

ETSI EN 300 328 V2.2.2: 2019
+
AS/NZS 4268: 2017

TEST REPORT

For

WiFi+Bluetooth 4.1(HS) System on Module

MODEL: PIXI-9377

Issued to:

TechNexion Ltd.

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

Issued by

Compliance Certification Services Inc.

Wugu Laboratory

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

Issued Date: November 16, 2020

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
01	November 16, 2020	Initial Issue Note Rev.(01)	ALL	Allison Chen

Rev. (01)

1. EN 300 328 V2.1.1 update to EN 300 328 V2.2.2, and only re-test the receiver blocking.
2. The above test method for those measurements are in accordance with CE EN 300 328 refer to T180627D10-RT1, please see as below: RF output power, power density, dwell time, minimum frequent occupation and hopping sequence, medium utilization, adaptivity, occupied channel bandwidth, transmitter unwanted emissions in oob domain, spurious domain, and receiver spurious emissions.
3. Other information, please refer to the T180627D10 and this test report.

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Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

1. TEST RESULT CERTIFICATION

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 Under Test: WiFi+Bluetooth 4.1(HS) System on Module

Trade Name: TechNexion

Model Number: PIXI-9377

Original Date of Test: July 25 ~ August 6, 2018

1st Update Date of Test: November 4, 2020

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
ETSI EN 300 328 V2.2.2: 2019 + AS/NZS 4268: 2017	No non-compliance noted
Statements of Conformity	
Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.	

The above equipment was tested by Compliance Certification Services Inc. for compliance with the requirements set forth in ETSI EN 300 328. 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:



Kevin Tsai
Deputy Manager
Compliance Certification Services Inc.

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2. EUT DESCRIPTION

Product	WiFi+Bluetooth 4.1(HS) System on Module		
Trade Name	TechNexion		
Model Number	PIXI-9377		
Model Discrepancy	N/A		
Original Received Date	June 27, 2018		
1st Update Received Date	September 23, 2020		
EUT Power Rating	Powered from host system. (DC 5V)		
Frequency Range	IEEE 802.11b Mode: 2412 ~ 2472 MHz IEEE 802.11g Mode: 2412 ~ 2472 MHz IEEE 802.11n HT 20 MHz Mode: 2412 ~ 2472 MHz IEEE 802.11n HT 40 MHz Mode: 2422~2462 MHz Bluetooth: 2402 ~ 2480 MHz		
Modulation Technique	IEEE 802.11b Mode: DSSS IEEE 802.11g Mode: OFDM IEEE 802.11n HT 20 MHz Mode: OFDM IEEE 802.11n HT 40 MHz Mode: OFDM Bluetooth 2.1 + EDR: GFSK for 1Mbps; $\pi/4$ -DQPSK for 2Mbps; 8DPSK for 3Mbps Bluetooth 4.1: GFSK		
Number of Channels	IEEE 802.11b Mode: 13 Channels IEEE 802.11g Mode: 13 Channels IEEE 802.11n HT 20 MHz Mode: 13 Channels IEEE 802.11n HT 40 MHz Mode: 9 Channels Bluetooth 2.1 + EDR: 79 Channels Bluetooth 4.1: 40 Channels (37 hopping + 3 advertising Channel)		
Transmit Power (mean EIRP)	Mode	Transmit Power (dBm)	Transmit Power (mW)
	IEEE 802.11b Mode	18.39	69.02
	IEEE 802.11g Mode	19.99	99.77
	IEEE 802.11n HT 20 MHz Mode	19.75	94.41
	IEEE 802.11n HT 40 MHz Mode	19.99	99.77
	Bluetooth 2.1 + EDR	9.66	9.25
	Bluetooth 4.1	9.89	9.75

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Antenna Specification	FPC Antenna: TechNexion / VM2450-25523-OOX-180 Gain: 2.5dBi Dipole Antenna: TechNexion / VM2450-ASSY1005 Gain: 4dBi
Temperature Range	0°C ~ +70°C
S.W Version	1.0
H.W: Version	A1

Remark:

1. For more details, refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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3. TEST METHODOLOGY

3.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:

ETSI EN 300 328 –Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum.

3.2 DESCRIPTION OF TEST MODES

The EUT (model: PIXI-9377) had been tested under operating and standby condition. Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

IEEE 802.11b Mode: (1TX)

Channel Low (2412MHz) and Channel High (2472MHz) with 1Mbps data rate were chosen for full testing.

IEEE 802.11g Mode: (1TX)

Channel Low (2412MHz) and Channel High (2472MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT 20 MHz Mode: (1TX)

Channel Low (2412MHz) and Channel High (2472MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT 40 MHz Mode: (1TX)

Channel Low (2422MHz) and Channel High (2462MHz) with 13.5Mbps data rate were chosen for full testing.

Bluetooth 2.1 + EDR

Following channels were selected for the radiated emission testing only as listed below:

Tested Channel	Modulation Type	Packet Type	Date Rate
Low, High	GFSK	DH 5	1
Low, High	8DPSK	DH 5	3

Bluetooth 4.1

Tested Channel	Frequency (MHz)
Low	2402
High	2480

Normal Link: EUT for staying in normal used mode.

TX mode: Software used to control the EUT for staying in continuous transmitting mode is programmed.

RX mode: Software used to control the EUT for staying in continuous receiving mode is programmed.

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3.2.1 The worst mode of measurement

For FPC Antenna
WiFi 2.4GHz + BT 4.1

Radiated Emission Measurement	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Power supply Mode	Mode 1: EUT Power by host system
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Position	<input type="checkbox"/> Placed in fixed position. <input checked="" type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)

Remark:

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

BT2.1+EDR

Radiated Emission Measurement	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Power supply Mode	Mode 1: EUT Power by host system
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Position	<input type="checkbox"/> Placed in fixed position. <input type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input checked="" type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)

Remark:

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

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For Dipole Antenna
WiFi 2.4GHz + BT2.1+EDR + BT 4.1

Radiated Emission Measurement	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Power supply Mode	Mode 1: EUT Power by host system
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Position	<input type="checkbox"/> Placed in fixed position. <input checked="" type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)

Remark:

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

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4 INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Original Test Date: July 25 ~ August 6, 2018

RF Conducted Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Due
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	06/29/2018	06/28/2019
Directional Couplers	Agilent	87301D	MY44350252	07/24/2018	07/23/2019
Power Divider	Solvang Technology	STI08-0015	008	07/27/2018	07/26/2019
Power Meter	Anritsu	ML2495A	1012009	09/18/2017	09/17/2018
Power Sensor	Anritsu	MA2411B	1126148	02/06/2018	02/05/2019
Signal Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018
Thermostatic/Hygrosatic Chamber	GWINSTEK	GTC-288MH-CC	TH160402	05/17/2018	05/16/2019
USB Wideband Power Sensor	AGILENT	U2021XA	MY54250027	07/05/2018	07/04/2019
USB Wideband Power Sensor	AGILENT	U2021XA	MY54260016	07/05/2018	07/04/2019
USB Wideband Power Sensor	AGILENT	U2021XA	MY54260020	07/05/2018	07/04/2019
USB Wideband Power Sensor	AGILENT	U2021XA	MY54260007	07/05/2018	07/04/2019

Wugu Fully Chamber B					
Name of Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Due
Band Reject Filters	MICRO TRONICS	BRM 50702	120	05/14/2018	05/13/2019
Bilog Antenna	Sunol Sciences	JB1	A052609	03/14/2018	03/13/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	23452	06/29/2018	06/28/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	33960	06/29/2018	06/28/2019
Digital Thermo-Hygro Meter	WISEWIND	1110	D06	02/08/2018	02/07/2019
Horn Antenna	SCHWARZBECK	BBHA 9120D	779	03/14/2018	03/13/2019
Pre-Amplifier	Anritsu	MH648A	M89145	06/29/2018	06/28/2019
Pre-Amplifier	EMEC	EM01M26G	060570	06/29/2018	06/28/2019
Signal Analyzer	Agilent	N9010A	MY52220817	03/22/2018	03/21/2019
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

Remark:

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

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WiFi 2.4GHz

Adaptivity Room					
Name of Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Due
Attenuator	E-INSTRUMENT	EPA-600H	EC1400050	07/25/2018	07/24/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	06/29/2018	06/28/2019
Directional Couplers	Agilent	87301D	MY44350252	07/24/2018	07/23/2019
Power Divider	Marvelous Microwave	MVE8586	16011206	07/27/2018	07/26/2019
Power Divider	Solvang Technology	STI08-0015	008	07/27/2018	07/26/2019
Power Splitter	Mini-Circuits	ZN2PD-9G-S	777	07/23/2018	07/22/2019
Spectrum Analyzer	R&S	FSU 26	100258	06/25/2018	06/24/2019
Vector Signal Generator	R&S	SMU 200A	101480	04/10/2018	04/09/2019
Vector Signal Genertor	R&S	SMU 200A	103439	05/04/2018	05/03/2019
Software	GPIBShot,DFS-Aggregate-Time FSU				

BT2.1+EDR+BT 4.1

Adaptivity Room					
Name of Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Due
Bluetooth Test Set	Anritsu	MT8852B	750013	05/24/2018	05/23/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	06/29/2018	06/28/2019
Directional Couplers	Agilent	87301D	MY44350252	07/24/2018	07/23/2019
Power Divider	Marvelous Microwave	MVE8586	16011206	07/27/2018	07/26/2019
Power Splitter	Mini-Circuits	ZN2PD-9G-S	777	07/23/2018	07/22/2019
Spectrum Analyzer	R&S	FSU 26	100258	06/25/2018	06/24/2019
Wideband Radio Communication Tester	R&S	CMW 500	116875	04/20/2018	04/19/2019
Vector Signal Genertor	R&S	SMU 200A	103439	05/04/2018	05/03/2019
Software	GPIBShot,DFS-Aggregate-Time FSU				

Remark:

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

1st Update Test Date: November 4, 2020

DFS (All)					
Name of Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Due
Attenuator	E-INSTRUMENT	EPA-600H	EC1400050	07/20/2020	07/19/2021
Coaxial Cable	Woken	WC12	DC004	06/29/2020	06/28/2021
Directional Couplers	Agilent	87301D	MY44350252	08/03/2020	08/02/2021
Power Divider	Marvelous Microwave	MVE8586	16011206	08/03/2020	08/02/2021
Power Divider	Solvang Technology	STI08-0015	008	08/05/2020	08/04/2021
Spectrum Analyzer	R&S	FSU 26	100258	06/12/2020	06/11/2021
Vector Signal Genertor	R&S	SMU 200A	103439	04/21/2020	04/20/2021
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/19/2020	07/18/2021
Software	GPIBShot, DFS-Aggregate-Time FSU,				

Remark:

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

4.3 MEASUREMENT UNCERTAINTY

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR 100 028-1 [2] and shall correspond to an expansion factor (coverage factor) $k = 1,96$ or $k = 2$ (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Table 7 is based on such expansion factors.

Table 7: Maximum measurement uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	+/- 5%
RF output power, conducted	+/- 1,5 dB
Power Spectral Density, conducted	+/- 3 dB
Unwanted Emissions, conducted	+/- 3 dB
All emissions, radiated	+/- 6 dB
Temperature	+/- 3°C
Supply voltages	+/- 3%
Time	+/- 5%

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

No. 199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

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

Tel: 886-2-2299-9720 / Fax: 886-2-2299-9721

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

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6 SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Cable length & Type Describe
	N/A					

Remark:

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.

7 ETSI EN 300 328 REQUIREMENTS

7.1 RF OUTPUT POWER

LIMIT

FHSS Equipment:

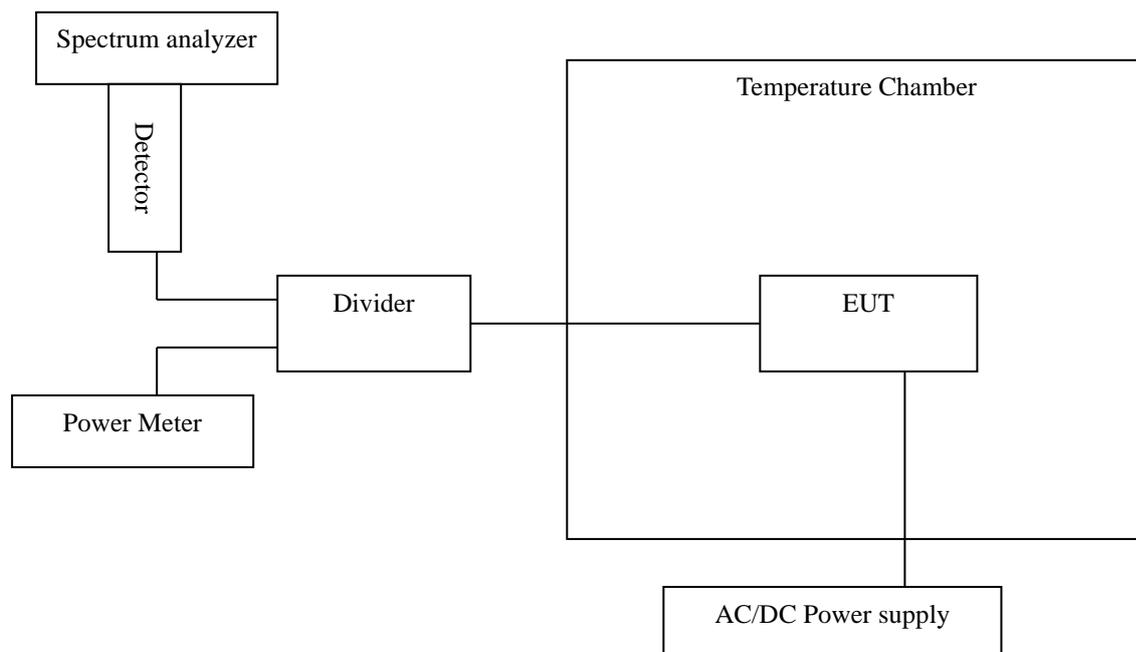
The RF output power for FHSS equipment shall be equal to or less than 20 dBm. For non-adaptive FHSS equipment, where the manufacturer has declared an RF output power lower than 20 dBm e.i.r.p., the RF output power shall be equal to or less than that declared value. This limit shall apply for any combination of power level and intended antenna assembly.

Non-FHSS equipment:

The RF output power for non-FHSS equipment shall be equal to or less than 20 dBm. For non-adaptive non-FHSS equipment, where the manufacturer has declared an RF output power of less than 20 dBm e.i.r.p., the RF output power shall be equal to or less than that declared value. This limit shall apply for any combination of power level and intended antenna assembly.

Test Configuration

Temperature and Voltage Measurement (under normal and extreme test conditions)



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TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

TEST RESULTS

No non-compliance noted.

Test Results: PASS **Test Mode:** IEEE 802.11b Mode
Tested By: Dally Hong **Test Date:** July 31, 2018

Antenna Gain =		4 dBi		
Test Conditions		Transmitter Power (dBm)		
		Temp(°C)		
		Normal	Low	High
Channel	Voltage Power	5v	5v	5v
Low	EIRP	17.92	18.18	18.08
Mid	EIRP	18.23	18.03	18.25
High	EIRP	17.81	18.13	*18.39
Limit		Average Limit= 20 dBm		
Measurement Uncertainty		+/- 1.20dB		

Test Results: PASS **Test Mode:** IEEE 802.11g Mode
Tested By: Dally Hong **Test Date:** July 31, 2018

Antenna Gain =		4 dBi		
Test Conditions		Transmitter Power (dBm)		
		Temp(°C)		
		Normal	Low	High
Channel	Voltage Power	5v	5v	5v
Low	EIRP	19.84	19.94	19.80
Mid	EIRP	19.88	19.92	*19.99
High	EIRP	19.98	19.73	19.94
Limit		Average Limit= 20 dBm		
Measurement Uncertainty		+/- 1.20dB		

Remark: 1. EIRP=A+G+CL
A = Reading
G = Antenna Gain
CL = Cable Loss

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Test Results: PASS

Test Mode: IEEE 802.11n HT 20 MHz Mode

Tested By: Dally Hong

Test Date: July 31, 2018

Antenna Gain =		4 dBi		
Test Conditions		Transmitter Power (dBm)		
		Temp(°C)		
		Normal	Low	High
Channel	Voltage Power	5v	5v	5v
Low	EIRP	19.31	19.20	19.62
Mid	EIRP	19.43	19.50	*19.75
High	EIRP	19.46	19.42	19.67
Limit		Average Limit= 20 dBm		
Measurement Uncertainty		+/- 1.20dB		

Remark: 1. EIRP=A+G+CL
A = Reading
G = Antenna Gain
CL = Cable Loss

Test Results: PASS

Test Mode: IEEE 802.11n HT 40 MHz Mode

Tested By: Dally Hong

Test Date: July 31, 2018

Antenna Gain =		4 dBi		
Test Conditions		Transmitter Power (dBm)		
		Temp(°C)		
		Normal	Low	High
Channel	Voltage Power	5v	5v	5v
Low	EIRP	19.94	19.98	*19.99
Mid	EIRP	19.38	19.31	19.55
High	EIRP	19.86	19.78	19.97
Limit		Average Limit= 20 dBm		
Measurement Uncertainty		+/- 1.20dB		

Remark: 1. EIRP=A+G+CL
A = Reading
G = Antenna Gain
CL = Cable Loss

Report No.: T200923D03-RT1

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Bluetooth for GFSK (BR-1M)

Test Results: PASS Test Mode: Bluetooth
Tested By: Dally Hong Test Date: July 30, 2018

Antenna Gain =		4 dBi		
Test Conditions		Transmitter Power (dBm)		
		Temp(°C)		
		Normal	Low	High
Channel	Voltage Power	5v	5v	5v
Hopping	Measured Power	3.61	3.82	2.39
	EIRP	9.45	*9.66	8.23
Limit		Average Limit= 20 dBm		
Measurement Uncertainty		+ 0.28dB / - 0.30dB		

Bluetooth for 8DPSK (EDR-3M)

Test Results: PASS Test Mode: Bluetooth
Tested By: Dally Hong Test Date: July 30, 2018

Antenna Gain =		4 dBi		
Test Conditions		Transmitter Power (dBm)		
		Temp(°C)		
		Normal	Low	High
Channel	Voltage Power	5v	5v	5v
Hopping	Measured Power	3.85	4.05	3.33
	EIRP	8.90	9.10	8.38
Limit		Average Limit= 20 dBm		
Measurement Uncertainty		+ 0.28dB / - 0.30dB		

Remark: 1. EIRP=A+G+CL
A = Reading
G = Antenna Gain
CL = Cable Loss

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Bluetooth 4.1

Test Results: PASS

Test Mode: Bluetooth

Tested By: Dally Hong

Test Date: July 30, 2018

Antenna Gain =		4 dBi		
Test Conditions		Transmitter Power (dBm)		
		Temp(°C)		
		Normal	Low	High
Channel	Voltage Power	5v	5v	5v
Low	EIRP	8.82	9.53	8.49
Mid	EIRP	9.65	9.59	9.60
High	EIRP	*9.89	9.85	9.82
Limit		Average Limit= 20 dBm		
Measurement Uncertainty		+/- 1.20dB		

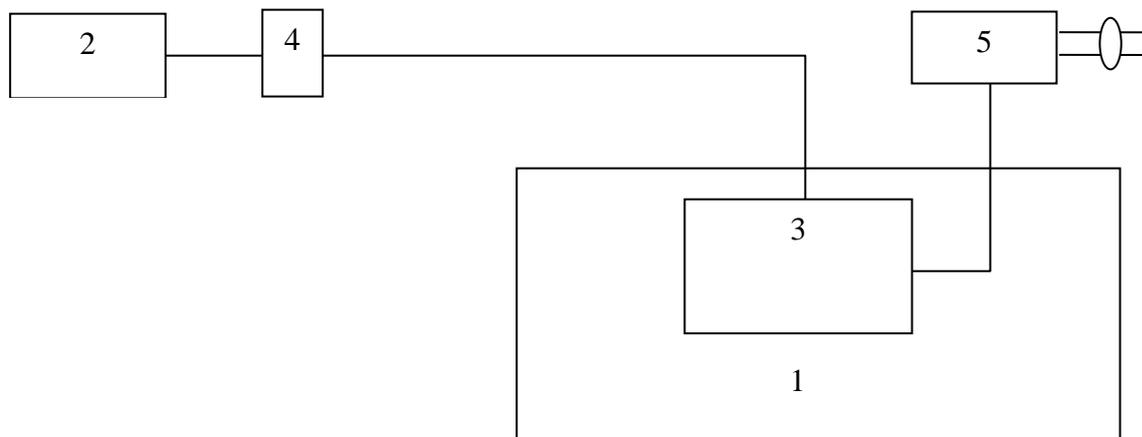
Remark: 1. EIRP=A+G+CL
A = Reading
G = Antenna Gain
CL = Cable Loss

7.2 MAXIMUM SPECTRAL POWER DENSITY

LIMIT

The maximum Power Spectral Density for non-FHSS equipment is 10 dBm per MHz.

Test Configuration



Legend

1. Wooden table
2. Spectrum analyzer
3. EUT
4. DC block
5. Power supply (Refer to power rating of section 2)

TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

For MIMO operation that employs simultaneous transmission at two chains of the transmission, measurements were done, and point of sample is captured at respective chain individually, and sums out to produce the final result.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

TEST RESULTS

No non-compliance noted.

Test Results: PASS Test Mode: IEEE 802.11b Mode
Tested By: Dally Hong Test Date: July 31, 2018

Test Conditions		Reading (dBm/MHz) (A)	Antenna Gain (dBi) (B)	Measured Power Density (dBm/MHz) (A+B)
Measured Power Density	Low	3.52	4.00	7.52
	Mid	5.84		9.84
	High	5.73		9.73
Limit		10 dBm/MHz		
Measurement Uncertainty		+1.5dB / -1.4dB		

Remark: 1. Power Density=Reading+Antenna Gain+Cable Loss

Test Results: PASS Test Mode: IEEE 802.11g Mode
Tested By: Dally Hong Test Date: July 31, 2018

Test Conditions		Reading (dBm/MHz) (A)	Antenna Gain (dBi) (B)	Measured Power Density (dBm/MHz) (A+B)
Measured Power Density	Low	3.84	4.00	7.84
	Mid	4.13		8.13
	High	4.01		8.01
Limit		10 dBm/MHz		
Measurement Uncertainty		+1.5dB / -1.4dB		

Remark: 1. Power Density=Reading+Antenna Gain+Cable Loss

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test Results: PASS

Test Mode: IEEE 802.11n HT 20 MHz Mode

Tested By: Dally Hong

Test Date: July 31, 2018

Test Conditions		Reading (dBm/MHz) (A)	Antenna Gain (dBi) (B)	Measured Power Density (dBm/MHz) (A+B)
Measured Power Density	Low	3.23	4.00	7.23
	Mid	3.47		7.47
	High	3.42		7.42
Limit		10 dBm/MHz		
Measurement Uncertainty		+1.5dB / -1.4dB		

Remark: 1. Power Density=Reading+Antenna Gain+Cable Loss

Test Results: PASS

Test Mode: IEEE 802.11n HT 40 MHz Mode

Tested By: Dally Hong

Test Date: July 31, 2018

Test Conditions		Reading (dBm/MHz) (A)	Antenna Gain (dBi) (B)	Measured Power Density (dBm/MHz) (A+B)
Measured Power Density	Low	0.61	4.00	4.61
	Mid	0.18		4.18
	High	0.64		4.64
Limit		10 dBm/MHz		
Measurement Uncertainty		+1.5dB / -1.4dB		

Remark: 1. Power Density=Reading+Antenna Gain+Cable Loss

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Bluetooth 2.1 + EDR

Please refer to ETSI EN 300 328

For wide band modulations other than FHSS (e.g. DSSS, OFDM, etc.), the maximum spectral power density shall be measured and recorded.

Bluetooth 4.1

Test Results: PASS **Test Mode:** Bluetooth
Tested By: Dally Hong **Test Date:** July 30, 2018

Test Conditions		Reading (dBm/MHz) (A)	Antenna Gain (dBi) (B)	Measured Power Density (dBm/MHz) (A+B)
Measured Power Density	Low	3.35	4	7.35
	Mid	4.34		8.34
	High	4.81		8.81
Limit		10 dBm/MHz		
Measurement Uncertainty		+1.5dB / -1.4dB		

Remark: 1. Power Density=Reading+Antenna Gain+Cable Loss

7.3 DUTY CYCLE, TX-SEQUENCE, TX-GAP

LIMIT

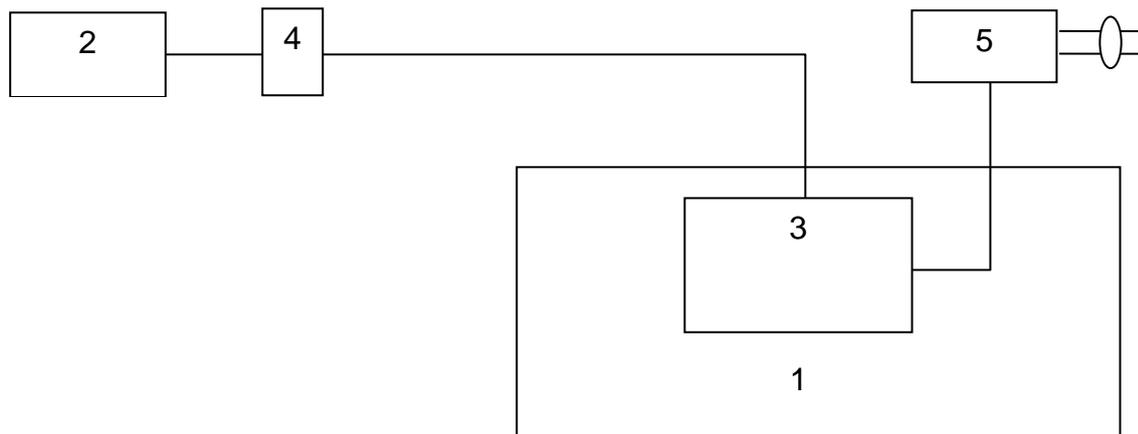
Non-adaptive FHSS equipment shall comply with the following:

- The Duty Cycle shall be equal to or less than the maximum value declared by the manufacturer.
- The maximum Tx-sequence time shall be 5 ms.
- The minimum Tx-gap time shall be 5 ms.

Non-FHSS equipment shall comply with the following:

- The Duty Cycle shall be equal to or less than the maximum value declared by the manufacturer.
- The Tx-sequence time shall be equal to or less than 10 ms.
- The minimum Tx-gap time following a Tx-sequence shall be equal to the duration of that proceeding Txsequence with a minimum of 3,5 ms.

Test Configuration



Legend

1. Wooden table
2. Spectrum analyzer
3. EUT
4. DC block
5. Power supply (Refer to power rating of section 2)

TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

TEST RESULTS

N/A for Modulation Technology other than non-adaptive FHSS or non-adaptive wide band modulations other than FHSS.

7.4 DWELL TIME, MINIMUM FREQUENCT OCCUPATION AND HOPPING SEQUENCE

LIMIT

Non-adaptive frequency hopping systems

The Accumulated Transmit Time on any hopping frequency shall not be greater than 15 ms within any observation period of 15 ms multiplied by the minimum number of hopping frequencies (N) that have to be used. In order for the FHSS equipment to comply with the Frequency Occupation requirement, it shall meet either of the following two options:

Option 1: Each hopping frequency of the Hopping Sequence shall be occupied at least once within a period not exceeding four times the product of the dwell time and the number of hopping frequencies in use.

Option 2: The probability that each hopping frequency is occupied shall be between $((1 / U) \times 25 \%)$ and 77 % where U is the number of hopping frequencies in use.

The Hopping Sequence(s) shall contain at least N hopping frequencies where N is either 5 or the result of 15 MHz divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater.

Adaptive frequency hopping systems

Adaptive FHSS equipment shall be capable of operating over a minimum of 70 % of the band specified in table 1. The Accumulated Transmit Time on any hopping frequency shall not be greater than 400 ms within any observation period of 400 ms multiplied by the minimum number of hopping frequencies (N) that have to be used. In order for the FHSS equipment to comply with the Frequency Occupation requirement, it shall meet either of the following two options:

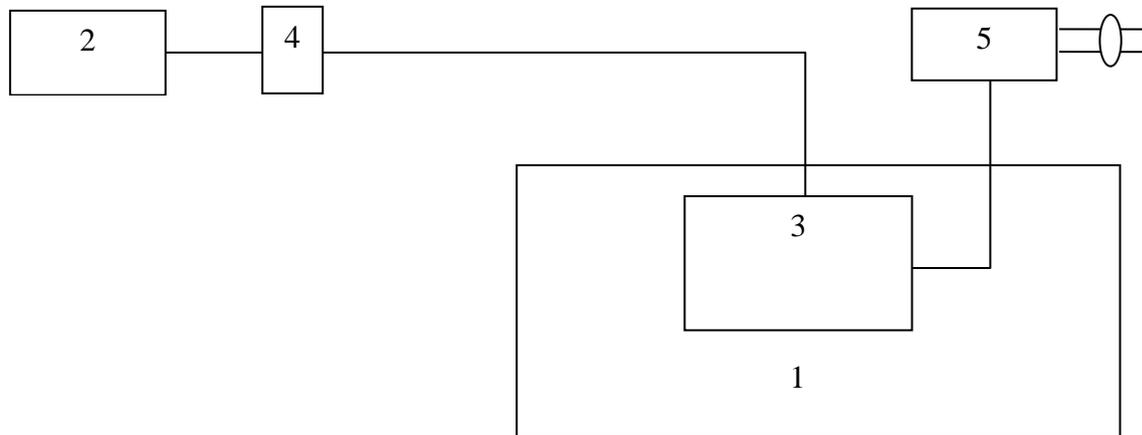
Option 1: Each hopping frequency of the Hopping Sequence shall be occupied at least once within a period not exceeding four times the product of the dwell time and the number of hopping frequencies in use.

Option 2: The occupation probability for each frequency shall be between $((1 / U) \times 25 \%)$ and 77 % where U is the number of hopping frequencies in use. The Hopping Sequence(s) shall contain at least N hopping frequencies at all times, where N is either 15 or the result of 15 MHz divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test Configuration



Legend

1. Wooden table
2. Spectrum analyzer
3. EUT
4. DC block
5. Power supply (Refer to power rating of section 2)

TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

TEST RESULTS

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

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TEST RESULTS

Dwell Time:

Dwell Time					
Mode	Data Rate	Frequency	Dwell Time (ms)	Limit	Result
BR	1 Mbps	Hopping	6.51	15	Pass
EDR	3 Mbps	Hopping	316.28	400	Pass

Minimum Frequency Occupation Time Result:

Minimum Frequency Occupation Time						
Mode	Data Rate	Frequency	Total Channel	Duty Cycle On (ms)	Minimum Frequency Occupation (ms)	Sweep time (ms)
BR	1 Mbps	Hopping	79	1.63	2.927	515.08
EDR	3 Mbps	Hopping	20	2.97	3.476	237.6

Hopping sequence:

Hopping Sequence							
Mode	Data Rate	Frequency	FL 20dB (MHz)	FH 20dB (MHz)	Hopping Range (%)	Limit	Result
BR	1 Mbps	Hopping	N/A	N/A	N/A	N/A	Pass
EDR	3 Mbps	Hopping	2401.83	2480.32	100.63%	70%	Pass

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

7.5 HOPPING FREQUENCY SEPARATION

LIMIT

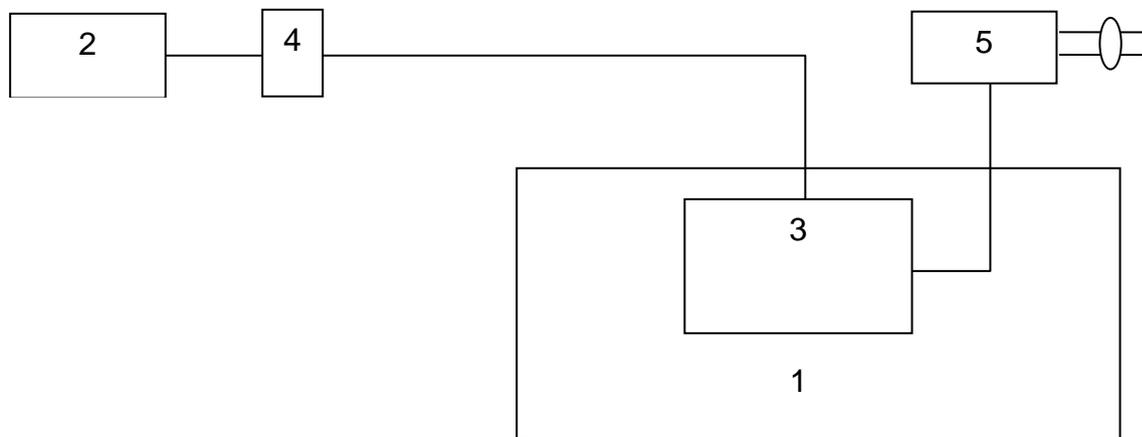
Non-adaptive frequency hopping systems

The minimum Hopping Frequency Separation shall be equal to Occupied Channel Bandwidth of a single hop, with a minimum separation of 100 kHz.

Adaptive frequency hopping systems

The minimum Hopping Frequency Separation shall be 100 kHz.

Test Configuration



Legend

1. Wooden table
2. Spectrum analyzer
3. EUT
4. DC block
5. Power supply (Refer to power rating of section 2)

TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

TEST RESULTS

N/A for Modulation Technology other than FHSS

TEST RESULTS

Hopping Frequency Separation							
Mode	Data Rate	Frequency	F _{1PK} (MHz)	F _{2PK} (MHz)	F _{HS} (MHz)	F _{HS} Limit (kHz)	Result
BR	1 Mbps	Hopping	2441.1613	2442.1599	0.9986	100	Pass
EDR	3 Mbps	Hopping	2441.1613	2442.1686	1.0073	100	Pass

7.6 MEDIUM UTILISATION

LIMIT

ETSI EN 300 328

The maximum Medium Utilisation factor for non-adaptive Frequency Hopping equipment shall be 10 %.

TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

TEST RESULTS

N/A for equipments that employs the adaptive mechanism. This given UE implements adaptive mechanism to identify transmission of likely presence in the band.

7.7 ADAPTIVITY

LIMIT

Requirement	Operational Mode			
	Non-LBT based Detect and Avoid	Frame Based Equipment	Load Based Equipment (Base on 'Spectrum Sharing' mechanisms)	Load Based Equipment (Not using any of the mechanisms referenced)
Minimum Clear Channel Assessment (CCA) Time	NA	18 us (see note 1)	(see note 2)	18 us (see note 1)
Maximum Channel Occupancy (COT) Time	40 ms	1 ms to 10 ms	(see note 2)	13ms
Minimum Idle Period	5us	5% of COT	(see note 2)	18us (see note 3)
Extended CCA check	NA	NA	(see note 2)	18us~160us
Short Control Signalling Transmissions	Maximum duty cycle of 10 % within an observation period of 50 ms (see note 4)			

NOTE 1: The CCA time used by the equipment shall be declared by the supplier.
 NOTE 2: Load Based Equipment may implement an LBT based spectrum sharing mechanism based on the Clear Channel Assessment (CCA) mode using energy detect, as described in IEEE 802.11™-2012 clause 9, clause 10, clause 16, clause 17, clause 19 and clause 20, or in IEEE 802.15.4™-2011 [i.4], clause 4, clause 5 and clause 8
 NOTE 3: The Idle Period in between transmissions is considered to be the CCA or the Extended CCA check as there are no transmissions during this period.
 NOTE 4: Adaptive equipment may or may not have Short Control Signalling Transmissions

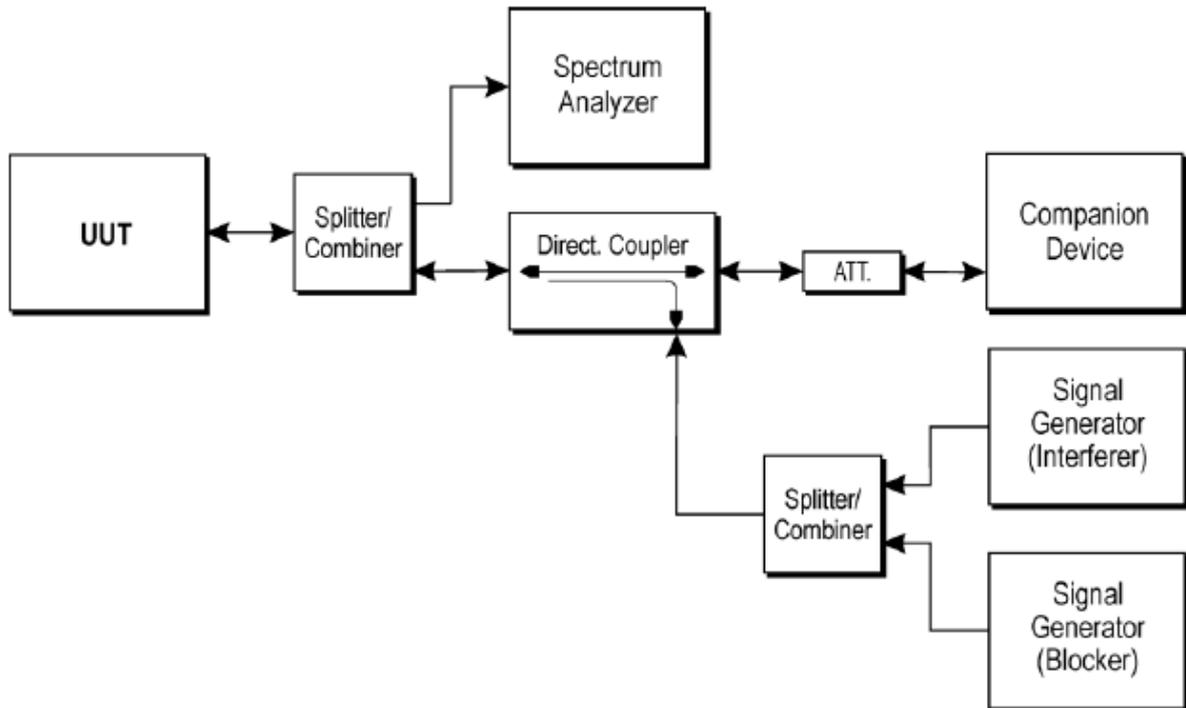
Threshold Level for LBT based Detect and Avoid (Load Based Equipment)	
Maximum transmit power (P _H) EIRP dBm	Threshold level (TL) (see notes 1 and 2)
20	-70 dBm / MHz

NOTE 1: For a 20 dBm e.i.r.p. transmitter the CCA threshold level (TL) shall be equal to or less than -70 dBm/MHz at the input to the receiver assuming a 0 dBi (receive) antenna assembly. This threshold level (TL) may be corrected for the (receive) antenna assembly gain (G)
 NOTE 2: For power levels less than 20 dBm e.i.r.p. the CCA threshold level may be relaxed to: TL = -70 dBm/MHz + 10 × log₁₀ (100 mW / P_{out}) ; (P_{out} in mW e.i.r.p.)

Unwanted signal parameters for LBT based Detect and Avoid (Load Based Equipment)		
Wanted signal mean power from companion device	Unwanted signal frequency (MHz)	Unwanted signal power (dBm)
sufficient to maintain the link (see note 2)	2 395 or 2 488,5 (see note 1)	-35 (see note 3)

NOTE 1: The highest frequency shall be used for testing operating channels within the range 2 400 MHz to 2 442 MHz, while the lowest frequency shall be used for testing operating channels within the range 2 442 MHz to 2 483,5 MHz. See clause 5.4.6.1.
 NOTE 2: A typical value which can be used in most cases is -50 dBm/MHz.
 NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna.

Test Configuration



TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

The spectrum analyser sweep was triggered by the start of the interfering signal , with the interfering signal present, a 100 % duty cycle CW signal is inserted as the blocking signal.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

TEST RESULTS

IEEE 802.11b Mode	Signal duration after interfering (s)	
	CH Low	CH High
	Pass	Pass

IEEE 802.11g Mode	Signal duration after interfering (s)	
	CH Low	CH High
	Pass	Pass

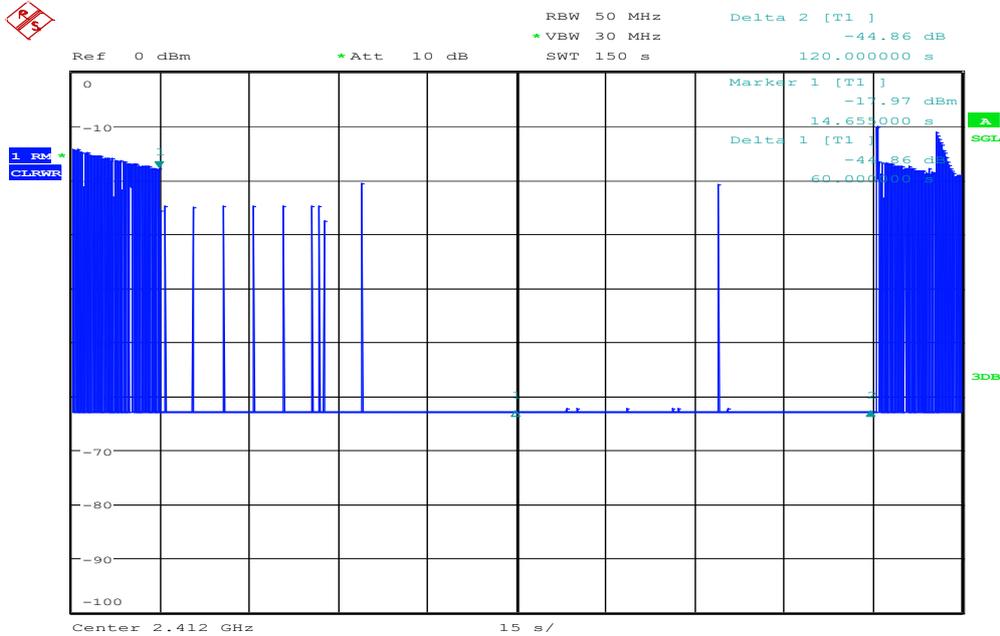
IEEE 802.11n HT 20 MHz Mode	Signal duration after interfering (s)	
	CH Low	CH High
	Pass	Pass

IEEE 802.11n HT 40 MHz Mode	Signal duration after interfering (s)	
	CH Low	CH High
	Pass	Pass

Report No.: T200923D03-RT1

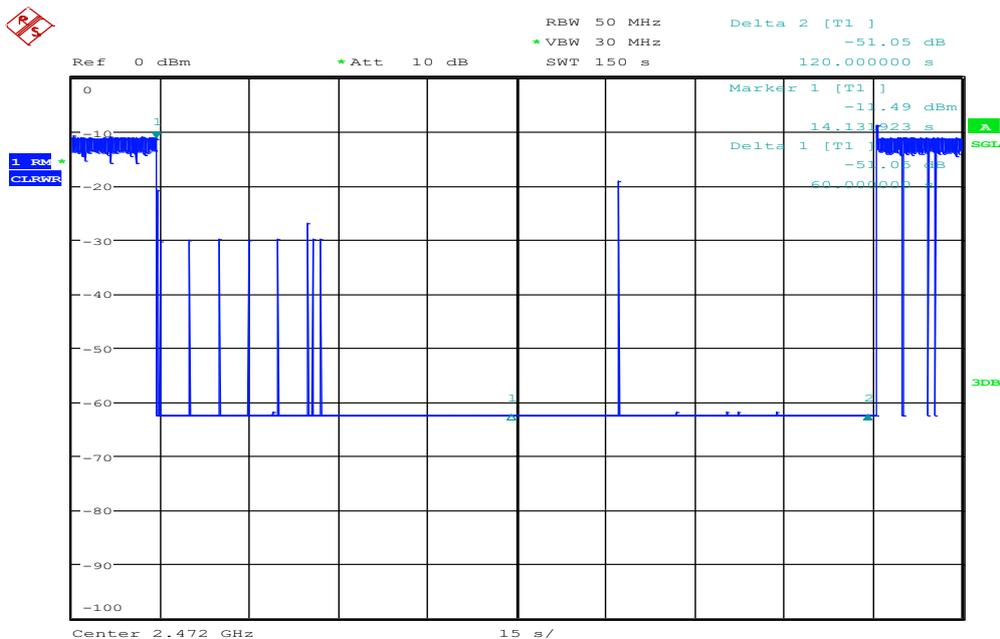
Ref. No.: T180627D10-RT1

Test results: IEEE 802.11b Mode, Low



Date: 25.JUL.2018 15:58:50

Test results: IEEE 802.11b Mode, High

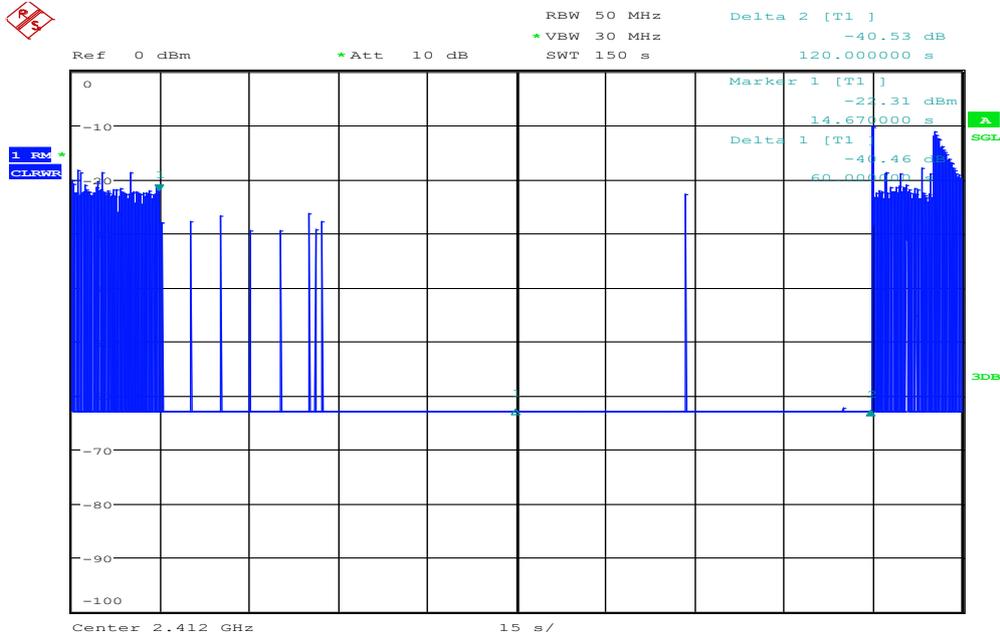


Date: 25.JUL.2018 17:16:41

Report No.: T200923D03-RT1

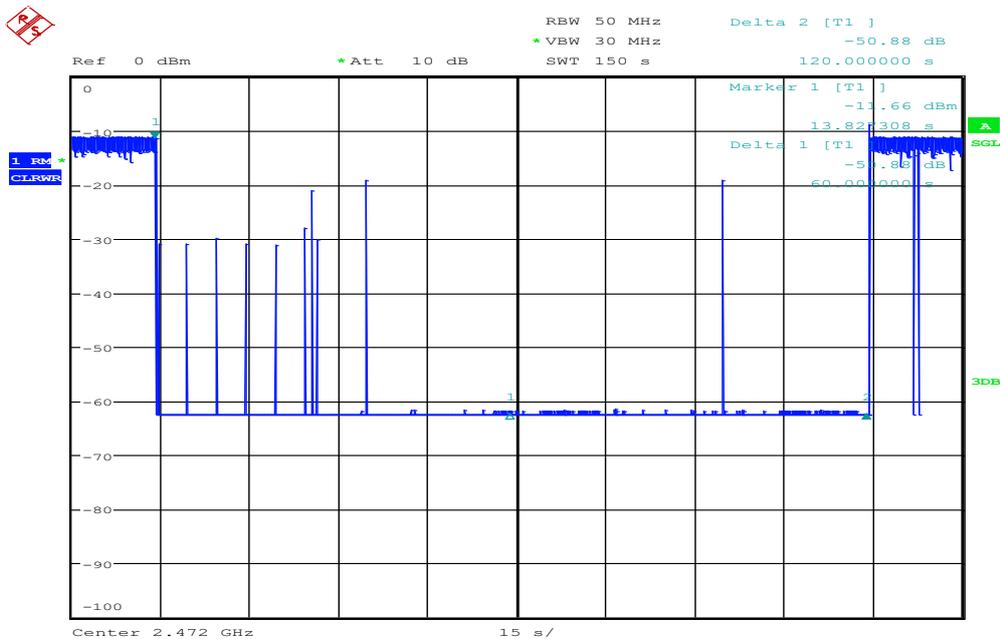
Ref. No.: T180627D10-RT1

Test results: IEEE 802.11g Mode, Low



Date: 25.JUL.2018 16:02:07

Test results: IEEE 802.11g Mode, High

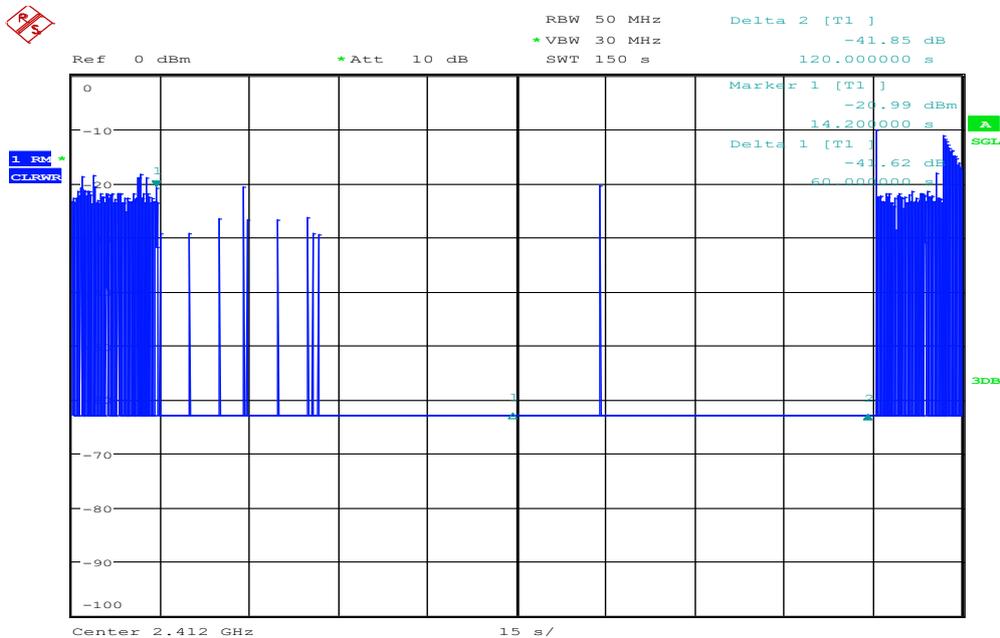


Date: 25.JUL.2018 17:07:38

Report No.: T200923D03-RT1

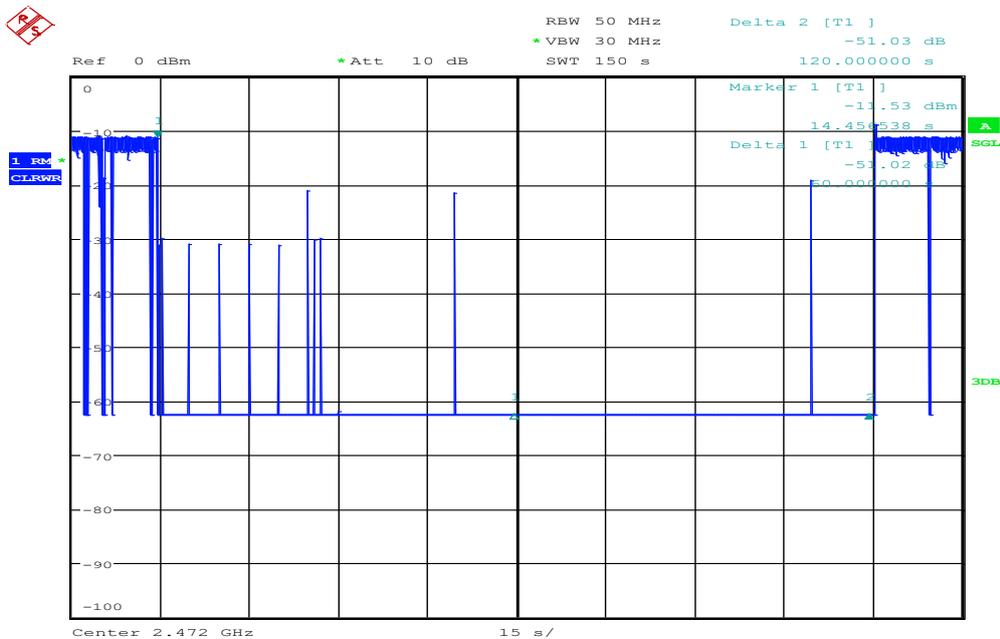
Ref. No.: T180627D10-RT1

Test results: IEEE 802.11n HT 20 MHz Mode, Low



Date: 25.JUL.2018 16:05:06

Test results: IEEE 802.11n HT 20 MHz Mode, High

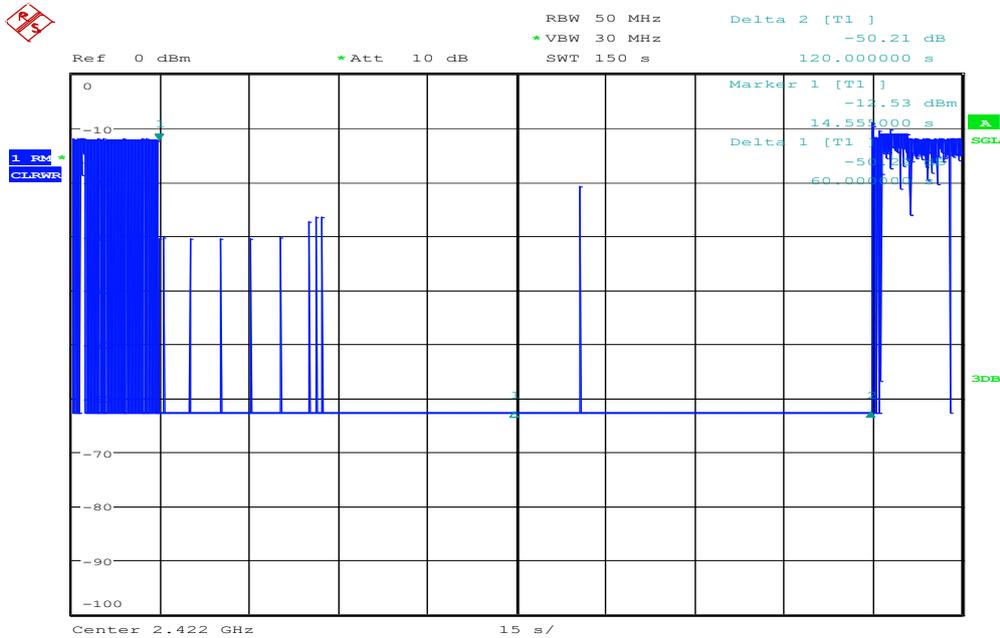


Date: 25.JUL.2018 16:56:24

Report No.: T200923D03-RT1

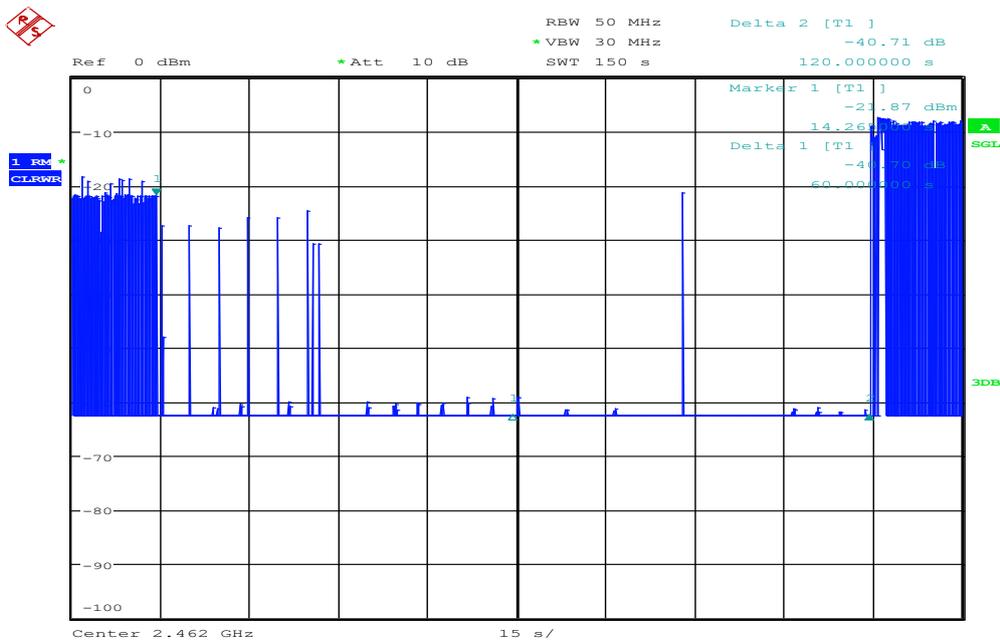
Ref. No.: T180627D10-RT1

Test results: IEEE 802.11n HT 40 MHz Mode, Low



Date: 25.JUL.2018 18:29:01

Test results: IEEE 802.11n HT 40 MHz Mode, High



Date: 25.JUL.2018 19:17:01

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

TEST RESULTS

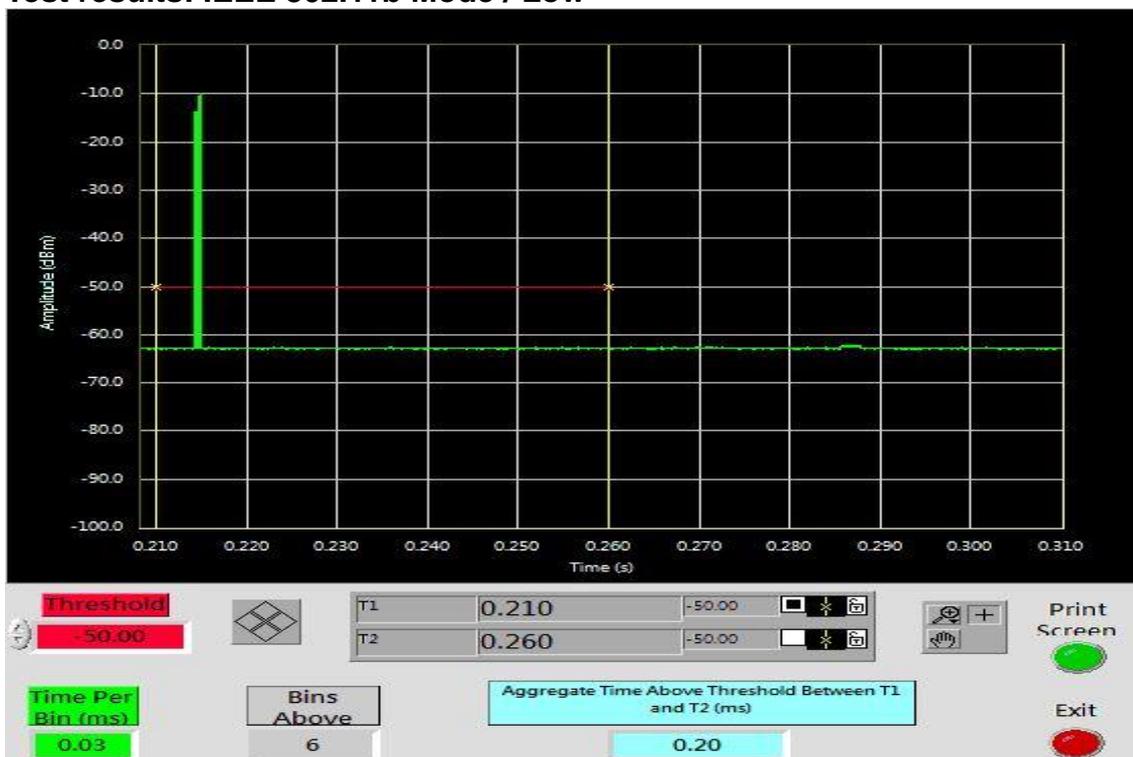
Short Control Signalling Transmissions			
Mode	Maximum duty cycle(ms)		Limit(ms)
	CH Low	CH High	
IEEE 802.11b Mode	0.20	0.07	5
IEEE 802.11g Mode	0.23	0.37	5
IEEE 802.11n HT 20 MHz Mode	0.40	0.23	5

Short Control Signalling Transmissions			
Mode	Maximum duty cycle(ms)		Limit(ms)
	CH Low	CH High	
IEEE 802.11n HT 40 MHz Mode	0.30	0.45	5

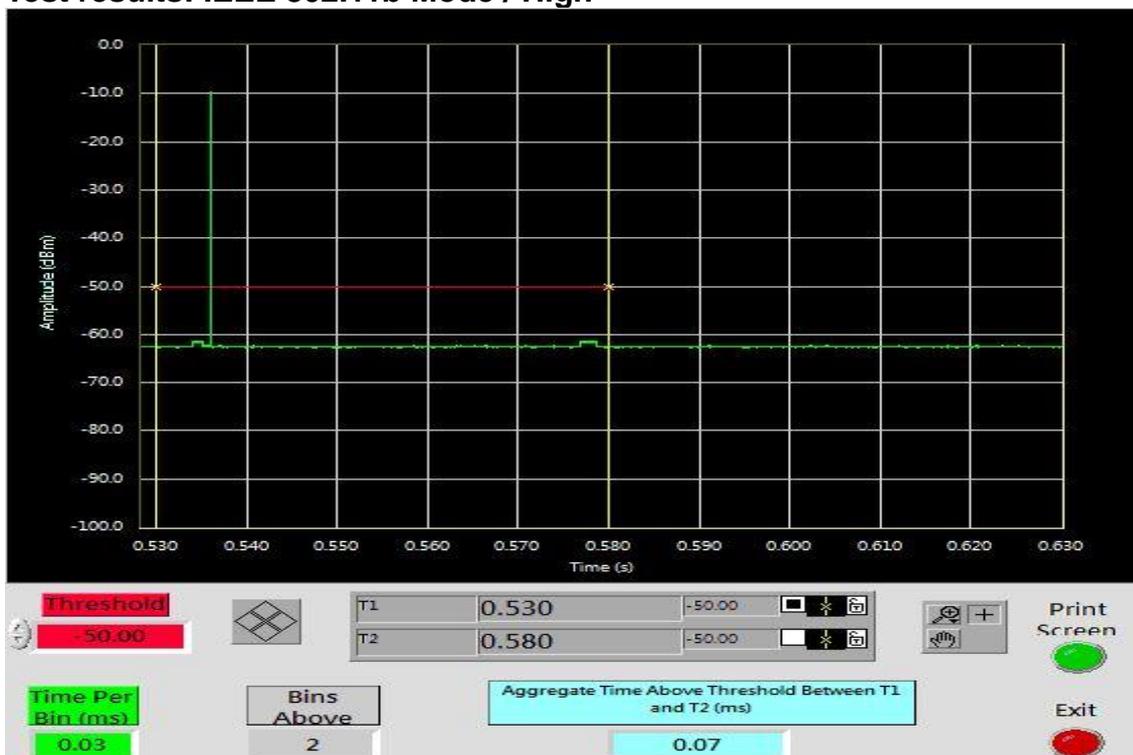
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test results: IEEE 802.11b Mode / Low



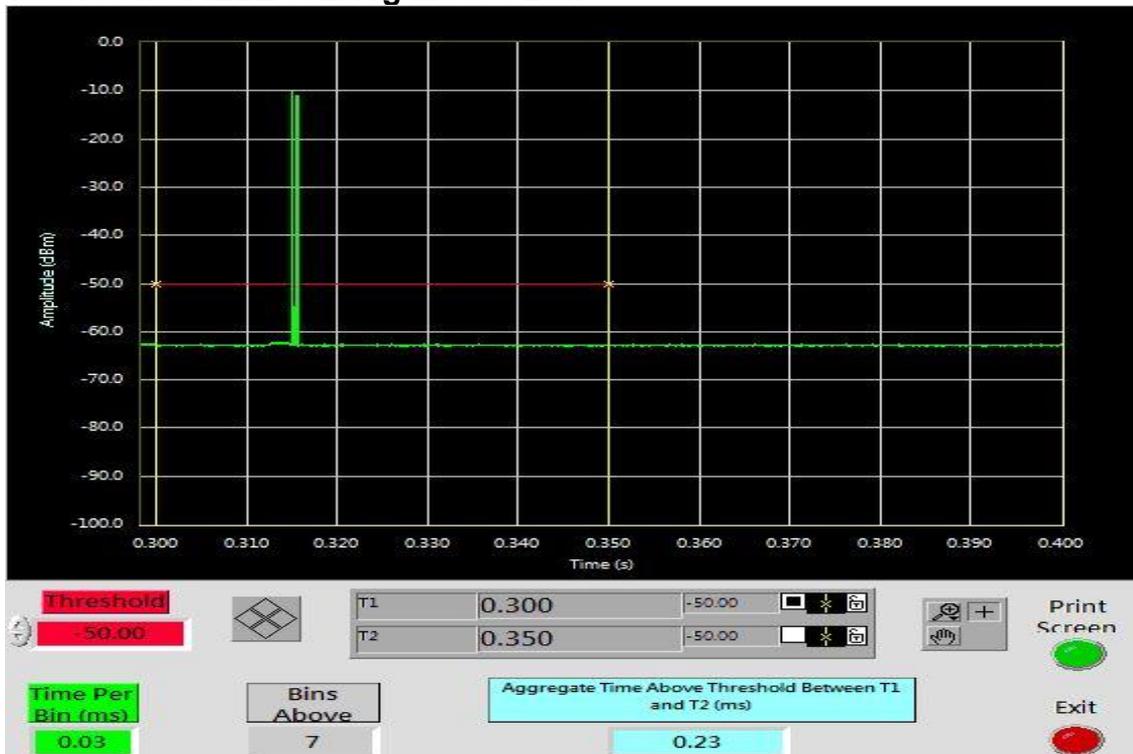
Test results: IEEE 802.11b Mode / High



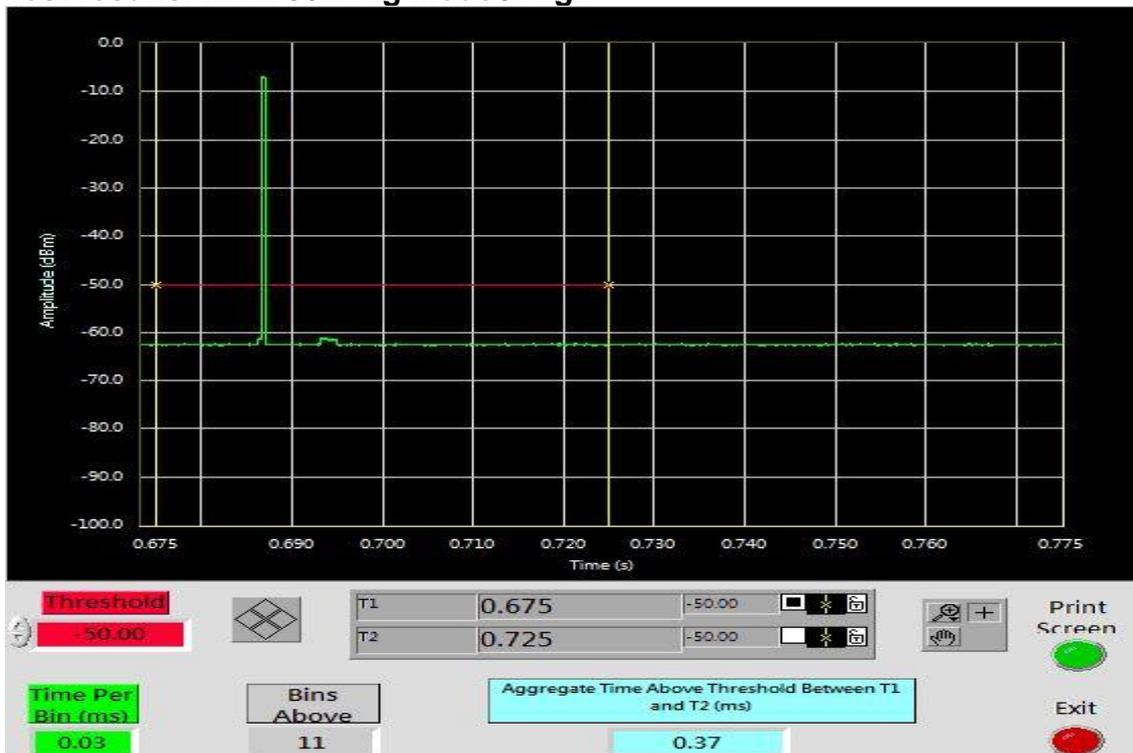
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test results: IEEE 802.11g Mode / Low



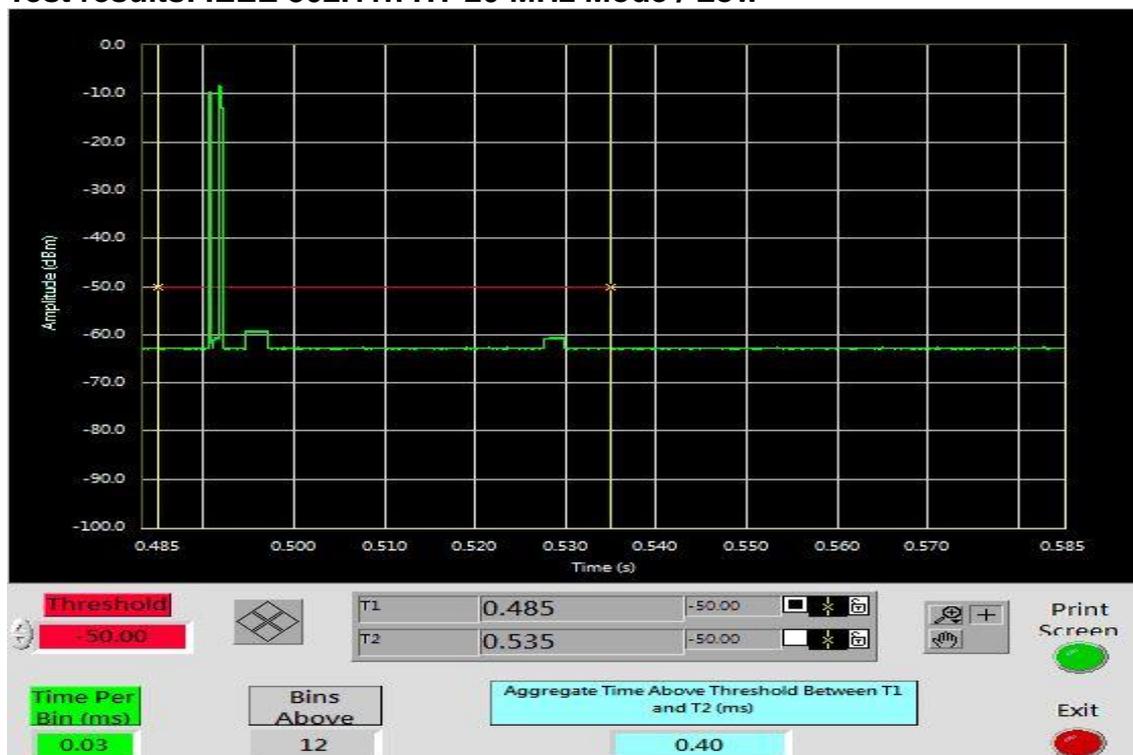
Test results: IEEE 802.11g Mode / High



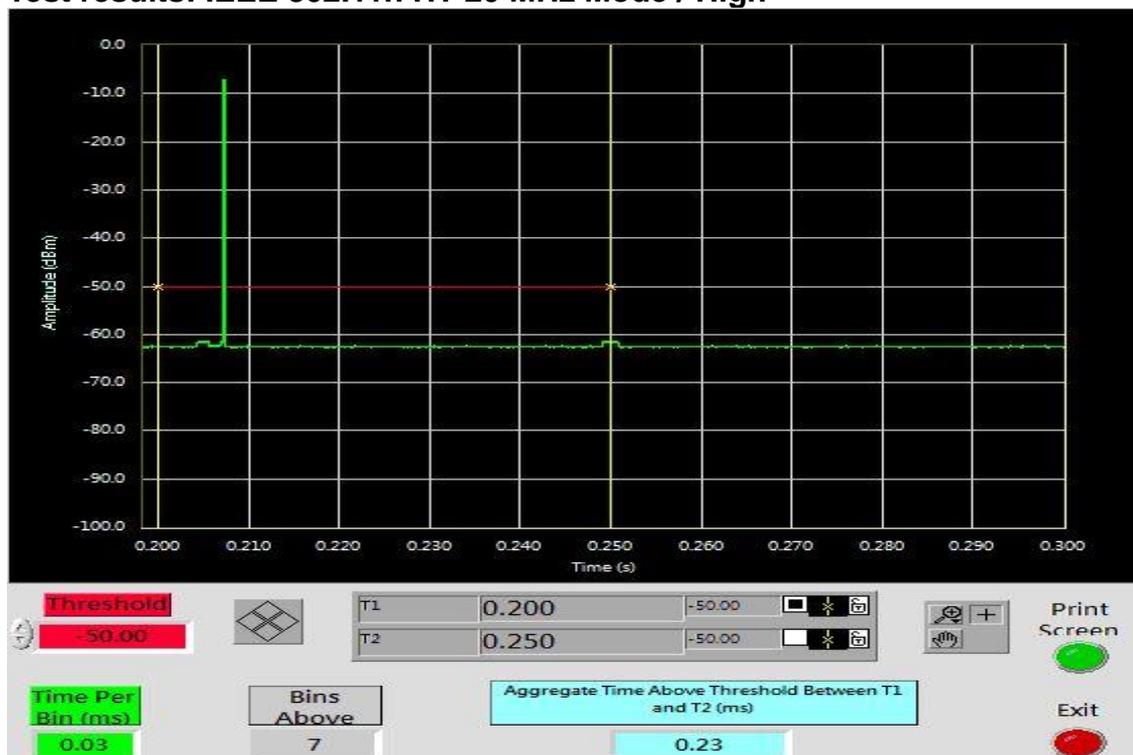
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test results: IEEE 802.11n HT 20 MHz Mode / Low



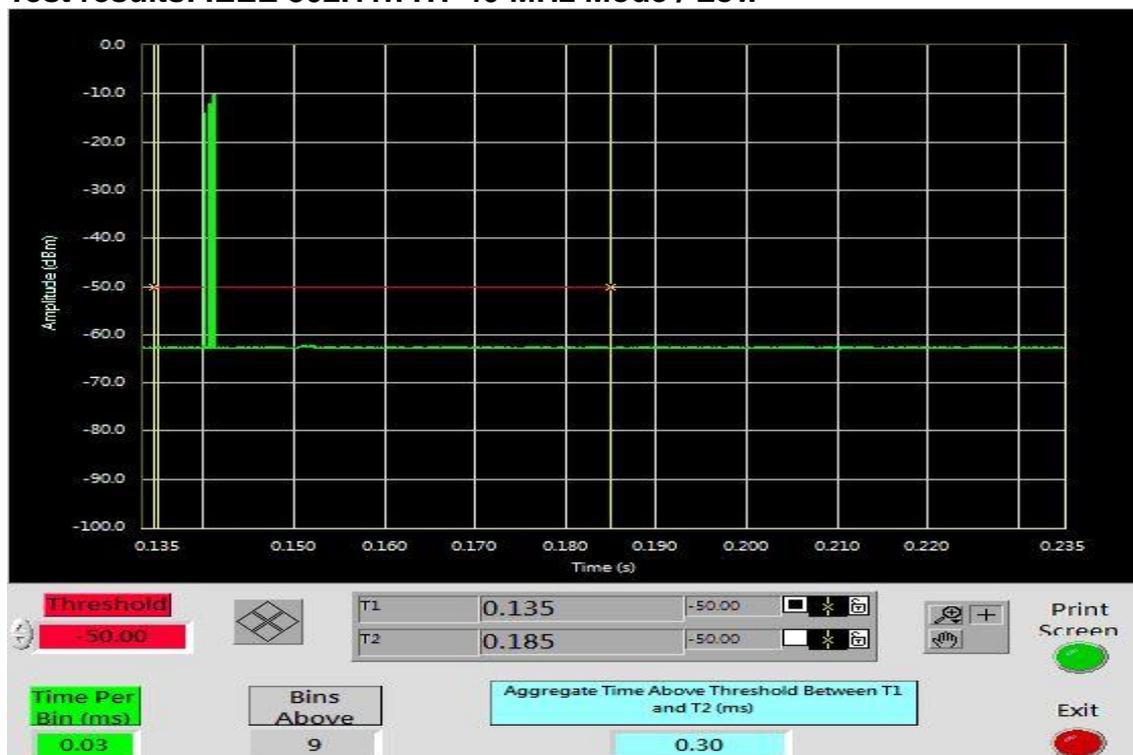
Test results: IEEE 802.11n HT 20 MHz Mode / High



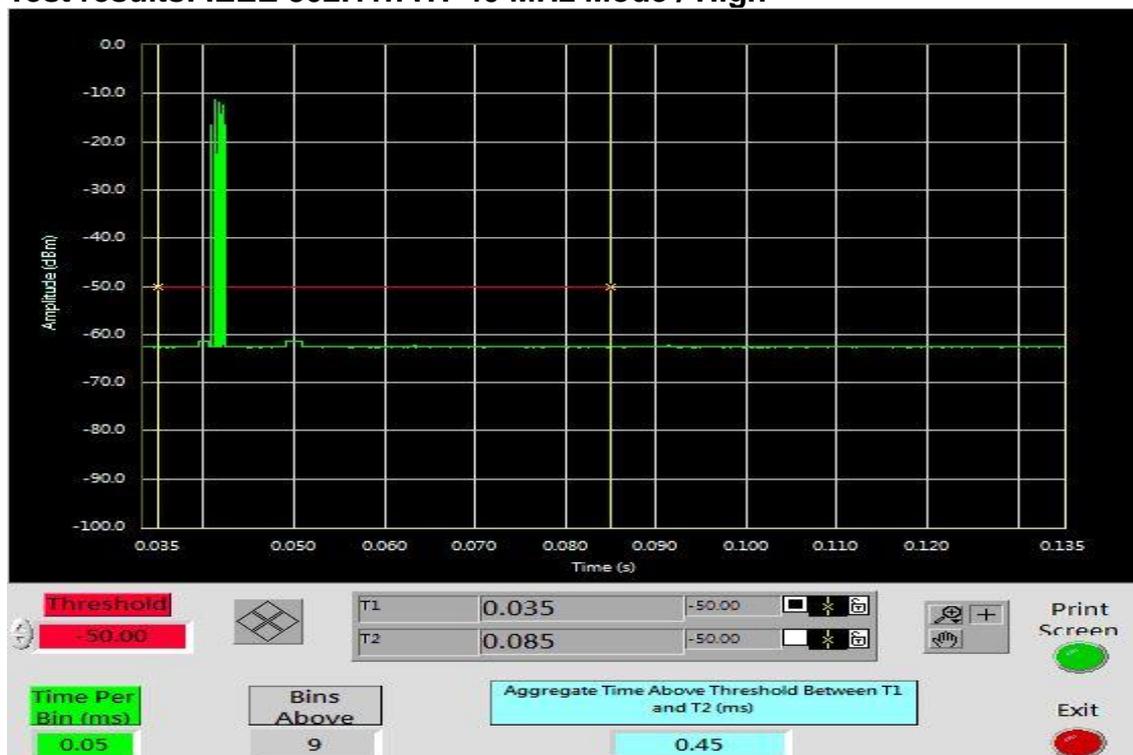
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test results: IEEE 802.11n HT 40 MHz Mode / Low



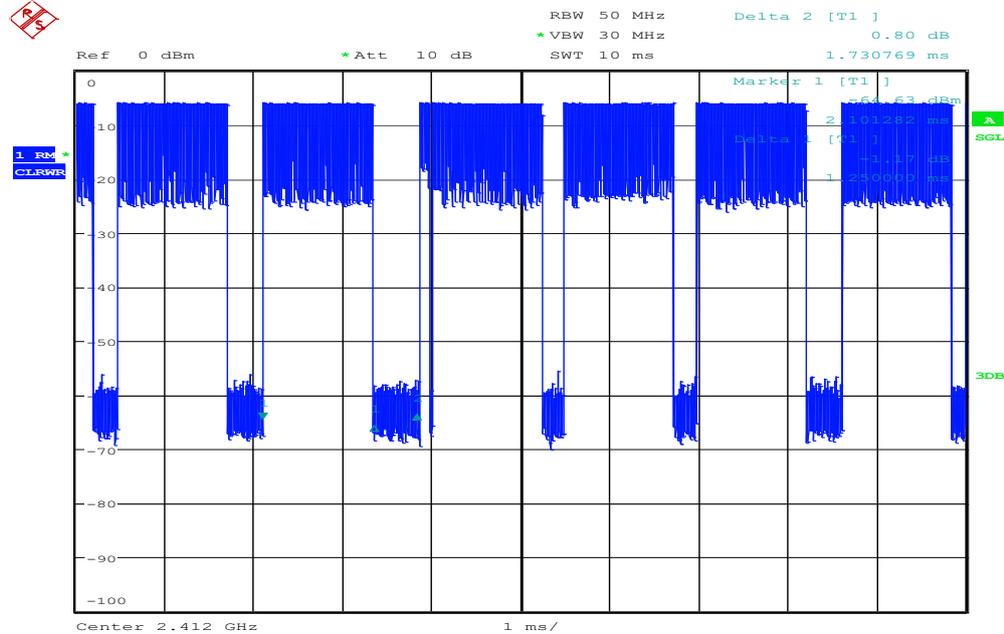
Test results: IEEE 802.11n HT 40 MHz Mode / High



Report No.: T200923D03-RT1

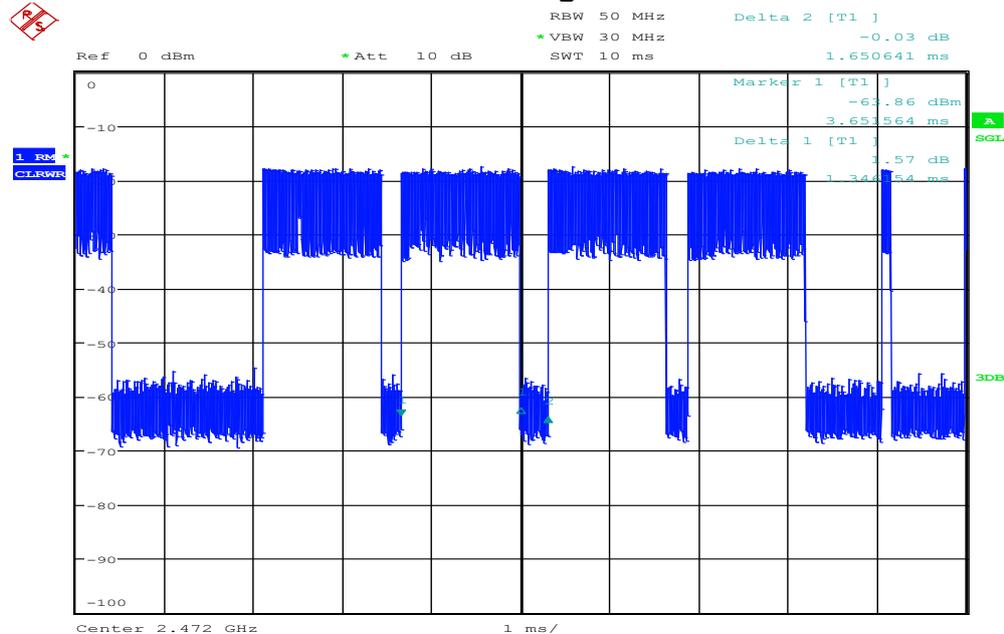
Ref. No.: T180627D10-RT1

Occupancy time Test results: IEEE 802.11b Mode / Low



Date: 25.JUL.2018 14:42:27

Test results: IEEE 802.11b Mode / High

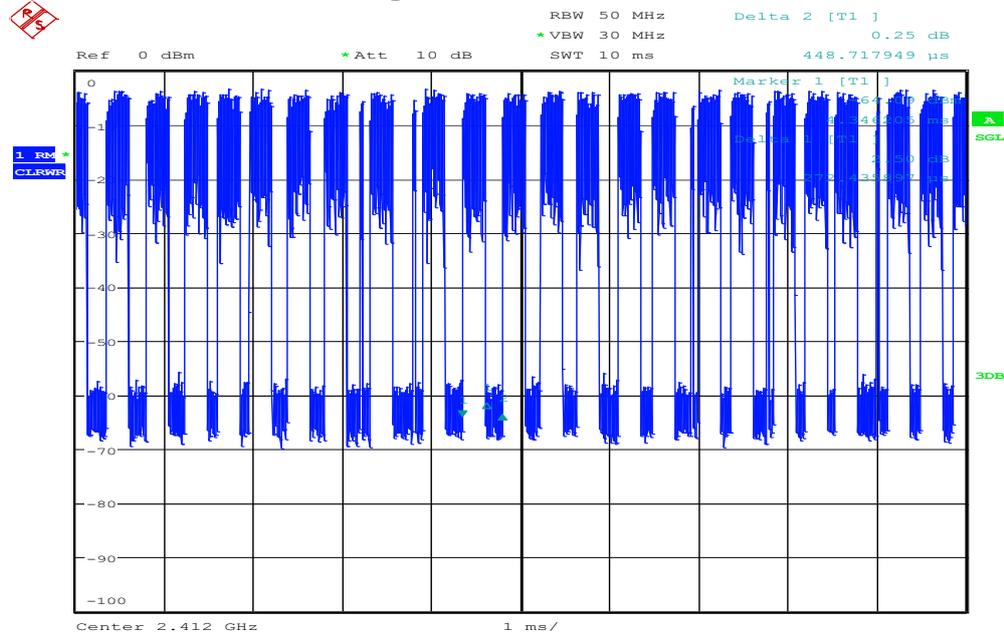


Date: 25.JUL.2018 17:52:22

Report No.: T200923D03-RT1

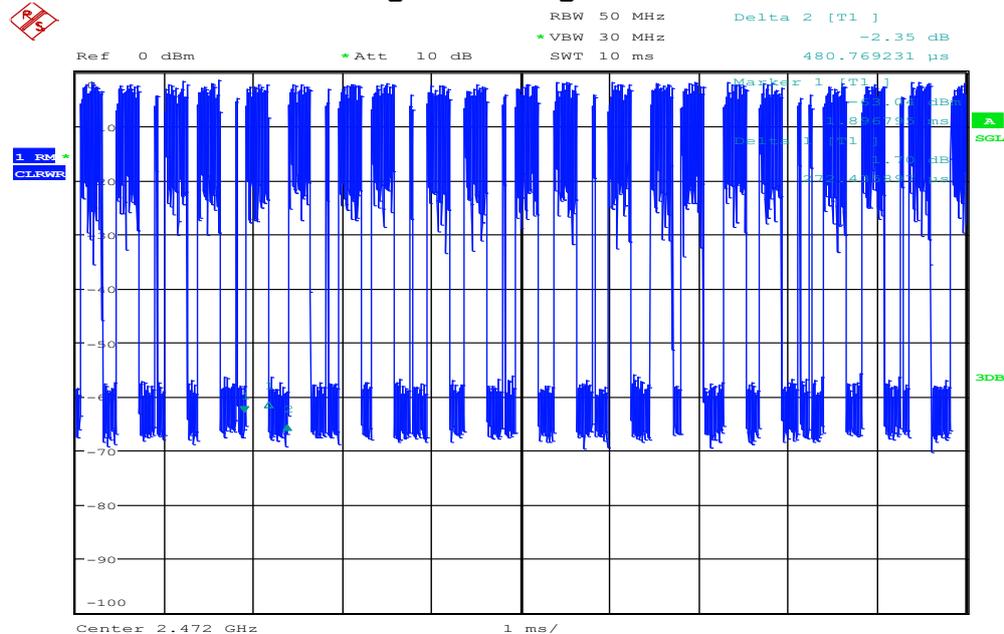
Ref. No.: T180627D10-RT1

Test results: IEEE 802.11g Mode / Low



Date: 25.JUL.2018 15:11:48

Test results: IEEE 802.11g Mode / High

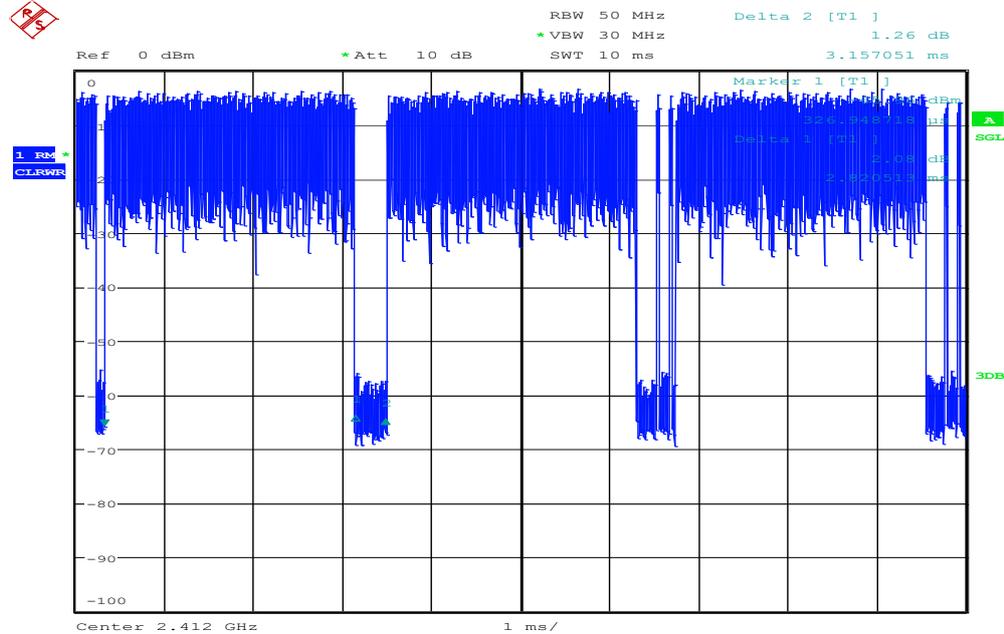


Date: 25.JUL.2018 17:04:25

Report No.: T200923D03-RT1

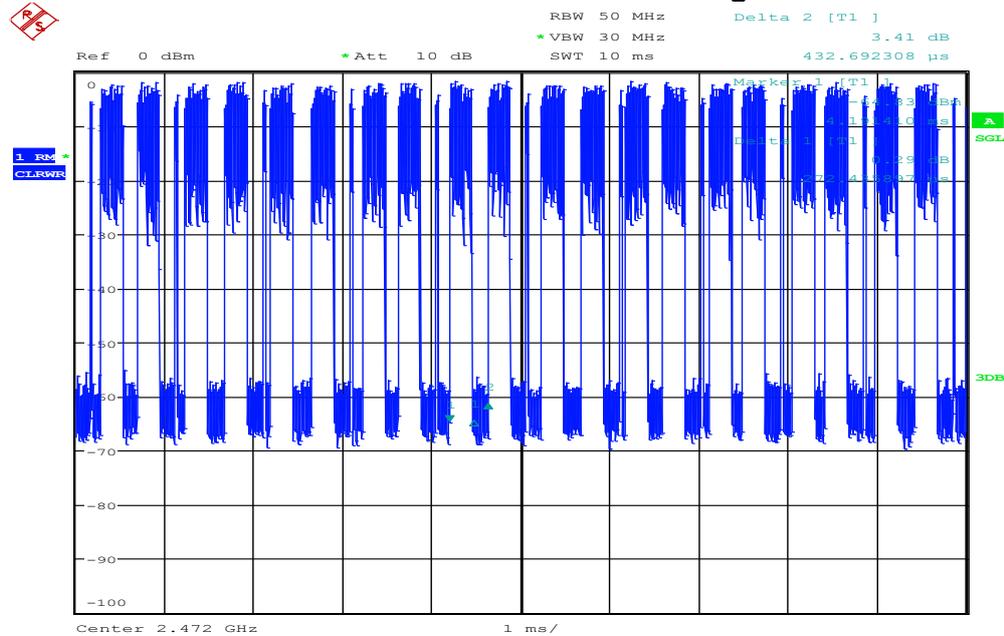
Ref. No.: T180627D10-RT1

Test results: IEEE 802.11n HT 20 MHz Mode / Low



Date: 25.JUL.2018 15:41:28

Test results: IEEE 802.11n HT 20 MHz Mode / High

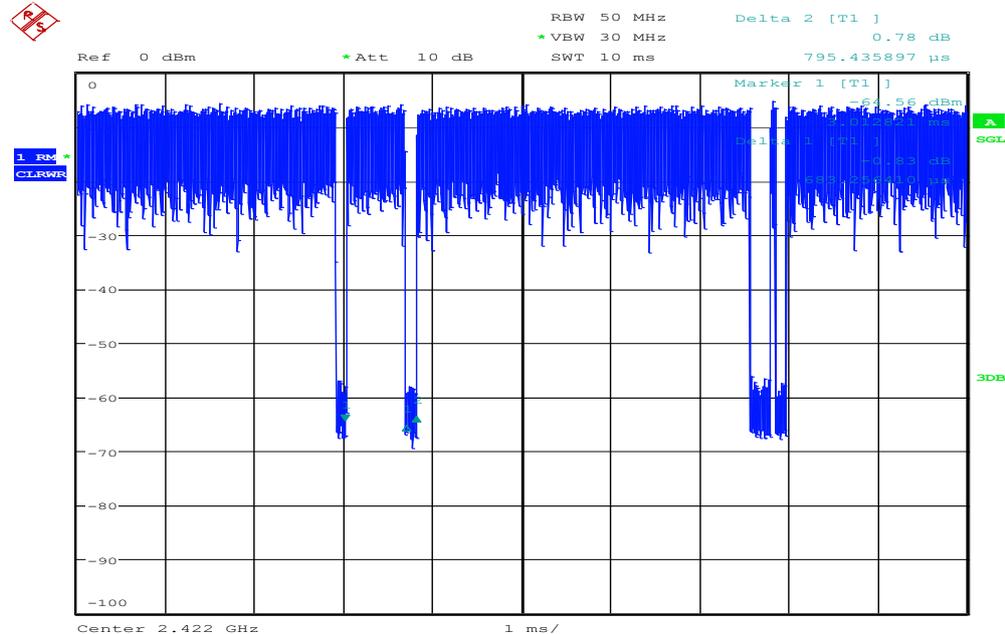


Date: 25.JUL.2018 16:53:07

Report No.: T200923D03-RT1

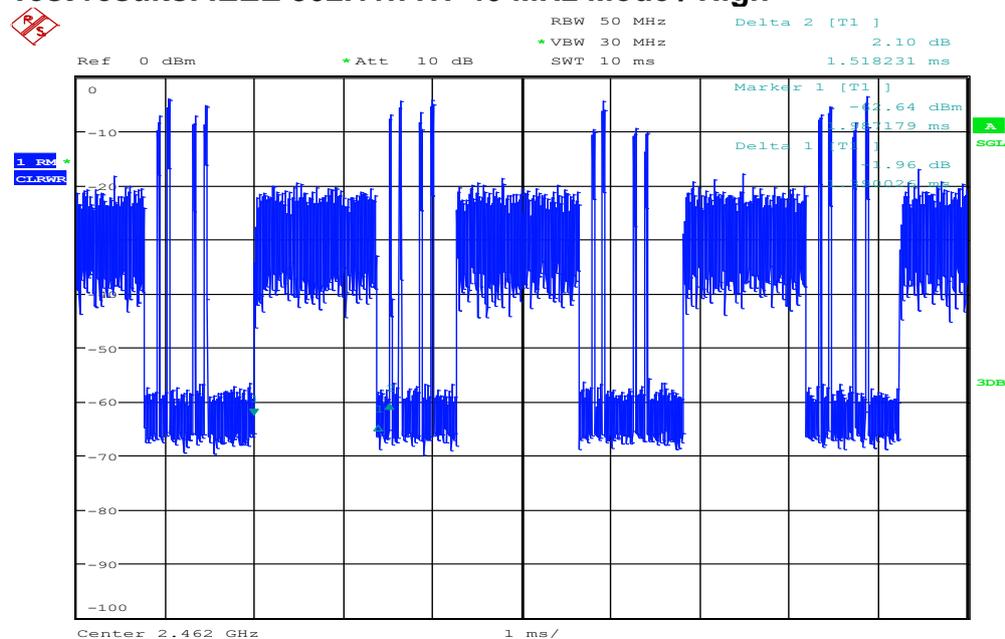
Ref. No.: T180627D10-RT1

Test results: IEEE 802.11n HT 40 MHz Mode / Low



Date: 25.JUL.2018 18:25:47

Test results: IEEE 802.11n HT 40 MHz Mode / High



Date: 25.JUL.2018 19:13:46

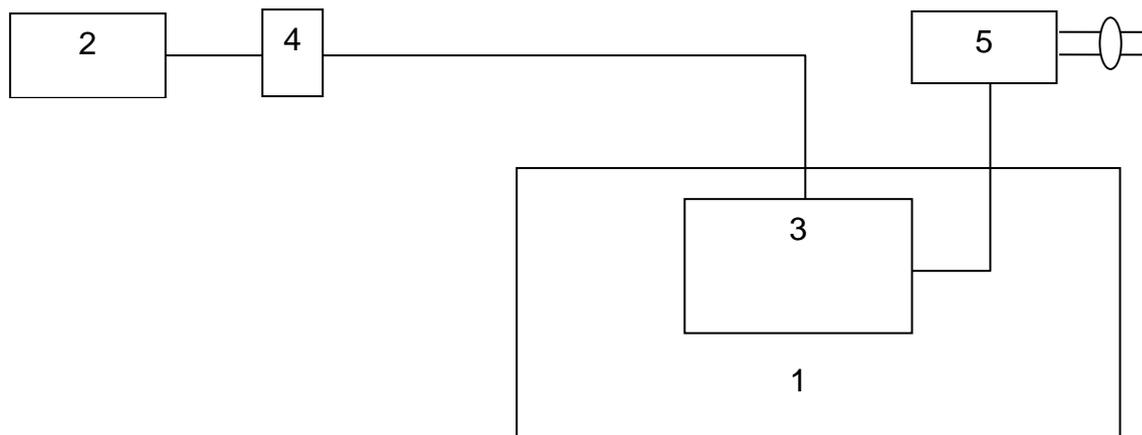
7.8 OCCUPIED CHANNEL BANDWIDTH

LIMIT

FHSS equipments: The Occupied Channel Bandwidth for each hopping frequency shall be within the band 2400 MHz ~ 2483.5 MHz. In addition, for non-adaptive FHSS equipment with e.i.r.p. greater than 10 dBm, the Occupied Channel Bandwidth for every occupied hopping frequency shall be equal to or less than 5 MHz.

Non-FHSS equipment: The Occupied Channel Bandwidth shall be within the band 2400 MHz ~ 2483.5 MHz. In addition, for non-adaptive non-FHSS equipment with e.i.r.p. greater than 10 dBm, the Occupied Channel Bandwidth shall be equal to or less than 20 MHz.

Test Configuration



Legend

1. Wooden table
2. Spectrum analyzer
3. EUT
4. DC block
5. Power supply (Refer to power rating of section 2)

TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

TEST RESULTS

No non-compliance noted.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

IEEE 802.11b Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.068
High	2472	13.056

Data Rate	Frequency	FL at 99% Bandwidth(MHz)	FH at 99% Bandwidth(MHz)	Limit	Result
1 Mbps	2412	2405.5173	2418.6183	2400	Pass
	2472	2465.6178	2478.6188	2483.5	Pass

IEEE 802.11g Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.235
High	2472	16.245

Data Rate	Frequency	FL at 99% Bandwidth(MHz)	FH at 99% Bandwidth(MHz)	Limit	Result
6 Mbps	2412	2404.013	2420.214	2400	Pass
	2472	2463.9119	2480.2136	2483.5	Pass

IEEE 802.11n HT20 MHz Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.351
High	2472	17.345

Data Rate	Frequency	FL at 99% Bandwidth(MHz)	FH at 99% Bandwidth(MHz)	Limit	Result
MCS 0	2412	2403.4138	2420.8142	2400	Pass
	2472	2463.4135	2480.8144	2483.5	Pass

IEEE 802.11n HT40 MHz Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2422	36.091
High	2462	36.066

Data Rate	Frequency	FL at 99% Bandwidth(MHz)	FH at 99% Bandwidth(MHz)	Limit	Result
MCS 0	2422	2404.1106	2440.211	2400	Pass
	2462	2444.0109	2480.1112	2483.5	Pass

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Bluetooth for GFSK (BR-1M)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	0.993
High	2480	0.993

Data Rate	Frequency (MHz)	FL at 99% Bandwidth (MHz)	FH at 99% Bandwidth (MHz)	Limit (MHz)	Result
1 Mbps	2402	2401.5155	2402.5156	2400	Pass
	2480	2479.5153	2480.5155	2483.5	Pass

Bluetooth for 8DPSK (EDR-3M)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.219
High	2480	1.213

Data Rate	Frequency (MHz)	FL at 99% Bandwidth (MHz)	FH at 99% Bandwidth (MHz)	Limit (MHz)	Result
3 Mbps	2402	2401.4147	2402.6156	2400	Pass
	2480	2479.4141	2480.6154	2483.5	Pass

Bluetooth 4.1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.09
High	2480	1.09

Data Rate	Frequency (MHz)	FL at 99% Bandwidth (MHz)	FH at 99% Bandwidth (MHz)	Limit (MHz)	Result
BLE	2402	2401.5196	2402.6198	2400	Pass
	2480	2479.5178	2480.6182	2483.5	Pass

7.9 TRANSMITTER UNWANTED EMISSIONS IN THE OOB DOMAIN

LIMIT

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure 1.

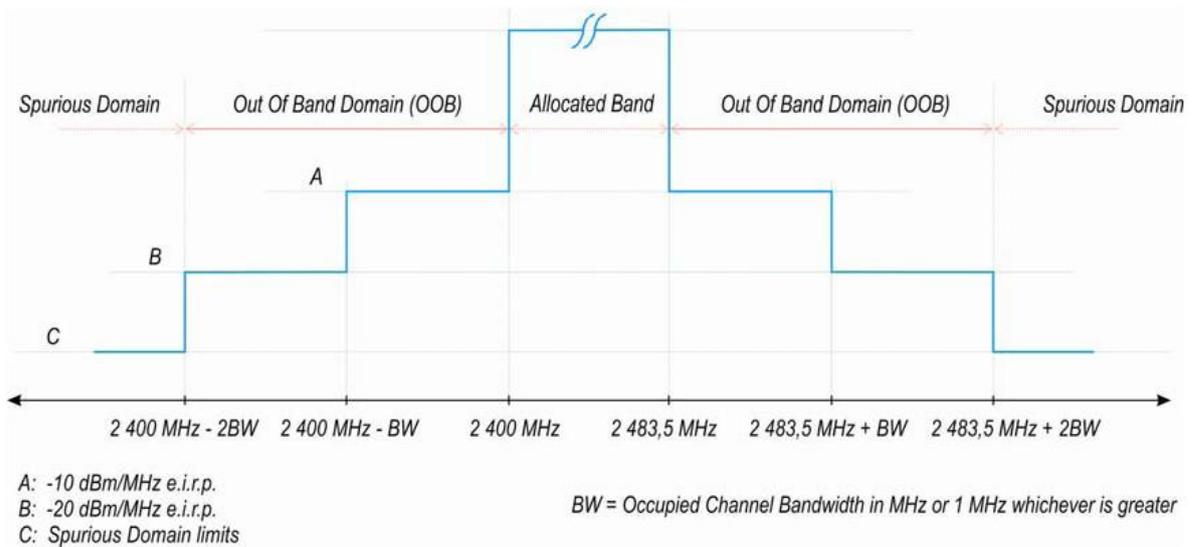


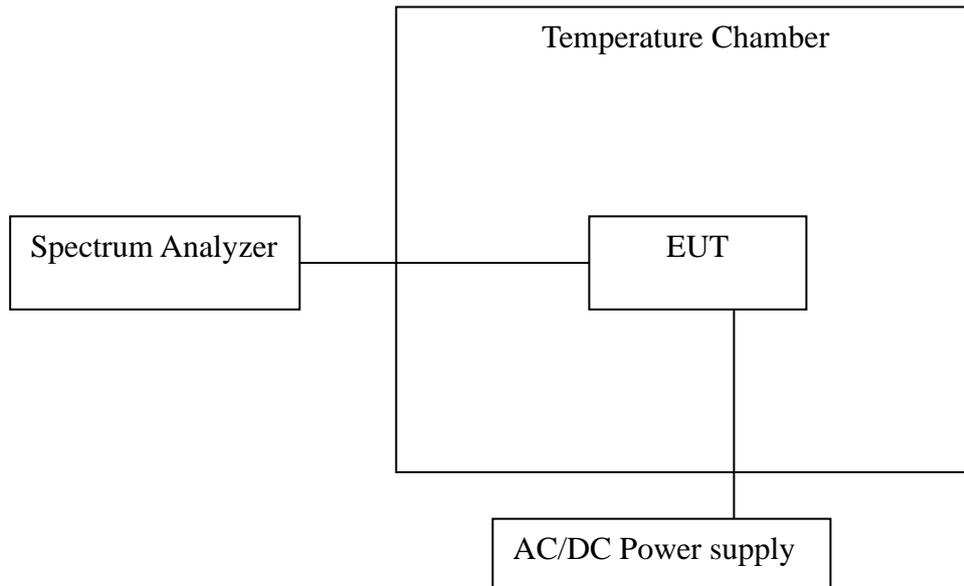
Figure 1: Transmit mask

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test Configuration

Temperature and Voltage Measurement (under normal and extreme test conditions)



TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

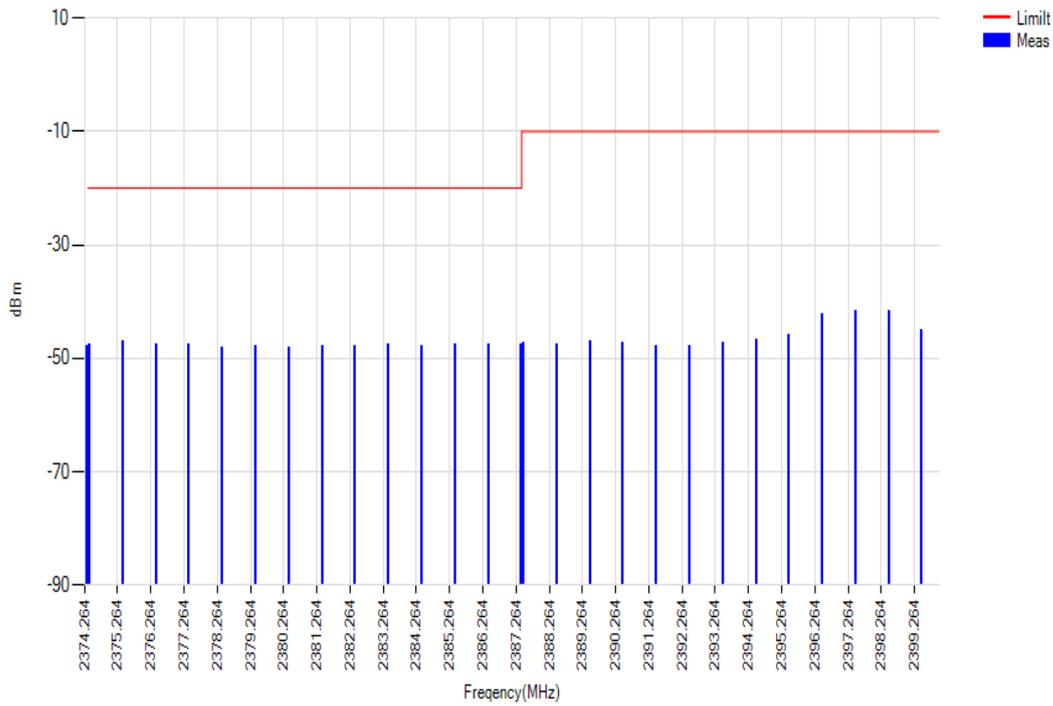
TEST RESULTS

No non-compliance noted.

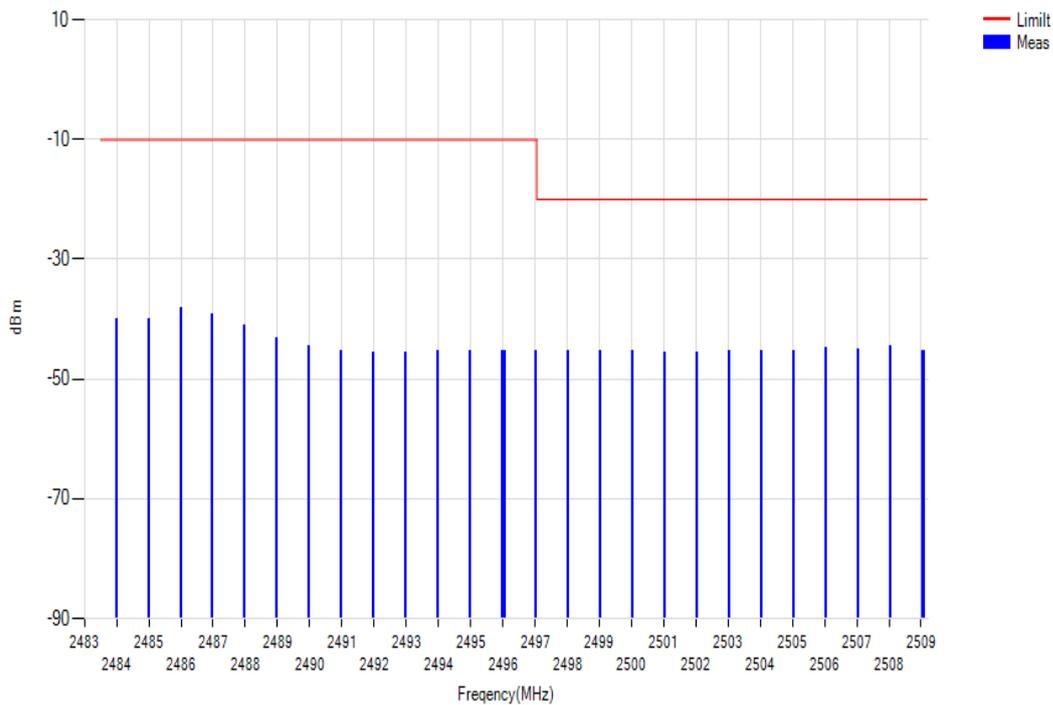
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test results: IEEE 802.11b Mode
25°C /5v CH Low



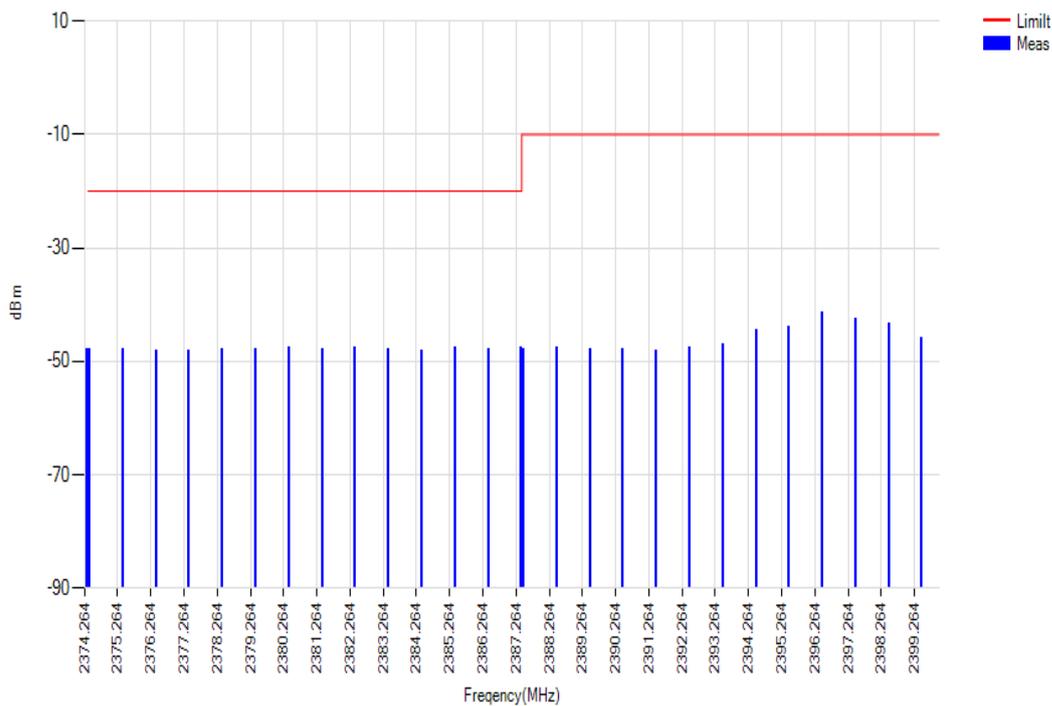
25°C /5v CH High



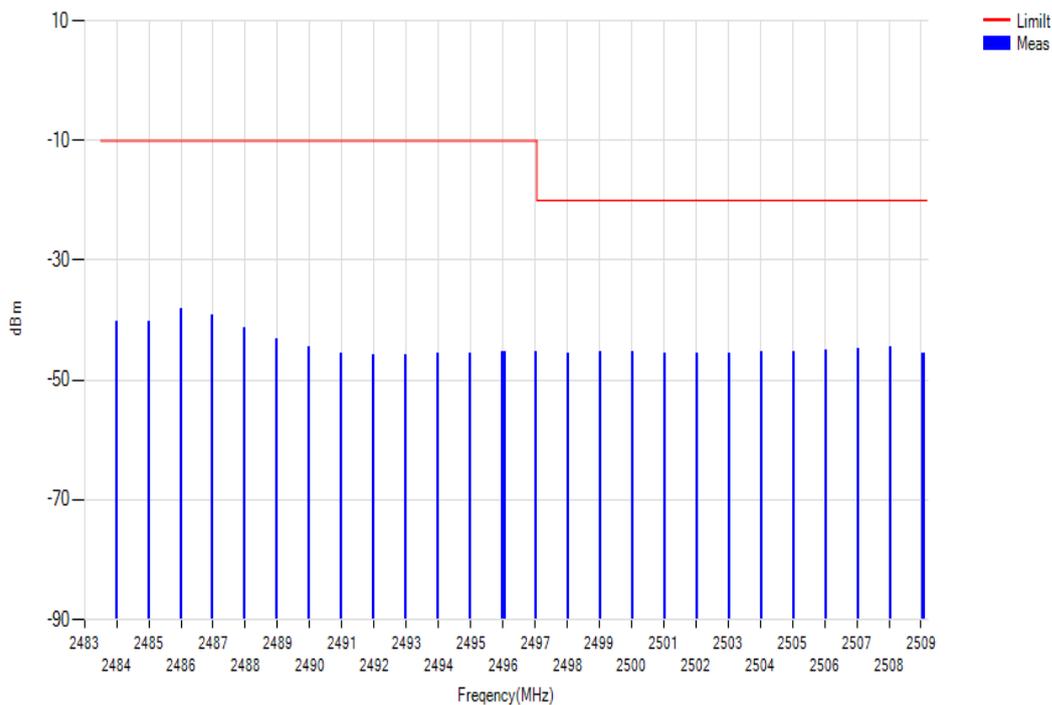
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

0°C /5v CH Low



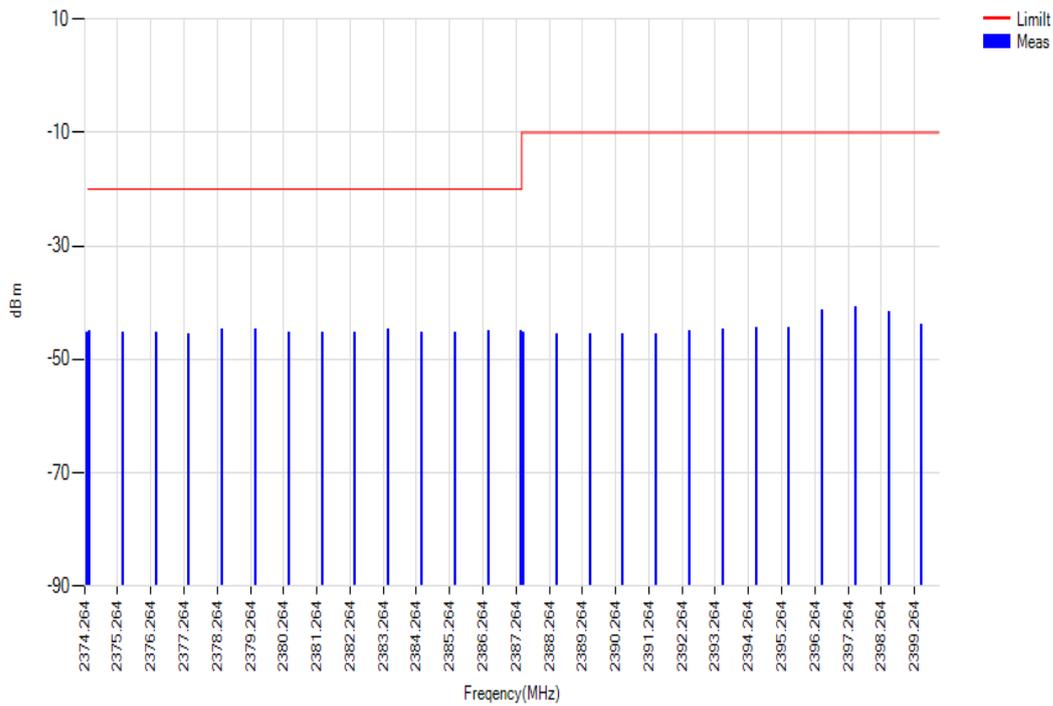
0°C /5v CH High



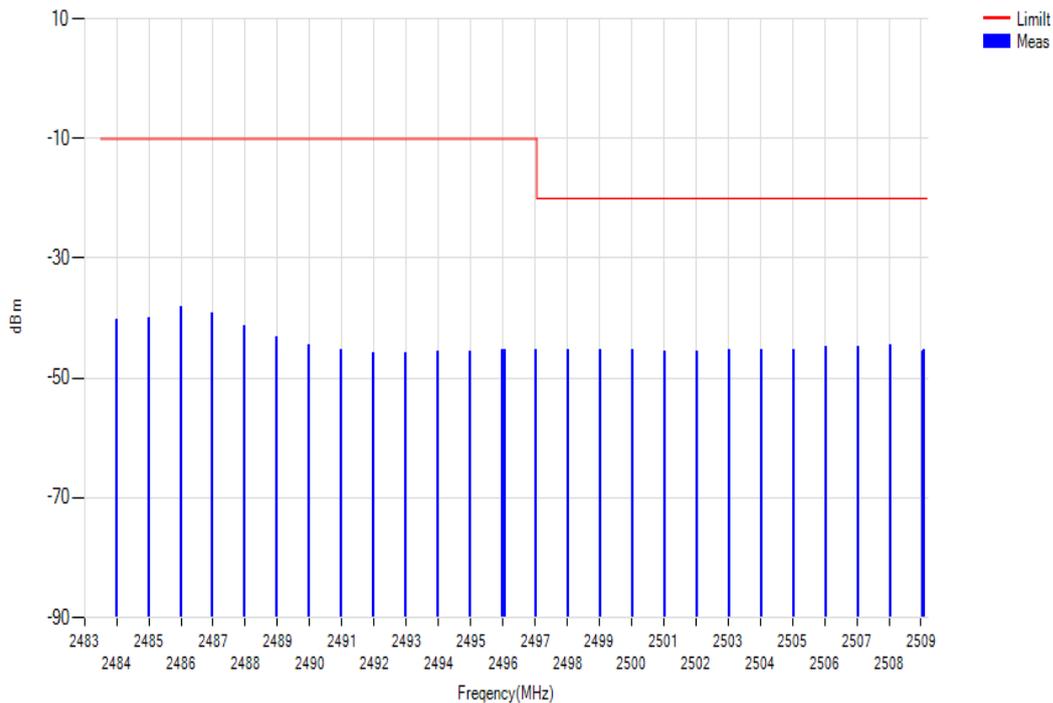
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

70°C /5v CH Low



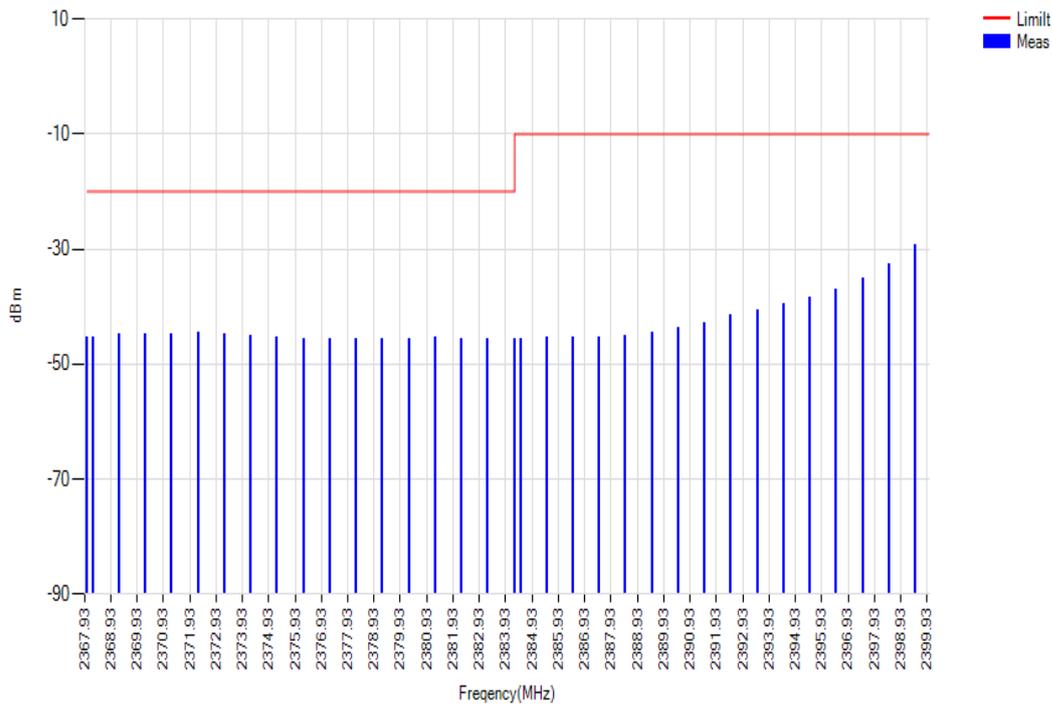
70°C /5v CH High



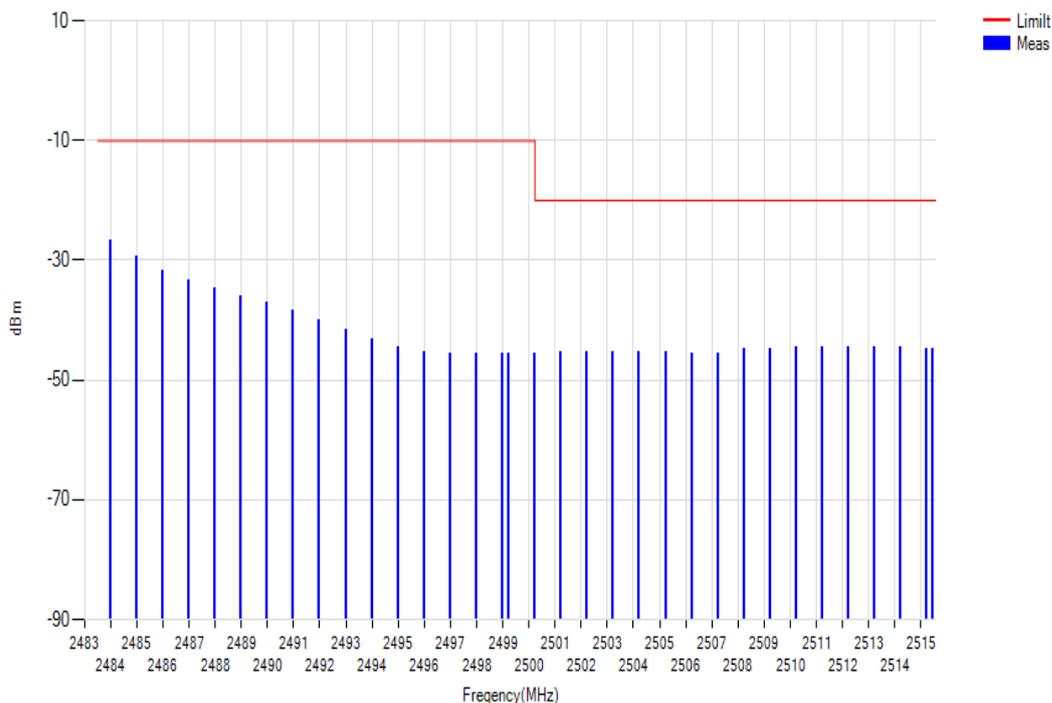
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test results: IEEE 802.11g Mode
25°C /5v CH Low



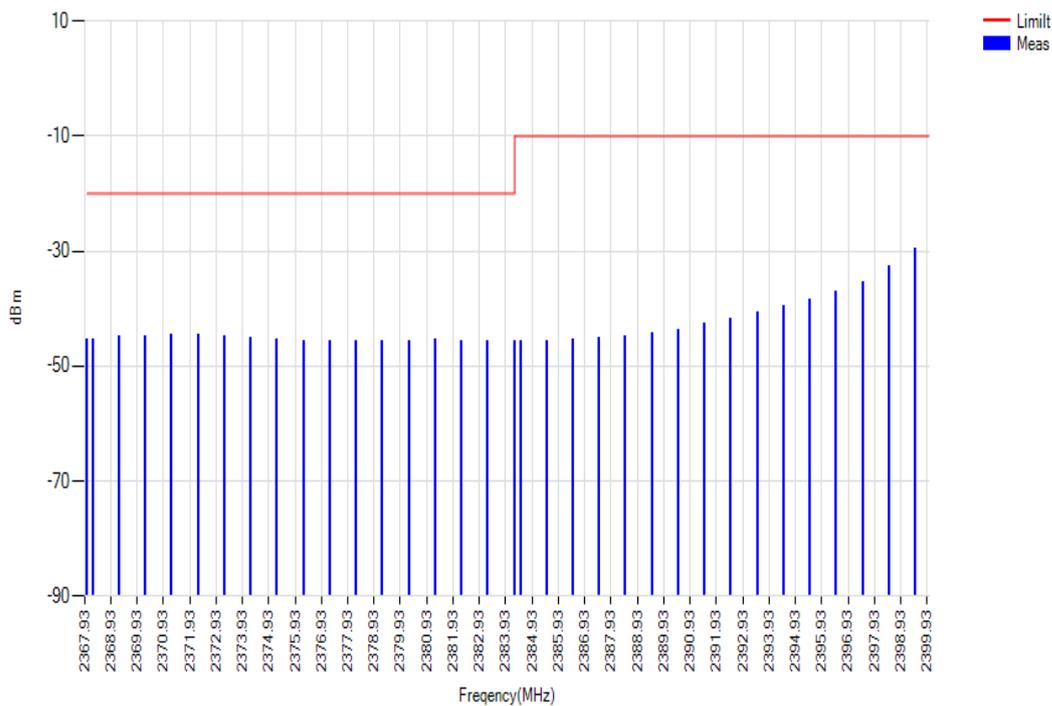
25°C /5v CH High



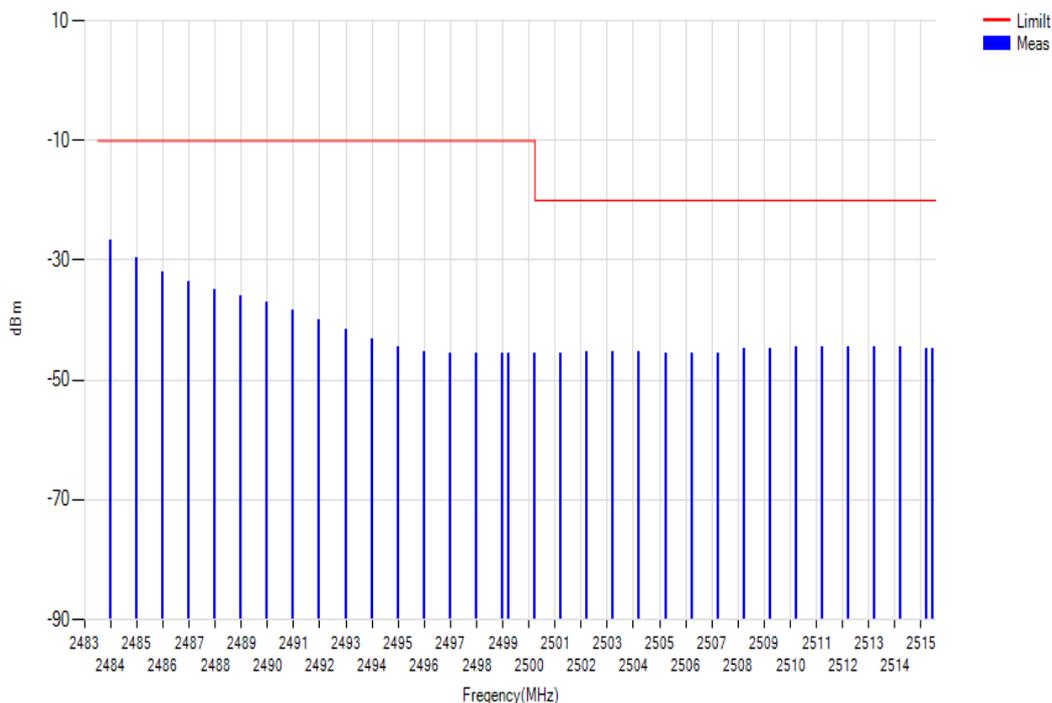
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

0°C /5v CH Low



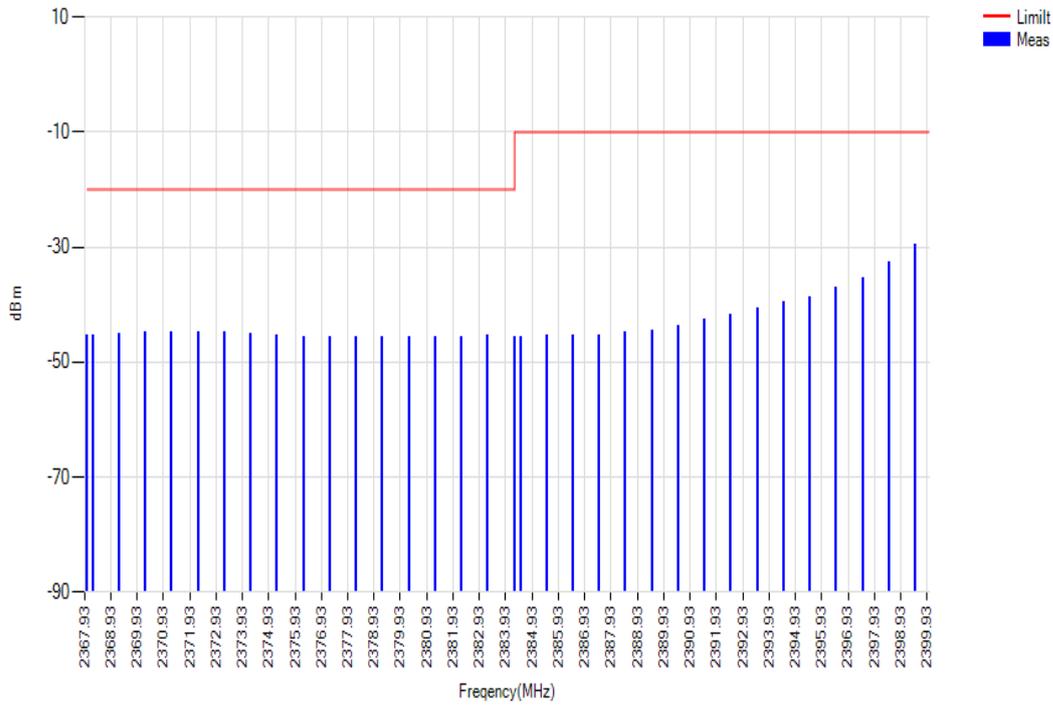
0°C /5v CH High



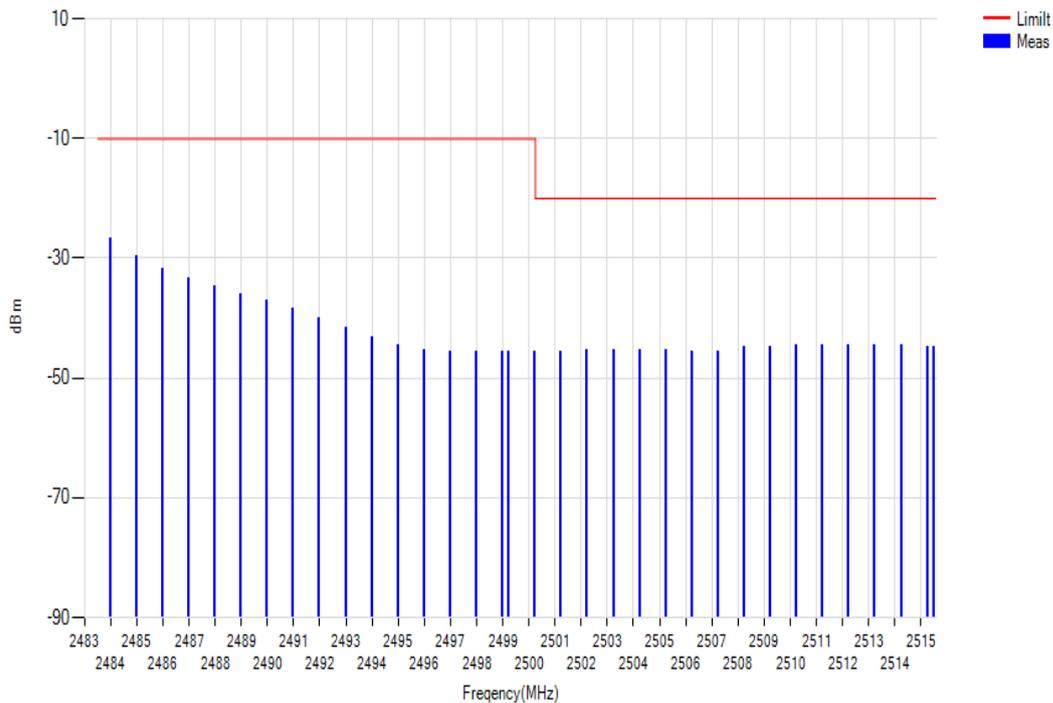
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

70°C /5v CH Low



70°C /5v CH High

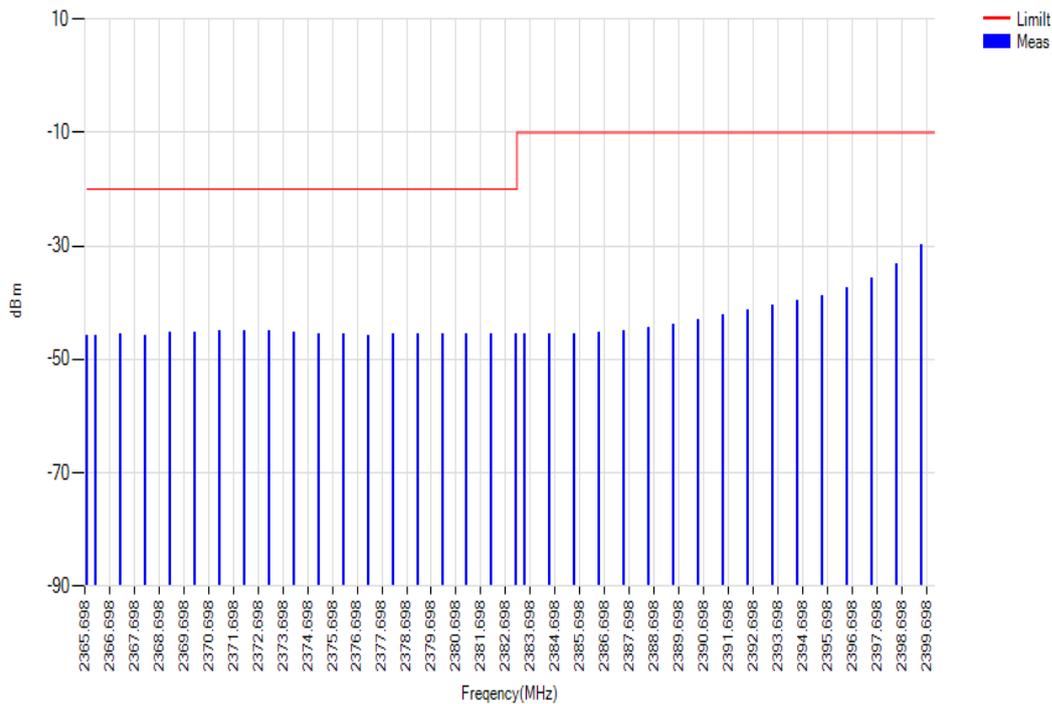


Report No.: T200923D03-RT1

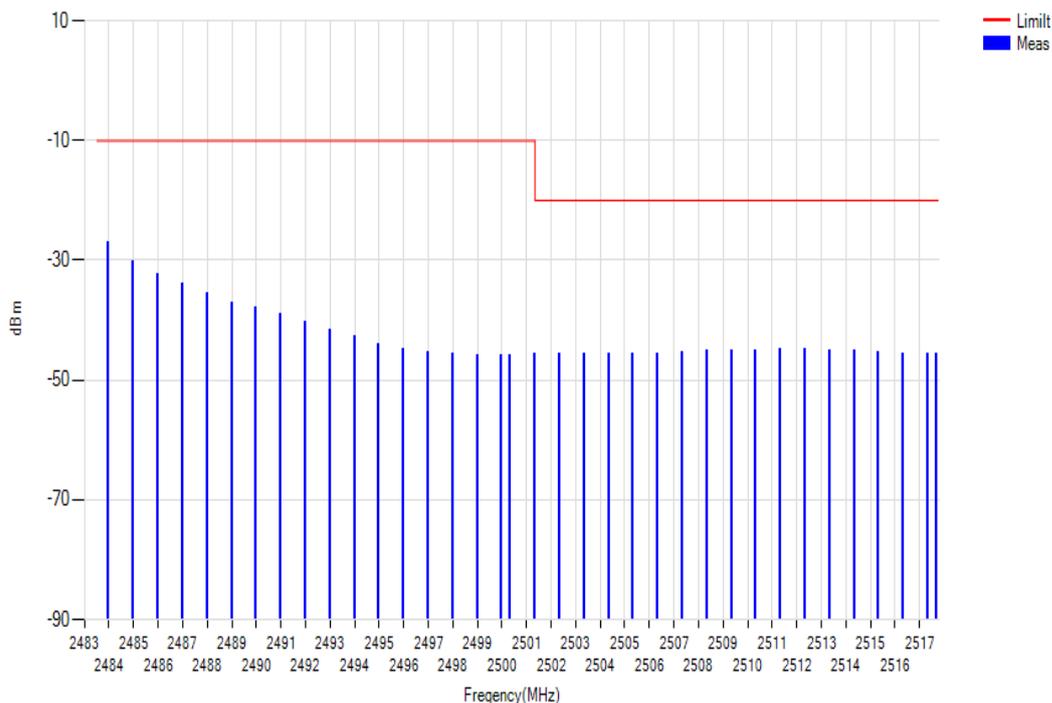
Ref. No.: T180627D10-RT1

Test results: IEEE 802.11n HT 20 MHz Mode:

25°C /5v CH Low



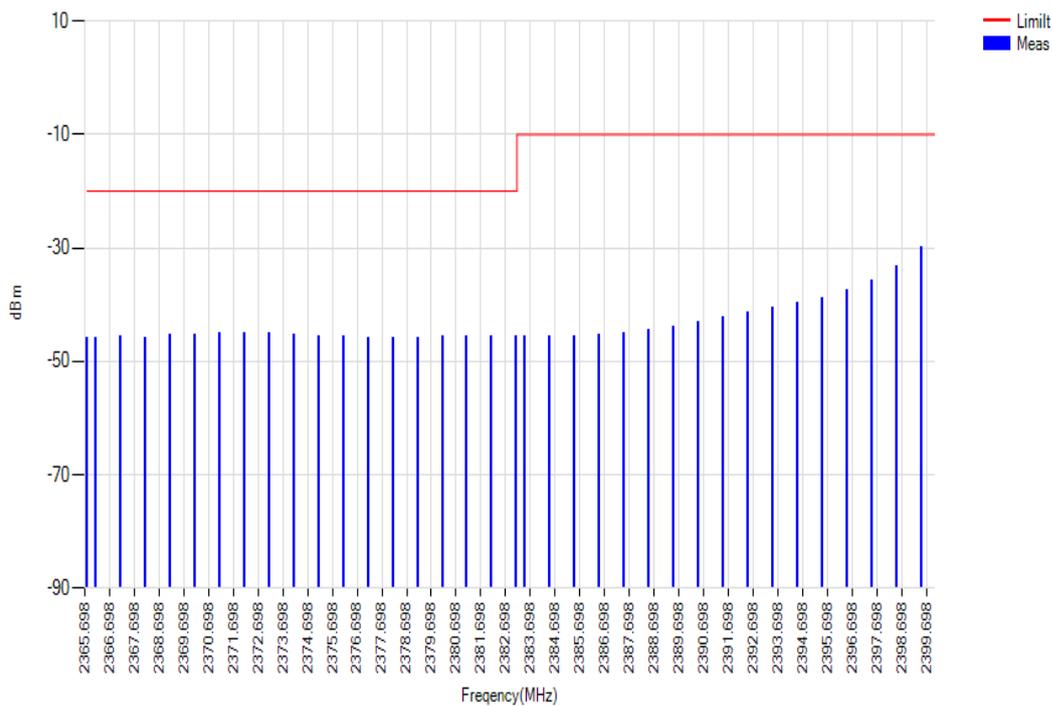
25°C /5v CH High



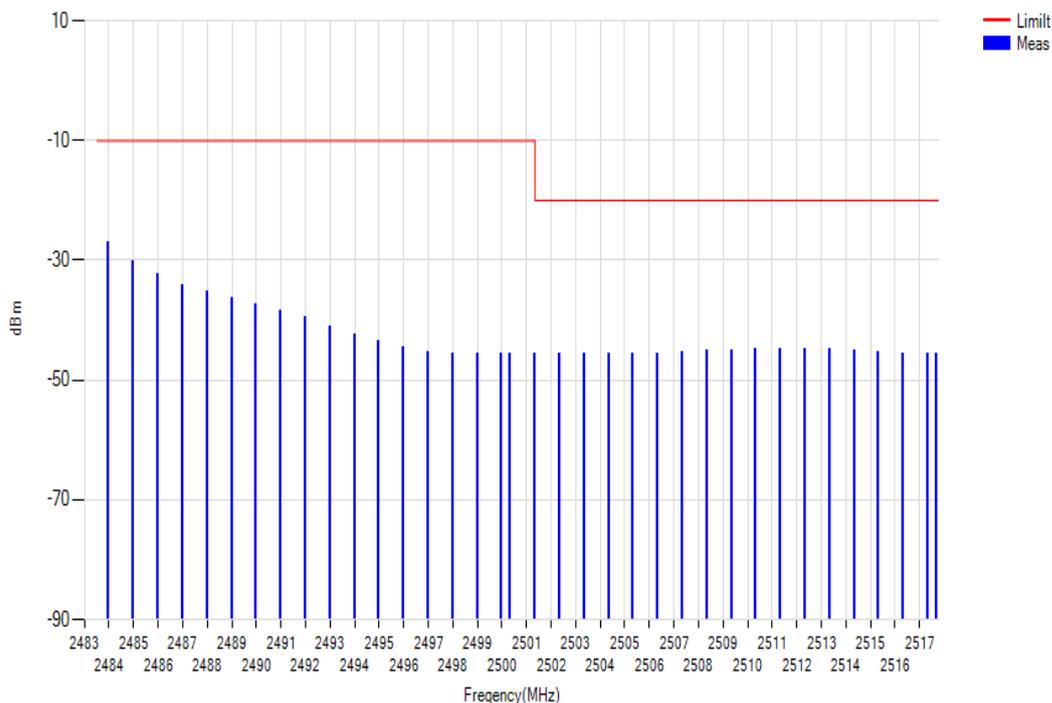
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

0°C /5v CH Low



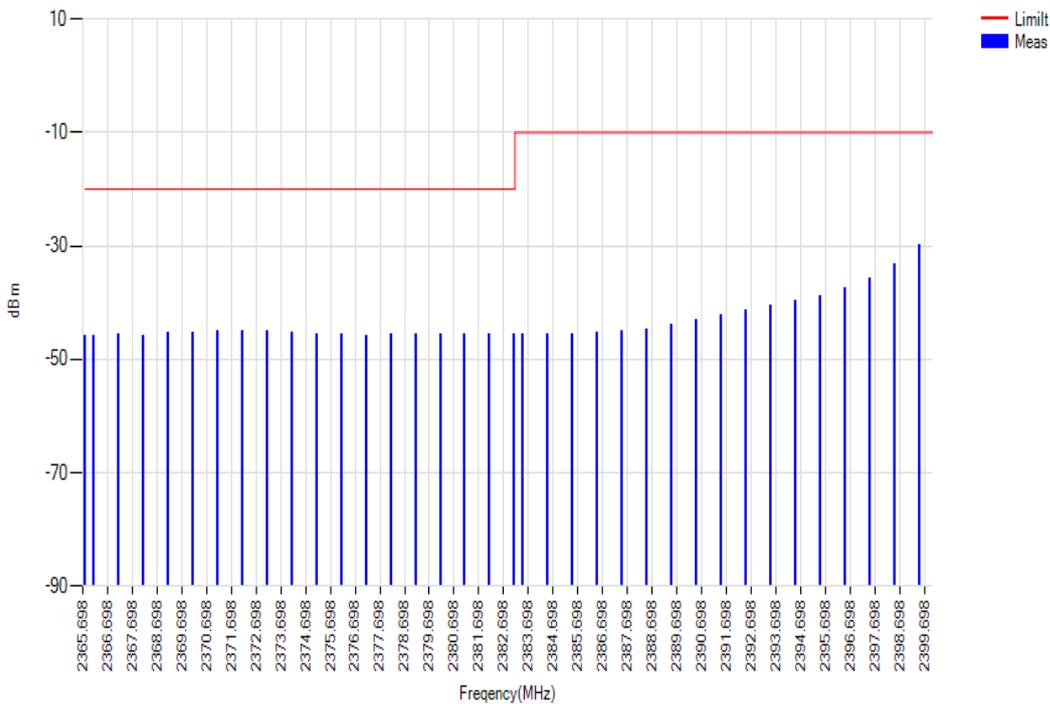
0°C /5v CH High



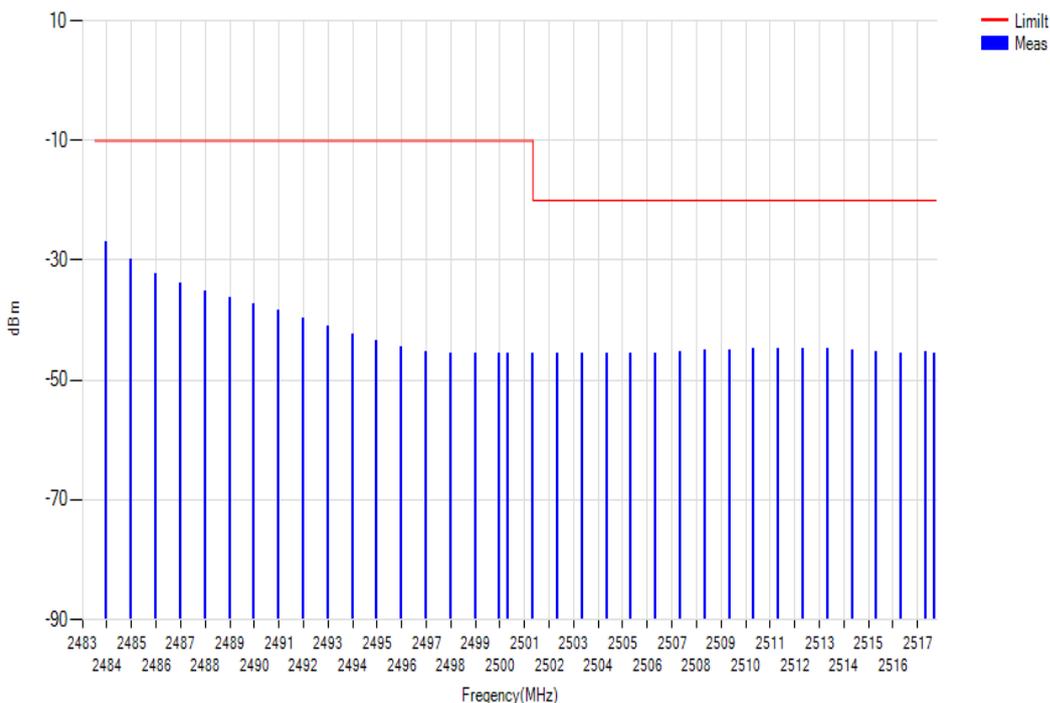
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

70°C /5v CH Low



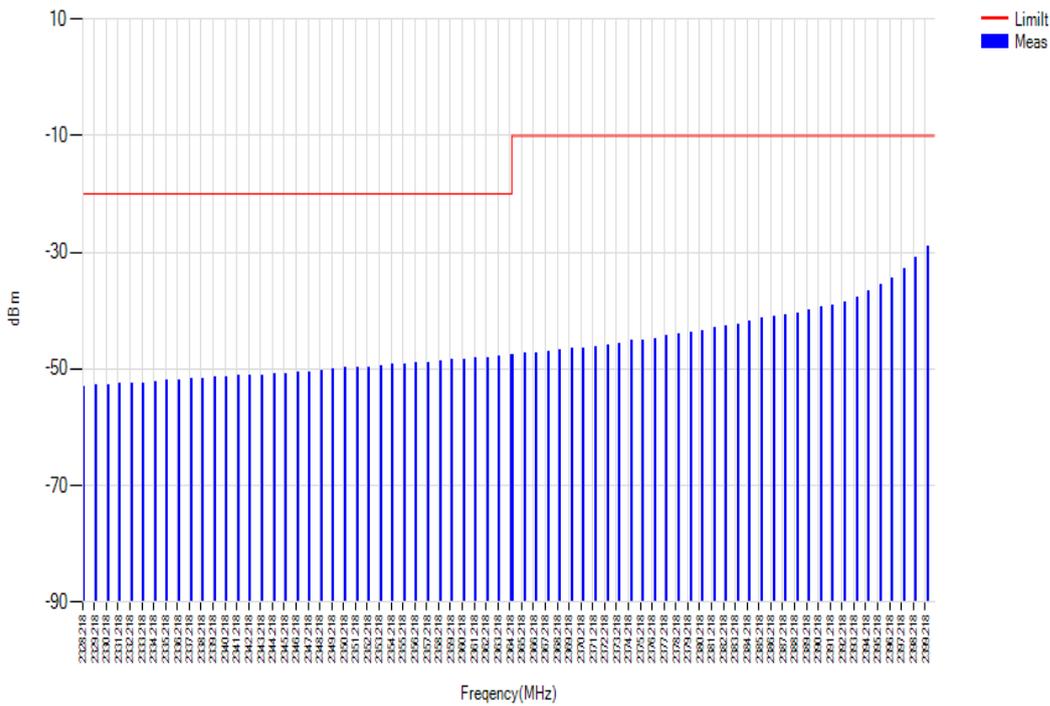
70°C /5v CH High



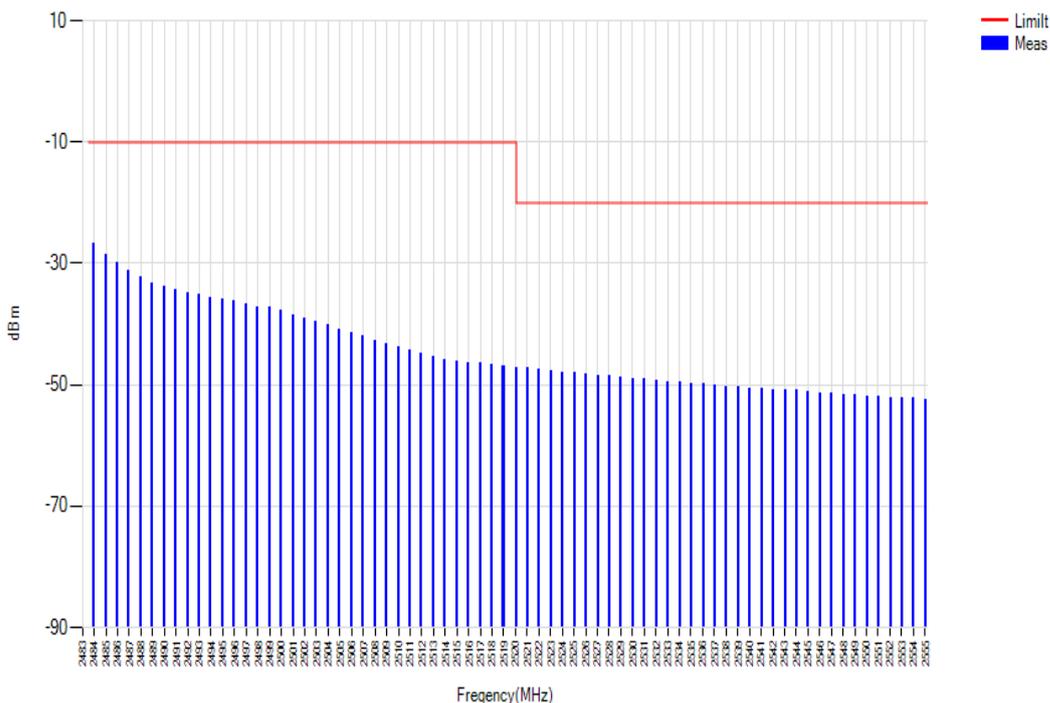
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

**Test results: IEEE 802.11n HT 40 MHz Mode:
25°C /5v CH Low**



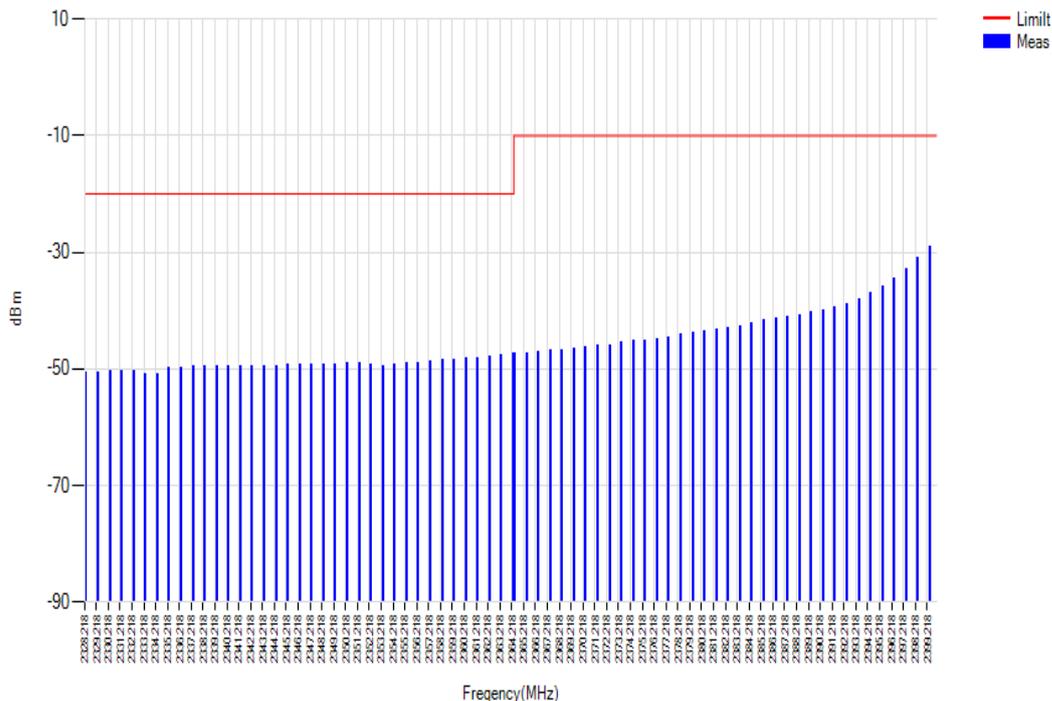
25°C /5v CH High



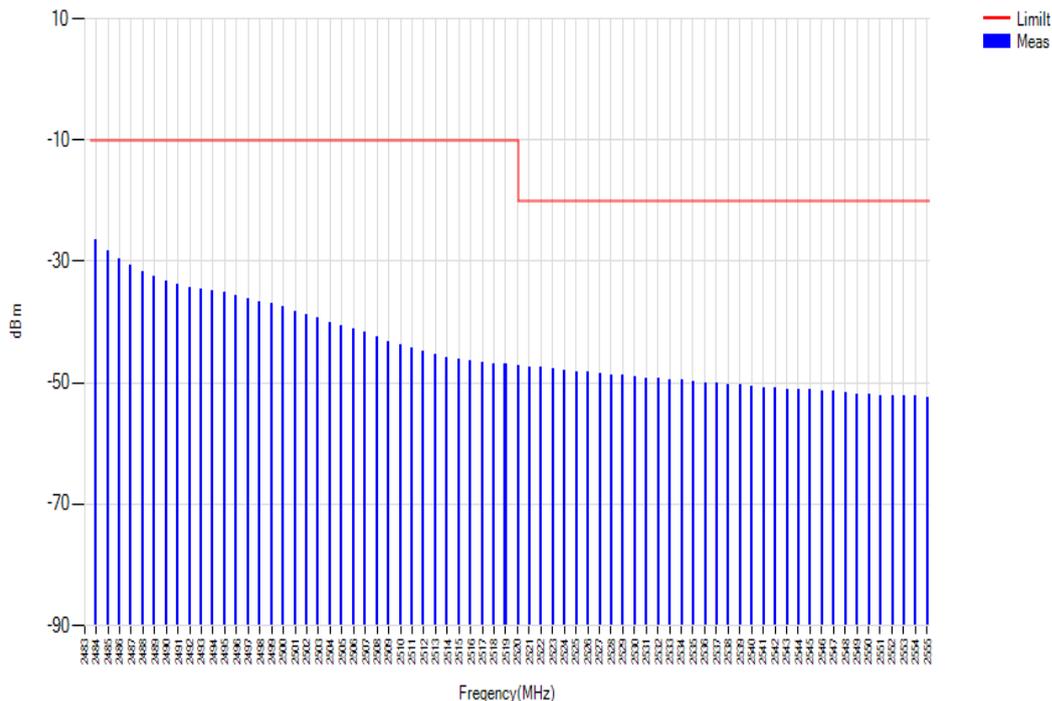
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

70°C /5v CH Low



70°C /5v CH High

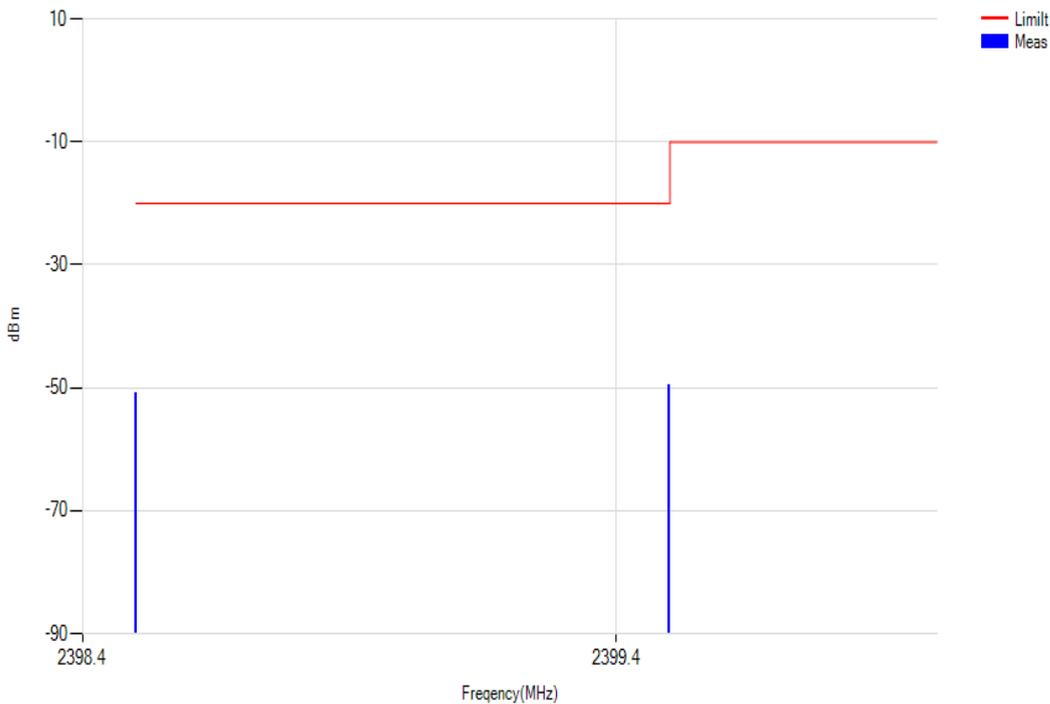


Report No.: T200923D03-RT1

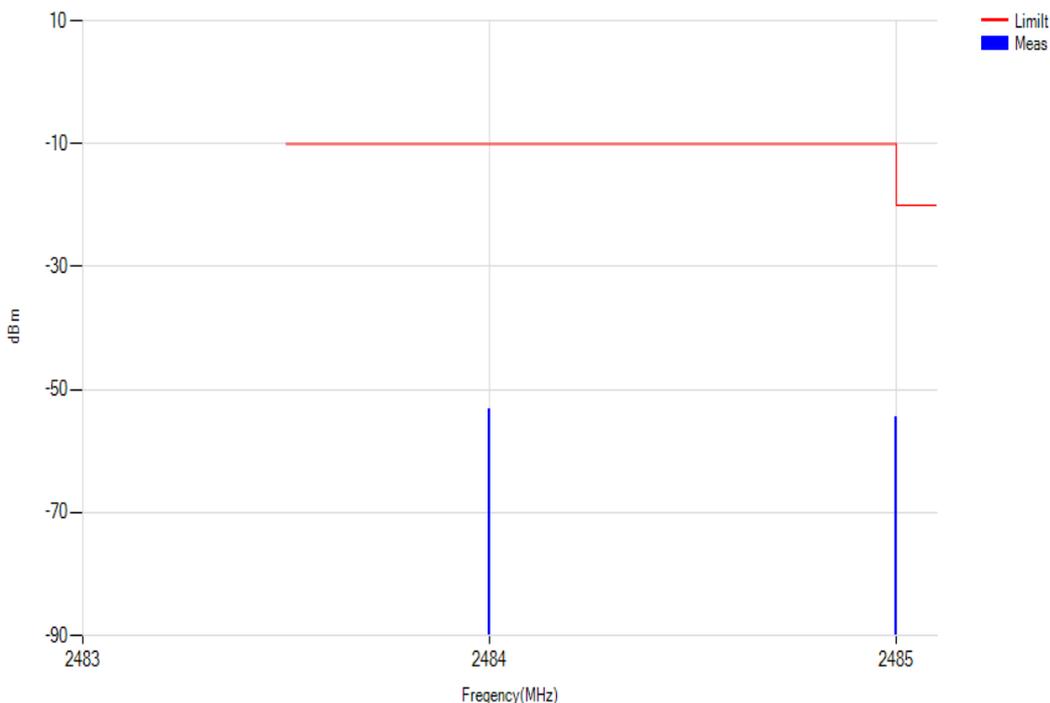
Ref. No.: T180627D10-RT1

Test results: Bluetooth for GFSK (BR-1M)

25°C /5v CH Low



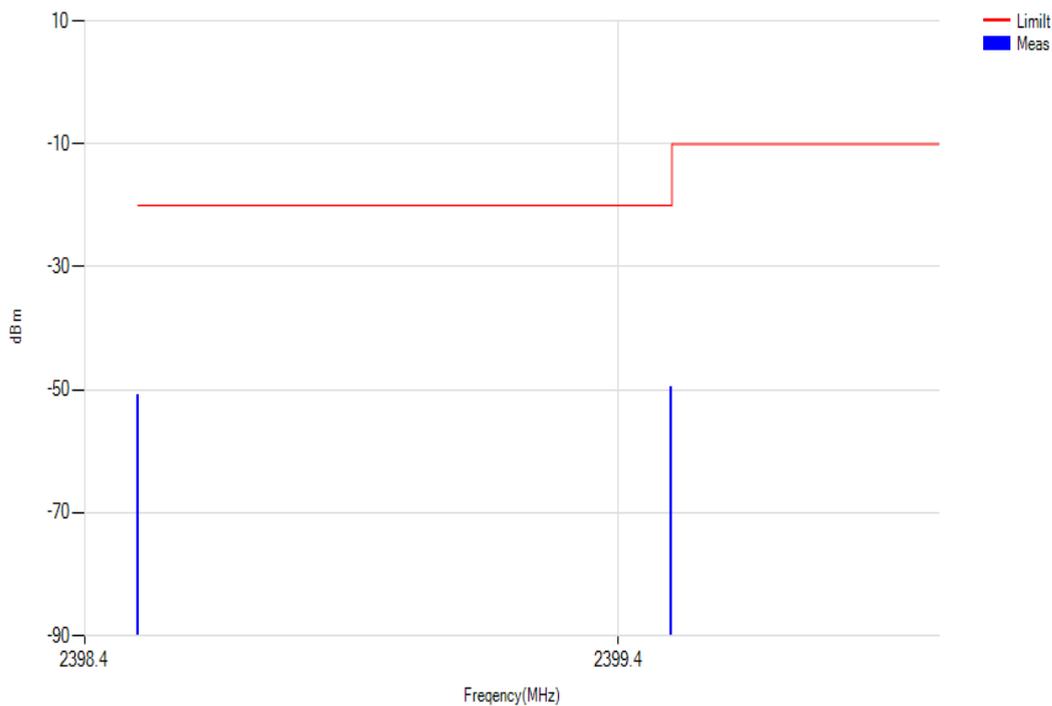
25°C /5v CH High



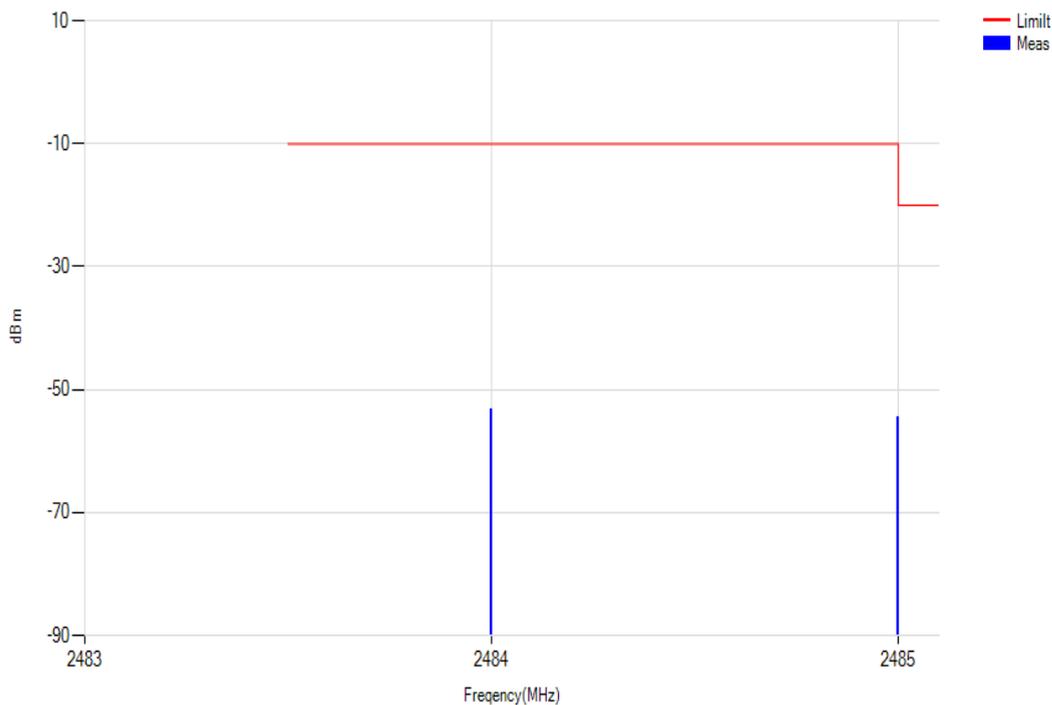
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

0°C /5v CH Low



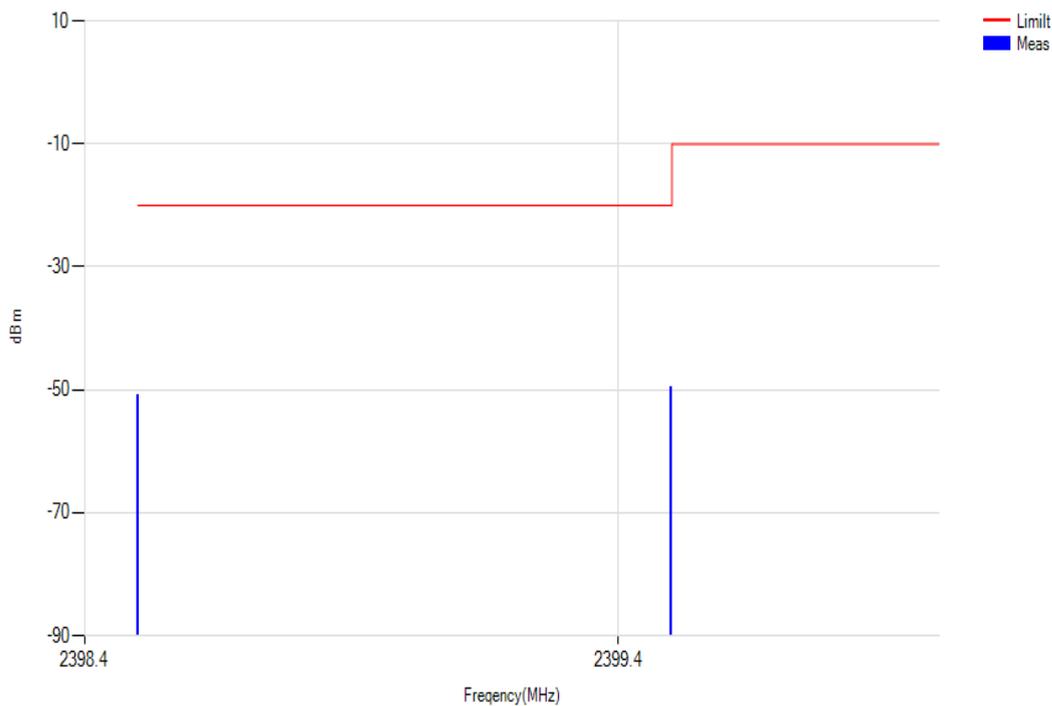
0°C /5v CH High



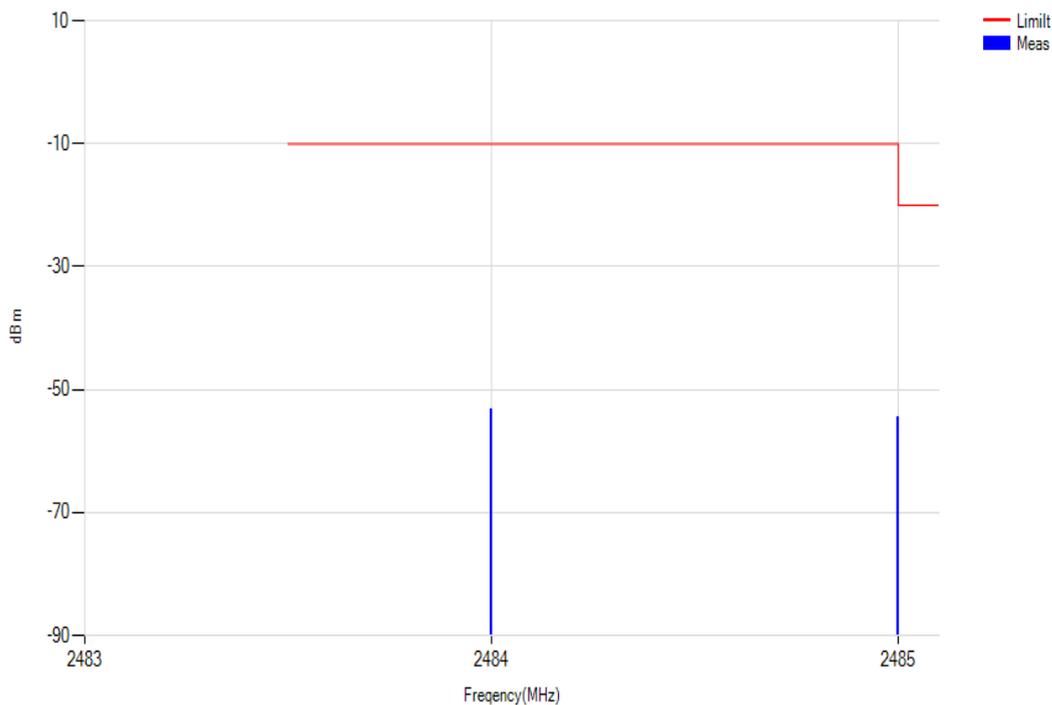
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

70°C /5v CH Low



70°C /5v CH High

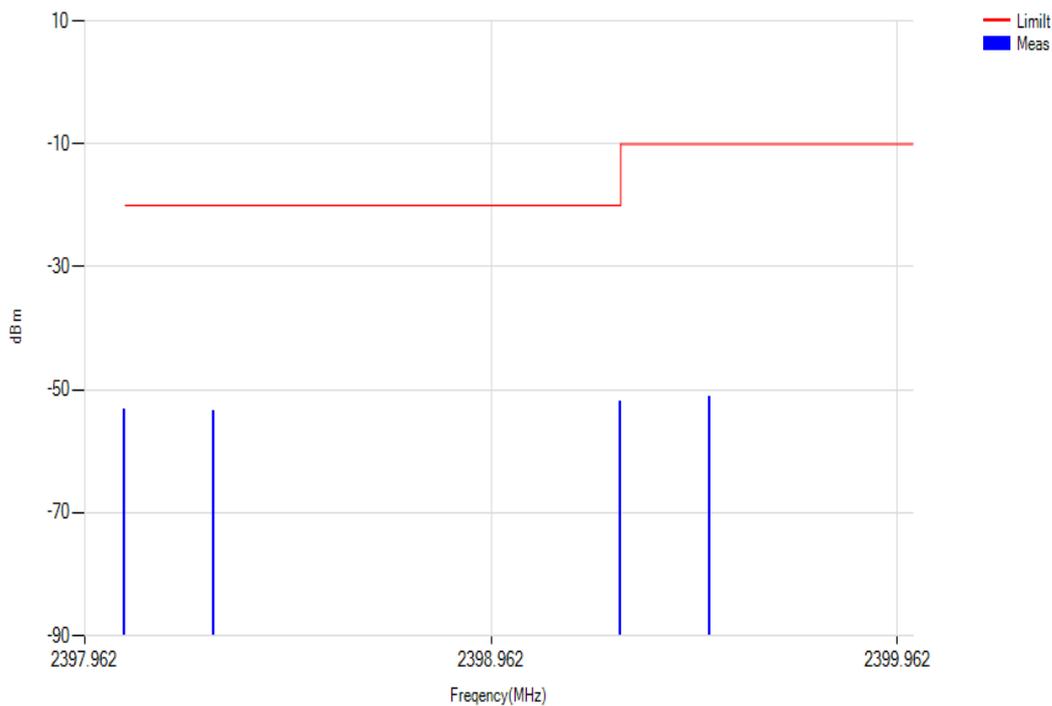


Report No.: T200923D03-RT1

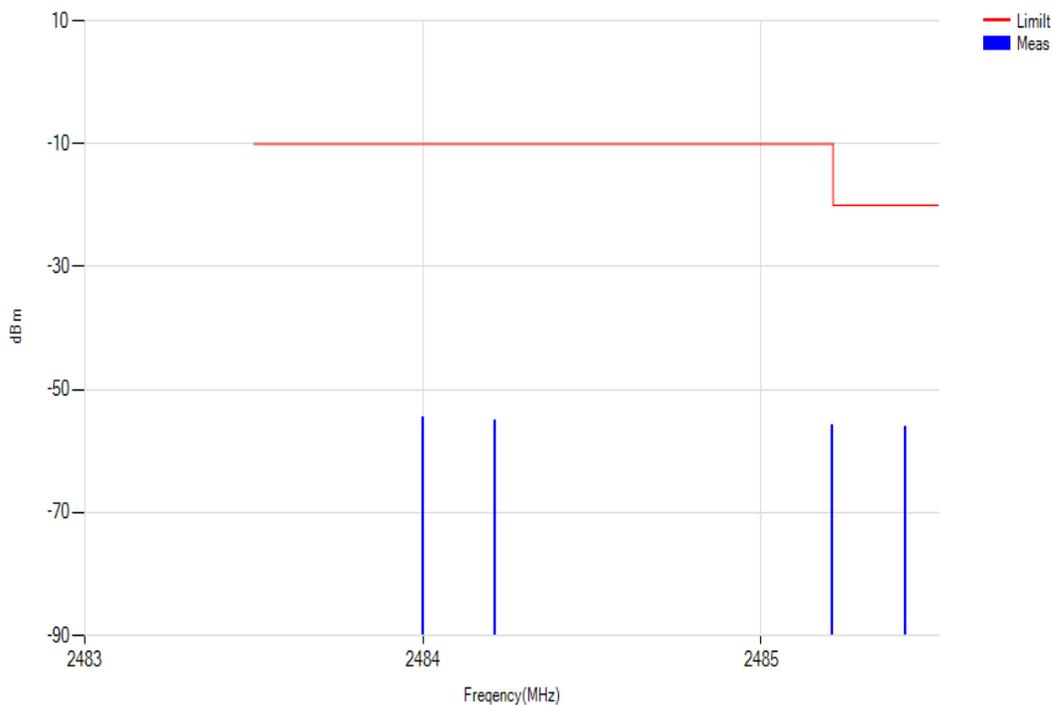
Ref. No.: T180627D10-RT1

Test results: Bluetooth for 8DPSK (EDR-3M)

25°C /5v CH Low



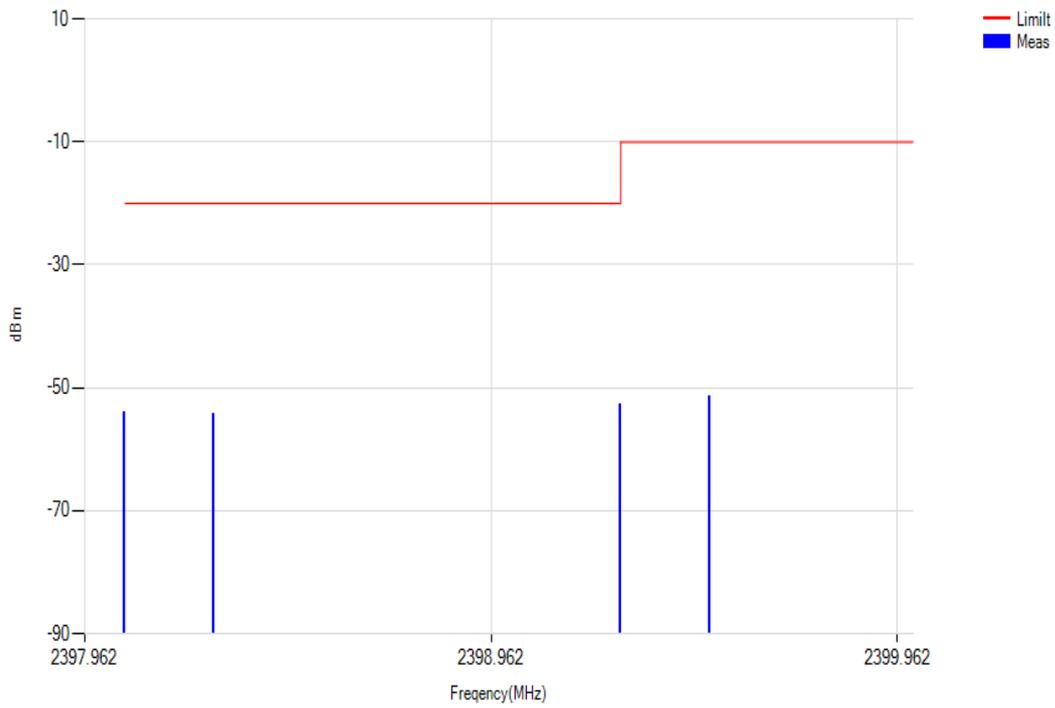
25°C /5v CH High



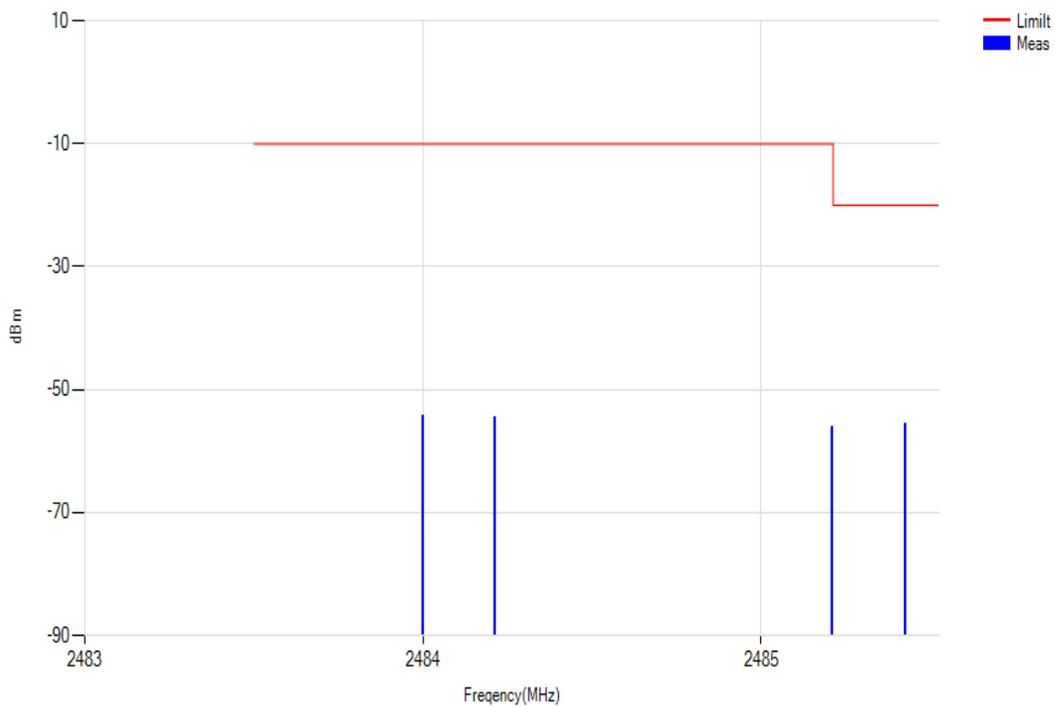
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

0°C /5v CH Low



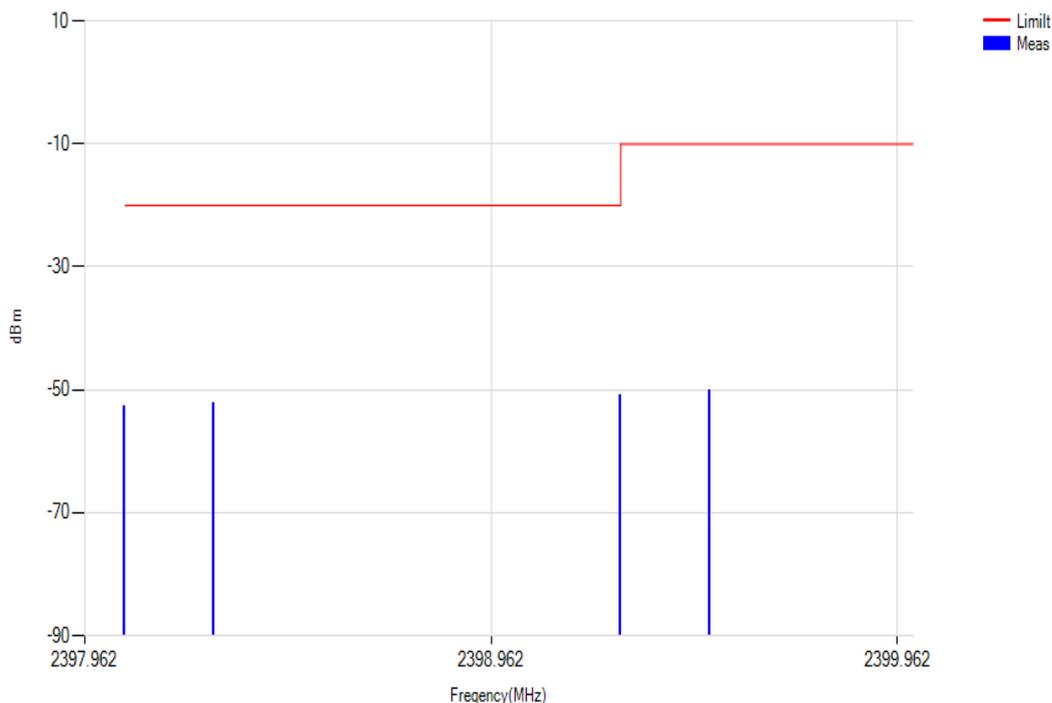
0°C /5v CH High



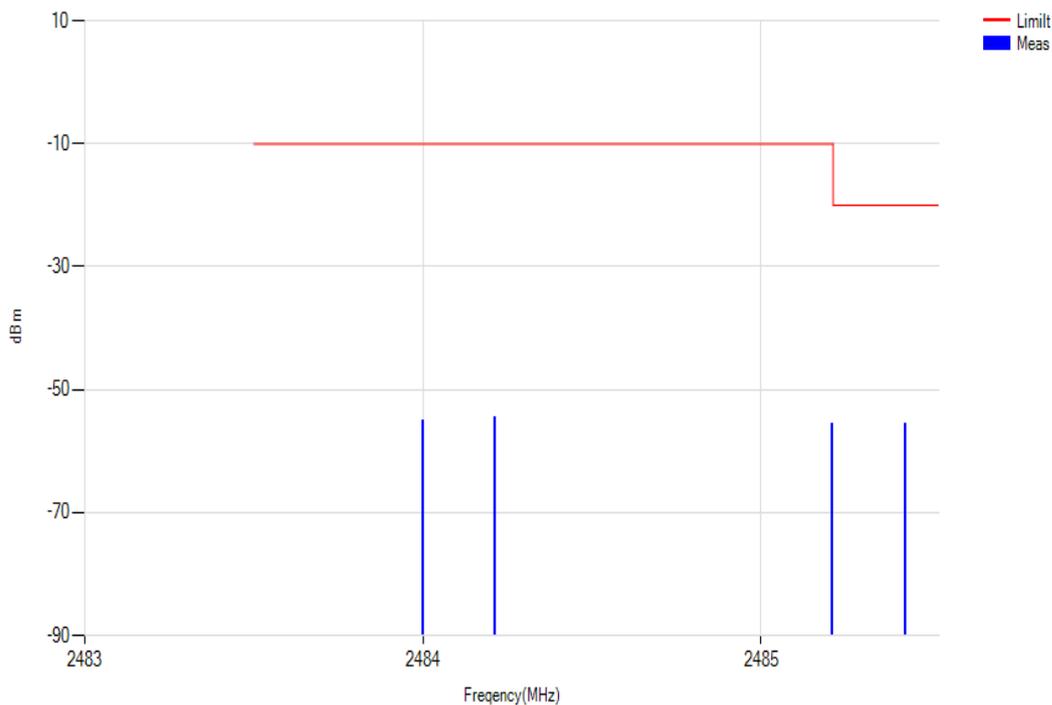
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

70°C /5v CH Low



70°C /5v CH High

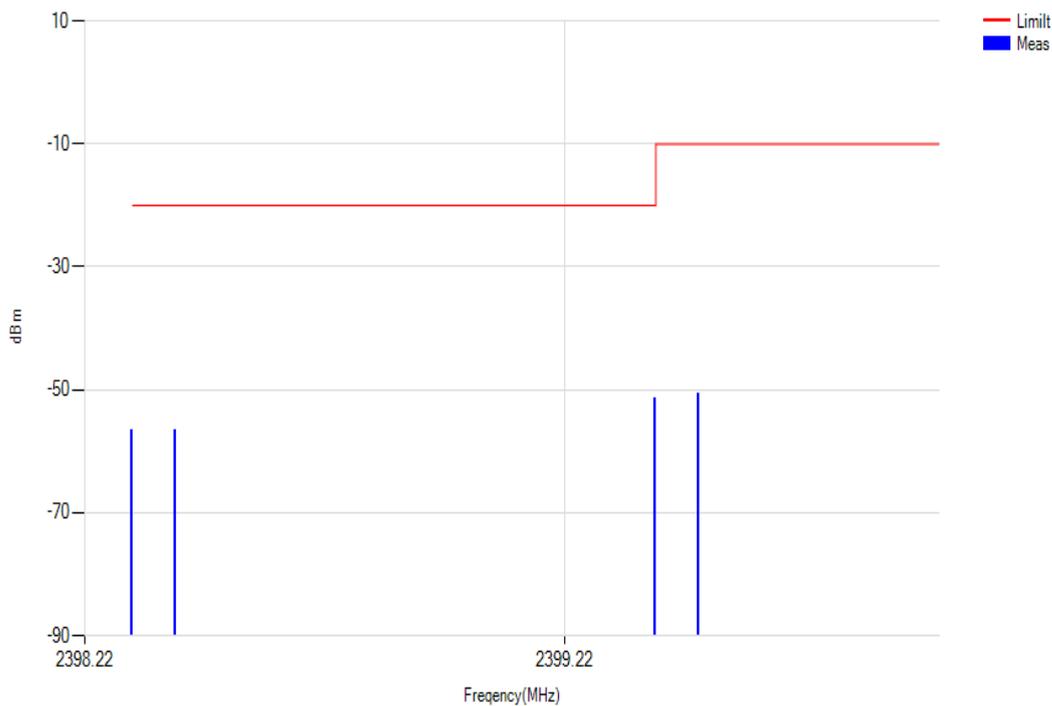


Report No.: T200923D03-RT1

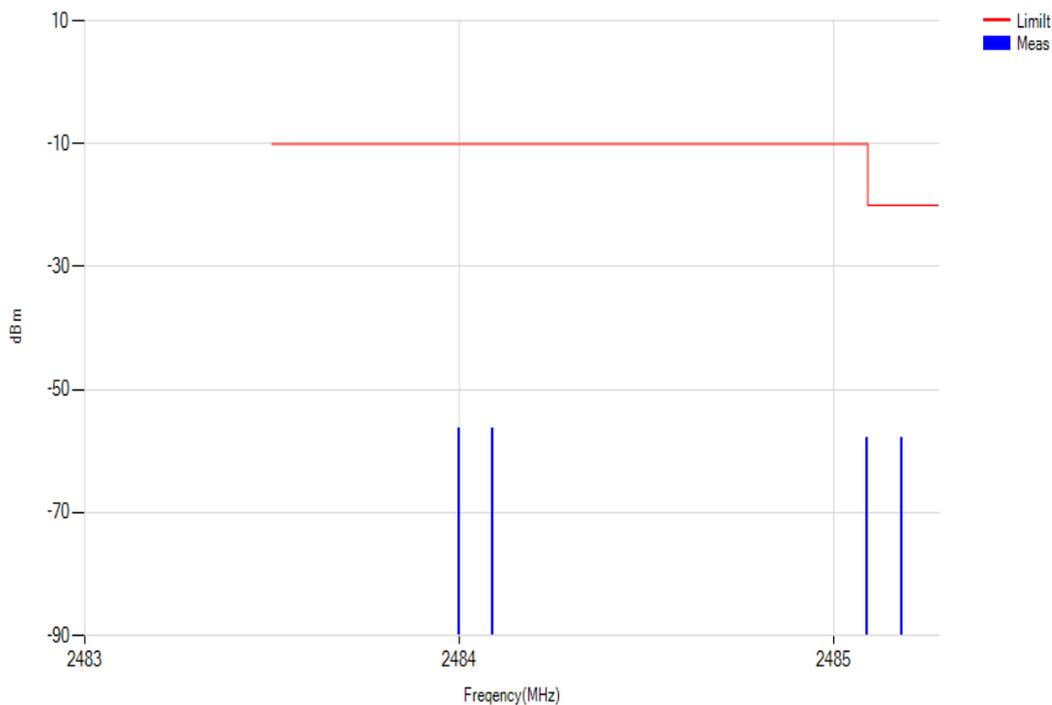
Ref. No.: T180627D10-RT1

Test results: Bluetooth 4.1

25°C /5v CH Low



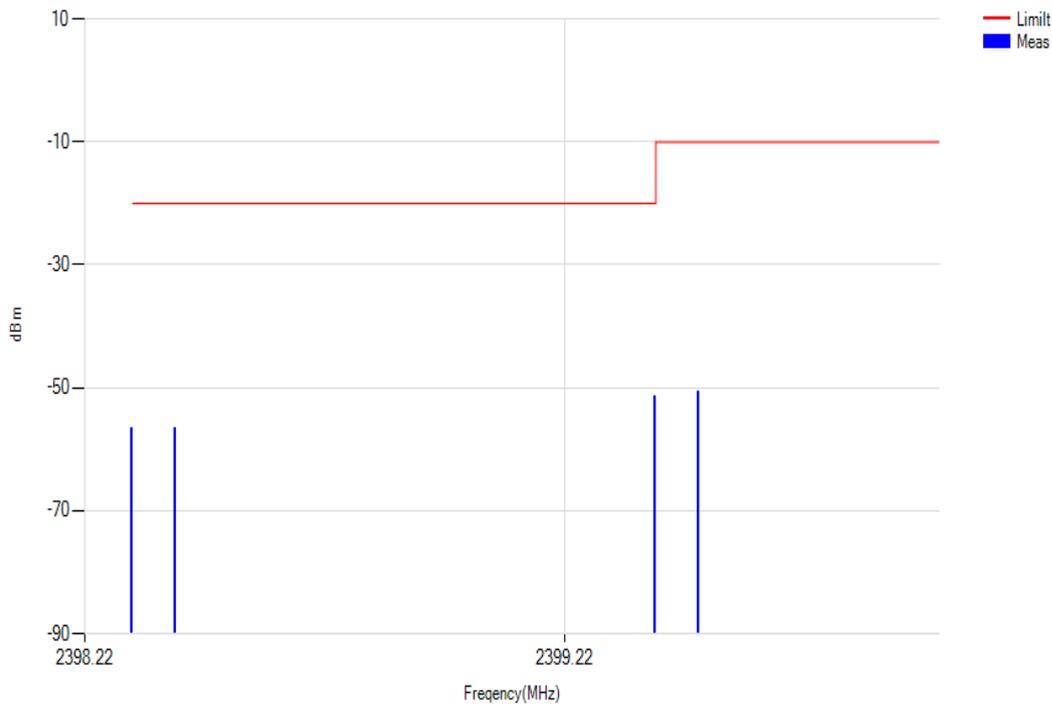
25°C /5v CH High



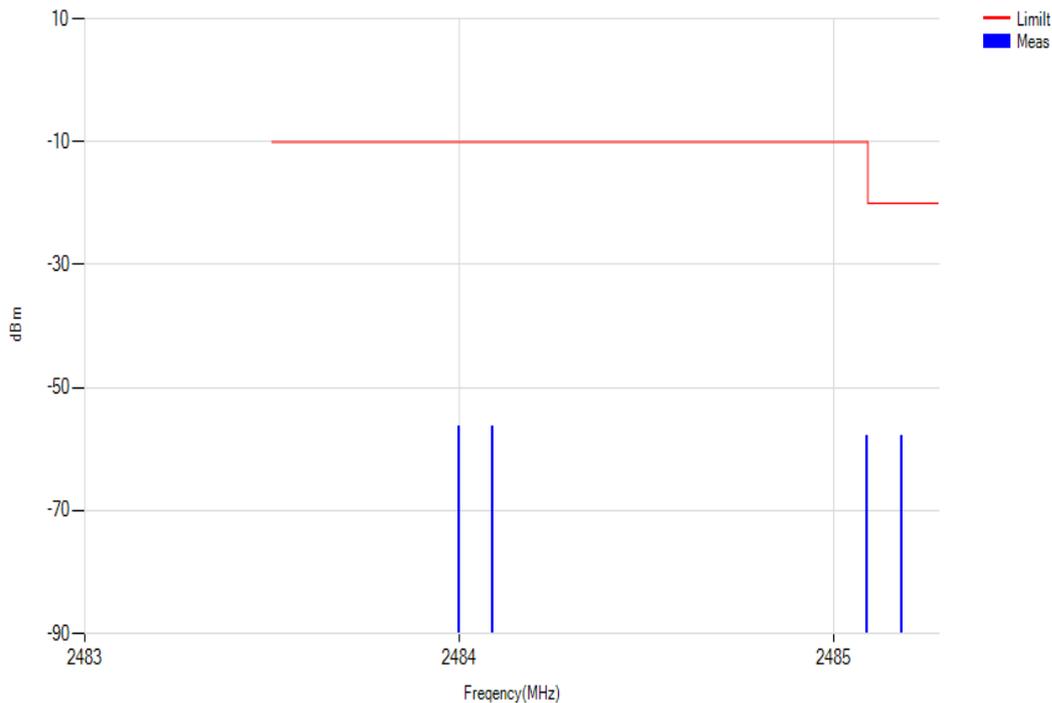
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

0°C /5v CH Low



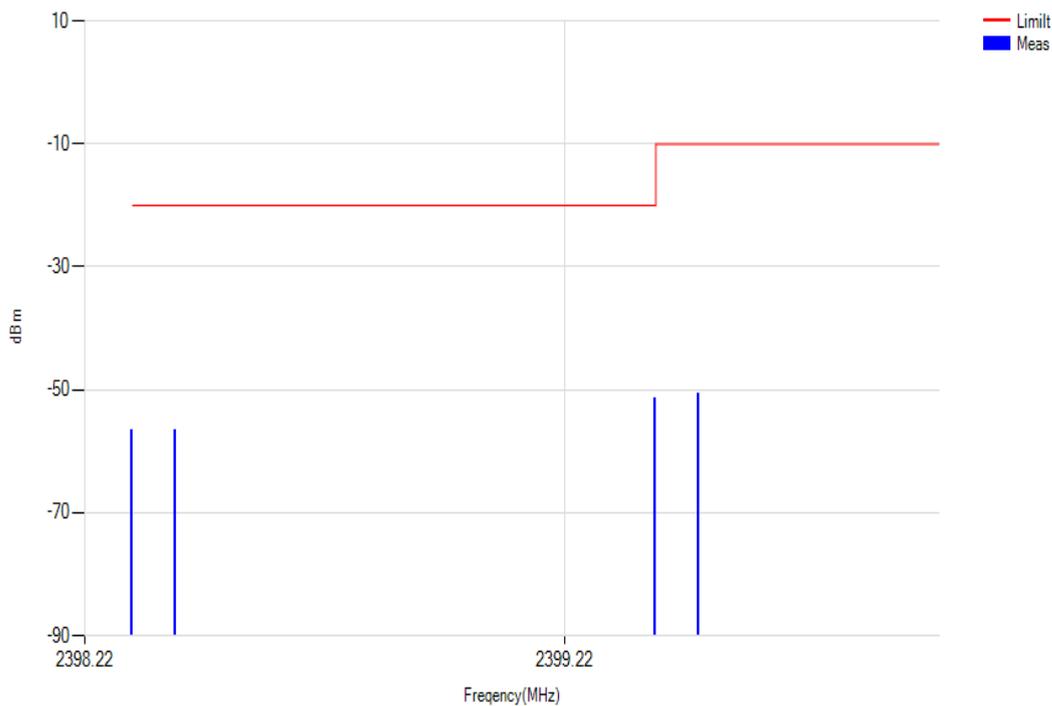
0°C /5v CH High



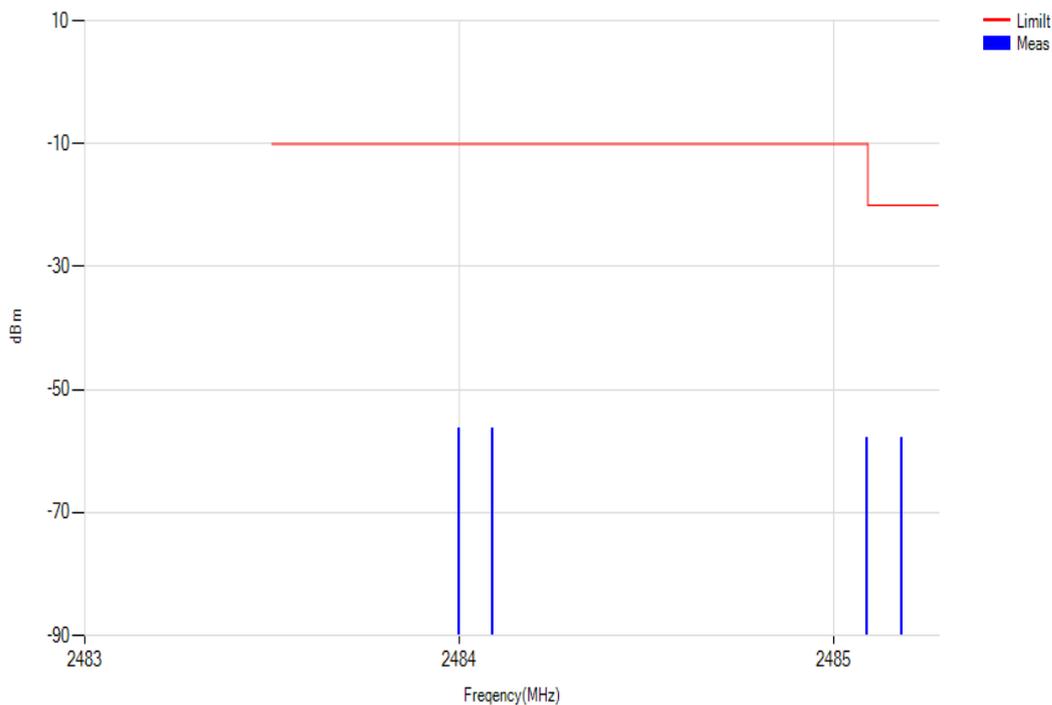
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

70°C /5v CH Low



70°C /5v CH High



Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

IEEE 802.11b Mode:

TEST CONDITION				Out of Band Emissions		
				Frequency	Measured Power	Limit
Temp.		Voltage		MHz	dBm/MHz(e.i.r.p)	dBm/MHz(e.i.r.p)
25	°C	Vnom	5v	2397.5000	-41.62	-10.00
				2375.4320	-46.92	-20.00
				2486.0000	-38.19	-10.00
				2508.0560	-44.58	-20.00
0	°C	Vnom	5v	2396.5000	-41.44	-10.00
				2380.4320	-47.50	-20.00
				2486.0000	-38.21	-10.00
				2508.0560	-44.58	-20.00
70	°C	Vnom	5v	2397.5000	-40.78	-10.00
				2383.4320	-44.80	-20.00
				2486.0000	-38.16	-10.00
				2508.0560	-44.59	-20.00

IEEE 802.11g Mode:

TEST CONDITION				Out of Band Emissions		
				Frequency	Measured Power	Limit
Temp.		Voltage		MHz	dBm/MHz(e.i.r.p)	dBm/MHz(e.i.r.p)
25	°C	Vnom	5v	2399.5000	-29.42	-10.00
				2372.2650	-44.65	-20.00
				2484.0000	-26.65	-10.00
				2512.2350	-44.42	-20.00
0	°C	Vnom	5v	2399.5000	-29.60	-10.00
				2372.2650	-44.64	-20.00
				2484.0000	-26.78	-10.00
				2512.2350	-44.41	-20.00
70	°C	Vnom	5v	2399.5000	-29.58	-10.00
				2372.2650	-44.68	-20.00
				2484.0000	-26.57	-10.00
				2511.2450	-44.44	-20.00

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

IEEE 802.11n HT 20 MHz Mode:

TEST CONDITION				Out of Band Emissions		
				Frequency	Measured Power	Limit
Temp.		Voltage		MHz	dBm/MHz(e.i.r.p)	dBm/MHz(e.i.r.p)
25	°C	Vnom	5v	2399.5000	-29.90	-10.00
				2372.1490	-45.00	-20.00
				2484.0000	-26.92	-10.00
				2511.3450	-44.84	-20.00
0	°C	Vnom	5v	2399.5000	-29.91	-10.00
				2371.1490	-45.07	-20.00
				2484.0000	-26.99	-10.00
				2511.3450	-44.79	-20.00
70	°C	Vnom	5v	2399.5000	-29.82	-10.00
				2372.1490	-45.05	-20.00
				2484.0000	-26.88	-10.00
				2511.3450	-44.78	-20.00

IEEE 802.11n HT 40 MHz Mode:

TEST CONDITION				Out of Band Emissions		
				Frequency	Measured Power	Limit
Temp.		Voltage		MHz	dBm/MHz(e.i.r.p)	dBm/MHz(e.i.r.p)
25	°C	Vnom	5v	2399.5000	-29.05	-10.00
				2363.4090	-47.86	-20.00
				2484.0000	-26.73	-10.00
				2520.0660	-47.14	-20.00
0	°C	Vnom	5v	2399.5000	-28.99	-10.00
				2363.4090	-47.79	-20.00
				2484.0000	-26.42	-10.00
				2520.0660	-47.13	-20.00
70	°C	Vnom	5v	2399.5000	-29.04	-10.00
				2363.4090	-47.70	-20.00
				2484.0000	-26.53	-10.00
				2520.0660	-47.24	-20.00

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Bluetooth for GFSK (BR-1M)

TEST CONDITION				Out of Band Emissions		
				Frequency	Measured Power	Limit
Temp.		Voltage		MHz	dBm/MHz(e.i.r.p)	dBm/MHz(e.i.r.p)
25	°C	Vnom	5v	2399.5000	-49.57	-10.00
				2398.5000	-50.90	-20.00
				2484.0000	-53.11	-10.00
				2485.0000	-54.53	-20.00
0	°C	Vnom	5v	2399.5000	-49.52	-10.00
				2398.5000	-50.89	-20.00
				2484.0000	-53.12	-10.00
				2485.0000	-54.50	-20.00
70	°C	Vnom	5v	2399.5000	-49.50	-10.00
				2398.5000	-50.96	-20.00
				2484.0000	-53.21	-10.00
				2485.0000	-54.47	-20.00

Bluetooth for 8DPSK (EDR-3M)

TEST CONDITION				Out of Band Emissions		
				Frequency	Measured Power	Limit
Temp.		Voltage		MHz	dBm/MHz(e.i.r.p)	dBm/MHz(e.i.r.p)
25	°C	Vnom	5v	2399.5000	-51.12	-10.00
				2398.0620	-53.33	-20.00
				2484.0000	-54.56	-10.00
				2485.2130	-55.93	-20.00
0	°C	Vnom	5v	2399.5000	-51.40	-10.00
				2398.0620	-53.99	-20.00
				2484.0000	-54.31	-10.00
				2485.4260	-55.64	-20.00
70	°C	Vnom	5v	2399.5000	-50.21	-10.00
				2398.2810	-52.28	-20.00
				2484.2130	-54.52	-10.00
				2485.2130	-55.44	-20.00

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Bluetooth 4.1

TEST CONDITION				Out of Band Emissions		
				Frequency	Measured Power	Limit
Temp.		Voltage		MHz	dBm/MHz(e.i.r.p)	dBm/MHz(e.i.r.p)
25	°C	Vnom	5v	2399.5000	-50.52	-10.00
				2398.4100	-56.52	-20.00
				2484.0000	-56.25	-10.00
				2485.0900	-57.86	-20.00
0	°C	Vnom	5v	2399.5000	-50.53	-10.00
				2398.4100	-56.58	-20.00
				2484.0000	-56.28	-10.00
				2485.0900	-57.82	-20.00
70	°C	Vnom	5v	2399.5000	-50.49	-10.00
				2398.4100	-56.51	-20.00
				2484.0000	-56.29	-10.00
				2485.0900	-57.86	-20.00

7.10 TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

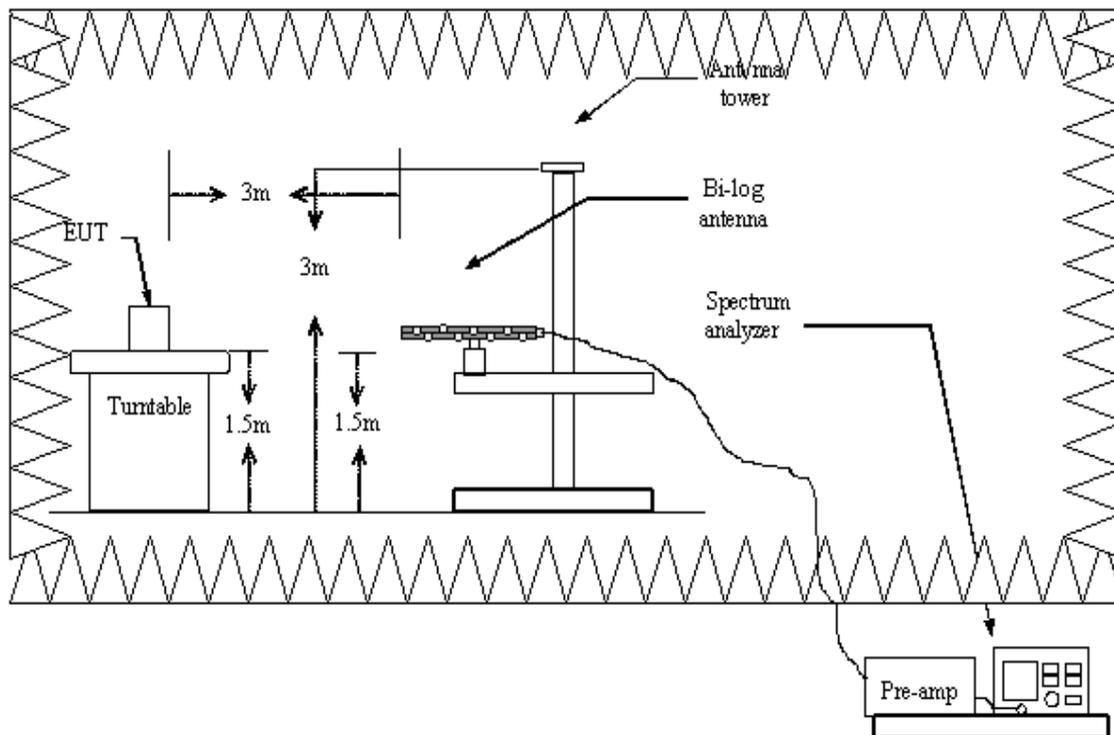
LIMIT

The transmitter unwanted emissions in the spurious domain shall not exceed the values given in table as below. In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and e.i.r.p. for emissions above 1 GHz.

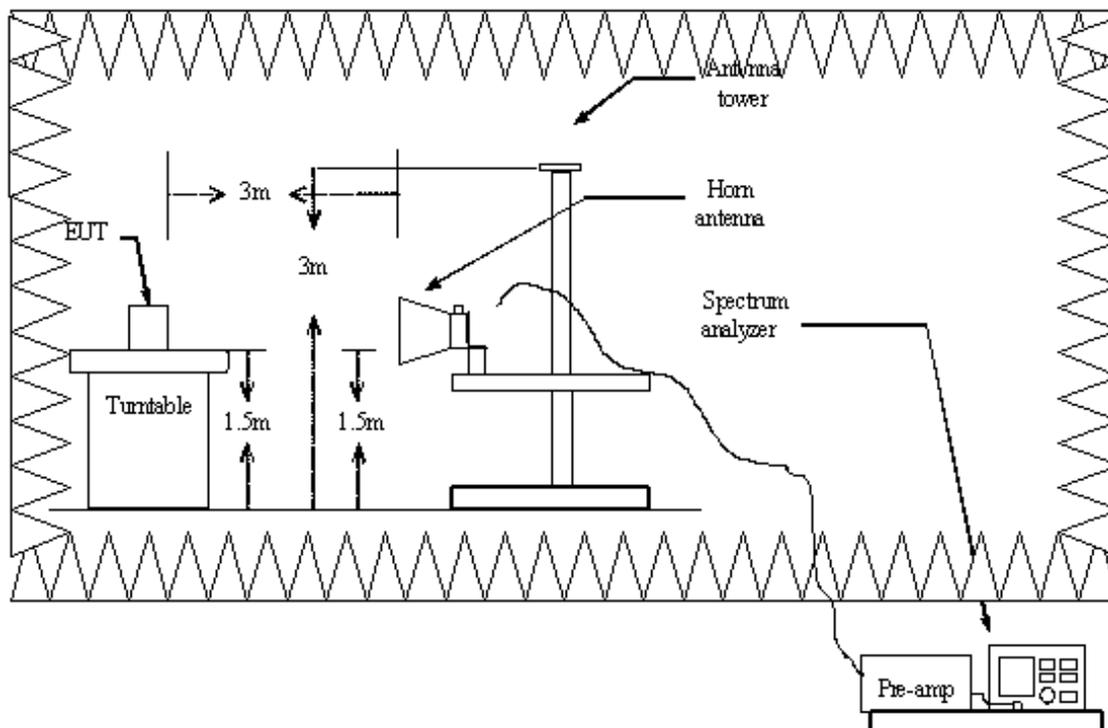
Frequency range	Maximum power	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 694 MHz	-54 dBm	100 kHz
694 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz

Test Configuration

Below 1GHz



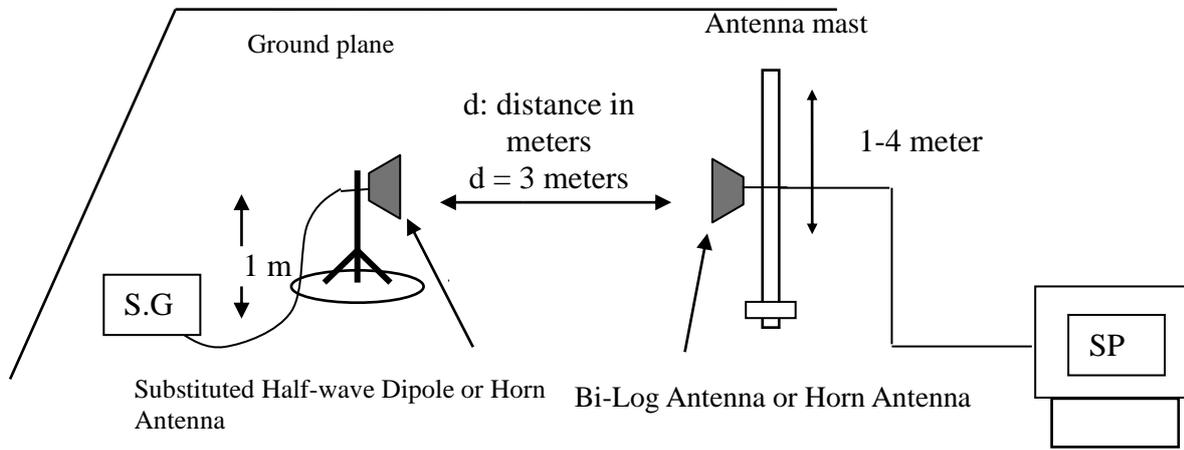
Above 1GHz



Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Substituted Method Test Set-up



TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

TEST RESULTS

No value of the measurement limit is within 6dB, and therefore no further investigation and identification to measure emission with point of measurement is required.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

For FPC Antenna

Below 1GHz

Test Mode: Normal Link

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
125.0600	-67.00	-6.38	-73.38	-36.00	-37.38	V
441.7650	-68.61	-2.82	-71.43	-36.00	-35.43	V
499.9650	-72.04	-1.65	-73.69	-54.00	-19.69	V
625.0950	-66.15	-0.07	-66.22	-54.00	-12.22	V
750.2250	-61.73	2.11	-59.62	-54.00	-5.62	V
874.8700	-68.14	4.03	-64.11	-36.00	-28.11	V
250.1900	-54.22	-8.51	-62.73	-36.00	-26.73	H
374.8350	-62.60	-4.83	-67.43	-36.00	-31.43	H
499.9650	-61.98	-1.65	-63.63	-54.00	-9.63	H
625.0950	-70.18	-0.07	-70.25	-54.00	-16.25	H
750.2250	-67.35	2.11	-65.24	-54.00	-11.24	H
901.5450	-64.10	4.54	-59.56	-36.00	-23.56	H

Test Mode: Bluetooth

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
125.0600	-63.78	-6.38	-70.16	-36.00	-34.16	V
224.9700	-64.95	-9.23	-74.18	-54.00	-20.18	V
441.7650	-68.58	-2.82	-71.40	-36.00	-35.40	V
625.0950	-65.99	-0.07	-66.06	-54.00	-12.06	V
750.2250	-61.37	2.11	-59.26	-54.00	-5.26	V
874.8700	-68.05	4.03	-64.02	-36.00	-28.02	V
250.1900	-57.28	-8.51	-65.79	-36.00	-29.79	H
374.8350	-69.40	-4.83	-74.23	-36.00	-38.23	H
499.9650	-63.33	-1.65	-64.98	-54.00	-10.98	H
625.0950	-70.95	-0.07	-71.02	-54.00	-17.02	H
750.2250	-65.39	2.11	-63.28	-54.00	-9.28	H
874.8700	-70.01	4.03	-65.98	-36.00	-29.98	H

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Above 1GHz

Test Mode: IEEE 802.11b Mode / TX (CH Low)

Tested by: Jerry Chuang

Ambient temperature: 22°C

Relative humidity: 42 % RH

Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4824.000	-36.44	-12.00	-48.44	-30.00	-18.44	V
7236.000	-51.45	-5.92	-57.37	-30.00	-27.37	V
N/A						
4824.000	-39.26	-12.00	-51.26	-30.00	-21.26	H
7236.000	-52.19	-5.92	-58.11	-30.00	-28.11	H
N/A						

Test Mode: IEEE 802.11b Mode / TX (CH High)

Tested by: Jerry Chuang

Ambient temperature: 22°C

Relative humidity: 42 % RH

Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4944.500	-28.46	-11.30	-39.76	-30.00	-9.76	V
7416.000	-50.72	-5.20	-55.92	-30.00	-25.92	V
N/A						
4944.500	-33.18	-11.30	-44.48	-30.00	-14.48	H
7416.000	-51.46	-5.20	-56.66	-30.00	-26.66	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test Mode: IEEE 802.11g Mode / TX (CH Low)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4824.000	-38.47	-12.00	-50.47	-30.00	-20.47	V
7236.000	-51.86	-5.92	-57.78	-30.00	-27.78	V
N/A						
4824.000	-41.50	-12.00	-53.50	-30.00	-23.50	H
7236.000	-52.15	-5.92	-58.07	-30.00	-28.07	H
N/A						

Test Mode: IEEE 802.11g Mode / TX (CH High)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4944.000	-32.00	-11.30	-43.30	-30.00	-13.30	V
7416.000	-51.27	-5.20	-56.47	-30.00	-26.47	V
N/A						
4944.000	-37.30	-11.30	-48.60	-30.00	-18.60	H
7416.000	-52.27	-5.20	-57.47	-30.00	-27.47	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test Mode: IEEE 802.11n HT 20 MHz Mode / TX (CH Low) **Tested by:** Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4824.000	-39.06	-12.00	-51.06	-30.00	-21.06	V
7236.000	-51.89	-5.92	-57.81	-30.00	-27.81	V
N/A						
4824.000	-43.63	-12.00	-55.63	-30.00	-25.63	H
7236.000	-52.75	-5.92	-58.67	-30.00	-28.67	H
N/A						

Test Mode: IEEE 802.11n HT 20 MHz Mode / TX (CH High) **Tested by:** Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4944.000	-32.51	-11.30	-43.81	-30.00	-13.81	V
7416.000	-51.89	-5.20	-57.09	-30.00	-27.09	V
N/A						
4944.000	-37.39	-11.30	-48.69	-30.00	-18.69	H
7416.000	-52.74	-5.20	-57.94	-30.00	-27.94	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test Mode: IEEE 802.11n HT 40 MHz Mode / TX (CH Low) **Tested by:** Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4844.000	-42.27	-11.88	-54.15	-30.00	-24.15	V
7266.000	-52.42	-5.80	-58.22	-30.00	-28.22	V
N/A						
4844.000	-46.25	-11.88	-58.13	-30.00	-28.13	H
7266.000	-51.96	-5.80	-57.76	-30.00	-27.76	H
N/A						

Test Mode: IEEE 802.11n HT 40 MHz Mode / TX (CH High) **Tested by:** Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4941.000	-37.01	-11.33	-48.34	-30.00	-18.34	V
7386.000	-52.71	-5.31	-58.02	-30.00	-28.02	V
N/A						
4924.000	-42.03	-11.42	-53.45	-30.00	-23.45	H
7386.000	-51.54	-5.31	-56.85	-30.00	-26.85	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Bluetooth for GFSK (BR-1M)

Test Mode: Bluetooth / TX (CH Low)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4804.500	-36.10	-12.11	-48.21	-30.00	-18.21	V
7206.000	-52.72	-6.05	-58.77	-30.00	-28.77	V
N/A						
4804.000	-40.27	-12.11	-52.38	-30.00	-22.38	H
7206.000	-52.25	-6.05	-58.30	-30.00	-28.30	H
N/A						

Test Mode: Bluetooth / TX (CH High)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4960.000	-38.75	-11.23	-49.98	-30.00	-19.98	V
7440.000	-52.29	-5.10	-57.39	-30.00	-27.39	V
N/A						
4960.000	-40.44	-11.23	-51.67	-30.00	-21.67	H
7440.000	-53.01	-5.10	-58.11	-30.00	-28.11	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Bluetooth for 8DPSK (EDR-3M)

Test Mode: Bluetooth / TX (CH Low)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4804.000	-38.30	-12.11	-50.41	-30.00	-20.41	V
7206.000	-52.43	-6.05	-58.48	-30.00	-28.48	V
N/A						
4804.000	-41.95	-12.11	-54.06	-30.00	-24.06	H
7206.000	-51.88	-6.05	-57.93	-30.00	-27.93	H
N/A						

Test Mode: Bluetooth / TX (CH High)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4960.000	-41.97	-11.23	-53.20	-30.00	-23.20	V
7440.000	-52.71	-5.10	-57.81	-30.00	-27.81	V
N/A						
4960.000	-41.90	-11.23	-53.13	-30.00	-23.13	H
7440.000	-52.81	-5.10	-57.91	-30.00	-27.91	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Bluetooth 4.1

Test Mode: Bluetooth / TX (CH Low)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4804.500	-38.15	-12.11	-50.26	-30.00	-20.26	V
7206.000	-52.32	-6.05	-58.37	-30.00	-28.37	V
N/A						
4804.500	-37.11	-12.11	-49.22	-30.00	-19.22	H
7206.000	-51.84	-6.05	-57.89	-30.00	-27.89	H
N/A						

Test Mode: Bluetooth / TX (CH High)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4960.000	-38.10	-11.23	-49.33	-30.00	-19.33	V
7440.000	-52.73	-5.10	-57.83	-30.00	-27.83	V
N/A						
4960.000	-36.62	-11.23	-47.85	-30.00	-17.85	H
7440.000	-52.83	-5.10	-57.93	-30.00	-27.93	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

For Dipole Antenna

Below 1GHz

Test Mode: Normal Link

Tested by: Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
125.0600	-62.85	-6.38	-69.23	-36.00	-33.23	V
289.9600	-66.03	-6.60	-72.63	-36.00	-36.63	V
441.7650	-67.76	-2.82	-70.58	-36.00	-34.58	V
625.0950	-64.91	-0.07	-64.98	-54.00	-10.98	V
750.2250	-61.59	2.11	-59.48	-54.00	-5.48	V
874.8700	-67.85	4.03	-63.82	-36.00	-27.82	V
125.0600	-64.62	-6.38	-71.00	-36.00	-35.00	H
250.1900	-57.60	-8.51	-66.11	-36.00	-30.11	H
499.9650	-63.10	-1.65	-64.75	-54.00	-10.75	H
625.0950	-71.78	-0.07	-71.85	-54.00	-17.85	H
750.2250	-63.35	2.11	-61.24	-54.00	-7.24	H
874.8700	-70.19	4.03	-66.16	-36.00	-30.16	H

Test Mode: Bluetooth

Tested by: Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
125.0600	-63.36	-6.38	-69.74	-36.00	-33.74	V
224.9700	-63.41	-9.23	-72.64	-54.00	-18.64	V
499.9650	-72.38	-1.65	-74.03	-54.00	-20.03	V
625.0950	-65.57	-0.07	-65.64	-54.00	-11.64	V
750.2250	-62.01	2.11	-59.90	-54.00	-5.90	V
874.8700	-67.74	4.03	-63.71	-36.00	-27.71	V
250.1900	-57.74	-8.51	-66.25	-36.00	-30.25	H
374.8350	-66.83	-4.83	-71.66	-36.00	-35.66	H
499.9650	-63.00	-1.65	-64.65	-54.00	-10.65	H
625.0950	-71.83	-0.07	-71.90	-54.00	-17.90	H
750.2250	-63.60	2.11	-61.49	-54.00	-7.49	H
874.8700	-70.51	4.03	-66.48	-36.00	-30.48	H

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Above 1GHz

Test Mode: IEEE 802.11b Mode / TX (CH Low)

Tested by: Jerry Chuang

Ambient temperature: 22°C

Relative humidity: 42 % RH

Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4824.000	-45.36	-12.00	-57.36	-30.00	-27.36	V
7236.000	-51.73	-5.92	-57.65	-30.00	-27.65	V
N/A						
4825.500	-36.59	-11.99	-48.58	-30.00	-18.58	H
7236.000	-52.00	-5.92	-57.92	-30.00	-27.92	H
N/A						

Test Mode: IEEE 802.11b Mode / TX (CH High)

Tested by: Jerry Chuang

Ambient temperature: 22°C

Relative humidity: 42 % RH

Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4944.500	-43.59	-11.30	-54.89	-30.00	-24.89	V
7416.000	-53.74	-5.20	-58.94	-30.00	-28.94	V
N/A						
4944.500	-37.33	-11.30	-48.63	-30.00	-18.63	H
7416.000	-53.53	-5.20	-58.73	-30.00	-28.73	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test Mode: IEEE 802.11g Mode / TX (CH Low)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4824.000	-47.21	-12.00	-59.21	-30.00	-29.21	V
7236.000	-51.00	-5.92	-56.92	-30.00	-26.92	V
N/A						
4824.000	-36.82	-12.00	-48.82	-30.00	-18.82	H
7236.000	-51.94	-5.92	-57.86	-30.00	-27.86	H
N/A						

Test Mode: IEEE 802.11g Mode / TX (CH High)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4944.000	-45.42	-11.30	-56.72	-30.00	-26.72	V
7416.000	-53.28	-5.20	-58.48	-30.00	-28.48	V
N/A						
4944.500	-38.16	-11.30	-49.46	-30.00	-19.46	H
7416.000	-53.24	-5.20	-58.44	-30.00	-28.44	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test Mode: IEEE 802.11n HT 20 MHz Mode / TX (CH Low) **Tested by:** Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4824.000	-48.13	-12.00	-60.13	-30.00	-30.13	V
7236.000	-51.81	-5.92	-57.73	-30.00	-27.73	V
N/A						
4822.000	-37.02	-12.01	-49.03	-30.00	-19.03	H
7236.000	-51.28	-5.92	-57.20	-30.00	-27.20	H
N/A						

Test Mode: IEEE 802.11n HT 20 MHz Mode / TX (CH High) **Tested by:** Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4944.000	-47.27	-11.30	-58.57	-30.00	-28.57	V
7416.000	-52.82	-5.20	-58.02	-30.00	-28.02	V
N/A						
4941.000	-38.94	-11.33	-50.27	-30.00	-20.27	H
7416.000	-53.32	-5.20	-58.52	-30.00	-28.52	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Test Mode: IEEE 802.11n HT 40 MHz Mode / TX (CH Low) **Tested by:** Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4844.000	-48.86	-11.88	-60.74	-30.00	-30.74	V
7266.000	-52.23	-5.80	-58.03	-30.00	-28.03	V
N/A						
4844.000	-49.54	-11.88	-61.42	-30.00	-31.42	H
7266.000	-51.24	-5.80	-57.04	-30.00	-27.04	H
N/A						

Test Mode: IEEE 802.11n HT 40 MHz Mode / TX (CH High) **Tested by:** Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4924.000	-49.39	-11.42	-60.81	-30.00	-30.81	V
7386.000	-53.71	-5.31	-59.02	-30.00	-29.02	V
N/A						
4924.000	-44.16	-11.42	-55.58	-30.00	-25.58	H
7386.000	-53.34	-5.31	-58.65	-30.00	-28.65	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Bluetooth for GFSK (BR-1M)

Test Mode: Bluetooth / TX (CH Low)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4804.000	-45.03	-12.11	-57.14	-30.00	-27.14	V
7206.000	-51.97	-6.05	-58.02	-30.00	-28.02	V
N/A						
4804.500	-32.12	-12.11	-44.23	-30.00	-14.23	H
7206.000	-52.14	-6.05	-58.19	-30.00	-28.19	H
N/A						

Test Mode: Bluetooth / TX (CH High)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4960.000	-49.61	-11.23	-60.84	-30.00	-30.84	V
7440.000	-52.68	-5.10	-57.78	-30.00	-27.78	V
N/A						
4960.000	-37.83	-11.23	-49.06	-30.00	-19.06	H
7440.000	-52.40	-5.10	-57.50	-30.00	-27.50	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Bluetooth for 8DPSK (EDR-3M)

Test Mode: Bluetooth / TX (CH Low)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4804.000	-46.80	-12.11	-58.91	-30.00	-28.91	V
7206.000	-51.85	-6.05	-57.90	-30.00	-27.90	V
N/A						
4804.500	-34.41	-12.11	-46.52	-30.00	-16.52	H
7206.000	-52.60	-6.05	-58.65	-30.00	-28.65	H
N/A						

Test Mode: Bluetooth / TX (CH High)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4960.000	-49.94	-11.23	-61.17	-30.00	-31.17	V
7440.000	-53.05	-5.10	-58.15	-30.00	-28.15	V
N/A						
4960.000	-41.52	-11.23	-52.75	-30.00	-22.75	H
7440.000	-53.28	-5.10	-58.38	-30.00	-28.38	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Bluetooth 4.1

Test Mode: Bluetooth / TX (CH Low)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4804.000	-46.26	-12.11	-58.37	-30.00	-28.37	V
7206.000	-50.99	-6.05	-57.04	-30.00	-27.04	V
N/A						
4804.000	-31.72	-12.11	-43.83	-30.00	-13.83	H
7206.000	-52.31	-6.05	-58.36	-30.00	-28.36	H
N/A						

Test Mode: Bluetooth / TX (CH High)

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
4960.000	-47.39	-11.23	-58.62	-30.00	-28.62	V
7440.000	-52.39	-5.10	-57.49	-30.00	-27.49	V
N/A						
4960.000	-35.72	-11.23	-46.95	-30.00	-16.95	H
7440.000	-52.84	-5.10	-57.94	-30.00	-27.94	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

7.11 RECEIVER SPURIOUS EMISSIONS

LIMIT

The spurious emissions of the receiver shall not exceed the values given in table 2.

Table 2: Spurious emission limits for receivers

Frequency range	Maximum power e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12,75 GHz	-47 dBm	1 MHz

Test Configuration

Radiated Spurious Emissions:

(Same as section 7.10 in this test report)

TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

Measurement Uncertainty

The measurement uncertainty of the test is ± 2.65 dB.

TEST RESULTS

No non-compliance noted.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

For FPC Antenna

Below 1GHz

Test Mode: RX

Tested by: Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
224.4850	-64.46	-9.26	-73.72	-57.00	-16.72	V
289.4750	-68.49	-6.60	-75.09	-57.00	-18.09	V
441.7650	-68.77	-2.82	-71.59	-57.00	-14.59	V
625.0950	-65.75	-0.07	-65.82	-57.00	-8.82	V
750.2250	-64.19	2.11	-62.08	-57.00	-5.08	V
874.8700	-68.62	4.03	-64.59	-57.00	-7.59	V
250.1900	-57.44	-8.51	-65.95	-57.00	-8.95	H
374.8350	-69.53	-4.83	-74.36	-57.00	-17.36	H
499.9650	-63.63	-1.65	-65.28	-57.00	-8.28	H
625.0950	-70.59	-0.07	-70.66	-57.00	-13.66	H
750.2250	-64.63	2.11	-62.52	-57.00	-5.52	H
874.8700	-70.23	4.03	-66.20	-57.00	-9.20	H

Test Mode: Bluetooth / RX

Tested by: Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
224.4850	-65.07	-9.26	-74.33	-57.00	-17.33	V
441.7650	-68.86	-2.82	-71.68	-57.00	-14.68	V
499.9650	-72.16	-1.65	-73.81	-57.00	-16.81	V
625.0950	-66.63	-0.07	-66.70	-57.00	-9.70	V
750.2250	-64.21	2.11	-62.10	-57.00	-5.10	V
874.8700	-69.21	4.03	-65.18	-57.00	-8.18	V
250.1900	-56.89	-8.51	-65.40	-57.00	-8.40	H
299.6600	-66.28	-6.61	-72.89	-57.00	-15.89	H
499.9650	-62.89	-1.65	-64.54	-57.00	-7.54	H
625.0950	-70.15	-0.07	-70.22	-57.00	-13.22	H
750.2250	-64.31	2.11	-62.20	-57.00	-5.20	H
874.8700	-70.35	4.03	-66.32	-57.00	-9.32	H

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Above 1GHz

Test Mode: RX

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
2200.500	-37.39	-19.66	-57.05	-47.00	-10.05	V
3187.500	-36.86	-17.40	-54.26	-47.00	-7.26	V
N/A						
1500.500	-37.23	-22.21	-59.44	-47.00	-12.44	H
2400.000	-42.43	-18.89	-61.32	-47.00	-14.32	H
3194.500	-44.74	-17.41	-62.15	-47.00	-15.15	H
5074.000	-49.12	-10.70	-59.82	-47.00	-12.82	H
6456.500	-49.95	-8.90	-58.85	-47.00	-11.85	H
7160.000	-50.09	-6.23	-56.32	-47.00	-9.32	H

Test Mode: Bluetooth / RX

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1248.500	-37.37	-23.10	-60.47	-47.00	-13.47	V
2974.000	-44.84	-17.27	-62.11	-47.00	-15.11	V
N/A						
1500.500	-37.31	-22.21	-59.52	-47.00	-12.52	H
2393.000	-43.27	-18.91	-62.18	-47.00	-15.18	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

For Dipole Antenna

Below 1GHz

Test Mode: RX

Tested by: Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
224.9700	-63.47	-9.23	-72.70	-57.00	-15.70	V
441.7650	-68.61	-2.82	-71.43	-57.00	-14.43	V
499.9650	-70.74	-1.65	-72.39	-57.00	-15.39	V
625.0950	-64.94	-0.07	-65.01	-57.00	-8.01	V
750.2250	-63.19	2.11	-61.08	-57.00	-4.08	V
874.8700	-67.97	4.03	-63.94	-57.00	-6.94	V
250.1900	-58.58	-8.51	-67.09	-57.00	-10.09	H
374.8350	-67.79	-4.83	-72.62	-57.00	-15.62	H
499.9650	-63.08	-1.65	-64.73	-57.00	-7.73	H
625.0950	-72.40	-0.07	-72.47	-57.00	-15.47	H
750.2250	-63.37	2.11	-61.26	-57.00	-4.26	H
874.8700	-70.09	4.03	-66.06	-57.00	-9.06	H

Test Mode: Bluetooth / RX

Tested by: Jerry Chuang

Ambient temperature: 22°C **Relative humidity:** 42 % RH **Date:** August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
224.9700	-62.34	-9.23	-71.57	-57.00	-14.57	V
374.8350	-66.59	-4.83	-71.42	-57.00	-14.42	V
499.9650	-64.73	-1.65	-66.38	-57.00	-9.38	V
625.0950	-64.90	-0.07	-64.97	-57.00	-7.97	V
750.2250	-63.60	2.11	-61.49	-57.00	-4.49	V
874.8700	-67.10	4.03	-63.07	-57.00	-6.07	V
250.1900	-58.83	-8.51	-67.34	-57.00	-10.34	H
374.8350	-66.45	-4.83	-71.28	-57.00	-14.28	H
499.9650	-64.06	-1.65	-65.71	-57.00	-8.71	H
625.0950	-71.68	-0.07	-71.75	-57.00	-14.75	H
750.2250	-64.18	2.11	-62.07	-57.00	-5.07	H
874.8700	-71.80	4.03	-67.77	-57.00	-10.77	H

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Above 1GHz

Test Mode: RX

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
1794.500	-32.30	-21.16	-53.46	-47.00	-6.46	V
2988.000	-37.42	-17.23	-54.65	-47.00	-7.65	V
N/A						
1126.000	-33.86	-23.54	-57.40	-47.00	-10.40	H
3194.500	-43.86	-17.41	-61.27	-47.00	-14.27	H
N/A						

Test Mode: Bluetooth / RX

Tested by: Jerry Chuang

Ambient temperature: 22°C Relative humidity: 42 % RH Date: August 6, 2018

Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
2197.000	-37.24	-19.67	-56.91	-47.00	-9.91	V
3194.500	-39.14	-17.41	-56.55	-47.00	-9.55	V
N/A						
1374.500	-36.47	-22.66	-59.13	-47.00	-12.13	H
3187.500	-45.59	-17.40	-62.99	-47.00	-15.99	H
N/A						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

7.12 RECEIVER BLOCKING

Limit

that does not support a PER or a FER test to be performed, the minimum performance criterion shall be no loss of the wireless transmission function needed for the intended use of the equipment.

WIFI 2.4GHz

Receiver Category	<input checked="" type="checkbox"/> Category 1 : Adaptive equipment with a maximum RF output power greater than 10 dBm e.i.r.p. shall be considered as receiver category 1 equipment. <input type="checkbox"/> Category 2 : Non-adaptive equipment with a Medium Utilization (MU) factor greater than 1 % and less than or equal to 10 % or adaptive equipment with a maximum RF output power of 10 dBm e.i.r.p. shall be considered as receiver category 2 equipment. <input type="checkbox"/> Category 3 : Non-adaptive equipment with a maximum Medium Utilization (MU) factor of 1 % or adaptive equipment with a maximum RF output power of 0 dBm e.i.r.p. shall be considered as receiver category 3 equipment
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Bluetooth 2.1 + EDR & Bluetooth 4.1

Receiver Category	<input type="checkbox"/> Category 1 : Adaptive equipment with a maximum RF output power greater than 10 dBm e.i.r.p. shall be considered as receiver category 1 equipment. <input checked="" type="checkbox"/> Category 2 : Non-adaptive equipment with a Medium Utilization (MU) factor greater than 1 % and less than or equal to 10 % or adaptive equipment with a maximum RF output power of 10 dBm e.i.r.p. shall be considered as receiver category 2 equipment. <input type="checkbox"/> Category 3 : Non-adaptive equipment with a maximum Medium Utilization (MU) factor of 1 % or adaptive equipment with a maximum RF output power of 0 dBm e.i.r.p. shall be considered as receiver category 3 equipment
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Category 1			
Wanted signal mean power from companion device (dBm) (see notes 1 and 4)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 4)	Type of blocking signal
(-133 dBm + 10 × log ₁₀ (OCBW)) or -68 dBm whichever is less (see note 2)	2 380	-34	CW
	2 504		
(-139 dBm + 10 × log ₁₀ (OCBW)) or -74 dBm whichever is less (see note 3)	2 300	-34	CW
	2 330		
	2 360		
	2 524		
	2 584		
2 674			

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 20 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

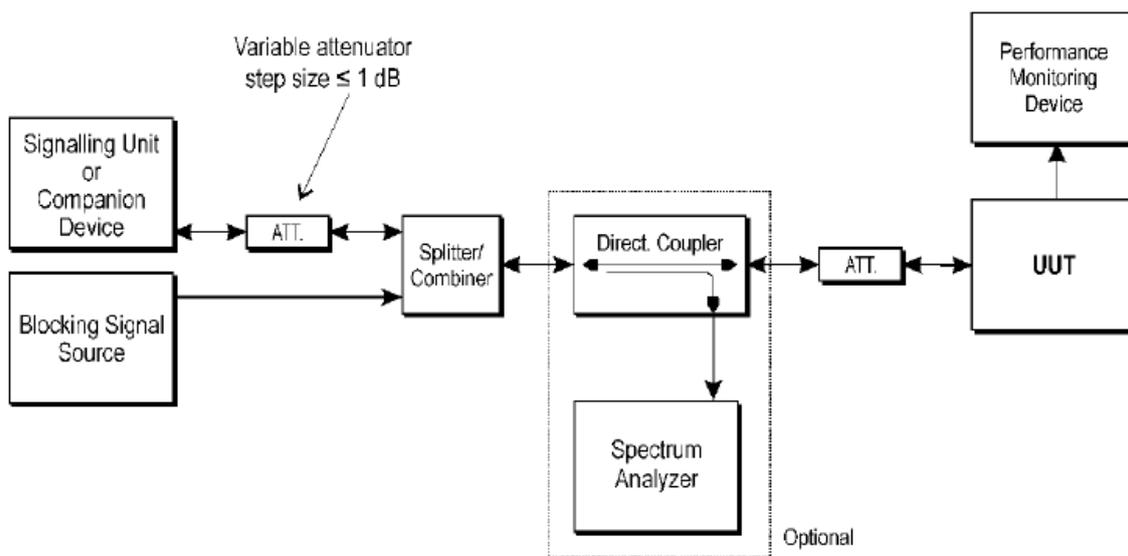
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Category 2			
Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
$(-139 \text{ dBm} + 10 \times \log_{10}(\text{OCBW}) + 10 \text{ dB})$ or $(-74 \text{ dBm} + 10 \text{ dB})$ whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
<p>NOTE 1: OCBW is in Hz.</p> <p>NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to $P_{\text{min}} + 26 \text{ dB}$ where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.</p> <p>NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.</p>			

Category 3			
Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
$(-139 \text{ dBm} + 10 \times \log_{10}(\text{OCBW}) + 20 \text{ dB})$ or $(-74 \text{ dBm} + 20 \text{ dB})$ whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
<p>NOTE 1: OCBW is in Hz.</p> <p>NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to $P_{\text{min}} + 30 \text{ dB}$ where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.</p> <p>NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.</p>			

Test Configuration



TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) or the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) for the measurement method.

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TEST RESULTS

Temp: 22.5°C

Hum.: 50% RH

Tested By: Ryan Du

Test Date: November 4, 2020

Configuration	Frequency (MHz)	Blocking signal frequency (MHz)	Receiver Blocking signal power (dBm)	calibration Blocking Signal	OBW (MHz)	Wanted signal mean power from companion device (dBm) [Pmin]	Per Results	Limit (%)	Result
IEEE 802.11b Mode	2412	2380	-34	-16	12.33	-68	0.00%	≤ 10%	Pass
		2504		-16	12.33	-68	0.00%	≤ 10%	Pass
		2300		-16	12.33	-74	0.00%	≤ 10%	Pass
		2330		-16	12.33	-74	0.00%	≤ 10%	Pass
		2360		-16	12.33	-74	0.00%	≤ 10%	Pass
		2524		-16	12.33	-74	0.00%	≤ 10%	Pass
		2584		-16	12.33	-74	0.00%	≤ 10%	Pass
		2674		-16	12.33	-74	0.00%	≤ 10%	Pass
IEEE 802.11b Mode	2462	2380	-34	-16	12.34	-68	0.00%	≤ 10%	Pass
		2504		-16	12.34	-68	0.00%	≤ 10%	Pass
		2300		-16	12.34	-74	0.00%	≤ 10%	Pass
		2330		-16	12.34	-74	0.00%	≤ 10%	Pass
		2360		-16	12.34	-74	0.00%	≤ 10%	Pass
		2524		-16	12.34	-74	0.00%	≤ 10%	Pass
		2584		-16	12.34	-74	0.00%	≤ 10%	Pass
		2674		-16	12.34	-74	0.00%	≤ 10%	Pass

Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Configuration	Frequency (MHz)	Blocking signal frequency (MHz)	Receiver Blocking signal power (dBm)	calibration Blocking Signal	OBW (MHz)	Wanted signal mean power from companion device (dBm) [Pmin]	Per Results	Limit (%)	Result
Bluetooth 2.1+EDR	2402	2380	-34	-16	0.889423	-69	0.02%	≤ 10%	Pass
		2504		-16	0.889423	-69	0.01%	≤ 10%	Pass
		2300		-16	0.889423	-69	0.00%	≤ 10%	Pass
		2584		-16	0.889423	-69	0.02%	≤ 10%	Pass
Bluetooth 2.1+EDR	2480	2380	-34	-16	0.897435	-68	0.08%	≤ 10%	Pass
		2504		-16	0.897435	-68	0.03%	≤ 10%	Pass
		2300		-16	0.897435	-68	0.00%	≤ 10%	Pass
		2584		-16	0.897435	-68	0.02%	≤ 10%	Pass

Configuration	Frequency (MHz)	Blocking signal frequency (MHz)	Receiver Blocking signal power (dBm)	calibration Blocking Signal	OBW (MHz)	Wanted signal mean power from companion device (dBm) [Pmin]	Per Results	Limit (%)	Result
BLE Mode	2402	2380	-34	-16	1.057	-64	0.00%	≤ 10%	Pass
		2504		-16	1.057	-64	0.00%	≤ 10%	Pass
		2300		-16	1.057	-64	0.03%	≤ 10%	Pass
		2584		-16	1.057	-64	0.01%	≤ 10%	Pass
BLE Mode	2480	2380	-34	-16	1.057	-64	0.00%	≤ 10%	Pass
		2504		-16	1.057	-64	0.01%	≤ 10%	Pass
		2300		-16	1.057	-64	0.01%	≤ 10%	Pass
		2584		-16	1.057	-64	0.01%	≤ 10%	Pass

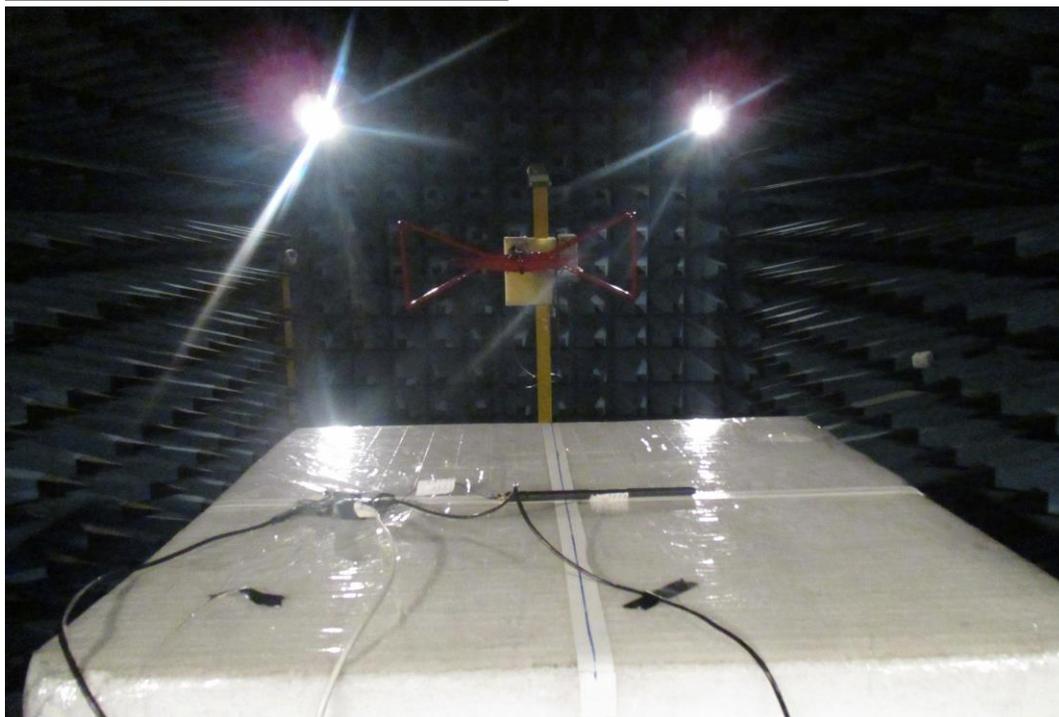
-- End of Test Report --

APPENDIX A PHOTOGRAPHS OF TEST SETUP

Below 1GHz

For Dipole Antenna

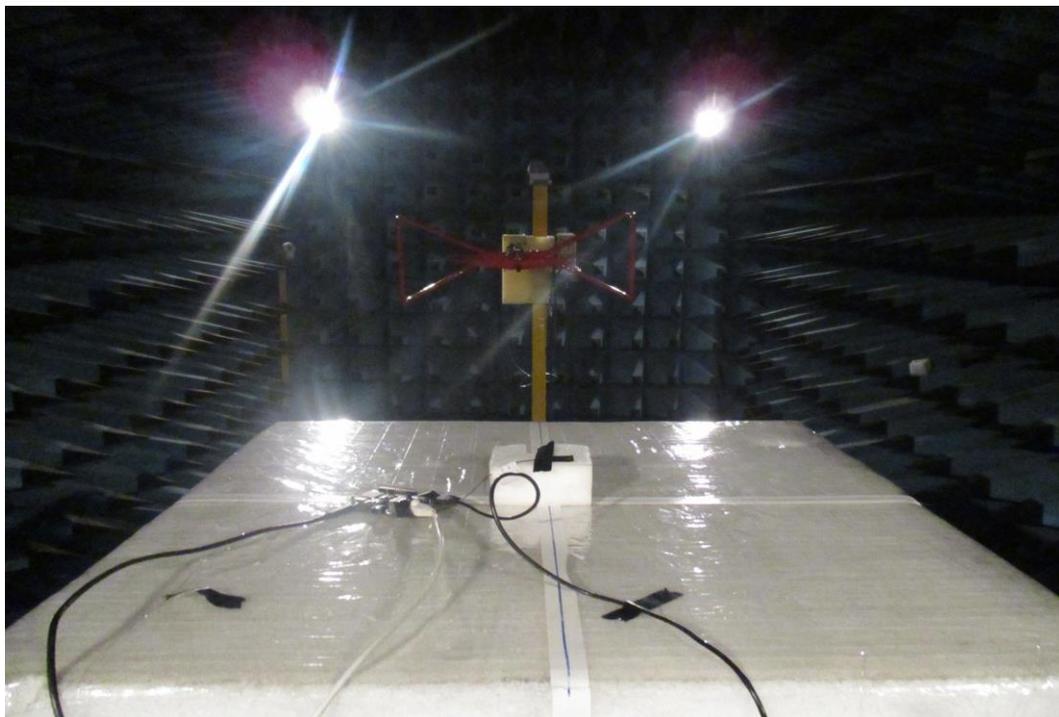
WiFi 2.4GHz+ BT2.1+EDR+BT 4.1



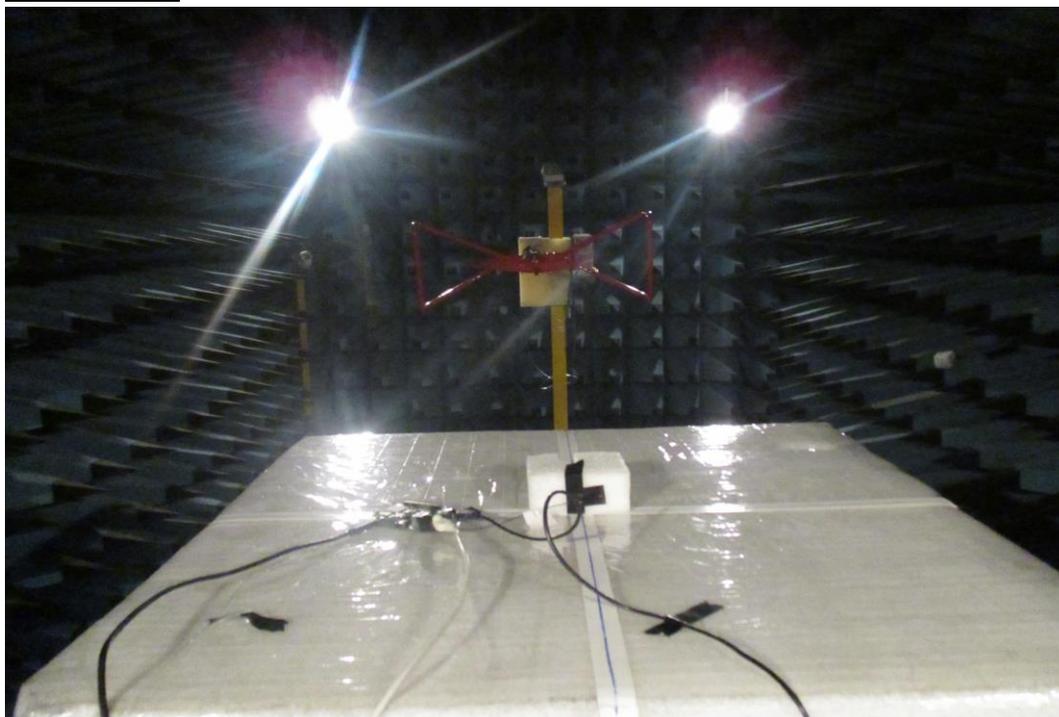
Report No.: T200923D03-RT1

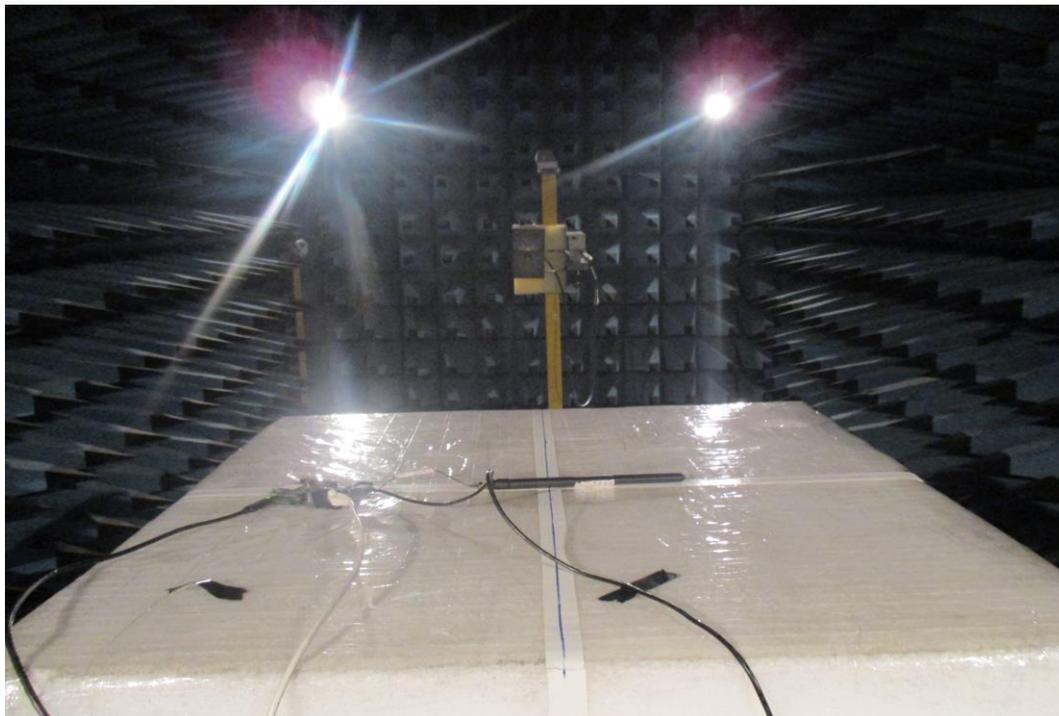
Ref. No.: T180627D10-RT1

**For FPC Antenna
WiFi 2.4GHz+BT 4.1**



BT2.1+EDR

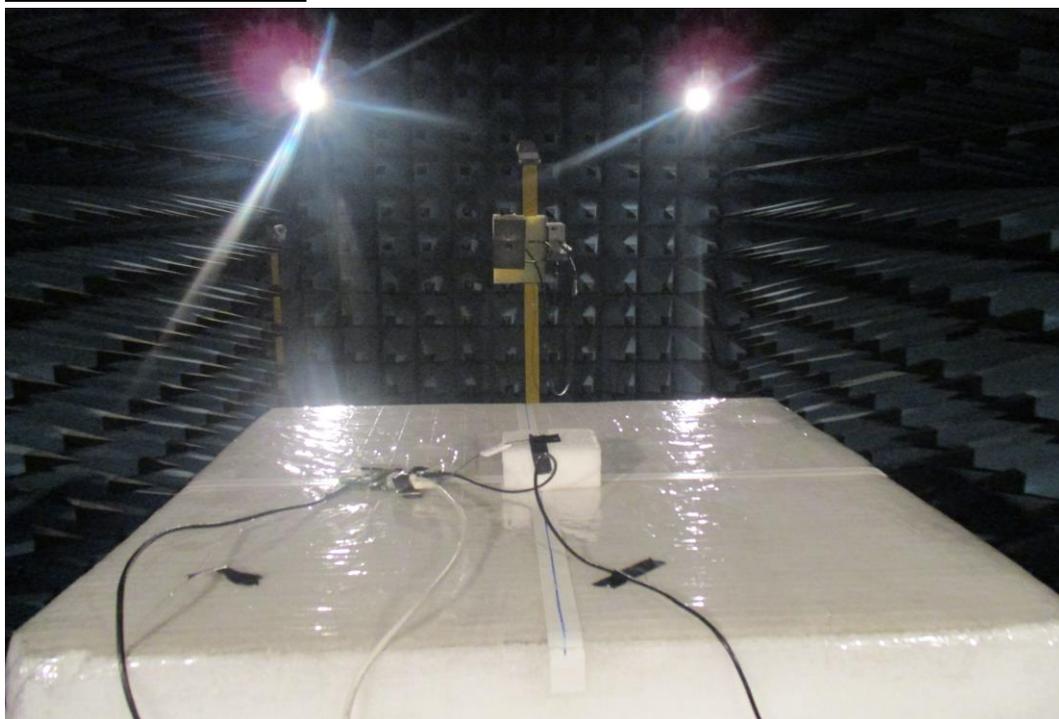


Above 1GHz**For Dipole Antenna****WiFi 2.4GHz+ BT2.1+EDR+BT 4.1**

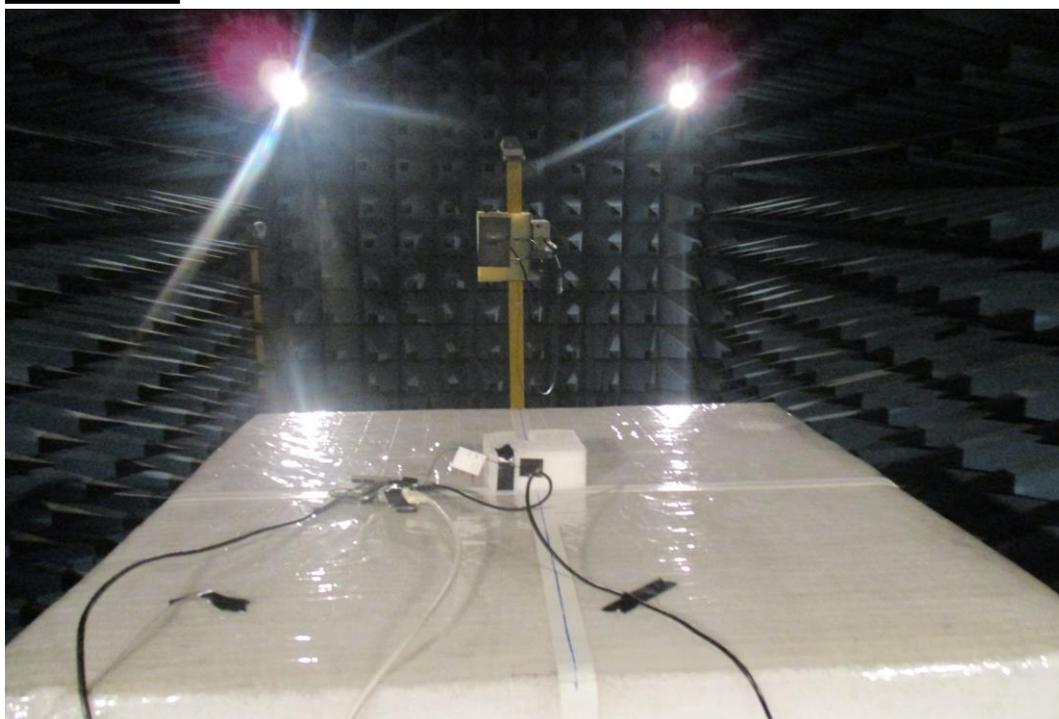
Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

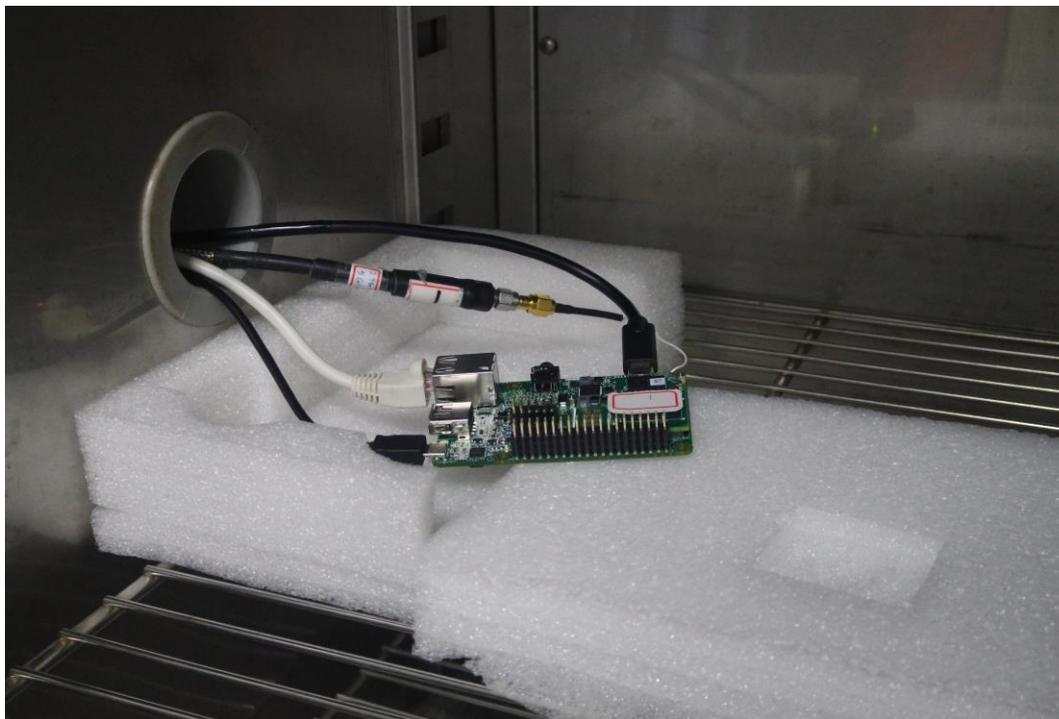
**For FPC Antenna
WiFi 2.4GHz+BT 4.1**



BT2.1+EDR



Conducted



Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

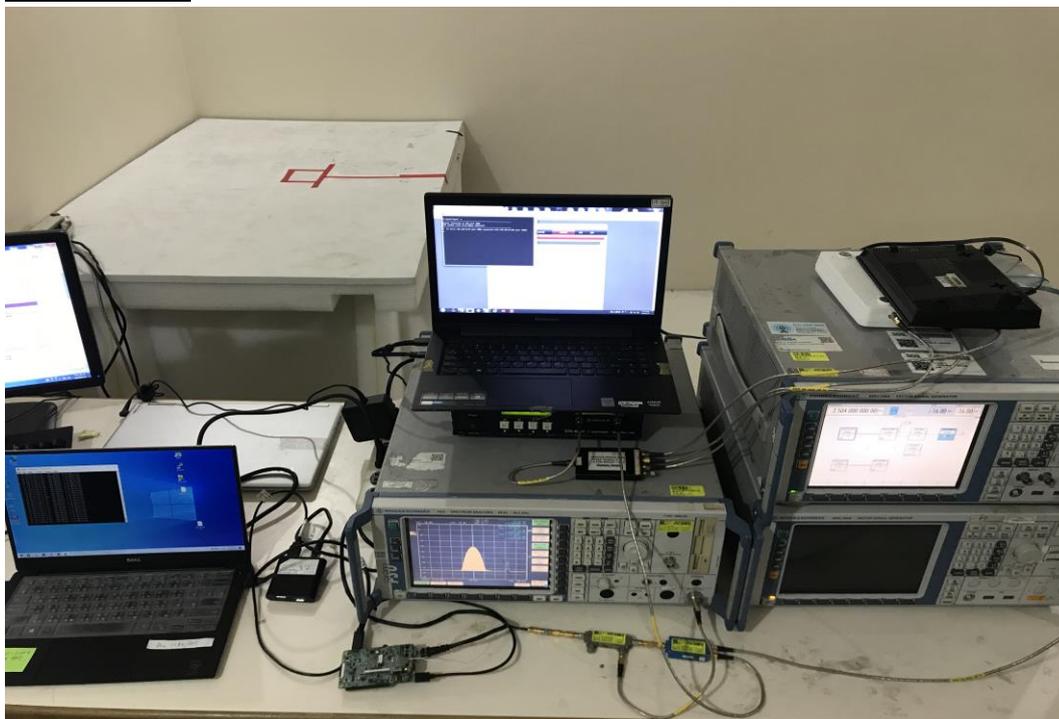
Adaptivity



Report No.: T200923D03-RT1

Ref. No.: T180627D10-RT1

Receiver Blocking WiFi 2.4GHz



Bluetooth

