



ISED: 22364-QCA9377 Report No.: T180627D11-RC1 Page: 1 / 87 Rev.: 02

# RADIO TEST REPORT INDUSTRY CANADA RSS-247

Test Standard	ISED RSS-247 issue 2
Product name	WiFi+Bluetooth 4.1(HS) System on Module
Brand Name	TechNexion
Model No.	PIXI-9377
Test Result	Pass

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory)

Approved by:

Reviewed by:

Sam Chuang

Sam Chuang Manager

Chine

Jerry Chuang Engineer

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(a) are retained for 90 days only. 除非另有說明,此報告結果僅對潮試之權品負責。同時此權品價保留90天。本報告未經本公司書面許可。不可當分複製。

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# Revision History

Rev.	Issue Date	Revisions	Revised By
00	August 28, 2018	Initial Issue	May Lin
01	September 20, 2018	<ol> <li>Added information about the FHSS characteristics in P.5.</li> <li>Revised 1.1 EUT information antenna information in P.4, P.6.</li> <li>Revised the test procedure in P.19, P.33.</li> <li>Revised the test result and test data in P.26, P.38-39.</li> <li>Added note in P.29-30, P.35, P.39.</li> <li>Update KDB 937606 to KDB 414788 in P.40.</li> </ol>	May Lin
02	September 27, 2018	September 27, 2018 1. Revised the worst mode of measurement in P.13.	



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# 1. GENERAL INFORMATION

# **1.1 EUT INFORMATION**

Applicant	TechNexion Ltd. 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipei City 23511 Taiwan ROC
Manufacturer	TechNexion Ltd. 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipei City 23511 Taiwan ROC
Equipment	WiFi+Bluetooth 4.1(HS) System on Module
Model No.	PIXI-9377
Model Discrepancy	N/A
Trade Name	TechNexion
Received Date	June 27, 2018
Date of Test	July 16 ~August 10, 2018
Output Power (W)	GFSK : 0.0111 (EIRP: 0.0279) 8DPSK : 0.0097 (EIRP: 0.0244)
Power Operation	Power by host system
HW Version	A1
FW Version	A1



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## 1.2 INFORMATION ABOUT THE FHSS CHARACTERISTICS

#### 1.2.1 Pseudorandom Frequency Hopping Sequence

The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels. The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master; the phase in the hopping sequence is determined by the Bluetooth clock of the master. The channel is divided into time slots where each slot corresponds to an RF hop frequency. Consecutive hops correspond to different RF hop frequencies. The nominal hop rate is 1 600 hops/s.

### 1.2.2 Equal Hopping Frequency Use

The channels of this system will be used equally over the long-term distribution of the hopsets.

#### 1.2.3 Example of a 79 hopping sequence in data mode:

02, 05, 31, 24, 20, 10, 43, 36, 30, 23, 40, 06, 21, 50, 44, 09, 71, 78, 01, 13, 73, 07, 70, 72, 35, 62, 42, 11, 41, 08, 16, 29, 60, 15, 34, 61, 58, 04, 67, 12, 22, 53, 57, 18, 27, 76, 39, 32, 17, 77, 52, 33, 56, 46, 37, 47, 64, 49, 45, 38, 69, 14, 51, 26, 79, 19, 28, 65, 75, 54, 48, 03, 25, 66, 05, 16, 68, 74, 59, 63, 55

#### 1.2.4 System Receiver Input Bandwidth

Each channel bandwidth is 1MHz.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

### 1.2.5 Equipment Description

15.247(a)(1) that the Rx input bandwidths shift frequencies in synchronization with the transmitted signals.

15.247(g): In accordance with the Bluetooth Industry Standard, the system is designed to comply with all of the regulations in Section 15.247 when the transmitter is presented with a continuous data (or information) system.

15.247(h): In accordance with the Bluetooth Industry Standard, the system does not coordinate it channels selection/ hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.



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# **1.3 EUT CHANNEL INFORMATION**

Frequency Range	2402MHz-2480MHz	
Modulation Type	<ol> <li>GFSK for BR-1Mbps</li> <li>π/4-DQPSK for EDR-2Mbps</li> <li>8DPSK for EDR-3Mbps</li> </ol>	
Number of channel	79 Channels	

#### Remark:

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 and RSS-GEN Table 1 for test channels

Number of frequencies to be tested					
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation			
1 MHz or less	1	Middle			
1 MHz to 10 MHz	2	1 near top and 1 near bottom			
More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom			

# **1.4ANTENNA INFORMATION**

Antenna Type	Dipole PIFA PCB Coils					
		Brand	P/N	Туре	Peak Gain	Worst Mode
Antenna Gain	Antenna 1	TechNexion	VM2450-25523-OOX-180	PIFA	2.5dBi	X
	Antenna 2	TechNexion	VM2450-ASSY1005	Dipole	4dBi	0



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# 1.5 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY	
AC Powerline Conducted Emission	+/- 1.2575	
Emission bandwidth, 20dB bandwidth	+/- 1.4003	
RF output power, conducted	+/- 1.1372	
Power density, conducted	+/- 1.4003	
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138	
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483	
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975	
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112	
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389	
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683	

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.



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# 1.6 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	Dally Hong	1( <b>4</b> 5)
Radiation	Jerry Chuang	2 <b>4</b> 3
RF Conducted	Jerry Chuang	-

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.



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# 1.7 INSTRUMENT CALIBRATION

		RF Conducte	d Test Site		
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	06/29/2018	06/28/2019
Power Meter	Anritsu	ML2495A	1012009	09/18/2017	09/17/2018
Power Seneor	Anritsu	MA2411B	1126148	02/06/2018	02/05/2019
Signal Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018
		Wugu 966 C	hamber A		
Name of Equipment	t Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Band Reject Filters	MICRO TRONICS	BRM 50702	120	05/14/2018	05/13/2019
Bilog Antenna	Sunol Sciences	JB3	A030105	07/13/2018	07/12/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	07/31/2017	07/30/2018
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	02/08/2018	02/07/2019
Double Ridged Guide Horn Antenna	' ETC	MCTD 1209	DRH13M02003	08/25/2017	08/24/2018
Loop Ant	COM-POWER	AL-130	121051	03/21/2018	03/20/2019
Pre-Amplifier	EMEC	EM330	060609	06/29/2018	06/28/2019
Pre-Amplifier	HP	8449B	3008A00965	06/29/2018	06/28/2019
PSA Series Spectrum Analyzer	n Agilent	E4446A	MY46180323	05/31/2018	05/30/2019
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	ccs	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R

Conducted Emission Room # B							
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due		
LISN	R&S	ENV216	101054	02/06/2018	02/05/2019		
LISN	SCHWARZBECK	NSLK 8127	8127-541	02/09/2018	02/08/2019		
EMI Test Receiver	R&S	ESCI	101203	11/02/2017	11/01/2018		
CABLE	EMCI	CFD300-NL	CERF	07/03/2018	07/02/2019		

Remark: Each piece of equipment is scheduled for calibration once a year.



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# 1.8 SUPPORT AND EUT ACCESSORIES EQUIPMENT

	EUT Accessories Equipment						
No.	Equipment	Brand	Model	Series No.	FCC ID		
	N/A						

	Support Equipment							
No.	Equipment	Brand	Model	Series No.	FCC ID			
1	NB(K)	Toshiba	voyager	ZD 154034s	N/A			
2	NB	Lenovo	TP00056A	R33B65	PD97260HU			

# 1.9 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, RSS-247 Issue 2 and RSS-GEN Issue 5.



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# 2. TEST SUMMERY

IC Standard Section	Report Section	Test Item	Result
1	1.3	Antenna Requirement	Pass
RSS-GEN 8.8	4.1	AC Conducted Emission	Pass
RSS-247(5.1)(a)	4.2	20 dB Bandwidth	Pass
RSS-GEN 6.7	4.2	Occupied Bandwidth (99%)	Pass
RSS-247(5.4)(b)	4.3	Output Power Measurement	Pass
RSS-247(5.1)(b)	4.4	Frequency Separation	Pass
RSS-247(5.1)(d)	4.5	Number of Hopping	Pass
RSS-247(5.5)	4.6	Conducted Band Edge	Pass
RSS-247(5.5)	4.6	Conducted Emission	Pass
RSS-247(5.1)(d)	4.7	Time of Occupancy	Pass
RSS-GEN 8.9, 8.10	4.8	Radiation Band Edge	Pass
RSS-GEN 8.9, 8.10	4.8	Radiation Spurious Emission	Pass



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# 3. DESCRIPTION OF TEST MODES

### 3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	GFSK for BR-1Mbps (DH5) 8DPSK for EDR-3Mbps (3DH5)
Test Channel Frequencies	GFSK for BR-1Mbps: 1.Lowest Channel : 2402MHz 2.Middle Channel : 2441MHz 3.Highest Channel : 2480MHz 8DPSK for EDR-3Mbps: 1.Lowest Channel : 2402MHz 2.Middle Channel : 2441MHz 3.Highest Channel : 2480MHz

Remark:

Ē

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.



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# 3.2 THE WORST MODE OF MEASUREMENT

#### For PIFA Antenna

Radiated Emission Measurement Below 1G					
Test Condition	Radiated Emission Below 1G				
Power supply Mode	Mode 1: EUT power by host system				
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4				

	Radiated Emission Measurement Above 1G
Test Condition	Band edge, Emission for Unwanted and Fundamental
Power supply Mode	Mode 1: EUT power by host system
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4
Worst Position	<ul> <li>Placed in fixed position.</li> <li>Placed in fixed position at X-Plane (E2-Plane)</li> <li>Placed in fixed position at Y-Plane (E1-Plane)</li> <li>Placed in fixed position at Z-Plane (H-Plane)</li> </ul>
Worst Polarity	Horizontal 🗌 Vertical

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (X-Plane and Horizontal) were recorded in this report

3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.



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#### For Dipole Antenna

AC Power Line Conducted Emission					
Test Condition	AC Power line conducted emission for line and neutral				
Power supply Mode	Mode 1: EUT power by host system				
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4				

	Radiated Emission Measurement Below 1G					
Test Condition	Radiated Emission Below 1G					
Power supply Mode	Mode 1: EUT power by host system					
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4					

	Radiated Emission Measurement Above 1G
Test Condition	Band edge, Emission for Unwanted and Fundamental
Power supply Mode	Mode 1: EUT power by host system
Worst Mode	🛛 Mode 1 🗌 Mode 2 🗌 Mode 3 🗌 Mode 4
Worst Position	<ul> <li>Placed in fixed position.</li> <li>Placed in fixed position at X-Plane (E2-Plane)</li> <li>Placed in fixed position at Y-Plane (E1-Plane)</li> <li>Placed in fixed position at Z-Plane (H-Plane)</li> </ul>
Worst Polarity	Horizontal 🖂 Vertical

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (Z-Plane and Vertical) were recorded in this report

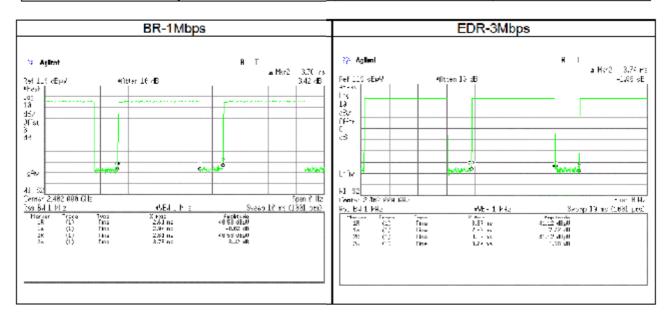
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.



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# 3.3 EUT DUTY CYCLE

	Duty Cycle					
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)			
BR-1Mbps	2.9400	3.7600	78.19%			
EDR-3Mbps	2.9200	3.7400	78.07%			





# 4. TEST RESULT

# 4.1 AC POWER LINE CONDUCTED EMISSION

#### 4.1.1 Test Limit

According to RSS-GEN section 8.8,

Frequency Range	Limits(dBµV)		
(MHz)	Quasi-peak	Average	
0.15 to 0.50	66 to 56*	56 to 46*	
0.50 to 5	56	46	
5 to 30	60	50	

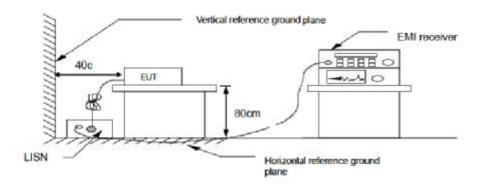
\* Decreases with the logarithm of the frequency.

#### 4.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

- The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
- 2. EUT connected to the line impedance stabilization network (LISN)
- Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
- Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. Recorded Line for Neutral and Line.

# 4.1.3 Test Setup



# 4.1.4 Test Result

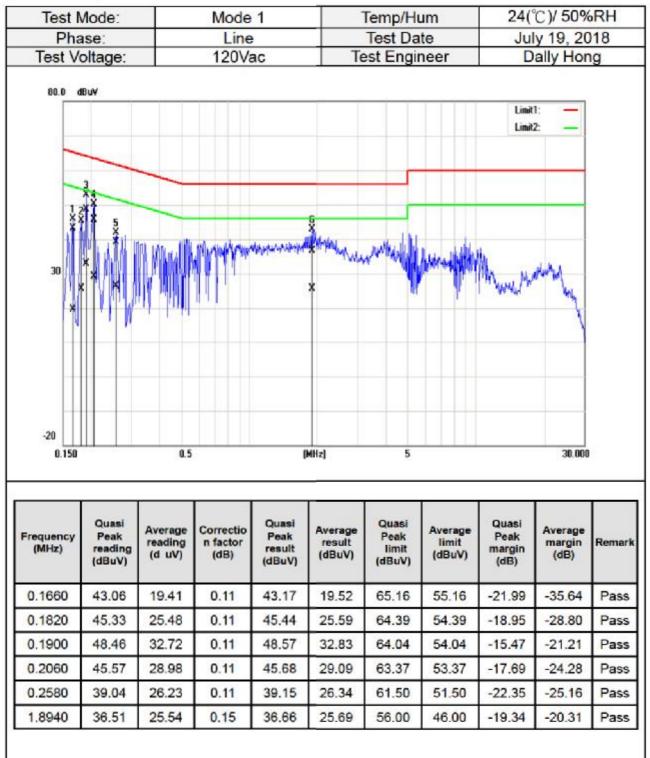
#### PASS

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### Test Data





Test N	loae:		Mode	1		Temp/H	um	24(	°C)/50%	DRH
Pha	ise:		Neutra	al		Test Da	te	Ju	ly 19, 20	18
Test Vo	oltage:		120Va	ac	Te	st Engi	neer	D	ally Hon	ng
80.0 d	BUV		Notrachila	Winner	han and a state of the state of		55	Limit		
									m.	
-20 0.150		0.5			MHz)	5			30.000	13
	Quasi Peak reading dBuV)	0.5 Average reading (dBuV)	Correctio n factor (dB)	Quasi Peak result (dBuV)	MHz) Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	30.000 Average margin (dB)	
0.150	Peak reading	Average reading	Correctio n factor	Quasi Peak result	Average result	Quasi Peak limit	limit	Peak margin	Average margin	Remar
0.150 Frequency (MHz)	Peak reading dBuV)	Average reading (dBuV)	Correctio n factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	limit (dBuV)	Peak margin (dB)	Average margin (dB)	Remar
0.150 Frequency (MHz) 1.8940	Peak reading dBuV) 31.03	Average reading (dBuV) 22.97	Correctio n factor (dB) 0.16	Quasi Peak result (dBuV) 31.19	Average result (dBuV) 23.13	Quasi Peak limit (dBuV) 56.00	limit (dBuV) 46.00	Peak margin (dB) -24.81	Average margin (dB) -22.87	Remar Pass Pass
0.150 Frequency (MHz) 1.8940 0.1825	Peak reading dBuV) 31.03 40.91	Average reading (dBuV) 22.97 28.44	Correctio n factor (dB) 0.16 0.13	Quasi Peak result (dBuV) 31.19 41.04	Average result (dBuV) 23.13 28.57	Quasi Peak limit (dBuV) 56.00 64.37	limit (dBuV) 46.00 54.37	Peak margin (dB) -24.81 -23.33	Average margin (dB) -22.87 -25.80	Remar Pass Pass Pass
0.150 Frequency (MHz) 1.8940 0.1825 0.2007	Peak reading dBuV) 31.03 40.91 40.02	Average reading (dBuV) 22.97 28.44 26.02	Correctio n factor (dB) 0.16 0.13 0.13	Quasi Peak result (dBuV) 31.19 41.04 40.15	Average result (dBuV) 23.13 28.57 26.15	Quasi Peak limit (dBuV) 56.00 64.37 63.58	limit (dBuV) 46.00 54.37 53.58	Peak margin (dB) -24.81 -23.33 -23.43	Average margin (dB) -22.87 -25.80 -27.43	Remark Pass Pass Pass Pass Pass



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# 4.2 20dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

### 4.2.1 Test Limit

According to RSS-247 section 5.1(a) and RSS-GEN 6.7,

20 dB Bandwidth : For reporting purposes only.

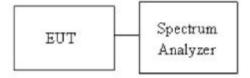
Occupied Bandwidth(99%) : For reporting purposes only.

#### 4.2.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 11.8.1,

- 1. The EUT RF output connected to the spectrum analyzer by RF cable.
- 2. Setting maximum power transmit of EUT
- SA set RBW = 30kHz, VBW = 100kHz and Detector = Peak, to measurement 20 dB Bandwidth.
- SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth.
- Measure and record the result of 20 dB Bandwidth and 99% Bandwidth. in the test report.

### 4.2.3 Test Setup





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# 4.2.4 Test Result

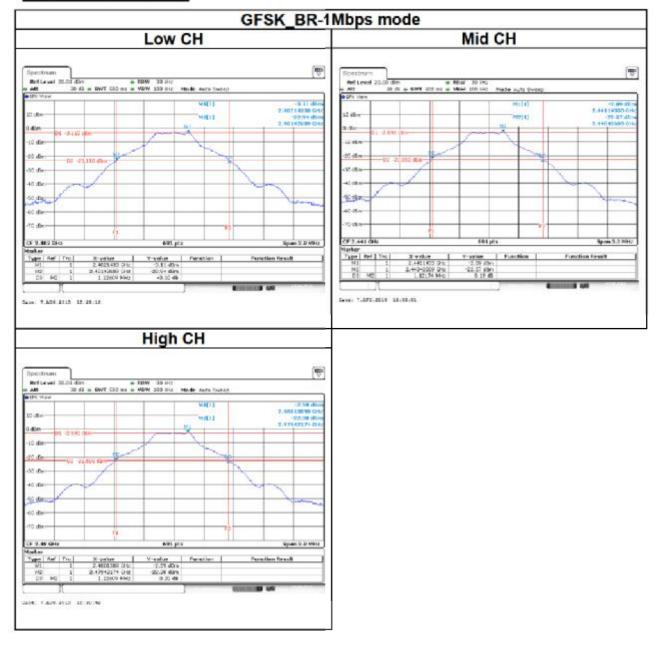
Test mode: GFSK_BR-1Mbps mode / 2402-2480 MHz							
Channel	Frequency (MHz)	OBW (99%) (MHz)	20dB BW (MHz)				
Low	2402	0.9073	1.1260				
Mid	2441	0.8986	1.1217				
High	2480	0.8986	1.1260				

Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	OBW (99%) (MHz)	20dB BW (MHz)	
Low	2402	1.1852	1.3869	
Mid	2441	1.1765	1.3826	
High	2480	1.1722	1.3739	



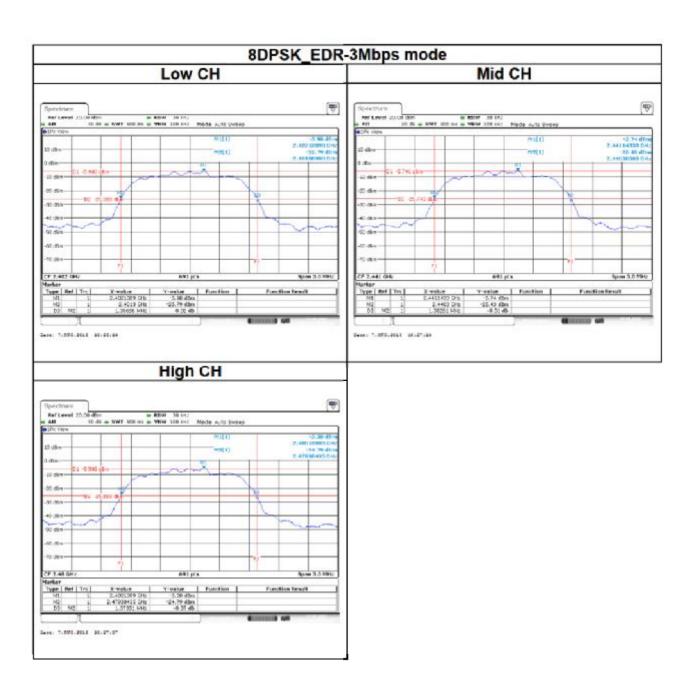
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# Test Data 20dB BANDWIDTH



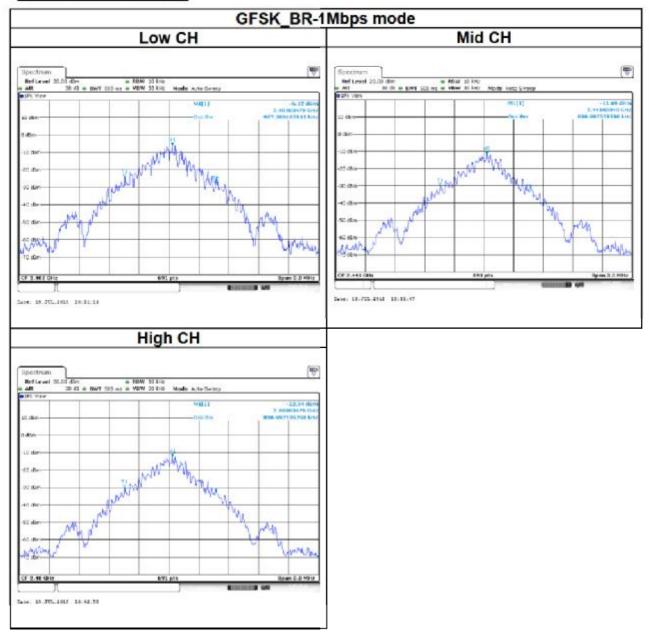


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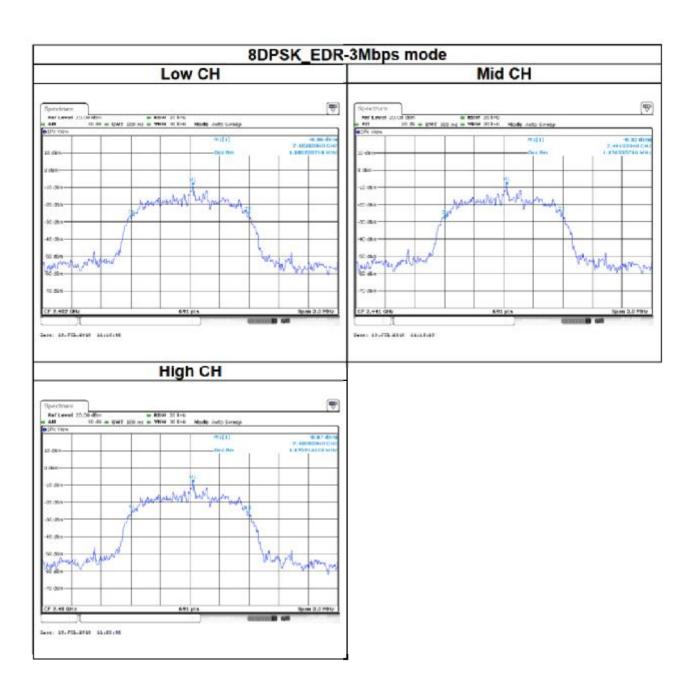


### BANDWIDTH (99%)





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# 4.3 OUTPUT POWER MEASUREMENT

### 4.3.1 Test Limit

#### Peak output power :

1. According to RSS-247 section 5.1(b), FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

2. According to RSS-247 section 5.4(b), For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).



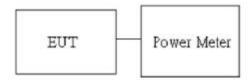
Antenna not exceed 6 dBi : 21dBm
Antenna with DG greater than 6 dBi : 21dBm [Limit = 30 – (DG – 6)]

Average output power : For reporting purposes only.

### 4.3.2 Test Procedure

- 1. The EUT RF output connected to the power meter by RF cable.
- 2. Setting maximum power transmit of EUT.
- 3. The path loss was compensated to the results for each measurement.
- Measure and record the result of Peak output power and Average output power. in the test report.

### 4.3.3 Test Setup





## 4.3.4 Test Result

#### Peak output power :

BT							
Config.	СН	Freq. (MHz)	PK Power (dBm)	EIRP PK Power (dBm)	PK Power (W)	EIRP PK Power (W)	IC Limit (dBm)
GFSK BR-1Mbps (DH5)	0	2402	10.13	14.13	0.0103	0.0259	21
	39	2441	10.46	14.46	0.0111	0.0279	
	78	2480	10.41	14.41	0.0110	0.0276	
8DPSK EDR- 3Mbps (DH5)	0	<mark>240</mark> 2	9.23	13.23	0.0084	0.0210	
	39	2441	9.87	13.87	0.0097	0.0244	
	78	2480	9.83	13.83	0.0096	0.0242	

#### Average output power :

BT				
Config.	СН	Freq. (MHz)	AV Power (dBm)	
GFSK	0	2402	10.00	
BR-1Mbps	39	2441	10.37	
(DH5)	78	2480	10.29	
8DPSK	0	2402	6.73	
EDR- 3Mbps	39	2441	7.03	
(DH5)	78	2480	6.99	

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# 4.4 FREQUENCY SEPARATION

### 4.4.1 Test Limit

According to RSS-247 section 5.1(b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

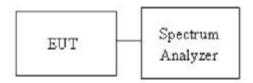
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Limit	> two-thirds of the 20 dB bandwidth
Limit	> two-thirds of the 20 dB bandwidth

### 4.4.2 Test Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. EUT RF output port connected to the SA by RF cable.
- Set the spectrum analyzer as RBW = 100kHz, VBW = 300kHz, Sweep = auto. Max hold, mark 3 peaks of hopping channel and record the 3 peaks frequency

# 4.4.3 Test Setup





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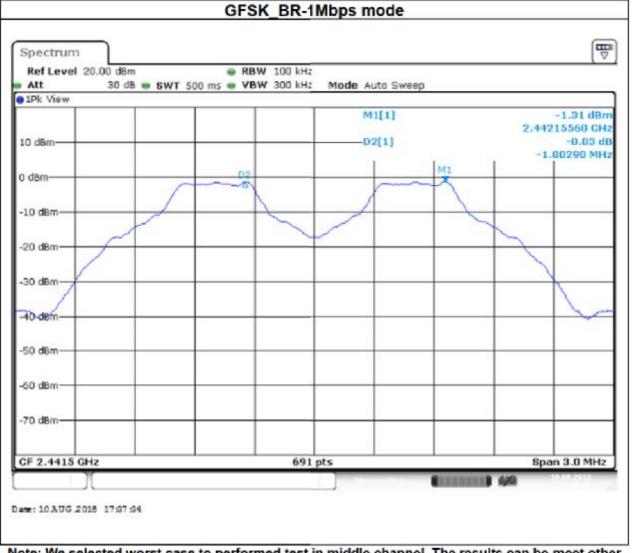
# 4.4.4 Test Result

Test mode: GFSK_BR-1Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result
Low	2402	1.0029	>0.7507	PASS
Mid	2441	1.0029	>0.7478	PASS
High	2480	1.0029	>0.7507	PASS

Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result
Low	2402	1.0029	>0.9246	PASS
Mid	2441	1.0029	>0.9217	PASS
High	2480	1.0029	>0.9159	PASS



### Test Data

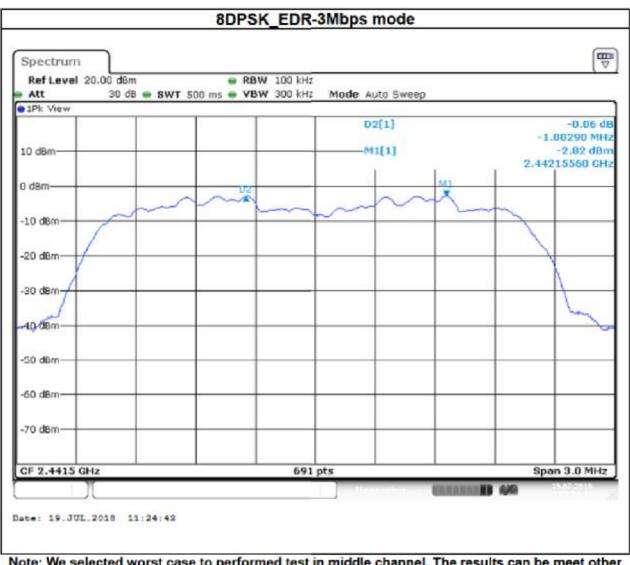


Note: We selected worst case to performed test in middle channel, The results can be meet other channel.

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Note: We selected worst case to performed test in middle channel, The results can be meet other channel.



# 4.5 NUMBER OF HOPPING

### 4.5.1 Test Limit

According to RSS-247 section 5.1(d)

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

#### 4.5.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 7.8.3

1. Place the EUT on the table and set it in transmitting mode.

- 2. EUT RF output port connected to the SA by RF cable.
- 3. Set spectrum analyzer Start Freq. = 2400 MHz, Stop Freq. = 2483.5 MHz, RBW
- =100KHz, VBW = 300KHz.
- 4. Max hold, view and count how many channel in the band.

### 4.5.3 Test Setup



### 4.5.4 Test Result

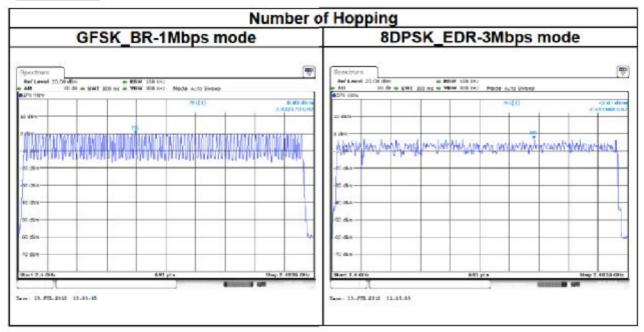
Number of Hopping					
Mode	Frequency (MHz)	Hopping Channel Number	Hopping Channel Number Limits	Result	
BR-1Mbps	2402-2480	79	15	Pass	
EDR-3Mbps	2402-2480	79	15		

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### Test Data





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# 4.6 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

### 4.6.1 Test Limit

According to RSS-247 section 5.5

Limit -20 dB	;
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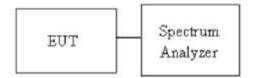
### 4.6.2 Test Procedure

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

 SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. The Band Edge at 2.4GHz and 2.4835GHz are investigated with both hopping "ON" and "OFF" modes ".

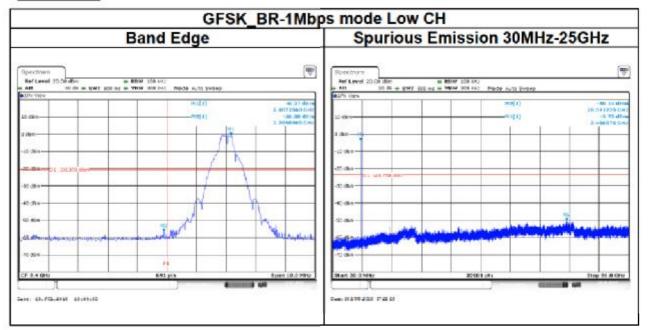
#### 4.6.3 Test Setup

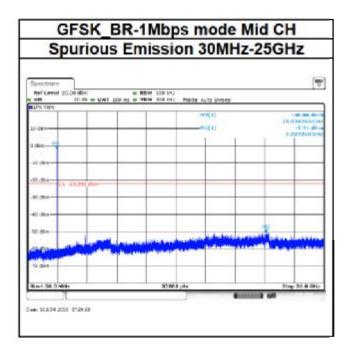




# 4.6.4 Test Result

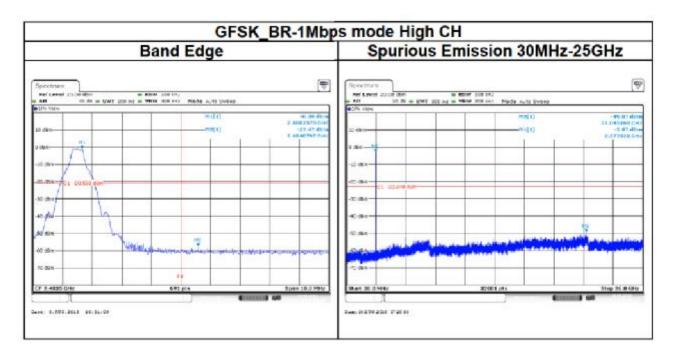
### Test Data

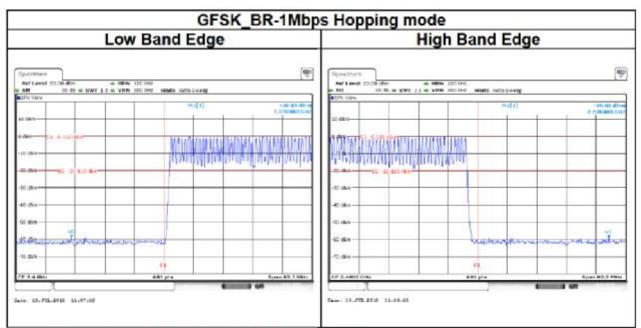




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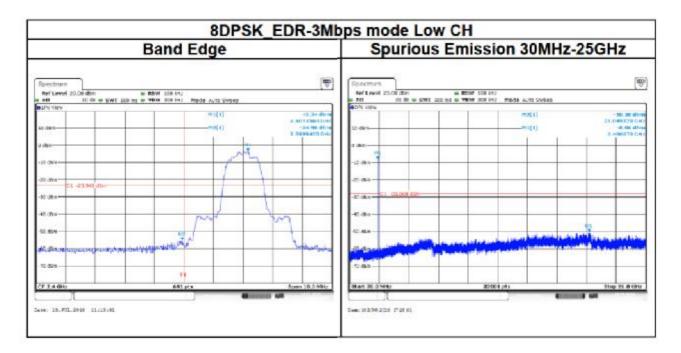


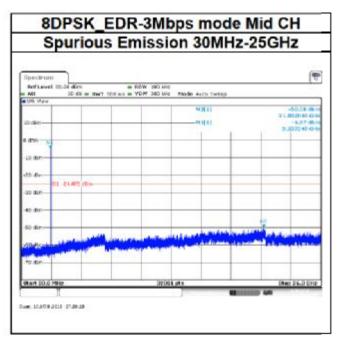


Note: The D1 line is at the maximum peak power point.



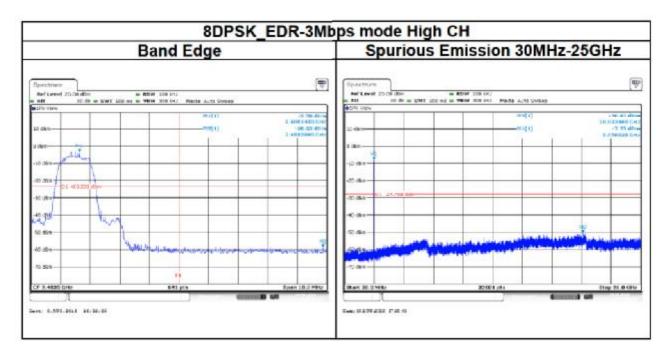
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Low Band Edge	High Band Edge
-churn	Boekhurn
efsevel 20.08 dBm	Ref Level 20.05 dan e Rev 1001H0 e All 30 db e SWE 15 e VIW 2003H0 Hods Juitz Sweg
16 Titler 17 L[[1] - 270 Jim din in 28	Baldin Views         mml[1]         -mml minimum           30 dem         -mml[1]         -mml minimum           30 dem         -mml[1]         2 mml minimum
และ (สมา 1	and the state of the second seco
da- 00 2-200 Au	-20 (#)
381	-0.ds-
dia	02.68
81	-10 day
2.4 (94) 8.41 p/s Span (2.1.199)	217 9,4895 Older 6.05 pl a Space 60.5 9967



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# 4.7 TIME OF OCCUPANCY (DWELL TIME)

# 4.7.1 Test Limit

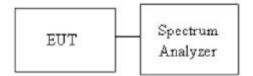
According to RSS-247 section 5.1(d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

# 4.7.2 Test Procedure

- 1. EUT RF output port connected to the SA by RF cable.
- 2. Set center frequency of spectrum analyzer = operating frequency.
- 3. Set the spectrum analyzer as RBW, VBW=1MHz, Sweep = 1 ms

# 4.7.3 Test Setup



#### 4.7.4 Test Result

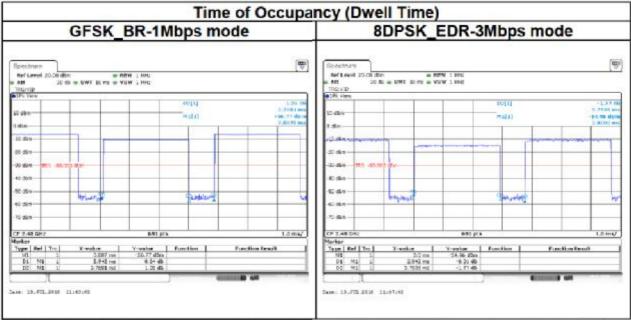
Mode	Frequency (MHz)	Pulse Time Per Hopping	Minimum Number of	Number of pulse in	Dwell Time IN	Dwell Time	Result
	(	(ms)	Hopping Freq.	(0.4 * N sec)	(0.4 * N sec)	Limits (s)	Nesun
BR-1Mbps	2441	2.942	79	106.67	0.3138	0.4	
EDR-3Mbps	2441	2.942	79	106.67	0.3138	0.4	Pass



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# Test Data



Note: We selected worst case to performed test in middle channel, The results can be meet other channel.



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# 4.8 RADIATION BANDEDGE AND SPURIOUS EMISSION

# 4.8.1 Test Limit

IC according to RSS-247 section 5.5, RSS-Gen, Section 8.9 and 8.10

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

#### Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

#### Above 30 MHz

Frequency	Field Str microvolts/m at 3 me	
(MHz)	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.



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# 4.8.2 Test Procedure

Test method Refer as, Section 12.1.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

 For harmonic, the worst case of output power was BR-1Mbps. Therefore only BR-1Mbps record in the report.

- 5. The SA setting following :
  - (1) Below 1G : RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
  - (2) Above 1G :
    - (2.1) For Peak measurement : RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
    - (2.2) For Average measurement : RBW = 1MHz, VBW

If Duty Cycle ≥ 98%, VBW=10Hz.

If Duty Cycle < 98%, VBW≥1/T.

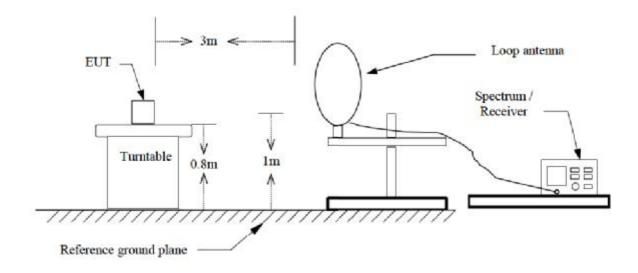
Configuration	Duty Cycle (%)	T(ms)	1/T (Hz)	VBW setting
GFSK_BR-1Mbps	78.19%	2.9400	0.340	360Hz
8DPSK_EDR-3Mbps	78.07%	2.9200	0.342	360Hz



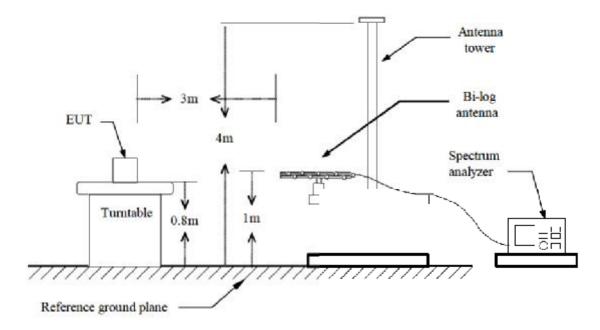
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#### 9kHz ~ 30MHz



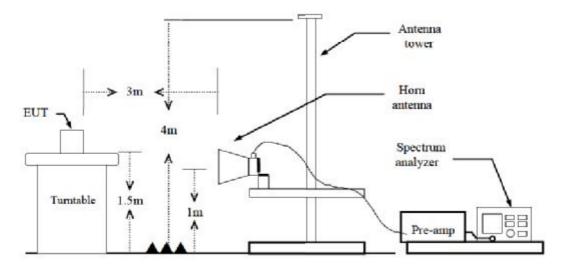
#### 30MHz ~ 1GHz





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# Above 1 GHz





# 4.8.4 Test Result

#### Band Edge Test Data

#### For PIFA Antenna

Test N	Mode:		CBR-1Mbps ow CH	Ter	np/Hum	22(°(	)/ 34%RH
Test	Item	Ba	and Edge	Te	st Date	July	16, 2018
Pola	arize	Vertical		Test	Test Engineer		y Chuang
Dete	ector		Peak				· · · · · · · · · · · · · · · · · · ·
120.0 dB	uW/m					Limit1: Limit2:	
80							
	0 2320.20 2330		2350.80 2361.			1.60	2412.00 MHz
		Reading	Correct	Result	Limit	Margin	Remark
No.	Frequency	Reading	CONECT	100000000	CROIC COCINCES		
No.	Frequency (MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
No.					(dBuV/m) 74.00	(dB) -22.21	peak

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1000000000	Mode:	l	CBR-1Mbps Low CH		mp/Hum		)/ 34%RH
	Item		and Edge		st Date		16, 2018
	arize		Vertical	Test	Engineer	Jerr	y Chuang
Dete	ector	ŀ	Average				
110.0 de	uV/m						
						Linit1: Lini(2:	-
70							
30.0					4	N	A
	0 2320.20 2330	.40 2340.60	2350.80 2361	.00 2371.20	2381.40 239	1.60	2412.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	2389.152	38.57	-2.98	35.59	54.00	-18.41	AVG
1					1		



lest	Mode:		K_BR-1Mbp: High CH	s Te	mp/Hum	22(°(	C)/ 34%RI
Tes	t Item	E	Band Edge	Te	est Date	July	y 16, 2018
Po	larize		Vertical	Test	t Engineer	Jen	ry Chuang
De	tector		Peak				
120.0 di	8uW/m						
						Limit1: Limit2:	_
80							
Nov.		topenda sources of	handetelen hater paraise	managanta	anggifgeren strategeret	1jania foljenov so svijeme	de matinked a
40.0 2470.00	00 2478.20 2486	.40 2494.60		00 2519.20	2527.40 253	5.60	2552.00 MHz
40.0	00 2478.20 2486	.40 2494.60 Rading	2502.80 2511. Correct	00 2519.20 Result	2527.40 253 Limit	5.60 Margin	
40.0 2470.00	00 2478.20 2486	.40 2494.60	2502.80 2511	00 2519.20	2527.40 253	5.60	2552.00 MHz



Test	Mode:	GFS	K_BR-1Mbps High CH	s Te	mp/Hum	22(°(	C)/ 34%R
Tes	t Item	E	Band Edge	Te	est Date	July	y 16, 2018
Po	larize		Vertical	Test	t Engineer	Jer	ry Chuang
De	tector		Average				
110.0 d	8uV/m		-2517				
	1					Linit1: Linit2:	
70							
70							
70							
70							
70							
70							
30.0	00 2478.20 2486	.40 2494.60	2502.80 2511.	00 2519.20	2527.40 253	5.60	2552.00 MHz
30.0		.40 2494.60 Reading	2502.80 2511. Correct	00 2519.20 Result	2527.40 253 Limit	5.60 Margin	2552.00 MHz Remark
30.0	00 2478.20 2486						
30.0	00 2478.20 2486	Reading	Correct	Result	Limit	Margin	



Test	Mode:		K_EDR-3Mb Low CH	ie	mp/Hum	510 / 0 / 0 / 0 / 0 / 0 / 0 / 0 / 0 / 0 /	C)/ 34%RI
Tes	t Item	E	Band Edge	Te	est Date	July	16, 2018
Pol	arize		Vertical	Test	t Engineer	Jen	ry Chuang
Det	tector		Peak				
120.0 de	3u₩/m						
						Limit1: Limit2:	
						2	
						Ň	
							-
80							
						1	how
-					LANG CARE	4	2.023
mante	-	when when when	n-manantenah naki	mainenation	NAMEN OF		
40.0							
2310.00	0 2320.20 2330	.40 2340.60	2350.80 2361	.00 2371.20	2381.40 239	1.60	2412.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.662	57.17	-2.98	54.19	74.00	-19.81	peak
2	2402.004	107.92	-2.95	104.97	-	-	peak



Test	Mode:	8DPS	K_EDR-3Mb Low CH	Tel	mp/Hum	22(°(	c)/ 34%RH
	t Item	E	Band Edge		est Date		/ <mark>16, 2018</mark>
	larize		Vertical	Test	Engineer	Jerr	y Chuang
Det	tector		Average				
110.0 de	Bu <b>V/m</b>						
						Limit1: Limit2:	Ξ
						Ť.	
70							
							<u>(</u>
_							
-					1		
30.0				~		~	~
10.000	0 2320.20 2330	.40 2340.60	2350.80 2361.	00 2371.20	2381.40 2391	60	2412.00 MHz
No.	Freque cy	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.662	38.90	-2.98	35.92	54.00	-18.08	AVG
2	2402.106	103.96	-2.95	101.01		7.5	AVG



Test Item     Band Edge     Test Date     July 16, 2018       Polarize     Vertical     Test Engineer     Jerry Chuang       Detector     Peak     Imit:	0.09070	Mode:		K_EDR-3Mb High CH	ie	mp/Hum	and the second sec	C)/ 34%RI
Detector         Peak           120.0         dBuW/m           Imit:         Imit:           Imit:         Imit:			E					
120.0 dBuV/m					Test	Engineer	Jerry Chuang	
80	De	tector		Peak				
	120.0 d	Bu¥/m						
								_
40.0	80		Million	16 aster and a star and a star	arriterative free and a	petroper Arrengere		ed magner
	40.0 2470.0				_			_
	100 St. 1	Frequency	Reading	Correct	Result	Limit	Margin	Remark
No.         Frequency         Reading         Correct         Result         Limit         Margin         Remark           (MHz)         (dBuV)         Factor(dB/m)         (dBuV/m)         (dBuV/m)         (dB)	2470.0	Frequency		Chicologic Contra				Remark
	2470.0 No.	Frequency (MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)			



Test Item     Band Edge     Test Date     July 16, 2018       Polarize     Vertical     Test Engineer     Jerry Chuang       Detector     Average     Image     Image	0.00.000	Mode:	10.00000000	K_EDR-3Mbj High CH	le	mp/Hum		C)/ 34%R
Detector         Average           110.0         dBuV/m           Imit::         Imit::           Imit::			E					
110.0 dBvV/m	Po	larize		Vertical	Test	Engineer	Jen	ry Chuang
	De	tector		Average				
	110.0 d	BuV/m						
30.0								
	30.0 2470.0	00 2478.20 248				2527.40 2535		2552.00 MHz
No. Frequency Reading Correct Result Limit Margin Remark	30.0		5.40 2494.60 Reading	2502.80 2511. Correct	00 2519.20 Result	2527.40 2535 Limit		2552.00 MHz Remark
No.         Frequency         Reading         Correct         Result         Limit         Margin         Remark           (MHz)         (dBuV)         Factor(dB/m)         (dBuV/m)         (dBuV/m)         (dB)	30.0 2470.0	00 2478.20 2488	Reading	Correct	Result	Limit	Margin	
	30.0 2470.0 No.	00 2478.20 2488 Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit	Margin (dB)	Remark



#### For Dipole Antenna

Test	Mode:	I	CBR-1Mbps ow CH	Ter	np/Hum	22(°(	C)/ 34%R⊦
	Item		and Edge	Te	st Date		16, 2018
Pola	arize		Vertical	Test	Engineer	Jerr	ry Chuang
Dete	ector		Peak				21
120.0 de	3u¥/m						
						Limit1: Limit2:	
						Ž	
						Л	
-							
						1 1	
2222						1.5 04	
80							
							100
					1	N.	No.
-					å	LAN	1 NOW
w	Converting wind	and when some some	n beløkense referendelinger	mathalipet	Anotherphylan		1.14
40.0							
2310.00	0 2320.20 2330	.40 2340.60	2350.80 2361	.00 2371.20	2381.40 239	1.60	2412.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.866	56.60	-2.98	53.62	74.00	-20.38	peak
12				108.43			



	Mode:	l	CBR-1Mbps ow CH	Ter	mp/Hum		C)/ 34%RI
	Item		and Edge		st Date		16, 2018
	arize		Vertical	Test	Engineer	Jerr	y Chuang
Dete	ector	ŀ	Average				
110.0 dB	uW/m					2	
						Limita: Limita:	-
						Linit.2	_
						- 41	
						— <u>н</u>	2.1
70							
-							
				Λ	~	N	han
30.0	Linnan			Nummer of the second se			
2310.00	0 2320.20 2330	.40 2340.60	2350.80 2361	.00 2371.20	2381.40 239	1.60	2412.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	2313.978	46.23	-3.22	43.01	54.00	-10.99	AVG
1							



Test	Mode:		K_BR-1Mbps High CH	ie	mp/Hum	State State	C)/ 34%RI
	t Item	E	Band Edge		est Date		16, 2018
Po	larize		Vertical	Test	t Engineer	Jen	y Chuang
Det	tector		Peak				
120.0 dB	3u¥/m						
	4					Linit1: Linit2:	_
80							
robush		Proder North Million of	Manumana	encolatano dan denderado da	prostance broken alger and a star	nandite en daniling	la factoria ha
	00 2478.20 2486	.40 2494.60	2502.80 2511.	.00 2519.20	2527.40 253	5.60	2552.00 MHz
	00 2478.20 2486	R ading	2502.80 2511. Correct	00 2519.20 Result	2527.40 253 Limit	5.60 Margin	2552.00 MHz Remark
2470.00	00 2478.20 2486 Fre uency (MHz)	.40 2494.60 Rading (dBuV)	2502.80 2511. Correct Factor(dB/m)	00 2519.20 Result (dBuV/m)	2527.40 253	5.60 Margin (dB)	Remark
2470.00	00 2478.20 2486	R ading	2502.80 2511. Correct	00 2519.20 Result	2527.40 253 Limit	5.60 Margin	2552.00 MHz



Test	Mode:	GFS	K_BR-1Mbps High CH	s Te	mp/Hum	22(°(	C)/ 34%R
Tes	t Item	E	Band Edge	Te	est Date	July	y 16, 2018
Po	larize		Vertical	Test	t Engineer		ry Chuang
De	tector		Average				
110.0 df	BuV/m						
	Å					Linit1: Linit2:	
						-	
70							
70							
70							
70					×		
30.0	00 2478.20 2486	6.40 2454.60	2502.80 2511.		A 2527.40 253	5.60	2552.00 MHz
30.0		.40 2454.60 Reading	2502.80 2511. Correct		2527.40 253	5.60 Margin	2552.00 MHz Remark
30.0	00 2478.20 2486				and a second second		
30.0	00 2478.20 2486	Reading	Correct	Result	Limit	Margin	



Test	Mode:		K_EDR-3Mb Low CH	. ie	mp/Hum	51.70% - <b>1</b> 76	C)/ 34%RI
Tes	t Item	E	Band Edge		est Date	the second se	y 16, 2018
Pol	arize		Vertical	Test	t Engineer	Jerry Chuang	
Det	tector		Peak				
120.0 dB	3u₩/m						
						Limit1: Limit2:	_
						2	
						ň	
						— M	5.1
80							
							Allan
					1		No. Participation
			www.weenwerner	10 mm - 10 m	at the light		191
west	Unterneteral	mannam	when have a solution of the	a had a production of the light	P. Markelandan da	ар.	
40.0							
2310.00	0 2320.20 2330	.40 2340.60	2350.80 2361	.00 2371.20	2381.40 239	1.60	2412.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
		56.54	-2.98	53.56	74.00	-20.44	peak
1	2389.560		1.000	2 X232-221-221-2	2263 V 2426 V 01		



Test	Mode:	8DPS	K_EDR-3Mbp Low CH	os Tei	mp/Hum	22(°(	)/ 34%RI
Tes	t Item	E	Band Edge	Te	est Date	July	16, 2018
Po	larize		Vertical	Test	Engineer	Jerr	y Chuang
De	tector		Average				
110.0 df	Bu <b>V/m</b>						
						Limit1: Limit2:	_
						A	
70							
							· · · · ·
1							
				~ -	_	$\mathcal{N}$	m
30.0	·			/ have a second			
2310.00	00 2320.20 2330	.40 2340.60	2350.80 2361.	00 2371.20	2381.40 2391	.60	2412.00 MHz
No.	Freque cy	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2314.080	43.91	-3.22	40.69	54.00	-13.31	AVG
				Service of the service of			AVG



	Mode:		K_EDR-3Mb High CH	Te	mp/Hum	CLOSED BALL	C)/ 34%RI
Tes	st Item	E	Band Edge		est Date		16, 2018
Po	larize		Vertical	Test	Engineer	Jerr	y Chuang
De	tector		Peak				
120.0 d	BuV/m						
						Linit1: Linit2:	_
	Å						
-							
80							
00							
	1						
-		m					
m		The West					_
		. Contraction	Arthurston	and a standard and a standard and and and and and and and and and an	How he have hard being	ليعامد ومدور ومرود	hulperson
40.0							
	00 2478.20 248	5.40 2494.60	2502.80 2511.	00 2519.20	2527.40 2535	5.60	2552.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2480.004	109.81	-2.70	107.11	-	-	peak
2	2483.500	65.68	-2.69	62.99	74.00	-11.01	peak
	- Cross	5.1 S					



0.75957	Mode:		K_EDR-3Mb High CH	16	mp/Hum	- 18 P	C)/ 34%RI
	t Item	E	Band Edge		est Date		y 16, 2018
	larize		Vertical	Test	Engineer	Jen	ry Chuang
De	tector		Average				
110.0 d	BuV/m					555	
	Å					Linit1: Linit2:	
							-
70							
30.0	~ ~				~		
30.0	00 2478.20 2486	5.40 2494.60	2502.80 2511	.00 2519.20	2527.40 253	5.60	2552.00 MHz
	00 2478.20 248	6.40 2494.60 Reading	2502.80 2511 Correct	00 2519.20 Result	2527.40 253 Limit	5.60 Margin	2552.00 MHz Remark
2470.0							
2470.0	Frequency	Reading	Correct	Result	Limit	Margin	
2470.0	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark



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#### Below 1G Test Data

#### For PIFA Antenna

lest	Mode:			BT Mode	Te	emp/Hum	22(	C)/34%R
Test	t Item		30	OMHz-1GHz		est Date		y 30, 201
	arize			Vertical	Tes	t Engineer	Jer	ry Chuan
Det	ector			Peak				
80.0 dB	u¥/m						1	
_							Limit1: Margin	
-								
				_				_
30		ł	ş	7 X	*	5	8	
			Î					
20								
20 30.000	127.00	224.0	00 321.00	418.00 515	.00 612.00	703.00 806	5.00	1000.00 MHz
	127.00		00 321.00 Reading	418.00 515 Correct	.00 612.00 Result	703.00 800	5.00 Margin	1000.00 MHz Remark
30.000		ncy			Result			
30.000	reque	ncy z)	Reading	Correct	Result	Limit	Margin	
No.	reque (MHz	ncy z) 300	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
30.000 No.	reque (MH: 174.53	ncy z) 300	Reading (dBuV) 43.35	Correct Factor(dB/m) -10.78	Result (dBuV/m) 32.57	Limit (dBuV/m) 43.52	Margin (dB) -10.95	Remark peak
30.000 No. 1 2	reque (MH: 174.53 324.88	ncy z) 300 800	Reading (dBuV) 43.35 37.32	Correct Factor(dB/m) -10.78 -7.38	Result           (dBuV/m)           32.57           29.94	Limit (dBuV/m) 43.52 46.02	Margin (dB) -10.95 -16.08	Remark peak peak
30.000 No. 1 2 3	reque (MH 174.53 324.88 399.57	ncy z) 300 800 700 400	Reading (dBuV) 43.35 37.32 36.19	Correct Factor(dB/m) -10.78 -7.38 -5.30	Result           (dBuV/m)           32.57           29.94           30.89	Limit (dBuV/m) 43.52 46.02 46.02	Margin (dB) -10.95 -16.08 -15.13	Remark peak peak peak



	Mode:		BT Mode	and the second se	mp/Hum	and the second division of the local divisio	C)/ 34%R
	st Item		MHz-1GHz		est Date		y 30, 2018
	larize		Horizontal	Test	Engineer	Jen	ry Chuang
Det	tector		Peak	204			
80.0 de	BuV/m					Limit1: Margin	
30			× *		4		-
	127.00 224	88 221.08	410.00 515 /	0 612.00			1000 00 HU-
30,000	o seriesta lotraria		418.00 515.0		709.00 806		1000.00 MHz
	Frequency	Reading	Correct	Result	Limit	Margin	1000.00 MHz Remark
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
30.000 No.	Frequency (MHz) 224.9700	Reading (dBuV) 48.22	Correct Factor(dB/m) -10.97	Result (dBuV/m) 37.25	Limit (dBuV/m) 46.02	Margin (dB) -8.77	Remark peak
30.000 No. 1 2	Frequency           (MHz)           224.9700           375.3200	Reading (dBuV) 48.22 44.05	Correct Factor(dB/m) -10.97 -6.02	Result (dBuV/m) 37.25 38.03	Limit (dBuV/m) 46.02 46.02	Margin (dB) -8.77 -7.99	Remark peak peak
30.000 No. 1 2 3	Frequency           (MHz)           224.9700           375.3200           424.7900	Reading (dBuV) 48.22 44.05 40.51	Correct Factor(dB/m) -10.97 -6.02 -4.51	Result (dBuV/m) 37.25 38.03 36.00	Limit (dBuV/m) 46.02 46.02 46.02	Margin (dB) -8.77 -7.99 -10.02	Remark peak peak peak
30.000 No. 1 2	Frequency           (MHz)           224.9700           375.3200	Reading (dBuV) 48.22 44.05	Correct Factor(dB/m) -10.97 -6.02	Result (dBuV/m) 37.25 38.03	Limit (dBuV/m) 46.02 46.02	Margin (dB) -8.77 -7.99	Remark peak peak



#### For Dipole Antenna

	Mode:		BT Mod	е		Te	mp/Hun	1 I	22(°	C)/ 34	%R
Test	t Item	30	MHz-10	Hz	10- 		est Date		Jul	y 30, 2	2018
Pol	arize		Vertical			Tes	t Engine	er	Jer	Ty Chu	uan
Det	ector		Peak								
80.0 dB	uV/m										20
									Limit1: Margir		
								_			Į.
	1										
30	1		2 X	mX	×	5 X		6 X			Į.
											ĺ
20											
-20 30.000	127.00 2	224.00 321.00	418.00	515.00	) 612	2.00	709.00	806.00		1000.00	MHz
30.000											
	requenc	y Reading	Corre	ct	Rest	ult	Limit		Margin	1000.00	
30.000		y Reading (dBuV)		ct B/m)		ult //m)		n)			ark
30.000 No.	requenc (MHz)	y         Reading           (dBuV)         48.13	Corre Factor(d	ct B/m) 8	Resu (dBuV	ult //m) 35	Limit (dBuV/r	n)	Margin (dB)	Rem	ark ak
30.000 No.	requenc (MHz) 174.5300	ry         Reading           (dBuV)         (dBuV)           0         48.13           0         34.10	Corre Factor(d -10.7	et B/m) 8	Resu (dBuV 37.3	ult //m) 35 59	Limit (dBuV/r 43.52	n)	Margin (dB) -6.17	Rem	ark ak ak
30.000 No. 1 2	requenc (MHz) 174.5300 424.7900	y         Reading           (dBuV)         48.13           0         34.10           0         36.05	Corre Factor(d -10.7 -4.51	ct B/m) 8 1 3	Resu (dBuV 37.3 29.5	ult //m) 35 39 37	Limit (dBuV/r 43.52 46.02	n)	Margin (dB) -6.17 -16.43	Rem pea	ark ak ak ak
30.000 No. 1 2 3	requenc (MHz) 174.5300 424.7900 524.7000	y         Reading           (dBuV)         48.13           0         34.10           0         36.05           0         34.71	Corre Factor(d -10.7 -4.51 -2.18	ct B/m) 8 1 3 6	Rest (dBuV 37.3 29.5 33.6	ult //m) 35 39 37 5	Limit (dBuV/r 43.52 46.02 46.02	n)	Margin (dB) -6.17 -16.43 -12.15	Rem pea pea	ark ak ak ak ak

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	Mode:			BT Mo			the second s	mp/Hum	the subscription of the local division of th	C)/ 34%R
1.000	t Item larize			MHz-1 Horizon		-		est Date Engineer	_	y 30, 2018 Ty Chuang
	tector			Peak			1631	Lingineer	Jei	ry chuang
80.0 dB	3u¥/m									
	suv/m								Limit1: Margir	
										F
30			ž		ž		4 X	×	×	
-20										
-20 30,000	127.00	224.0	0 321.00	418.00	515.0	0 612	00	709.00 80	6.00	1000.00 MHz
	127.00		0 321.00 Reading	418.00 Corr		0 612. Resu		709.00 80 Limit	6.00 Margin	1000.00 MHz Remark
000000	o and include	ncy	an constant	- Setteres	rect	50. 725.28	lt		100 M	-
30.000	Freque	ency z)	Reading	Corr	rect (dB/m)	Resu	lt m)	Limit	Margin	-
30.000	Freque (MH	ency z) 300	Reading (dBuV)	Corr Factor(	(dB/m)	Resu (dBuV/	lt m) 2	Limit (dBuV/m)	Margin (dB)	Remark
30.000 No.	Freque (MH: 174.53	ency z) 300 100	Reading (dBuV) 48.10	Corr Factor( -10.	rect (dB/m) .78 49	Resu (dBuV/ 37.32	lt m) 2 8	Limit (dBuV/m) 43.52	Margin (dB) -6.20	Remark peak
30.000 No. 1 2	Freque (MH: 174.53 275.41	ency z) 300 100 300	Reading (dBuV) 48.10 39.57	Corr Factor( -10. -8.4	rect (dB/m) .78 49 14	Resu (dBuV/ 37.32 31.08	lt m) 2 3	Limit (dBuV/m) 43.52 46.02	Margin (dB) -6.20 -14.94	Remark peak peak
30.000 No. 1 2 3	Freque (MH: 174.53 275.4 475.23	<b>rncy</b> <b>z)</b> 300 100 300 100	Reading (dBuV) 48.10 39.57 33.46	Corr Factor( -10. -8.4 -3.1	rect (dB/m) .78 49 14 40	Resu (dBuV/ 37.3 31.08 30.3	1t m) 2 3 2 3	Limit (dBuV/m) 43.52 46.02 46.02	Margin (dB) -6.20 -14.94 -15.70	Remark peak peak peak

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#### Above 1G Test Data

#### For PIFA Antenna

11.000.000000	Node:		K_BR-1Mbps Low CH	Ten	np/Hum		C)/ 34%RH
	Item	ł	larmonic		st Date	July 30, 2018	
Pola			Vertical		Engineer	Jer	ry Chuang
Dete	ector	Peak	and Average				
110.0 dBu	V/m						
						Limit1: Limit2:	
70						_	_
	*					_	
30.0	3550.00 610	0.00 8650.00	11200.00 13750	.00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
110.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Keniark
1	4806.000	44.58	4.35	48.93	74.00	-25.07	peak

#### Remark:

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Te	st Mod	e:		K_BR- Low C	1Mbps H	Te	mp/Hum	22(°	C)/ 34%RI
Te	est Iten	n	Harmonic			Т	est Date	Jul	y 30, 2018
P	olarize	;	ŀ	lorizor	ntal	Tes	t Enginee	r Jer	ry Chuang
D	etecto	r	Peak	and A	verage				
110.0	dBu¥/m								
								Limit1: Limit2:	
								Limitz	
-									
-				_	_				-
70									
-								_	
		1							
		×							2
-									
30.0									
_	.000 3550	00 6100	.00 8650.00	11200.0	0 13750.0	00 16300.00	18850.00 2	1400.00	26500.00 MHz
No	. Fre	quency	Reading	Co	rrect	Result	Limit	Margin	Remark
	(	MHz)	(dBuV)	Facto	r(dB/m)	(dBuV/m	) (dBuV/n	n) (dB)	
1	48	06.000	47.82	4	.35	52.17	74.00	-21.83	peak

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Item         Harmonic         Test Date           Polarize         Vertical         Test Engineer           Detector         Peak and Average         Image: Comparison of the second s		30, 2018 Chuang
Detector         Peak and Average           110.0         dBuV/m	Limit1:	Chuang
110.0 dBuV/m		
		_
1       1		
70		
70		
	_	
*		
30.0		
1000.000 3550.00 6100.00 8650.00 11200.00 13750.00 16300.00 18850.00 21400.00	26	6500.00 MHz
No. Frequency Reading Correct Result Limit M	largin	Remark
(MHz) (dBuV) Factor(dB/m) (dBuV/m) (dBuV/m) (	(dB)	
1 4883.000 45.40 4.49 49.89 74.00 -2	24.11	peak
	300	80

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test I	Mode:	GFS	K_BR-1Mbps Mid CH	Ten	np/Hum	22(℃	C)/ 34%RI
Test	Item	ł	Harmonic	Tes	st Date	July 30, 2018	
Pola	arize	H	orizontal	Test	Engineer	Jen	ry Chuang
Dete	ector	Peak	and Average	5			
110.0 dBu	N/m						
						Limit1: Limit2:	
70	*						
	3550.00 6100		11200.00 13750.0		18850.00 21400		26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	4883.000	49.30	4.49	53.79	74.00	-20.21	peak

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



0.000000	Mode:		K_BR-1Mbps High CH		np/Hum	1	C)/ 34%R
	t Item	ł	Harmonic		st Date		30, 2018
	larize		Vertical	the second se	Engineer	Jerr	y Chuang
De	tector	Peak	and Average	34			
110.0 d	Bu <b>V/m</b>						
						Limit1: Limit2:	_
70							
	ł						
30.0							
	00 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
	Erony	Reading	Correct	Result	Limit	Margin	Remark
No.	Frequency				A REPORT OF A REPORT OF	a second	
No.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



lest N	Mode:	GFSK_BR-1Mbps High CH		0.000	p/Hum	22/245	)/ 34%RH
Test	Item	Ha	armonic		t Date	July 30, 20	
Pola	rize	He	orizontal	Test E	ngineer		y Chuang
Dete	ector	Peak a	and Average				
110.0 dB	uV/m						
						Limit1: Limit2:	
70							
30.0	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 2140	0.00	26500.00 MHz
		.00 8650.00 Reading	11200.00 13750. Correct	00 16300.00 Result	18850.00 21400 Limit	0.00 Margin	26500.00 MHz Remark
1000.00	0 3550.00 6100						

#### Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Mode		K_EDR-3Mbp Low CH	Ten	np/Hum	11142	c)/ 34%R
	H		Name of Concession, Name of Street or other Designation, or other	the second s	July 30, 2018	
And and a second se	-	the second se		Engineer	Jerr	y Chuang
tector	Peak	and Average				
3u¥/m						
					Limit1: Limit2:	Ξ
						_
ł						
00 3550.00 6100	.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	0.00	26500.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
4804.000	40.85	4.34	45.19	74.00	-28.81	peak
	10 3550.00 6100	t Item i arize tector Peak	t Item Harmonic arize Vertical tector Peak and Average	Item     Harmonic     Test       larize     Vertical     Test       tector     Peak and Average     Image: State of the stat	t Item         Harmonic         Test Date           arize         Vertical         Test Engineer           tector         Peak and Average         NW/m	t Item     Harmonic     Test Date     July       arize     Vertical     Test Engineer     Jerr       tector     Peak and Average     Imit:

2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



lest	Mode		K_EDR-3Mbp Low CH	s Tem	np/Hum	22(°(	C)/ 34%RH
Test	Item	H	larmonic	Tes	st Date	July 30, 2018	
Pol	arize	ł	orizontal	Test	Engineer	Jerr	y Chuang
Det	ector	Peak	and Average				
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
_							
	×						
30.0							
and the second second	0 3550.00 6100	.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	D. OD	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
		43.36	4.35	47.71	74.00	-26.29	peak

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Teat	Mode	8DPS	K_EDR-3Mbp Mid CH	Ten	np/Hum	and a state of the	)/ <mark>34%R</mark> I
Tes	t Item	1	Harmonic	Tes	st Date	July 30, 201	
Pol	arize		Vertical	Test	Engineer	Jerr	y Chuang
Det	tector	Peak	and Average				
110.0 dB	uW/m						
						Limit1: Limit2:	_
70							
	*						
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	0.00	26500.00 MHz
			Correct	Result	Limit	Margin	Remark
No.	Frequency	Reading	Correct		S1233 (33.53)		
No.	Frequency (MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	

- fundamental frequency.
- For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



	Mode		K_EDR-3Mbp Mid CH	Ten	np/Hum	10.000	c)/ 34%RI
	t Item	_	Harmonic		st Date		30, 2018
	arize		Iorizontal		Engineer	Jerr	y Chuang
Det	ector	Peak	and Average	2			
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
	*						
30.0 1000.00	0 3550.00 610	0.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
-	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	4883.000	45.82	4.49	50.31	74.00	-23.69	peak

2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



	Mode		K_EDR-3Mbp High CH	Ten	np/Hum		C)/ 34%R
Tes	t Item	ł	Harmonic		st Date		/ 30, 2018
Pol	larize		Vertical	Test	Engineer	Jerr	y Chuang
Det	tector	Peak	and Average	SC			
110.0 de	3uV/m						
						Linit1: Linit2:	_
70							
						_	
	×						
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4960.000	42.25	4.61	46.86	74.00	-27.14	peak
mark:							

- 2. For above 1GHz, the EUT peak value was under average limit, therefore the
  - Average value compliance with the average limit



Test	Mode		K_EDR-3Mbp High CH	s Ten	np/Hum	22(°	C)/ 34%RI
Test	Item		Harmonic	Tes	st Date	July	30, 2018
	arize	ł	Iorizontal	Test	Engineer		ry Chuang
Det	ector	Peak	and Average	5			
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
-	*						_
30.0							
1000.00	0 3550.00 610	0.00 8650.00	11200.00 13750.0	16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	4960.000	46.20	4.61	50.81	74.00	-23.19	peak

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



#### For Dipole Antenna

0.0005	Mode:		K_BR-1Mbps Low CH	ien	np/Hum		)/ 34%RH
	ttem	1	Harmonic		st Date		30, 2018
	arize		Vertical		Engineer	Jerr	y Chuang
Det	ector	Peak	and Average				
110.0 dB	u¥/m						
						Limit1: Limit2:	_
				-			
70							
10							
	¥						
325224							
30.0	0 3550.00 6100	00 8650.00	11200.00 13750.	00 16300.00	18950.00 21400	00	26500.00 MHz
1000.00	0 3330.00 6100	.00 0650.00	11200.00 13/30.	00 16500.00	10050.00 21400		26308.00 MH2
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4806.000	46.35	4.35	50.70	74.00	-23.30	peak

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test	Mode:		K_BR-1Mbps Low CH		np/Hum	22(℃	C)/ 34%RI
Test	t Item		Harmonic		st Date		/ 30, 2018
	arize	-	orizontal	and the second se	Engineer	Jen	y Chuang
Det	ector	Peak	and Average	2			
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
_	*						
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	), 00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
		38.15	4.34	42.49	74.00	-31.51	peak

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Item     Harmonic     Test Date     July 30, 2018       Polarize     Vertical     Test Engineer     Jerry Chuang       Detector     Peak and Average     Imit:     Imit:	Mode:	GFS	K_BR-1Mbps Mid CH		np/Hum	22(°(	C)/ 34%RH
Detector         Peak and Average           110.0         d8uV/m           Imit:         Imit:           Imit:         Imit:           Imit:         Imit:		ł					the second se
110.0 dBuV/m	arize			Test	Engineer	Jerr	y Chuang
Image: Sector of the sector	ector	Peak	and Average	5			
	uV/m						
							_
No. Frequency Reading Correct Result Limit Margin Remark				I Wellington States			
(MHz) (dBuV) Factor(dB/m) (dBuV/m) (dBuV/m) (dB)	4883.000	48.33	4.49	52.82	74.00	-21.18	peak
30.0 1000.000 No.		arize ector w/m 1	arize Peak	Item       Harmonic         arize       Vertical         ector       Peak and Average         uv/m       Image: state s	Item       Harmonic       Test         arize       Vertical       Test I         ector       Peak and Average       Image: Correct         uV/m       Image: Correct       Result	Item       Harmonic       Test Date         arize       Vertical       Test Engineer         ector       Peak and Average          uv/m           1           2       3550.00       6100.00       8650.00       11200.00       13750.00       16300.00       18850.00       21400         Frequency       Reading       Correct       Result       Limit	Item       Harmonic       Test Date       July         arize       Vertical       Test Engineer       Jerr         ector       Peak and Average       Imit:       Imit:         uv//n       Imit:       Imit:       Imit:         uv//n       Imit:

- fundamental frequency.
- For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



fundamental frequency.

0.000	Mode:	GFS	K_BR-1Mbps Mid CH		np/Hum	and a second	C)/ 34%RI
	t Item	_	larmonic		st Date		/ 30, 2018
Po	larize		orizontal	And and a second se	Engineer	Jen	y Chuang
Det	tector	Peak	and Average	2			
110.0 de	3u¥/m						
						Limit1: Limit2:	_
70							
	1						
	*						
30.0							
1000.00	00 3550.00 6100	.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	0.00	26500.00 MHz
				<b>BH</b>	Limit	Margin	Remark
No.	Frequency	Reading	Correct	Result	Linne	margin	
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
No.					CONTRACTOR CONTRACTOR	111111	peak

2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



0.000	Mode:		K_BR-1Mbps High CH		np/Hum	22(℃	C)/ 34%RI
	t Item		Harmonic		st Date		/ 30, 2018
	larize		Vertical	the second se	Engineer	Jen	y Chuang
Det	tector	Peak	and Average				
110.0 de	3u¥/m						
						Limit1: Limit2:	_
70							
	1						
-							
-							
30.0							
	0 3550.00 6	100.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
	00 3550.00 6		11200.00 13750. Correct	00 16300.00 Result	18850.00 21400 Limit	Margin	26500.00 MHz Remark
1000.00							

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test N	1.800000 J	Н	_BR-1Mbps ligh CH	2 ALCONTRACT	p/Hum	2.3 - 5 - 5	)/ 34%RF
Test	Item		armonic	Test	t Date	July	30, 2018
Pola	and the second se	the second se	orizontal	Test E	ngineer	Jerr	y Chuang
Dete	ctor	Peaka	and Average				
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
_					-		
	ł						
-							
30.0							
1000.00	0 3550.00 6100	.00 9650.00	11200.00 13758.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
2	4960.000	38.55	4.61	43.16	74.00	-30.84	peak

#### Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test	Mode		K_EDR-3Mbp Low CH	s Tem	np/Hum	22(°(	C)/ 34%RI
Tes	t Item	1	Harmonic	Tes	st Date		30, 2018
Pol	arize		Vertical		Engineer	Jerr	y Chuang
Det	tector	Peak	and Average				
110.0 dB	lu¥/m						
						Limit1: Limit2:	
-					_		
70							
	*						
	Î						
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	4806.000	47.69	4.35	52.04	74.00	-21.96	peak

- fundamental frequency. 2. For above 1GHz, the EUT peak value was under average limit, therefore the
  - Average value compliance with the average limit



	Mode		K_EDR-3Mbp Low CH	Ten	np/Hum	22(°(	C)/ 34%RH
Tes	t Item	ł	Harmonic	Tes	st Date	July	/ 30, 2018
Pol	arize	ł	Iorizontal	Test	Engineer	Jerr	y Chuang
Det	ector	Peak	and Average				
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
-							_
	¥						
			11000.00 10750				
30.0	0.3550.00 0100			00 000010 00	10000 00 01400	0.00	20500 00 000
5202.0	0 3550.00 6100	.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	0.00	26500.00 MHz
5202.0	0 3550.00 6100 Frequency	.00 8650.00 Reading	Correct	00 16300.00 Result	18850.00 21400	Margin	26500.00 MHz Remark
1000.00							

- fundamental frequency. 2. For above 1GHz, the EUT peak value was under average limit, therefore the
  - Average value compliance with the average limit



	Mode	8DPS	K_EDR-3Mbp Mid CH	Ten	np/Hum	10.00	C)/ 34%RI
	t Item	1	Harmonic		st Date		30, 2018
	arize		Vertical		Engineer	Jerr	y Chuang
Det	ector	Peak	and Average	2			
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
	1						
-	Ŕ						
30.0							
1919 B	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
		Desider	Correct	Result	Limit	Margin	Remark
No.	Frequency	Reading	Concor		CONTRACTOR (CONTRACT)		
No.	Frequency (MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
No.		1		(dBuV/m) 55.69	(dBuV/m) 74.00	(dB) -18.31	peak

For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Mode		K_EDR-3Mbp Mid CH	Ten	np/Hum	10.000	)/ 34%RI
	_					30, 2018
and the second sec				Engineer	Jerr	y Chuang
ector	Peak	and Average			l	
uW/m						
					Limit1: Limit2:	_
					_	
¥						
0 3550.00 610	0.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	0.00	26500.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
4883.000	39.96	4.49	44.45	74.00	-29.55	peak
	0 3550.00 6100	arize   H ector   Peak uW/m 	t Item Harmonic arize Horizontal ector Peak and Average	Item         Harmonic         Test           arize         Horizontal         Test           ector         Peak and Average         Image: Constraint of the second sec	Item         Harmonic         Test Date           arize         Horizontal         Test Engineer           ector         Peak and Average         Image: Construction of the second s	Mild CH     Test Date     July       arize     Horizontal     Test Engineer     Jerr       ector     Peak and Average     Imit:     Imit:       uw/m     Imit:     Imit:     Imit:       uw/m     Imit:

2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



1000000	Mode		K_EDR-3Mbp High CH	Ten	np/Hum	and the second	C)/ 34%R
Tes	t Item	ł	Harmonic	Tes	st Date	July	/ 30, 2018
Pol	larize		Vertical	Test	Engineer	Jerr	y Chuang
Det	tector	Peak	and Average	10			
110.0 de	3uV/m						
						Limit1: Limit2:	_
70							
	1 X						
		-					
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4960.000	45.69	4.61	50.30	74.00	-23.70	peak
00	10 A	54 - 54 -	94A	65		0.0	01 10
mark:							

- 2. For above 1GHz, the EUT peak value was under average limit, therefore the
- Average value compliance with the average limit



lest	Mode		K_EDR-3Mbp High CH	s Ten	np/Hum	22(°	C)/ 34%RI
Test	t Item		Harmonic	Tes	st Date	July	30, 2018
Pol	arize	ŀ	lorizontal	Test	Engineer		ry Chuang
Det	ector	Peak	and Average	5			
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
	ł						
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.0	10 16300.00	18850.00 21400	). 00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	4960.000	37.75	4.61	42.36	74.00	-31.64	peak

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

--End of Report--



APPENDIX-A Test Photo For PIFA Antenna Radiation (Below 1GHz) Page: A-1 / A-4 Rev.: 02



Radiation (Above 1GHz)

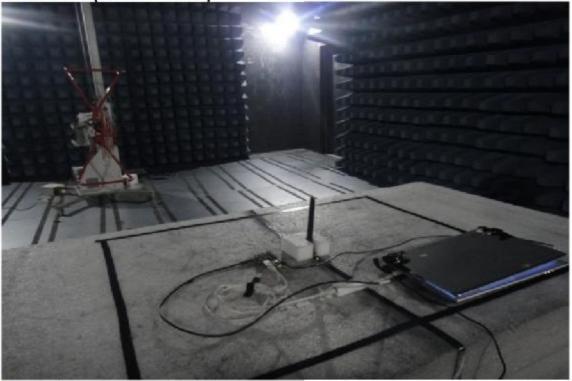


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# For Dipole Antenna Radiation (Below 1GHz)



Radiation (Above 1GHz)

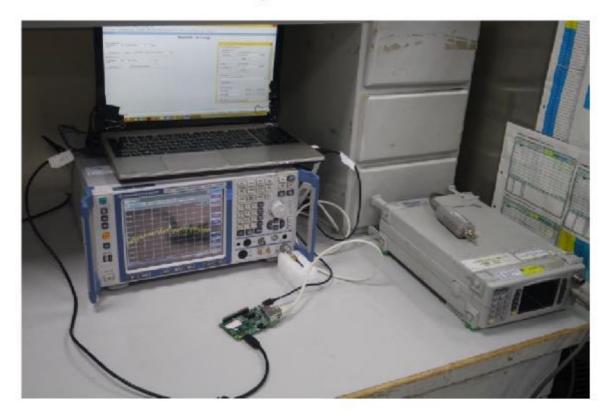


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# Conducted Emission Set Up Photo





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# Conduction





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ISED: 22364-QCA9377 Report No.: T180627D11-RC4 Page: 1 / 185 Rev.: 02

# RADIO TEST REPORT INDUSTRY CANADA RSS-247

Test Standard	ISED RSS-247 Issue 2
Brand name	TechNexion
Applicant	TechNexion Ltd.
Product name	WiFi+Bluetooth 4.1(HS) System on Module
Model No.	PIXI-9377
Test Result	Pass

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory)

Approved by:

Sam Chuang Manager Reviewed by:

Jerry Chuang Engineer

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明, 此報告結果做對測試之權品負責,同時此權品僱保留90天。本報告未經本公司書面許可,不可留分複製。

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SGS Compliance Certification Service Inc. 释智科教授俗有限公司 No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan / 新北市五股區五工六路 11 號 t.(886-2) 2299-9720 f:(886-2) 2298-1882 www.sgs.tw www.ccsrf.com



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# Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 28, 2018	Initial Issue	ALL	May Lin
01	September 20, 2018	<ol> <li>Revised the EUT and antenna information.</li> <li>Revised the test result and test data.</li> <li>Update KDB 937606 to KDB 414788.</li> <li>Modify the test mode frequency.</li> </ol>	P.4, P.5, P.34-35, P.48, P.131-132, P.167-168, P.184-185	May Lin
02	September 27, 2018	1. Revised the worst mode of measurement.	P.11	May Lin



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# 1. GENERAL INFORMATION

# **1.1 EUT INFORMATION**

	U-NII-3	IEEE 802.11n HT 40 MHz IEEE 802.11ac VHT 80 MHz	5755 ~ 5795 5775	0.0378	0.1503	
		IEEE 802.11n HT 20 MHz	5745 ~ 5825	0.0209	0.0832	
		IEEE 802.11ac VHT 80 MHz IEEE 802.11a	5210 5745 ~ 5825	0.0048	0.0191	
Juipul Power(w)	100000000000000000000000000000000000000	IEEE 802,11n HT 40 MHz	5190 ~ 5230	0.0447	0.1778	
Dutput Power(W)	U-NII-1	IEEE 802.11n HT 20 MHz	5180 - 5240	0.0236	0.0940	
		IEEE 802.11a	5180 ~ 5240	0.0236	0.0940	
	Band	Mode	Frequency Range (MHz)	Output Power (W)	EIRP Output Power (w)	
FW Version	A1					
HW Version	A1					
Power Supply	Power by host system					
Date of Test	July 13 ~ August 8, 2018					
Received Date	June 27, 2018					
Model Discrepancy	N/A					
Model Name	PIXI-9377					
Equipment	WiFi+Blue	tooth 4.1(HS) System	on Module			
Manufacturer		n Ltd. 736, Zhongzheng Roa I Taiwan ROC	d, Zhonghe	Dist., Ne	ew Taipei	
Applicant	TechNexion Ltd. 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipei City, 23511 Taiwan ROC					



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#### Report No.: T180627D11-RC4

# 1.2 EUT CHANNEL INFORMATION

	UNII-1	12 I I I I I I I I I I I I I I I I I I I
	IEEE 802.11a	5180 ~ 5240 MHz
	IEEE 802.11n HT 20 MHz	5180 ~ 5240 MHz
	IEEE 802.11n HT 40 MHz	5190 ~ 5230 MHz
Fraguenes Denge	IEEE 802.11ac VHT 80 MHz	5210 MHz
Frequency Range	UNII-3	
	IEEE 802.11a	5745 ~ 5825 MHz
	IEEE 802.11n HT 20 MHz	5745 ~ 5825 MHz
	IEEE 802.11n HT 40 MHz	5755 ~ 5795 MHz
	IEEE 802.11ac VHT 80 MHz	5775 MHz
Modulation Type	1. IEEE 802.11a mode: OFD 2. IEEE 802.11n HT 20 MHz 3. IEEE 802.11n HT 40 MHz 4. IEEE 802.11ac VHT 80 MH	mode: OFDM mode: OFDM

#### Remark:

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 and RSS-GEN Table 1 for test channels

Num	ber of frequencies	to be tested
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
🛛 More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

# **1.3 ANTENNA INFORMATION**

Antenna Type		PCB 🛛 Dipol	e 🗌 Coils			
		Brand	P/N	Туре	Peak Gain	Worst Mode
Antenna Gain	Antenna 1	TechNexion	VM2450-25523-OOX-180	PIFA	3dBi	х
	Antenna 2	TechNexion	VM2450-ASSY1005	Dipole	6dBi	0



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# **1.4 MEASUREMENT UNCERTAINTY**

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

# 1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark	
AC Conduction Room	Dally Hong	1961	
Radiation	Jerry Chuang		
RF Conducted	Jerry Chuang		

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.



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# **1.6INSTRUMENT CALIBRATION**

RF Conducted Test Site						
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due	
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	06/29/2018	06/28/2019	
Power Meter	Anritsu	ML2495A	1012009	09/18/2017	09/17/2018	
Power Seneor	Anritsu	MA2411B	1126148	02/06/2018	02/05/2019	
Signal Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018	

3M 966 Chamber Test Site						
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due	
Bilog Antenna	Sunol Sciences	JB3	A030105	07/13/2018	07/12/2019	
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018	
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	07/31/2017	07/30/2018	
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	02/08/2018	02/07/2019	
Double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	08/25/2017	08/24/2018	
High Pass Filters	MICRO TRONICS	HPM13195	003	05/14/2018	05/13/2019	
Horn Antenna	ETS LINDGREN	3116	00026370	01/04/2018	01/03/2019	
Loop Ant	COM-POWER	AL-130	121051	03/21/2018	03/20/2019	
Pre-Amplifier	EMEC	EM330	060609	06/29/2018	06/28/2019	
Pre-Amplifier	MITEQ	AMF-6F-260400-40-8P	985646	06/21/2018	06/20/2019	
Pre-Amplifier	HP	8449B	3008A00965	06/29/2018	06/28/2019	
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/31/2018	05/30/2018	
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R	
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R	
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R	

AC Conducted Emissions Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
LISN	R&S	ENV216	101054	02/06/2018	02/05/2019
LISN	SCHWARZBECK	NSLK 8127	8127-541	02/09/2018	02/08/2019
EMI Test Receiver	R&S	ESCI	101203	11/02/2017	11/01/2018
CABLE	EMCI	CFD300-NL	CERF	07/03/2018	07/02/2019

Remark: Each piece of equipment is scheduled for calibration once a year.



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# 1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

		EUT A	ccessories Equip	oment	
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A	61 - 701			

		S	upport Equipmen	it	
No.	Equipment	Brand	Model	Series No.	FCC ID
1	NB(K)	Toshiba	voyager	ZD 154034s	N/A
2	NB	Lenovo	TP00056A	R33B65	PD97260HU

# **1.8 TEST METHODOLOGY AND APPLIED STANDARDS**

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, KDB 789033 D02.



# 2. TEST SUMMERY

IC Standard Sec.	Chapter	Test Item	Result
-	1.3	Antenna Requirement	Pass
RSS-Gen(8.8)	4.1	AC Conducted Emission	Pass
1 <u>42</u> 11	4.2	26dB Bandwidth	Pass
RSS-247(6.2.4)	4.2	6dB Bandwidth	Pass
RSS-Gen(6.7)	4.2	Occupied Bandwidth (99%)	Pass
RSS-247(6.2.1.1) RSS-247(6.2.4.1)	4.3	Output Power Measurement	Pass
RSS-247(6.2.1.1) RSS-247(6.2.4.1)	4.4	Power Spectral Density	Pass
RSS-247(6.2.1.2) RSS-247(6.2.4.2)	4.5	Radiation Band Edge	Pass
RSS-247(6.2.1.2) RSS-247(6.2.4.2)	4.5	Radiation Spurious Emission	Pass
RSS-Gen(6.11)	4.6	Frequency Stability	Pass

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# 3. DESCRIPTION OF TEST MODES

## 3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	1. IEEE 802.11a mode: 6Mbps 2. IEEE 802.11n HT 20 MHz mode: MCS0 3. IEEE 802.11n HT 40 MHz mode: MCS0 4. IEEE 802.11ac VHT 80 MHz mode: MCS0					
		Mode	Frequency Range (MHz)	Number of Channels		
	U-NII-1	IEEE 802.11a	5180 ~ 5240	4 Channels		
0		IEEE 802.11n HT 20 MHz	5180 ~ 5240	4 Channels		
Operating Frequency		IEEE 802.11n HT 40 MHz	5190 ~ 5230	2 Channels		
Range &		IEEE 802.11ac VHT 80 MHz	5210	1 Channels		
Number of Channels		IEEE 802.11a	5745 - 5825	5 Channels		
		IEEE 802.11n HT 20 MHz	5745 ~ 5825	5 Channels		
	U-NII-3	IEEE 802.11n HT 40 MHz	5755 ~ 5795	2 Channels		
	101000000000000000000000000000000000000	IEEE OUZ TITETT 40 MITZ	0100 0100	a. solida a rord		

Remark:

Ē.

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

2. Covered modes are test reduction modes. The output powers on the covered modes are equal to or less than the mode referenced and use the same module



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# 3.2 THE WORST MODE OF MEASUREMENT

#### For PIFA Antenna

	Radiated Emission Measurement Above 1G
Test Condition	Band edge, Emission for Unwanted and Fundamental
Power supply Mode	Mode 1: EUT power by host system
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4
Worst Position	<ul> <li>Placed in fixed position.</li> <li>Placed in fixed position at X-Plane (E2-Plane)</li> <li>Placed in fixed position at Y-Plane (E1-Plane)</li> <li>Placed in fixed position at Z-Plane (H-Plane)</li> </ul>
Worst Polarity	Horizontal 🗌 Vertical

F	Radiated Emission Measurement Below 1G
Test Condition	Radiated Emission Below 1G
Power supply Mode	Mode 1: EUT power by host system
Worst Mode	🖾 Mode 1 🔲 Mode 2 🗌 Mode 3 🗌 Mode 4

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (X-Plane and Horizontal) were recorded in this report

3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.



#### For Dipole Antenna

AC Power Line Conducted Emission				
Test Condition	AC Power line conducted emission for line and neutral			
Power supply Mode	Mode 1: EUT power by host system			
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4			

	Radiated Emission Measurement Above 1G
Test Condition	Band edge, Emission for Unwanted and Fundamental
Power supply Mode	Mode 1: EUT power by host system
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4
Worst Position	<ul> <li>Placed in fixed position.</li> <li>Placed in fixed position at X-Plane (E2-Plane)</li> <li>Placed in fixed position at Y-Plane (E1-Plane)</li> <li>Placed in fixed position at Z-Plane (H-Plane)</li> </ul>
Worst Polarity	Horizontal      Vertical

F	Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G	
Power supply Mode	Mode 1: EUT power by host system	
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4	

Remark:

1. The worst mode was record in this test report.

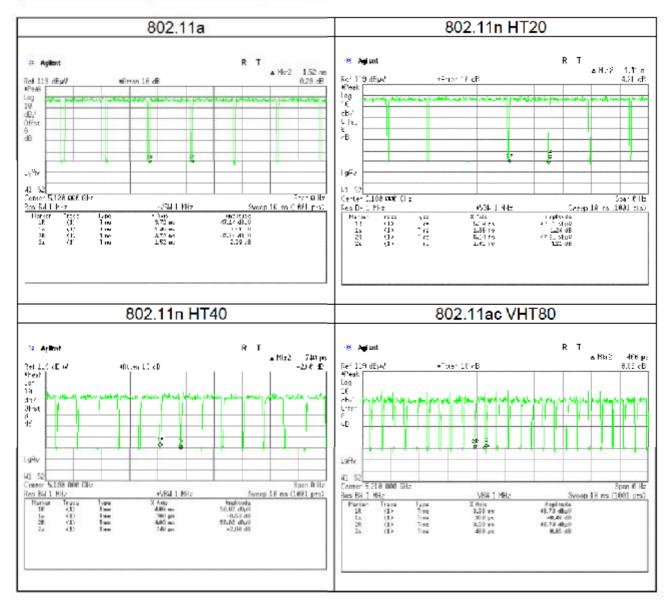
2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (Z-Plane and Vertical) were recorded in this report

3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.



# **3.3EUT DUTY CYCLE**

Duty Cycle								
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)	Duty Factor(dB)				
802.11a	1.4600	1.5200	96.05%	-0.17				
802.11n HT20	1.3600	1.4100	96.45%	-0.16				
802.11n HT40	0.7000	0.7400	94.59%	-0.24				
802.11ac VHT80	0.3600	0.4000	90.00%	-0.46				





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# 4. TEST RESULT

# 4.1 AC POWER LINE CONDUCTED EMISSION

## 4.1.1 Test Limit

According to RSS-GEN section 8.8,

Frequency Range	Limits(dBµV)			
(MHz)	Quasi-peak	Average		
0.15 to 0.50	66 to 56*	56 to 46*		
0.50 to 5	56	46		
5 to 30	60	50		

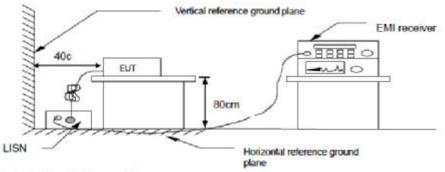
\* Decreases with the logarithm of the frequency.

### 4.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

- The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
- 2. EUT connected to the line impedance stabilization network (LISN)
- Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
- Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. Recorded Line for Neutral and Line.

# 4.1.3 Test Setup

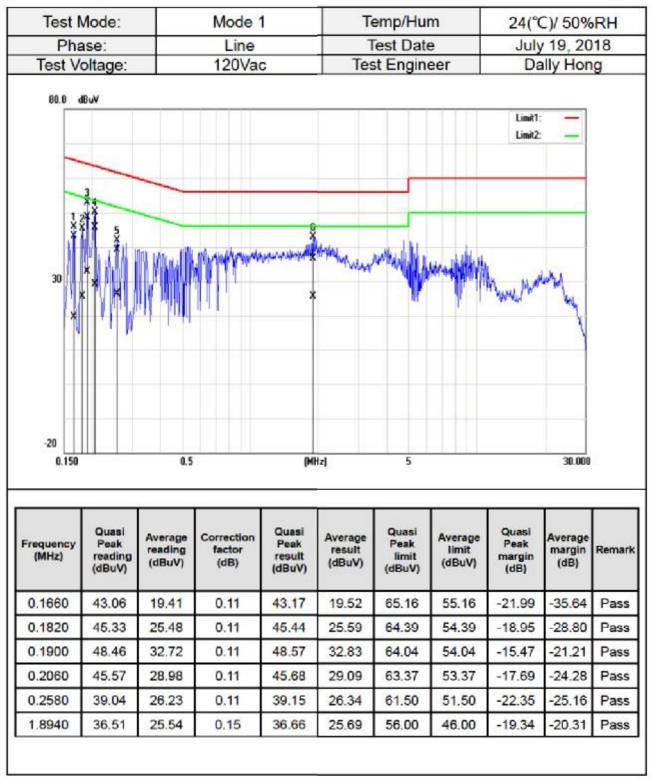


# 4.1.4 Test Result





# Test Data





Test N	Node:		Mode 1	1	Te	emp/Hu	m	24(°(	C)/ 50%	RH
Pha	ise:		Neutra		Т	est Date	е	July	19,20	18
Test Vo	oltage:		120Vac		Tes	Test Engineer		Dally Hong		g
80.0 d		m	Manandaha	ylinium			5× 6	Limit1: Limit2:		
-20 0.150		0.5		(MI	Hz)	5			30.000	ĥ
0.150	Quasi Peak reading (dBuV)	0.5 Average reading (dBu )	Correction factor (dB)	(M Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	30.000 Average margin (dB)	Remar
0.150	Peak reading	Average reading	Correction factor	Quasi Peak result	Average result	Quasi Peak limit	limit	Peak margin	Average margin	
0.150 Frequency (MHz)	Peak reading (dBuV)	Average reading (dBu )	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	limit (dBuV)	Peak margin (dB)	Average margin (dB)	Pass
0.150 Frequency (MHz) 1.8940	Peak reading (dBuV) 31.03	Average reading (dBu ) 22.97	Correction factor (dB) 0.16	Quasi Peak result (dBuV) 31.19	Average result (dBuV) 23.13	Quasi Peak limit (dBuV) 56.00	limit (dBuV) 46.00	Peak margin (dB) -24.81	Average margin (dB) -22.87	Pass Pass
0.150	Peak reading (dBuV) 31.03 40.91	Average reading (dBu ) 22.97 28.44	Correction factor (dB) 0.16 0.13	Quasi Peak result (dBuV) 31.19 41.04	Average result (dBuV) 23.13 28.57	Quasi Peak limit (dBuV) 56.00 64.37	limit (dBuV) 46.00 54.37	Peak margin (dB) -24.81 -23.33	Average margin (dB) -22.87 -25.80	Pass Pass Pass
0.150	Peak reading (dBuV) 31.03 40.91 40.02	Average reading (dBu ) 22.97 28.44 26.02	Correction factor (dB) 0.16 0.13 0.13	Quasi Peak result (dBuV) 31.19 41.04 40.15	Average result (dBuV) 23.13 28.57 26.15	Quasi Peak limit (dBuV) 56.00 64.37 63.58	limit (dBuV) 46.00 54.37 53.58	Peak margin (dB) -24.81 -23.33 -23.43	Average margin (dB) -22.87 -25.80 -27.43	Pass Pass Pass Pass

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# 4.2 26dB BANDWIDTH, 6DB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

### 4.2.1 Test Limit

26 dB Bandwidth : For reporting purposes only.

6 dB Bandwidth : Least 500kHz.

Occupied Bandwidth(99%) : For reporting purposes only.

### 4.2.2 Test Procedure

Test method Refer as KDB 789033 D02 Section C, D, and ANSI 63.10:2013 clause 6.9.2,

- 1. The EUT RF output connected to the spectrum analyzer by RF cable.
- 2. Setting maximum power transmit of EUT
- 3. UNII-1

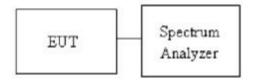
(1) BW=20MHz : SA set RBW = 300kHz, VBW = 1MHz and Detector = Peak, to measurement 26 dB Bandwidth and 99% Bandwidth

(2) BW=40MHz : SA set RBW = 1MHz, VBW = 3MHz and Detector = Peak, to measurement 26 dB Bandwidth and 99% Bandwidth

(3) BW=80MHz : SA set RBW = 1MHz, VBW = 3MHz and Detector = Peak, to measurement 26 dB Bandwidth and 99% Bandwidth

- UNII-3, SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth and 99% Bandwidth
- SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
- Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

## 4.2.3 Test Setup





## 4.2.4 Test Result

	UNII-1 5150		
	Test mode: IEEE	802.11a mode	
Channel	Frequency (MHz)	OBW (99%) (MHz)	26dB BW (MHz)
Low	5180	16.2807	19.8551
Mid	5220	16.2807	19.8551
High	5240	16.3531	19.9275
Т	est mode: IEEE 80	2.11n HT20 m	ode
Channel	Frequency (MHz)	OBW (99%) (MHz)	26dB BW (MHz)
Low	5180	17.3661	19.682
Mid	5220	17.3661	19.247
High	5240	17.3661	19.247
Т	est mode: IEEE 80	2.11n HT40 m	ode
Channel	Frequency (MHz)	OBW (99%) (MHz)	26dB BW (MHz)
Low	5190	36.0057	39.02
High	5230	35.8900	39.13
Te	st mode: IEEE 802	.11ac VHT80 n	node
Channel	Frequency (MHz)	OBW (99%) (MHz)	26dB BW (MHz)
Mid	5210	75.0217	79,88

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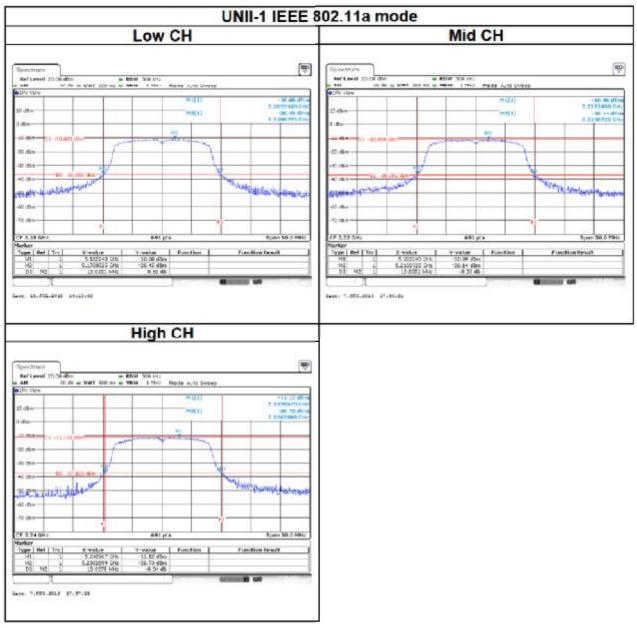
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	UNII-3 5725	-302311112	
	Test mode: IEEE	802.11a mode	
Channel	Frequency (MHz)	OBW(99%) (MHz)	6dB BW (MHz)
Low	5745	16.2807	15.1739
Mid	5785	16.2807	15.1739
High	5825	16.2807	15.1739
T	est mode: IEEE 80	2.11n HT20 m	ode
Channel	Frequency (MHz)	OBW(99%) (MHz)	6dB BW (MHz)
Low	5745	17.4384	15.1739
Mid	5785	17.3661	15.087
High	5825	17.4384	15.1304
Т	est mode: IEEE 80	2.11n HT40 m	de
Channel	Frequency (MHz)	OBW(99%) (MHz)	6dB BW (MHz)
Low	5755	36.0057	35.13
High	5795	37.6266	<mark>3</mark> 5.13
Te	st mode: IEEE 802	.11ac VHT80 n	node
Channel	Frequency (MHz)	OBW(99%) (MHz)	6dB BW (MHz)
Mid	5775	75,4848	75.13



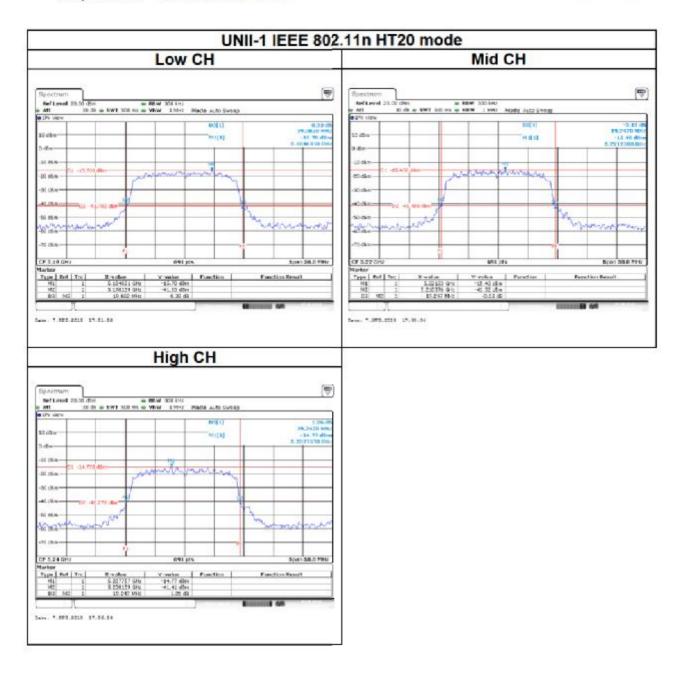
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# Test Data (26dB BANDWIDTH)



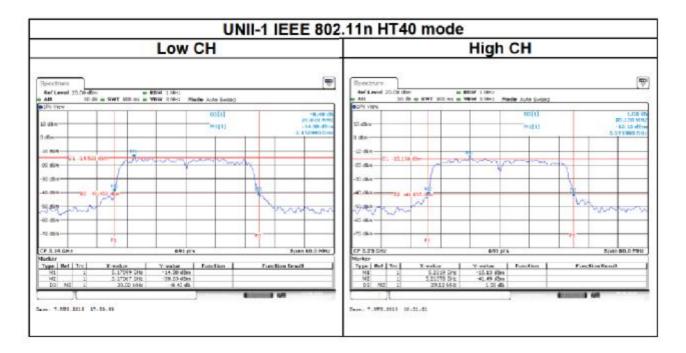


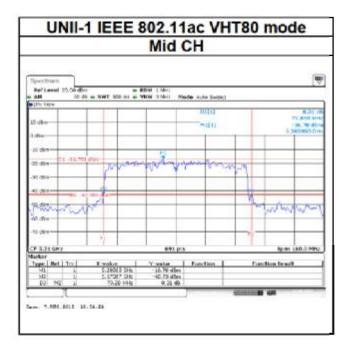
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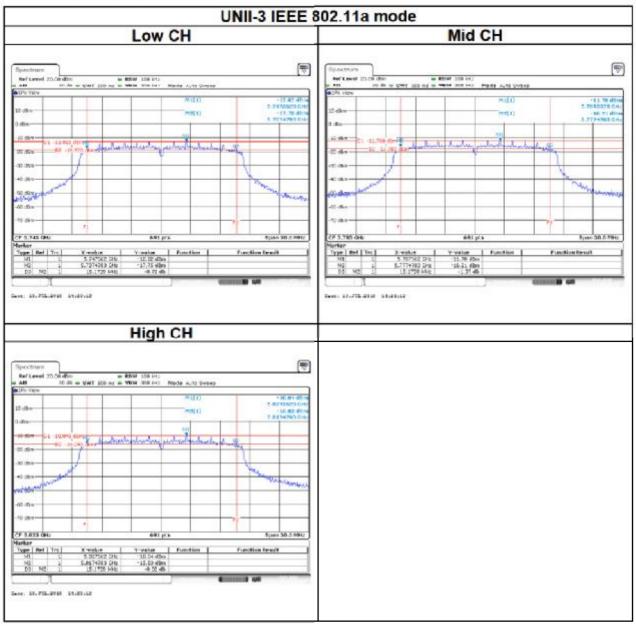


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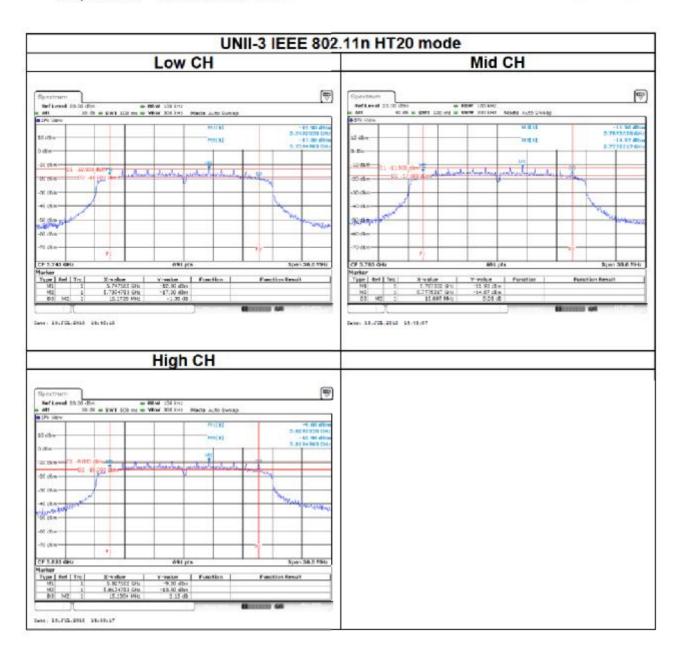
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# Test Data (6dB BANDWIDTH)



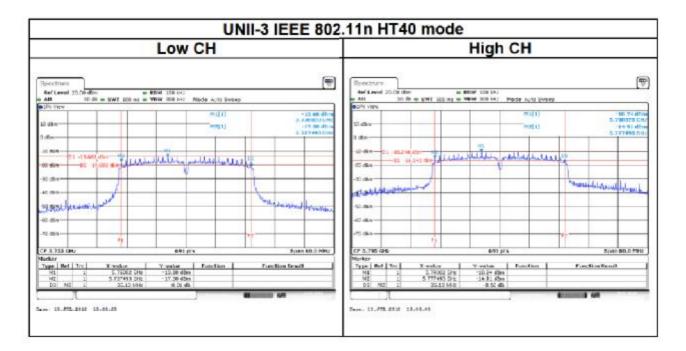


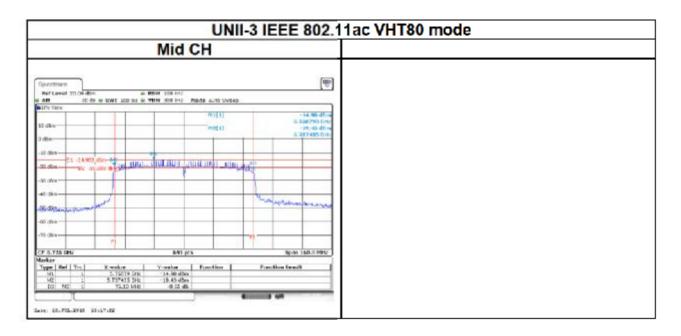
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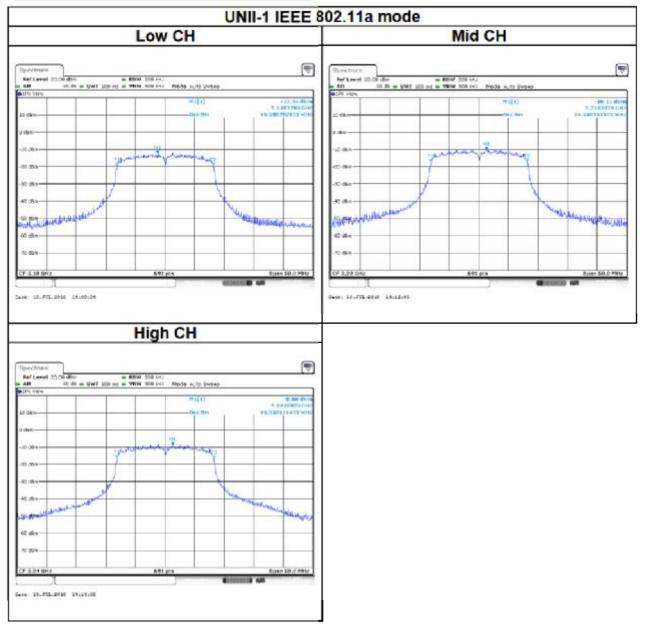
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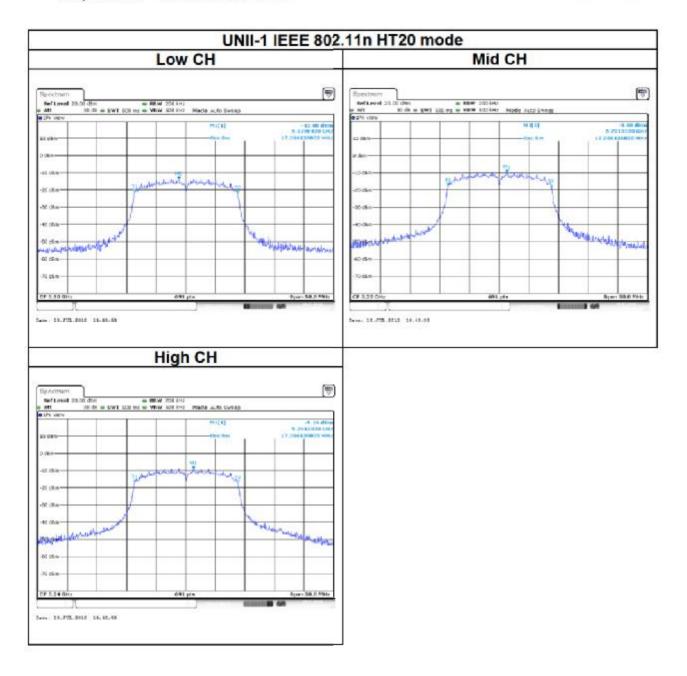


# Test Data (BANDWIDTH 99%)



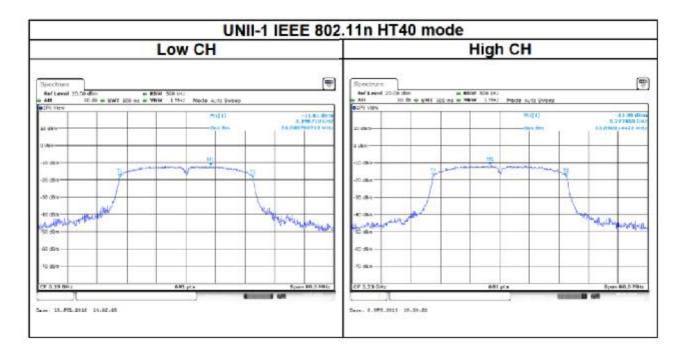


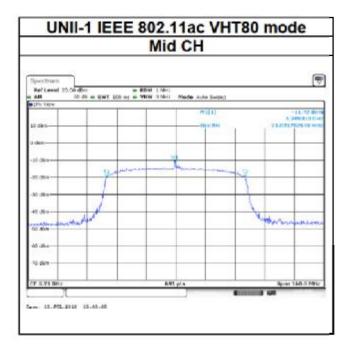
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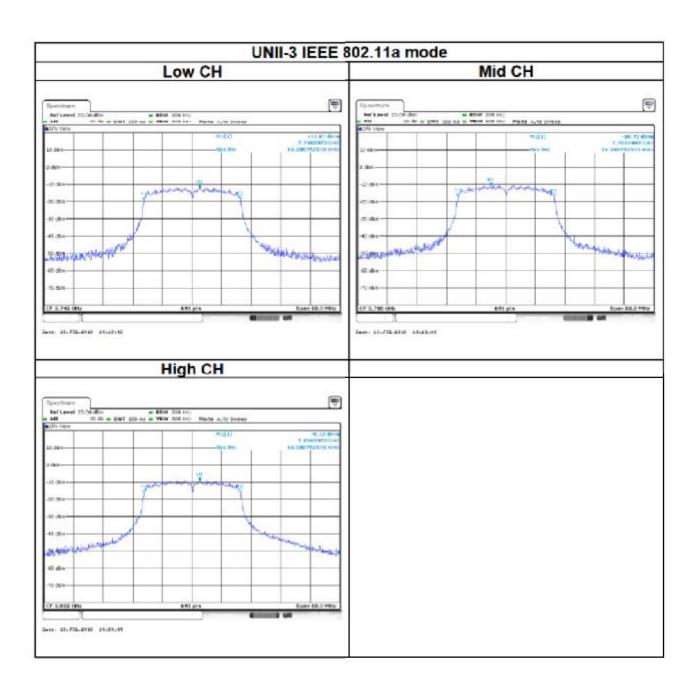
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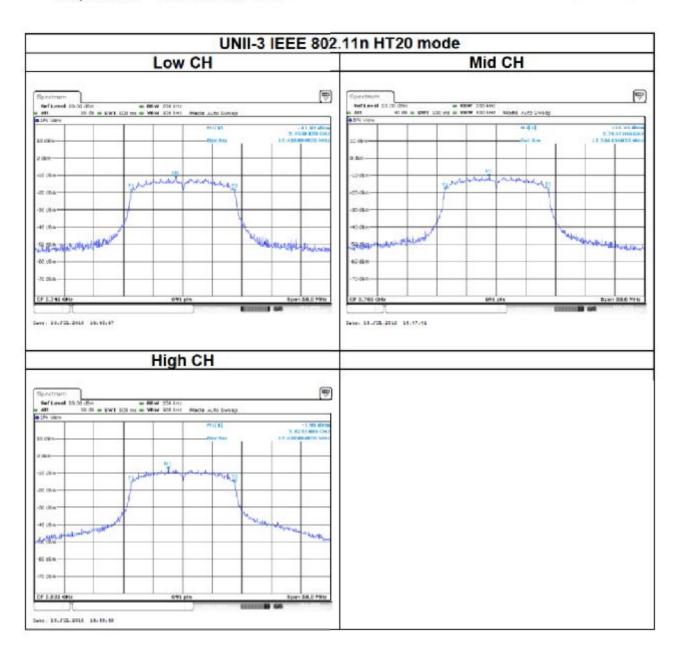


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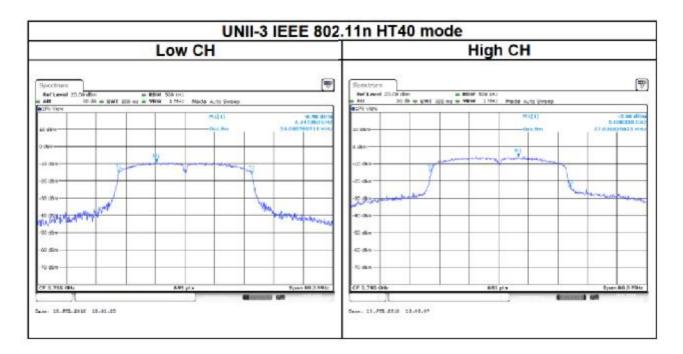


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UNII-3 IEEE 802.1				
	Mid CH			
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	might commentation			
Barrow Alling and the second s	hour beder beder			



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## 4.3 OUTPUT POWER MEASUREMENT

### 4.3.1 Test Limit

According to RSS-247 section 6.2.1.1 and section 6.2.4.1

#### UNII-1 :

For the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

### UNII-3:

The maximum conducted output power shall not exceed 1 W. The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-1 Limit	Antenna not exceed 6 dBi : EIRP: 23dBm Antenna with DG greater than 6 dBi : [Limit = 24 – (DG – 6)]
UNII-3 Limit	<ul> <li>Antenna not exceed 6 dBi : 30dBm</li> <li>Antenna with DG greater than 6 dBi :</li> <li>[Limit = 30 - (DG - 6)]</li> </ul>

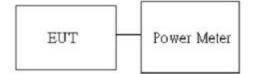


### 4.3.2 Test Procedure

Test method Refer as KDB 789033 D02, Section E.3.b.

- 1. The EUT RF output connected to the power meter by RF cable.
- 2. Setting maximum power transmit of EUT.
- 3. The path loss was compensated to the results for each measurement.
- 4. Measure and record the result of Average output power. in the test report.

### 4.3.3 Test Setup





## 4.3.4 Test Result

#### Conducted output power :

	UNII-1								
Config	сн	Freq. (MHz)	Power Set	AV Power (dBm)	EIRP AV Power (dBm)	AV Power (W)	EIRP AV Power (W)	DG (dBi)	EIRP Limit (dBm)
36	36	5180	11	9.76	15.76	0.0095	0.0377	6	
IEEE 802.11a Data rate: 6Mbps	44 5220 13 12.90 18.90 0.0195 0.0776								
	<mark>4</mark> 8	5240	14	13.73	19.73	0.0236	0.0940	6 2	
IEEE 802.11n	36	5180	9	8.61	14.61	0.0073	0.0289		
HT20 44 Data rate:	44	5220	11	12.90	18.90	0.0195	0.0776		
MCS0	48	5240	14	13.73	19.73	0.0236	0.0940		23
IEEE 802.11n	38	5190	11	10.08	16.08	0.0102	0.0406		
HT40 Data rate: MCS0	46	5230	18	16.50	22.50	0.0447	0.1778		
IEEE 802.11ac VHT80 Data rate: MCS0	42	52 <mark>1</mark> 0	8	6.82	12.82	0.0048	0.0191		

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l.	UNII-3								
Config	сн	Freq. (MHz)	Power Set	AV Power (dBm)	EIRP AV Total Power (dBm)	AV Power (W)	EIRP AV Total Power (W)	DG (dBi)	Limit (dBm
IEEE 802.11a	<mark>1</mark> 49	5 <mark>74</mark> 5	9	10.12	16.12	0.0103	0.0409		
Data rate: 1 6Mbps	157	5785	11	<mark>11.05</mark>	17.05	0.0127	0.0507		
	165	5825	14	12.73	18.73	0.0187	0.0746		
HT20 Data rate:	149	5745	9	9.90	15.90	0.0098	0.0389	6	6 30
	157	5785	11	10.87	16.87	0.0122	0.0486		
	165	5825	15	13.20	19.20	0.0209	0.0832		
IEEE 802.11n	151	5755	11	11.64	17.64	0.0146	0.0581		
HT40 Data rate: MCS0	159	5795	16	15.77	21.77	0.0378	0.1503		
IEEE 802.11ac VHT80 Data rate: MCS0	<mark>155</mark>	5775	13	<mark>12.72</mark>	18.72	0.0187	0.0745		



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# 4.4 POWER SPECTRAL DENSITY

### 4.4.1 Test Limit

According to RSS-247 section 6.2.1(1) and section 6.2.4(1)

### UNII-1:

The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-1 Limit	Antenna not exceed 6 dBi : 10 dBm Antenna with DG greater than 6 dBi : [Limit = 11 - (DG - 6)]
UNII-3 Limit	Antenna not exceed 6 dBi : 30 dBm Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6)]

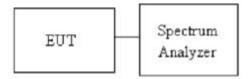


## 4.4.2 Test Procedure

Test method Refer as KDB 789033 D02, Section F

- 1. The EUT RF output connected to the spectrum analyzer by RF cable.
- 2. Setting maximum power transmit of EUT
- UNII-1, SA set RBW = 1MHz, VBW = 3MHz and Detector = RMS, to measurement Power Density.
- UNII-3, SA set RBW = 500kHz, VBW = 2MHz and Detector = RMS, to measurement Power Density
- The path loss and Duty Factor were compensated to the results for each measurement by SA.
- 6. Mark the maximum level.
- 7. Measure and record the result of power spectral density. in the test report.

## 4.4.3 Test Setup



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## 4.4.4 Test Result

	UNII-1 5150-	-5250 MINZ		
Tes	st mode: IEEE	802.11a m	ode	
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	
Low	5180	-13.88		
Mid	5220	-11.80	10	
High	5240	- <mark>1</mark> 0.37	]	
Test n	node: IEEE 80	2.11n HT20	mode	
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	
Low	5180	-15.86		
Mid	5220	- <mark>1</mark> 2.01	10	
High	5240	-11.18		
Test n	node: IEEE 80	2.11n HT40	mode	
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	
Low	5190	-17.56	10	
High	5230	-11.80	10	
Test me	ode: IEEE 802	.11ac VHT8	0 mode	
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	
Mid	5210	-24.00	10	

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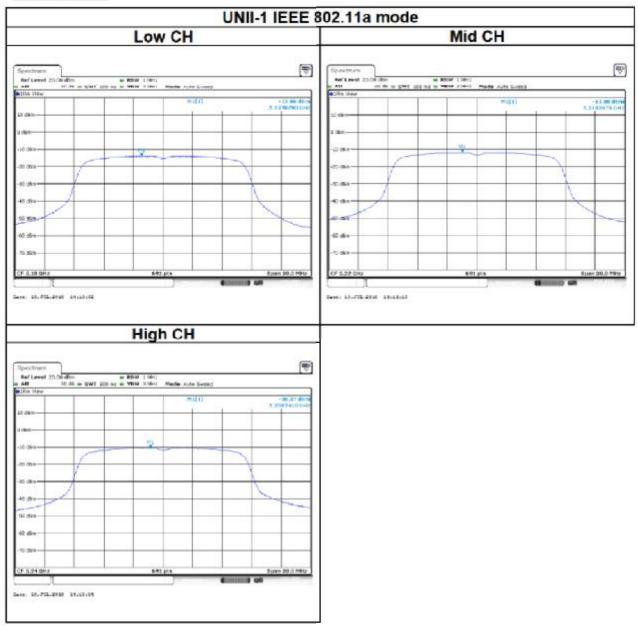
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	UNII-3 5725	-5825 MHZ		
	Test mode: IEEE	802.11a mod	e	
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	
Low	5745	-7.55		
Mid	5785	-6.38	30	
High	5825	-4.99		
Tes	st mode: IEEE 80	2.11n HT20 m	ode	
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	
Low	5745	-8.16		
Mid	5785	-6.48	30	
High	5825	-4.30		
Tes	st mode: IEEE 80	2.11n HT40 m	ode	
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	
Low	5755	-0.09		
High	5795	-0.26	30	
Test	mode: IEEE 802	.11ac VHT80 r	node	
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	
Mid	5775	-9.75	30	



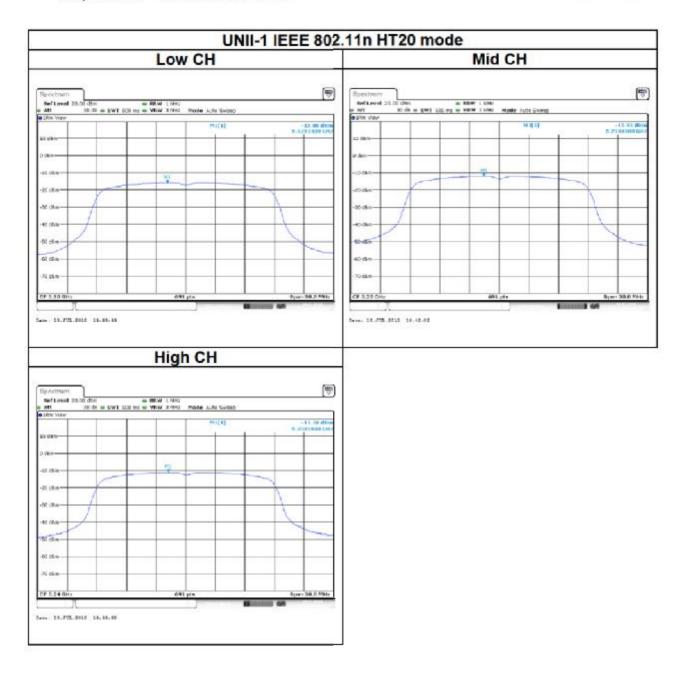
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# Test Data



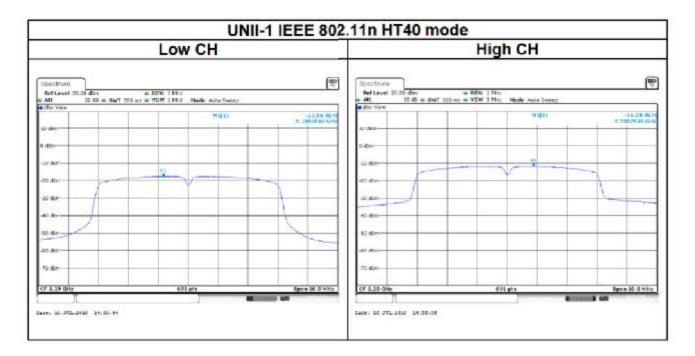


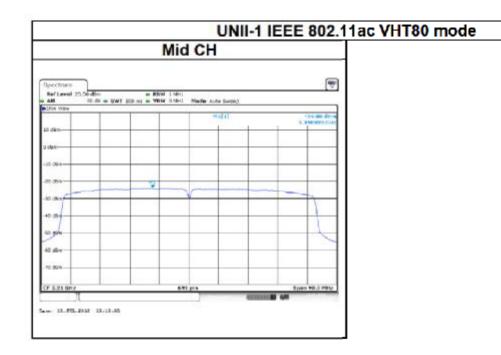
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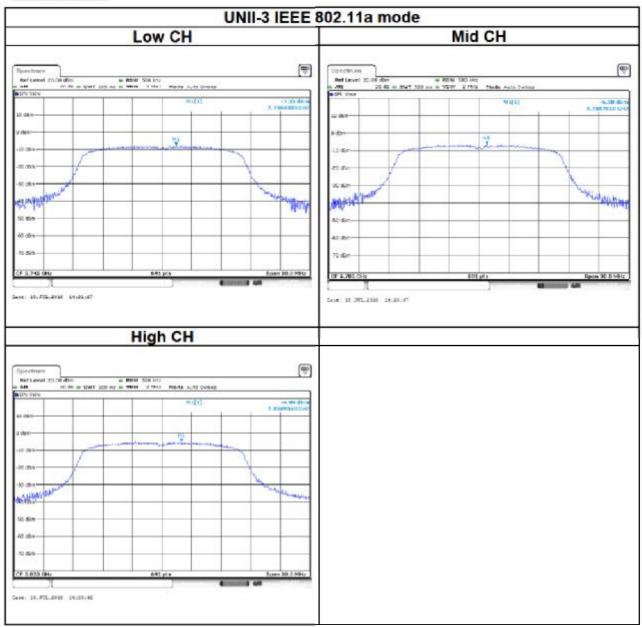






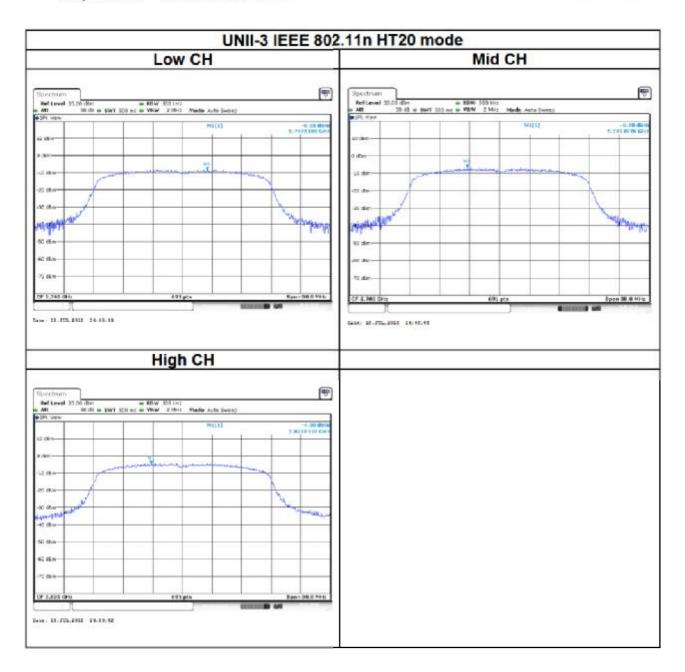
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# Test Data



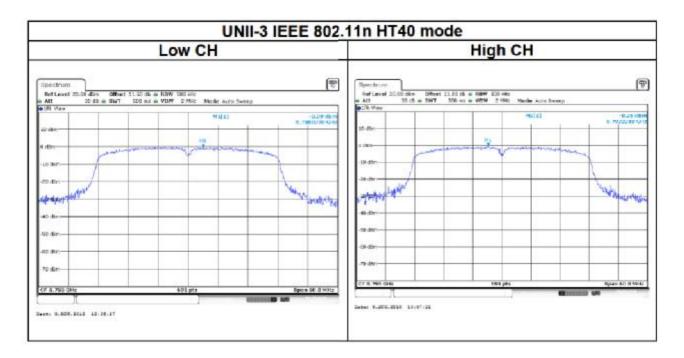


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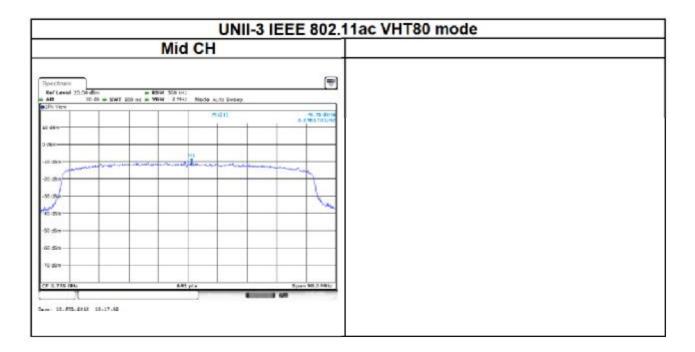


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# 4.5 RADIATION BANDEDGE AND SPURIOUS EMISSION

### 4.5.1 Test Limit

IC according to RSS-247 section 6.2.1.2 and section 6.2.4.2

### Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

#### Above 30 MHz

Frequency	Field Str microvolts/m at 3 me	
(MHz)	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

#### UNII-1:

For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, any unwanted emissions that fall into the band 5250-5350 MHz must be 26 dBc, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth, above 5.25 GHz. Otherwise, the transmission is considered as intentional and the devices shall implement dynamic frequency selection (DFS) and transmitter power control (TPC) as per the requirements for the band 5250-5350 MHz

#### UNII-3:

For the band 5725-5850 MHz, emissions at frequencies from the band edges to 10 MHz above or below the band edges shall not exceed -17 dBm/MHz e.i.r.p.

For emissions at frequencies more than 10 MHz above or below the band edges, the emissions power shall not exceed -27 dBm/MHz



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## 4.5.2 Test Procedure

Test method Refer as KDB 789033 D02, Section G.3, G.4, G.5, and G.6,.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Remark:

- Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.
- No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
- 4. The SA setting following :
  - (1) Below 1G : RBW = 100kHz, VBW ≥ 3\*RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
  - (2) Above 1G :
    - (2.1) For Peak measurement : RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
    - (2.2) For Average measurement : RBW = 1MHz, VBW

'If Duty Cycle ≥ 98%, VBW=10Hz.

If Duty Cycle < 98%, VBW=1/T.

Configuration	Duty Cycle (%)	T(ms)	1/T (Hz)	VBW Setting
802.11a	96.05%	1.4600	684.932	750Hz
802.11n HT20	96.45%	1.3600	735.294	750Hz
802.11n HT40	94.59%	0.7000	1428.571	1.5KHz
802.11ac VHT80	90.00%	0.3600	2777.778	3KHz

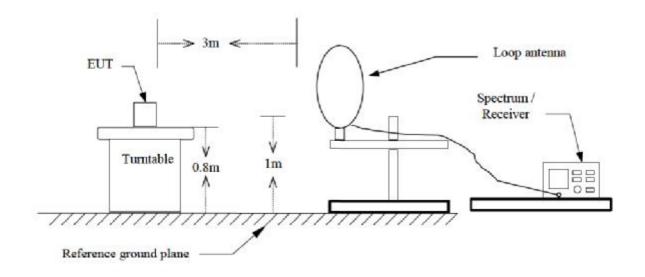
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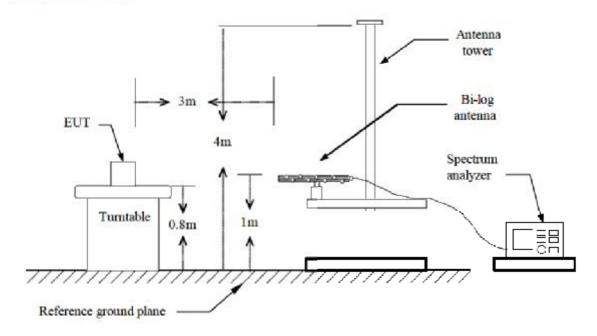
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Report No.: T180627D11-RC4

# 4.5.3 Test Setup 9kHz ~ 30MHz



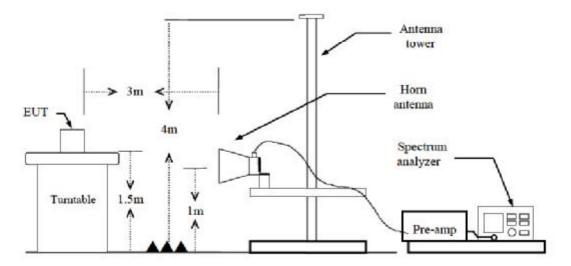
30MHz ~ 1GHz





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## Above 1 GHz





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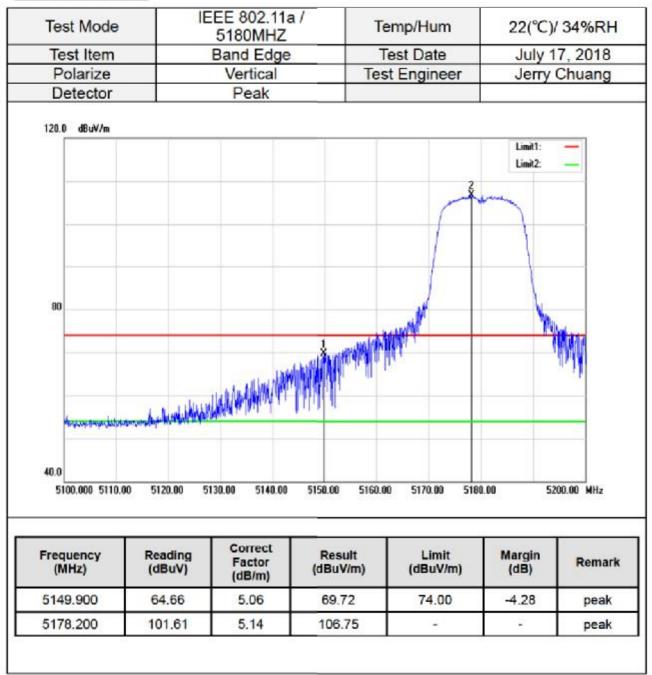
Report No.: T180627D11-RC4

## 4.5.4 Test Result

### Test Data

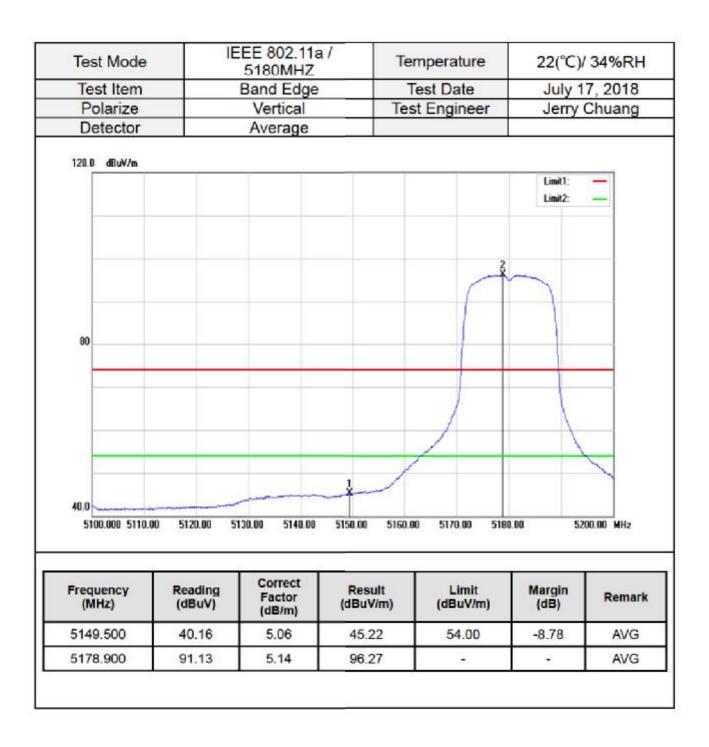
### Band Edge Test Data for UNII-1

### For PIFA Antenna

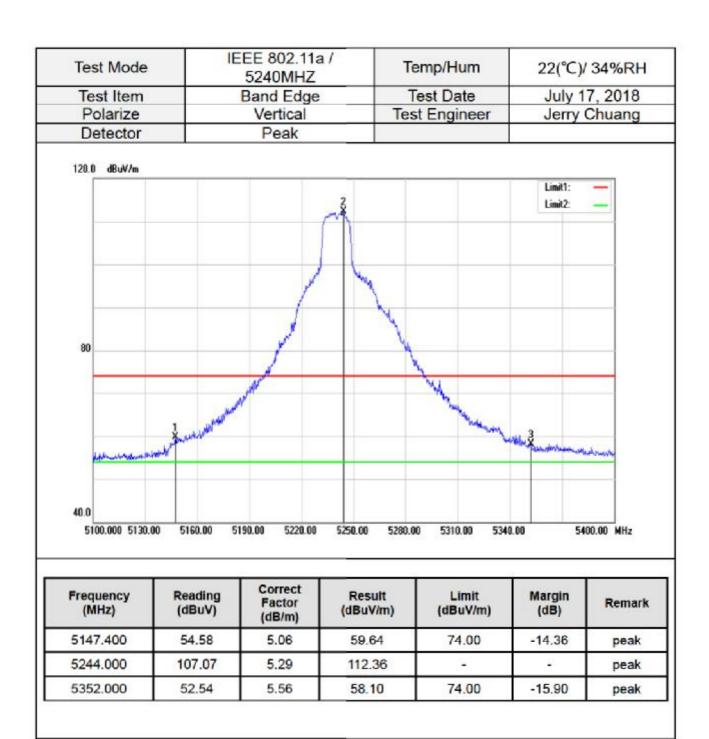




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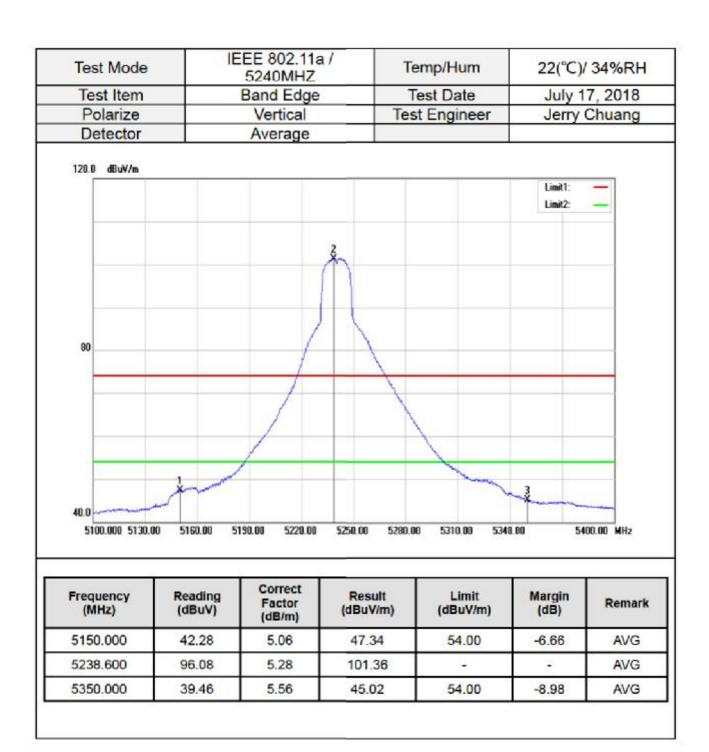






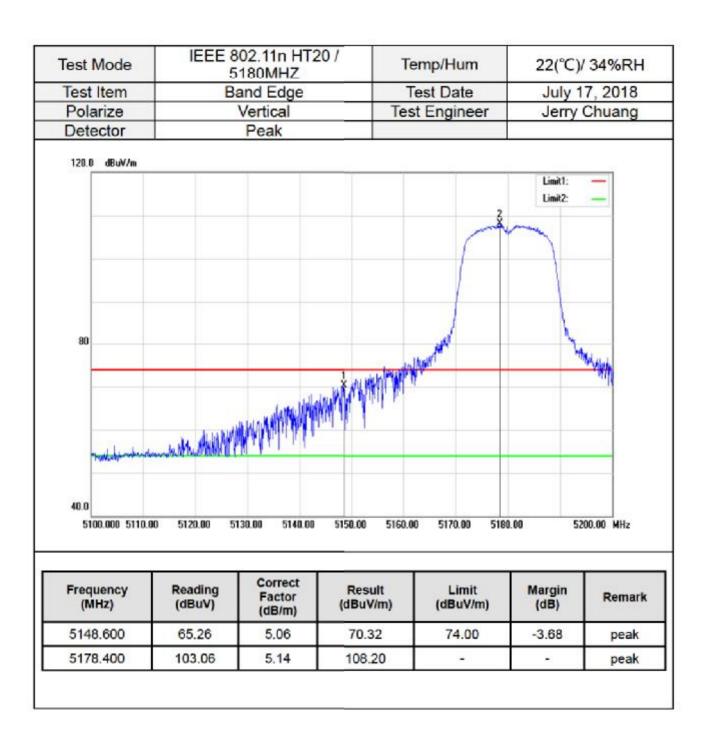


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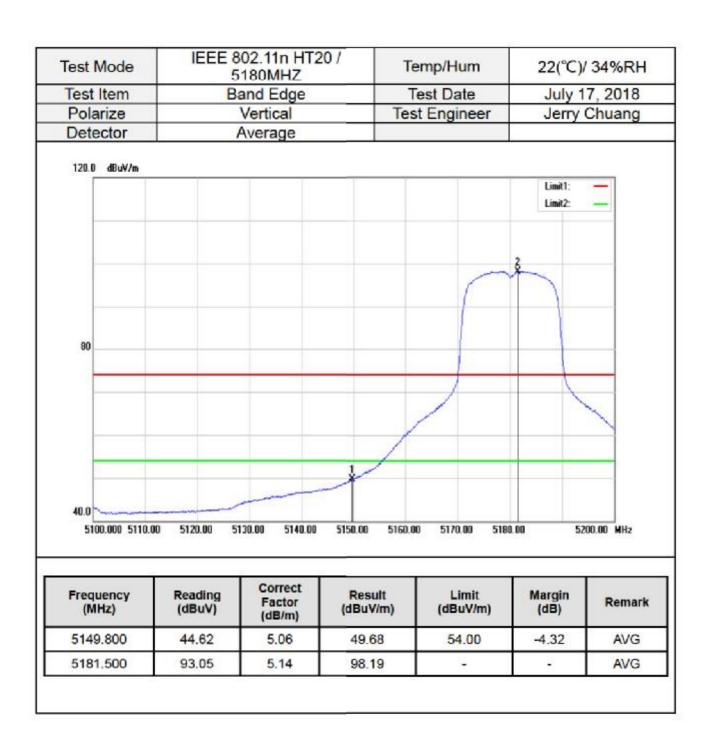


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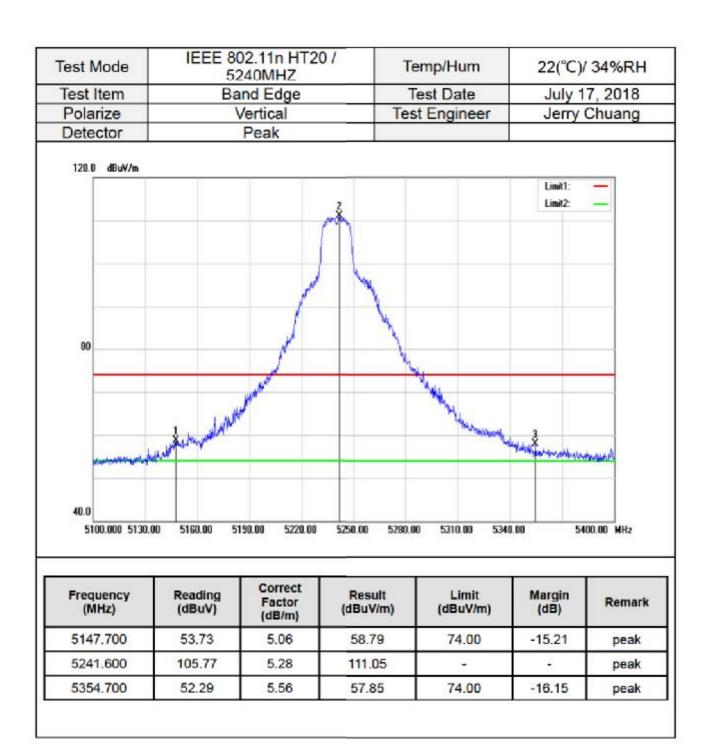


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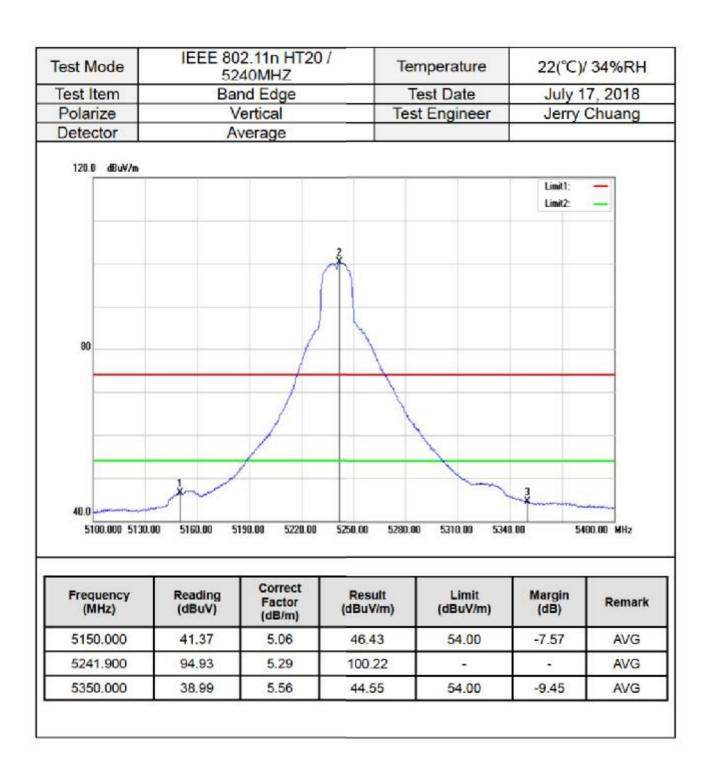


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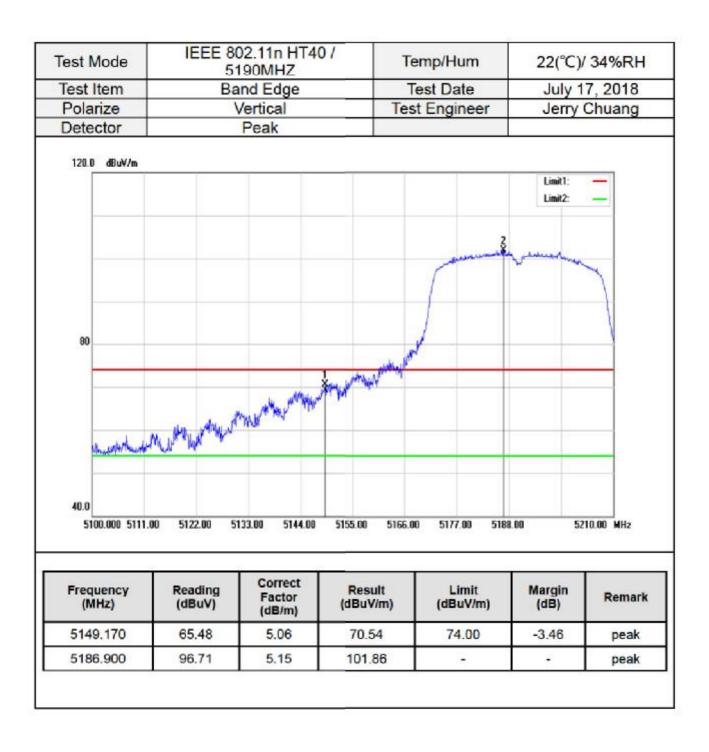




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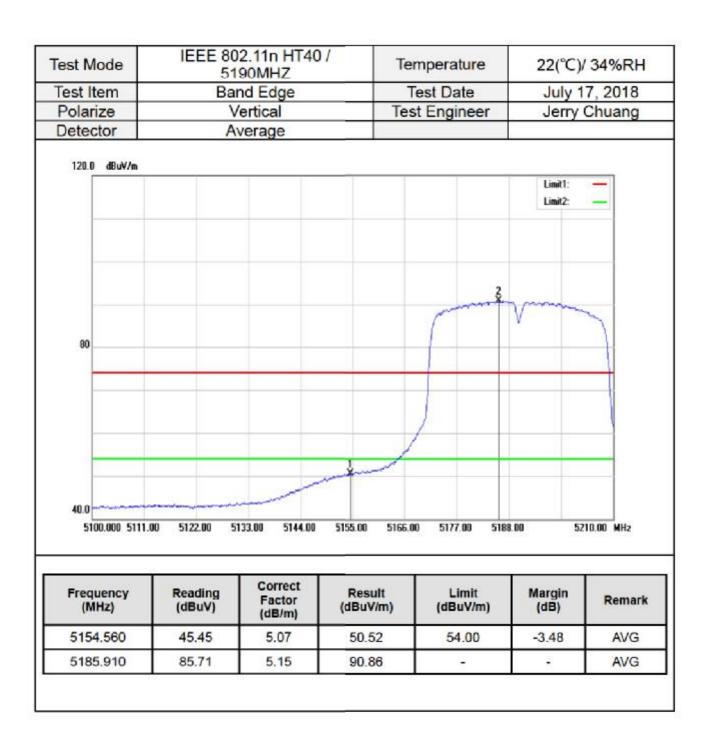






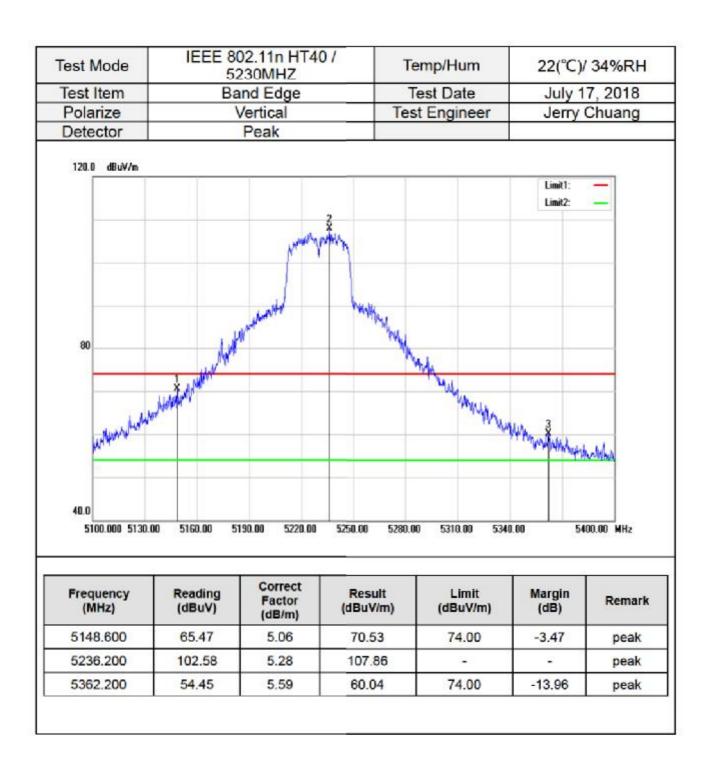


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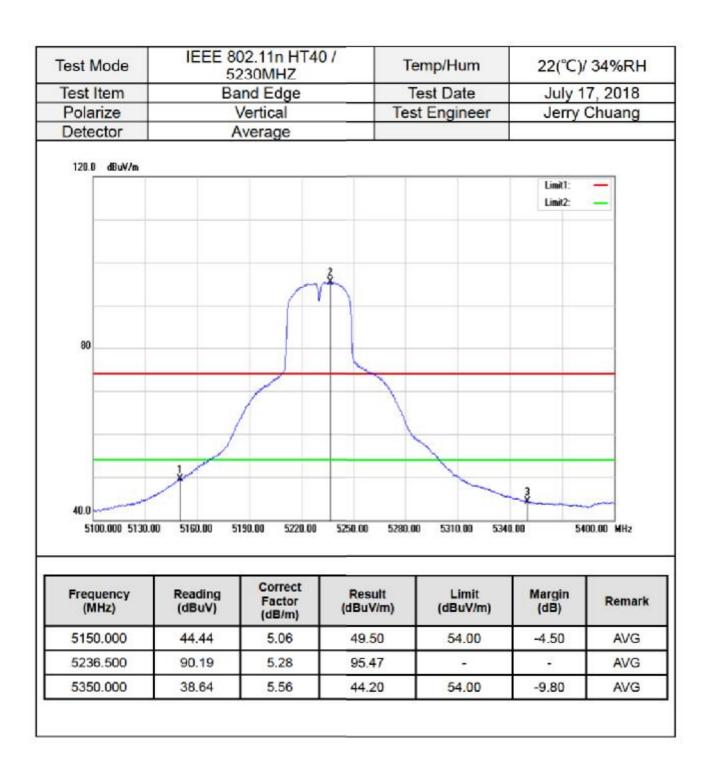


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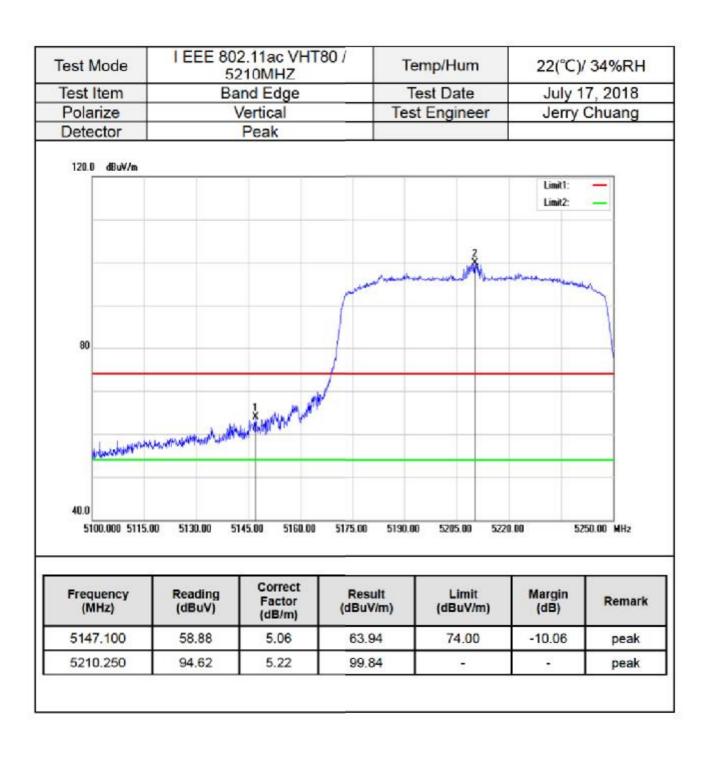


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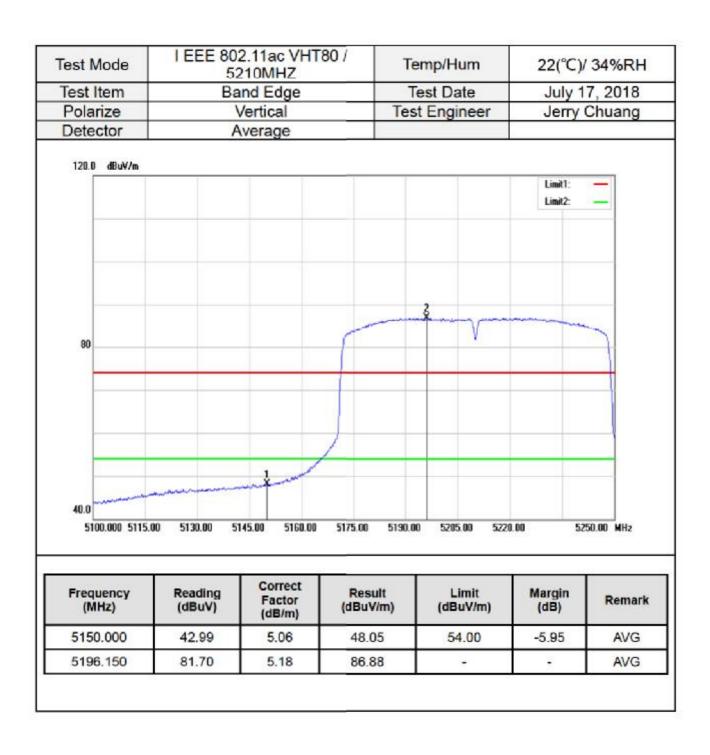


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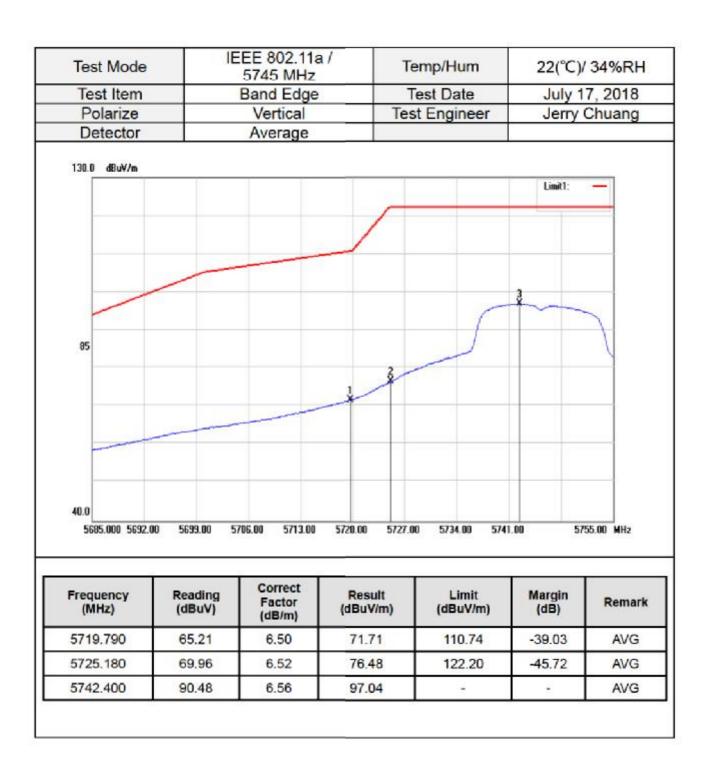


## Band Edge Test Data for UNII-3

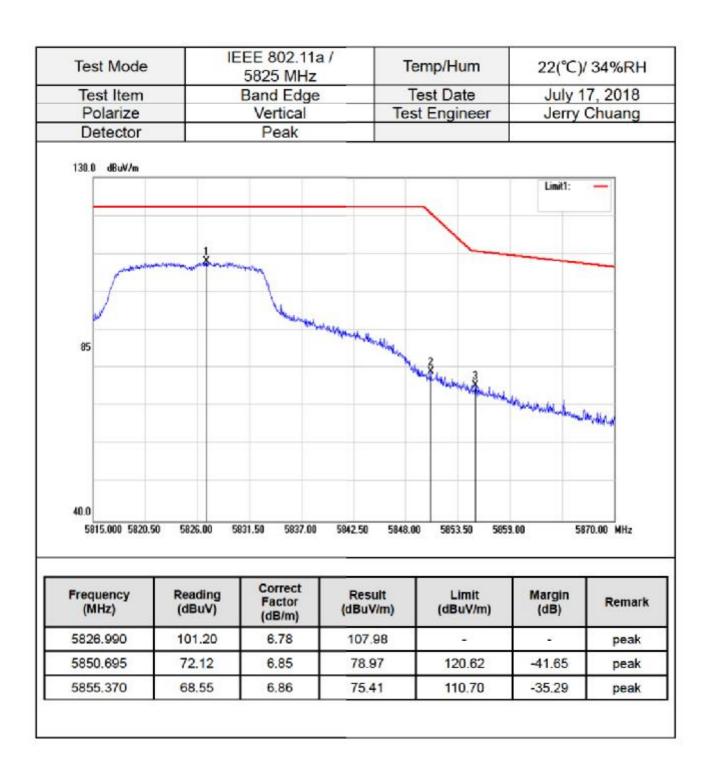
Test Mode	IE	EE 802.11a / 5745 MHz	/ Τε	emp/Hum	22(°C)/	34%RH
Test Item		Band Edge	T	est Date	July 1	7, 2018
Polarize		Vertical	Tes	t Engineer		Chuang
Detector		Peak				0.50%
130.0 dBu¥/m			2		Limit1:	~
85	an to define a shareful to t	M. North James M. Marthy				
85 40.0 5685.000 5692.0	0 5699.00 57 Reading (dBuV)	06.00 5713.00 Correct Factor	5720.00 5727.00 Result (dBuV/m)		.00 57 Margin (dB)	55.00 MHz
40.0 5685.000 5692.0 Frequency (MHz)	0 5699.00 57 Reading (dBuV)	06.00 5713.00 Correct Factor (dB/m)	5720.00 5727.0 Result (dBuV/m)	0 5734.00 5741 Limit (dBuV/m)	Margin (dB)	Remari
40.0 5685.000 5692.0 Frequency	0 5699.00 57 Reading	06.00 5713.00 Correct Factor	5720.00 5727.0 Result	0 5734.00 5741 Limit	Margin	



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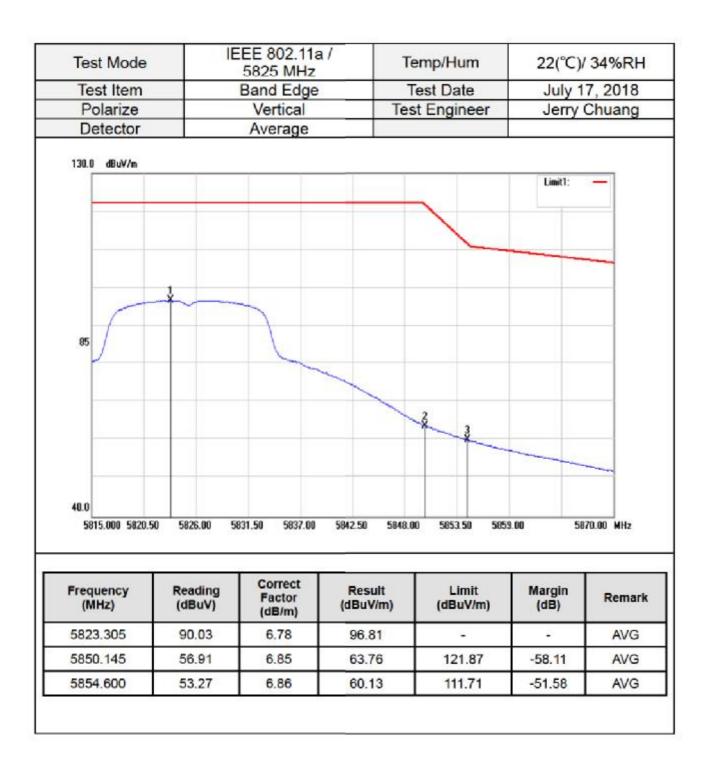






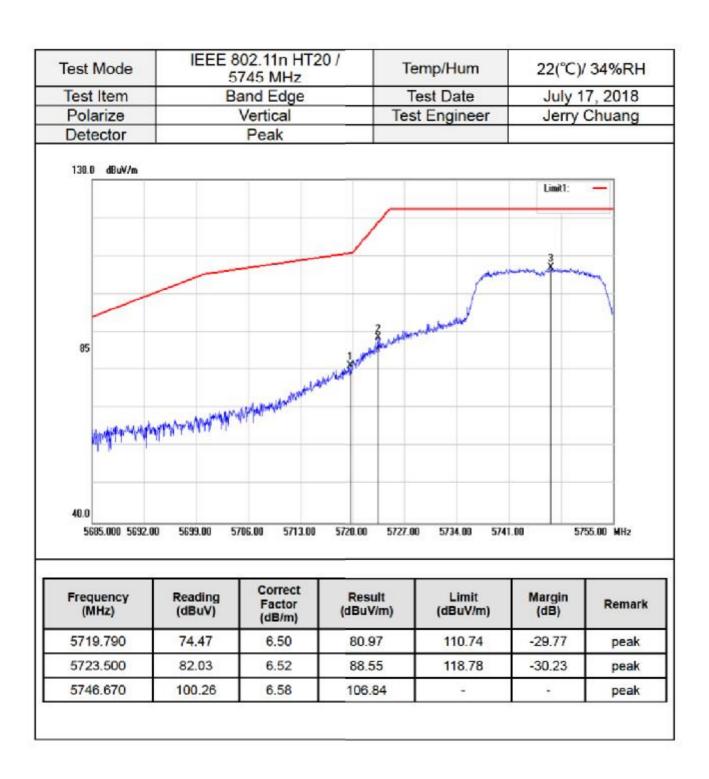


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Test Mode		02.11n HT2 45 MHz	0 / T	emp/Hum	22(°C)/	34%RH
Test Item		nd Edge	7	Test Date	July 1	7, 2018
Polarize		/ertical		st Engineer		Chuang
Detector	A	verage				
130.0 dBuV/m 85					Limit1:	-
	10 5699.00 571	06.00 5713.00	5720.00 5727.0	00 5734.00 5741	1.00 57	55.00 MHz
40.0 5685.000 5692.0	0 3033.00 570					
	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5685.000 5692.0	Reading	Factor			Margin (dB) -44.64	Remark AVG
5685.000 5692.0 Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	



Test Mode		02.11n HT20 325 MHz	0 / Te	emp/Hum	22(°C)/	34%RH
Test Item		Band Edge		est Date	July 17, 2018	7, 2018
Polarize		/ertical	Tes	st Engineer	Jerry Chuang	
Detector		Peak				
130.0 dBuV/m		1	home have		Limit1:	
				- tool the loss of the star of	nten son station to	HIN'NAL
40.0 5815.000 5820.5	50 5826.00 58	331.50 5837.00	5842.50 5848.0			70.00 MHz
	50 5826.00 58 Reading (dBuV)					70.00 MH2
5815.000 5820.	Reading	331.50 5837.00 Correct Factor	5842.50 5848.0 Result	0 5853.50 5853	00 58 Margin	
5815.000 5820. Frequency (MHz)	Reading (dBuV)	331.50 5837.00 Correct Factor (dB/m)	5842.50 5848.0 Result (dBuV/m)	0 5853.50 5853 Limit (dBuV/m)	1.00 58 Margin (dB)	70.00 MHz Remark



ioot mode	st Mode 58		5825 MHz		07 Te	emp/Hum	22(°C)/ 34%RF		
Test Item								July 17, 2018	
Polarize		/ertical		st Engineer	Jerry Chuang				
Detector	A	verage							
130.0 dBuV/m	¥				Limit1:				
				2					
40.0 5815.000 5820.		331.50 5837.00 Correct	5842.50 5848.0	0 5853.50 5855		70.00 MHz			
5815.000 5820. Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	5842.50 5848.0 Result (dBuV/m)		a.00 58 Margin (dB)	70.00 MHz Remark			
5815.000 5820.	Reading	Correct Factor	Result	D0 5853.50 5855	Margin				
5815.000 5820. Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark			



Test Mode		02.11n HT40/ /55 MHz	Te	emp/Hum	22(°C)/	34%RH
Test Item		nd Edge	Т	est Date	July 1	7, 2018
Polarize		/ertical		t Engineer	Jerry Chuang	
Detector		Peak		ž		
85	Walker makenaderate	an marine and	-way		Limit1:	Minad
40.0			30.00 5740.0	0 5750.00 5760	1.00 574	80.00 MHz
40.0		710.00 5720.00 57 Correct	30.00 5740.0 Result dBuV/m)	0 5750.00 5760 Limit (dBuV/m)	.00 57 Margin (dB)	80.00 MHz Remark
40.0 5680.000 5690.0	0 5700.00 57 Reading	710.00 5720.00 57 Correct Factor	Result	Limit	Margin	
40.0 5680.000 5690.0 Frequency (MHz)	0 5700.00 57 Reading (dBuV)	10.00 5720.00 57 Correct Factor (dB/m)	Result dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark



5755 MHz Band Edge Vertical Average		Test Date st Engineer		7, 2018 Chuang
Vertical				
Average				
			Limit1:	-
		3		
	m	mumu	hunn	
	manner			m
mmm				
man				
				_
10.00 5710.00 5720	1.00 5730.00 5740.0	00 5750.00 5760	3.00 57	80.00 MHz
enne organisation providen		2256 SBURGSTER 62355	0055104. 092577	
ading Correct	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
BuV) (dB/m)	(and they			
.09 6.50	77.59	111.03	-33.44	AVG
(db/m)			-33.44 -41.93	AVG AVG
	0.00 5710.00 5720	0.00 5710.00 5720.00 5730.00 5740.0	0.00 5710.00 5720.00 5730.00 5740.00 5750.00 5760	0.00 5710.00 5720.00 5730.00 5740.00 5750.00 5760.00 5740.00 5740.00 5750.00 5760.00 5740.00 5740.00 5750.00 5750.00 5740.00 5740.00 5750.00 5750.00 5740.00 5740.00 5750.00 5750.00 5740.00 5740.00 5750.00 5750.00 5740.00 5740.00 5750.00 5740.00 5740.00 5750.00 5740.00 5740.00 5740.00 5750.00 5740.00 5740.00 5750.00 5740.00 5740.00 5750.00 5740.00 5740.00 5750.00 5740.00 5740.00 5750.00 5740.00 5740.00 5750.00 5740.00 5740.00 5750.00 5740.00 5



Test Mode		02.11n HT4 95 MHz	0/ т	emp/Hum	22(°C)/	34%RH
Test Item		nd Edge		Test Date	July 1	7, 2018
Polarize		Vertical		st Engineer		Chuang
Detector		Peak				
130.0 dBuV/m 85	mit in the second se	heard	Mark Marken Lansano	and have been and	Limit1:	-
-						_
40.0 5770.000 5780.0	0 5790.00 58	800.00 5810.00	5820.00 5830.	00 5840.00 5850	.00 58	70.00 MHz
	0 5790.00 58 Reading (dBuV)	00.00 5810.00 Correct Factor (dB/m)	5820.00 5830. Result (dBuV/m)	00 5840.00 5850 Limit (dBuV/m)	.00 58 Margin (dB)	70.00 MHz Remark
5770.000 5780.0	Reading	Correct Factor	Result	Limit	Margin	
5770.000 5780.0 Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark



		02.11n HT4 95 MHz	0/ Te	emp/Hum	22(°C)/	34%RH
Test Item	Band Edge Test Date		est Date	July 17, 2018		
Polarize		/ertical		st Engineer	Jerry Chuang	
Detector	A	verage				
130.0 dBuV/m					Limit1:	
40.0	10 5790.00 58	00.00 5810.00	5820.00 5830.0		1.00 58	70.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Frequency		Factor				Remark AVG
Frequency (MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	



Test Mode		2.11ac VHT 775 MHz	<sup>80 /</sup> Т	emp/Hum	22(°C)/	34%RH
Test Item		and Edge		Test Date	July 17, 2018	
Polarize		Vertical	Te	st Engineer	Jerry Chuang	
Detector		Peak				
130.0 dBuV/m		Nanaderinaariaariaaria	3 million and		Limit1:	-
					- They	ANA ANA
50.0 5700.000 5717.	00 5734.00 5	751.00 5768.00	5785.00 5802.			170.00 MHz
	00 5734.00 5 Reading (dBuV)	751.00 5768.00 Correct Factor (dB/m)	5785.00 5802. Result (dBuV/m)			
5700.000 5717.	Reading	Correct Factor	Result	00 5819.00 583 Limit	6.00 58 Margin	70.00 MHz
5700.000 5717. Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	00 5819.00 583 Limit (dBuV/m)	6.00 58 Margin (dB)	Remark
5700.000 5717. Frequency (MHz) 5716.150	Reading (dBuV) 85.52	Correct Factor (dB/m) 6.49	Result (dBuV/m) 92.01	00 5819.00 583 Limit (dBuV/m) 109.72	6.00 58 Margin (dB) -17.71	70.00 MHz Remark
5700.000 5717. Frequency (MHz) 5716.150 5721.080 5777.690	Reading (dBuV) 85.52 86.14 99.34	Correct Factor (dB/m) 6.49 6.51	Result (dBuV/m) 92.01 92.65 106.00	00 5819.00 583 Limit (dBuV/m) 109.72 113.26 -	6.00 58 Margin (dB) -17.71 -20.61 -	70.00 MHz Remark peak peak peak
5700.000 5717. Frequency (MHz) 5716.150 5721.080	Reading (dBuV) 85.52 86.14	Correct Factor (dB/m) 6.49 6.51 6.66	Result (dBuV/m) 92.01 92.65	00 5819.00 583 Limit (dBuV/m) 109.72 113.26	6.00 58 Margin (dB) -17.71 -20.61	70.00 MHz Remark peak peak



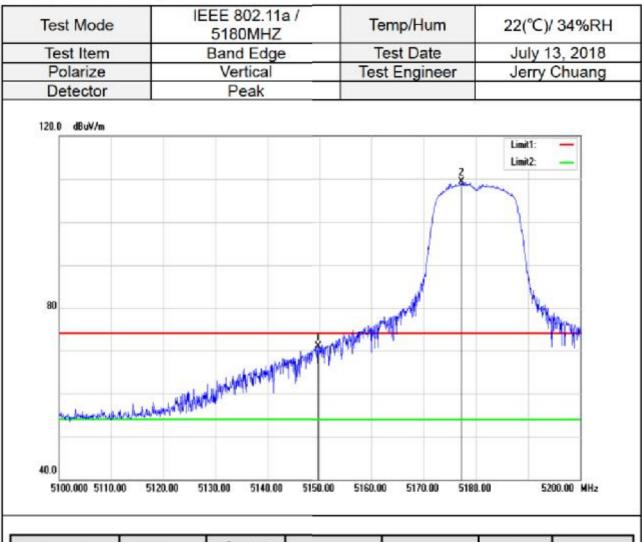
est Mode		2.11ac VHT8 75 MHz	30 / Te	emp/Hum	22(°C)/	34%RH
Test Item		nd Edge	г	est Date	July 1	7, 2018
Polarize		/ertical	Tes	st Engineer	Jerry Chuang	
Detector	A	verage				
130.0 dBuV/m	<u></u>	¥	V	~~~	Limit1:	
manan				- Andrew -		~
50.0 5700.000 5717.	.00 5734.00 5	751.00 5768.00	5785.00 5802.0	10 5819.00 5831	5.00 58	70.00 MH2
	.00 5734.00 5 Reading (dBuV)	751.00 5768.00 Correct Factor (dB/m)	5785.00 5802.0 Result (dBuV/m)	0 5819.00 583 Limit (dBuV/m)	5.00 58 Margin (dB)	70.00 MH2 Remark
5700.000 5717	Reading	Correct Factor	Result	Limit	Margin	
5700.000 5717. Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5700.000 5717. Frequency (MHz) 5719.210	Reading (dBuV) 72.95	Correct Factor (dB/m) 6.50	Result (dBuV/m) 79.45	Limit (dBuV/m) 110.58	Margin (dB) -31.13	Remark AVG
5700.000 5717. Frequency (MHz) 5719.210 5723.630	Reading (dBuV) 72.95 73.91	Correct Factor (dB/m) 6.50 6.52	Result (dBuV/m) 79.45 80.43	Limit (dBuV/m) 110.58 119.08	Margin (dB) -31.13 -38.65	Remark AVG AVG



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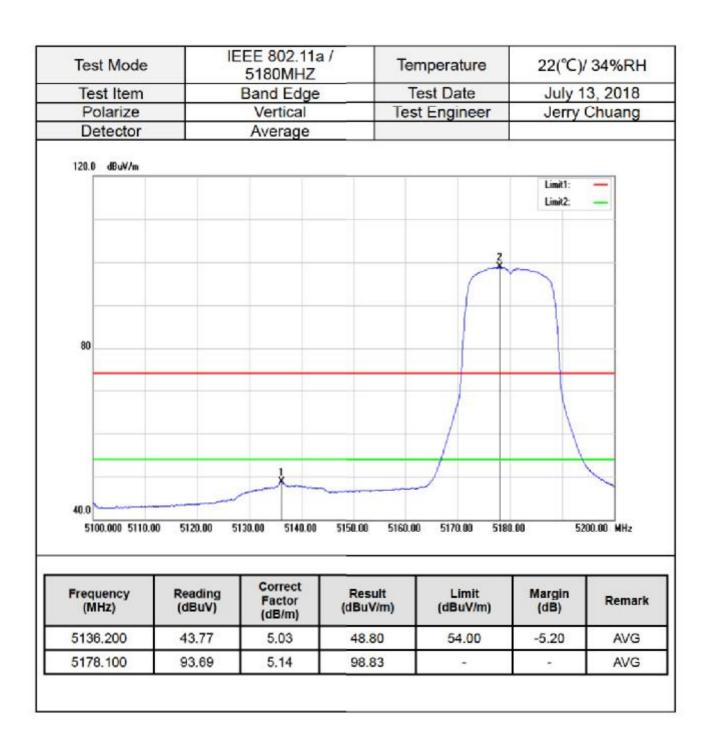
## Band Edge Test Data for UNII-1

## For Dipole Antenna

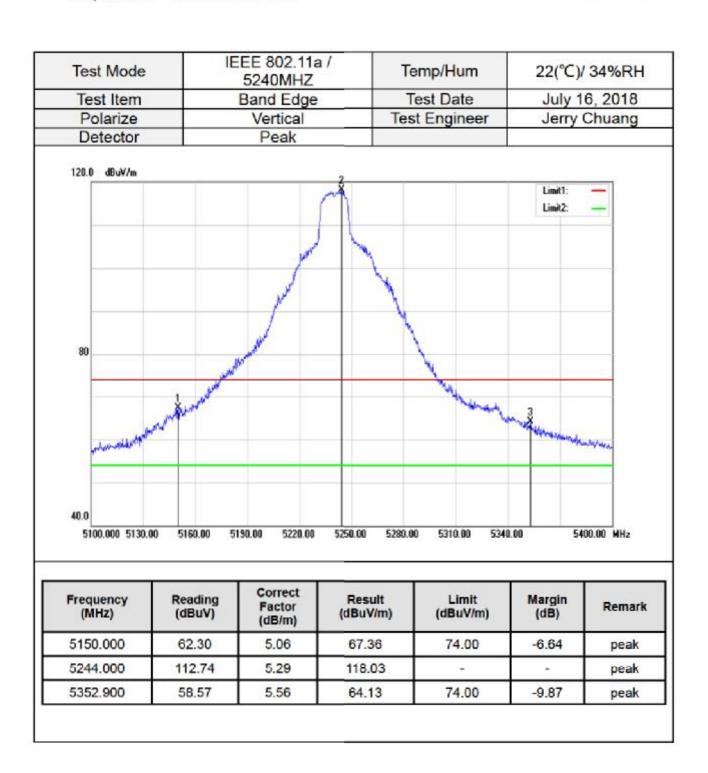


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.800	65.87	5.06	70.93	74.00	-3.07	peak
5177.300	104.20	5.14	109.34		-	peak

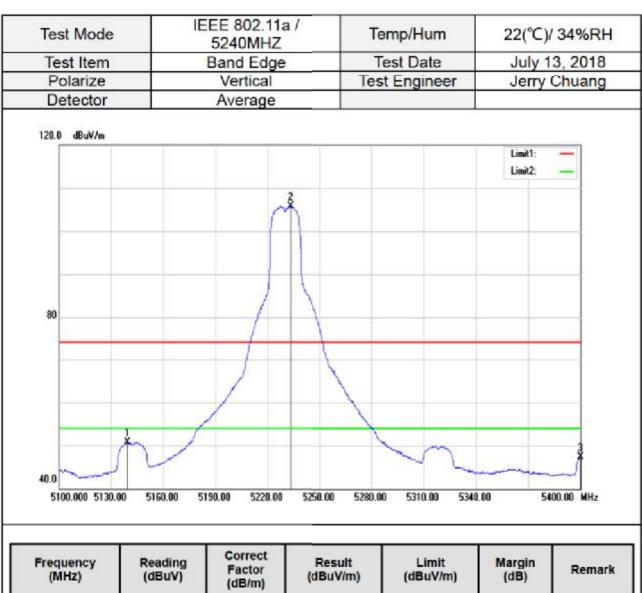






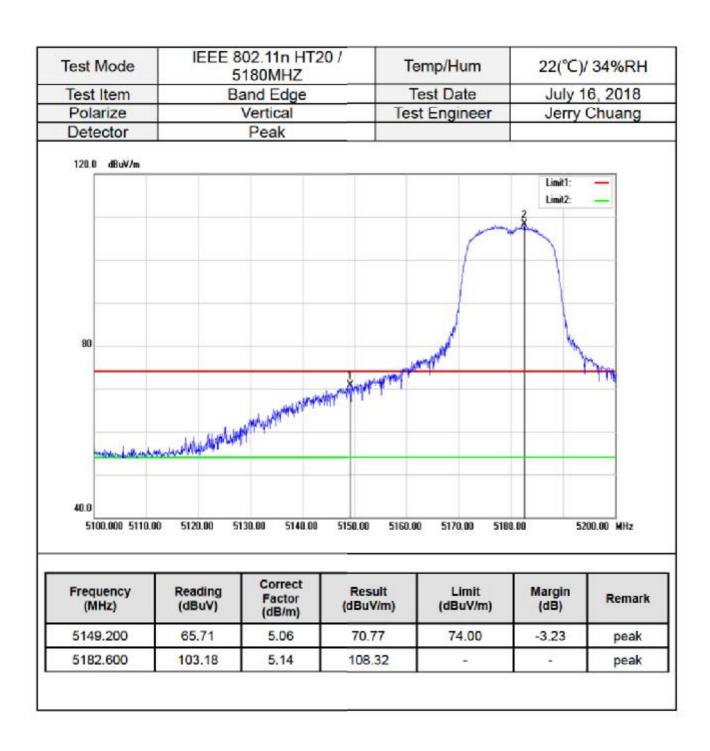






(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
5139.300	45.70	5.03	50.73	54.00	-3.27	AVG
5233.200	100.42	5.27	105.69			AVG
5400.000	41.72	5.68	47.40	54.00	-6.60	AVG

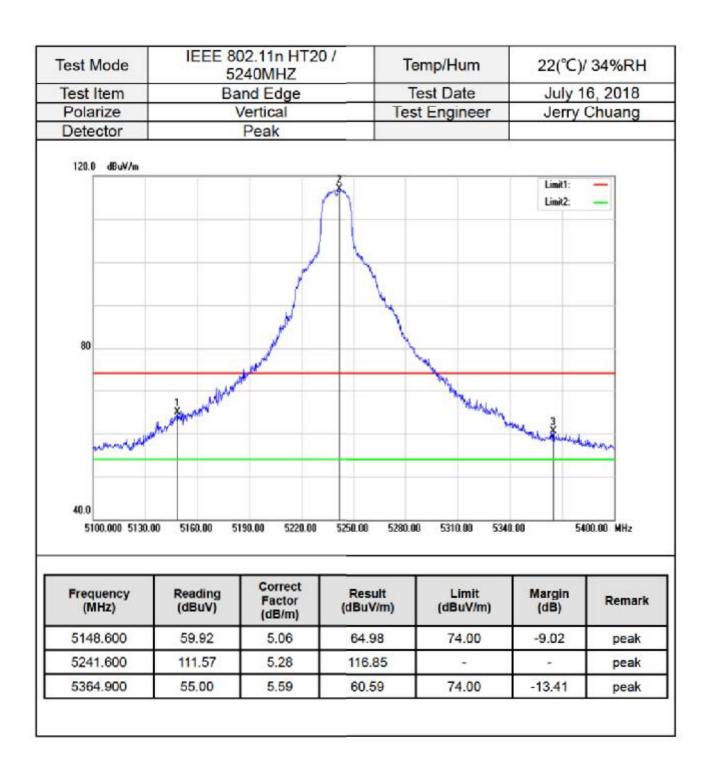




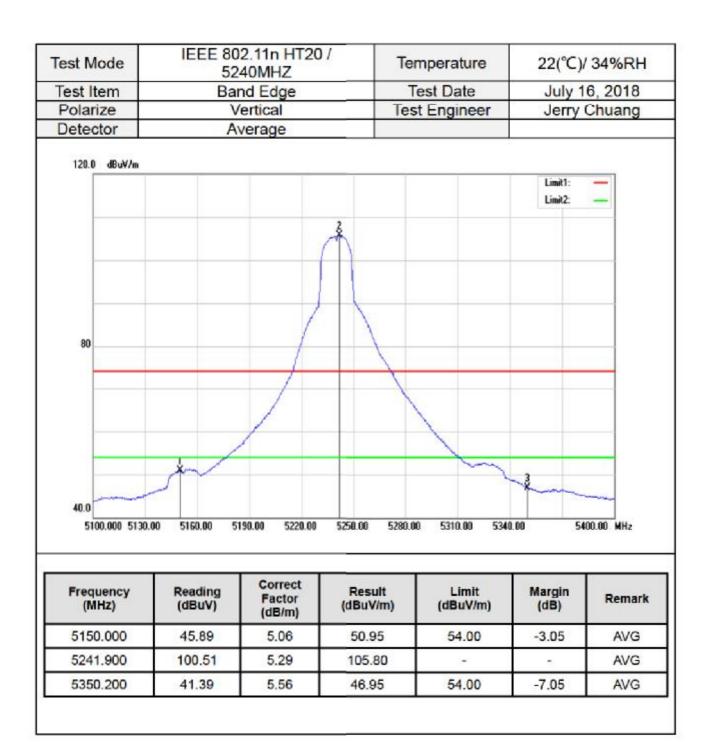


Test Mode	IEEE 802.11n HT20 / 5180MHZ		Ie	əmp/Hum	22(°C)/ 34%RH		
Test Item	B			est Date		July 16, 2018	
Polarize		Vertical	Tes	st Engineer	Jerry	Jerry Chuang	
Detector	Average						
120.0 dBuV/m							
					Limit1: Limit2:	-	
80							
40.0 5100.000 5110.0	10 5120.00 5	130.00 5140.00	5150.00 5160.0	0 5170.00 5180	0.00 52	00.00 MHz	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	
(11112)		5.00	47.55	54.00	-6.45	AVG	
5135.900	42.52	5.03	47.55	04.00	0.40	AVG	

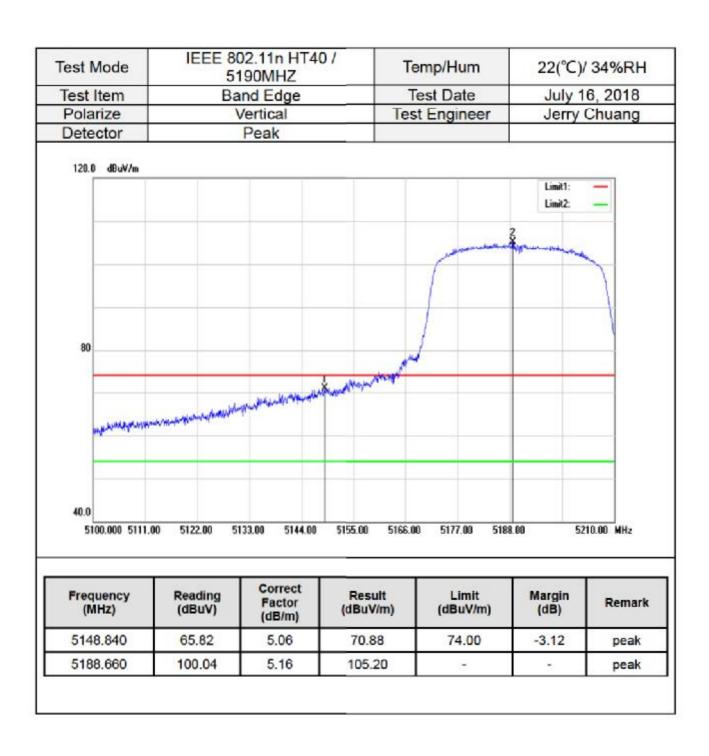




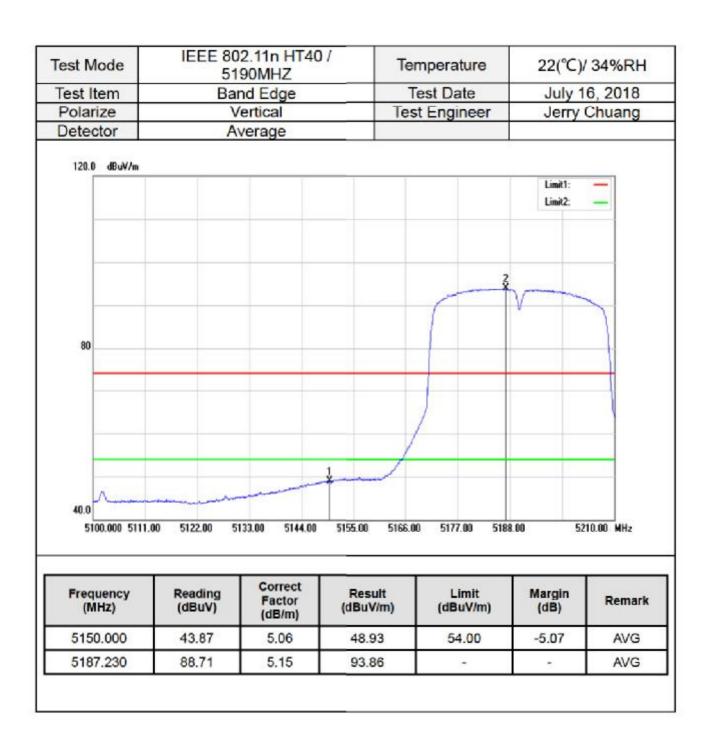








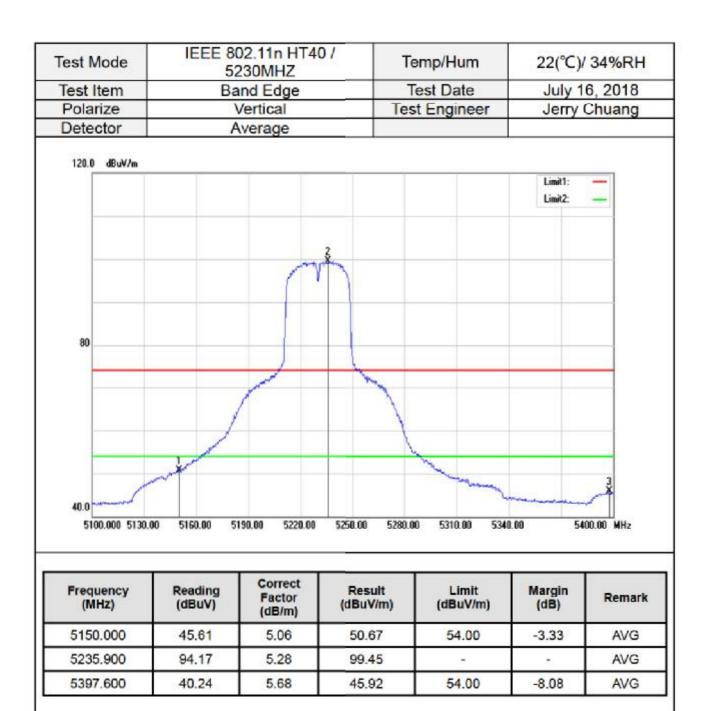




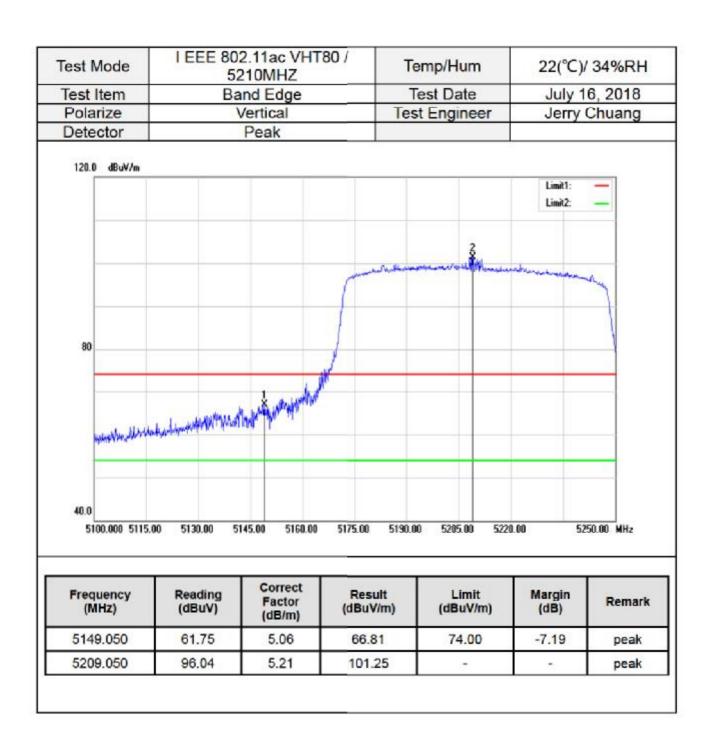


Test Mode	5230MHZ		Te	emp/Hum	22(°C)/ 34%RH	
Test Item	Band Edge		Т	est Date	July 16, 2018	
Polarize	Vertical		Tes	t Engineer	Jerry Chuang	
Detector	Peak					
120.0 dBu∀/m					Limit1: Limit2:	-
		- And -	Champer H			
80	min and the			and in the state of the state o	un 3	enterpol
		90.00 5220.00 5	250.00 5280.0			00.00 MHz
10.0		Correct				
40.0 5100.000 5130.	00 5160.00 51 Reading	Correct Factor	250.00 5280.0 Result	0 5310.00 5340 Limit	1.00 54 Margin	00.00 MHz
40.0 5100.000 5130.	00 5160.00 51 Reading (dBuV)	Correct Factor (dB/m)	250.00 5280.0 Result (dBuV/m)	0 5310.00 5340 Limit (dBuV/m)	.00 54 Margin (dB)	00.00 MHz Remark

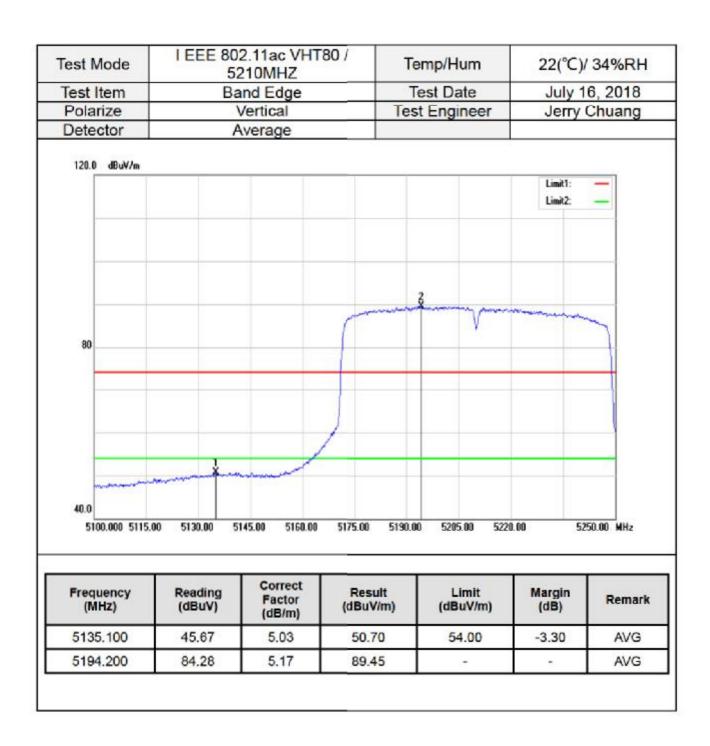












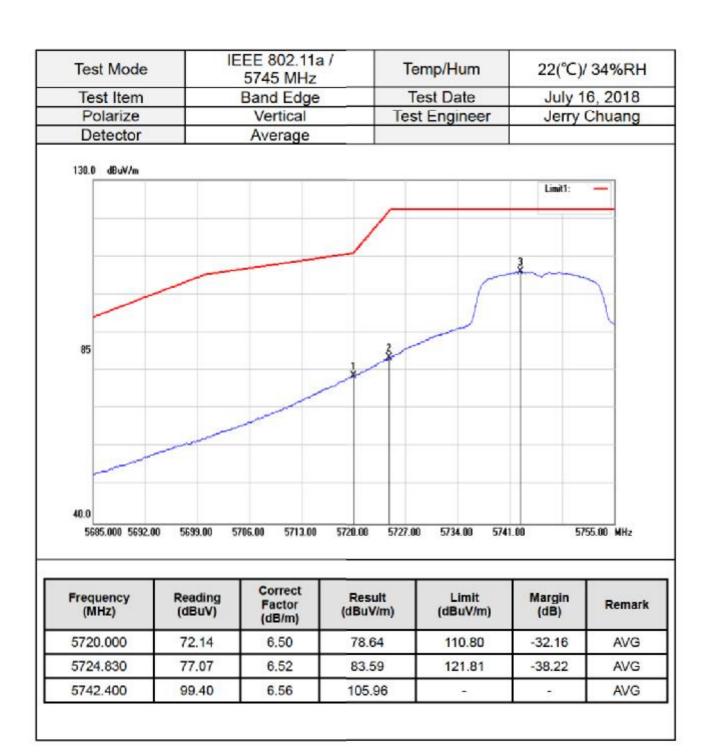
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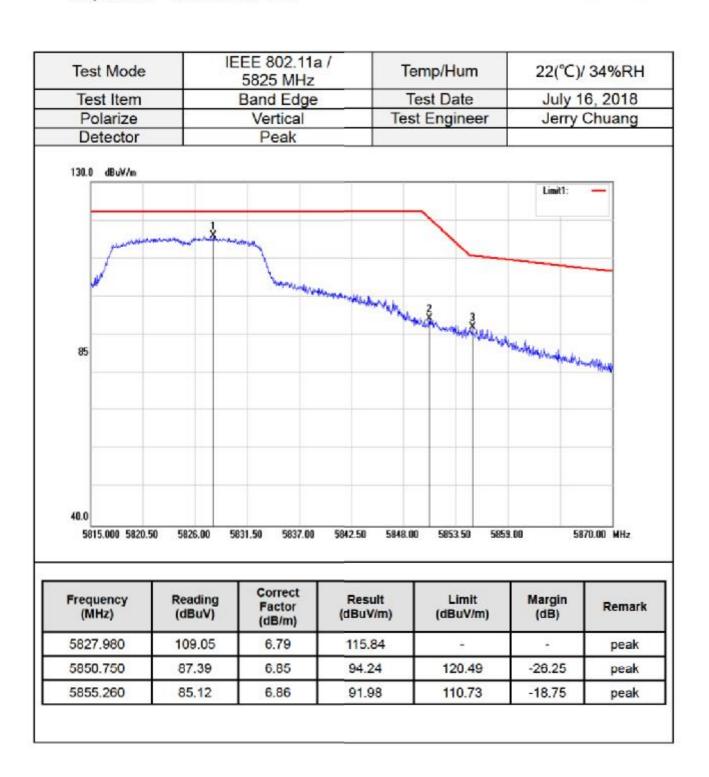
# Band Edge Test Data for UNII-3

Test Mode		EE 802.11a / 5745 MHz	Te	mp/Hum	22(°C)/	34%RH
Test Item		Band Edge	T	est Date	July 1	6, 2018
Polarize		Vertical	Tes	t Engineer		Chuang
Detector		Peak				
130.0 dBu∀/m			3 h mil	a Halland Mar	Linit1:	-
85 40.0 5685.000 5632.0		06.00 5713.00 S	1 X 5720.00 5727.00		.00 575	55.00 MHz
40.0		706.00 5713.00 S Correct			.00 575 Margin (dB)	
40.0 5685.000 5692.0	00 5639.00 57 Reading	706.00 5713.00 5 Correct Factor	5720.00 5727.00 Result	0 5734.00 5741 Limit	Margin	55.00 MHz Remari
40.0 5685.000 5632.0 Frequency (MHz)	00 5693.00 57 Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	0 5734.00 5741 Limit (dBuV/m)	Margin (dB)	Remark

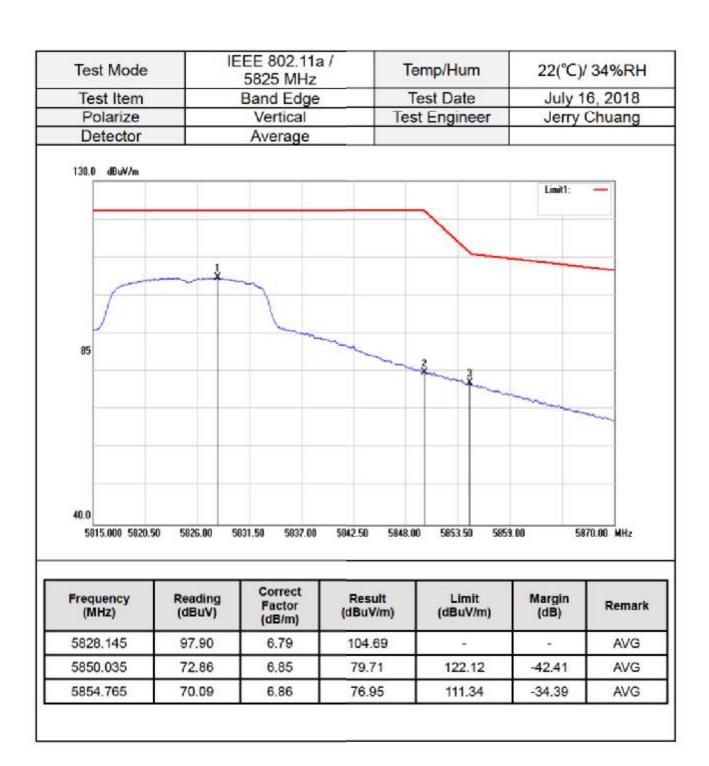




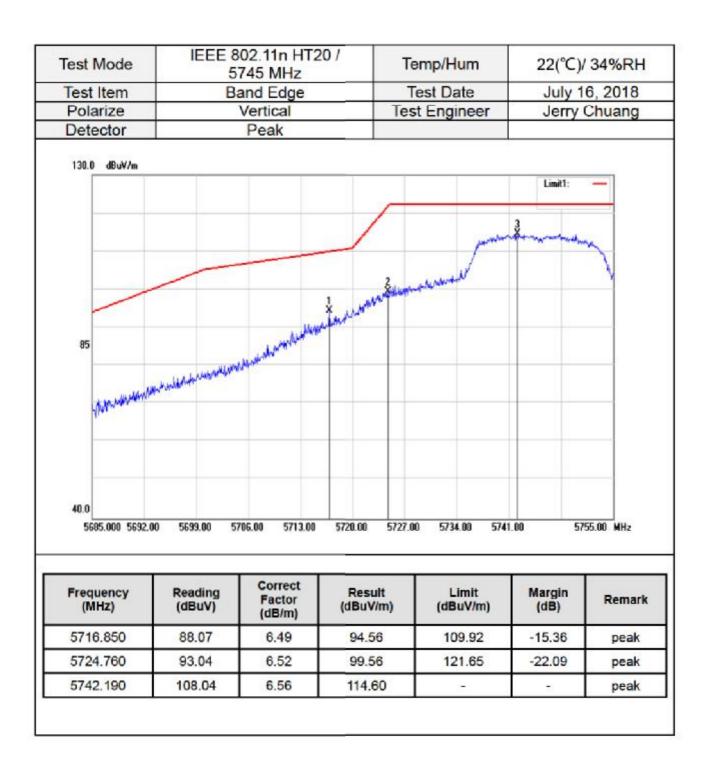








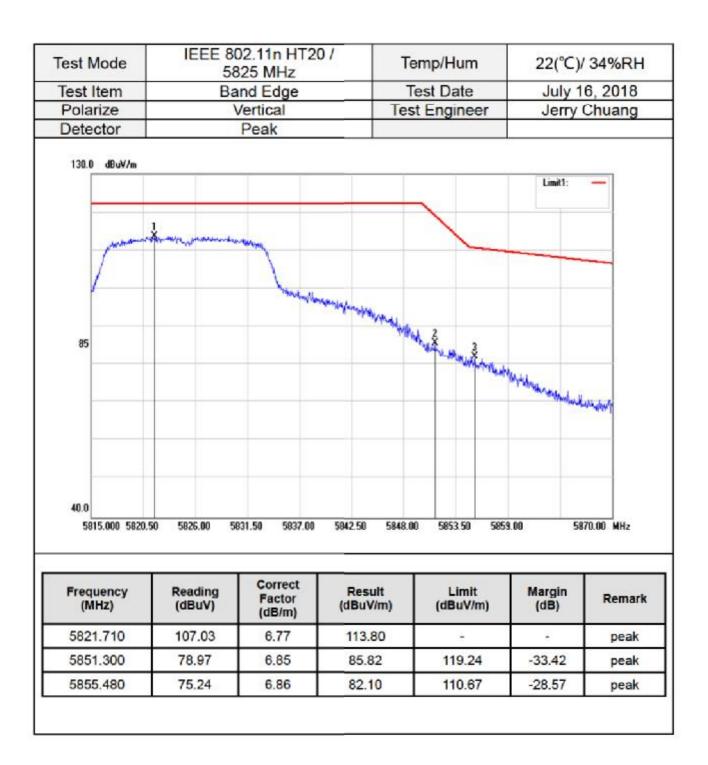




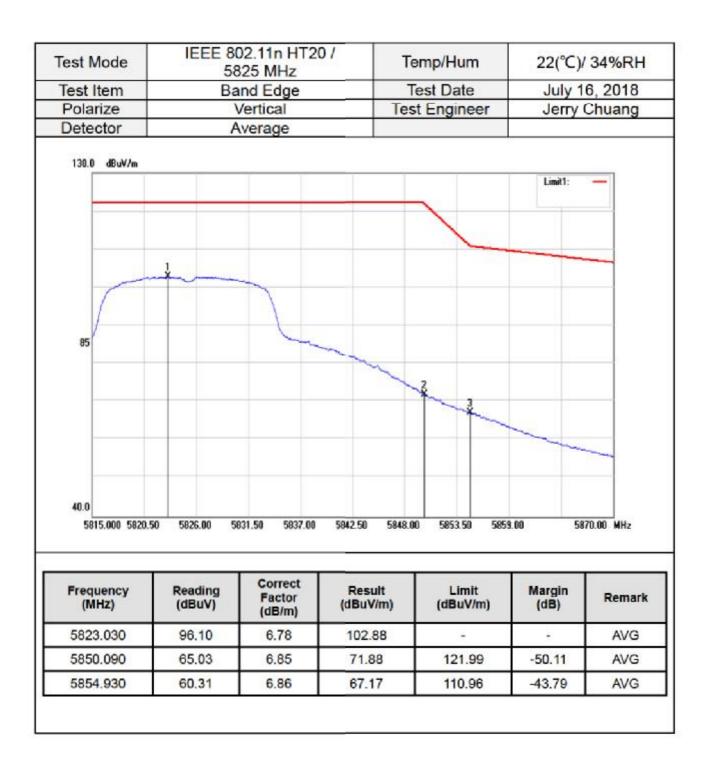




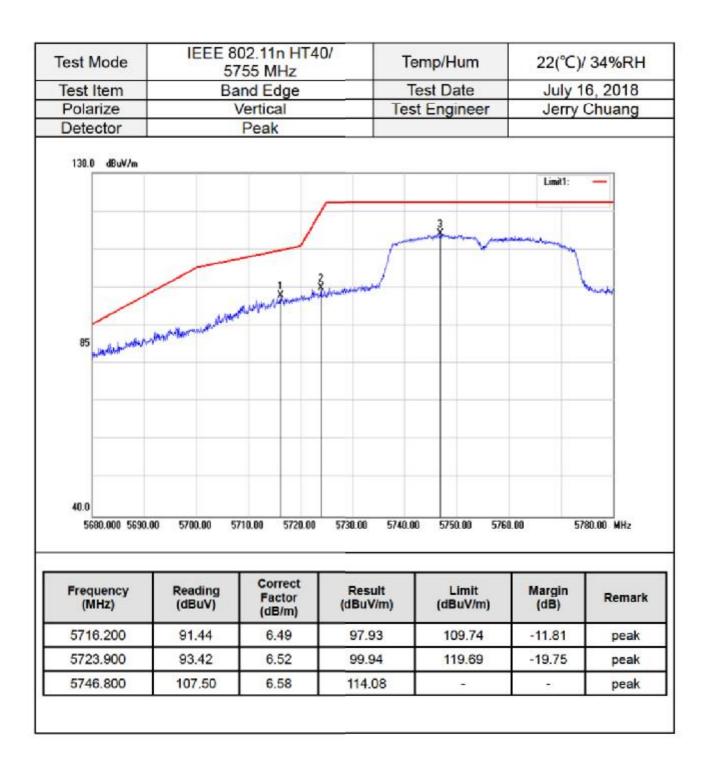




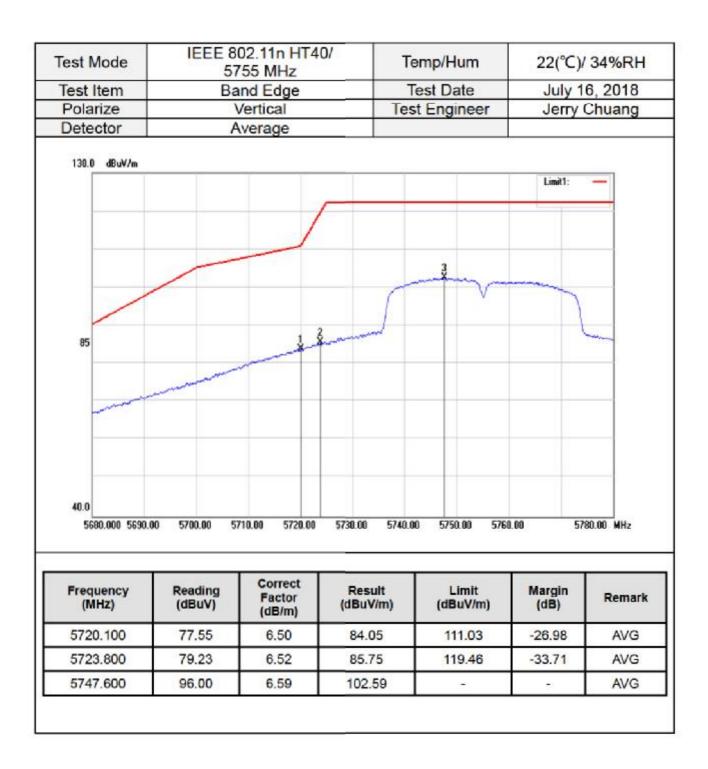






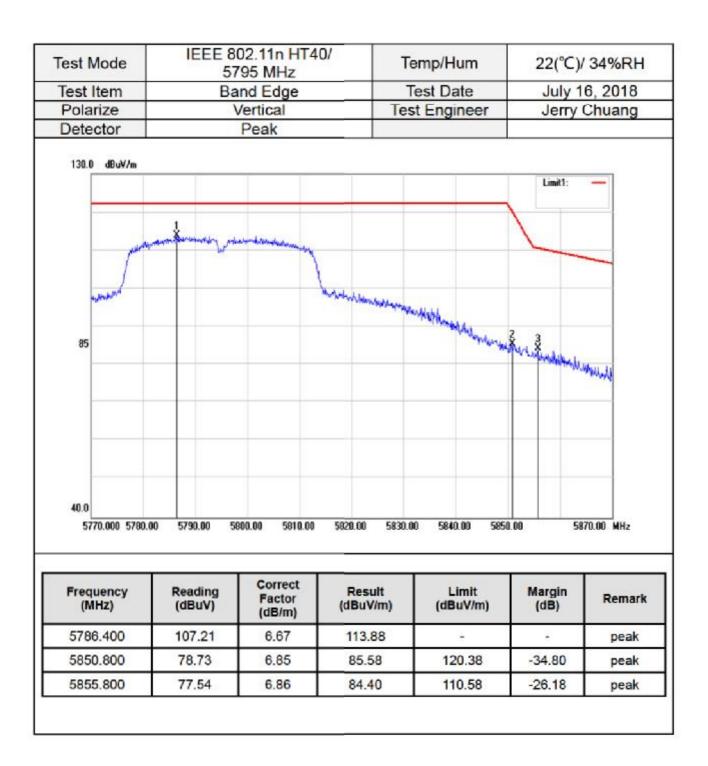




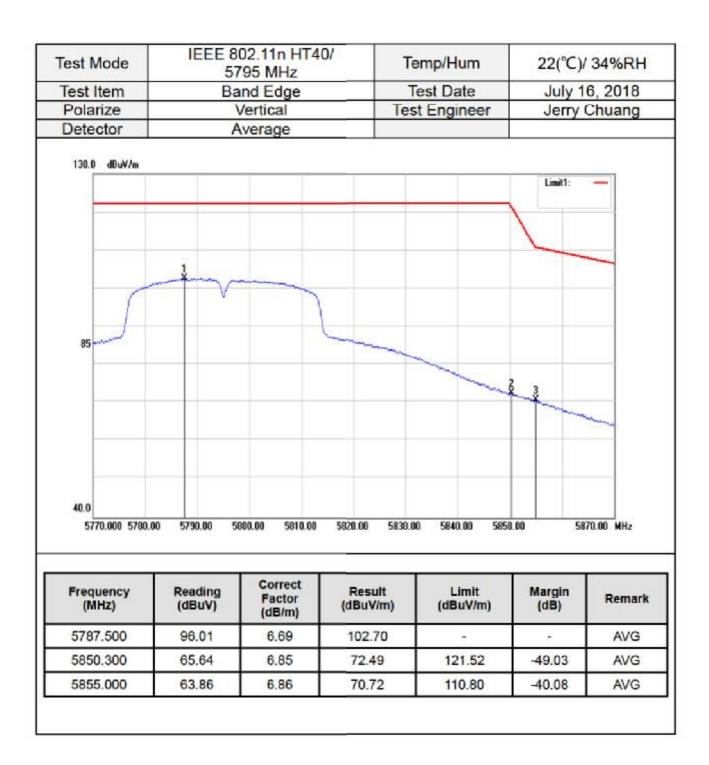








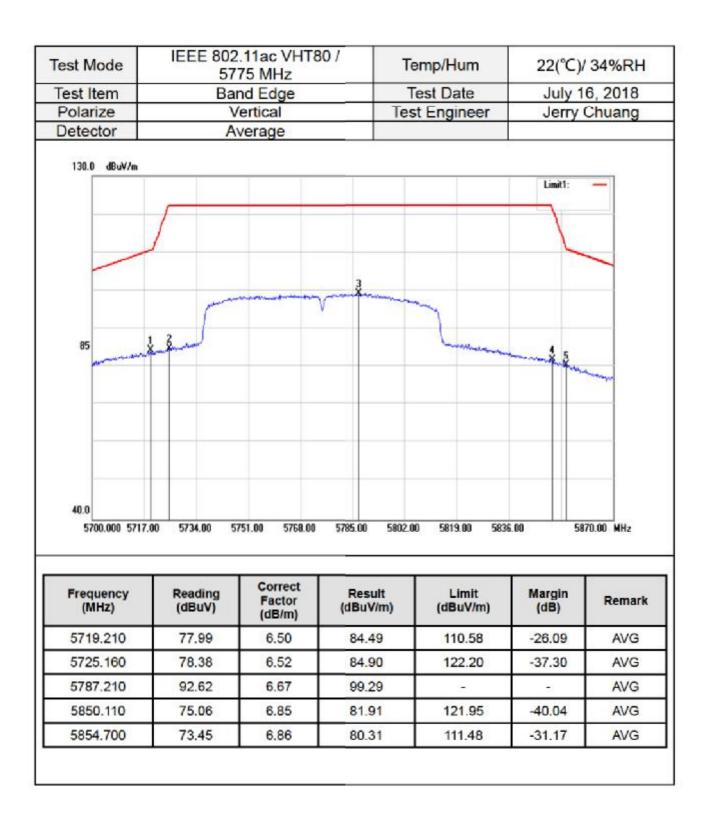






Test Mode		2.11ac VHT8 75 MHz	<sup>80 /</sup> T	emp/Hum	22(°C)/	34%RH
Test Item		and Edge	1	Test Date	July 1	6, 2018
Polarize		Vertical		st Engineer		Chuang
Detector		Peak				
130.0 dBuV/m	2 million and		Lander and an of the second	ALC: NOT		al and a second se
85						
40.0 5700.000 5717.	00 5734.00 5	751.00 5768.00	5785.00 5802.0	10 5819.00 5839	5.00 58	70.00 MHz
	00 5734.00 5 Reading (dBuV)	Correct Factor (dB/m)	5785.00 5802.0 Result (dBuV/m)	0. 5819.00 5838 Limit (dBuV/m)	.00 58 Margin (dB)	
5700.000 5717.	Reading	Correct Factor	Result	Limit	Margin	70.00 MHz Remark
5700.000 5717. Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5700.000 5717. Frequency (MHz) 5715.640	Reading (dBuV) 90.92	Correct Factor (dB/m) 6.49	Result (dBuV/m) 97.41	Limit (dBuV/m) 109.58	Margin (dB) -12.17	Remark peak
5700.000 5717. Frequency (MHz) 5715.640 5724.650 5748.280	Reading (dBuV) 90.92 91.82 104.54	Correct Factor (dB/m) 6.49 6.52 6.59	Result (dBuV/m) 97.41 98.34 111.13	Limit (dBuV/m) 109.58 121.40 -	Margin (dB) -12.17 -23.06 -	Remark peak peak peak
5700.000 5717. Frequency (MHz) 5715.640 5724.650	Reading (dBuV) 90.92 91.82	Correct Factor (dB/m) 6.49 6.52	Result (dBuV/m) 97.41 98.34	Limit (dBuV/m) 109.58 121.40	Margin (dB) -12.17 -23.06	Remark peak peak







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## Below 1G Test Data

## For PIFA Antenna

N SCORES &	Mode		IEE	521	OMHZ			mp/Hu			C)/ 349	
Test	t Item			30MH	Iz-1GH	lz	T	est Date	Э	July	30, 2	018
Pol	arize			Hor	izonta		Tes	t Engine	eer	Jerr	y Chu	ang
Det	ector		Pe	ak and	Quas	i-peak						
80.0	dBuV/m									Limit1:		1
-				_						Limici: Margin		
				_							_	
	_		_	_	_					_	-	
30	-	¥	-	2	3	4×	5	ş				
30					Î							
-				_								
				_								
-20												
30.00	0 127.0	0 22	4.00	321.00	418.00	515.00	612.00	709.00	806.00		1000.00	MHa

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
174.5300	44.87	-10.78	34.09	43.52	-9.43	peak
324.8800	36.94	-7.38	29.56	46.02	-16.46	peak
399.5700	35.99	-5.30	30.69	46.02	-15.33	peak
515.0000	36.88	-2.33	34.55	46.02	-11.47	peak
565.4400	32.75	-1.56	31.19	46.02	-14.83	peak
724.5200	30.75	1.35	32.10	46.02	-13.92	peak

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Test Mode		802.11ac V 5210MHZ		Ter	np/Hum	3	22(°C)	)/ 34%RI
Test Item	1 1 1	30MHz-1GH		Te	st Date	10	July 3	30, 2018
Polarize		Horizontal		Test	Enginee	r		Chuang
Detector	Pea	k and Quasi	-peak					
80.0 dBuV/m		8 3 X	*			5	Limit1: Margin:	
		_						
	Reading	21.00 418.00 Correct Factor	515.00 Result		Limit	806.00	argin	000.00 MHz
30.000 127.0 Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/n	n)	Limit (dBuV/m)	M/	argin (dB)	Remar
30.000 127.0 Frequency (MHz) 224.9700	Reading (dBuV) 48.73	Correct Factor (dB/m) -10.97	Result (dBuV/n 37.76	n)	Limit (dBuV/m) 46.02	M; (	argin (dB) 8.26	Reman
30.000 127.0 Frequency (MHz) 224.9700 324.8800	Reading (dBuV) 48.73 44.33	Correct Factor (dB/m) -10.97 -7.38	Result (dBuV/n 37.76 36.95	n)	Limit (dBuV/m) 46.02 46.02	M. (	argin (dB) 8.26 9.07	Remai
30.000 127.0 Frequency (MHz) 224.9700	Reading (dBuV) 48.73	Correct Factor (dB/m) -10.97	Result (dBuV/n 37.76	n)	Limit (dBuV/m) 46.02	M. (	argin (dB) 8.26	Remai
30.000 127.0 Frequency (MHz) 224.9700 324.8800	Reading (dBuV) 48.73 44.33	Correct Factor (dB/m) -10.97 -7.38	Result (dBuV/n 37.76 36.95	n)	Limit (dBuV/m) 46.02 46.02	M. (	argin (dB) 8.26 9.07	Remai peak peak
30.000 127.0 Frequency (MHz) 224.9700 324.8800 375.3200	Reading (dBuV) 48.73 44.33 44.47	Correct Factor (dB/m) -10.97 -7.38 -6.02	Result (dBuV/n 37.76 36.95 38.45	n)	Limit (dBuV/m) 46.02 46.02 46.02	M. (	argin (dB) 8.26 9.07 7.57	Reman peak peak peak



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## For Dipole Antenna

Test Mode	IEEE	802.11ac VI 5210MHZ	HT80 /	Ter	mp/Hum	22(°C)	)/ 34%RH
Test Item	3	30MHz-1GH	z	Te	st Date	Julv	30, 2018
Polarize		Horizontal			Engineer		Chuang
Detector	Peak	and Quasi	peak				
80.0 dBu¥/m						Linit1: Margin:	_
	2			5		6	
	1	1		×		ax.	
30							
-20 30.000 127.00	224.00 3	21.00 418.00	515.00	612.00	709.00 8	806.00 1	000.00 MHz
	Reading (dBuV)	21.00 418.00 Correct Factor (dB/m)	515.00 Resu (dBuV	ilt	709.00 8 Limit (dBuV/m)	Margin (dB)	000.00 MHz Remar
30.000 127.00 Frequency	Reading	Correct Factor	Resu	ılt /m)	Limit	Margin	
30.000 127.00 Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resu (dBuV	ılt /m) 1	Limit (dBuV/m)	Margin (dB)	Remar
30.000 127.00 Frequency (MHz) 114.3900	Reading (dBuV) 47.47	Correct Factor (dB/m) -9.96	Resu (dBuV) 37.5	llt /m) 1 9	Limit (dBuV/m) 43.52	Margin (dB) -6.01	Remar
30.000 127.00 Frequency (MHz) 114.3900 174.5300	Reading (dBuV) 47.47 47.17	Correct Factor (dB/m) -9.96 -10.78	Resu (dBuV 37.5 36.3	/m) 1 9 1	Limit (dBuV/m) 43.52 43.52	Margin (dB) -6.01 -7.13	Remar peak peak
30.000 127.00 Frequency (MHz) 114.3900 174.5300 299.6600	Reading (dBuV) 47.47 47.17 39.28	Correct Factor (dB/m) -9.96 -10.78 -7.97	Resu (dBuV) 37.5 36.3 31.3	llt /m) 1 9 1 3	Limit (dBuV/m) 43.52 43.52 46.02	Margin (dB) -6.01 -7.13 -14.71	Remar peak peak peak

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Test Mode		802.11ac V 5210MHZ		Tem	p/Hum	22	2(°C)/ 3	34%R
Test Item		30MHz-1GH		Tes	t Date	J	uly 30	, 2018
Polarize		Horizonta		Test I	Engineer		erry C	
Detector	Pea	k and Quas	i-peak					
80.0 dBuV/m		3.	3 X		4 53 X		nit1: -	
								-
-20 30.000 127.0 Frequency (MHz)	0 224.00 3 Reading (dBuV)	21.00 418.00 Correct Factor (dB/m)	515.00 Result (dBuV/n		709.00 8	06.00 Marg	jin	00 MHz Remai
30.000 127.0 Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/n	n)	Limit (dBuV/m)	Marg (dB	jin I)	Rema
30.000 127.0 Frequency (MHz) 174.5300	Reading (dBuV) 48.18	Correct Factor (dB/m) -10.78	Result (dBuV/n 37.40	n)	Limit (dBuV/m) 43.52	Marg (dB -6.1	jin I) 2	Remai
30.000 127.0 Frequency (MHz) 174.5300 324.8800	Reading (dBuV) 48.18 38.18	Correct Factor (dB/m) -10.78 -7.38	Result (dBuV/n 37.40 30.80	n)	Limit (dBuV/m) 43.52 46.02	Marg (dB -6.1 -15.2	<b>jin</b> 1) 2 22	Reman peak peak
30.000 127.0 Frequency (MHz) 174.5300 324.8800 475.2300	Reading (dBuV) 48.18 38.18 32.64	Correct Factor (dB/m) -10.78 -7.38 -3.14	Result (dBuV/n 37.40 30.80 29.50	n)	Limit (dBuV/m) 43.52 46.02 46.02	Marg (dB -6.1 -15.2 -16.5	gin 2 22 52	Reman peak peak peak
30.000 127.0 Frequency (MHz) 174.5300 324.8800 475.2300 675.0500	Reading (dBuV) 48.18 38.18 32.64 36.87	Correct Factor (dB/m) -10.78 -7.38 -3.14 0.68	Result (dBuV/n 37.40 30.80 29.50 37.55	n)	Limit (dBuV/m) 43.52 46.02 46.02 46.02	Marg (dB -6.1 -15.2 -16.9 -8.4	gin 2 22 52 7	Reman peak peak peak
30.000 127.0 Frequency (MHz) 174.5300 324.8800 475.2300	Reading (dBuV) 48.18 38.18 32.64	Correct Factor (dB/m) -10.78 -7.38 -3.14	Result (dBuV/n 37.40 30.80 29.50	n)	Limit (dBuV/m) 43.52 46.02 46.02	Marg (dB -6.1 -15.2 -16.5	<b>jin</b> 2 22 52 7 9	



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Report No.: T180627D11-RC4

#### For PIFA Antenna

## Above 1G Test Data for UNII-1

Test Mode	1	EEE 802.11a 5180MHZ	10	emp/Hum		34%RH
Test Item		Harmonic		est Date		0, 2018
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Pe	ak and Avera	age			
110.0 dBu¥/m						
			_		Limit1: Limit2:	Ξ
70						
30.0	00 8800.00	12700.00 16600.00	20500.00 24400	00 28300.00 3220	10,00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10360.000	34.62	14.45	49.07	74.00	-24.93	peak
N/A						

Remark:

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Mode	IE	EEE 802.11a 5180MHZ	1940 C	emp/Hum	22(°C)/	34%RH
Test Item		Harmonic		Test Date	July 30, 2018	
Polarize		Horizontal	Te	st Engineer		Chuang
Detector	Pe	ak and Aver	age			
110.0 dBuV/m					Limit1:	_
					Linit2:	
70	2					
30.0 1000.000 4900.0	00 8800.00 1	2700.00 16600.00	) 20500.00 24400	1.00 28300.00 322	00.00 49	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10360.000	47.22	14.45	61.67	74.00	-12.33	peak
10360.000	36.22	14.45	50.67	54.00	-3.33	AVG
N/A						
			· · · · · · · · · · · · · · · · · · ·		3	3

fundamental frequency.



Test Mode		IEEE 802.11a 5220 MHZ	2011	emp/Hum	22(°C)/	34%RH
Test Item		Horizontal		Test Date	July 3	0, 2018
Polarize		Vertical	Te	st Engineer	Jerry Chuang	
Detector	P	eak and Aver	age			
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
	ł	2				
30.0	.00 8800.00	12700.00 16600.00	) 20500.00 24400	1.00 28300.00 3221	00.00 49	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remar
10440.000	33.18	14.71	47.89	74.00	-26.11	peak
N/A						
	s					

fundamental frequency.



Test Mode	IE	EE 802.11a 5220 MHz	a/ Te	emp/Hum	22(°C)/	34%RH
Test Item		Harmonic	1	est Date	July 3	0, 2018
Polarize		Horizontal		st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBu¥/m						
					Limit1:	-
					Limit2:	_
70						
	¥					
	*					
10.00						
30.0	00 8800.00 12	2700.00 16600.00	) 20500.00 24400	00 28300.00 322	00.00 49	000.00 MHz
1000.000 4300.	00 8800.00 1.	2700.00 16600.00	20300.00 24400	00 26300.00 322	JU.UU 548	UUU.UU MHZ
		e 23 - 67				
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10440.000	47. <mark>1</mark> 3	14.71	61.84	74.00	-12.16	peak
10440.000	35.80	14.71	50.51	54.00	-3.49	AVG
N/A						
						<u>.</u>
mark:						
mark.						



Test Mode	IE	EE 802.11a 5240MHZ	a/ Te	emp/Hum	22(°C)/	34%RH
Test Item		Harmonic		Fest Date	July 3	0, 2018
Polarize		Vertical	Tes	st Engineer	Jerry	Chuang
Detector	Pe	ak and Aver	age			
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
	*					
30.0	0 8800.00 1	2700.00 16600.00	0 20500.00 24400	.00 28300.80 3221	00.00 48	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10480.000	33.90	(dB/m) 14.84	48.74	74.00	-25.26	peak
N/A						

fundamental frequency.



Test Mode	IE	EE 802.11a 5240MHZ	a/ Te	emp/Hum	22(°C)/ 34%RF	
Test Item		Harmonic	1	est Date	July 3	0, 2018
Polarize		Horizontal		st Engineer	Jerry	Chuang
Detector	Pea	Peak and Average				
110.0 dBuV/m						
					Limit1:	—
					Limit2:	_
70						
	Å					
_						- C.
	\$					
-						_
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	) 20500.00 24400	.00 28300.00 322	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remari
10480.000	44.36	14.84	59.20	74.00	-1 <mark>4.80</mark>	peak
10480.000	35.12	14.84	49.96	54.00	-4.04	AVG
N/A						



Fest Mode		02.11n HT20 180MHZ	0/ Те	emp/Hum	22(°C)/ 34%RH	
Test Item	Н	armonic	Т	est Date	July 3	0, 2018
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Peak :	and Average	e			
110.0 dBuV/m					Limit1:	_
					Limit2:	_
70						
	1					
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3221	10.00 49	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10360.000	35.00	14.45	49.45	74.00	-24.55	peak
N/A						
						2 2 2
					5	

fundamental frequency.



Test Mode	520 H 67 - 67 - 67 - 67 - 67 - 67 - 67 - 67	302.11n HT: 180MHZ	20/ T	emp/Hum	22(°C)/ 34%R	
Test Item	H	larmonic		Fest Date	July 3	0, 2018
Polarize		lorizontal		st Engineer	Jerry	Chuang
Detector	Peak	and Averag	je 🔤			
110.0 dBu¥/m					1. Sec.	
					Linit1: Linit2:	_
70						
	1					
	3					-
	Î					
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	0 20500.00 24400	.00 28300.00 3220	10.00 48	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10360.000	47.49	14.45	61.94	74.00	-12.06	peak
10360.000	35.10	14.45	49.55	54.00	-4.45	AVG
N/A						

fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

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Test Mode	NO 14 193 NO 14 19 19 19 19	02.11n HT2 220MHZ	20 / Te	emp/Hum	22(°C)/ 34%RH	
Test Item	H	armonic	Т	est Date	July 3	0, 2018
Polarize		Vertical	Tes	t Engineer	Jerry	Chuang
Detector	Peak	and Averag	e			
110.0 dBuV/m					Limit1:	_
					Limit2:	_
70						
	1					
30.0 1000.000 <b>4</b> 900.0	X 00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3221	0.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10440.000	34.73	(dB/m) 14.71	49.44	74.00	-24.56	peak
N/A						pour
						2 2

fundamental frequency.



Fest Mode	V01+140-04-00-00	02.11n HT2 220MHZ	107 Te	emp/Hum	22(°C)/	34%RH
Test Item		larmonic	1	Fest Date	July 3	0, 2018
Polarize	F	orizontal	Tes	st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	-
70						
10						
	1					
	Î					-
	3					_
	Î					
30.0						
1000.000 4900.	00 8800.00 12	2700.00 16600.00	20500.00 24400	.00 28300.00 322	00.09 49	008.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10440.000	45.14	14.71	59.85	7 <mark>4.0</mark> 0	-1 <mark>4</mark> .15	peak
10440.000	35.85	14.71	50.56	54.00	-3.44	AVG
N/A						
mark:				0th harmonic		



Test Mode		02.11n HT20 240MHZ	0/ те	emp/Hum	22(°C)/ 34%RH	
Test Item	Harmonic			est Date	July 3	0, 2018
Polarize	1	/ertical	Tes	st Engineer	Jerry (	Chuang
Detector	Peak a	and Average	e			
110.0 dBuV/m					Limit1:	_
					Limit2:	-
						_
70						
	×					
30.0 1000.000 <b>49</b> 00.0	0 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	0.00 49	000.00 MHz
1000.000 4000.		10000	20500.00 21100.	00 20300.00 2220	0.00	000.00 Milz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10480.000	32.61	14.84	47.45	74.00	-26.55	peak
N/A						
emark:						

fundamental frequency.



est Mode	IEEE 802.11n HT20 / 5240MHZ			emp/Hum	22(°C)/ 34%RH	
Test Item	Harmonic			est Date	July 3	0, 2018
Polarize	H	orizontal	Tes	st Engineer	Jerry	Chuang
Detector	Peak	and Average	9			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	_
70						
	1					
	Ĩ					-
	3					
30.0						
1000.000 4900.0	06 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 3221	00.00 40	000.00 MHz
		Correct			1444	
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10480.000	44.98	14.84	59.82	74.00	-14.18	peak
10480.00 <mark>0</mark>	35.29	14.84	50.13	54.00	-3.87	AVG
N/A						
mark:						



Test Mode	5	02.11n HT4 190MHZ	16	emp/Hum	22(°C)/ 34%RI	
Test Item	H	larmonic		est Date		0, 2018
Polarize	-	Vertical		st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m					Limit1:	
					Limit2:	=
70						
	×					_
						_
30.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 26300.00 3221	00.00 49	000.00 MHz
1000.000 4300.0	0 000.00 1.	2700.00 10000.00	20300.00 21100.	00 20300.00 3221	10.00	000.00 MH2
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10390.000	37.16	14.54	51.70	74.00	-22.30	peak
N/A						
						2 2 2

fundamental frequency.



Test Mode	Vite the construction of the	02.11n HT4 190MHZ	0 / Te	emp/Hum	22(°C)/ 34%RH	
Test Item	F	larmonic	Г	est Date	July 3	0, 2018
Polarize	H	lorizontal	Tes	t Engineer	Jerry	Chuang
Detector	Peak	and Averag	e			
110.0 dBu¥/m						
					Limit1:	-
					Limit2:	_
						_
70						
	1					_
	*					
	\$					
30.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3221	00.00 40	000.00 MHz
1000.000 4300.	00 00000 1.	2700.00 10000.00	20300.00 24400.	00 26300.00 3220	JU, DJ 40	000.00 M H2
Francisco	Peoples	Correct	Result	Limit	Manaia	
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	Margin (dB)	Remark
10360.000	41.73	14.45	56.18	74.00	-17.82	peak
10360.00 <mark>0</mark>	34.37	14.45	48.82	54.00	- <mark>5.1</mark> 8	AVG
N/A						-
mark:					20000	
				0th harmonic		



Test Mode		02.11n HT40 230MHZ	0/ те	emp/Hum	22(°C)/ 34%RH	
Test Item	Н	armonic	Т	est Date	July 3	0, 2018
Polarize	1	/ertical	Tes	st Engineer	Jerry (	Chuang
Detector	Peak a	and Average	e			
110.0 dBuV/m					Limit1:	_
					Limit2:	_
70						
	*					_
30.0 1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	0.00 48	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10460.000	35.28	14.79	50.07	74.00	-23.93	peak
N/A						
					~	

fundamental frequency.



Fest Mode		02.11n HT40 230MHZ	0/ Те	emp/Hum	22(°C)/	34%RH
Test Item	Н	armonic	Т	est Date	July 30, 2018	
Polarize	H	orizontal	Tes	t Engineer		Chuang
Detector	Peak a	and Average	9			
110.0 dBuV/m						
					Limit1: Limit2:	_
						_
						_
70						
	1					_
-	*					
	×					
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	10.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10450.000	40.50	14.75	55.25	74.00	-18.75	peak
10450.000	32.74	14.75	47.49	54.00	-6.51	AVG
N/A						
emark:						
			01	0th harmonic	. think and	



est Mode		.11ac VHT8 10MHZ	0/ Те	emp/Hum	22(°C)/ 34%RH	
Fest Item	Ha	rmonic	Т	est Date	July 30, 2018	
Polarize	V	ertical	Tes	t Engineer	Jerry	Chuang
Detector	Peak a	nd Average				
110.0 dBu¥/m						
					Limit1: Limit2:	_
						_
70						
						_
	*					
30.0						
1000.000 4900.0	0 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	10.00 48	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10420.000	33.92	14.66	48.58	74.00	-25.42	peak
N/A						
			_			
emark:						5

fundamental frequency.



est Mode		.11ac VHT8 10MHZ	0/ Te	emp/Hum	22(°C)/ 34%RI	
est Item	10000	rmonic	Т	est Date	July 3	0, 2018
Polarize	Ho	rizontal	Tes	t Engineer		Chuang
Detector	Peak a	nd Average				
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
	ł					
30.0 1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	10.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10420.000	33.50	14.66	48.16	74.00	-25.84	peak
N/A	-					
emark:				0th harmonic		



#### Above 1G Test Data for UNII-3

Test Mode	, IE	EE 802.11a 5745 MHz	1/ Т	emp/Hum	22(°C)/	34%RH
Test Item		Harmonic		Fest Date	July 3	0, 2018
Polarize		Vertical		st Engineer		Chuang
Detector	Pe	ak and Aver	age		n an	
110.0 dBu¥/m					Limit1:	_
70						
30.0 1000.000 4900	.00 8800.00 1	2700.00 16600.00	20500.00 24400	1.00 28300.00 322	00.00 <b>4</b> 0	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remari
11490.000	31.69	16.09	47.78	74.00	-26.22	peak
N/A						



Test Mode	IE	EE 802.11a 5745 MHz	a/ Te	emp/Hum	22(°C)/ 34%RI	
Test Item		Harmonic	٦	est Date	July 30, 2018	
Polarize		Horizontal		st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBu¥/m						
					Limit1: Limit2:	_
70						_
	1					
	Ť					
	× ×					
						_
30.0						
1000.000 4900.	00 8800.00 1	2700.00 16600.00	20500.00 24400	00 28300.00 3220	10.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	44.42	16.09	60.51	74.00	-1 <mark>3.4</mark> 9	peak
11490.000	34.54	16.09	50.63	54.00	-3.37	AVG
N/A						2
						5 5
			-			

fundamental frequency.



Test Mode	IE	EE 802.11a 5825 MHz	a/ Te	emp/Hum	22(°C)/ 34%RH	
Test Item		Harmonic	Т	est Date	July 30, 2018	
Polarize		Vertical	Tes	st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBuV/m					Limit1: Limit2:	-
70	*					
30.0 1000.000 4900.0	90 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 3220	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11570.000	36.61	16.01	52.62	74.00	-21.38	peak
N/A						
mark:						

fundamental frequency.



Test Mode	IE	EE 802.11a 5825 MHz	a/ Te	emp/Hum	22(°C)/	34%RH
Test Item		Harmonic	Т	est Date	July 30, 2018	
Polarize		Horizontal		st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
70						
	1					
_		_				
						_
30.0						
30.0 1000.000 4900.	00 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 322	00.00 40	000.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	
	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
(MHz)					40.70	peak
	44.29	16.01	60.30	74.00	-13.70	
(MHz)	44.29 33.84	16.01 16.01	60.30 49.85	74.00 54.00	-13.70 -4.15	AVG
(MHz) 11570.000	0.07000.022707	2002/02/02/02	NOT CALLED IN	201262200	50580AP02	AVG
(MHz) 11570.000 11570.000	0.07000.022707	2002/02/02/02	NOT CALLED IN	201262200	50580AP02	AVG
(MHz) 11570.000 11570.000	0.07000.022707	2002/02/02/02	NOT CALLED IN	201262200	50580AP02	AVG



Test Mode	IE	EE 802.11a 5825 MHz	а/ Т	emp/Hum	22(°C)/ 34%RH	
Test Item		Harmonic		Test Date	July 30, 2018	
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBuV/m					Limit1: Limit2:	
70	*					
30.0 1000.000 4900.0	0 8800.00 12	2700.00 16600.00	0 20500.00 24400	1.00 28300.00 3220	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	36.90	15.93	52.83	74.00	-21.17	peak
N/A						
mark:						

fundamental frequency.



		EE 802.11 5825 MHz		ſemp/Hum	22(°C)/	34%RH
Test Item		Harmonic		Test Date	July 30, 2018	
Polarize		Horizontal		st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	_
70						
10						
	1					
	Î					
	3	8				
	Î					
-						_
30.0						
30.0 1000.000 <b>4</b> 900.	00 8800.00 1:	2700.00 16600.0	0 20500.00 2440	0.00 28300.00 322	00.00 49	908.00 MHz
	00 8800.00 1.	2700.00 16600.0	0 20500.00 2440	0.00 28300.00 322	00.00 49	000.00 MHz
1000.000 4900.						000.00 MHz
	00 8800.00 1 Reading (dBuV)	Correct Factor	0 20500.00 2440 Result (dBuV/m)	Limit	00.00 40 Margin (dB)	
1000.000 4900. Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remari
1000.000 4900. Frequency (MHz) 11650.000	Reading (dBuV) 43.95	Correct Factor (dB/m) 15.93	Result (dBuV/m) 59.88	Limit (dBuV/m) 74.00	Margin (dB) -14.12	Remari
1000.000 4900. Frequency (MHz) 11650.000 11650.000	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remari
1000.000 4900. Frequency (MHz) 11650.000	Reading (dBuV) 43.95	Correct Factor (dB/m) 15.93	Result (dBuV/m) 59.88	Limit (dBuV/m) 74.00	Margin (dB) -14.12	Remari
1000.000 4900. Frequency (MHz) 11650.000 11650.000	Reading (dBuV) 43.95	Correct Factor (dB/m) 15.93	Result (dBuV/m) 59.88	Limit (dBuV/m) 74.00	Margin (dB) -14.12	Remari
1000.000 4900. Frequency (MHz) 11650.000 11650.000	Reading (dBuV) 43.95	Correct Factor (dB/m) 15.93	Result (dBuV/m) 59.88	Limit (dBuV/m) 74.00	Margin (dB) -14.12	Remari



Test Mode	Vice the rest of the rest of the	02.11n HT2 745 MHz	20 / T	emp/Hum	22(°C)/ 34%RH	
Test Item	F	larmonic	1	fest Date	July 30, 2018	
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
	*					
30.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	.00 28300.00 3220	0.00 48	000.00 MHz
Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
11490.000	35.39	16.09	51.48	74.00	-22.52	peak
N/A		-	· · · · · · · · · · · · · · · · · · ·			
mark:						

fundamental frequency.



Test <mark>Mod</mark> e	Vite the Control of the	02.11n HT2 745 MHz	20 / Te	emp/Hum	22(°C)/	34%RH
Test Item		larmonic	Г	est Date	July 30, 2018	
Polarize	H	lorizontal	Tes	t Engineer	Jerry	Chuang
Detector	Peak	and Averag	e			
110.0 dBuV/m						
					Linit1: Linit2:	-
						_
70						
	\$					_
	×					_
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	45.61	16.09	61.70	74.00	-12.30	peak
11490.000	34.73	16.09	50.82	54.00	-3.18	AVG
N/A						
mark:						



Test Mode	22110-V - COLEX- 1600	302.11n HT2 785 MHz	20/ Te	emp/Hum	22(°C)/ 34%RF	
Test Item	ŀ	larmonic		est Date	July 30, 2018	
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Peak	and Averag	e l			
110.0 dBu¥/m					15.54	
					Limit1: Limit2:	_
70						
	×					
30.0						
1000.000 4900.0	00 8800.00 13	2700.00 16600.00	20500.00 24400	.00 28300.00 3221	0.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11570.000	35.03	16.01	51.04	74.00	-22.96	peak
N/A						

fundamental frequency.



Test Item		785 MHz			22(°C)/ 34%R	
restitem	H	larmonic	Т	est Date	July 30, 2018	
Polarize	H	lorizontal	Tes	t Engineer	Jerry	Chuang
Detector	Peak	and Averag	e			
110.0 dBu¥/m					Limit1:	_
					Limit2:	_
70						
	*					
30.0						
1000.000 4900.0	0 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.90 3220	10.00 48	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remari
11570.000	42.93	16.01	58.94	74.00	-15.06	peak
11570.000	34.55	16.01	50.56	54.00	-3.44	AVG
N/A						



Fest Mode		02.11n HT2 325 MHz	0/ Te	emp/Hum	22(°C)/ 34%RH	
Test Item	Н	armonic		est Date		0, 2018
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Peak :	and Average				
110.0 dBuV/m					Limit1:	_
					Limit2:	-
70						
	*	8				
30.0 1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 3220	10.00 48	008.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
11650.000	36.01	15.93	51.94	74.00	-22.06	peak
N/A						
					3	5

fundamental frequency.



Test Item Polarize Detector 110.0 dBuV/m	H He	325 MHz armonic orizontal and Average	Tes	est Date t Engineer		0, 2018 Chuang
Detector			the second se	t Engineer	Limit1:	Chuang
·	Peak	and Average				_
110.0 dBu¥/m						_
						_
30.0	*					
1000.000 4900.00	8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	0.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	43.64	15.93	59.57	74.00	-14.43	peak
11650.000	34.21	15.93	50.14	54.00	-3.86	AVG
N/A						
emark:						



Test Mode	22110 CONTRACTOR	302.11n HT4 755 MHz	40/ T	emp/Hum	22(°C)/ 34%RF	
Test Item	F	larmonic		lest Date	July 3	0, 2018
Polarize		Vertical	Te	st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m						
					Linit1: Linit2:	_
70						_
	ı					
30.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	.00 28300.00 3220	00.00 40	000.00 MHz
Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	reman
11510.000	37.86	16.08	53.94	74.00	-20.06	peak
N/A						
mark:						

fundamental frequency.



Test Mode		02.11n HT4 755 MHz	0/ т	emp/Hum	22(°C)/ 34%RH	
Test Item		armonic		Test Date	July 3	0, 2018
Polarize		orizontal		st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m					Limit1:	_
					Limit2:	-
70	1 X					
	3					
	×					
30.0 1000.000 4900.0	00 8800.00 1:	2700.00 16600.00	0 20500.00 24400	1.00 28300.00 3220	10.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11510.000	45.46	16.08	61.54	74.00	-12.46	peak
11510.000	34.31	16.08	50.39	54.00	-3.61	AVG
N/A						
						2



Fest Mode		02.11n HT4 '95 MHz	le	emp/Hum	22(°C)/ 34%RH	
Test Item		armonic		est Date		0, 2018
Polarize		/ertical		t Engineer	Jerry	Chuang
Detector	Peaka	and Average	e			
110.0 dBuV/m					Limit1:	
					Limit2:	=
70						
	×					
30.0	0000.00	100.00 100.00 00	201202 00 01400	00 00000 00 000	0.00 10	
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	0.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10590.000	36.41	15.12	51.53	74.00	-22.47	peak
N/A						
						2 2 2 2

fundamental frequency.



est Mode		02.11n HT4 '95 MHz	0/ Te	emp/Hum	22(°C)/ 34%RI	
Test Item		armonic	Г	est Date	July 30, 2018	
Polarize	H	orizontal	Tes	st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	_
						_
20						_
70						
	×					-
	3					
	Î					
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	10.00 48	000.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
10590.000	42.37	15.12	57.49	74.00	-16.51	peak
10590.000	33.86	15.12	48.98	54.00	-5.02	AVG
N/A						
mark:						



est Mode		2.11ac VHT8 75 MHz	<sup>80/</sup> Te	emp/Hum	22(°C)/ 34%R	
est Item		rmonic		est Date		0, 2018
Polarize	1/5	ertical		t Engineer	Jerry	Chuang
Detector	Peak a	nd Average				
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
	*					
30.0	00 8800.00 12	2700.00 16600.00	) 20500.00 24400.	00 28300.00 3220	0.00 40	000.00 MHz
1000.000 4300.0	JU 8800.00 1.	2700.00 16600.00	20300.00 24400.	00 28300.00 3221	10.00 40	000.00 MH2
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11530.000	36.56	16.07	52.63	74.00	-21.37	peak
N/A						
emark:		·				

fundamental frequency.



est Mode		2.11ac VHT8 75 MHz	30/ Te	emp/Hum	22(°C)/ 34%R	
est Item	100-00	armonic	Т	est Date	July 3	0, 2018
Polarize		rizontal	Tes	st Engineer		Chuang
Detector	Peak a	nd Average				
110.0 dBu¥/m						
					Limit1:	-
					Limit2:	_
70						
	,					
	1					_
	×					
30.0						
1000.000 4900.	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 322	00.00 40	000.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
11520.000	44.20	16.06	60.26	74.00	-13.74	peak
11520.000	34.66	16.06	50.72	54.00	-3.28	AVG
N/A						



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#### For Dipole Antenna

## Above 1G Test Data for UNII-1

Test Mode	IE	EEE 802.11a 5180MHZ	1/ Т	emp/Hum	22(°C)/	34%RH
Test Item		Harmonic	-	Test Date	July 30, 2018	
Polarize		Vertical	Te	st Engineer		Chuang
Detector	Pea	ak and Avera	age			
110.0 dBu∀/m						
					Linit1: Linit2:	
70	×1 ×					
30.0 1000.000 4300.0 Frequency (MHz)	00 8800.00 1 Reading (dBuV)	2700.00 16600.00 Correct Factor	20500.00 24400 Result (dBuV/m)	1.00 28300.00 3220 Limit (dBuV/m)	0.00 40 Margin (dB)	000.00 MHz Remark
	1000	(dB/m)		1000000000000		
10360.000	47.24	14.45	61.69	74.00	-12.31	peak
10360.000	35.87	14.45	50.32	54.00	-3.68	AVG
N/A						
	t	<del>   </del>			-	

 Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Test Mode	18	EEE 802.11a 5180MHZ	E.C	emp/Hum	22(°C)/ 34%R	
Test Item		Harmonic		Fest Date	July 3	0, 2018
Polarize		Horizontal	Tes	st Engineer	Jerry	Chuang
Detector	Pe	ak and Aver	age			
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
						_
	ł	-				_
						_
38.0 1000.000 4900.0	00 8800.00 1	2700.00 16600.00	20500.00 24400	.00 28300.00 322	00.00 49	000.00 MHz
		Correct				
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10360.000	35.81	14.45	50.26	74.00	-23.74	peak
N/A						

fundamental frequency.



Test Mode	IE	EE 802.11a 5220 MHZ		emp/Hum	22(°C)/ 34%R	
Test Item		Horizontal		Fest Date	July 3	0, 2018
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	_
70						
	1	_				
	×					
-	2					_
						_
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	.00 28300.00 3221	00.00 48	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remari
10440.000	43.29	14.71	58.00	74.00	-16.00	peak
10440.000	34.97	14.71	49.68	54.00	-4.32	AVG
N/A						2
						2 2

fundamental frequency.



Test Mode	IE	EE 802.11a 5220 MHz	a/ Te	emp/Hum	22(°C)/ 34%R	
Test Item		Harmonic	T	est Date	July 3	0, 2018
Polarize		Horizontal		st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBu¥/m						
					Limit1:	-
					Limit2:	-
30						
70						
						_
	¥					
30.0						
1000.000 4900.0	00 8800.00 1	2700.00 16600.00	20500.00 24400	00 28300.00 322	00.00 48	000.00 MHz
	Loos-SWACK	Correct			a support the second second	S
Frequency (MHz)	Reading (dBuV)	Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
		(dB/m)				
10440.000	32.32	14.71	47.03	74.00	-26.97	peak
N/A						
mark:						
	CARGE CONTRACTOR CONTRACTOR	10-10-10-10-10-10-10-10-10-10-10-10-10-1		Oth harmonic		



Test Mode		IE	EE 802.11 5240MHZ		Temp/H	lum	22(°C)/ 34%R	
Test Item			Harmonic		Test D	ate	July 3	0, 2018
Polarize			Vertical		Test Eng	ineer	Jerry	Chuang
Detector	9	Pea	ak and Ave	age				
110.0 dBuV/m							Limit1:	
							Limit1: Limit2:	_
70								
		¥						- C
		ş						
30.0								
1000.000 4900	0.00 880	0.00 12	2700.00 16600.0	0 20500.00 24	1400.00 283	00.00 3220	10.00 40	1000.00 MHz
Frequency (MHz)		ding uV)	Correct Factor (dB/m)	Result (dBuV/m)	1.	.imit luV/m)	Margin (dB)	Remark
10480.000	40	.92	14.84	55.76	7	4.00	-18.24	peak
10480.000	35	.08	14.84	49.92	5	4.00	-4.08	AVG
N/A								
	8	_				3 3		

fundamental frequency.



Test Mode	IE	EE 802.11a 5240MHZ	Te	emp/Hum	22(°C)/	34%RH
Test Item		Harmonic	Г	est Date	July 3	0, 2018
Polarize		Horizontal		st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBu¥/m						
					Limit1:	-
					Limit2:	_
70						
	96					_
	×					
30.0 1000.000 4900.0	0 8800.00 1	2700.00 16600.00	20500.00 24400	00 28300.00 322	00.00 40	000.00 MHz
		Correct				0
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remar
10480.000	31.82	14.84	46.66	74.00	-27.34	peak
N/A						
mark:						



Test Mode		02.11n HT2 180MHZ	0/ Te	emp/Hum	22(°C)/ 34%RH	
Test Item	Н	armonic	Т	est Date	July 3	0, 2018
Polarize	1	Vertical	Tes	st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m					Limit1:	_
					Limit2:	_
70						
	*					
	3		_			
	Î					
30.0 1000.000 4900.0	00 8800.00 12	2700.00 16600.00	0 20500.00 24400	00 28300.00 3220	10.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10360.000	46.93	14.45	61.38	74.00	-12.62	peak
10360.000	35.77	14.45	50.22	54.00	-3.78	AVG
N/A						
						2

fundamental frequency.



Test Mode	220 H & V & CONTRACTOR	302.11n HT2 180MHZ	20/ Te	emp/Hum	22(°C)/ 34%R	
Test Item	F	larmonic	Т	est Date	July 30, 2018	
Polarize		lorizontal		t Engineer	Jerry	Chuang
Detector	Peak	and Averag	je 🔤			
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
						_
	ł					
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	) 20500.00 24400.	00 28300.00 3221	10.00 48	000.00 MHz
		Common to				
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10360.000	33.97	14.45	48.42	74.00	-25.58	peak
N/A						
						2 2 2

fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

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Test Mode	Vice provide the second	02.11n HT2 220MHZ	20 / T	emp/Hum	22(°C)/ 34%R	
Test Item	F	larmonic		Test Date	July 3	0, 2018
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m					Limit1:	_
					Limit2:	_
70						
	1					
	70					
30.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	1.00 28300.00 3221	10.09 49	008.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10440.000	46.05	14.71	60.76	74.00	-13.24	peak
10440.00 <mark>0</mark>	34.98	14.71	49.69	54.00	-4.31	AVG
N/A						
						2

fundamental frequency.



Test Mode	V02-226-004-00-00-0	02.11n HT2 220MHZ	20 / Te	emp/Hum	22(°C)/ 34%R	
Test Item	H	larmonic	Т	est Date	July 3	0, 2018
Polarize	F	orizontal	Tes	st Engineer	Jerry	Chuang
Detector	Peak	and Averag	e			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	_
70						
-						
	*					
30.0						
1000.000 4900.0	0 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 322	00.00 49	000.00 MHz
Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
10430.000	36. <mark>4</mark> 4	14.67	51.11	74.00	-22.89	peak
N/A						
mark:						



Test Mode		02.11n HT2 240MHZ	0/ T	emp/Hum	22(°C)/ 34%RF	
Test Item	Н	armonic		est Date		0, 2018
Polarize		/ertical		st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBu¥/m					Limit1:	
					Limit2:	=
70						
	*					
	ş					
30.0 1000.000 4900.0	00 8800.00 12	2700.00 16600.00	) 20500.00 24400	.00 28300.00 3220	10.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10480.000	45.29	14.84	60.13	74.00	-13.87	peak
10480.000	35.01	14.84	49.85	54.00	-4.15	AVG
N/A						

fundamental frequency.2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

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est Mode		02.11n HT2 240MHZ	0/ Те	emp/Hum	22(°C)/ 34%R	
Test Item	Н	armonic	Г	est Date	July 30, 2018	
Polarize	H	orizontal	Tes	t Engineer		Chuang
Detector	Peak	and Average	9			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	_
70						
						-
	1					
	×					
10.000						
30.0	0 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 322	00.00 49	900.00 MHz
1000.000 4300.0	0 6800.00 12	2700.00 16600.00	20300.00 24400.	00 26300.00 322	UU.UU .40	UUU.UU MH2
		Correct				0
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10480.000	32.72	14.84	47.56	74.00	-26.44	peak
N/A						
						о. 
mark:						10- 



Test Mode	Vite the second second	02.11n HT4 190MHZ	10 / т	emp/Hum	22(°C)/ 34%R	
Test Item	H	larmonic		Test Date	July 3	0, 2018
Polarize	12	Vertical		st Engineer	Jerry	Chuang
Detector	Peak	and Average	je			
110.0 dBu¥/m						
					Linit1: Linit2:	_
70						
	1					_
	Š.					
30.0 1000.000 4900.	00 8800.00 1:	2700.00 16600.00	) 20500.00 24400	1.00 28300.00 3221	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10380.000	39.52	14.50	54.02	74.00	-19.98	peak
10380.000	31.18	14.50	45.68	54.00	-8.32	AVG
N/A						

fundamental frequency.



Test Mode	V12-226 001-200-00	02.11n HT4 190MHZ	0 / Τε	emp/Hum	22(°C)/ 34%R	
Test Item	H	larmonic	Т	est Date	July 30, 2018	
Polarize		orizontal		t Engineer	Jerry	Chuang
Detector	Peak	and Averag	e			
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
_						-
	X					
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10380.000	32.70	14.50	47.20	74.00	-26.80	peak
N/A						
mark:					3	S.

fundamental frequency.



Fest Mode		02. <mark>11</mark> n HT4 230MHZ	07 Te	emp/Hum	22(°C)/ 34%RH	
Test Item	Н	armonic	1	est Date	July 3	0, 2018
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m					Limit1:	
					Limit2:	=
70						
	1					
	X					
30.0						
1000.000 4900.0	00 8800.00 1.	2700.00 16600.00	20500.00 24400	.00 28300.00 3220	00.00 40	000.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
10460.000	44.93	14.79	59.72	74.00	-14.28	peak
10460.000	35.58	14.79	50.37	54.00	-3.63	AVG
N/A					l. Î	

fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

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est Mode		02.11n HT40 230MHZ	0/ Те	emp/Hum	22(°C)/ 34%RH	
Test Item		armonic	Т	est Date	July 3	0, 2018
Polarize	H	orizontal	Tes	t Engineer	Jerry	Chuang
Detector	Peak a	and Average				
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
	×					
						_
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	10.00 48	000.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
10460.000	36.2 <mark>1</mark>	14.79	51.00	74.00	-23.00	peak
N/A						
mark						
emark:		ncies from 1				



est Mode		.11ac VHT8 10MHZ	0 / Te	Temp/Hum		34%RH
Fest Item		rmonic		est Date		0, 2018
Polarize		ertical		t Engineer	Jerry (	Chuang
Detector	Peak a	nd Average				
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
	×					
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	10.00 49	000.00 MHz
						6
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10420.000	36.52	14.66	51.18	74.00	-22.82	peak
N/A						

fundamental frequency.



est Mode		.11ac VHT8 10MHZ	0/ Те	emp/Hum	22(°C)/ 34%RH	
est Item	10000	rmonic	Т	est Date	July 3	0, 2018
Polarize	Ho	rizontal	Tes	t Engineer		Chuang
Detector	Peak a	nd Average				
110.0 dBuV/m						
					Limit1:	-
					Linit2:	_
70						
70						
						-
	1					
	Ť					
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3220	10.00 40	000.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
10420.000	33.65	14.66	48.31	74.00	-25.69	peak
N/A						
						v
emark:						



#### Above 1G Test Data for UNII-3

Test Mode	IE	EE 802.11a 5745 MHz	a/ Te	emp/Hum	22(°C)/ 34%R	
Test Item		Harmonic		Fest Date	July 3	0, 2018
Polarize		Vertical		st Engineer		Chuang
Detector	Pea	ak and Avera				
110.0 dBuV/m					Limit1: Limit2:	_
70						
30.0 1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	.00 28300.00 322	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remar
11490.000	45.38	16.09	61.47	74.00	-12.53	peak
11490.000	34.37	16.09	50.46	54.00	-3.54	AVG
N/A						



Test Mode	IE	EE 802.11a 5745 MHz	a/ Te	emp/Hum	22(°C)/ 34%RH	
Test Item		Harmonic	1	est Date	July 3	0, 2018
Polarize		Horizontal	Tes	st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBu¥/m						
					Limit1: Limit2:	_
70						
	*					_
						_
30.0						
1000.000 4900.0	00 8800.00 1.	2700.00 16600.00	20500.00 24400	.00 28300.00 322	00.00 48	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	35.94	16.09	52.03	74.00	-21.97	peak
N/A						
						2 2 2

fundamental frequency.



Test Mode	IE	EE 802.11a 5785 MHz	a/ Te	emp/Hum	22(°C)/ 34%R	
Test Item		Harmonic		est Date	July 3	0, 2018
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBu¥/m						
					Limit1:	-
					Limit2:	_
70						
	×					
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
						_
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 3220	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remari
11570.000	45.64	16.01	61.65	74.00	-12.35	peak
11570.000	34.47	16.01	50.48	54.00	- <u>3.5</u> 2	AVG
N/A	r					8
						2 5.
			-			

fundamental frequency.



Test Mode	IE	EE 802.11a 5785 MHz	a/ Te	emp/Hum	22(°C)/ 34%R	
Test Item		Harmonic	1	lest Date	July 3	0, 2018
Polarize		Horizontal		st Engineer	Jerry	Chuang
Detector	Pea	ak and Aver	age			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	-
70						
-	1					
	×					
12122						
30.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 322	00.00 49	000.00 MHz
1000.000 4300.0	00 000000 11	10000.00	20300.00 24400	.00 20300.00 322	00.00 .40	000.00 MH2
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remar
11570.000	37.10	16.01	53.11	74.00	-20.89	peak
N/A						
					0	10



Test Mode	IE	EE 802.11a 5825 MHz	Te	emp/Hum	22(°C)/ 34%RH	
Test Item		Harmonic	1	est Date	July 3	0, 2018
Polarize		Vertical	Tes	st Engineer	Jerry	Chuang
Detector	Pea	ak and Avera	age			
110.0 dBuV/m						
					Linit1:	-
					Limit2:	_
70						
	1					
	*	2				_
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 322	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	43.64	15.93	59.57	74.00	-1 <mark>4.4</mark> 3	peak
11650.000	34.84	15.93	50.77	54.00	-3.23	AVG
N/A					l l	
mark:						



Test Mode	IE	EE 802.11a 5825 MHz	1/ Те	emp/Hum	22(°C)/ 34%RI	
Test Item		Harmonic		lest Date		0, 2018
Polarize		Horizontal		st Engineer	Jerry	Chuang
Detector	Pea	ak and Avera	age			
110.0 dBuV/m						
					Limit1:	—
					Limit2:	_
70						
-	1					
	*					
10.000						
30.0		0700.00 40000.00	201202.00			
1000.000 4900.	00 8800.00 12	2700.00 16600.00	20500.00 24400	.00 28300.00 322	00.00 49	000.00 MHz
Frequency	Reading	Correct Factor	Result	Limit	Margin	Remari
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
11650.000	37.09	15.93	53.02	74.00	-20.98	peak
CONTRACTOR STATE OF STATE						
N/A						1
N/A						
N/A					_	
N/A						
N/A mark:						



Test Mode		02.11n HT2 745 MHz	0 / Te	emp/Hum	22(°C)/ 34%RH	
Test Item	-	larmonic	1	est Date	July 3	0, 2018
Polarize		Vertical	Tes	st Engineer	Jerry	Chuang
Detector	Peak	and Averag	e			
110.0 dBu∀/m						
					Limit1: Limit2:	_
70	1					
						_
	20					_
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 3220	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	47.41	16.09	63.50	74.00	-10.50	peak
11490.000	34.09	16.09	50.18	54.00	-3.82	AVG
N/A						
emark:						
	uring fragues	icios from 1	CHI to the 1	Oth harmonic	of highast	



Test Mode	Vite the construction of	02.11n HT2 745 MHz	20 / T	emp/Hum	22(°C)/ 34%RH	
Test Item	H	armonic		Fest Date	July 3	0, 2018
Polarize	7. · · · · · · · · · · · · · · · · · · ·	orizontal		st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBu¥/m					Limit1:	
					Limit2:	_
70						
-	1					
	X					
30.0						
1000.000 4900.	00 8800.00 12	2700.00 16600.00	20500.00 24400	.00 28300.00 3220	10.00 49	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	38.31	16.09	54.40	74.00	-1 <mark>9.6</mark> 0	peak
11490.000	26.76	16.09	42.85	54.00	-11.15	AVG
N/A						

fundamental frequency.



Test Mode	221112 CONTRACTOR	302.11n HT2 785 MHz	20/ T	emp/Hum	22(°C)/ 34%RH	
Test Item	ŀ	larmonic		est Date	July 3	0, 2018
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Peak	and Average	je 🔤			
110.0 dBu¥/m					Limit1: Limit2:	-
70	1					
30.0 1000.000 4900.0 Frequency (MHz)	0 8800.00 1: Reading (dBuV)	2700.00 16600.00 Correct Factor	20500.00 24400 Result (dBuV/m)	.00 28300.00 3221 Limit (dBuV/m)	0.00 40 Margin (dB)	000.00 MHz Remark
		(dB/m)				
11570.000	44.53	16.01	60.54	74.00	-13.46	peak
11570.000	33.94	16.01	49.95	54.00	-4.05	AVG
N/A						
					l l	1



Test Mode	22.112.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.	302.11n HT2 785 MHz	20/ Te	emp/Hum	22(°C)/ 34%RH	
Test Item	-	larmonic	Т	est Date	July 3	0, 2018
Polarize	F	orizontal	Tes	t Engineer	Jerry	Chuang
Detector	Peak	and Averag	e			
110.0 dBuV/m						
					Linit1: Linit2:	
						_
70						
						_
						_
						_
30.0	N 0000 00 1	2200.00 10000.00	20500.00 24400	00 00000 00 000	00.00 10	000.00.444
1000.000 4900.0	0 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 322	00.00 40	000.00 MHz
	10000	Correct		220423	1000	
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11570.000	37.50	16.01	53.51	74.00	-20.49	peak
N/A						
mark:						



Fest Mode		02.11n HT2 325 MHz	0/ T	emp/Hum	22(°C)/	34%RH
Test Item		armonic		est Date	July 3	0, 2018
Polarize	1	Vertical	Tes	st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBu¥7m					Linit1: Linit2:	=
70						
30.0	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2700.00 16600.00	) 20500.00 24400	.00 28300.00 3221	00.00 49	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	44.41	15.93	60.34	74.00	-13.66	peak
11650.000	34.29	15.93	50.22	54.00	-3.78	AVG
N/A						

fundamental frequency.



est Mode		02.11n HT2 325 MHz	0/ Te	emp/Hum	22(°C)/ 34%RH	
Test Item		armonic	Г	Test Date		0, 2018
Polarize	H	orizontal	Tes	t Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m					Limit1:	_
					Limit2:	_
70						
						_
-	1					_
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.08 24400.	00 28300.00 3220	0.00 48	008.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	37.75	15.93	53.68	74.00	-20.32	peak
N/A						
mark:						



Tes <mark>t Mo</mark> de		302.11n HT4 755 MHz	40/ Te	emp/Hum	22(°C)/ 34%RH	
Test Item		larmonic	٦	est Date	July 3	0, 2018
Polarize		Vertical	Tes	st Engineer	Jerry	Chuang
Detector	Peak	and Averag	e			
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
	4					
-		_				
	Î					
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	00 28300.00 322	00.00 48	000.00 MHz
		Correct				12
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11500.000	44.01	16.09	60.10	74.00	-13.90	peak
11500.000	34.12	16.09	50.21	54.00	-3.79	AVG
N/A						2
mark:						



est Mode		02.11n HT4 '55 MHz	0/ T	em <mark>p/Hu</mark> m	22(°C)/ 34%RI	
Test Item		armonic		lest Date	July 30, 2018	
Polarize		orizontal		st Engineer	Jerry	Chuang
Detector	Peaka	and Average	e			
110.0 dBuV/m					Limit1:	
					Limit2:	_
70						
10						
-	1					_
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400	.00 28300.00 3220	0.00 40	000.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
11500.000	35.96	16.09	52.05	74.00	-21.95	peak
N/A						

fundamental frequency.



Fest Mode		02.11n HT4 795 MHz	0/ T	emp/Hum	22(°C)/ 34%RH	
Test Item		armonic		est Date	July 3	0, 2018
Polarize	1	Vertical	Tes	st Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m					Linit1: Linit2:	_
70	1					
	1					
30.0 1000.000 4900.	00 8800.00 1:	2700.00 16600.00	) 20500.00 24400	.00 28300.00 3221	00.00 49	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11590.000	44.88	16.00	60.88	74.00	-13.12	peak
11590.000	34.55	16.00	50.55	54.00	-3.45	AVG
N/A						

fundamental frequency.



est Mode		02.11n HT4 795 MHz	0/ Te	em <mark>p/Hu</mark> m	22(°C)/ 34%R	
Test Item		armonic	Г	est Date	July 3	0, 2018
Polarize	H	orizontal	Tes	t Engineer	Jerry	Chuang
Detector	Peak	and Average	e			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	_
70						
-						
	×					
30.0	0 0000 00 1	2700.00 16600.00	20500.00 24400	00 28300.00 322	00.00 49	000.00 MHz
1000.000 4900.0	0 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 322	00.00 .48	UUU.UU MHZ
		Correct		1117-111 <b>8</b>		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11590.000	35.23	16.00	51.23	74.00	-22.77	peak
N/A						
			·			
mark:						



est Mode		.11ac VHT8 75 MHz	30/ Te	emp/Hum	22(°C)/ 34%RH	
est Item		rmonic	Т	est Date	July 3	0, 2018
Polarize	V	ertical	Tes	t Engineer		Chuang
Detector	Peak a	nd Average				
110.0 dBuV/m						
					Limit1: Limit2:	_
70						
10	1					
						_
	Î					
30.0						
1000.000 4900.0	00 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 3221	00.00 40	000.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11510.000	43.82	16.08	59.90	74.00	-1 <mark>4</mark> .10	peak
11510.000	34.38	16.08	50.46	54.00	-3.54	AVG
N/A						
emark:						
	uring frequer	icies from 1	GHz to the 1	0th harmonic	of highest	



est Mode		2.11ac VHT8 75 MHz	80/ Te	emp/Hum	22(°C)/ 34%RH	
est Item	Ha	rmonic	Т	est Date	July 3	0, 2018
Polarize	Но	rizontal	Tes	st Engineer	Jerry	Chuang
Detector	Peak a	nd Average				
110.0 dBu¥/m						
					Limit1: Limit2:	-
						_
						_
70						
	1					
	Î					
30.0						
1000.000 4900.0	06 8800.00 12	2700.00 16600.00	20500.00 24400.	00 28300.00 322	00.00 48	000.00 MHz
	CONCERNANT OF	Correct			Sector Sector	
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11550.000	34.37	16.04	50.41	74.00	-23.59	peak
N/A						
					-	
emark:						
		naina frans 4	GHz to the 1	Oth hammania	of high and	



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# **4.6FREQUENCY STABILITY**

## 4.6.1 Test Limit

According to RSS-Gen(6.11) manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the operational description.

## 4.6.2 Test Procedure

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

## 4.6.3 Test Setup

Spectrum analyzer

Variable Power Supply



## 4.6.4 Test Result

		Measured Frequency	51	80	(MHz)					
Temp. (°C)	Voltage (V)		Time (min	1)						Result
Operating	Frequency:	0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	1
50	Normal	5180.10320	5180.07641	5180.10120	5180.10090	19.9228	14.7510	19.5367	19.4788	Pass
40	Normal	5180.09510	5180.09514	5180.09423	5180.09231	18.3591	18.3658	18.1911	17.8205	Pass
30	Normal	5180.08123	5180.08412	5180.07641	5180.07964	15.6815	16.2394	14.7510	15.3745	Pass
20	Normal	5180.08531	5180.07561	5179.98310	5180.06513	16.4691	14.5965	-3.2625	12.5734	Pass
10	Normal	5180.04564	5180.08531	5180.04645	5180.03156	8.8108	16.4691	8.9672	6.0927	Pass
0	Normal	5180.02199	5180.02564	5180.03457	5180.02000	4.2450	4.9506	6.6735	3.8610	Pass
-10	Normal	5180.00156	5180.00321	5180.07641	5180.07910	0.3012	0.6197	14.7510	15.2703	Pass
-20	Normal	5179.98310	5180.10090	5180.03156	5179.94532	-3.2625	19.4788	6.0927	-10.5560	Pass
_		Measured Frequency	51	80	(MHz)					
Temp. (°C)	Voltage (V)		Time (min)							Result
Operating	Frequency:	0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	ĺ
20	Minimum	5180.085250	5180.08531	5180.05325	5180.06432	16.4575	16.4691	10.2799	12.4170	Pass
20	Normal	5180.08531	5180.07561	5179.98310	51 <mark>80.06513</mark>	16.4691	14.5965	-3.2625	12.5734	Pass
20	Maximum	5180.084320	5180.06150	5180.06312	5180.07651	16.2780	11.8726	12.1853	14.7703	Pass

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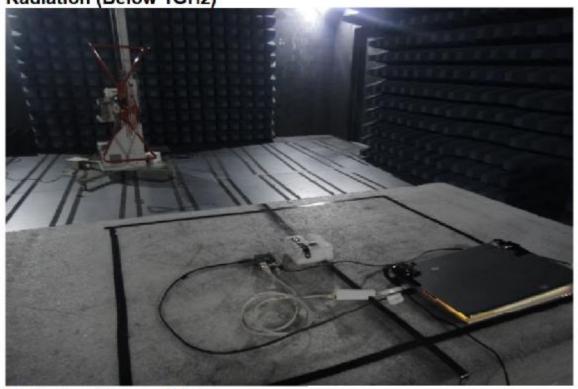


-		Measured Frequency	57	45	(MHz)					
Temp. (°C)	Voltage (V)		Time (min	1)						Result
Operating	Frequency:	0 min	2 <mark>m</mark> in	5 min	10 min	0 min	2 min	5 min	10 min	1
50	Normal	57 <mark>45.10</mark> 549	5745.10189	5745.10695	5745.10980	18.3619	17.7354	18.6157	19.1123	Pass
40	Normal	5745.09784	5745.00071	5745.09212	5745.00040	17.0306	0.1238	16. <mark>0</mark> 353	0.0696	Pass
30	Normal	5745.08412	5745.08048	5745.05059	5745.07022	14.6428	14.0085	8.8057	12.2222	Pass
20	Normal	5745.07023	5745.07319	5745.07154	5745.07945	12.2247	12.7391	12.4519	13.8296	Pass
10	Normal	57 <mark>45.0</mark> 5153	5745.05123	5745.05979	5745.05059	8.9697	8.9175	10.4071	8.8057	Pass
0	Normal	5745.03486	5745.03741	5745.03312	5745.03987	6.0687	6.5117	5.7654	6.9406	Pass
-10	Normal	5745.08412	5745.09078	5745.00923	5745.00874	14.6428	15.8016	1.6069	1.5215	Pass
-20	Normal	5745.00040	5745.00048	5745.00071	5745.00084	0.0696	0.0833	0.1238	0.1464	Pass
		Measured Frequency	57	45	(MHz)					
Temp. (°C)	Voltage (V)		Time (min)							Result
Operating Frequency		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	1
20	Minimum	5745.06916	5745.06915	5745.06905	5745.06811	12.0376	12.0362	12.0188	11.8555	Pass
20	Normal	5745.07023	5745.07319	5745.07154	5745.07945	12.2247	12.7391	12.4519	13.8296	Pass
20	Maximum	5745.07123	5745.07849	5745.07278	5745.07212	12.3988	13.6625	12.6684	12.5541	Pass

--End of Report--



APPENDIX- Test Photo For PIFA Antenna Radiation (Below 1GHz) Page: A-1 / A-4 Rev.: 02



Radiation (Above 1GHz)

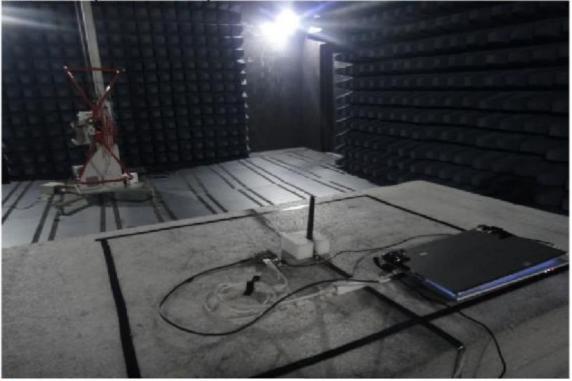


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## For Dipole Antenna Radiation (Below 1GHz)



Radiation (Above 1GHz)

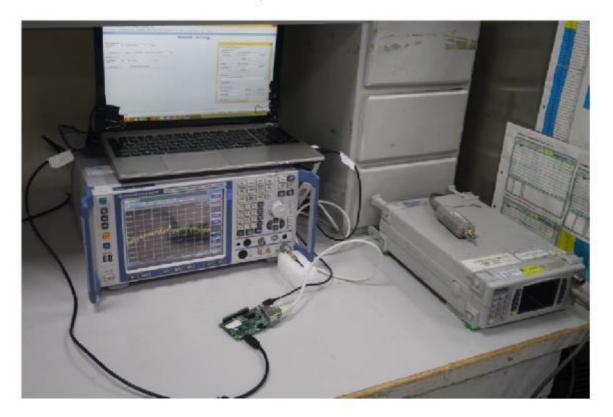


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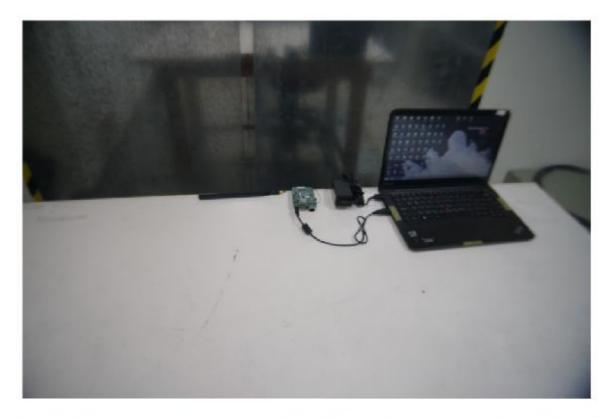
# **Conducted Emission Set up Photo**





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## Conduction





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ISED: 22364-QCA9377 Report No.: T180627D11-RC1 Page: 1 / 87 Rev.: 02

# RADIO TEST REPORT INDUSTRY CANADA RSS-247

Test Standard	ISED RSS-247 issue 2
Product name	WiFi+Bluetooth 4.1(HS) System on Module
Brand Name	TechNexion
Model No.	PIXI-9377
Test Result	Pass

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory)

Approved by:

Reviewed by:

Sam Chuang

Sam Chuang Manager

Chione

Jerry Chuang Engineer

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(a) are retained for 90 days only. 除非另有說明,此報告結果僅對潮試之權品負責。同時此權品價保留90天。本報告未經本公司書面許可。不可當分複製。

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# Revision History

Rev.	Issue Date	Revisions	Revised By
00	August 28, 2018	Initial Issue	May Lin
01	September 20, 2018	<ol> <li>Added information about the FHSS characteristics in P.5.</li> <li>Revised 1.1 EUT information antenna information in P.4, P.6.</li> <li>Revised the test procedure in P.19, P.33.</li> <li>Revised the test result and test data in P.26, P.38-39.</li> <li>Added note in P.29-30, P.35, P.39.</li> <li>Update KDB 937606 to KDB 414788 in P.40.</li> </ol>	May Lin
02	September 27, 2018	1. Revised the worst mode of measurement in P.13.	May Lin



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# 1. GENERAL INFORMATION

# **1.1 EUT INFORMATION**

Applicant	TechNexion Ltd. 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipei City 23511 Taiwan ROC
Manufacturer	TechNexion Ltd. 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipei City 23511 Taiwan ROC
Equipment	WiFi+Bluetooth 4.1(HS) System on Module
Model No.	PIXI-9377
Model Discrepancy	N/A
Trade Name	TechNexion
Received Date	June 27, 2018
Date of Test	July 16 ~August 10, 2018
Output Power (W)	GFSK : 0.0111 (EIRP: 0.0279) 8DPSK : 0.0097 (EIRP: 0.0244)
Power Operation	Power by host system
HW Version	A1
FW Version	A1



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## 1.2 INFORMATION ABOUT THE FHSS CHARACTERISTICS

## 1.2.1 Pseudorandom Frequency Hopping Sequence

The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels. The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master; the phase in the hopping sequence is determined by the Bluetooth clock of the master. The channel is divided into time slots where each slot corresponds to an RF hop frequency. Consecutive hops correspond to different RF hop frequencies. The nominal hop rate is 1 600 hops/s.

## 1.2.2 Equal Hopping Frequency Use

The channels of this system will be used equally over the long-term distribution of the hopsets.

## 1.2.3 Example of a 79 hopping sequence in data mode:

02, 05, 31, 24, 20, 10, 43, 36, 30, 23, 40, 06, 21, 50, 44, 09, 71, 78, 01, 13, 73, 07, 70, 72, 35, 62, 42, 11, 41, 08, 16, 29, 60, 15, 34, 61, 58, 04, 67, 12, 22, 53, 57, 18, 27, 76, 39, 32, 17, 77, 52, 33, 56, 46, 37, 47, 64, 49, 45, 38, 69, 14, 51, 26, 79, 19, 28, 65, 75, 54, 48, 03, 25, 66, 05, 16, 68, 74, 59, 63, 55

## 1.2.4 System Receiver Input Bandwidth

Each channel bandwidth is 1MHz.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

## 1.2.5 Equipment Description

15.247(a)(1) that the Rx input bandwidths shift frequencies in synchronization with the transmitted signals.

15.247(g): In accordance with the Bluetooth Industry Standard, the system is designed to comply with all of the regulations in Section 15.247 when the transmitter is presented with a continuous data (or information) system.

15.247(h): In accordance with the Bluetooth Industry Standard, the system does not coordinate it channels selection/ hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.



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# **1.3 EUT CHANNEL INFORMATION**

Frequency Range	2402MHz-2480MHz	
Modulation Type	1. GFSK for BR-1Mbps 2. π/4-DQPSK for EDR-2Mbps 3. 8DPSK for EDR-3Mbps	
Number of channel	79 Channels	

#### Remark:

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 and RSS-GEN Table 1 for test channels

Numbe	er of frequencies to	be tested
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

# **1.4ANTENNA INFORMATION**

Antenna Type	na Type PIFA PCB Coils						
		Brand	P/N	Туре	Peak Gain	Worst Mode	
Antenna Gain	Antenna 1	TechNexion	VM2450-25523-OOX-180	PIFA	2.5dBi	X	
	Antenna 2	TechNexion	VM2450-ASSY1005	Dipole	4dBi	0	



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# 1.5 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.



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# 1.6 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark	
AC Conduction Room	Dally Hong	( <b>1</b> 1)	
Radiation	Jerry Chuang	-	
RF Conducted	Jerry Chuang	-	

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.



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## 1.7 INSTRUMENT CALIBRATION

		RF Conducte	d Test Site		
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	06/29/2018	06/28/2019
Power Meter	Anritsu	ML2495A	1012009	09/18/2017	09/17/2018
Power Seneor	Anritsu	MA2411B	1126148	02/06/2018	02/05/2019
Signal Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018
		Wugu 966 C	hamber A		-
Name of Equipment	t Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Band Reject Filters	MICRO TRONICS	BRM 50702	120	05/14/2018	05/13/2019
Bilog Antenna	Sunol Sciences	JB3	A030105	07/13/2018	07/12/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	07/31/2017	07/30/2018
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	02/08/2018	02/07/2019
Double Ridged Guide Horn Antenna	' ETC	MCTD 1209	DRH13M02003	08/25/2017	08/24/2018
Loop Ant	COM-POWER	AL-130	121051	03/21/2018	03/20/2019
Pre-Amplifier	EMEC	EM330	060609	06/29/2018	06/28/2019
Pre-Amplifier	HP	8449B	3008A00965	06/29/2018	06/28/2019
PSA Series Spectrum Analyzer	n Agilent	E4446A	MY46180323	05/31/2018	05/30/2019
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	ccs	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R

Conducted Emission Room # B					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
LISN	R&S	ENV216	101054	02/06/2018	02/05/2019
LISN	SCHWARZBECK	NSLK 8127	8127-541	02/09/2018	02/08/2019
EMI Test Receiver	R&S	ESCI	101203	11/02/2017	11/01/2018
CABLE	EMCI	CFD300-NL	CERF	07/03/2018	07/02/2019

Remark: Each piece of equipment is scheduled for calibration once a year.



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## 1.8 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

Support Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	NB(K)	Toshiba	voyager	ZD 154034s	N/A
2	NB	Lenovo	TP00056A	R33B65	PD97260HU

# 1.9 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, RSS-247 Issue 2 and RSS-GEN Issue 5.



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## 2. TEST SUMMERY

IC Standard Section	Report Section	Test Item	Result
1	1.3	Antenna Requirement	Pass
RSS-GEN 8.8	4.1	AC Conducted Emission	Pass
RSS-247(5.1)(a)	4.2	20 dB Bandwidth	Pass
RSS-GEN 6.7	4.2	Occupied Bandwidth (99%)	Pass
RSS-247(5.4)(b)	4.3	Output Power Measurement	Pass
RSS-247(5.1)(b)	4.4	Frequency Separation	Pass
RSS-247(5.1)(d)	4.5	Number of Hopping	Pass
RSS-247(5.5)	4.6	Conducted Band Edge	Pass
RSS-247(5.5)	4.6	Conducted Emission	Pass
RSS-247(5.1)(d)	4.7	Time of Occupancy	Pass
RSS-GEN 8.9, 8.10	4.8	Radiation Band Edge	Pass
RSS-GEN 8.9, 8.10	4.8	Radiation Spurious Emission	Pass



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## 3. DESCRIPTION OF TEST MODES

## 3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	GFSK for BR-1Mbps (DH5) 8DPSK for EDR-3Mbps (3DH5)
Test Channel Frequencies	GFSK for BR-1Mbps: 1.Lowest Channel : 2402MHz 2.Middle Channel : 2441MHz 3.Highest Channel : 2480MHz 8DPSK for EDR-3Mbps: 1.Lowest Channel : 2402MHz 2.Middle Channel : 2441MHz 3.Highest Channel : 2480MHz

Remark:

Ē

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.



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## 3.2 THE WORST MODE OF MEASUREMENT

#### For PIFA Antenna

Radiated Emission Measurement Below 1G				
Test Condition Radiated Emission Below 1G				
Power supply Mode	Power supply Mode Mode 1: EUT power by host system			
Worst Mode   Mode 1 Mode 2 Mode 3 Mode 4				

	Radiated Emission Measurement Above 1G			
Test Condition	Band edge, Emission for Unwanted and Fundamental			
Power supply Mode Mode 1: EUT power by host system				
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4			
Worst Position	<ul> <li>Placed in fixed position.</li> <li>Placed in fixed position at X-Plane (E2-Plane)</li> <li>Placed in fixed position at Y-Plane (E1-Plane)</li> <li>Placed in fixed position at Z-Plane (H-Plane)</li> </ul>			
Worst Polarity	Horizontal 🗌 Vertical			

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (X-Plane and Horizontal) were recorded in this report

3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.



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#### For Dipole Antenna

AC Power Line Conducted Emission			
Test Condition AC Power line conducted emission for line and neutral			
Power supply Mode Mode 1: EUT power by host system			
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4		

Radiated Emission Measurement Below 1G				
Test Condition	Radiated Emission Below 1G			
Power supply Mode	Power supply Mode Mode 1: EUT power by host system			
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4			

	Radiated Emission Measurement Above 1G		
Test Condition	Band edge, Emission for Unwanted and Fundamental		
Power supply Mode	Mode 1: EUT power by host system		
Worst Mode	🛛 Mode 1 🗌 Mode 2 🗌 Mode 3 🗌 Mode 4		
Worst Position	<ul> <li>Placed in fixed position.</li> <li>Placed in fixed position at X-Plane (E2-Plane)</li> <li>Placed in fixed position at Y-Plane (E1-Plane)</li> <li>Placed in fixed position at Z-Plane (H-Plane)</li> </ul>		
Worst Polarity	Horizontal 🖂 Vertical		

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (Z-Plane and Vertical) were recorded in this report

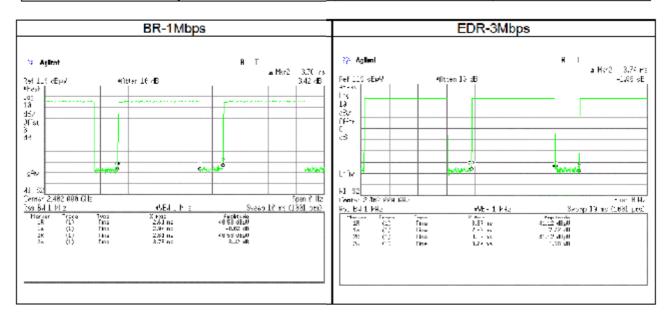
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.



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# 3.3 EUT DUTY CYCLE

	Duty Cycle				
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)		
BR-1Mbps	2.9400	3.7600	78.19%		
EDR-3Mbps	2.9200	3.7400	78.07%		





## 4. TEST RESULT

## 4.1 AC POWER LINE CONDUCTED EMISSION

#### 4.1.1 Test Limit

According to RSS-GEN section 8.8,

Frequency Range	Limits(di	BμV)
(MHz)	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

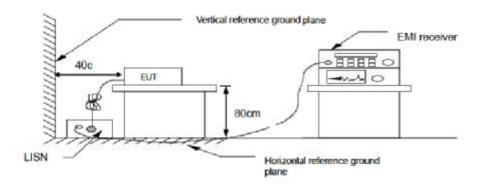
\* Decreases with the logarithm of the frequency.

#### 4.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

- The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
- 2. EUT connected to the line impedance stabilization network (LISN)
- Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
- Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. Recorded Line for Neutral and Line.

## 4.1.3 Test Setup



# 4.1.4 Test Result

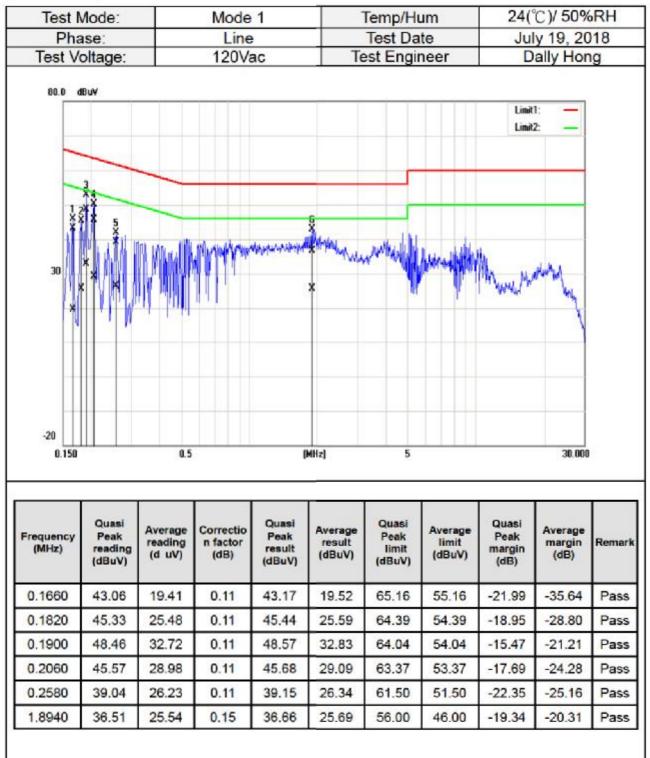
#### PASS

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## Test Data





Test N	loae:		Mode	1		Temp/H	um	24(	°C)/50%	DRH
Pha	ise:		Neutra	al		Test Da	te	Ju	ly 19, 20	18
Test Vo	est Voltage: 120Vad		ac	Test Engineer		neer	Dally Hong		ng	
80.0 d	BUV		Notrachila	Winner	han and a state of the state of		55	Limit		
									m.	
-20 0.150		0.5			MHz)	5			30.000	13
	Quasi Peak reading dBuV)	0.5 Average reading (dBuV)	Correctio n factor (dB)	Quasi Peak result (dBuV)	MHz) Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	30.000 Average margin (dB)	
0.150	Peak reading	Average reading	Correctio n factor	Quasi Peak result	Average result	Quasi Peak limit	limit	Peak margin	Average margin	Remar
0.150 Frequency (MHz)	Peak reading dBuV)	Average reading (dBuV)	Correctio n factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	limit (dBuV)	Peak margin (dB)	Average margin (dB)	Remar
0.150 Frequency (MHz) 1.8940	Peak reading dBuV) 31.03	Average reading (dBuV) 22.97	Correctio n factor (dB) 0.16	Quasi Peak result (dBuV) 31.19	Average result (dBuV) 23.13	Quasi Peak limit (dBuV) 56.00	limit (dBuV) 46.00	Peak margin (dB) -24.81	Average margin (dB) -22.87	Remar Pass Pass
0.150 Frequency (MHz) 1.8940 0.1825	Peak reading dBuV) 31.03 40.91	Average reading (dBuV) 22.97 28.44	Correctio n factor (dB) 0.16 0.13	Quasi Peak result (dBuV) 31.19 41.04	Average result (dBuV) 23.13 28.57	Quasi Peak limit (dBuV) 56.00 64.37	limit (dBuV) 46.00 54.37	Peak margin (dB) -24.81 -23.33	Average margin (dB) -22.87 -25.80	Remar Pass Pass Pass
0.150 Frequency (MHz) 1.8940 0.1825 0.2007	Peak reading dBuV) 31.03 40.91 40.02	Average reading (dBuV) 22.97 28.44 26.02	Correctio n factor (dB) 0.16 0.13 0.13	Quasi Peak result (dBuV) 31.19 41.04 40.15	Average result (dBuV) 23.13 28.57 26.15	Quasi Peak limit (dBuV) 56.00 64.37 63.58	limit (dBuV) 46.00 54.37 53.58	Peak margin (dB) -24.81 -23.33 -23.43	Average margin (dB) -22.87 -25.80 -27.43	Remark Pass Pass Pass Pass Pass



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## 4.2 20dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

### 4.2.1 Test Limit

According to RSS-247 section 5.1(a) and RSS-GEN 6.7,

20 dB Bandwidth : For reporting purposes only.

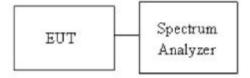
Occupied Bandwidth(99%) : For reporting purposes only.

#### 4.2.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 11.8.1,

- 1. The EUT RF output connected to the spectrum analyzer by RF cable.
- 2. Setting maximum power transmit of EUT
- SA set RBW = 30kHz, VBW = 100kHz and Detector = Peak, to measurement 20 dB Bandwidth.
- SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth.
- Measure and record the result of 20 dB Bandwidth and 99% Bandwidth. in the test report.

### 4.2.3 Test Setup





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## 4.2.4 Test Result

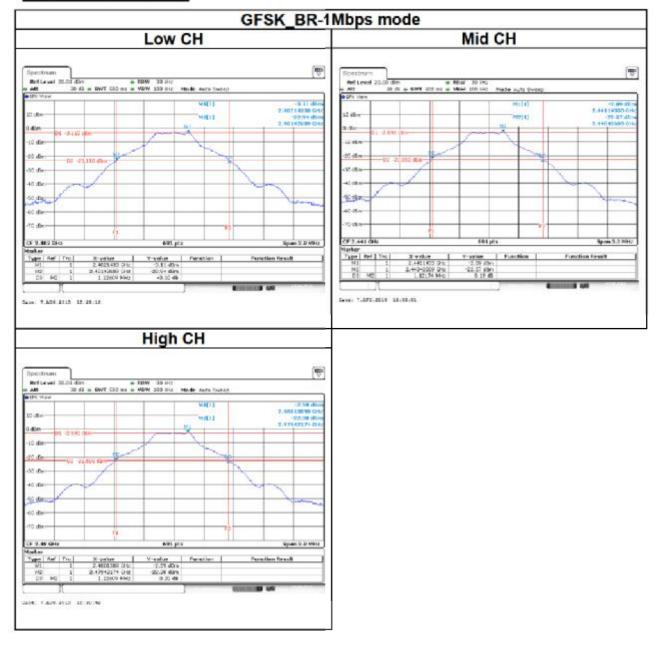
Test mode: GFSK_BR-1Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	OBW (99%) (MHz)	20dB BW (MHz)	
Low	2402	0.9073	1.1260	
Mid	2441	0.8986	1.1217	
High	2480	0.8986	1.1260	

Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	OBW (99%) (MHz)	20dB BW (MHz)	
Low	2402	1.1852	1.3869	
Mid	2441	1.1765	1.3826	
High	2480	1.1722	1.3739	



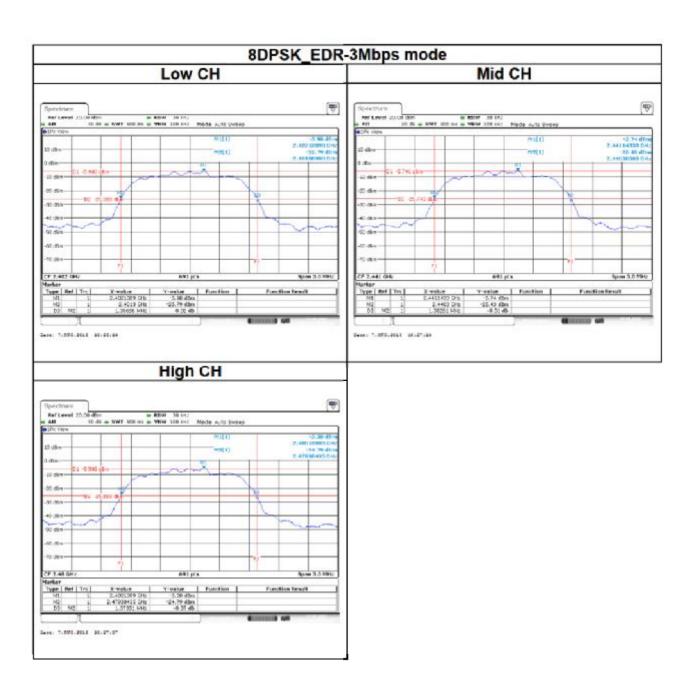
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## Test Data 20dB BANDWIDTH



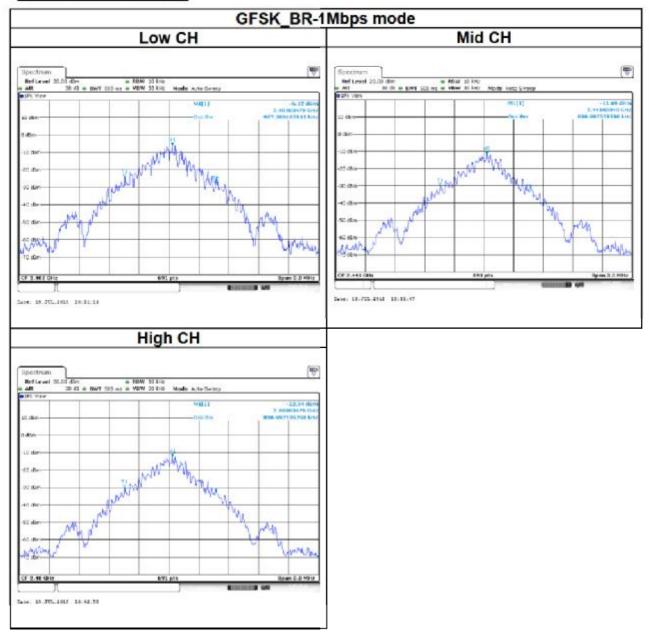


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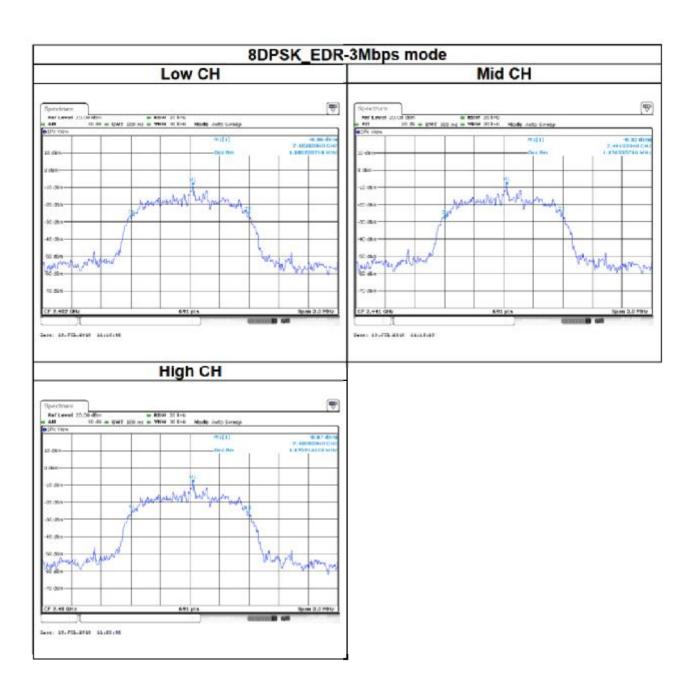


### BANDWIDTH (99%)





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## 4.3 OUTPUT POWER MEASUREMENT

## 4.3.1 Test Limit

#### Peak output power :

1. According to RSS-247 section 5.1(b), FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

2. According to RSS-247 section 5.4(b), For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).



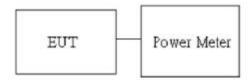
Antenna not exceed 6 dBi : 21dBm
Antenna with DG greater than 6 dBi : 21dBm [Limit = 30 – (DG – 6)]

Average output power : For reporting purposes only.

### 4.3.2 Test Procedure

- 1. The EUT RF output connected to the power meter by RF cable.
- 2. Setting maximum power transmit of EUT.
- 3. The path loss was compensated to the results for each measurement.
- Measure and record the result of Peak output power and Average output power. in the test report.

## 4.3.3 Test Setup





## 4.3.4 Test Result

#### Peak output power :

			B	Т			
Config.	СН	Freq. (MHz)	PK Power (dBm)	EIRP PK Power (dBm)	PK Power (W)	EIRP PK Power (W)	IC Limit (dBm)
GFSK	0	2402	10.13	14.13	0.0103	0.0259	
BR-1Mbps	39	2441	10.46	14.46	0.0111	0.0279	
(DH5)	78	2480	10.41	14.41	0.0110	0.0276	24
8DPSK	0	<mark>240</mark> 2	9.23	13.23	0.0084	0.0210	21
EDR- 3Mbps	39	2441	9.87	13.87	0.0097	0.0244	
(DH5)	78	2480	9.83	13.83	0.0096	0.0242	

#### Average output power :

ВТ				
Config.	СН	Freq. (MHz)	AV Power (dBm)	
GFSK	0	2402	10.00	
BR-1Mbps	39	2441	10.37	
(DH5)	78	2480	10.29	
8DPSK	0	2402	6.73	
EDR- 3Mbps	39	2441	7.03	
(DH5)	78	2480	6.99	

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## 4.4 FREQUENCY SEPARATION

## 4.4.1 Test Limit

According to RSS-247 section 5.1(b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

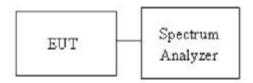
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Limit	> two-thirds of the 20 dB bandwidth
Limit	> two-thirds of the 20 dB bandwidth

### 4.4.2 Test Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. EUT RF output port connected to the SA by RF cable.
- Set the spectrum analyzer as RBW = 100kHz, VBW = 300kHz, Sweep = auto. Max hold, mark 3 peaks of hopping channel and record the 3 peaks frequency

## 4.4.3 Test Setup





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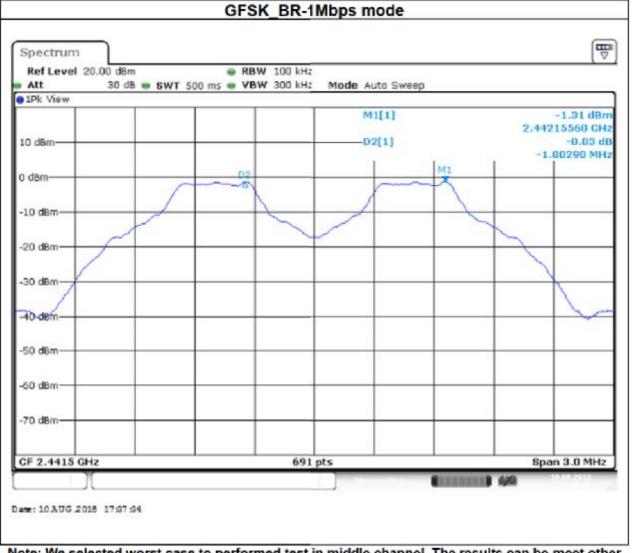
## 4.4.4 Test Result

Test mode: GFSK_BR-1Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result
Low	2402	1.0029	>0.7507	PASS
Mid	2441	1.0029	>0.7478	PASS
High	2480	1.0029	>0.7507	PASS

Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result
Low	2402	1.0029	>0.9246	PASS
Mid	2441	1.0029	>0.9217	PASS
High	2480	1.0029	>0.9159	PASS



## Test Data

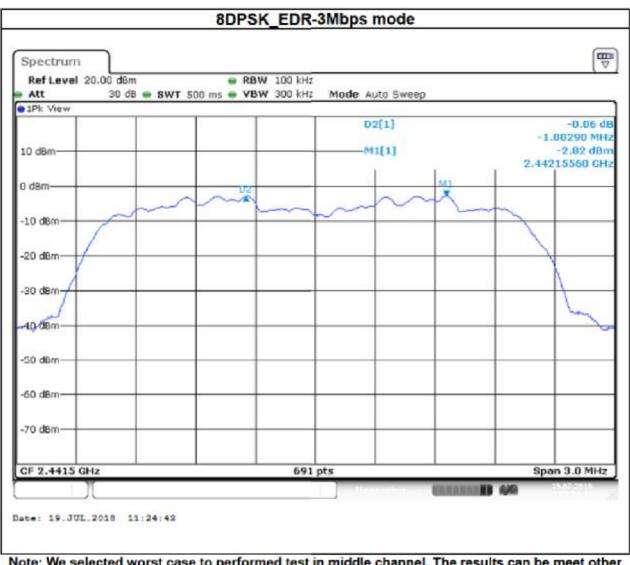


Note: We selected worst case to performed test in middle channel, The results can be meet other channel.

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Note: We selected worst case to performed test in middle channel, The results can be meet other channel.



## 4.5 NUMBER OF HOPPING

### 4.5.1 Test Limit

According to RSS-247 section 5.1(d)

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

#### 4.5.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 7.8.3

1. Place the EUT on the table and set it in transmitting mode.

- 2. EUT RF output port connected to the SA by RF cable.
- 3. Set spectrum analyzer Start Freq. = 2400 MHz, Stop Freq. = 2483.5 MHz, RBW
- =100KHz, VBW = 300KHz.
- 4. Max hold, view and count how many channel in the band.

### 4.5.3 Test Setup



## 4.5.4 Test Result

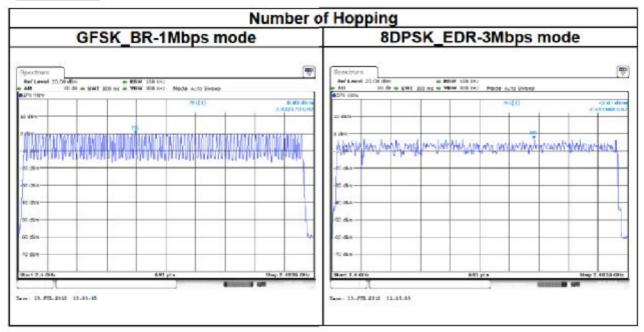
Number of Hopping				
Mode	Frequency (MHz)	Hopping Channel Number	Hopping Channel Number Limits	Result
BR-1Mbps	2402-2480	79	15	Daga
EDR-3Mbps	2402-2480	79	15	Pass

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## Test Data





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## 4.6 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

## 4.6.1 Test Limit

According to RSS-247 section 5.5

Limit	-20 dBc
-------	---------

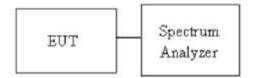
### 4.6.2 Test Procedure

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

 SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. The Band Edge at 2.4GHz and 2.4835GHz are investigated with both hopping "ON" and "OFF" modes ".

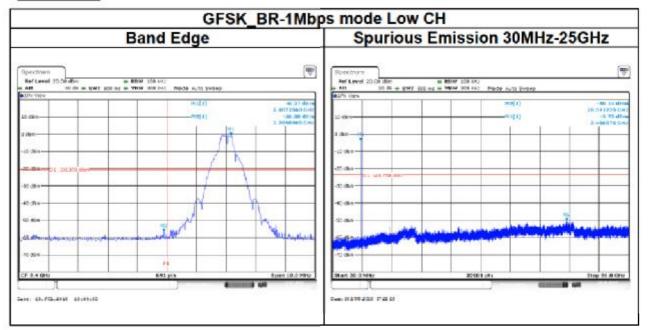
#### 4.6.3 Test Setup

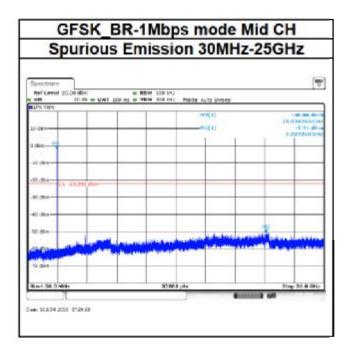




## 4.6.4 Test Result

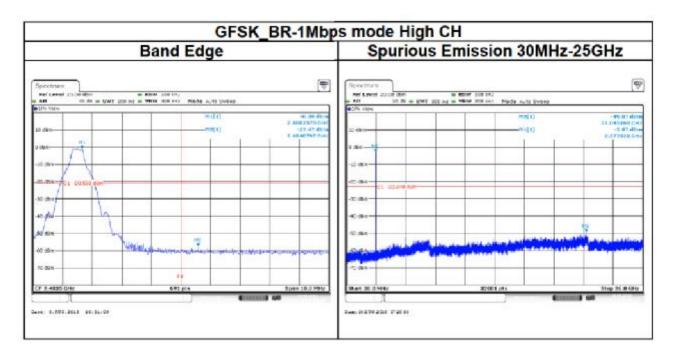
### Test Data

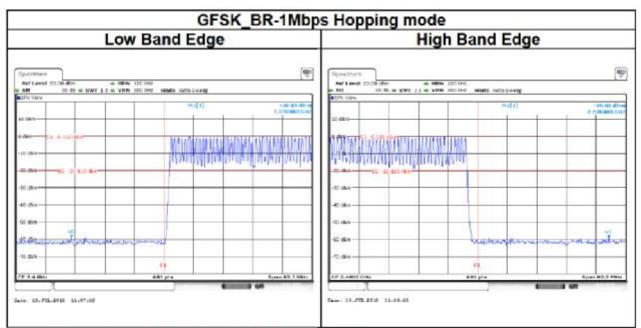




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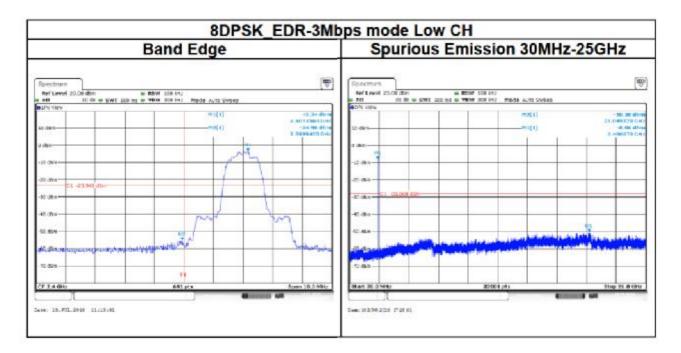


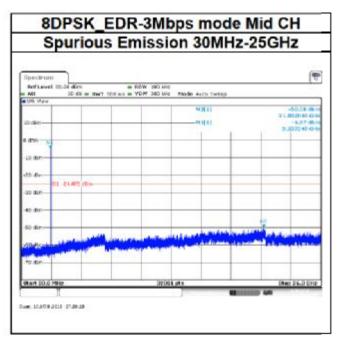


Note: The D1 line is at the maximum peak power point.



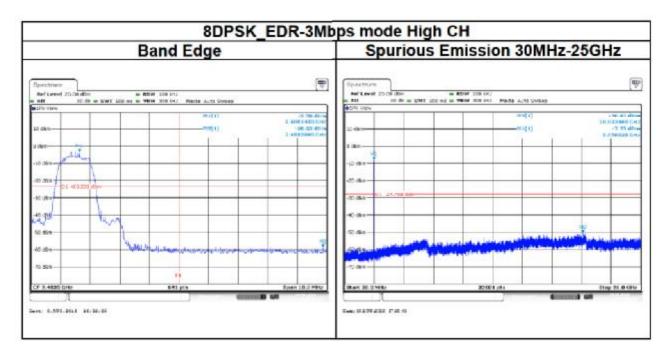
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Low Band Edge	High Band Edge
-churn	Boekhurn
efsevel 20.08 dBm	Ref Level 20.05 dan e Rev 1001H0 e All 30 db e SWE 15 e VIW 2003H0 Hods Juitz Sweg
16 Titler 17 L[[1] - 270 Jim din in 28	Baldin Views         mml[1]         -mml minimum           30 dem         -mml[1]         -mml minimum           30 dem         -mml[1]         2 mml minimum
และ (สมา 1	and the state of the second seco
da- 00 2-200 Au	-20 (#)
381	-0.ds-
dia	02.68
81	-10 day
2.4 (94) 8.41 p/s Span (2.1.199)	217 9,4895 Older 6.05 pl a Space 60.5 9967



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## 4.7 TIME OF OCCUPANCY (DWELL TIME)

## 4.7.1 Test Limit

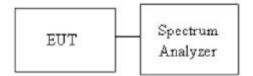
According to RSS-247 section 5.1(d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### 4.7.2 Test Procedure

- 1. EUT RF output port connected to the SA by RF cable.
- 2. Set center frequency of spectrum analyzer = operating frequency.
- 3. Set the spectrum analyzer as RBW, VBW=1MHz, Sweep = 1 ms

## 4.7.3 Test Setup



#### 4.7.4 Test Result

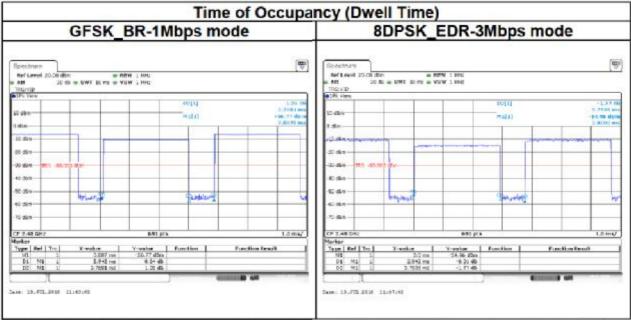
Mode	Frequency (MHz)	Per Hopping Number of pulse in IN Time	Dwell Time	Result			
	(		Hopping Freq.	(0.4 * N sec)	(0.4 * N sec)	Limits (s)	_
BR-1Mbps	2441	2.942	79	106.67	0.3138	0.4	
EDR-3Mbps	2441	2.942	79	106.67	0.3138	0.4	Pass



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#### Report No.: T180627D11-RC1

### Test Data



Note: We selected worst case to performed test in middle channel, The results can be meet other channel.



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## 4.8 RADIATION BANDEDGE AND SPURIOUS EMISSION

## 4.8.1 Test Limit

IC according to RSS-247 section 5.5, RSS-Gen, Section 8.9 and 8.10

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

#### Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

#### Above 30 MHz

Frequency	Field Str microvolts/m at 3 me	
(MHz)	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.



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### 4.8.2 Test Procedure

Test method Refer as, Section 12.1.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

 For harmonic, the worst case of output power was BR-1Mbps. Therefore only BR-1Mbps record in the report.

- 5. The SA setting following :
  - (1) Below 1G : RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
  - (2) Above 1G :
    - (2.1) For Peak measurement : RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
    - (2.2) For Average measurement : RBW = 1MHz, VBW

If Duty Cycle ≥ 98%, VBW=10Hz.

If Duty Cycle < 98%, VBW≥1/T.

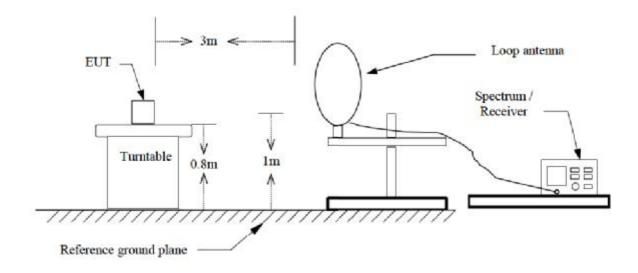
Configuration	Duty Cycle (%)	T(ms)	1/T (Hz)	VBW setting
GFSK_BR-1Mbps	78.19%	2.9400	0.340	360Hz
8DPSK_EDR-3Mbps	78.07%	2.9200	0.342	360Hz



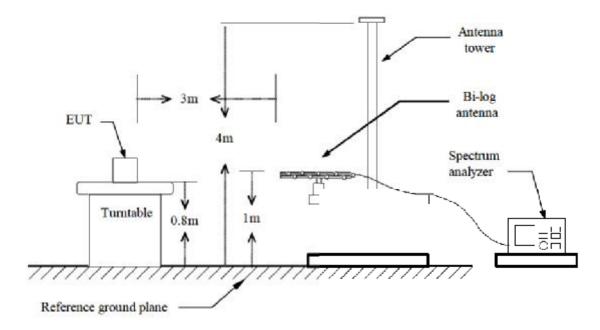
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## Report No.: T180627D11-RC1 4.8.3 Test Setup

#### 9kHz ~ 30MHz



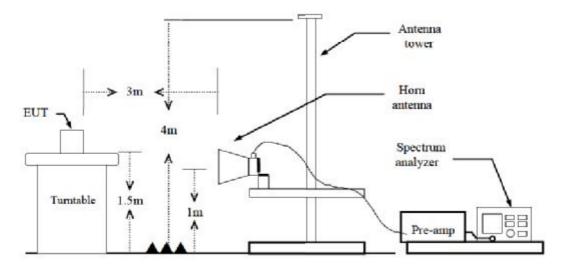
#### 30MHz ~ 1GHz





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### Above 1 GHz





## 4.8.4 Test Result

#### Band Edge Test Data

#### For PIFA Antenna

Test M	Mode:		CBR-1Mbps _ow CH	Ter	np/Hum	22(°(	)/ 34%RH	
Test	Item	Ba	and Edge	Test Date		July	July 16, 2018	
Pola	arize		Vertical	Test	Engineer	Jerr	erry Chuang	
Dete	ector		Peak					
120.0 dB	UV7m					Limit1: Limit2:		
80								
	0 2320.20 2330		2350.80 2361.			1.60	2412.00 MHz	
		Reading	Correct	Result	Limit	Margin	Remark	
No.	Frequency							
No.	Frequency (MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
No.			Factor(dB/m) -2.98	(dBuV/m) 51.79	(dBuV/m) 74.00	(dB) -22.21	peak	

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	Mode:	l	CBR-1Mbps Low CH		mp/Hum		)/ 34%RH
	Item	Band Edge			st Date		16, 2018
	arize	Vertical		Test	Test Engineer		y Chuang
Dete	ector	ŀ	Average				
110.0 de	uV/m						
						Linit1: Lini(2:	-
70							
30.0					4	N	A
	0 2320.20 2330	.40 2340.60	2350.80 2361	.00 2371.20	2381.40 239	1.60	2412.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	2389.152	38.57	-2.98	35.59	54.00	-18.41	AVG
1					1		



lest	Mode:		K_BR-1Mbp: High CH	s Te	mp/Hum	22(°(	C)/ 34%RI
Tes	t Item	E	Band Edge	Te	est Date	July	y 16, 2018
Po	larize		Vertical	Test	t Engineer	Jen	ry Chuang
De	tector		Peak				
120.0 di	8uW/m						
						Limit1: Limit2:	_
80							
Nov.		topenda sources of	handetelen hater paraise	managana	anggifgeren strategeret	1jania folgones se s	dy matinky in
40.0 2470.00	00 2478.20 2486	.40 2494.60		00 2519.20	2527.40 253	5.60	2552.00 MHz
40.0	00 2478.20 2486	.40 2494.60 Rading	2502.80 2511. Correct	00 2519.20 Result	2527.40 253 Limit	5.60 Margin	
40.0 2470.00	00 2478.20 2486	.40 2494.60	2502.80 2511	00 2519.20	2527.40 253	5.60	2552.00 MHz



Test	Mode:	GFS	K_BR-1Mbps High CH	s Te	mp/Hum	22(°(	C)/ 34%R
Tes	t Item	E	Band Edge	Te	est Date	July	y 16, 2018
Po	larize		Vertical	Test	t Engineer	Jer	ry Chuang
De	tector		Average				
110.0 d	8uV/m		-2517				
	1					Linit1: Linit2:	
70							
70							
70							
70							
70							
70							
30.0	00 2478.20 2486	.40 2494.60	2502.80 2511.	00 2519.20	2527.40 253	5.60	2552.00 MHz
30.0		.40 2494.60 Reading	2502.80 2511. Correct	00 2519.20 Result	2527.40 253 Limit	5.60 Margin	2552.00 MHz Remark
30.0	00 2478.20 2486						
30.0	00 2478.20 2486	Reading	Correct	Result	Limit	Margin	



Test	Mode:		K_EDR-3Mb Low CH	ie	mp/Hum	510 / 0 / 0 / 0 / 0 / 0 / 0 / 0 / 0 / 0 /	C)/ 34%RI
Tes	t Item	E	Band Edge		Test Date		16, 2018
Pol	arize		Vertical		Test Engineer		ry Chuang
Det	tector		Peak				
120.0 de	3u₩/m						
						Limit1: Limit2:	
						2	
						Ň	
							-
80							
						1	how
-					LANG CARE	4	2 C 2 2
mante	-	when when when	n-manantenah naki	mainenation	NAMEN OF		
40.0							
2310.00	0 2320.20 2330	.40 2340.60	2350.80 2361	.00 2371.20	2381.40 239	1.60	2412.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.662	57.17	-2.98	54.19	74.00	-19.81	peak
2	2402.004	107.92	-2.95	104.97	-	-	peak



Test	Mode:	8DPS	K_EDR-3Mb Low CH	Tel	mp/Hum	22(°(	c)/ 34%RH
	t Item	E	Band Edge		est Date		/ <mark>16, 2018</mark>
	larize		Vertical	Test	Test Engineer		y Chuang
Det	tector		Average				
110.0 de	Bu <b>V/m</b>						
						Limit1: Limit2:	Ξ
						Ť.	
70							
							<u>(</u>
_							
-					1		
30.0				~		~	~
10.000	0 2320.20 2330	.40 2340.60	2350.80 2361.	00 2371.20	2381.40 2391	60	2412.00 MHz
No.	Freque cy	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.662	38.90	-2.98	35.92	54.00	-18.08	AVG
2	2402.106	103.96	-2.95	101.01		7.5	AVG



Test Item     Band Edge     Test Date     July 16, 2018       Polarize     Vertical     Test Engineer     Jerry Chuang       Detector     Peak     Imit:	0.09070	Mode:		K_EDR-3Mb High CH	ie	mp/Hum	and the second sec	C)/ 34%RI
Detector         Peak           120.0         dBuW/m           Imit:         Imit:           Imit:         Imit:			E					
120.0 dBuV/m						Test Engineer		y Chuang
80	De	tector		Peak				
	120.0 d	Bu¥/m						
								_
40.0	80		Million	16 aster and a star and a star	arriterative free and a	petroper Arrengere		ed magner
	40.0 2470.0				_			_
	100 M	Frequency	Reading	Correct	Result	Limit	Margin	Remark
No.         Frequency         Reading         Correct         Result         Limit         Margin         Remark           (MHz)         (dBuV)         Factor(dB/m)         (dBuV/m)         (dBuV/m)         (dB)	2470.0	Frequency		Chicologic Contract				Remark
	2470.0 No.	Frequency (MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)			



Test Item     Band Edge     Test Date     July 16, 2018       Polarize     Vertical     Test Engineer     Jerry Chuang       Detector     Average     Image     Image	0.00.000	Mode:	10.00000000	K_EDR-3Mbj High CH	le	mp/Hum		C)/ 34%R
Detector         Average           110.0         dBuV/m           Imit::         Imit::           Imit::			E					
110.0 dBvV/m	Po	larize		Vertical	Test	Engineer	Jen	ry Chuang
	De	tector		Average				
	110.0 d	BuV/m						
30.0								
	30.0 2470.0	00 2478.20 248				2527.40 2535		2552.00 MHz
No. Frequency Reading Correct Result Limit Margin Remark	30.0		5.40 2494.60 Reading	2502.80 2511. Correct	00 2519.20 Result	2527.40 2535 Limit		2552.00 MHz Remark
No.         Frequency         Reading         Correct         Result         Limit         Margin         Remark           (MHz)         (dBuV)         Factor(dB/m)         (dBuV/m)         (dBuV/m)         (dB)	30.0 2470.0	00 2478.20 2488	Reading	Correct	Result	Limit	Margin	
	30.0 2470.0 No.	00 2478.20 2488 Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit	Margin (dB)	Remark



## For Dipole Antenna

Test I	Mode:	I	CBR-1Mbps ow CH	Ter	np/Hum	22(°(	C)/ 34%R⊦
	Item		Band Edge		Test Date		16, 2018
Pola	arize		Vertical		Test Engineer		ry Chuang
Dete	ector		Peak				97
120.0 de	3u¥/m						
						Limit1: Limit2:	
						Ž	
						Л	
-							
						1 (1)	
2222						1.5 04	
80							
							100
					1	N.	No.
-					å	LAN	1 NOW
w	Converting wind	and when some some	n beløkense referendelinger	mathalipet	Anotherphylan		1.14
40.0							
2310.00	0 2320.20 2330	.40 2340.60	2350.80 2361	.00 2371.20	2381.40 239	1.60	2412.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.866	56.60	-2.98	53.62	74.00	-20.38	peak
12				108.43			



	Mode:	l	CBR-1Mbps ow CH	Ter	mp/Hum		C)/ 34%RI
	Item		Band Edge		Test Date		16, 2018
	arize	Vertical		Test	Test Engineer		y Chuang
Dete	ector	ŀ	Average				
110.0 dB	uW/m					2	
						Limita: Limita:	-
						Linit.2	_
						- 41	
						— <u>н</u>	2.1
70							
-							
				Λ	~	N	han
30.0	Linnan			Nummer of the second se			
2310.00	0 2320.20 2330	.40 2340.60	2350.80 2361	.00 2371.20	2381.40 239	1.60	2412.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	2313.978	46.23	-3.22	43.01	54.00	-10.99	AVG
1							



Test	Mode:		K_BR-1Mbps High CH	ie	mp/Hum	State State	C)/ 34%RI
	t Item	E	Band Edge		est Date		16, 2018
Po	larize		Vertical	Test	t Engineer	Jen	y Chuang
Det	tector		Peak				
120.0 dB	3u¥/m						
	4					Linit1: Linit2:	_
80							
robush		Proder North Million of	Manumana	encolatano dan denderado da	prostance broken alger and a star	nandite en daniling	la factoria ha
	00 2478.20 2486	.40 2494.60	2502.80 2511.	.00 2519.20	2527.40 253	5.60	2552.00 MHz
	00 2478.20 2486	R ading	2502.80 2511. Correct	00 2519.20 Result	2527.40 253 Limit	5.60 Margin	2552.00 MHz Remark
2470.00	00 2478.20 2486 Fre uency (MHz)	.40 2494.60 Rading (dBuV)	2502.80 2511. Correct Factor(dB/m)	00 2519.20 Result (dBuV/m)	2527.40 253	5.60 Margin (dB)	Remark
2470.00	00 2478.20 2486	R ading	2502.80 2511. Correct	00 2519.20 Result	2527.40 253 Limit	5.60 Margin	2552.00 MHz



Test	Mode:	GFS	K_BR-1Mbps High CH	s Te	mp/Hum	22(°(	C)/ 34%R
Tes	t Item	E	Band Edge	Te	est Date	July	y 16, 2018
Po	larize		Vertical	Test	t Engineer		ry Chuang
De	tector		Average				
110.0 df	BuV/m						
	Å					Linit1: Linit2:	
						-	
70							
70							
70							
70					×		
30.0	00 2478.20 2486	6.40 2454.60	2502.80 2511.		A 2527.40 253	5.60	2552.00 MHz
30.0		.40 2454.60 Reading	2502.80 2511. Correct		2527.40 253	5.60 Margin	2552.00 MHz Remark
30.0	00 2478.20 2486				and a second second		
30.0	00 2478.20 2486	Reading	Correct	Result	Limit	Margin	



Test	Mode:		K_EDR-3Mb Low CH	. ie	mp/Hum	51.70% - <b>1</b> 76	C)/ 34%RI
Tes	t Item	E	Band Edge		Test Date		y 16, 2018
Pol	arize		Vertical T		t Engineer	Jer	ry Chuang
Det	tector		Peak				
120.0 dB	3u₩/m						
						Limit1: Limit2:	_
						2	
						ň	
						— M	5.1
80							
							Allan
					1		No. Participation
			www.weenwerner	10 mm - 10 m	at the light		191
west	Unterneteral	mannam	when have a solution of the	a had a production of the last	P. Markelandan da	ар.	
40.0							
2310.00	0 2320.20 2330	.40 2340.60	2350.80 2361	.00 2371.20	2381.40 239	1.60	2412.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
		56.54	-2.98	53.56	74.00	-20.44	peak
1	2389.560		1.000	2 X232-221-221-2	2263 V 2426 V 01		



Test	Mode:	8DPS	K_EDR-3Mbp Low CH	os Tei	mp/Hum	22(°(	)/ 34%RI
Tes	t Item	E	Band Edge	Te	est Date	July	16, 2018
Po	larize		Vertical	Test	Engineer	Jerr	y Chuang
De	tector		Average				
110.0 df	Bu <b>V/m</b>						
						Limit1: Limit2:	_
						A	
70							
							· · · · ·
1							
				~ -	_	$\mathcal{N}$	m
30.0	·			/ harmont			
2310.00	00 2320.20 2330	.40 2340.60	2350.80 2361.	00 2371.20	2381.40 2391	.60	2412.00 MHz
No.	Freque cy	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2314.080	43.91	-3.22	40.69	54.00	-13.31	AVG
				Service of the service of			AVG



	Mode:		K_EDR-3Mb High CH	Te	mp/Hum	CLOSED BALL	C)/ 34%RI
Tes	st Item	E	Band Edge		est Date		16, 2018
Po	larize		Vertical	Test	Engineer	Jerr	y Chuang
De	tector		Peak				
120.0 d	BuV/m						
						Linit1: Linit2:	_
	Å						
-							
80							
00							
	1						
-		m					
m		The West					_
		. Contraction	Arthurston	and a standard and a standard and and and and and and and and and an	How he have hard being	ليعامد ومدور ومرود	hulperson
40.0							
	00 2478.20 248	5.40 2494.60	2502.80 2511.	00 2519.20	2527.40 2535	5.60	2552.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2480.004	109.81	-2.70	107.11	-	-	peak
2	2483.500	65.68	-2.69	62.99	74.00	-11.01	peak
	- Cross	5.1 S					



0.75957	Mode:		K_EDR-3Mb High CH	16	mp/Hum		C)/ 34%RI
	t Item	E	Band Edge		est Date		y 16, 2018
	larize		Vertical	Test	Engineer	Jen	ry Chuang
De	tector		Average				
110.0 d	BuV/m					555	
	Å					Linit1: Linit2:	
							-
70							
30.0	~ ~				~		
30.0	00 2478.20 2486	5.40 2494.60	2502.80 2511	.00 2519.20	2527.40 253	5.60	2552.00 MHz
	00 2478.20 248	6.40 2494.60 Reading	2502.80 2511 Correct	00 2519.20 Result	2527.40 253 Limit	5.60 Margin	2552.00 MHz Remark
2470.0							
2470.0	Frequency	Reading	Correct	Result	Limit	Margin	
2470.0	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark



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## Below 1G Test Data

### For PIFA Antenna

lest	Mode:			BT Mode	Te	emp/Hum	22(	C)/34%R
Test	t Item		30	OMHz-1GHz		est Date		y 30, 201
	arize			Vertical	Tes	t Engineer	Jer	ry Chuan
Det	ector			Peak				
80.0 dB	u¥/m						1	
_							Limit1: Margin	
-								
				_				_
30	-	¥	ş	7 X	*	5	8	
			Î					
20								
20 30.000	127.00	224.0	00 321.00	418.00 515	.00 612.00	703.00 806	5.00	1000.00 MHz
	127.00		00 321.00 Reading	418.00 515 Correct	.00 612.00 Result	703.00 800	5.00 Margin	1000.00 MHz Remark
30.000		ncy			Result			
30.000	reque	ncy z)	Reading	Correct	Result	Limit	Margin	
No.	reque (MHz	ncy z) 300	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
30.000 No.	reque (MH: 174.53	ncy z) 300	Reading (dBuV) 43.35	Correct Factor(dB/m) -10.78	Result (dBuV/m) 32.57	Limit (dBuV/m) 43.52	Margin (dB) -10.95	Remark peak
30.000 No. 1 2	reque (MH: 174.53 324.88	ncy z) 300 800	Reading (dBuV) 43.35 37.32	Correct Factor(dB/m) -10.78 -7.38	Result           (dBuV/m)           32.57           29.94	Limit (dBuV/m) 43.52 46.02	Margin (dB) -10.95 -16.08	Remark peak peak
30.000 No. 1 2 3	reque (MH 174.53 324.88 399.57	ncy z) 300 800 700 400	Reading (dBuV) 43.35 37.32 36.19	Correct Factor(dB/m) -10.78 -7.38 -5.30	Result           (dBuV/m)           32.57           29.94           30.89	Limit (dBuV/m) 43.52 46.02 46.02	Margin (dB) -10.95 -16.08 -15.13	Remark peak peak peak



	Mode:		BT Mode	and the second se	mp/Hum	and the second division of the local divisio	C)/34%R
	st Item		MHz-1GHz		est Date		y 30, 2018
	larize		Horizontal	Test	Engineer	Jen	ry Chuang
Det	tector		Peak	204			
80.0 de	BuV/m					Limit1: Margin	
30			× *		4		-
	127.00 224	88 221.08	410.00 515 /	0 612.00			1000 00 HU-
30,000	o seriesta lotraria		418.00 515.0		709.00 806		1000.00 MHz
	Frequency	Reading	Correct	Result	Limit	Margin	1000.00 MHz Remark
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
30.000 No.	Frequency (MHz) 224.9700	Reading (dBuV) 48.22	Correct Factor(dB/m) -10.97	Result (dBuV/m) 37.25	Limit (dBuV/m) 46.02	Margin (dB) -8.77	Remark peak
30.000 No. 1 2	Frequency           (MHz)           224.9700           375.3200	Reading (dBuV) 48.22 44.05	Correct Factor(dB/m) -10.97 -6.02	Result (dBuV/m) 37.25 38.03	Limit (dBuV/m) 46.02 46.02	Margin (dB) -8.77 -7.99	Remark peak peak
30.000 No. 1 2 3	Frequency           (MHz)           224.9700           375.3200           424.7900	Reading (dBuV) 48.22 44.05 40.51	Correct Factor(dB/m) -10.97 -6.02 -4.51	Result (dBuV/m) 37.25 38.03 36.00	Limit (dBuV/m) 46.02 46.02 46.02	Margin (dB) -8.77 -7.99 -10.02	Remark peak peak peak
30.000 No. 1 2	Frequency           (MHz)           224.9700           375.3200	Reading (dBuV) 48.22 44.05	Correct Factor(dB/m) -10.97 -6.02	Result (dBuV/m) 37.25 38.03	Limit (dBuV/m) 46.02 46.02	Margin (dB) -8.77 -7.99	Remark peak peak



#### For Dipole Antenna

	Mode:		BT Mod	е		Te	mp/Hun	1 I	22(°	C)/ 34	%R
Test	t Item	30	MHz-10	Hz	10- 		est Date		Jul	y 30, 2	2018
Pol	arize		Vertical			Tes	t Engine	er	Jer	Ty Chu	uan
Det	ector		Peak								
80.0 dB	uV/m										20
									Limit1: Margir		
								_			Į.
	1										
30	1		2 X	mX	×	5 X		6 X			Į.
											ĺ
20											
-20 30.000	127.00 2	224.00 321.00	418.00	515.00	) 612	2.00	709.00	806.00		1000.00	MHz
30.000											
	requenc	y Reading	Corre	ct	Rest	ult	Limit		Margin	1000.00	
30.000		y Reading (dBuV)		ct B/m)		ult //m)		n)			ark
30.000 No.	requenc (MHz)	y         Reading           (dBuV)         48.13	Corre Factor(d	ct B/m) 8	Resu (dBuV	ult //m) 35	Limit (dBuV/r	n)	Margin (dB)	Rem	ark ak
30.000 No.	requenc (MHz) 174.5300	ry         Reading           (dBuV)         (dBuV)           0         48.13           0         34.10	Corre Factor(d -10.7	et B/m) 8	Resu (dBuV 37.3	ult //m) 35 59	Limit (dBuV/r 43.52	n)	Margin (dB) -6.17	Rem	ark ak ak
30.000 No. 1 2	requenc (MHz) 174.5300 424.7900	y         Reading           (dBuV)         48.13           0         34.10           0         36.05	Corre Factor(d -10.7 -4.51	ct B/m) 8 1 3	Resu (dBuV 37.3 29.5	ult //m) 35 39 37	Limit (dBuV/r 43.52 46.02	n)	Margin (dB) -6.17 -16.43	Rem pea	ark ak ak ak
30.000 No. 1 2 3	requenc (MHz) 174.5300 424.7900 524.7000	y         Reading           (dBuV)         48.13           0         34.10           0         36.05           0         34.71	Corre Factor(d -10.7 -4.51 -2.18	ct B/m) 8 1 3 6	Rest (dBuV 37.3 29.5 33.6	ult //m) 35 39 37 5	Limit (dBuV/r 43.52 46.02 46.02	n)	Margin (dB) -6.17 -16.43 -12.15	Rem pea pea	ark ak ak ak ak

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	Mode:			BT Mo			the second s	mp/Hum	the subscription of the local division of th	C)/ 34%R
1.000	t Item larize			MHz-1 Horizon		-	_	est Date Engineer		y 30, 2018 Ty Chuang
	tector			Peak			Col	Lingineer	Jei	ry chuang
00.0 40	3u¥/m									
80.0 de	suv/m								Limit1: Margir	
										F
30			ž		3 X		4 X	×	×	
-20										
-20 30.000	127.00	224.0	0 321.00	418.00	515.0	0 612.	00	709.00 80	6.00	1000.00 MHz
	127.00		0 321.00 Reading	418.00 Corr		0 612. Resu		709.00 80 Limit	6.00 Margin	1000.00 MH2 Remark
000000	o and include	ncy	an constant	- Settings	rect		lt			-
30.000	Freque	ency z)	Reading	Corr	rect (dB/m)	Resu	lt m)	Limit	Margin	-
30.000	Freque (MH	ency z) 300	Reading (dBuV)	Corr Factor(	(dB/m)	Resu (dBuV/	lt m) 2	Limit (dBuV/m)	Margin (dB)	Remark
30.000 No.	Freque (MH: 174.53	ency z) 300 100	Reading (dBuV) 48.10	Corr Factor( -10.	rect (dB/m) .78 49	Resul (dBuV/ 37.32	lt m) 2 8	Limit (dBuV/m) 43.52	Margin (dB) -6.20	Remark peak
30.000 No. 1 2	Freque (MH: 174.53 275.41	ency z) 300 100 300	Reading (dBuV) 48.10 39.57	Corr Factor( -10. -8.4	rect (dB/m) .78 49 14	Resul (dBuV/ 37.32 31.08	ht m) 2 3 2	Limit (dBuV/m) 43.52 46.02	Margin (dB) -6.20 -14.94	Remark peak peak
30.000 No. 1 2 3	Freque (MH: 174.53 275.4 475.23	<b>rncy</b> <b>z)</b> 300 100 300 100	Reading (dBuV) 48.10 39.57 33.46	Corr Factor( -10. -8.4 -3.1	rect (dB/m) .78 49 14 40	Result (dBuV/ 37.32 31.08 30.32	ht m) 2 3 2 6	Limit (dBuV/m) 43.52 46.02 46.02	Margin (dB) -6.20 -14.94 -15.70	Remark peak peak peak

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## Above 1G Test Data

#### For PIFA Antenna

11.000 (2001) VI	Mode:		K_BR-1Mbps Low CH	Ten	np/Hum		C)/ 34%RH
	Item	ł	larmonic		st Date		y 30, 2018
	arize		Vertical		Engineer	Jer	ry Chuang
Dete	ector	Peak	and Average				
110.0 dBu	W/m						
						Limit1: Limit2:	
70						_	
-	k			_		_	
30.0	3550.00 610	0.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4806.000	44.58	4.35	48.93	74.00	-25.07	peak

#### Remark:

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Те	st Moo	le:		K_BR	-1Mbps CH	Те	mp/Hum	22(°	C)/ 34%RI
Te	est Iter	n	H	larmo	nic	Te	est Date	July	30, 2018
F	olarize	e	ŀ	lorizo	ntal	Test	t Engineer	Jer	ry Chuang
D	etecto	r	Peak	and A	Average				
110.0	dBu¥/m					394 			
								Limit1: Limit2:	-
								Limit2:	_
-									
-									
70									
-									
-		1							
-		×							-
30.0									
100	0.000 3550	0.00 6100	.00 8650.00	11200	00 13750.0	00 16300.00	18850.00 2140	10.00	26500.00 MHz
No	. Fre	equency	Reading	Co	rrect	Result	Limit	Margin	Remark
		(MHz)	(dBuV)	Facto	or(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	48	306.000	47.82	4	.35	52.17	74.00	-21.83	peak

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Pola	Item					22(℃)/ 34%R	
		- F	larmonic		st Date		/ 30, 2018
Dete	arize		Vertical	Test	Engineer	Jerr	y Chuang
Dele	ector	Peak	and Average	s			
110.0 dBu	N/m						
						Limit1: Limit2:	_
70							
	*						
30.0							
1000.000	3550.00 6100.	00 8650.00	11200.00 13750.0	10 16300.00	18850.00 21400	1.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4883.000	45.40	4. <mark>4</mark> 9	49.89	74.00	-24.11	peak
50 T	0		12. I				

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test I	Mode:	GFSI	K_BR-1Mbps Mid CH	Ten	np/Hum	22(°(	C)/ 34%RI
Test	Item	ł	Harmonic	Tes	st Date	July	30, 2018
Pola	arize	F	orizontal	Test	Engineer	Jen	ry Chuang
Dete	ector	Peak	and Average	5			
110.0 dBu	N/m						
						Limit1: Limit2:	
70	*						
	3550.00 6100		11200.00 13750.0		18850.00 21400		26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	4883.000	49.30	4.49	53.79	74.00	-20.21	peak

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Mode:					0.0000000	C)/ 34%RI
	1					30, 2018
1 Mill Million Inc.			Test	Engineer	Jerr	y Chuang
tector	Peak	and Average	s			
Bu <b>V/m</b>						
					Limit1: Limit2:	_
ł						
00 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
(militz)						
	it Item larize tector BuW/m	Wode.       it Item       larize       tector     Peak       BuW/m       Item       Item <t< td=""><td>Wode.       High CH         titlem       Harmonic         larize       Vertical         tector       Peak and Average         BuW/m       Image: State of the state</td><td>Mode.     High CH     Ten       It Item     Harmonic     Test       Iarize     Vertical     Test       tector     Peak and Average     Image: Character and the second se</td><td>High CH     Temp/Hum       it Item     Harmonic     Test Date       larize     Vertical     Test Engineer       tector     Peak and Average     Image: Comparison of the second se</td><td>Mode.     High CH     Temp/Hum     22(C       it Item     Harmonic     Test Date     July       larize     Vertical     Test Engineer     Jerr       tector     Peak and Average     Imit:     Imit:       Bw/m     Imit:     Imit:     Imit:       Imit:     Imit:     Imit:     Imit:       Imit:     Imit:     Imit:     Imit:</td></t<>	Wode.       High CH         titlem       Harmonic         larize       Vertical         tector       Peak and Average         BuW/m       Image: State of the state	Mode.     High CH     Ten       It Item     Harmonic     Test       Iarize     Vertical     Test       tector     Peak and Average     Image: Character and the second se	High CH     Temp/Hum       it Item     Harmonic     Test Date       larize     Vertical     Test Engineer       tector     Peak and Average     Image: Comparison of the second se	Mode.     High CH     Temp/Hum     22(C       it Item     Harmonic     Test Date     July       larize     Vertical     Test Engineer     Jerr       tector     Peak and Average     Imit:     Imit:       Bw/m     Imit:     Imit:     Imit:       Imit:     Imit:     Imit:     Imit:       Imit:     Imit:     Imit:     Imit:

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



lest N	Mode:		_BR-1Mbps ligh CH	a contrar o	p/Hum	2.3-2-4-2	)/ 34%RI
Test	Item	Ha	armonic		t Date	July	30, 2018
Pola	arize	He	orizontal	Test E	ngineer		y Chuang
Dete	ector	Peak a	and Average				
110.0 dB	3uV/m						
						Limit1: Limit2:	_
70							
	*						
30.0	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
		.00 8650.00 Reading	11200.00 13750.0 Correct	00 16300.00 Result	18850.00 21400 Limit	0.00 Margin	26500.00 MHz Remark
1000.00	00 3550.00 6100						

### Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



16172734	Mode		K_EDR-3Mbp Low CH	Ten	np/Hum	0.000	c)/ 34%R
	t Item	ł	Harmonic	Name of Concession, Name of Street or other Distances of Street or other D	st Date		30, 2018
	larize		Vertical		Engineer	Jerr	y Chuang
De	tector	Peak	and Average				
110.0 di	3u¥/m						
						Limit1: Limit2:	Ξ
1							
70							
-							
	¥						
30.0							
1000.00	00 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4804.000	40.85	4.34	45.19	74.00	-28.81	peak
1 mark:					1.0000		peak

2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



lest	Mode		K_EDR-3Mbp Low CH	s Tem	np/Hum	22(°(	C)/ 34%RH
Test	Item	H	larmonic	Tes	st Date	July	30, 2018
Pol	arize	ł	orizontal	Test	Engineer	Jerr	y Chuang
Det	ector	Peak	and Average				
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
_							
	×						
30.0							
and the second second	0 3550.00 6100	.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	D. OD	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
		100 100 100 100 100 100 100 100 100 100	4.35	47.71	74.00	-26.29	-

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test	Mode	8DPS	K_EDR-3Mbp Mid CH	Ten	np/Hum	1	c)/ 34%RI
Tes	t Item	1	Harmonic	Tes	st Date	July	30, 2018
Pol	larize		Vertical	Test	Engineer	Jerr	y Chuang
Det	tector	Peak	and Average				
110.0 dB	3u₩/m						
						Limit1: Limit2:	_
70							
	*						
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	0.00	26500.00 MHz
1000.00							
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark

- fundamental frequency.
- For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



	Mode		K_EDR-3Mbp Mid CH	Ten	np/Hum	10.000	c)/ 34%RI
	t Item	_	Harmonic		st Date		30, 2018
	arize		Iorizontal		Engineer	Jerr	y Chuang
Det	ector	Peak	and Average	2			
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
	*						
30.0 1000.00	0 3550.00 610	0.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
-	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	4883.000	45.82	4.49	50.31	74.00	-23.69	peak

2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



	Mode		K_EDR-3Mbp High CH	Ten	np/Hum		C)/ 34%R
Tes	t Item	ł	Harmonic		st Date		/ 30, 2018
Pol	larize		Vertical	Test	Engineer	Jerr	y Chuang
Det	tector	Peak	and Average	50			
110.0 de	3uV/m						
						Linit1: Linit2:	_
70							
				_		_	
	×						
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4960.000	42.25	4.61	46.86	74.00	-27.14	peak
mark:							

- 2. For above 1GHz, the EUT peak value was under average limit, therefore the
  - Average value compliance with the average limit



Test	Mode		K_EDR-3Mbp High CH	s Ten	np/Hum	22(°	C)/ 34%RI
Test	Item		Harmonic	Tes	st Date	July	30, 2018
	arize	ł	Iorizontal	Test	Engineer	Jer	ry Chuang
Det	ector	Peak	and Average	5			
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
-	*						_
30.0							
1000.00	0 3550.00 610	0.00 8650.00	11200.00 13750.0	16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	4960.000	46.20	4.61	50.81	74.00	-23.19	peak

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



### For Dipole Antenna

0.0005	Mode:		K_BR-1Mbps Low CH	ien	np/Hum		)/ 34%RH
	ttem	1	Harmonic		st Date		30, 2018
	arize		Vertical		Engineer	Jerr	y Chuang
Det	ector	Peak	and Average				
110.0 dB	u¥/m						
						Limit1: Limit2:	_
				-			
70							
10							
	¥						
325224							
30.0	0 3550.00 6100	00 8650.00	11200.00 13750.	00 16300.00	18950.00 21400	00	26500.00 MHz
1000.00	0 3330.00 6100	.00 0650.00	11200.00 13/30.	00 16500.00	10050.00 21400		26308.00 MH2
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4806.000	46.35	4.35	50.70	74.00	-23.30	peak

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test	Mode:		K_BR-1Mbps Low CH		np/Hum	22(℃	C)/ 34%RI
Test	t Item		Harmonic		st Date		/ 30, 2018
	arize	-	orizontal	and the second se	Engineer	Jen	y Chuang
Det	ector	Peak	and Average	2			
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
	*						
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	), 00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
		38.15	4.34	42.49	74.00	-31.51	peak

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Item     Harmonic     Test Date     July 30, 2018       Polarize     Vertical     Test Engineer     Jerry Chuang       Detector     Peak and Average     Imit:     Imit:	Mode:	GFS	K_BR-1Mbps Mid CH		np/Hum	22(°(	C)/ 34%RH
Detector         Peak and Average           110.0         d8uV/m           Imit:         Imit:           Imit:         Imit:           Imit:         Imit:		ł					the second se
110.0 dBuV/m	arize			Test	Engineer	Jerr	y Chuang
Image: Sector of the sector	ector	Peak	and Average	5			
	uV/m						
							_
No. Frequency Reading Correct Result Limit Margin Remark				I West out to save			
(MHz) (dBuV) Factor(dB/m) (dBuV/m) (dBuV/m) (dB)	4883.000	48.33	4.49	52.82	74.00	-21.18	peak
30.0 1000.000 No.		arize ector w/m 1	arize Peak	Item       Harmonic         arize       Vertical         ector       Peak and Average         uv/m       Image: state s	Item       Harmonic       Test         arize       Vertical       Test I         ector       Peak and Average       Image: Correct         uV/m       Image: Correct       Result	Item       Harmonic       Test Date         arize       Vertical       Test Engineer         ector       Peak and Average          uv/m           1           2       3550.00       6100.00       8650.00       11200.00       13750.00       16300.00       18850.00       21400         Frequency       Reading       Correct       Result       Limit	Item       Harmonic       Test Date       July         arize       Vertical       Test Engineer       Jerr         ector       Peak and Average       Imit:       Imit:         uv//n       Imit:       Imit:       Imit:         uv//n       Imit:

- fundamental frequency.
- For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



fundamental frequency.

0.000	Mode:	GFS	K_BR-1Mbps Mid CH		np/Hum	and a second	C)/ 34%RI
	t Item	_	larmonic		st Date		/ 30, 2018
Po	larize		orizontal	And and a second se	Engineer	Jen	y Chuang
Det	tector	Peak	and Average	2			
110.0 de	3u¥/m						
						Limit1: Limit2:	_
70							
	1						
	*						
30.0							
1000.00	00 3550.00 6100	.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	0.00	26500.00 MHz
				<b>BH</b>	Limit	Margin	Remark
No.	Frequency	Reading	Correct	Result	Linne	margin	
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
No.					CONTRACTOR CONTRACTOR	111111	peak

2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



0.000	Mode:		K_BR-1Mbps High CH		np/Hum	22(℃	C)/ 34%RI
	t Item		Harmonic		st Date		/ 30, 2018
	larize		Vertical	the second se	Engineer	Jen	y Chuang
Det	tector	Peak	and Average				
110.0 de	3u¥/m						
						Limit1: Limit2:	_
70							
	1						
-							
-							
30.0							
	0 3550.00 6	100.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
	00 3550.00 6		11200.00 13750. Correct	00 16300.00 Result	18850.00 21400 Limit	Margin	26500.00 MHz Remark
1000.00							

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test N	1.800000 J	Н	_BR-1Mbps ligh CH	2 ALCONTRACT	p/Hum	2.3 - 2 - 2	)/ 34%RF
Test	Item		armonic	Test	t Date	July	30, 2018
Pola	and the second se	the second se	orizontal	Test E	ngineer	Jerr	y Chuang
Dete	ctor	Peaka	and Average				
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
_					-		
	ł						
-							
30.0							
1000.00	0 3550.00 6100	.00 9650.00	11200.00 13758.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
2	4960.000	38.55	4.61	43.16	74.00	-30.84	peak

#### Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test	Mode		K_EDR-3Mbp Low CH	s Tem	np/Hum	22(°(	C)/ 34%RI
Tes	t Item	1	Harmonic	Tes	st Date		30, 2018
Pol	arize		Vertical		Engineer	Jerr	y Chuang
Det	tector	Peak	and Average				
110.0 dB	lu¥/m						
						Limit1: Limit2:	
-					_		
70							
	*						
	Î						
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	4806.000	47.69	4.35	52.04	74.00	-21.96	peak

- fundamental frequency. 2. For above 1GHz, the EUT peak value was under average limit, therefore the
  - Average value compliance with the average limit



	Mode		K_EDR-3Mbp Low CH	Ten	np/Hum	22(°(	C)/ 34%RH
Tes	t Item	ł	Harmonic	Tes	st Date	July	/ 30, 2018
Pol	arize	ł	Iorizontal	Test	Engineer	Jerr	y Chuang
Det	ector	Peak	and Average				
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
-							_
	¥						
			11000.00 10750				
30.0	0.3550.00 0100			00 000010 00	10000 00 01400	0.00	20500 00 000
5202.0	0 3550.00 6100	.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	0.00	26500.00 MHz
5202.0	0 3550.00 6100 Frequency	.00 8650.00 Reading	Correct	00 16300.00 Result	18850.00 21400	Margin	26500.00 MHz Remark
1000.00							

- fundamental frequency. 2. For above 1GHz, the EUT peak value was under average limit, therefore the
  - Average value compliance with the average limit



	Mode	8DPS	K_EDR-3Mbp Mid CH	Ten	np/Hum	10.00	C)/ 34%RI
	t Item	1	Harmonic		st Date	July 30, 2018	
	arize		Vertical		Engineer	Jerr	y Chuang
Det	ector	Peak	and Average	2			
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
	1						
-	Ŕ						
30.0							
1919 B	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
		Desider	Correct	Result	Limit	Margin	Remark
No.	Frequency	Reading	Concor		CONTRACTOR (CONTRACT)		
No.	Frequency (MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
No.		1		(dBuV/m) 55.69	(dBuV/m) 74.00	(dB) -18.31	peak

For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Mode		K_EDR-3Mbp Mid CH	Ten	np/Hum	10.000	)/ 34%RI
	_					30, 2018
and the second sec				Engineer	Jerr	y Chuang
ector	Peak	and Average			l	
uW/m						
					Limit1: Limit2:	_
					_	
¥						
0 3550.00 610	0.00 8650.00	11200.00 13750.0	00 16300.00	18850.00 21400	0.00	26500.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
4883.000	39.96	4.49	44.45	74.00	-29.55	peak
	0 3550.00 6100	arize   H ector   Peak	t Item Harmonic arize Horizontal ector Peak and Average	Item         Harmonic         Test           arize         Horizontal         Test           ector         Peak and Average         Image: Constraint of the second sec	Item         Harmonic         Test Date           arize         Horizontal         Test Engineer           ector         Peak and Average         Image: Construction of the second s	Mild CH     Test Date     July       arize     Horizontal     Test Engineer     Jerr       ector     Peak and Average     Imit:     Imit:       uw/m     Imit:     Imit:     Imit:       uw/m     Imit:

2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



	Mode		K_EDR-3Mbp High CH	Ten	np/Hum	and the second	C)/ 34%R
Tes	t Item	ł	Harmonic	Tes	st Date	July	/ 30, 2018
Pol	larize		Vertical	Test	Engineer	Jerr	y Chuang
Det	tector	Peak	and Average	10			
110.0 de	3uV/m						
						Limit1: Limit2:	_
70							
	1 X						
		-					
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.	00 16300.00	18850.00 21400	0.00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4960.000	45.69	4.61	50.30	74.00	-23.70	peak
00	10 A	54 - 54 -	94A	65		0.0	01 10
mark:							

- 2. For above 1GHz, the EUT peak value was under average limit, therefore the
- Average value compliance with the average limit



lest	Mode		K_EDR-3Mbp High CH	s Ten	np/Hum	22(°	C)/ 34%RI
Test	t Item		Harmonic	Tes	st Date	July	30, 2018
Pol	arize	ŀ	lorizontal	Test	Engineer		ry Chuang
Det	ector	Peak	and Average	5			
110.0 dB	uV/m						
						Limit1: Limit2:	_
70							
	ł						
30.0							
1000.00	0 3550.00 6100	.00 8650.00	11200.00 13750.0	10 16300.00	18850.00 21400	). 00	26500.00 MHz
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
	4960.000	37.75	4.61	42.36	74.00	-31.64	peak

- fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

--End of Report--



APPENDIX-A Test Photo For PIFA Antenna Radiation (Below 1GHz) Page: A-1 / A-4 Rev.: 02



Radiation (Above 1GHz)

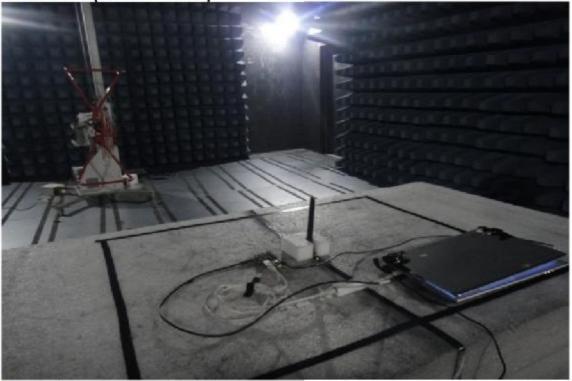


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## For Dipole Antenna Radiation (Below 1GHz)



Radiation (Above 1GHz)

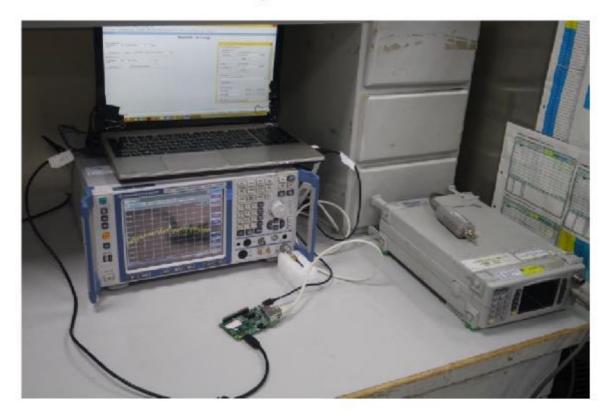


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## Conducted Emission Set Up Photo





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## Conduction





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ISED: 22364-QCA9377 Report No.: T180627D11-RC2 Page: 1 / 56 Rev.: 02

# RADIO TEST REPORT INDUSTRY CANADA RSS-247

Test Standard	ISED RSS-247 issue 2
Product name	WiFi+Bluetooth 4.1(HS) System on Module
Brand Name	TechNexion
Model No.	PIXI-9377
Test Result	Pass

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory)

Approved by:

Tested by:

Lun Sam Chuang

Sam Chuan Manager

Jerry Chuang Engineer

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對網試之樣品負責,同時此樣品難保留90天,本報告未經本公司書面許可,不可部分複製。

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SES Compliance Certification Service Inc. 程智科技能份有限公司 No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan / 新北市五股陸五工六路 11 號 t:(886-2) 2299-9720 f:(886-2) 2298-1882 www.sgs.tw www.ccsrf.com



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# **Revision History**

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 28, 2018	Initial Issue	ALL	May Lin
01	September 20, 2018	<ol> <li>Revised antenna information.</li> <li>Update KDB 937606 to KDB 414788.</li> </ol>	P.5, P29-30	May Lin
02	September 27, 2018	<ol> <li>Revised the worst mode of measurement.</li> </ol>	P.12	May Lin



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APPE	NDIX 1 - PHOTOGRAPHS OF EUT	



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## 1. GENERAL INFORMATION

## 1.1 EUT INFORMATION

	TechNexion Ltd.
Applicant	16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipe City, 23511 Taiwan ROC
Manufacturer	TechNexion Ltd. 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipe City, 23511 Taiwan ROC
Equipment	WiFi+Bluetooth 4.1(HS) System on Module
Model No.	PIXI-9377
Model Discrepancy	N/A
Trade Name	TechNexion
Received Date	June 27, 2018
Date of Test	July 16 ~30, 2018
Output Power (W)	BLE: 0.0042 (EIRP: 0.0106)
Power Operation	Power by host system
H/W Version	A1
F/W Version	A1



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## **1.2 EUT CHANNEL INFORMATION**

Frequency Range	2402MHz-2480MHz	
Modulation Type	GFSK for BLE-1Mbps	
Number of channel	40 Channels	

Remark:

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 and RSS-GEN Table 1 for test channels

Numbe	er of frequencies to	be tested
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle, and 1 near botto

## **1.3 ANTENNA INFORMATION**

Antenna Type		PCB 🛛 Dipol	e 🗌 Coils			
		Brand	P/N	Туре	Peak Gain	Worst Mode
Antenna Gain	Antenna 1	TechNexion	VM2450-25523-OOX-180	PIFA	2.5dBi	х
	Antenna 2	TechNexion	VM2450-ASSY1005	Dipole	4dBi	0



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## 1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY	
AC Powerline Conducted Emission	+/- 1.2575	
Emission bandwidth, 20dB bandwidth	+/- 1.4003	
RF output power, conducted	+/- 1.1372	
Power density, conducted	+/- 1.4003	
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138	
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483	
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975	
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112	
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389	
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683	

#### Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.



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## 1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	Dally Hong	(#):
Radiation	Jerry Chuang	(#)
RF Conducted	Jerry Chuang	( <del>-</del> 3).

**Remark:** The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.



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## **1.6 INSTRUMENT CALIBRATION**

	RF	Conducted Test S	ite		
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	06/29/2018	06/28/2019
Power Meter	Anritsu	ML2495A	1012009	09/18/2017	09/17/2018
Power Seneor	Anritsu	MA2411B	1126148	02/06/2018	02/05/2019
Signal Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018

	3M 966 Chamber Test Site				
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Band Reject Filters	MICRO TRONICS	BRM 50702	120	05/14/2018	05/13/2019
Bilog Antenna	Sunol Sciences	JB3	A030105	07/13/2018	07/12/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	07/31/2017	07/30/2018
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	02/08/2018	02/07/2019
Double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	08/25/2017	08/24/2018
Loop Ant	COM-POWER	AL-130	121051	03/21/2018	03/20/2019
Pre-Amplifier	EMEC	EM330	060609	06/29/2018	06/28/2019
Pre-Amplifier	HP	8449B	3008A00965	06/29/2018	06/28/2019
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/31/2018	05/30/2019
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R

AC Conducted Emissions Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
LISN	R&S	ENV216	101054	02/06/2018	02/05/2019
LISN	SCHWARZBECK	NSLK 8127	8127-541	02/09/2018	02/08/2019
EMI Test Receiver	R&S	ESCI	101203	11/02/2017	11/01/2018
CABLE	EMCI	CFD300-NL	CERF	07/03/2018	07/02/2019

Remark: Each piece of equipment is scheduled for calibration once a year.



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## 1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

		EU	IT Accessories E	quipment	
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

Support Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	NB(K)	Toshiba	voyager	ZD 154034s	N/A
2	NB	Lenovo	TP00056A	R33B65	PD97260HU

## 1.8 Test methodology and applied standards

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, KDB 558074 D01, RSS-247 Issue 2 and RSS-GEN Issue 5



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Report No.: T180627D11-RC2

## 2. TEST SUMMERY

IC Standard Section	Report Section	Test Item	Result
-	1.3	Antenna Requirement	Pass
RSS-GEN 8.8	4.1	AC Conducted Emission	Pass
RSS-247(5.2)(a)	4.2	6 dB Bandwidth	Pass
RSS-GEN 6.7	4.2	Occupied Bandwidth (99%)	Pass
RSS-247(5.4)(d)	4.3	Output Power Measurement	Pass
RSS-247(5.2)(b)	4.4	Power Spectral Density	Pass
RSS-247(5.5)	4.5	Conducted Band Edge	Pass
RSS-247(5.5) 4.5		Conducted Emission	Pass
RSS-GEN 8.9, 8.10	4.6	Radiation Band Edge	
RSS-GEN 8.9, 8.10	4.6	Radiation Spurious Emission	Pass



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## 3. DESCRIPTION OF TEST MODES

## 3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	BT4.1 Mode (1Mbps)
Test Channel Frequencies	1.Lowest Channel : 2402MHz 2.Middle Channel : 2440MHz 3.Highest Channel : 2480MHz

Remark:

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.



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## 3.2 THE WORST MODE OF MEASUREMENT

#### For PIFA Antenna

	Radiated Emission Measurement Above 1G			
Test Condition	Band edge, Emission for Unwanted and Fundamental			
Power supply Mode	Mode 1: EUT power by host system			
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4			
Worst Position	<ul> <li>Placed in fixed position.</li> <li>Placed in fixed position at X-Plane (E2-Plane)</li> <li>Placed in fixed position at Y-Plane (E1-Plane)</li> <li>Placed in fixed position at Z-Plane (H-Plane)</li> </ul>			
Worst Polarity	Horizontal Vertical			

F	Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G	
Power supply Mode	Mode 1: EUT power by host system	
Worst Mode	🛛 Mode 1 🗌 Mode 2 🗌 Mode 3 🗌 Mode 4	

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (X-Plane and Horizontal) were recorded in this report

3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.



#### For Dipole Antenna

	AC Power Line Conducted Emission
Test Condition	AC Power line conducted emission for line and neutral
Power supply Mode	Mode 1: EUT power by host system
Worst Mode	🖾 Mode 1 🗌 Mode 2 🗌 Mode 3 🗌 Mode 4

	Radiated Emission Measurement Above 1G
Test Condition	Band edge, Emission for Unwanted and Fundamental
Power supply Mode	Mode 1: EUT power by host system
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4
Worst Position	<ul> <li>Placed in fixed position.</li> <li>Placed in fixed position at X-Plane (E2-Plane)</li> <li>Placed in fixed position at Y-Plane (E1-Plane)</li> <li>Placed in fixed position at Z-Plane (H-Plane)</li> </ul>
Worst Polarity	☐ Horizontal ⊠ Vertical

	Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G	
Power supply Mode	Mode 1: EUT power by host system	
Worst Mode	Mode 1 Mode 2 Mode 3 Mode 4	

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case (Z-Plane and Vertical) were recorded in this report

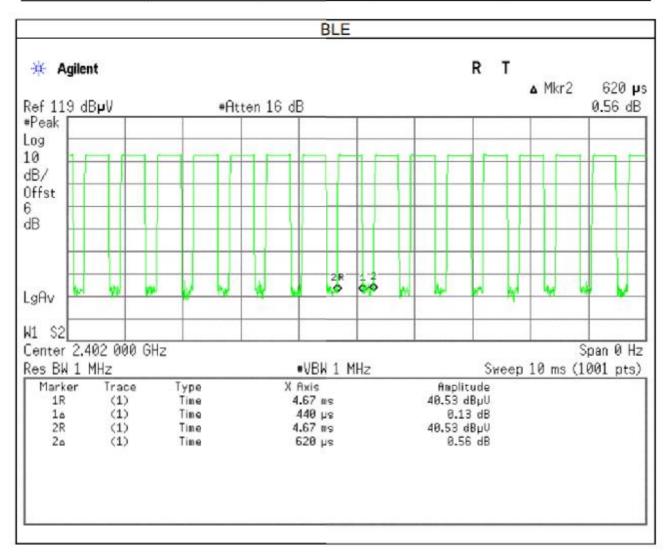
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.



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## 3.3 EUT DUTY CYCLE

	Duty Cycle					
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)	Duty Factor(dB)		
BLE	0.4400	0.6200	70.97%	-1.49		





## 4. TEST RESULT

## 4.1 AC POWER LINE CONDUCTED EMISSION

#### 4.1.1 Test Limit

According to RSS-GEN section 8.8,

Frequency Range	Limits(dBµV)		
(MHz)	Quasi-peak	Average	
0.15 to 0.50	66 to 56*	56 to 46*	
0.50 to 5	56	46	
5 to 30	60	50	

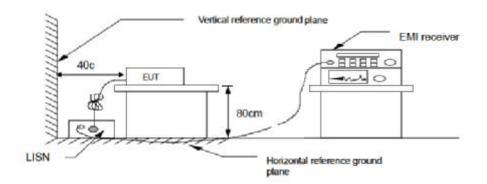
\* Decreases with the logarithm of the frequency.

#### 4.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

- The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
- 2. EUT connected to the line impedance stabilization network (LISN)
- Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
- Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. Recorded Line for Neutral and Line.

#### 4.1.3 Test Setup



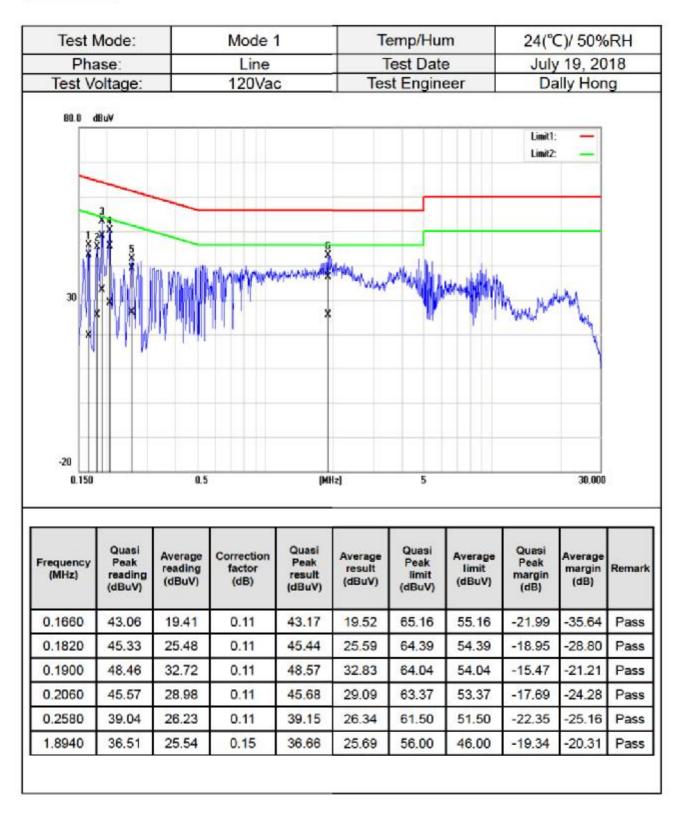
## 4.1.4 Test Result

Pass

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## Test Data





Test N	Mode:		Mode '	1	Te	emp/Hur	n	24(°C	C)/ 50%	RH
Pha	ise:	Neutral Test Date								
Test Vo	oltage:	: 120Vac		Tes	st Engine	eer		ally Hon		
80.0 d		myland	pphality	ylinestate			5X	Limit1: Limit2:		
-20										
-20 0.150		0.5		(MI	Hz)	5			30.000	12
and the second	Quasi Peak reading (dBuV)	0.5 Average reading (dBu )	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	30.000 Average margin (dB)	Remar
0.150	Peak reading	Average reading	Correction factor	Quasi Peak result	Average	Quasi Peak limit	limit	Peak margin	Average margin	Remar
0.150 Frequency (MHz)	Peak reading (dBuV)	Average reading (dBu )	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	limit (dBuV)	Peak margin (dB)	Average margin (dB)	
n 150 Frequency (MHz) 1.8940	Peak reading (dBuV) 31.03	Average reading (dBu ) 22.97	Correction factor (dB) 0.16	Quasi Peak result (dBuV) 31.19	Average result (dBuV) 23.13	Quasi Peak limit (dBuV) 56.00	limit (dBuV) 46.00	Peak margin (dB) -24.81	Average margin (dB) -22.87	Pass Pass
0.150 requency (MHz) 1.8940 0.1825	Peak reading (dBuV) 31.03 40.91	Average reading (dBu ) 22.97 28.44	Correction factor (dB) 0.16 0.13	Quasi Peak result (dBuV) 31.19 41.04	Average result (dBuV) 23.13 28.57	Quasi Peak limit (dBuV) 56.00 64.37	limit (dBuV) 46.00 54.37	Peak margin (dB) -24.81 -23.33	Average margin (dB) -22.87 -25.80	Pass Pass Pass
0.150 requency (MHz) 1.8940 0.1825 0.2007	Peak reading (dBuV) 31.03 40.91 40.02	Average reading (dBu ) 22.97 28.44 26.02	Correction factor (dB) 0.16 0.13 0.13	Quasi Peak result (dBuV) 31.19 41.04 40.15	Average result (dBuV) 23.13 28.57 26.15	Quasi Peak limit (dBuV) 56.00 64.37 63.58	limit (dBuV) 46.00 54.37 53.58	Peak margin (dB) -24.81 -23.33 -23.43	Average margin (dB) -22.87 -25.80 -27.43	Pass

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## 4.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

#### 4.2.1 Test Limit

According to RSS-247 section 5.2(a) and RSS-GEN 6.7,

#### 6 dB Bandwidth :

Limit

Shall be at least 500kHz

Occupied Bandwidth(99%) : For reporting purposes only.

#### 4.2.2 Test Procedure

Test method Refer as KDB 558074 D01, section 8.1 and ANSI 63.10:2013 clause 6.9.2 & 6.9.3.

- 1. The EUT RF output connected to the spectrum analyzer by RF cable.
- 2. Setting maximum power transmit of EUT
- SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth.
- SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
- Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

#### 4.2.3 Test Setup



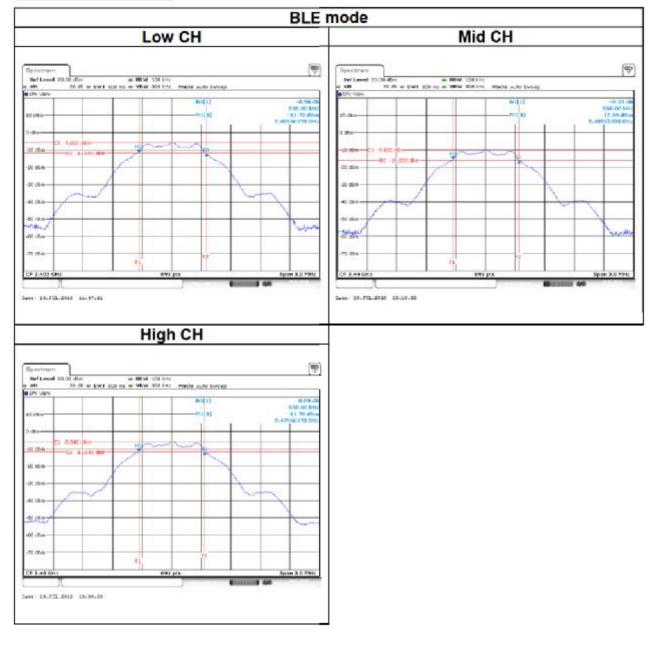
#### 4.2.4 Test Result

Test mode: BLE mode / 2402-2480 MHz						
Channel	Frequency (MHz)	OBW(99%) (MHz)	6dB BW (MHz)	6dB limit (kHz)		
Low	2402	1.0549	0.6860			
Mid	2440	1.0549	0.6686	>500		
High	2480	1.0593	0.6686	1		



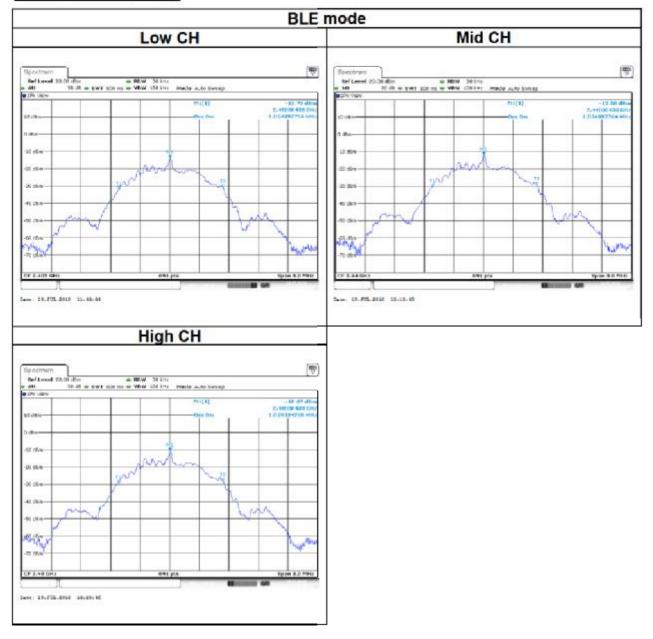
# Test Data

#### 6dB BANDWIDTH





#### BANDWIDTH(99%)



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## 4.3 OUTPUT POWER MEASUREMENT

#### 4.3.1 Test Limit

According to RSS-247 section 5.4(d)

#### Peak output power :

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e), base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

	Antenna not exceed 6 dBi : 30dBm	
Limit	<ul> <li>Antenna with DG greater than 6 dBi</li> <li>[Limit = 30 - (DG - 6)]</li> <li>Point-to-point operation</li> </ul>	

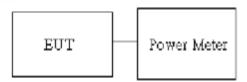
Average output power : For reporting purposes only.

#### 4.3.2 Test Procedure

Test method Refer as KDB 558074 D01, section 9.1.2.

- 1. The EUT RF output connected to the power meter by RF cable.
- 2. Setting maximum power transmit of EUT.
- 3. The path loss was compensated to the results for each measurement.
- Measure and record the result of Peak output power and Average output power. in the test report.

#### 4.3.3 Test Setup





## 4.3.4 Test Result

#### Peak output power :

			B	LE Mode			
Config.	СН	Freq. (MHz)	PK Power (dBm)	EIRP PK Power (dBm)	PK Power (W)	EIRP PK Power (W)	IC Limit (dBm)
BLE	0	2402	4.97	8.97	0.0031	0.0079	
Data rate:	19	2440	5.79	9.79	0.0038	0.0095	30
1Mbps	39	2480	6.26	10.26	0.0042	0.0106	

#### Average output power :

	BLE	Mode	
Config.	сн	Freq. (MHz)	AV Power (dBm)
BLE	0	2402	4.82
Data rate:	19	2440	5.65
1Mbps	39	2480	5.99

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## 4.4 POWER SPECTRAL DENSITY

### 4.4.1 Test Limit

According to RSS-247 section 5.2(b)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Limit

Antenna not exceed 6 dBi : 8dBm
 Antenna with DG greater than 6 dBi
 [Limit = 8 - (DG - 6)]
 Point-to-point operation :

#### 4.4.2 Test Procedure

Test method Refer as KDB 558074 D01, Section 10.2

- 1. The EUT RF output connected to the spectrum analyzer by RF cable.
- 2. Setting maximum power transmit of EUT
- SA set RBW = 3kHz, VBW = 30kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
- The path loss and Duty Factor were compensated to the results for each measurement by SA.
- 5. Mark the maximum level.
- 6. Measure and record the result of power spectral density. in the test report.

#### 4.4.3 Test Setup



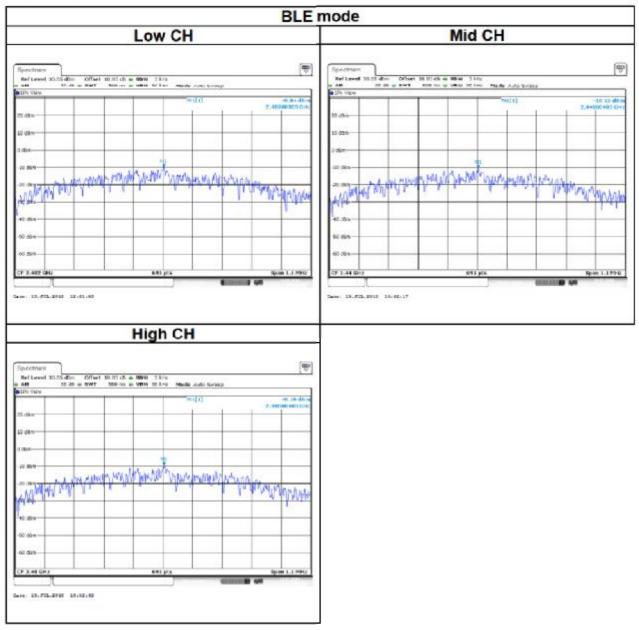
#### 4.4.4 Test Result

	Test mode: BLE	mode / 2402-2480 MH	z
Channel	Frequency (MHz)	PSD (dBm)	IC/FCC limit (dBm)
Low	2402	-9.84	
Mid	2440	-10.13	8
High	2480	-9.19	



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## Test Data





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## 4.5 CONDUCTED BAND EDGE AND SPURIOUS EMISSION

#### 4.5.1 Test Limit

According to RSS-247 section 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

#### 4.5.2 Test Procedure

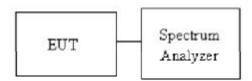
Test method Refer as KDB 558074 D01, Section 11.

 EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

 SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

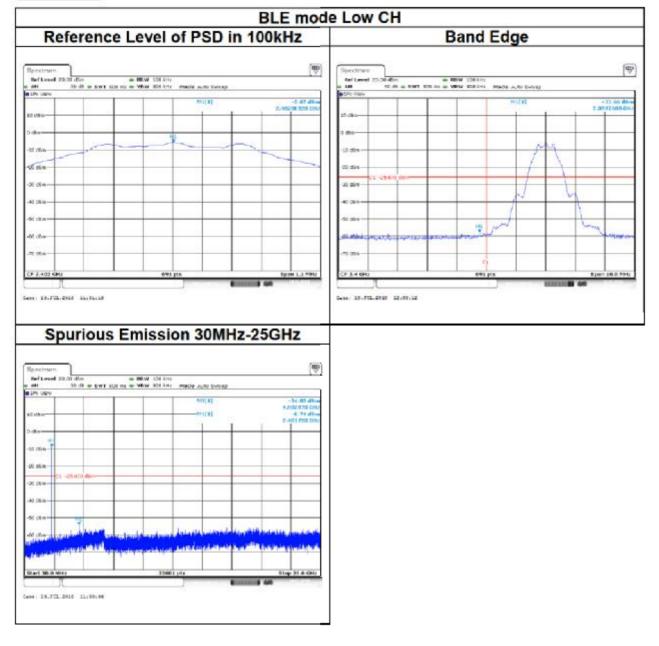
#### 4.5.3 Test Setup





### 4.5.4 Test Result

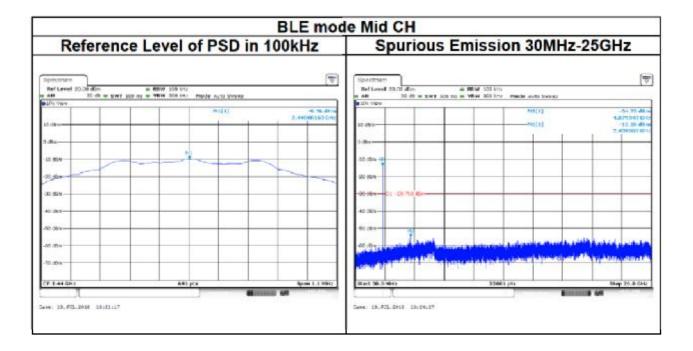
### Test Data



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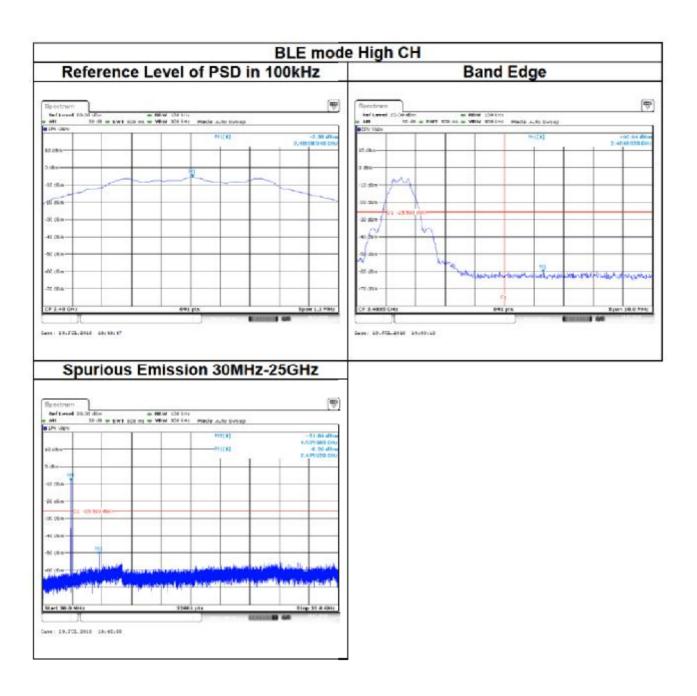


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## 4.6 RADIATION BANDEDGE AND SPURIOUS EMISSION

### 4.6.1 Test Limit

IC according to RSS-247 section 5.5, RSS-Gen, Section 8.9 and 8.10

#### Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

#### Above 30 MHz

Frequency	Field Str microvolts/m at 3 me	
(MHz)	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.



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Report No.: T180627D11-RC2

### 4.6.2 Test Procedure

Test method Refer as KDB 558074 D01, Section 12.1.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9KHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Remark:

1. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

2. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

- 4. The SA setting following :
  - (1) Below 1G : RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
  - (2) Above 1G :
    - (2.1) For Peak measurement : RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
    - (2.2) For Average measurement : RBW = 1MHz, VBW

'If Duty Cycle ≥ 98%, VBW=10Hz.

If Duty Cycle < 98%, VBW=1/T.

Configuration	Duty Cycle (%)	T(ms)	1/T (kHz)	VBW Setting
BLE	70.97%	0.4400	2.273	2.4K

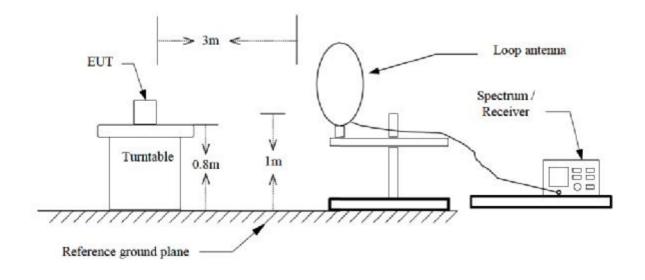


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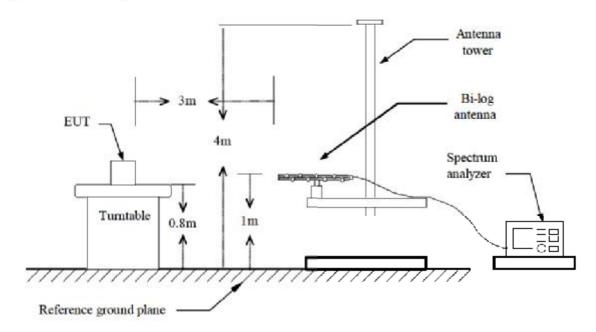
Report No.: T180627D11-RC2

## 4.6.3 Test Setup

9kHz ~ 30MHz



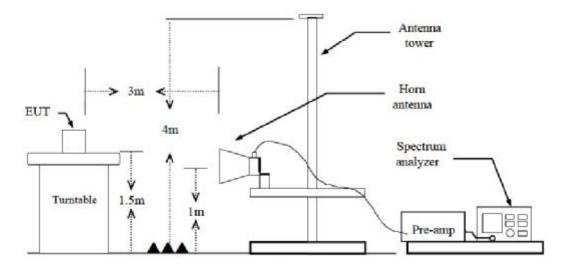
#### 30MHz ~ 1GHz





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#### Above 1 GHz





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## 4.6.4 Test Result

### Band Edge Test Data

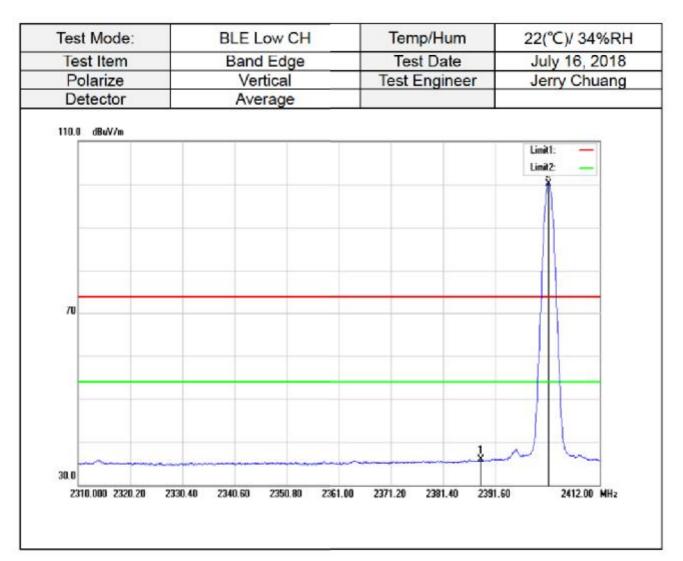
#### For PIFA Antenna

Test Mode:	BLE Low CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Band Edge	Test Date	July 16, 2018
Polarize			Jerry Chuang
Detector	Peak		
120.0 dBuV/m			
			Limit1: Limit2:
			- Â
80			
		1.	1 1
admittion with himself by a	hy stan and at had denote that an an an and a star	annon and a sport all and the first	Arr. M
2310.000 2320.20 233	30.40 2340.60 2350.80 2361.0	0 2371.20 2381.40 2391	.60 2412.00 MHz

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2388.540	52.78	-2.98	49.80	74.00	-24.20	peak
2	2402.208	104.95	-2.95	102.00	-	-	peak



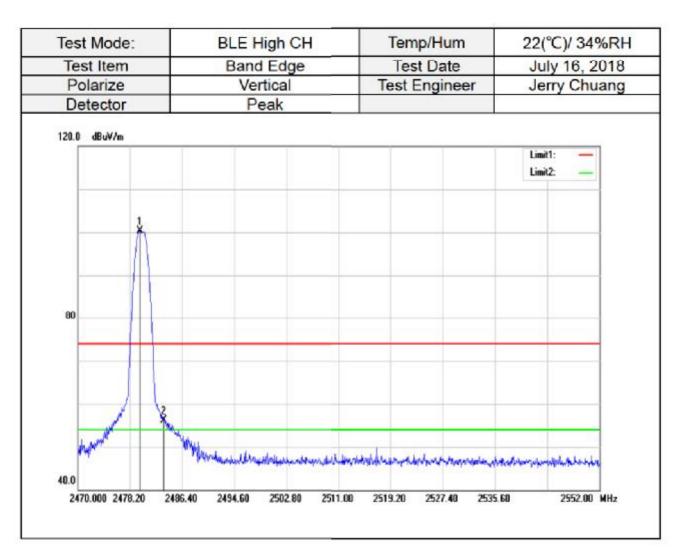
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No.	Frequency (MHz)	Reading	Correct	Result	Limit	Margin	Remark
		(MHz) (dBuV) Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	2388.744	38.80	-2.98	35.82	54.00	-18.18	AVG
2	2402.004	103.14	-2.95	100.19	-	-	AVG



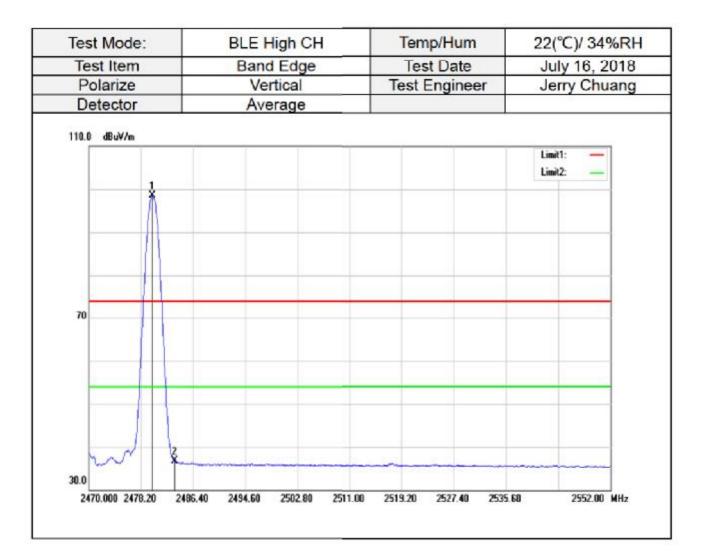
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No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2479.758	102.92	-2.70	100.22		-	peak
2	2483.500	58.78	-2.69	56.09	74.00	-17.91	peak



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No.	Frequency	Frequency Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2480.004	101.16	-2.70	98.46	-	a 7:	AVG
2	2483.500	39.39	-2.69	36.70	54.00	-17.30	AVG



## Band Edge Test Data

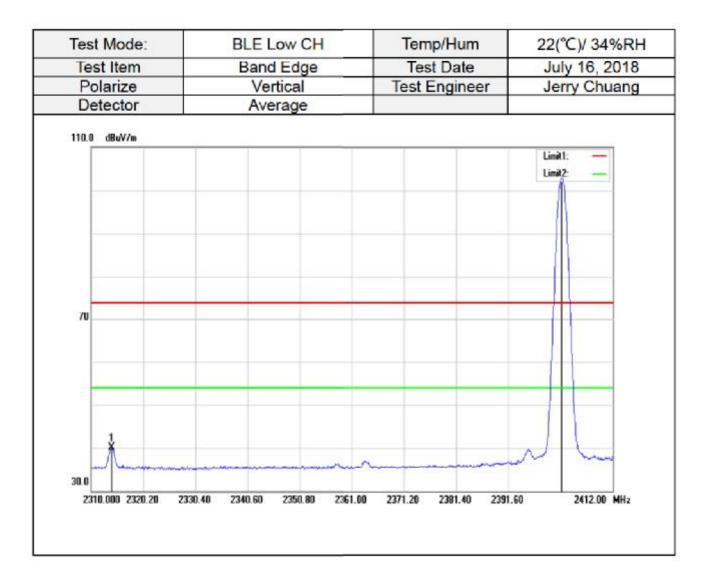
#### For Dipole Antenna

Test Mode:	BLE Low CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Band Edge	Test Date	July 16, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak		
120.0 dBuV/m			
			Limit1: Limit2:
			3
80			
		×	
40.0	washermanishis. An and the street of the street	Mong-disheep-historian Webshiresandy MWT197	
	30.40 2340.60 2350.80 2361.0		

No.	Frequency (MHz)		Limit	Margin	Remark		
			Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.254	54.68	-2.98	51.70	74.00	-22.30	peak
2	2402.208	106.55	-2.95	103.60	-	-	peak



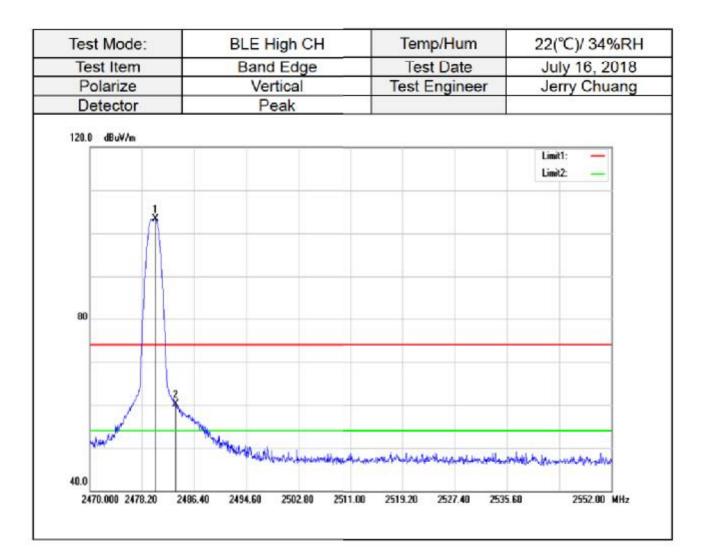
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No.	Frequency	Frequency Reading Correct R	Result	Limit	Margin	Remark	
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2313.978	43.25	-3.22	40.03	54.00	-13.97	AVG
2	2402.004	105.85	-2.95	102.90	-	-	AVG



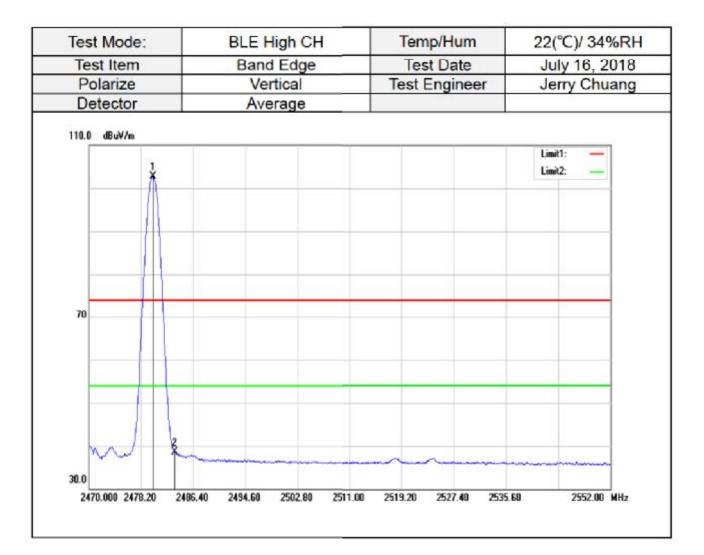
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No.	Frequency	Frequency Reading Correct	Correct	Result	Limit	Margin	Remark
(N	(MHz) (dBuV) Factor(dB/m) (dBu	(dBuV/m)	(dBuV/m) (dB)	(dB)			
1	2480.332	106.06	-2.70	103.36	2		peak
2	2483.500	62.81	-2.69	60.12	74.00	-13.88	peak



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No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2480.086	105.33	-2.70	102.63	-	a 7:	peak
2	2483.500	41.18	-2.69	38.49	54.00	-15.51	peak



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#### Above 1G Test Data For PIFA Antenna

Test Mode:		BLE Low C	н		/Hum	12	34%RH
Test Item		Harmonic	;		Date		0, 2018
Polarize		Vertical		Test E	ngineer	Jerry	Chuang
Detector	Pe	eak and Ave	rage				
110.0 dBu¥/m							
						Limit1:	—
						Linit2:	_
70							
	64						
	×						_
30.0							
	00 6100.00	8650.00 11200.	00 13750.00	16300.00	18850.00 214	00.00 26	500.00 MHz
1000.000 3550.							
1000.000 3550.							
1000.000 3550.	Reading	Correct	Resu	. 1	Limit	Margin	

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4806.000	47.51	4.35	51.86	74.00	-22.14	peak
N/A						
		1				

#### Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Mode:		BLE Low C		[emp/Hum		34%RH
Test Item		Harmonic	1	Test Date		0,2018
Polarize	Da	Horizontal		st Engineer	Jerry	Chuang
Detector	Pe	ak and Ave	rage			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	_
70						
_						_
	¥					
			_			_
30.0						
1000.000 3550.0	00 6100.00 8	650.00 11200.00	) 13750.00 16300	1.00 18850.00 2140	0.00 26	500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remari
4806.000	45.77	4.35	50.12	74.00	-23.88	peak
N/A						
			-			
				4		
mark						
mark: 1. Measi	urina freauei	ncies from 1	GHz to the	10th harmonic	of highest	

Average value compliance with the average limit



Test Mode: Test Item		BLE Mid CH Harmonic		emp/Hum Test Date		0, 2018
Polarize		Vertical	the second se	st Engineer		Chuang
Detector	Pe	ak and Aver				
110.0 dBuV/m						
					Limit1:	-
					Linit2:	_
70						
	×					
						_
30.0	00 6100.00 8	650.00 11200.00	13750.00 16300	100 18850.00 214	00.00 26	500.00 MHz
1000.000 3330.0	00 0100.00 0	030.00 11200.00	13730.00 16300	100 10030,00 214	00.00 20	300.00 Min2
	-					
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remari
4883.000	46.45	4.49	50.94	74.00	-23.06	peak
N/A						
						į
						1
mark:				10th harmonic		

Average value compliance with the average limit



Test Mode: Test Item		BLE Mid CH Harmonic		emp/Hum <sup>[</sup> est Date		34%RH
Polarize		Horizontal		st Engineer		Chuang
Detector	Pea	ak and Avera	age			
110.0 dBuV/m						
					Linit1:	-
					Limit2:	_
10						
70						
	×					
-			_			_
30.0						
1000.000 3550.	00 6100.00 8	650.00 11200.00	13750.00 16300	00 18850.00 214	00.00 26	500.00 MHz
-		Correct	<b>B</b>			
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4883.000	46.86	4.49	51.35	74.00	-22.65	peak
N/A						
					ļ.	
						j.
mark:				Oth harmonic		

Average value compliance with the average limit



Test Mode: Test Item		BLE High Cl Harmonic		emp/Hum Fest Date		34%RH
Polarize		Vertical		st Engineer		Chuang
Detector	Pe	ak and Aver				
110.0 dBuV/m						
					Limit1:	-
					Limit2:	_
70						
	1					
1	Ý					
						_
30.0 1000.000 3550.	00 6100.00 8	650.00 11200.00	) 13750.00 16300	.00 18850.00 2140	10.00 26	500.00 MHz
		a				
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4960.000	51.48	4.61	56.09	74.00	-17.91	peak
4960.000	47.80	4.61	52.41	54.00	-1.59	AVG
N/A	6					
					į.	1
						ĺ.
mark:			011	Oth harmonic		

Average value compliance with the average limit



Test Mode: Test Item	E	BLE High Cl		emp/Hum Fest Date		34%RH
Polarize		Harmonic Horizontal		st Engineer		Chuang
Detector	Pea	ak and Aver		t Engineer	oony	ondurig
110.0 dBuV/m						
					Limit1:	—
					Limit2:	_
70						
-	*					
30.0	00 0100 00 0	CED DO 11000 00	10250.00 10000	00 10050.00 214	10.80 20	500.00.1011
1000.000 3550.	00 6100.00 8	650.00 11200.00	13750.00 16300	.00 18850.00 214	00.00 26	500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4960.000	47.93	4.61	52.54	74.00	-21.46	peak
N/A						
	1					į
						3
mark:				0th harmonic		

Average value compliance with the average limit



#### Below 1G Test Data

Test Item         30MHz-1GHz         Test Date         July 30, 2018           Polarize         Vertical         Test Engineer         Jerry Chuang           Detector         Peak and Quasi-peak         Image: Character Stress	Test Mode:		BT Mode		Ter	mp/Hum		22(°	C)/ 349	%RH
Detector         Peak and Quasi-peak           88.0         dBuV/m           Imil:         Margin:           30         3           30         3           20         3	Test Item			z	Te	st Date		July	y 30, 2	018
80.0 dBuV/m			and the second se		Test	Enginee	r	Jen	ry Chu	ang
20	Detector	Peal	k and Quasi-	peak						
	80.0 dBu∀/m									]
	30	2	nx		*x		53		X	
	30.000 127.00	Reading	Correct	Resu	ilt	Limit		Margin		100.0445
(MHz) (dBuV) (dB/m) (dBuV/m) (dB) (dB)	30.000 127.00		Correct Factor	Resu	ilt					MHz temari
	30.000 127.00 Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resu (dBuV/	ilt /m)	Limit (dBuV/m		Margin (dB)	R	emari
(MHZ) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB)	30.000 127.00 Frequency (MHz) 119.2400	Reading (dBuV) 46.66	Correct Factor (dB/m) -9.05	Resu (dBuV) 37.6	llt /m) 1	Limit (dBuV/m 43.52	)	Margin (dB) -5.91	R	emari peak
(MH2)         (dBuV)         (dB/m)         (dBuV/m)         (dBuV/m)         (dBuV/m)         (dB)           119.2400         46.66         -9.05         37.61         43.52         -5.91         peak	30.000 127.00 Frequency (MHz) 119.2400 174.5300	Reading (dBuV) 46.66 46.82	Correct Factor (dB/m) -9.05 -10.78	Resu (dBuV) 37.6 36.0	lit /m) 1 4	Limit (dBuV/m 43.52 43.52	)	Margin (dB) -5.91 -7.48	R	emari peak peak
(MH2)         (dBuv)         (dB/m)         (dBuv/m)         (dBuv/m)         (dBuv/m)         (dB)           119.2400         46.66         -9.05         37.61         43.52         -5.91         peak           174.5300         46.82         -10.78         36.04         43.52         -7.48         peak	30.000 127.00 Frequency (MHz) 119.2400 174.5300 399.5700	Reading (dBuV) 46.66 46.82 36.35	Correct Factor (dB/m) -9.05 -10.78 -5.30	Resu (dBuV/ 37.6 36.0 31.0	lit /m) 1 4 5	Limit (dBuV/m 43.52 43.52 46.02	)	Margin (dB) -5.91 -7.48 -14.97	R	peak peak peak
(MH2)         (dBuv)         (dB/m)         (dBuv/m)         (dBuv/m)         (dBuv/m)         (dB)           119.2400         46.66         -9.05         37.61         43.52         -5.91         peak           174.5300         46.82         -10.78         36.04         43.52         -7.48         peak           399.5700         36.35         -5.30         31.05         46.02         -14.97         peak	30.000 127.00 Frequency (MHz) 119.2400 174.5300 399.5700 603.2700	Reading (dBuV) 46.66 46.82 36.35 36.11	Correct Factor (dB/m) -9.05 -10.78 -5.30 -1.03	Resu (dBuV/ 37.6 36.0 31.0 35.0	lit /m) 1 4 5 8	Limit (dBuV/m 43.52 43.52 46.02 46.02	)	Margin (dB) -5.91 -7.48 -14.97 -10.94	R	peak peak peak peak peak



Test Mode:	(d	BT Mode	T	emp/Hum		22(°C)	/ 34%RH
Test Item		30MHz-1GH	z	Test Date	2	July 3	30, 2018
Polarize		Horizontal		st Enginee	er	Jerry	Chuang
Detector	Peal	k and Quasi	-peak				
80.0 dBuV/m						Linit1: Margin:	Ξ
30		XX XX			5 e * X		F
-20							
-20 30.000 127.00	1 224.00 3	21.00 418.00	515.00 612.00	0 709.00	805.00	11	000.00 MHz
	224.00 3 Reading (dBuV)	21.00 418.00 Correct Factor (dB/m)	515.00 612.00 Result (dBuV/m)	) 709.00 Limit (dBuV/m		11 Margin (dB)	
30.000 127.00 Frequency	Reading	Correct Factor	Result	Limit	1)	Margin	000.00 MHz Remark
30.000 127.00 Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m	1)	Margin (dB)	Remar
30.000 127.00 Frequency (MHz) 224.9700	Reading (dBuV) 48.20	Correct Factor (dB/m) -10.97	Result (dBuV/m) 37.23	Limit (dBuV/m 46.02	1)	Margin (dB) -8.79	Remar
30.000 127.00 Frequency (MHz) 224.9700 324.8800	Reading (dBuV) 48.20 44.02	Correct Factor (dB/m) -10.97 -7.38	Result (dBuV/m) 37.23 36.64	Limit (dBuV/m 46.02 46.02	1)	Margin (dB) -8.79 -9.38	Remark peak peak
30.000 127.00 Frequency (MHz) 224.9700 324.8800 375.3200	Reading (dBuV) 48.20 44.02 43.98	Correct Factor (dB/m) -10.97 -7.38 -6.02	Result (dBuV/m) 37.23 36.64 37.96	Limit (dBuV/m 46.02 46.02 46.02	1)	Margin (dB) -8.79 -9.38 -8.06	Remar peak peak peak



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### Above 1G Test Data

#### For Dipole Antenna

100		BLE Low CH	Te	emp/Hum	22(°C)/	34%RH
Test Item		Harmonic	Т	Test Date	July 3	0, 2018
Polarize		Vertical		st Engineer	Jerry	Chuang
Detector	Pe	ak and Avera	ige			
110.0 dBuV/m					Limit1: Limit2:	
30.0 1000.000 3550.1 Frequency (MHz)	2 X 00 6100.00 ( Reading (dBuV)	0650.00 11200.00 Correct Factor	13750.00 16300 Result (dBuV/m)	.00 18950.00 2140 Limit (dBuV/m)	0.00 26 Margin (dB)	500.00 MHz Remark
4806.000	1000000000	(dB/m)	a constant.		0.000	naali
4806.000	57.48 48.44	4.35	61.83 52.79	74.00 54.00	-12.17 -1.21	peak AVG
4008.000 N/A	40.44	4.55	02.78	04.00	-1.21	AVG
N/O						

2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Mode		BLE Low C		emp/Hum		34%RH
Test Item		Harmonic		Test Date		0,2018
Polarize	-	Horizontal		st Engineer	Jerry	Chuang
Detector	Pe	ak and Aver	age			
110.0 dBuV/m						
					Limit1:	-
					Limit2:	-
70						
-						
	Ŷ					
30.0						
1000.000 3550.	00 6100.00 8	650.00 11200.00	13750.00 16300	00 18850.00 2140	10.00 26	500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remar
02010	43.49	(dB/m) 4.35	47.84	74.00	-26.16	peak
4806.000				Contract Proved		
5 S. A. B. S.						
4806.000 N/A						
5 S. A. B. S.						-
5 S. A. B. S.						
5 S. A. B. S.						
N/A						
N/A mark:				0th harmonic		

Average value compliance with the average limit



Test Item		BLE Mid CH Harmonic		emp/Hum Test Date		0, 2018
Polarize		Vertical		st Engineer		Chuang
Detector	Pe	ak and Aver				
110.0 dBuV/m						
					Linit1:	-
					Limit2:	_
70						
	¥					
	×					
-	_					_
30.0						
1000.000 3550.	00 6100.00 8	650.00 11200.00	13750.00 16300	1.00 18850.00 2140	00,00 26	500.00 MHz
	1					
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remar
4883.00 <mark>0</mark>	53.67	4.49	58.16	74.00	-15.84	peak
4883.000	47.80	4.49	52.29	54.00	-1.71	AVG
N/A						
				1		
mark:					0	

For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Mode Test Item		BLE Mid CH Harmonic		emp/Hum est Date		34%RH
Polarize		Horizontal		st Engineer		Chuang
Detector	Pea	ak and Aver		Lighton	conj	ondang
110.0 dBuV/m						
					Limit1:	—
					Limit2:	-
70						
10						
	¥					
						-
30.0						
1000.000 3550	.00 6100.00 8	650.00 11200.00	13750.00 16300	00 18850.00 2140	10.00 26	500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remar
4883.000	40.92	4.49	45.41	74.00	-28.59	peak
N/A						
					ļ.	
mark:	urina fragues	noine from t	CHz to the 1	0th harmonic	ofhichast	

Average value compliance with the average limit



Test Mode: Test Item		BLE High Cl Harmonic		emp/Hum Test Date	S	34%RH
Polarize		Vertical		st Engineer		Chuang
Detector	Pe	ak and Aver				
110.0 dBuV/m						
					Limit1:	—
					Limit2:	_
70						
	1					
	× ×					_
						_
30.0						
1000.000 3550.	00 6100.00 8	650.00 11200.00	13750.00 16300	00 18850.00 2140	00.00 26	500.00 MHz
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remari
4960.00 <mark>0</mark>	51.56	4.61	56.17	74.00	-17.83	peak
4960.000	47.44	4.61	52.05	54.00	-1.95	AVG
N/A						
					ļ.	
mark:			01-1-11-1	0th harmonic		

Average value compliance with the average limit



Test Item		BLE High CH Harmonic		emp/Hum est Date		34%RH
Polarize		Horizontal		t Engineer		Chuang
Detector	Pe	ak and Avera		Linghioon	oony	ondurig
110.0 dBuV/m	30					
					Limit1:	_
					Limit2:	_
20						
	*					
			_			_
30.0						
1000.000 3550	.00 6100.00 8	3650.00 11200.00	13750.00 16300.0	00 18850.00 214	00.00 26	500.00 MHz
Frequency	Reading	Correct	Result	Limit	Margin	Remar
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remar
		Factor				Remar peak
(MHz)	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
(MHz) 4960.000	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
(MHz) 4960.000	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
(MHz) 4960.000	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
(MHz) 4960.000 N/A	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remar peak
(MHz) 4960.000	(dBuV)	Factor (dB/m)	(dBuV/m)	(dBuV/m)	(dB)	

Average value compliance with the average limit



#### Below 1G Test Data

		BT Mode		Te	emp/H	um	22(°C)	/ 34%RH
Test Item	3	80MHz-1GH	z	Т	est Da	ate	July :	30, 2018
Polarize		Vertical		Tes	t Engi	neer	Jerry	Chuang
Detector	Peak	and Quasi-	peak					
80.0 dBu∀/m								
							Limit1: Margin:	Ξ
								F
30	*	2		3X	*	5	ŝ	
-								_
-20		21.00 110.00	F1E 00			00 806.0	10 1	000.00 MHz
30.000 127.00	0 224.00 3	21.00 418.00	515.00	612.00	/09.			
1000	Reading (dBuV)	Correct Factor (dB/m)	Resu (dBuV/	ılt	L	imit uV/m)	Margin (dB)	Remar
30.000 127.00	Reading	Correct Factor	Resu	ılt /m)	L (dB		Margin (dB) -7.30	
30.000 127.00 Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Resu (dBuV	ılt /m) 2	L (dB 43	uV/m)	(dB)	peak
30.000 127.00 Frequency (MHz) 174.5300	Reading (dBuV) 47.00	Correct Factor (dB/m) -10.78	Resu (dBuV/ 36.2	ult /m) 2 0	L (dB 4:	uV/m) 3.52	(dB) -7.30	peak peak
30.000 127.00 Frequency (MHz) 174.5300 424.7900	Reading (dBuV) 47.00 33.21	Correct Factor (dB/m) -10.78 -4.51	Resu (dBuV) 36.2 28.7	ult /m) 2 0 1	L (dB 4: 4(	uV/m) 3.52 3.02	(dB) -7.30 -17.32	peak peak peak
30.000 127.00 Frequency (MHz) 174.5300 424.7900 565.4400	Reading (dBuV) 47.00 33.21 35.37	Correct Factor (dB/m) -10.78 -4.51 -1.56	Resu (dBuV) 36.2 28.7 33.8	ult /m) 2 0 1 4	L (dB 4: 4( 4(	uV/m) 3.52 3.02 3.02	(dB) -7.30 -17.32 -12.21	Remark peak peak peak peak peak

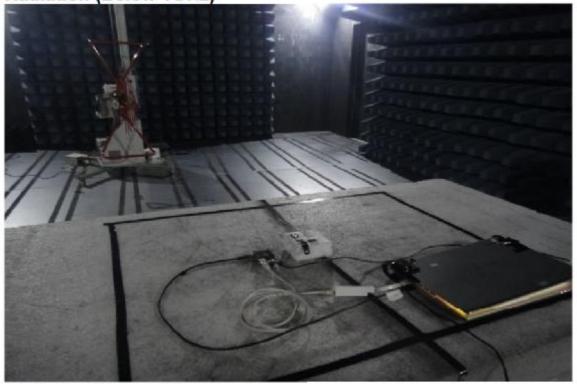


Test Mode:	£й,	E	BT Mode	•	Te	mp/Hu	m	22(°(	C)/ 34%R
Test Item		30	MHz-1G	Hz	Te	est Dat	e	July	30, 201
Polarize			lorizonta	1	Tes	t Engin	eer	Jen	ry Chuang
Detector	F	Peak a	ind Quas	si-peak					
60.0 dBuV/m								Linit1 Margir	
							5 6		F
	+	ž				X	<sup>2</sup> ×		-
30		8							
	-								
-20									
-20	) 224.00	321.0	0 418.00	515.00	612.00	709.00	806.0	D	1000.00 MHz
	224.00 Readin (dBu)	ng	Correct Factor	515.00 Resu (dBuV	ult	709.00 Lim (dBu\	it	) Margin (dB)	
30.000 127.00 Frequency	Readir	ng V)	Correct	Resu	ult //m)	Lim	iit //m)	Margin	
30.000 127.00 Frequency (MHz)	Readir (dBu)	ng V) 8	Correct Factor (dB/m)	Rest (dBuV	ult //m) KO	Lim (dBu\	it //m) 52	Margin (dB)	Rema
30.000 127.00 Frequency (MHz) 174.5300	Readin (dBu) 48.18	ng /) 8 5	Correct Factor (dB/m) -10.78	Resu (dBuV 37.4	ult //m) 10 36	Lim (dBu) 43.5	it //m) 52 02	Margin (dB) -6.12	Rema
30.000 127.00 Frequency (MHz) 174.5300 275.4100	Readin (dBu) 48.18 39.38	ng V) 8 5 2	Correct Factor (dB/m) -10.78 -8.49	Rest (dBuV 37.4 30.8	ult //m) 10 36 00	Lim (dBu) 43.9 46.0	it //m) 52 02 02	Margin (dB) -6.12 -15.16	Rema peal peal
30.000 127.00 Frequency (MHz) 174.5300 275.4100 675.0500	Readin (dBu) 48.18 39.30 36.32	ng /) 8 5 2 7	Correct Factor (dB/m) -10.78 -8.49 0.68	Rest (dBuV 37.4 30.8 37.0	ult //m) 10 36 00 02	Lim (dBu) 43.9 46.0 46.0	it //m) 52 02 02 02 02	Margin (dB) -6.12 -15.16 -9.02	Rema peal peal peal

#### --End of Report--



APPENDIX-A Test Photo For PIFA Antenna Radiation (Below 1GHz) Page: A-1 / A-4 Rev.: 02



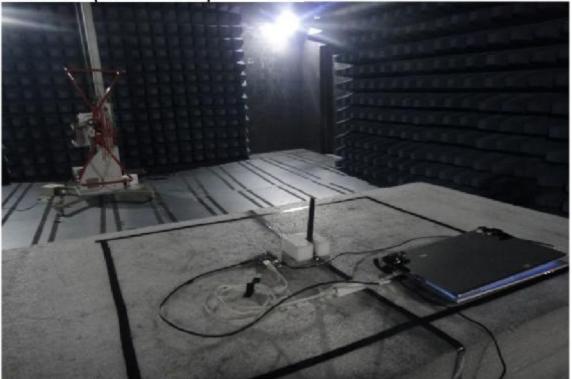
Radiation (Above 1GHz)





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For Dipole Antenna Radiation (Below 1GHz)



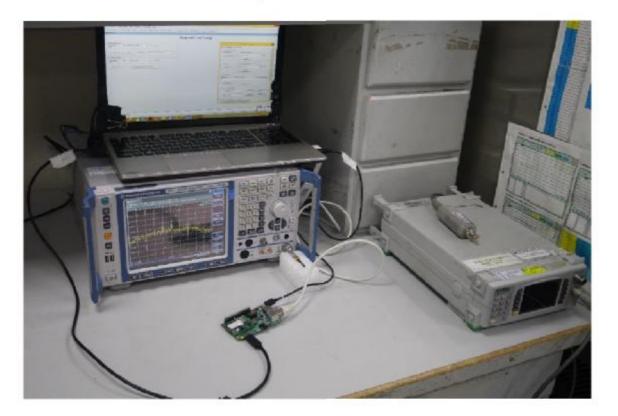
Radiation (Above 1GHz)





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# **Conducted Emission Set up Photo**

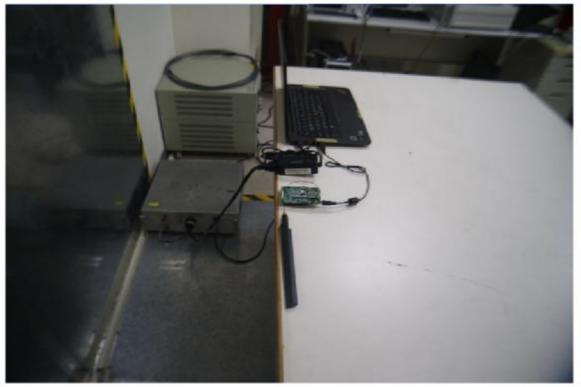




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# Conduction









# ISED: 22364-QCA9377 Report No.: T180627D11-MI

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INDUSTRY CANADA RSS 102 ISSUE 5

# RF EXPOSURE REPORT

For

# WiFi+Bluetooth 4.1(HS) System on Module

Model: PIXI-9377

# Trade Name: TechNexion

Issued to

TechNexion Ltd. 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipei City, 23511 Taiwan ROC

Issued by

Compliance Certification Services Inc. No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.) http://www.ccsrf.com Issued Date: September 20, 2018

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有说明,比較告結果僅對測试之樣品負責,同時此樣品懂保留90天。本報告未經本公司書面許可,不可部分複製。

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SGS Compliance Cartification Service Inc. 释智科技能份有限公司 

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# **Revision History**

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 28, 2018	Initial Issue	ALL	May Lin
01	September 20, 2018	1. Modify antenna specification.	P.5	May Lin



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# 1. TEST RESULT CERTIFICATION

### We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10: 2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of IC Rules RSS-102.

The test results of this report relate only to the tested sample EUT identified in this report.

APPLICABLE STANDARDS						
STANDARD	TEST RESULT					
INDUSTRY CANADA RSS 102 ISSUE 5	No non-compliance noted					

Approved by:

From Clearing

Sam Chuang Manager Compliance Certification Services Inc. Reporter:

May Līn

May Lin Report coordinator Compliance Certification Services Inc.



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# 2. LIMIT

According to RSS-102 Issue 5, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

# 3. EUT SPECIFICATION

EUT	WiFi+Bluet	WiFi+Bluetooth 4.1(HS) System on Module								
Model	PIXI-9377									
Trade Name	TechNexion	TechNexion								
Model Discrepancy	N/A	N/A								
Frequency band (Operating)	IEEE 8 IEEE 8 IEEE 8 IEEE 8									
Device category										
Exposure classification	General (S=0.0	<ul> <li>Occupational/Controlled exposure (S = 0.6455 f<sup>0.5</sup>W/m<sup>2</sup>)</li> <li>General Population/Uncontrolled exposure (S=0.02619 f<sup>0.6834</sup> W/m<sup>2</sup>)</li> <li>Note: f is frequency in MHz</li> </ul>								
	Bluetooth and WIFI 2.4G:									
	2	Brand	P/N	Туре	Peak Gain	Worst Mode				
	Antenna 1	TechNexion	VM2450-25523-00X-180	PIFA	2.5dBi	x				
	Antenna 2	TechNexion	VM2450-ASSY1005	Dipole	4dBi	0				
	WIFI 5G:									
Antenna		Brand	P/N	Туре	Peak Gain	Worst Mode				
Specification	Antenna 1	TechNexion	VM2450-25523-00X-180	PIFA	3dBi	х				
	Antenna 2	TechNexion	VM2450-ASSY1005	Dipole	6dBi	0				
				ric gain						

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Report No.: T18	80627D11-MI		Rev.: 01
Maximum Tune up Power	Bluetooth Mode : IEEE 802.11b Mode: IEEE 802.11g Mode: IEEE 802.11n HT 20 Mode: IEEE 802.11n HT 40 Mode: IEEE 802.11n HT 40 Mode: IEEE 802.11n HT 20 Mode: IEEE 802.11n HT 40 Mode: IEEE 802.11ac VHT80 Mode:	11.00 dBm 17.50 dBm 18.50 dBm 18.50 dBm 18.00 dBm 14.50 dBm 14.50 dBm 17.50 dBm 13.50 dBm	(0.013 W) (0.056 W) (0.071 W) (0.071 W) (0.063 W) (0.028 W) (0.028 W) (0.028 W) (0.056 W) (0.022 W)
Evaluation applied	MPE Evaluation*     SAR Evaluation     N/A		
Notes: For Bluet	ooth and WIFI could not be use as trans	mit/receive at the	same time.

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# 4. TEST RESULTS

### No non-compliance noted.

### Calculation

Given  $E = \frac{\sqrt{30 \times P \times G}}{d}$  &  $S = \frac{E^2}{377}$ Where E = Field strength in Volts / meter P = Power in Watts G = Numeric antenna gain d = Distance in meters S = Power density in watts / meter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377d^2}$$

Yields

$$S = \frac{30 \times P \times G}{377 \times (d)^2} = 0.0796 \times \frac{P \times G}{d^2}$$
 Equation 1

Where d = Distance in m P = Power in W G = Numeric antenna gain S = Power density in W / m<sup>2</sup> Page: 7 / 9 Rev.: 01



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# 5. MAXIMUM PERMISSIBLE EXPOSURE

Substituting the MPE safe distance using d = 0.2 m into Equation 1:

 $S = 1.99 \times P \times G$ 

Where P = Power in W

G = Numeric antenna gain

S = Power density in W / m2

#### Bluetooth mode:

Ch.	Frq.(MHz)	P (W)	Gain (num.)	D (m)	Power density in W / m <sup>2</sup>	Limit (W/m2)
79	2480	0.013	2.51	0.2	0.0649	5.47

#### IEEE 802.11b mode:

Ch.	Frq.(MHz)	P (W)	Gain (num.)	D (m)	Power density in W / m <sup>2</sup>	Limit (W/m2)
6	2437	0.056	2.51	0.2	0.2797	5.40

### IEEE 802.11g mode:

Ch.	Frq.(MHz)	P (W)	Gain (num.)	D (m)	Power density in W / m <sup>2</sup>	Limit (W/m2)
11	2462	0.071	2.51	0.2	0.3546	5.44

#### IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (W)	Gain (num.)	D (m)	Power density in W / m <sup>2</sup>	Limit (W/m2)
6	2437	0.071	2.51	0.2	0.3546	5.40

### IEEE 802.11n HT40 mode:

Ch.	Frq.(MHz)	P (W)	Gain (num.)	D (m)	Power density in W / m <sup>2</sup>	Limit (W/m2)
6	2437	0.063	2.51	0.2	0.3147	5.40



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#### IEEE 802.11a mode:

Ch.	Frq.(MHz)	P (W)	Gain (num.)	D (m)	Power density in W / m <sup>2</sup>	Limit (W/m2)
48	5240	0.028	3.98	0.2	0.2218	9.12

### IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (W)	Gain (num.)	D (m)	Power density in W / m <sup>2</sup>	Limit (W/m2)
48	5240	0.028	3.98	0.2	0.2218	9.12

#### IEEE 802.11n HT40 mode:

Ch.	Frq.(MHz)	P (W)	Gain (num.)	D (m)	Power density in W / m <sup>2</sup>	Limit (W/m2)
46	5230	0.056	3.98	0.2	0.4435	9.11

#### IEEE 802.11 ac VHT80:

Ch.	Frq.(MHz)	P (W)	Gain (num.)	D (m)	Power density in W / m <sup>2</sup>	Limit (W/m2)
155	5775	0.022	3.98	0.2	0.1742	9.74

--End of Report--



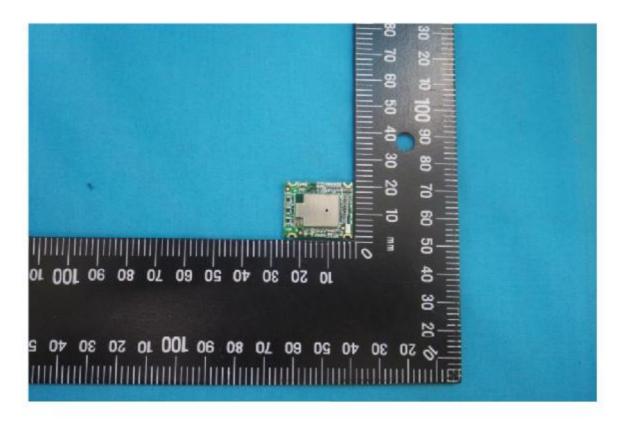
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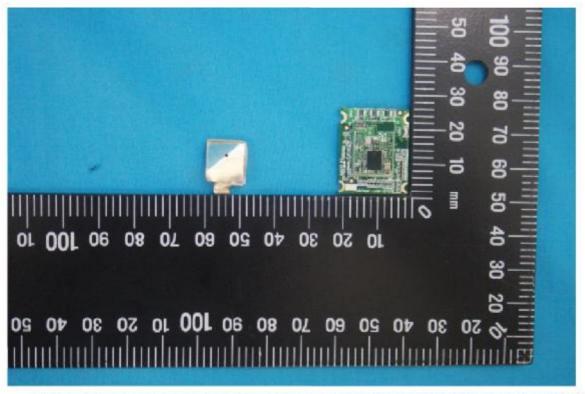
## APPENDIX 1 - PHOTOGRAPHS OF EUT





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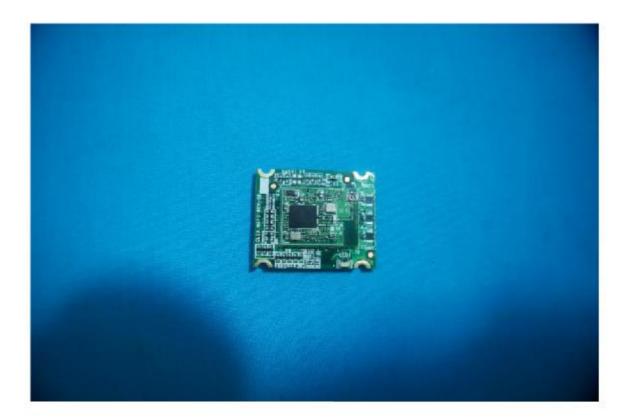


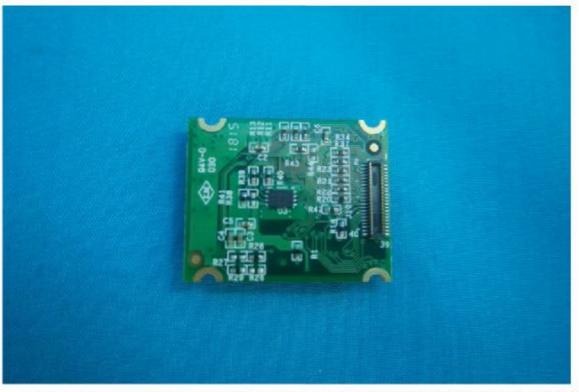


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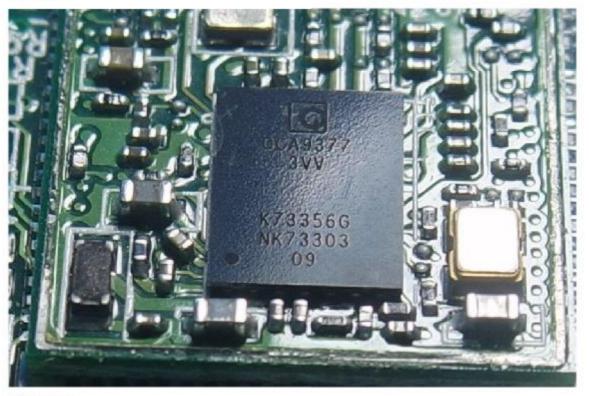


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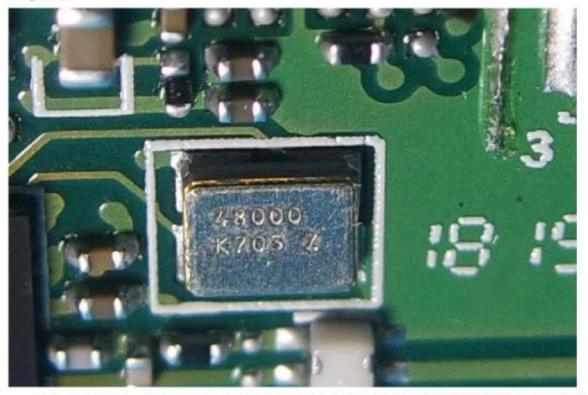


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## Module



Crystal

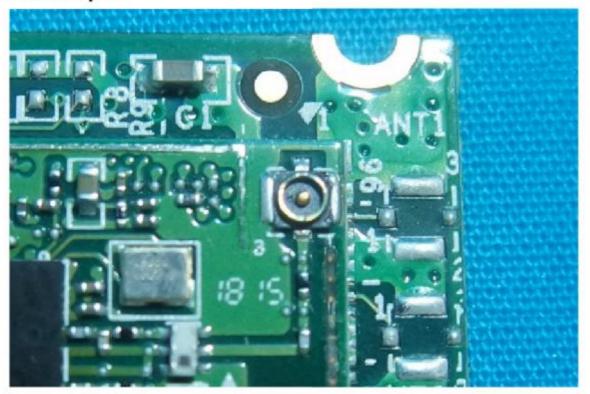


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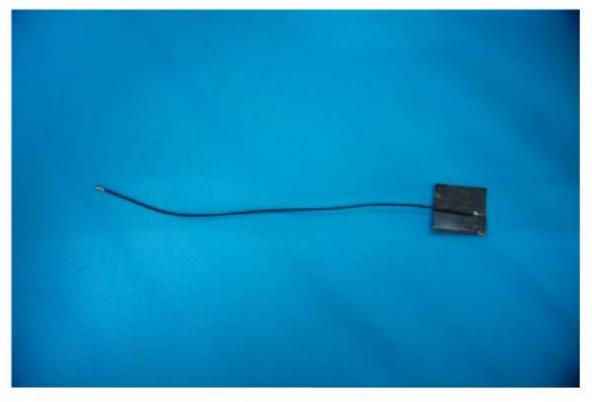
# Antenna port

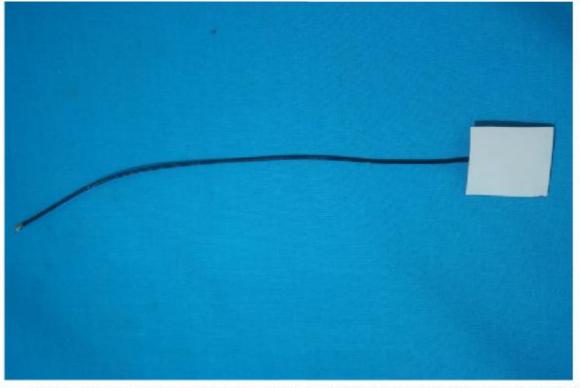




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## **FPC** Antenna



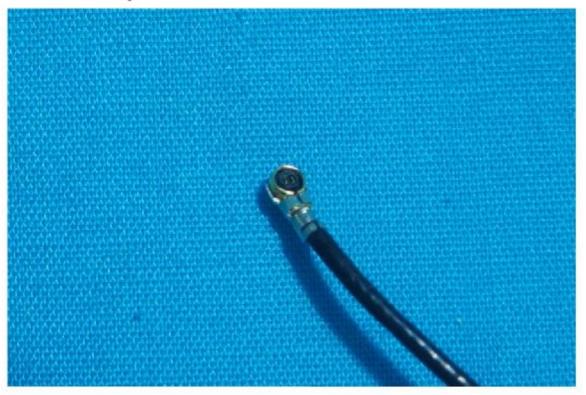


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## **FPC** Antenna port





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# **Dipole Antenna**





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# **Dipole Antenna port**





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## Ipex to SMA Cable



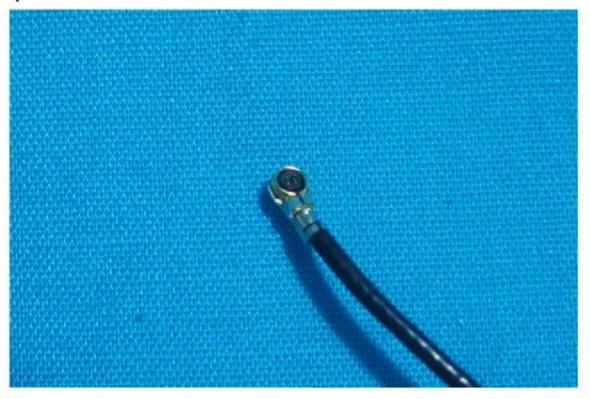


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### Ipex to SMA Cable Port



# VERIFICATION OF COMPLIANCE

This Verification of Compliance is hereby issued to the below named company and for below described product, based on

## <u>Technical Standard</u> : FCC 47 CFR Part 15 Subpart B ANSI C63.4:2014 ISED ICES-003 (Issue 6)

### General Information

Applicant : TechNexion Ltd. Address of Applicant : 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipei City, 23511 Taiwan ROC

### **Product Description**

Product Name : WiFi+Bluetcoth 4.1(HS) System on Module Brand Name : TechNexion Model Number : PIXI-9377

### Measurement Facilities

Company Name : Compliance Certification Services Inc. Test Laboratory : Xindian Lab. Address of Test Lab. : No.163-1, Jhongsheng Rd., Xindian Dist.,New Taipei City, 23151 Taiwan.

This device has been tested and found to be in compliance with the measurement procedures specified in the Standards & Specifications listed above and as indicated in the measurement report with the number: <u>T180627D11-D</u>

The test results shown in this report are applicable only to the investigated sample identified in this report.

Sam Hu / Assistant Manager Date: July 13, 2018



# FCC TEST REPORT

## for

## WiFi+Bluetooth 4.1(HS) System on Module

### MODEL: PIXI-9377

Test Report Number: T180627D11-D

Issued to:

TechNexion Ltd. 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipei City, 23511 Taiwan ROC

Issued by:

**Compliance Certification Services Inc.** 

Xindian Lab. No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, 23151 Taiwan. TEL: 886-2-22170894

FAX: 886-2-22171029

Issued Date: July 13, 2018



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### **Revision History**

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	July 13, 2018	Initial Issue	ALL	Amy Wang

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# **1 TEST RESULT CERTIFICATION**

Product:	WiFi+Bluetooth 4.1(HS) System on Module
Model:	PIXI-9377
Brand:	TechNexion
Applicant:	<b>TechNexion Ltd.</b> 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipei City, 23511 Taiwan ROC
Manufacturer:	<b>TechNexion Ltd.</b> 16f-5, No.736, Zhongzheng Road, Zhonghe Dist., New Taipei City, 23511 Taiwan ROC
Tested:	June 29, 2018 ~ July 5, 2018

EMISSION						
Standard	Item	Result	Remarks			
FCC 47 CFR Part 15 Subpart B, ICES-003 Issue 6-2016	Conducted (Power Port)	PASS	Meet Class B limit			
ANSI C63.4-2014	Radiated	PASS	Meet Class B limit			

**Note:** 1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.

2. The information of measurement uncertainty is available upon the customer's request.

#### **Deviation from Applicable Standard**

None

The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Sam Hu Assistant Manager

Reviewed by:

Eva Fan / Supervisor of report document dept.

# 2 EUT DESCRIPTION

Product	WiFi+Bluetooth 4.1(HS) System on Module
Brand Name	TechNexion
Model	PIXI-9377
Applicant	TechNexion Ltd.
Housing material	N/A
Identify Number	T180627D11
Received Date	June 27, 2018
EUT Power Rating	5VDC from Host PC Power Supply
AC Power During Test	120VAC / 60Hz to Host PC Power Supply
EUT I/O Cable Type	Antenna Cable: Unshielded, 0.1m (Detachable) X2

### I/O PORT

I/O PORT TYPES	Q'TY	TESTED WITH	

Note: Client consigns only one model sample to test (Model Number: PIXI-9377).

# **3 TEST METHODOLOGY**

## 3.1. DECISION OF FINAL TEST MODE

The EUT was tested together with the below additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The test configuration modes are as the following:

#### **Conduction Modes:**

1	WIFI 2.4G Mode
2	WIFI 5G Mode
3	BT Mode
4	FPC 2.4G Mode

**Radiation Modes:** 

1	WIFI 2.4G Mode
	WIFI 2.4G Mode / 1-25GHz
2	WIFI 5G Mode
3	BT Mode
4	FPC 2.4G Mode

Worst:

Conduction: Mode 1 Radiation: Mode 1

## 3.2. EUT SYSTEM OPERATION

- 1. Windows 7 boots system.
- 2. Run Emctest.exe to activate all peripherals and display "H" pattern on monitor screen.
- 3. Run Putty.exe and set rate "115200" to test EUT.

**Note:** Test program is self-repeating throughout the test.

# 4 SETUP OF EQUIPMENT UNDER TEST

## **4.1. DESCRIPTION OF SUPPORT UNITS**

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

### Host PC Devices:

No.	Equipment	Model No.	Brand Name	
1	HDD	DT01ACA100	TOSHIBA	
2	CPU (3.5GHz / Socket: FCLGA1151)	i5-6600K	INTEL	
3	RAM (DDR4 / 2666)	N/A	Samsung	
4	Graphic Card	GTX980	NVIDIA	
5	Power Supply	DPS-600WB B	DELTA	
6	Motherboard	IPM17-TP	HP	
7	ODD	DU-8AESH	LiteOn	

### **Peripherals Devices:**

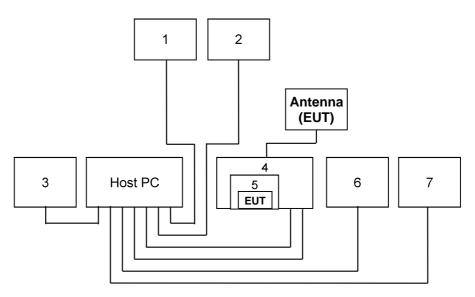
No.	Equipment	Model No.	Serial No.	FCC ID / BSMI ID	Brand Name	Data Cable	Power Cord
1	USB Mouse	M-U0026	810-002181	DOC BSMI: T41126	Logitech	Shielded, 1.8m	N/A
2	USB Keyboard	Y-U0011	N/A	DOC BSMI: T51160	Logitech	Shielded, 1.8m	N/A
3	Modem	AL-56ERM	0MERM04A0201	N/A	GALILEO	Shielded, 1.8m	Unshielded, 1.8m
4	ARM Cortex-A7 NXP i.MX7, Small Footprint, System on Module	PICO-IMX7	N/A	N/A	TechNexion	Micro USB: Shielded, 0.6m USB Type C: Shielded, 0.6m	N/A
5	Qualcomm Atheros QCA-9377 CLIX module	CLIX-9377	N/A	N/A	TechNexion	N/A	N/A
6	Monitor	PA248Q	G5LMQS071275	DOC BSMI: R31018	ASUS	Shielded, 1.8m	Unshielded, 1.8m
7	Printer	SNPRB-120 2-01	CN54K185HY	DOC BSMI: R33001	HP	Shielded, 1.6m	Unshielded, 1.8m

#### Note:

1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

## 4.2. CONFIGURATION OF SYSTEM UNDER TEST



# 5 FACILITIES AND ACCREDITATIONS

## 5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at CCSrf Taiwan Xindian Lab. at No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, 23151 Taiwan.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4 and CISPR 16-1-5.

## 5.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

Taiwan	TAF
USA	A2LA

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada
Japan	VCCI
Taiwan	BSM
USA	FCC

Copies of granted accreditation certificates are available for downloading from our web site, <u>http://www.ccsrf.com</u>

## 5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Uncertainty
Conducted emissions	0.15MHz ~ 30MHz	± 2.8
	30MHz ~ 1000MHz	± 5.3
Radiated emissions	1000MHz ~ 18000MHz	± <b>4</b> .6
	18000MHz ~ 40000MHz	± 3.8

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Consistent with industry standard (e.g. CISPR 22: 2005, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.

The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than  $U_{CISPR}$  which is 3.6dB and 5.2dB respectively. CCS values (called  $U_{Lab}$  in CISPR 16-4-2) is less than  $U_{CISPR}$  as shown in the table above. Therefore, MU need not be considered for compliance.

# **6 CONDUCTED EMISSION MEASUREMENT**

## 6.1. LIMITS OF CONDUCTED EMISSION MEASUREMENT

	Class A	(dBuV)	Class B (dBuV)		
FREQUENCY (MHz)	Quasi-peak	Average	Quasi-peak	Average	
0.15 - 0.5	79	66	66 - 56	56 - 46	
0.50 - 5.0	73	60	56	46	
5.0 - 30.0	73	60	60	50	

#### NOTE:

(1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases in line with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

## **6.2. TEST INSTRUMENTS**

Conducted Emission room # A								
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due				
BNC CABLE	EMEC	EMG178	BNC#A9	03/26/2019				
EMI Test Receiver	R&S	ESCI	101201	09/28/2018				
LISN	Schwarzbeck	NNLK 8129	8129-286	08/15/2018				
LISN(EUT)	Schwarzbeck	NSLK 8127	8127527	08/15/2018				
Pulse Limiter	R&S	ESH3Z2	SD-C002	08/17/2018				
Thermo-Hygro Meter	Wisewind	201A	No. 02	05/06/2019				
Test S/W	EZ-EMC							

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Request.

### 6.3. TEST PROCEDURES (please refer to measurement standard or CCS SOP PA-031)

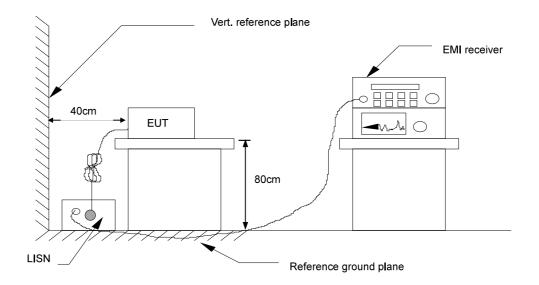
### **Procedure of Preliminary Test**

- The EUT and support equipment, if needed, were set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 12 mm non-conductive covering to insulate the EUT from the ground plane.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- The test equipment EUT installed by AC main power, through a Line Impedance Stabilization Network (LISN), which was supplied power source and was grounded to the ground plane.
- All support equipment power by from a second LISN.
- The test program of the EUT was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

### **Procedure of Final Test**

- EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- The test data of the worst-case condition(s) was recorded.

## 6.4. TEST SETUP



For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

## 6.5. DATA SAMPLE

Freq.	Reading	Factor	Result	Limit	Margin	Detector	Line
(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	(P/Q/A)	(L1/L2)
x.xx	42.95	0.55	43.50	56	-12.50	Q	L1

Freq.	= Emission frequency in MHz
Reading	= Uncorrected Analyzer/Receiver reading
Factor	= Insertion loss of LISN + Cable Loss + Pulse Limit
Result	= Reading + Factor
Limit	= Limit stated in standard
Margin	= Reading in reference to limit
P	= Peak Reading
Q	= Quasi-peak Reading
А	= Average Reading
14	

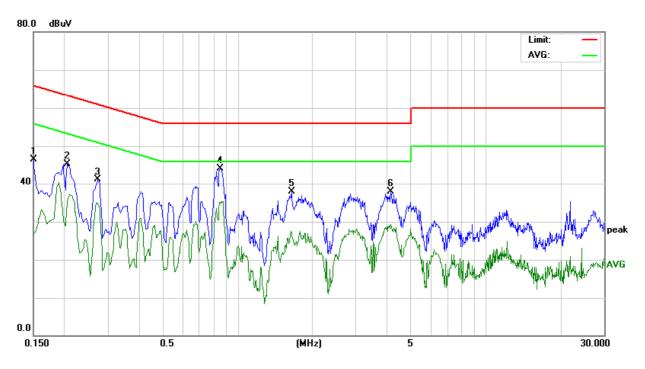
- = Hot side L1
- L2 = Neutral side

### **Calculation Formula**

Margin (dB) = Result (dBuV) – Limit (dBuV)

## 6.6. TEST RESULTS

Model No.	PIXI-9377	6dB Bandwidth	9 kHz
Environmental Conditions	26ºC, 53% RH	Test Mode	Mode 1
Tested by	Alee Shen	Phase	L1
Standard	FCC CLASS B		

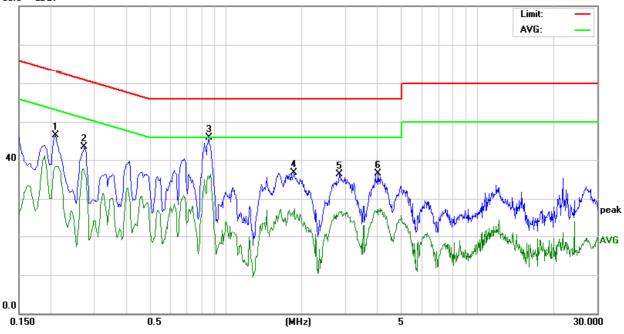


Conducted Emission Readings							
Frequ	lency Rang	je Investig	gated		150 kHz to	30 MHz	
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (P/Q/A)	Line (L1/L2)
0.1500	36.49	10.01	46.50	66.00	-19.50	Р	L1
0.2060	35.22	10.02	45.24	63.37	-18.13	Р	L1
0.2740	31.07	10.02	41.09	61.00	-19.91	Р	L1
0.8500	33.99	10.07	44.06	56.00	-11.94	Р	L1
1.6500	27.86	10.12	37.98	56.00	-18.02	Р	L1
4.1420	27.64	10.26	37.90	56.00	-18.10	Р	L1

**Note:** 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

Model No.	PIXI-9377	6dB Bandwidth	9 kHz
Environmental Conditions	26ºC, 53% RH	Test Mode	Mode 1
Tested by	Alee Shen	Phase	L2
Standard	FCC CLASS B		

80.0 dBuV



Conducted Emission Readings							
Frequ	lency Rang	je Investig	gated	150 kHz to 30 MHz			
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (P/Q/A)	Line (L1/L2)
0.2100	36.45	10.02	46.47	63.20	-16.73	Р	L2
0.2740	33.52	10.02	43.54	60.99	-17.45	Р	L2
0.8540	35.78	10.06	45.84	56.00	-10.16	Р	L2
1.8660	26.61	10.11	36.72	56.00	-19.28	Р	L2
2.8300	26.14	10.16	36.30	56.00	-19.70	Р	L2
4.0379	26.34	10.22	36.56	56.00	-19.44	Р	L2

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

# 7 RADIATED EMISSION MEASUREMENT

## 7.1. LIMITS OF RADIATED EMISSION MEASUREMENT

### Below 1GHz (for digital device)

	dBuV/m (At 10m)				
FREQUENCY (MHz)	Class A	Class B			
30 ~ 230	40	30			
230 ~ 1000	47	37			

## Limit tables for non-digital device:

### Class A Radiated Emission limit at 10m (for others)

Frequency (MHZ)	Field Strength Limit (uV/m)Q.P.	Field Strength Limit (dBuV/m)Q.P.	
30 - 88	90	39	
88 - 216	150	43.5	
216 – 960	210	46.4	
Above 960	300	49.5	

### Class B Radiated Emission limit at 3m (for others)

Frequency (MHZ)	Field Strength Limit (uV/m)Q.P.	Field Strength Limit (dBuV/m)Q.P.
30 - 88	100	40
88 - 216	150	43.5
216 – 960	200	46
Above 960	500	54

### Above 1GHz(for all device)

Frequency	Class A (dBuV/m) (At 10m)		Class B (dBuV/m) (At 3m)	
(MHZ)	Average	Peak	Average	Peak
Above 1000	49.5	69.5	54	74

**NOTE**: (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

(3) The measurement above 1GHz is at close-in distances 3m, and determine the limit L2 corresponding to the close-in distance d2 by applying the following relation: L2 = L1 (d1/d2), where L1 is the specified limit in microvolts per metre (uV/m) at the distance d1 (10m), L2 is the new limit for distance d2 (3m).

So the new Class A limit above 1GHz at 3m is as following table:

Frequency	Class A (dBuV/m) (At 3m)		
(MHZ)	Average	Peak	
Above 1000	60	80	

According to FCC Part 15.33 (b), for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5 <sup>th</sup> harmonic of the highest frequency or 40GHz, whichever is lower

## 7.2. TEST INSTRUMENTS

Open Area Test Site # H				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Bilog Antenna	Teseq	CBL 6112D	36995	06/25/2019
Cable	EMEC	CFD400NL-LW	N-Type#H11	08/17/2018
EMI Test Receiver	R&S	ESCI	101340	03/26/2019
Pre-Amplifier	HP	8447D	1937A01554	09/28/2018
Thermo-Hygro Meter	Wisewind	201A	No. 03	05/27/2019
Test S/W	EZ-EMC			
Above 1GHz Used				
Horn Antenna	EMCO	3115	00022256	08/09/2018
K-Type Cable	Rosnol	K1K50-UP0264-K1k 50-1000	170803-1	08/22/2018
Microflex Cable	Rosnol	N1K50-EW0630-N1 k50-7000	170803-1	08/22/2018
Pre-Amplifier	Com-Power	PAM-118A	551041	06/18/2019
Signal Analyzer	R&S	FSV40	101269	04/17/2019
Horn Antenna	Schwarzbeck	BBHA 9170	666	04/10/2019
K-Type Cable	Rosnol	K1K50-UP0264-K1k 50-5000	170803-1	08/22/2018
Pre-Amplifier	Com-Power	PAM-840A	461310	06/07/2019
Test S/W	EZ-EMC			

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Request.

## 7.3. TEST PROCEDURES (please refer to measurement standard or CCS SOP PA-031)

### **Procedure of Preliminary Test**

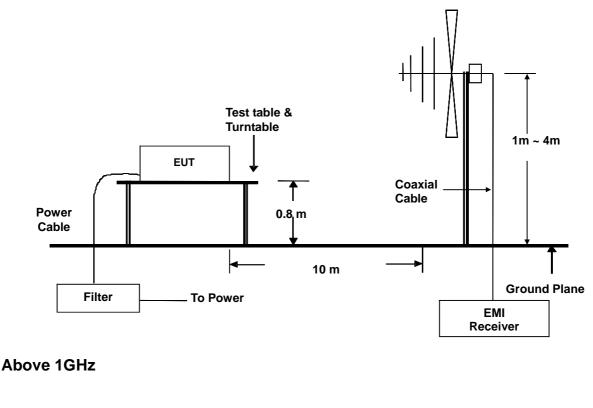
- The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor standing equipment, it is placed on the ground plane which has a 12 mm non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical usage as per ANSI C63.4.
- The EUT received AC power source from the outlet socket under the turntable. All support equipment power received from another socket under the turntable.
- The antenna was placed at 3 or 10 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.
- The Analyzer / Receiver quickly scanned from 30MHz to 40GHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test:
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

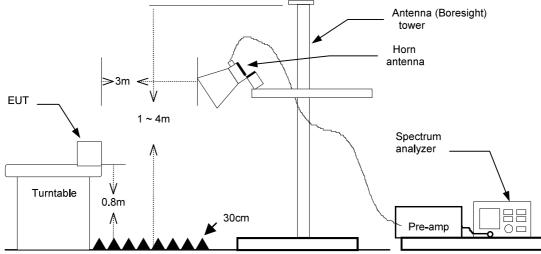
## **Procedure of Final Test**

- EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.
- The Analyzer / Receiver scanned from 30MHz to 40GHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 or 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- Recording at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. Below 1GHz the Q.P. reading and above 1GHz the Peak and Average reading are presented.
- The test data of the worst-case condition(s) was recorded.

# 7.4. TEST SETUP

# **Below 1GHz**





• For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

# 7.5. DATA SAMPLE

#### **Below 1GHz**

Freq.	Reading	Factor	Result	Limit	Margin	Detector	Pol.
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(P/Q)	(H/V)
x.xx	14.0	12.2	26.2	30	-10.8	Q	

#### Above 1GHz

Freq.	Reading	Factor	Result	Limit	Margin	Detector	Pol.
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(P/A)	(H/V)
x.xx	42.95	0.55	43.50	54	-10.50	A	

Freq. = Emission frequency in MHz

Reading = Uncorrected Analyzer/Receiver reading

- Factor = Antenna Factor + Cable Loss Amplifier Gain
- Result = Reading + Factor
- Limit = Limit stated in standard
- Margin = Reading in reference to limit
- P = Peak Reading
- Q = Quasi-peak Reading
- A = Average Reading
- H = Antenna Polarization: Horizontal

V = Antenna Polarization: Vertical

## **Calculation Formula**

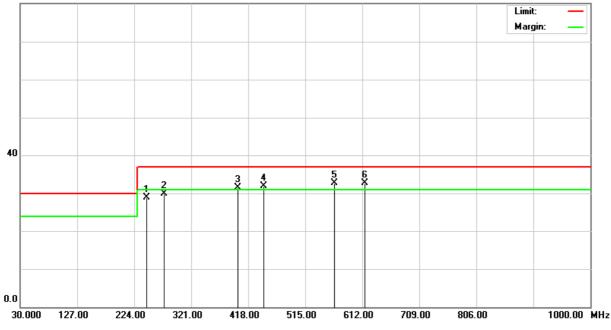
Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

# 7.6. TEST RESULTS

#### **Below 1GHz**

Model No.	PIXI-9377	Test Mode	Mode 1		
Environmental Conditions	29°C, 56% RH	6dB Bandwidth	120 kHz		
Antenna Pole	Vertical	Antenna Distance	10m		
Detector Function	Quasi-peak.	Tested by	Alee Shen		
Standard	FCC CLASS B W/ CISPR 22 CLASS B LIMIT				

80.0 dBuV/m



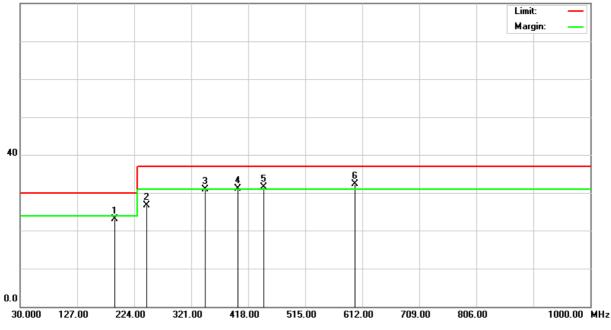
	Radiated Emission Readings											
Frequency Range Investigated						30 N	/Hz to 10	00 MHz a	t 10m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Lin (dBu'		Margin (dB)	Height (cm)	Degree (°)	Detector (P/Q)	Pol. (H/V)		
245.0060	36.80	-7.81	28.99	37.	.00	-8.01	100	11	Q	V		
275.0020	36.50	-6.68	29.82	37.	.00	-7.18	100	162	Q	V		
400.0100	34.50	-3.07	31.43	37.	.00	-5.57	400	325	Q	V		
445.0100	34.10	-2.13	31.97	37.	.00	-5.03	400	108	Q	V		
565.0600	32.40	0.38	32.78	37.	.00	-4.22	400	198	Q	V		
616.0500	32.50	0.27	32.77	37.	.00	-4.23	400	241	Q	V		

**Note:** 1. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

2. P= Peak Reading; Q= Quasi-peak Reading.

Model No.	PIXI-9377	Test Mode	Mode 1		
Environmental Conditions	29ºC, 56% RH	6dB Bandwidth	120 kHz		
Antenna Pole	Horizontal	Antenna Distance	10m		
Detector Function	Quasi-peak.	Tested by	Alee Shen		
Standard	FCC CLASS B W/ CISPR 22	CC CLASS B W/ CISPR 22 CLASS B LIMIT			

80.0 dBuV/m



	Radiated Emission Readings											
Frequency Range Investigated						30 N	/IHz to 10	00 MHz a	t 10m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Lir (dBu		Margin (dB)	Height (cm)	Degree (°)	Detector (P/Q)	Pol. (H/V)		
191.5300	34.10	-10.92	23.18	30.	.00	-6.82	400	99	Q	Н		
245.0600	34.50	-7.80	26.70	37.	.00	-10.30	400	180	Q	Н		
345.0020	36.20	-5.30	30.90	37.	.00	-6.10	400	162	Q	Н		
400.0110	34.10	-3.07	31.03	37.	.00	-5.97	100	22	Q	Н		
445.0600	33.60	-2.13	31.47	37.	.00	-5.53	100	150	Q	Н		
600.0100	32.40	-0.13	32.27	37.	.00	-4.73	100	54	Q	Н		

**Note:** 1. 30MHz to 1000MHz test is Applicable CISPR 22 standard. 2. P= Peak Reading; Q= Quasi-peak Reading.

## Above 1GHz

Model No.	PIXI-9377	Test Mode	Mode 1
Environmental Conditions	26ºC, 60% RH	6dB Bandwidth	1 MHz
Antenna Pole	Vertical	Antenna Distance	3m & 1m
Highest frequency generated or used	5000MHz	Upper frequency	25000MHz
Detector Function	Peak and average.	Tested by	Pipo Hou
Standard	FCC CLASS B		

	Radiated Emission Readings										
Frequ	uency Rang	ge Investig		Above 1GH	Iz at 3m						
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/A)	Pol. (H/V)				
1034.000	65.43	-9.09	56.34	74.00	-17.66	Р	V				
1039.534	58.49	-9.07	49.42	54.00	-4.58	Α	V				
1476.000	59.37	-8.30	51.07	74.00	-22.93	Р	V				
1782.000	61.69	-6.40	55.29	74.00	-18.71	Р	V				
1782.400	52.82	-6.41	46.41	54.00	-7.59	Α	V				
2071.000	54.36	-4.88	49.48	74.00	-24.52	Р	V				
2224.000	53.53	-4.71	48.82	74.00	-25.18	Р	V				
3193.000	49.18	-4.14	45.04	74.00	-28.96	Р	V				
5981.000	47.42	-0.23	47.19	74.00	-26.81	Р	V				

	Radiated Emission Readings										
Frequ	Frequency Range Investigated				Above 1GH	lz at 1m					
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/A)	Pol. (H/V)				
18063.000	47.70	7.34	55.04	83.50	-28.46	Р	V				
18777.000	48.70	6.65	55.35	83.50	-28.15	Р	V				
19120.000	49.62	6.40	56.02	83.50	-27.48	Р	V				
19477.000	49.91	6.18	56.09	83.50	-27.41	Р	V				
21633.000	51.01	7.15	58.16	83.50	-25.34	Р	V				
21990.000	50.61	8.93	59.54	83.50	-23.96	Р	V				
22732.000	51.14	6.65	57.79	83.50	-25.71	Р	V				

**Note:** 1. P= Peak Reading; A= Average Reading.

Model No.	PIXI-9377	Test Mode	Mode 1
Environmental Conditions	26ºC, 60% RH	6dB Bandwidth	1 MHz
Antenna Pole	Horizontal	Antenna Distance	3m & 1m
Highest frequency generated or used	5000MHz	Upper frequency	25000MHz
Detector Function	Peak and average.	Tested by	Pipo Hou
Standard	FCC CLASS B		

	Radiated Emission Readings										
Frequency Range Investigated					Above 1GH	lz at 3m					
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/A)	Pol. (H/V)				
1034.000	64.05	-9.09	54.96	74.00	-19.04	Р	Н				
1039.774	56.15	-9.07	47.08	54.00	-6.92	Α	Н				
1476.000	55.96	-8.30	47.66	74.00	-26.34	Р	Н				
1782.000	58.62	-6.40	52.22	74.00	-21.78	Р	Н				
2224.000	57.83	-4.71	53.12	74.00	-20.88	Р	Н				
2394.000	56.44	-4.50	51.94	74.00	-22.06	Р	Н				
2989.000	52.55	-4.14	48.41	74.00	-25.59	Р	Н				

	Radiated Emission Readings										
Frequ	uency Rang		Above 1GH	lz at 1m							
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/A)	Pol. (H/V)				
19078.000	49.99	6.41	56.40	83.50	-27.10	Р	Н				
19526.000	49.49	6.15	55.64	83.50	-27.86	Р	Н				
21591.000	50.69	6.94	57.63	83.50	-25.87	Р	Н				
21990.000	51.21	8.93	60.14	83.50	-23.36	Р	Н				
22487.000	50.58	7.30	57.88	83.50	-25.62	Р	Н				
24587.000	52.70	7.22	59.92	83.50	-23.58	Р	Н				
24993.000	51.42	7.35	58.77	83.50	-24.73	Р	Н				

Note: 1. P= Peak Reading; A= Average Reading.

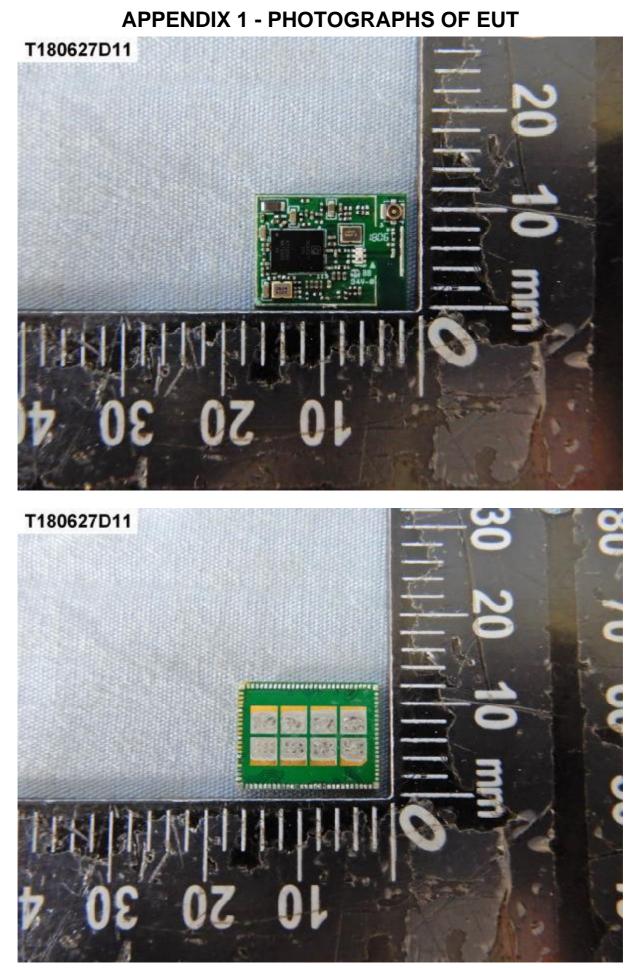
# 8 PHOTOGRAPHS OF THE TEST CONFIGURATION CONDUCTED EMISSION TEST





# **RADIATED EMISSION TEST**







Report No.: T180627D11

