

# JAPAN SPECIFIED RADIO EQUIPMENT

## TEST REPORT

For

**WiFi+Bluetooth 5.2 System on Module**

**Trade Name: TechNexion**

**Model: PIXI-IW416**

Issued to

**TechNexion Ltd.**

**16F-5, No. 736, Zhongzheng Road, ZhongHe District, 23511, New Taipei City, Taiwan**

Issued by

**Compliance Certification Services Inc.**

**Wugu Laboratory**

**No.11, Wugong 6th Rd., Wugu Dist.,**

**New Taipei City, Taiwan**

**Issued Date: August 7, 2023**

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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### **Revision History**

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 7, 2023	Initial Issue	ALL	Allison Chen

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## 1. TEST RESULT CERTIFICATION

**Applicant:** TechNexion Ltd.  
16F-5, No. 736, Zhongzheng Road, ZhongHe District,  
23511, New Taipei City, Taiwan

**Manufacturer:** TechNexion Ltd.  
16F-5, No. 736, Zhongzheng Road, ZhongHe District,  
23511, New Taipei City, Taiwan

**Equipment Under Test:** WiFi+Bluetooth 5.2 System on Module

**Trade Name:** TechNexion

**Model Number:** PIXI-IW416

**Detailed EUT Description:** See Item 3 of this report

**EUT Receive Date:** May 16, 2023

**Date of Test:** May 22~24, 2023

APPLICABLE STANDARDS	
CLASSIFICATION	TEST RESULT
ARIB STD T-66 Ver.3.7	Compliance
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 ARIB STD T-66 Ver.3.7. 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.

Measurement was conducted by the following test method: the test method of Ordinance Concerning Technical Regulations Conformity Certification etc. of Specified Radio Equipment in Annex 1, the Ministry of Internal Affairs and Communication notification in Annex 43 of Article 88, the Paragraph 1 test method more than equivalent.

Approved by:




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Shawn Wu  
Supervisor  
Compliance Certification Services Inc.

## 2. SUMMARY OF TEST RESULTS

### 2.1 WLAN IEEE 802.11b (CH1~CH13)

APPLIED STANDARD: ARIB STD T-66 Ver.3.7			
Standard Section	Report Section	Test Type and Limit	Test Result
<b>General provisions</b>			
5	6.1	Frequency Tolerance	PASS
6	6.4	Occupied Bandwidth	PASS
7	6.3	Unwanted Emission Strength	PASS
<b>Transmitting equipment</b>			
14	6.2	RF Out Power	PASS
14.2	-	SAR	-
<b>Transmitting antenna</b>			
20	3	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
<b>Receiving antenna</b>			
24	6.6	Limitation of Collateral Emission of Receiver	PASS
26	3	Refer to All Articles for Transmitting Antenna	PASS
<b>Operating frequency 2400~2483MHz</b>			
49.20(1);a	4.4	RF Shielding Method	PASS
49.20(1);a	3	Communication Method	PASS
49.20(1);b	-	Spread-spectrum Method	-
49.20(1);c	6.2	RF Out Power	PASS
49.20(1);d	-	Absolute Antenna Gain (Provided at Individual Antenna Report)	PASS
49.20(1);e	6.5	Spread-Spectrum Bandwidth	PASS
49.20(1);f	6.5	Spreading Factor	PASS
49.20(1);g	-	Hopping Frequency Dwell Time (FH employed)	-
-	15	Interference Prevention Function	PASS

## 2.2 WLAN IEEE 802.11g (CH1~CH13)

APPLIED STANDARD: ARIB STD T-66 Ver.3.7			
Standard Section	Report Section	Test Type and Limit	Test Result
<b>General provisions</b>			
5	7.1	Frequency Tolerance	PASS
6	7.4	Occupied Bandwidth	PASS
7	7.3	Unwanted Emission Strength	PASS
<b>Transmitting equipment</b>			
14	7.2	RF Out Power	PASS
14.2	-	SAR	-
<b>Transmitting antenna</b>			
20	3	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
<b>Receiving antenna</b>			
24	7.5	Limitation of Collateral Emissions of Receiver	PASS
26	3	Refer to All Articles for Transmitting Antenna	PASS
<b>Operating frequency 2400~2483MHz</b>			
49.20(1);a	4.4	RF Shielding Method	PASS
49.20(1);a	3	Communication Method	PASS
49.20(1);b	-	Spread-spectrum Method	-
49.20(1);c	7.2	RF Out Power	PASS
49.20(1);d	-	Absolute Antenna Gain (Provided at Individual Antenna Report)	PASS
49.20(1);e	-	Diffusion Bandwidth	PASS
49.20(1);f	-	Spreading Factor	PASS
49.20(1);g	-	Hopping Frequency Dwell Time (FH employed)	-
-	15	Interference Prevention Function	PASS

## 2.4 WLAN IEEE 802.11n HT20 (CH1~CH13)

APPLIED STANDARD: ARIB STD T-66 Ver.3.7			
Standard Section	Report Section	Test Type and Limit	Test Result
<b>General provisions</b>			
5	8.1	Frequency Tolerance	PASS
6	8.4	Occupied Bandwidth	PASS
7	8.3	Unwanted Emission Strength	PASS
<b>Transmitting equipment</b>			
14	8.2	RF Out Power	PASS
14.2	-	SAR	-
<b>Transmitting antenna</b>			
20	3	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
<b>Receiving antenna</b>			
24	8.5	Limitation of Collateral Emissions of Receiver	PASS
26	3	Refer to All Articles for Transmitting Antenna	PASS
<b>Operating frequency 2400~2483MHz</b>			
49.20(1);a	4.4	RF Shielding Method	PASS
49.20(1);a	3	Communication Method	PASS
49.20(1);b	-	Spread-spectrum Method	-
49.20(1);c	8.2	RF Out Power	PASS
49.20(1);d	-	Absolute Antenna Gain (Provided at Individual Antenna Report)	PASS
49.20(1);e	-	Diffusion Bandwidth	PASS
49.20(1);f	-	Spreading Factor	PASS
49.20(1);g	-	Hopping Frequency Dwell Time (FH employed)	-
-	15	Interference Prevention Function	PASS

## 2.5 WLAN IEEE 802.11n HT40 (CH3~CH11)

APPLIED STANDARD: ARIB STD T-66 Ver.3.7			
Standard Section	Report Section	Test Type and Limit	Test Result
<b>General provisions</b>			
5	9.1	Frequency Tolerance	PASS
6	9.4	Occupied Bandwidth	PASS
7	9.3	Unwanted Emission Strength	PASS
<b>Transmitting equipment</b>			
14	9.2	RF Out Power	PASS
14.2	-	SAR	-
<b>Transmitting antenna</b>			
20	3	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
<b>Receiving antenna</b>			
24	9.5	Limitation of Collateral Emissions of Receiver	PASS
26	3	Refer to All Articles for Transmitting Antenna	PASS
<b>Operating frequency 2400~2483MHz</b>			
49.20(1);a	4.4	RF Shielding Method	PASS
49.20(1);a	3	Communication Method	PASS
49.20(1);b	-	Spread-spectrum Method	-
49.20(1);c	9.2	RF Out Power	PASS
49.20(1);d	-	Absolute Antenna Gain (Provided at Individual Antenna Report)	PASS
49.20(1);e	-	Diffusion Bandwidth	PASS
49.20(1);f	-	Spreading Factor	PASS
49.20(1);g	-	Hopping Frequency Dwell Time (FH employed)	-
-	15	Interference Prevention Function	PASS

## 2.6 BLUETOOTH (CH0~CH78) (FOR GFSK)

APPLIED STANDARD:ARIB STD T-66 Ver.3.7			
Standard Section	Report Section	Test Type and Limit	Test Result
<b>General provisions</b>			
5	10.1	Frequency Error	PASS
6	10.4	Occupied Bandwidth	PASS
7	10.3	Unwanted Emission Strength	PASS
<b>Transmitting equipment</b>			
14	10.2	Antenna Power	PASS
14.2	-	SAR	-
<b>Transmitting antenna</b>			
20	3	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
<b>Receiving antenna</b>			
24	10.8	Limitation of Collateral Emission of Receiver	PASS
26	3	Refer to All Articles for Transmitting Antenna	PASS
<b>Operating frequency 2400~2483MHz</b>			
49.20(1);a	4.4	RF Shielding Method	PASS
49.20(1);a	3	Communication Method	PASS
49.20(1);b	3	Spread-spectrum Method	PASS
49.20(1);d	-	Absolute Antenna Gain (Provided at Individual Antenna Report)	PASS
49.20(1);e	10.5	Spread-Spectrum Bandwidth	PASS
49.20(1);g	10.9	Hopping Frequency Dwell Time (FH employed)	PASS
-	15	Interference Prevention Function	PASS



## 2.7 BLUETOOTH (CH0~CH78) (For $\pi/4$ DQPSK)

APPLIED STANDARD:ARIB STD T-66 Ver.3.7			
Standard Section	Report Section	Test Type and Limit	Test Result
<b>General provisions</b>			
5	11.1	Frequency Error	PASS
6	11.4	Occupied Bandwidth	PASS
7	11.3	Unwanted Emission Strength	PASS
<b>Transmitting equipment</b>			
14	11.2	Antenna Power	PASS
14.2	-	SAR	-
<b>Transmitting antenna</b>			
20	3	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
<b>Receiving antenna</b>			
24	11.8	Limitation of Collateral Emission of Receiver	PASS
26	3	Refer to All Articles for Transmitting Antenna	PASS
<b>Operating frequency 2400~2483MHz</b>			
49.20(1);a	4.4	RF Shielding Method	PASS
49.20(1);a	3	Communication Method	PASS
49.20(1);b	3	Spread-spectrum Method	PASS
49.20(1);d	-	Absolute Antenna Gain (Provided at Individual Antenna Report)	PASS
49.20(1);e	11.5	Spread-Spectrum Bandwidth	PASS
49.20(1);g	11.9	Hopping Frequency Dwell Time (FH employed)	PASS
-	15	Interference Prevention Function	PASS

## 2.8 BLUETOOTH (CH0~CH78) (FOR 8DPSK)

APPLIED STANDARD:ARIB STD T-66 Ver.3.7			
Standard Section	Report Section	Test Type and Limit	Test Result
<b>General provisions</b>			
5	12.1	Frequency Error	PASS
6	12.4	Occupied Bandwidth	PASS
7	12.3	Unwanted Emission Strength	PASS
<b>Transmitting equipment</b>			
14	12.2	Antenna Power	PASS
14.2	-	SAR	-
<b>Transmitting antenna</b>			
20	3	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
<b>Receiving antenna</b>			
24	12.8	Limitation of Collateral Emission of Receiver	PASS
26	3	Refer to All Articles for Transmitting Antenna	PASS
<b>Operating frequency 2400~2483MHz</b>			
49.20(1);a	4.4	RF Shielding Method	PASS
49.20(1);a	3	Communication Method	PASS
49.20(1);b	3	Spread-spectrum Method	PASS
49.20(1);d	-	Absolute Antenna Gain (Provided at Individual Antenna Report)	PASS
49.20(1);e	12.5	Spread-Spectrum Bandwidth	PASS
49.20(1);g	12.9	Hopping Frequency Dwell Time (FH employed)	PASS
-	15	Interference Prevention Function	PASS

## 2.9 BLE 1M (CH0~CH39) (FOR GFSK)

APPLIED STANDARD:ARIB STD T-66 Ver.3.7			
Standard Section	Report Section	Test Type and Limit	Test Result
<b>General provisions</b>			
5	13.1	Frequency Error	PASS
6	13.4	Occupied Bandwidth	PASS
7	13.3	Spurious Emissions Intensity	PASS
<b>Transmitting equipment</b>			
14	13.2	Antenna Power	PASS
14.2	-	SAR	-
<b>Transmitting antenna</b>			
20	3	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
<b>Receiving antenna</b>			
24	13.5	Limitation of Collateral Emission of Receiver	PASS
26	3	Refer to All Articles for Transmitting Antenna	PASS
<b>Operating frequency 2400~2483MHz</b>			
49.20(1);a	4.4	RF Shielding Method	PASS
49.20(1);a	3	Communication Method	PASS
49.20(1);b	3	Spread-spectrum Method	PASS
49.20(1);d	-	Absolute Antenna Gain (Provided at Individual Antenna Report)	PASS
49.20(1);e	-	Spread-Spectrum Bandwidth	-
-	15	Interference Prevention Function	PASS

## 2.10 BLE 2M (CH0~CH39) (FOR GFSK)

APPLIED STANDARD:ARIB STD T-66 Ver.3.7			
Standard Section	Report Section	Test Type and Limit	Test Result
<b>General provisions</b>			
5	14.1	Frequency Error	PASS
6	14.4	Occupied Bandwidth	PASS
7	14.3	Spurious Emissions Intensity	PASS
<b>Transmitting equipment</b>			
14	14.2	Antenna Power	PASS
14.2	-	SAR	-
<b>Transmitting antenna</b>			
20	3	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
<b>Receiving antenna</b>			
24	14.5	Limitation of Collateral Emission of Receiver	PASS
26	3	Refer to All Articles for Transmitting Antenna	PASS
<b>Operating frequency 2400~2483MHz</b>			
49.20(1);a	4.4	RF Shielding Method	PASS
49.20(1);a	3	Communication Method	PASS
49.20(1);b	3	Spread-spectrum Method	PASS
49.20(1);d	-	Absolute Antenna Gain (Provided at Individual Antenna Report)	PASS
49.20(1);e	-	Spread-Spectrum Bandwidth	-
-	15	Interference Prevention Function	PASS

### 3. EUT DESCRIPTION

<b>Product</b>	WiFi+Bluetooth 5.2 System on Module		
<b>Model Number</b>	PIXI-IW416		
<b>Trade Name</b>	TechNexion		
<b>Power Supply</b>	5VDC from Host PC Power Supply		
<b>Model Discrepancy</b>	N/A		
<b>Frequency Range</b>	IEEE 802.11b (CH1~13): 2412~2472MHz IEEE 802.11g (CH1~13): 2412~2472MHz IEEE 802.11n HT20 (CH1~13): 2412~2472MHz IEEE 802.11n HT40 (CH3~11): 2422~2462MHz Bluetooth: 2402~2480MHz		
<b>Rated Antenna Power (mW, mW/MHz)</b>			
	IEEE 802.11b (CH1~13):	6.356	mW/MHz
	IEEE 802.11g (CH1~13)	2.961	mW/MHz
	IEEE 802.11n HT20 (CH1~13)	1.617	mW/MHz
	IEEE 802.11n HT40 (CH3~11)	0.881	mW/MHz
	Bluetooth 2.0 for GFSK(Normal):	0.053	mW/MHz
	Bluetooth 2.0 for GFSK(AFH):	0.208	mW/MHz
	Bluetooth 2.0 for $\pi/4$ DQPSK (Normal):	0.056	mW/MHz
	Bluetooth 2.0 for $\pi/4$ DQPSK (AFH):	0.219	mW/MHz
	Bluetooth 2.0 for 8DPSK(Normal):	0.051	mW/MHz
	Bluetooth 2.0 for 8DPSK(AFH):	0.197	mW/MHz
	BLE 1M:	6.331	mW
	BLE 2M:	6.039	mW
<b>Measured Antenna Power (mW, mW/MHz)</b>			
	IEEE 802.11b (CH1~13):	6.356	mW/MHz
	IEEE 802.11g (CH1~13)	2.961	mW/MHz
	IEEE 802.11n HT20 (CH1~13)	1.617	mW/MHz
	IEEE 802.11n HT40 (CH3~11)	0.881	mW/MHz
	Bluetooth 2.0 for GFSK(Normal):	0.053	mW/MHz
	Bluetooth 2.0 for GFSK(AFH):	0.208	mW/MHz
	Bluetooth 2.0 for $\pi/4$ DQPSK (Normal):	0.056	mW/MHz
	Bluetooth 2.0 for $\pi/4$ DQPSK (AFH):	0.219	mW/MHz
	Bluetooth 2.0 for 8DPSK(Normal):	0.051	mW/MHz
	Bluetooth 2.0 for 8DPSK(AFH):	0.197	mW/MHz
	BLE 1M:	6.331	mW
	BLE 2M:	6.039	mW

<b>Modulation Technique</b>	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (QPSK, BPSK, 16-QAM, 64-QAM) IEEE 802.11n: OFDM (QPSK, BPSK, 16-QAM, 64-QAM) Bluetooth: FHSS (GFSK, $\pi/4$ -DQPSK, 8DPSK) BLE 1M & BLE 2M: GFSK
<b>Number of Channels</b>	IEEE 802.11b (CH1~13): 13 channels IEEE 802.11g / n HT20 (CH1~13): 13 channels IEEE 802.11n HT40 (CH3~11): 9 channels Bluetooth (CH0~78): 79 channels BLE 1M & BLE 2M: 40 channels
<b>Antenna Specification</b>	1. Dipole Antenna / Gain: 4 dBi (*Worst) 2. PIFA Antenna / Gain: 2.5 dBi
<b>Hardware Version</b>	A1
<b>Software Version</b>	1.0

**Remark:**

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

## 4. TEST METHODOLOGY & CONDITIONS

### 4.1 TEST CONDITIONS

Temperature: 24.3~25.2°C

Test date: May 22~24, 2023

Humidity: 50~60% RH

Tested by: David Li, Marco Chan

#### WIFI 2.4GHz

	unit	----	----	----	Limit	Result
Ambient Temperature	°C	25.2			$\geq$ 5 $\leq$ 35	PASS
Relative Humidity	%	60			$\geq$ 45 $\leq$ 85	PASS
Input Power Voltage	VDC	3.3			-----	-----
The reason why the tests are performed only at rated voltage:	When the input voltage to receiver RF circuit varies below $\pm$ 1% as the input voltage from the external power supply to the receiver varies $\pm$ 10% (excluding power supply).					

802.11b	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	-----	-----
Channel Number	Ch.	1	7	13	-----	-----
Declaration Output Power	mW/MHz	6.356			$\leq$ 10	PASS
	dBm/MHz	8.032			$\leq$ 10	PASS
E.I.R.P.	dBm/MHz	12.03			< 12.14	PASS
Peak Antenna Gain (Chain0)	dBi	4.00			-----	-----
Tested Circuit Insertion Loss (Chain0)	dB	10.50			-----	-----
Tested Circuit Insertion Loss (RX_Chain0)	dB	0.50			-----	-----
Interference Prevention Function	----	PASS	PASS	PASS	-----	PASS
802.11g	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	-----	-----
Channel Number	Ch.	1	7	13	-----	-----
Declaration Output Power	mW/MHz	2.961			$\leq$ 10	PASS
	dBm/MHz	4.71			$\leq$ 10	PASS
E.I.R.P.	dBm/MHz	8.71			< 12.14	PASS
Peak Antenna Gain (Chain0)	dBi	4.00			-----	-----
Tested Circuit Insertion Loss (Chain0)	dB	10.50			-----	-----
Tested Circuit Insertion Loss (RX_Chain0)	dB	0.50			-----	-----
Interference Prevention Function	----	PASS	PASS	PASS	-----	PASS

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802.11n_20MHz	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
Declaration Output Power	mW/MHz	1.617			≤ 10	PASS
	dBm/MHz	2.087			≤ 10	PASS
E.I.R.P.	dBm/MHz	6.09			< 12.14	PASS
Peak Antenna Gain (Chain0)	dBi	4.00			----	----
Tested Circuit Insertion Loss (Chain0)	dB	10.50			----	----
Tested Circuit Insertion Loss (RX_Chain0)	dB	0.50			----	----
Interference Prevention Function	----	PASS	PASS	PASS	----	PASS
802.11n_40MHz	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2422	2442	2462	----	----
Channel Number	Ch.	3	7	11	----	----
Declaration Output Power	mW/MHz	0.881			≤ 5	PASS
	dBm/MHz	-0.550			≤ 6.99	PASS
E.I.R.P.	dBm/MHz	3.45			< 9.13	PASS
Peak Antenna Gain (Chain0)	dBi	4.00			----	----
Tested Circuit Insertion Loss (Chain0)	dB	10.50			----	----
Tested Circuit Insertion Loss (RX_Chain0)	dB	0.50			----	----
Interference Prevention Function	----	PASS	PASS	PASS	----	PASS

## Bluetooth for GFSK

Bluetooth for GFSK

				Limit	Result	Note	
Environment of Test Room	Temperature	°C	24.3		$5 \leq x \leq 35$	PASS	
	Humidity	%	50		$45 \leq x \leq 85$	PASS	
Peak Antenna Gain		dBi	4		----	----	
Number of hopping channel		----	79	20	----	----	
Declaration Output Power		mW/MHz	0.053	0.208	$\leq 3$ mW/MHz	PASS	
Declaration Output Power		dBm/MHz	-12.76	-6.82	$\leq 4.77$ dBm/MHz	PASS	
E.I.R.P.		dBm/MHz	-8.76	-2.82	$\leq 6.91$ dBm/MHz	PASS	
Tested Circuit Insertion Loss		dB	0.50	0.50	----	----	
Input Voltage		VDC	3.30		----	----	
Packet Type (Mode)		----	DH5		----	----	
Frequency equal to the transmission rate of the modulation signal		MHz	1		----	----	
Test Category		2.4GHz Band Wideband Low-Power Data Communication System (Bluetooth GFSK include AFH)					
The reason why test are performed only rated voltage							
When the input voltage to receiver RF circuit varies below $\pm 1\%$ as the input voltage from the external power supply to the receiver varies $\pm 10\%$ (excluding power supply).							



## Bluetooth for $\pi/4$ DQPSK

				Limit	Result	Note	
Environment of Test Room	Temperature	°C	24.3		$5 \leq x \leq 35$	PASS	
	Humidity	%	50		$45 \leq x \leq 85$	PASS	
Peak Antenna Gain		dBi	4		-----	-----	
Number of hopping channel		-----	79	20	-----	-----	
Declaration Output Power		mW/MHz	0.056	0.219	$\leq 3$ mW/MHz	PASS	
Declaration Output Power		dBm/MHz	-12.52	-6.60	$\leq 4.77$ dBm/MHz	PASS	
E.I.R.P.		dBm/MHz	-8.52	-2.60	$\leq 6.91$ dBm/MHz	PASS	
Tested Circuit Insertion Loss		dB	0.50	0.50	-----	-----	
Input Voltage		VDC	3.30		-----	-----	
Packet Type (Mode)		-----	2DH5		-----	-----	
Frequency equal to the transmission rate of the modulation signal		MHz	1		-----	-----	
Test Category		2.4GHz Band Wideband Low-Power Data Communication System (Bluetooth $\pi/4$ -DQPSK include AFH)					
The reason why test are performed only rated voltage							
When the input voltage to receiver RF circuit varies below $\pm 1\%$ as the input voltage from the external power supply to the receiver varies $\pm 10\%$ (excluding power supply).							

## Bluetooth for 8DPSK

				Limit	Result	Note	
Environment of Test Room	Temperature	°C	24.3		$5 \leq x \leq 35$	PASS	
	Humidity	%	50		$45 \leq x \leq 85$	PASS	
Peak Antenna Gain		dBi	4		-----	-----	
Number of hopping channel		-----	79	20	-----	-----	
Declaration Output Power		mW/MHz	0.051	0.197	$\leq 3$ mW/MHz	PASS	
Declaration Output Power		dBm/MHz	-12.92	-7.06	$\leq 4.77$ dBm/MHz	PASS	
E.I.R.P.		dBm/MHz	-8.92	-3.06	$\leq 6.91$ dBm/MHz	PASS	
Tested Circuit Insertion Loss		dB	0.50	0.50	-----	-----	
Input Voltage		VDC	3.30		-----	-----	
Packet Type (Mode)		-----	3DH5		-----	-----	
Frequency equal to the transmission rate of the modulation signal		MHz	1		-----	-----	
Test Category		2.4GHz Band Wideband Low-Power Data Communication System (Bluetooth 8DPSK include AFH)					
The reason why test are performed only rated voltage							
When the input voltage to receiver RF circuit varies below ± 1% as the input voltage from the external power supply to the receiver varies ± 10% (excluding power supply).							



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### BLE 1M

Environment of Test Room	Temperature	24.8~25.2	°C
	Humidity	52~60	%

Peak Antenna Gain	4	dBi
Declaration Output Power	6.331	mW
Declaration Output Power	8.015	dBm
<b>E.I.R.P.</b>	<b>12.015</b>	<b>dBm</b>
Input Voltage	3.3	VDC

### BLE 2M

Environment of Test Room	Temperature	24.8~25.2	°C
	Humidity	52~60	%

Peak Antenna Gain	4	dBi
Declaration Output Power	6.039	mW
Declaration Output Power	7.810	dBm
<b>E.I.R.P.</b>	<b>11.810</b>	<b>dBm</b>
Input Voltage	3.3	VDC

Voltage Fluctuation Test	Normal Voltage	High Voltage + 10% of Normal Voltage	Low Voltage - 10% of Normal Voltage
Input AC Power	3.3	3.63	2.97
Output DC Power	3.3	3.3	3.3
Voltage Variation (%)	0	0	0
<b>Note: Voltage Variation (%) = (Output High or Low Voltage - Output Normal Voltage)/Output Normal Voltage X 100</b>			
During the input supply voltage to the EUT from the external power source is varied by +/- 10%, if output voltage had been confirmed that the fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than +/- 1%. Exempt extremely high and low supply voltage condition tests, EUT only operated in normal voltage to test all regulations.			

## 4.2 DESCRIPTION OF TEST MODES

The EUT (model: PIXI-IW416) had been tested under operating condition. Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

The worst case data rate is determined as the data rate with highest output power. IEEE802.11b (CH1~13): Channel Low, Channel Mid and Channel High with 11Mbps data rate were chosen for full testing.

IEEE802.11g (CH1~13): Channel Low, Channel Mid and Channel High with 6Mbps data rate were chosen for full testing.

IEEE802.11n HT 20MHz (CH1~13) : Channel Low, Channel Mid and Channel High with 6.5Mbps data rate were chosen for full testing.

IEEE802.11n HT40 (CH3~11): Channel Low, Channel Mid and Channel High with 13.5Mbps data rate were chosen for full testing.

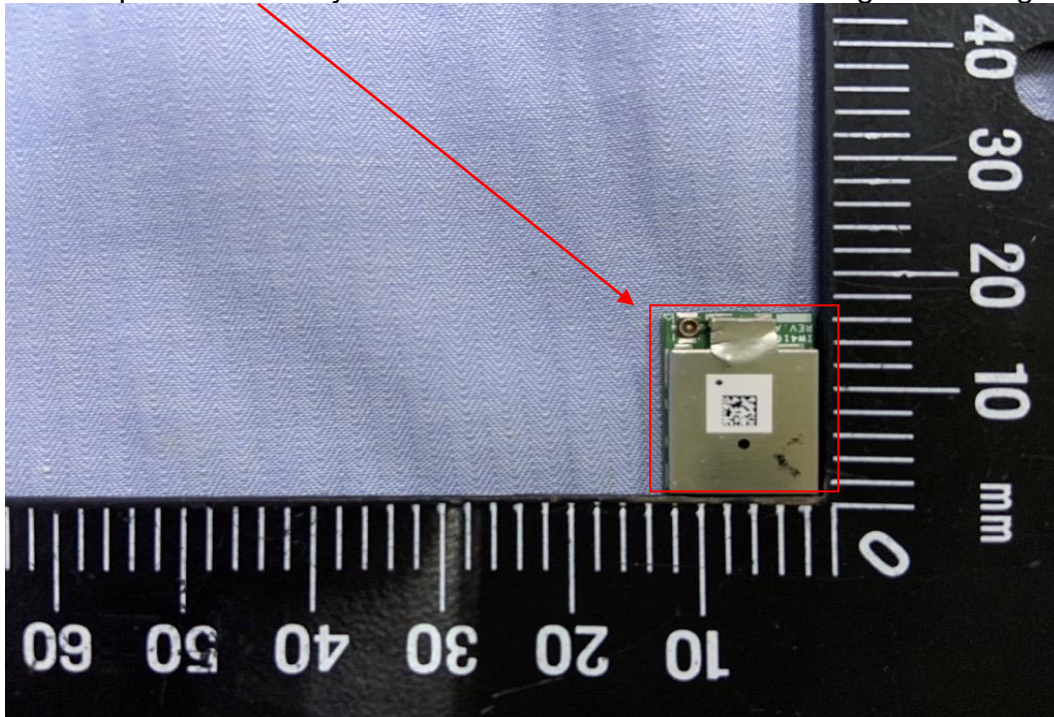
Bluetooth & BLE: Measurement was conducted by the following test method.

## 4.3 TESTING APPLIED STARDARDS

MIC Notice No.88 Appendix No.43  
MIC Certification Rule, Article 2 Paragraph 1 Item 19  
ARIB STD-66

#### 4.4 RF SHIELDING METHOD

The RF part is not easily accessible because the EUT is using a shielding case as below.



#### 4.5 SETUP OF EQUIPMENT UNDER TEST

##### Setup Diagram

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

##### Support Equipment

No	Equipment	Trade Name	Model	Serial No.	FCC ID
1.	NB(G)	Lenovo	T460P	N/A	N/A

## 5. INSTRUMENT AND CALIBRATION

### 5.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 5.2 TEST AND MEASUREMENT EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and other equivalent standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective manual.

#### Equipment Used for Emission Measurement

Conducted Emission Test Site								
Name of Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal Due	Calibration Lab.	Accreditation Organization of the Cal. Lab	Calibration Method
SG	Keysight	E8257C	US42340383	2022-06-29	2023-06-28	ETC	TAF	c
Power Meter	Anritsu	ML2496A	2136002	2022-11-24	2023-11-23	ETC	TAF	c
EXA Signal Analyzer	Keysight	N9010B	MY60242460	2023-02-02	2024-02-01	ETC	TAF	c
Power Sensor	Anritsu	MA2411B	1911386	2022-08-08	2023-08-07	ETC	TAF	c
Power Sensor	Anritsu	MA2411B	1911387	2022-08-08	2023-08-07	ETC	TAF	c
Software	Radio Test Software Ver. 21							

#### Remark:

1. Each piece of equipment is scheduled for calibration once a year.
2. Calibration Method:
  - a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1)
  - b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)
  - c) Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1)
  - d) Calibration conducted by using measuring instruments and other equipment listed in the right column of Table No. 3 attached hereto, which shall have been given any of calibration, etc. listed above from a) to c)

### 5.3 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 6 is based on such expansion factors.

**Table: Maximum measurement uncertainty**

PARAMETER	UNCERTAINTY
RF Output Power	$\pm 1.871$ dB
Frequency Tolerance	$\pm 0.03$ ppm
Unwanted Emission strength	$\pm 1.875$ dB
Occupied Bandwidth (99%)	$\pm 1.9$ %
Spread-Spectrum Bandwidth (90%)	$\pm 1.9$ %
Limitation of collateral emissions of receiver	$\pm 1.875$ dB

**Remark:**

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.



6. TEST RESULT FOR IEEE 802.11b (CH1~CH13)

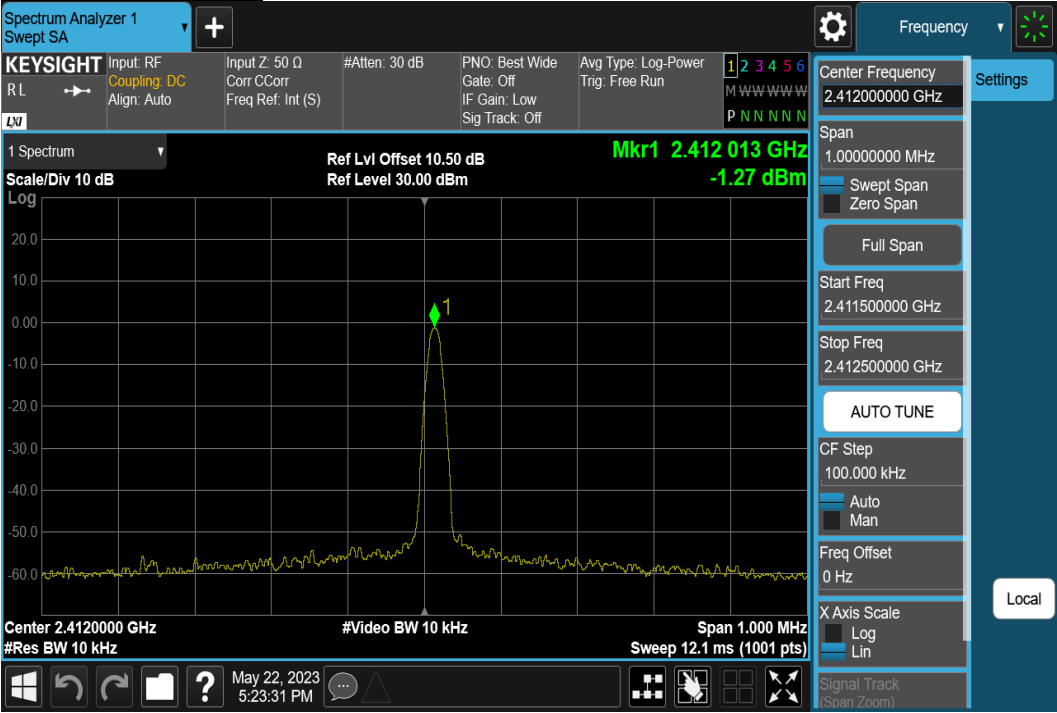
6.1 FREQUENCY ERROR

TEST RESULT

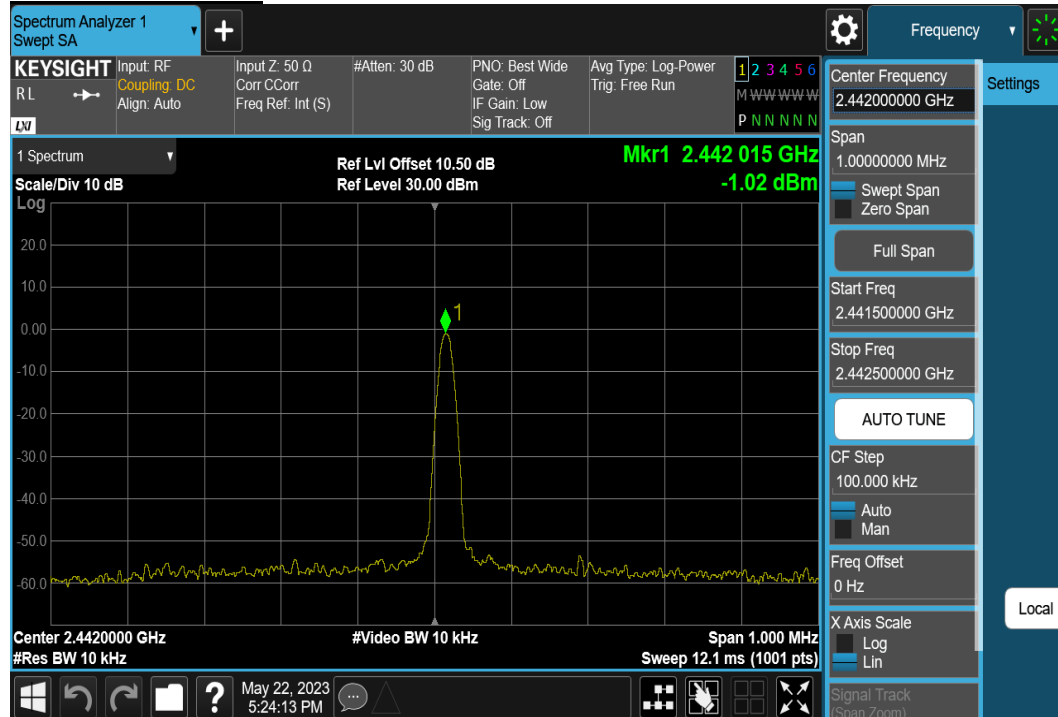
Frequency Tolerance						
802.11b	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
Reading Frequency (Chain0)	MHz	2412.013	2442.015	2472.016	≥ -50.00	PASS
Frequency Tolerance (Chain0)	ppm	5.38972	6.14251	6.47249	≤ 50.00	

TEST PLOTS

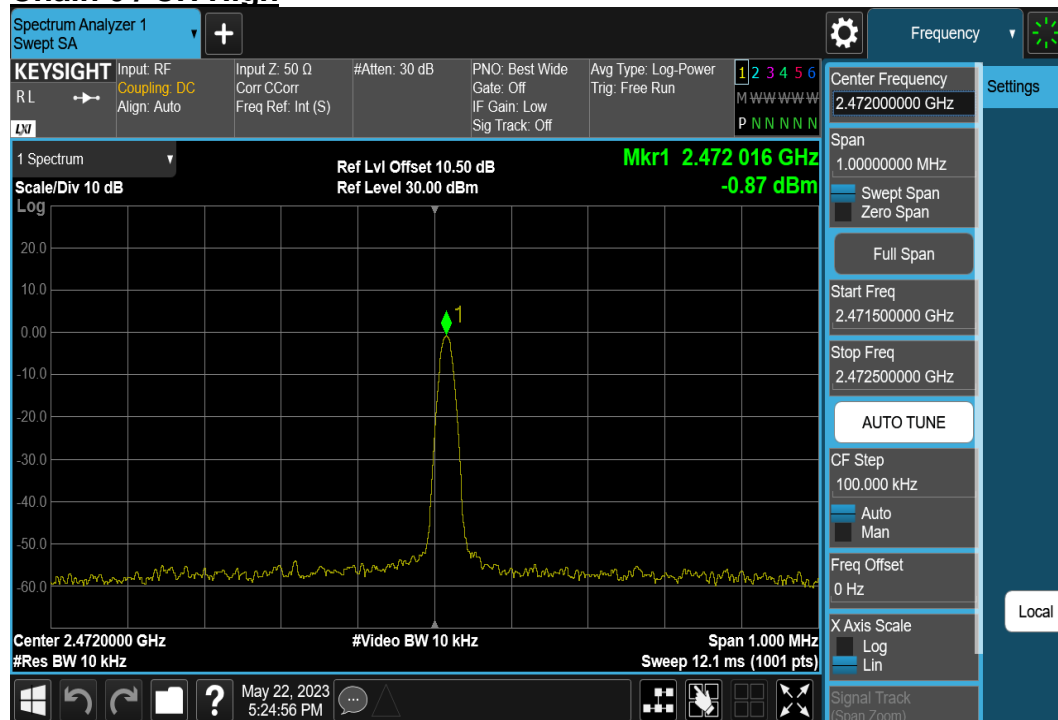
Chain 0 / CH Low



## Chain 0 / CH Mid



## Chain 0 / CH High





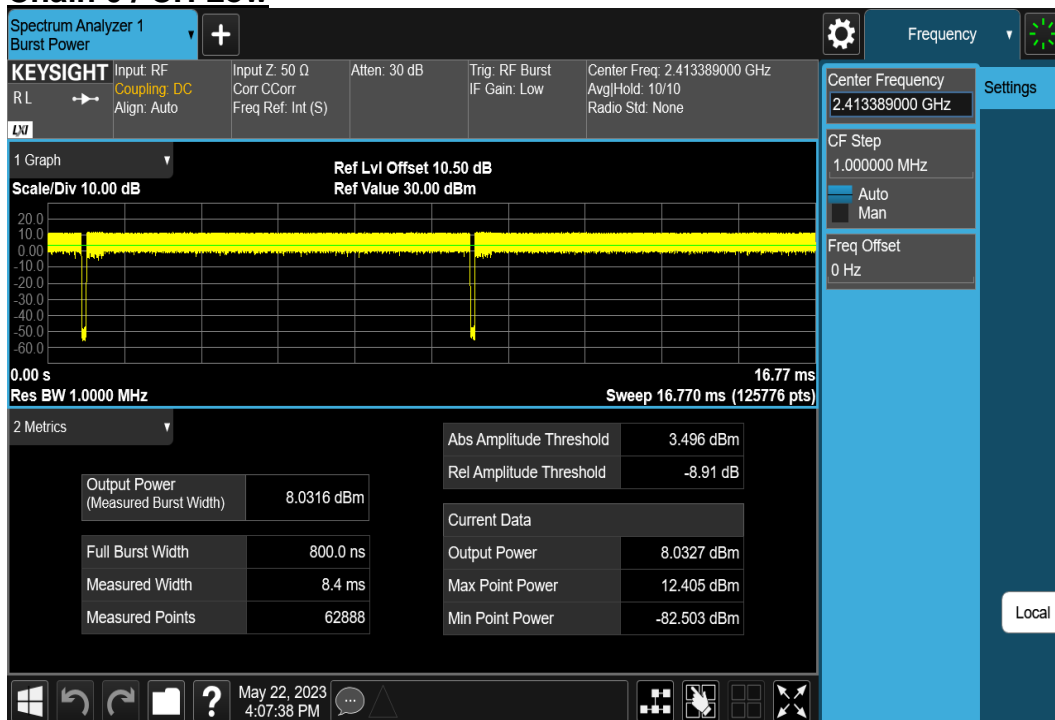
## 6.2 RF OUTPUT POWER

### TEST RESULT

RF Output Power						
802.11b	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
RF Output Power (Chain0)	mW/MHz	6.356	5.418	5.594	≤ 10.000	PASS
	dBm/MHz	8.0316	7.3384	7.4772	≤ 10.000	
RF Output Power Tolerance	%	-0.01	-14.76	-11.99	≤ 20	PASS
					≥ -80	

### TEST PLOTS

#### Chain 0 / CH Low





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## Chain 0 / CH Mid



## Chain 0 / CH High





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## 6.3 UNWANTED EMISSION STRENGTH

### TEST RESULT

Unwanted Emission Strength (Chain 0&1)						
802.11b	unit	-----	-----	-----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	-----	-----
Channel Number	Ch.	1	7	13	-----	-----
Under 2387MHz (Chain0)	μW/MHz	0.1995	0.2046	0.3690	≤ 2.50	PASS
	MHz	2159.50	2375.30	105.90	-----	
2387 ~ 2400MHz (Chain0)	μW/MHz	0.4335	0.1702	0.1486	≤ 25.00	PASS
	MHz	2398.50	2395.52	2387.65	-----	
2483.5 ~ 2496.5MHz (Chain0)	μW/MHz	0.1567	0.2070	0.4416	≤ 25.00	PASS
	MHz	2490.95	2487.17	2483.50	-----	
2496.5MHz ~ 12.5GHz (Chain0)	μW/MHz	0.3381	0.2979	0.2685	≤ 2.50	PASS
	MHz	3618.00	3785.00	3707.00	-----	



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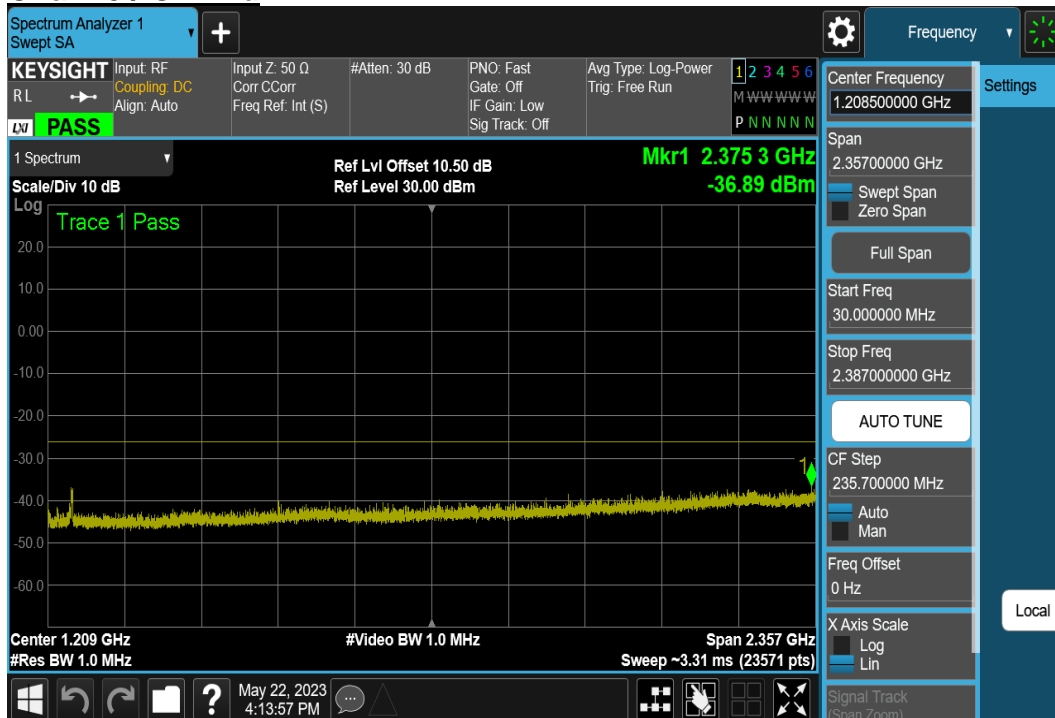
## Under 2387MHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low



#### Chain 0 / CH Mid





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Chain 0 / CH High





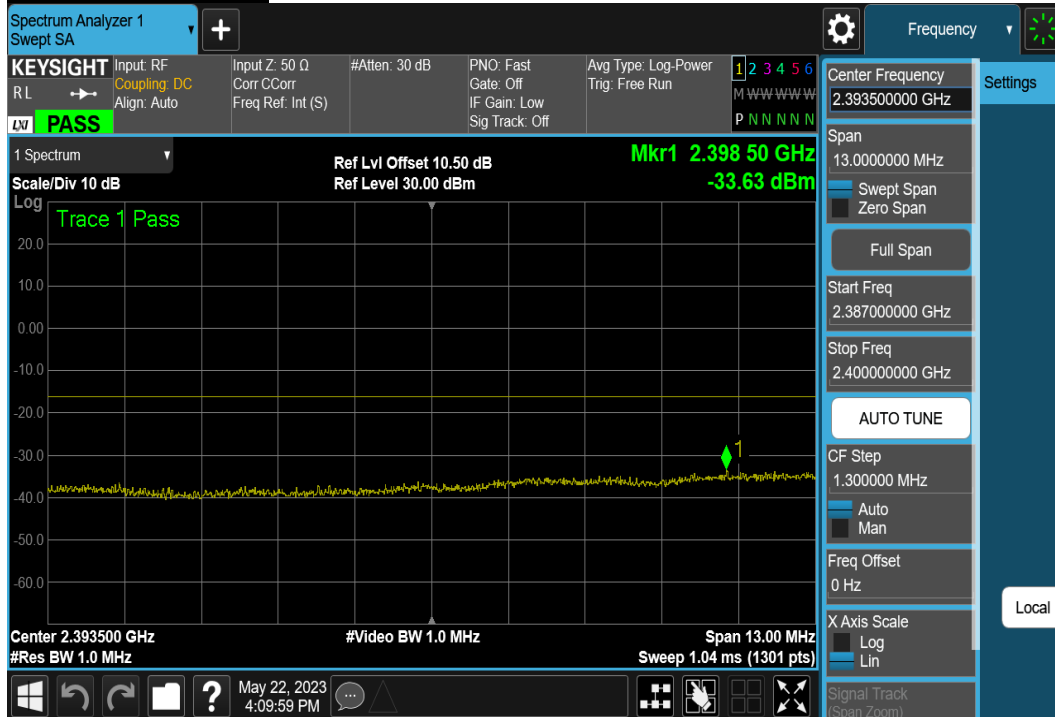
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## 2387 ~ 2400MHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low

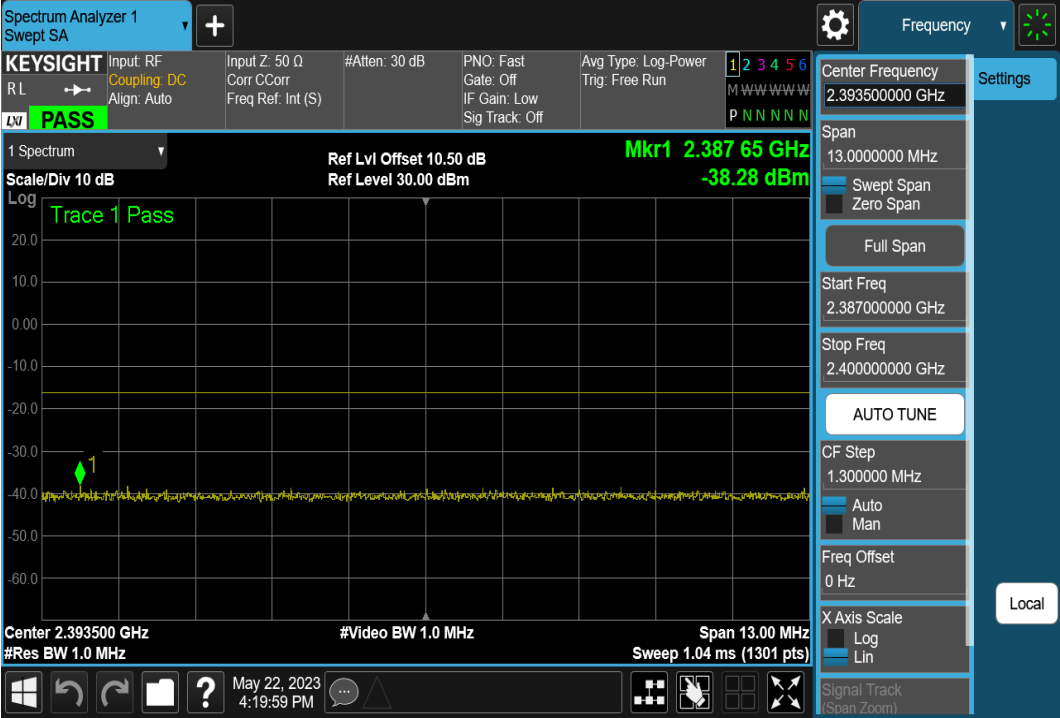


#### Chain 0 / CH Mid





Chain 0 / CH High





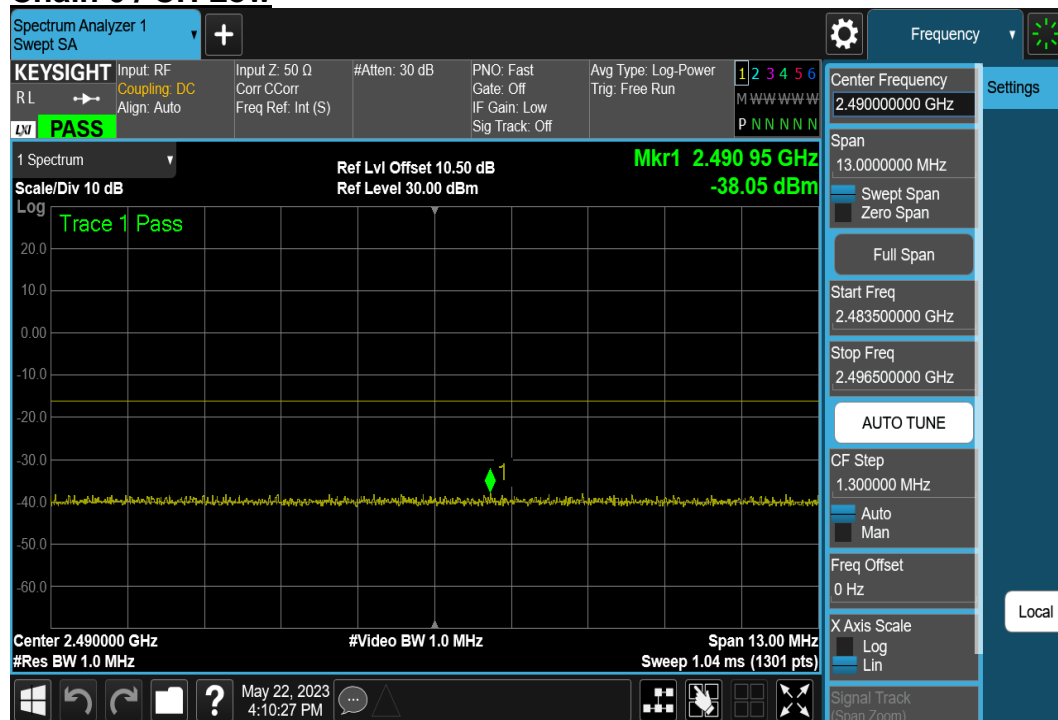
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2483.5 ~ 2496.5MHz (Chain0)

## TEST PLOTS

### Chain 0 / CH Low



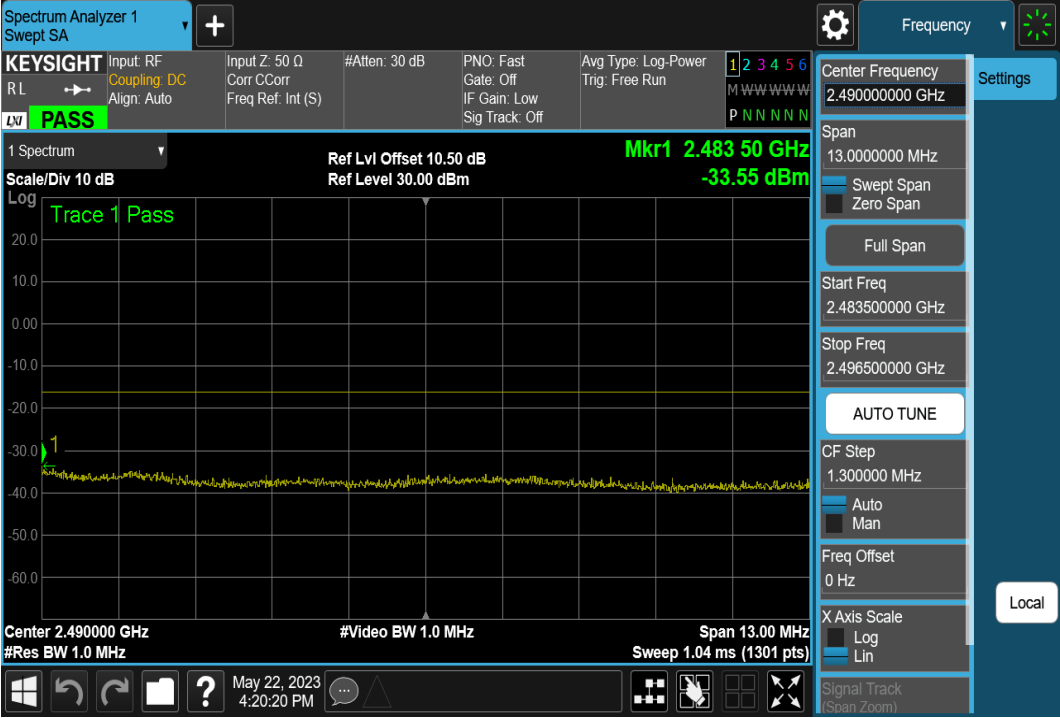
### Chain 0 / CH Mid







Chain 0 / CH High





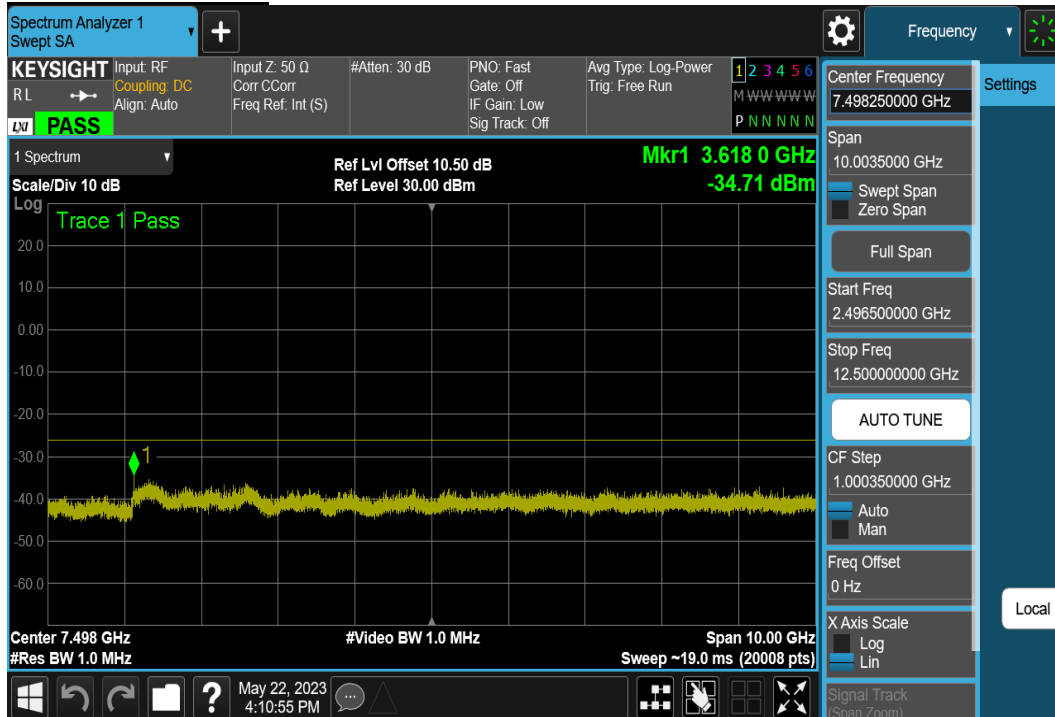
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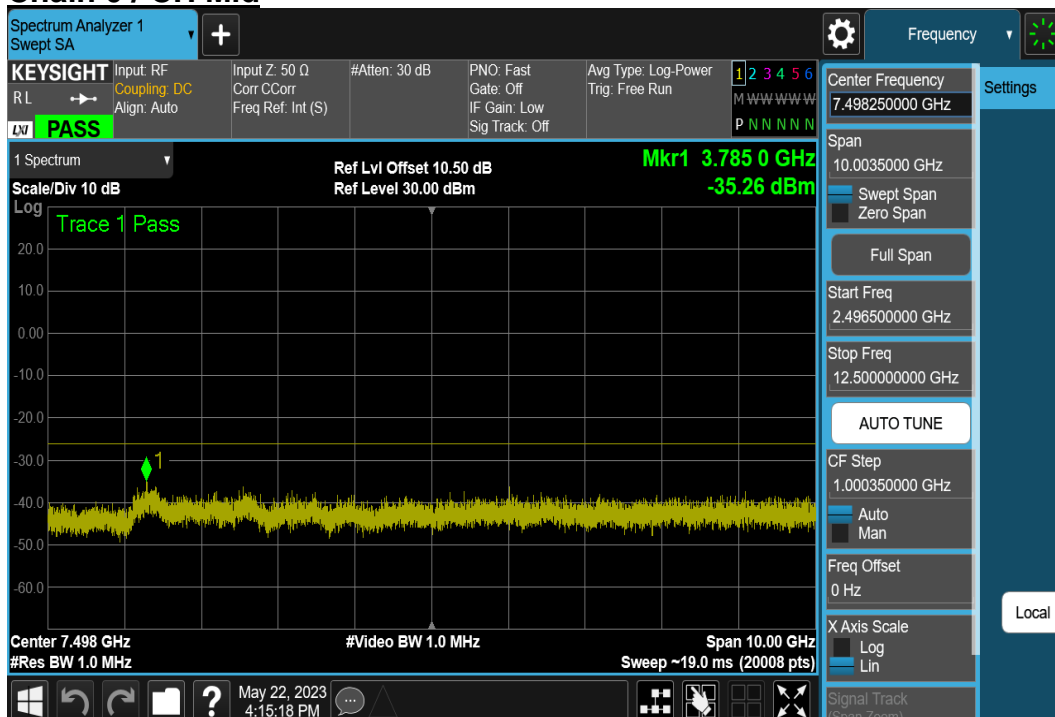
2496.5MHz ~ 12.5GHz (Chain0)

## TEST PLOTS

### Chain 0 / CH Low

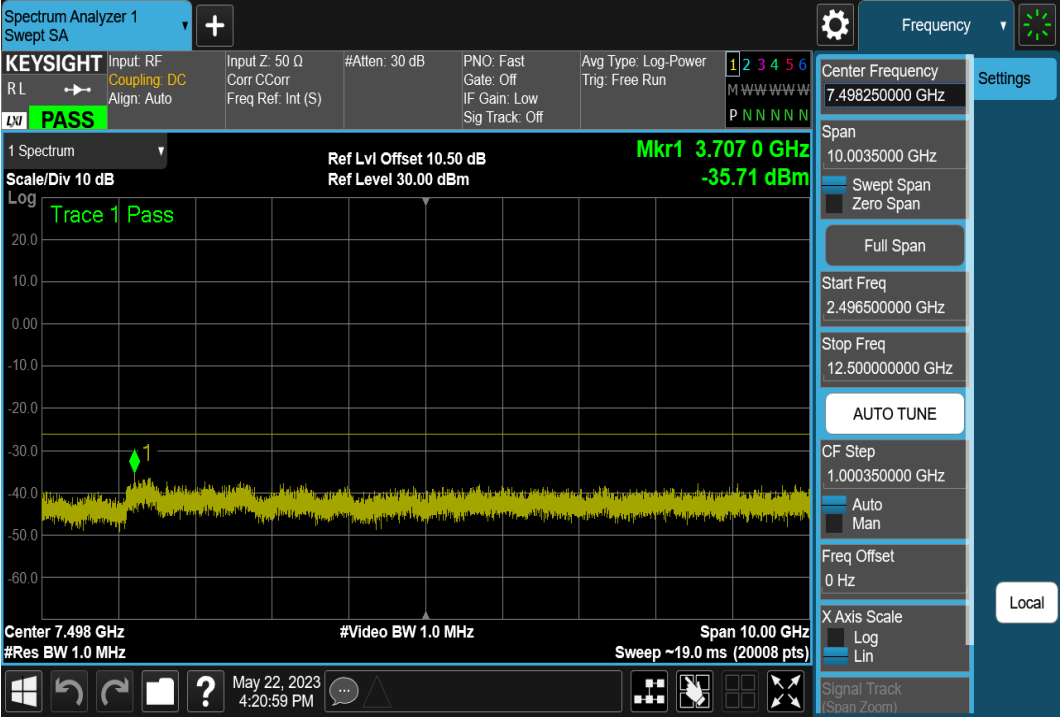


### Chain 0 / CH Mid





Chain 0 / CH High





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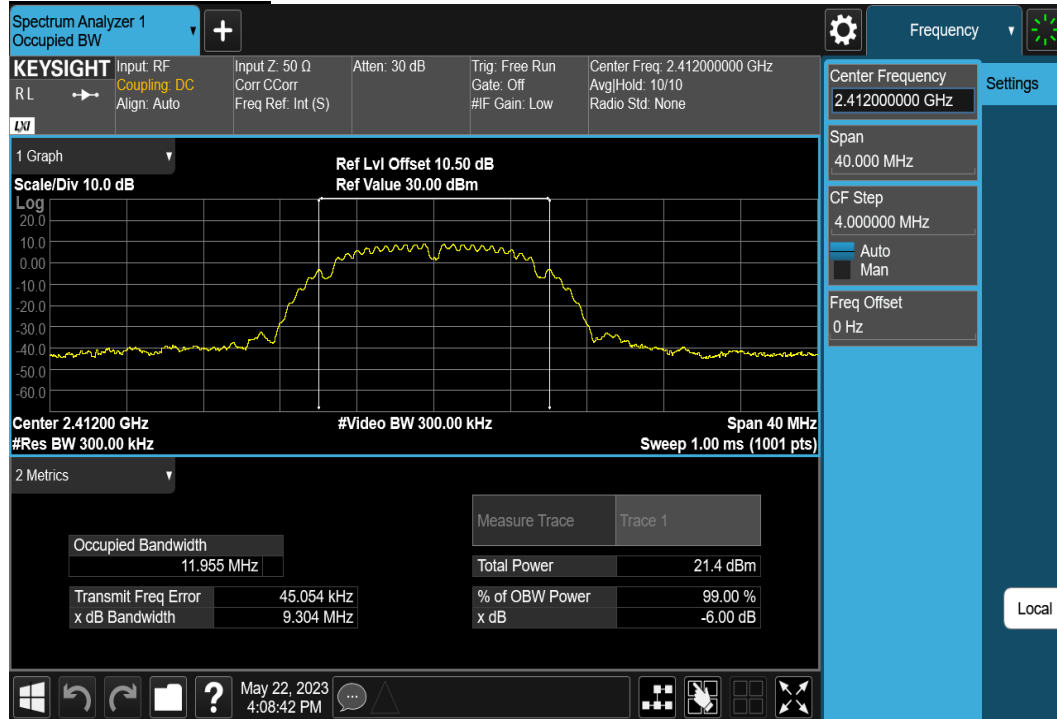
6.4 OCCUPIED BANDWIDTH (99%)

TEST RESULT

Occupied Bandwidth						
802.11b	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
Occupied Bandwidth (Chain0)	MHz	11.955	11.969	11.981	≤ 26	PASS

## TEST PLOTS

### Chain 0 / CH Low

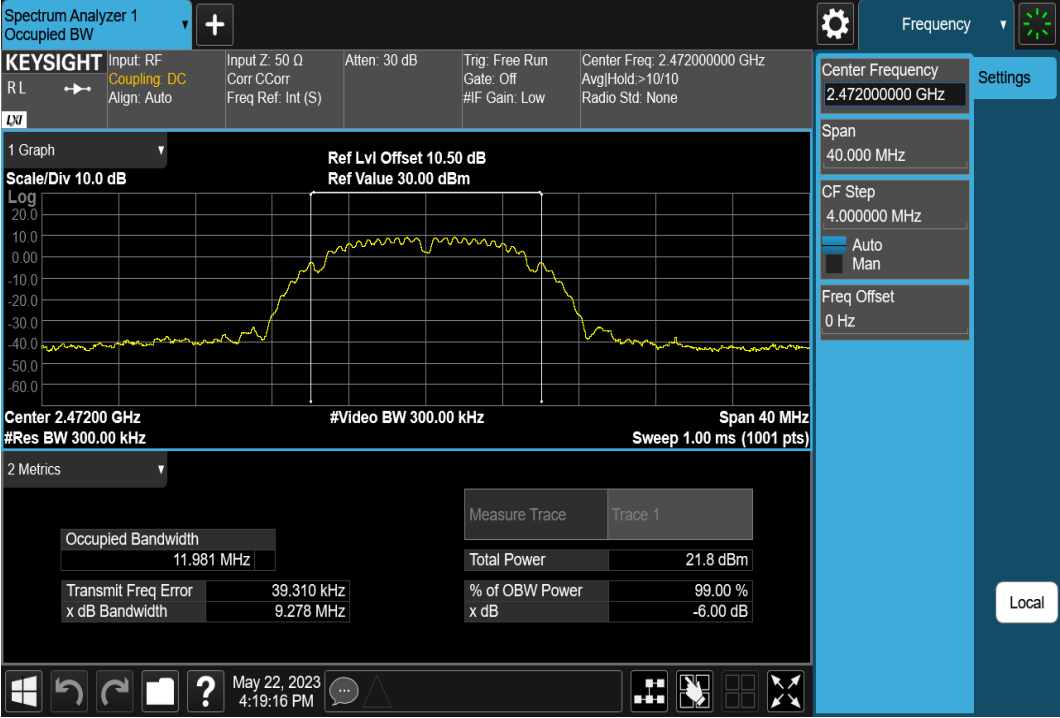


### Chain 0 / CH Mid





Chain 0 / CH High





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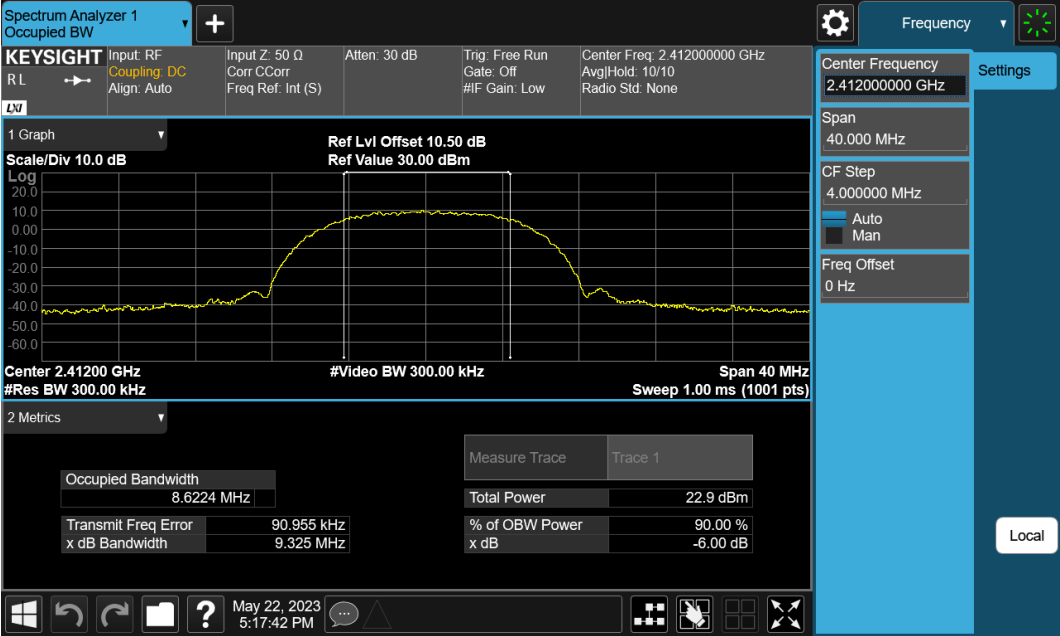
## 6.5 SPREAD-SPECTRUM BANDWIDTH (90%)

### TEST RESULT

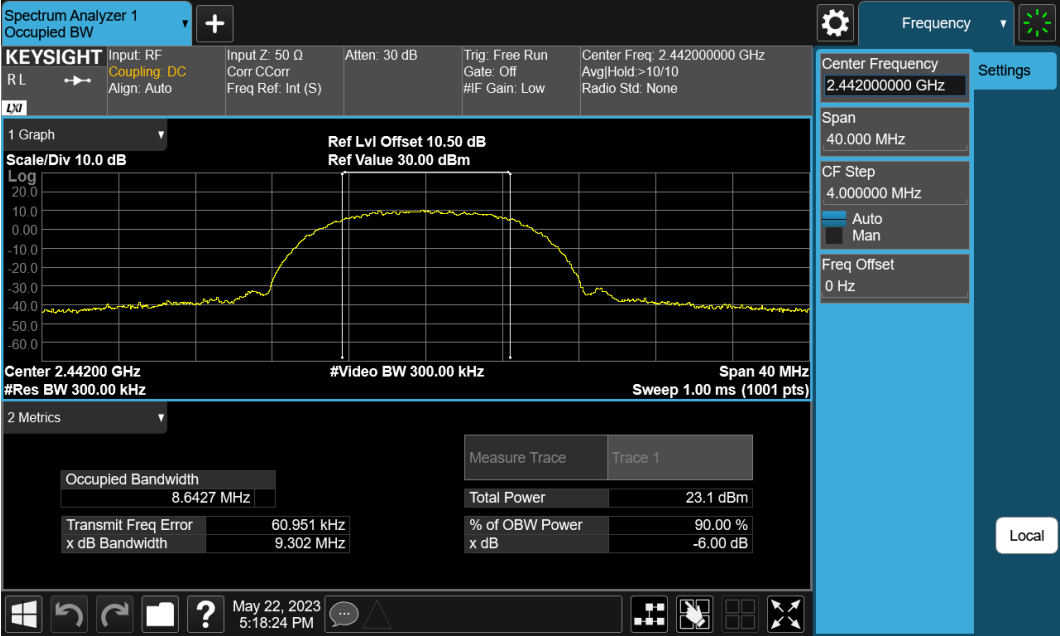
Spread Bandwidth & Spreading Factor						
802.11b	unit	-----	-----	-----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	-----	-----
Channel Number	Ch.	1	7	13	-----	-----
Spread Bandwidth (Chain0)_11 Mbps	MHz	8.62240	8.64270	8.62630	≥ 0.5	PASS
Spread Factor (Chain0)	-----	6.27	6.29	6.27	≥ 5.00	
Spread Factor =Spread Bandwidth / Symbol Rate(1.375Mbps)						



TEST PLOTS  
Chain 0 / CH Low



Chain 0 / CH Mid



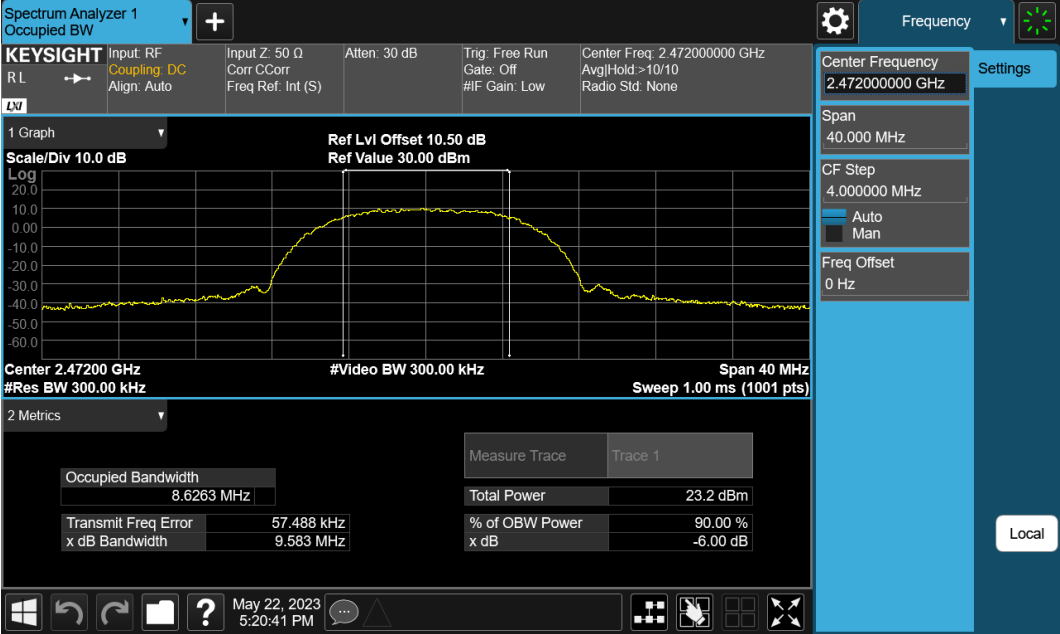




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Chain 0 / CH High





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## 6.6 LIMITATION OF COLLATERAL EMISSIONS OF RECEIVER

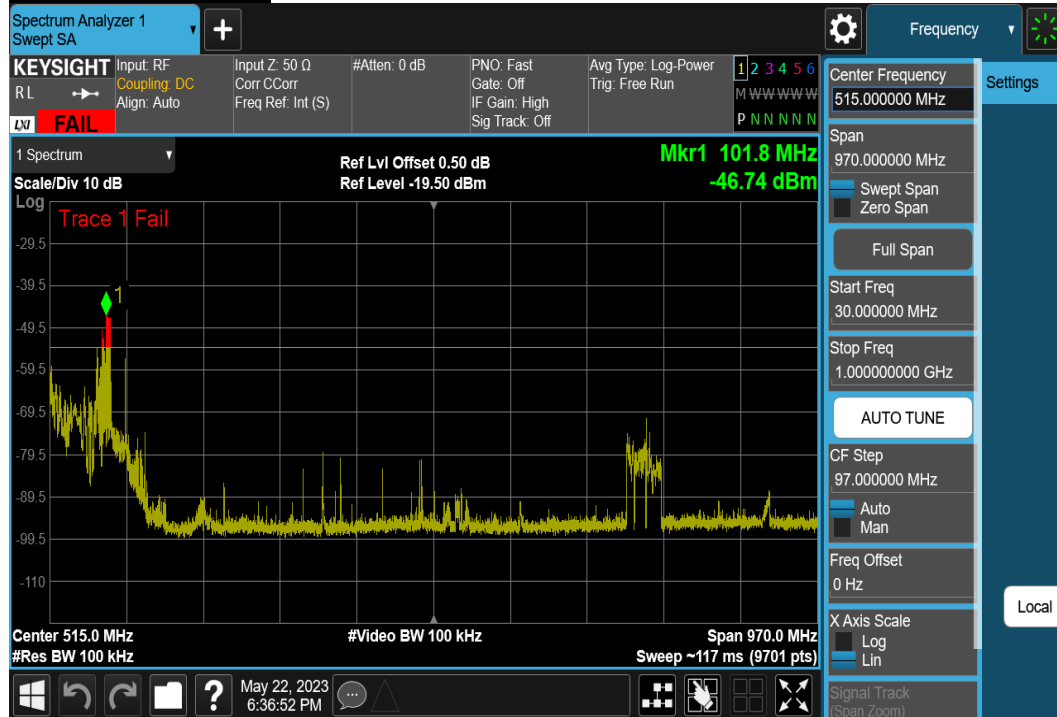
### TEST RESULT

Secondarily emitted radio wave strength						
802.11b	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
Under 1GHz (Chain0)	nW	1.387	2.014	0.764	≤ 4.00	PASS
	MHz	101.80	101.80	106.00	----	
1 - 12.5GHz (Chain0)	nW	0.044	0.081	0.177	≤ 20.00	PASS
	MHz	3283.00	2480.00	2426.00	----	

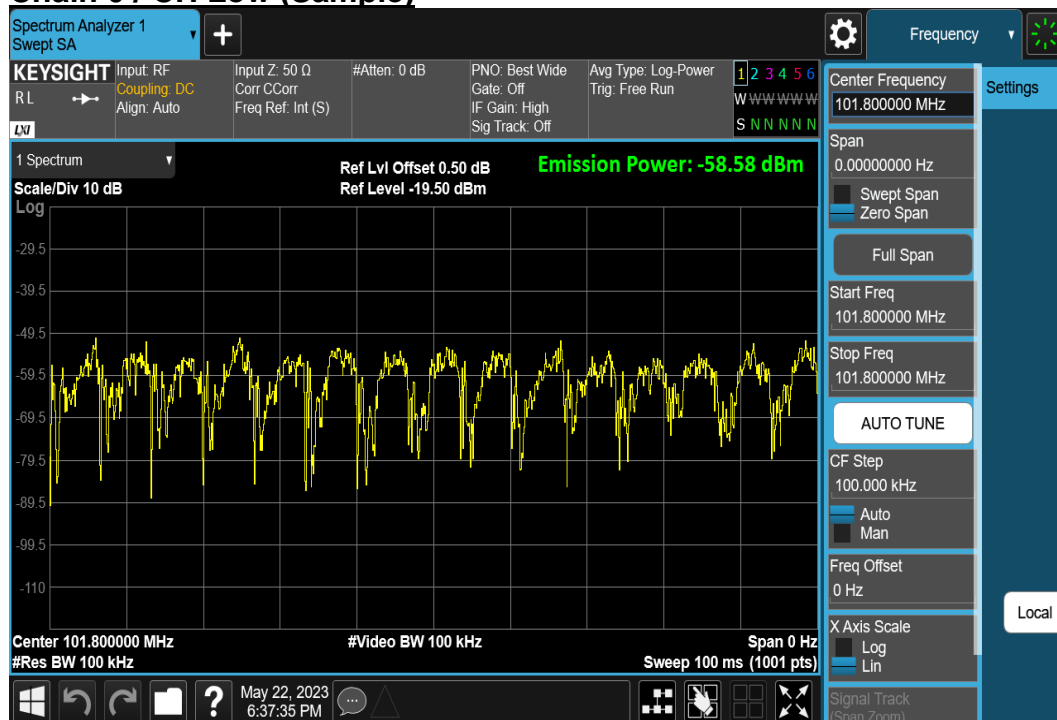
## Under 1GHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low



#### Chain 0 / CH Low (Sample)

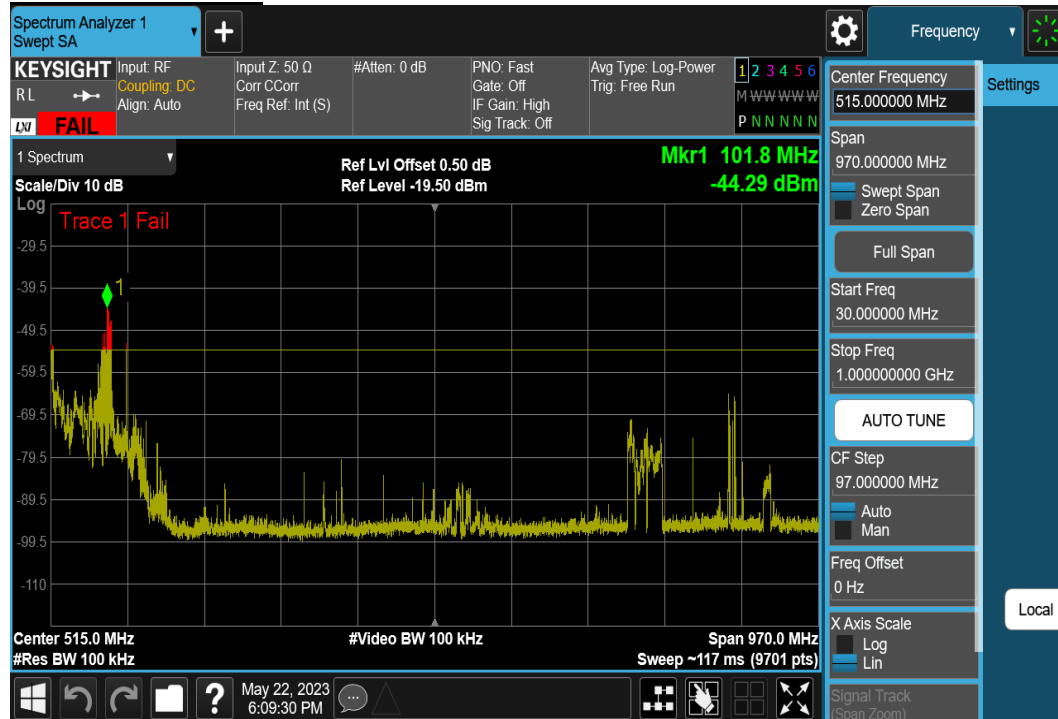




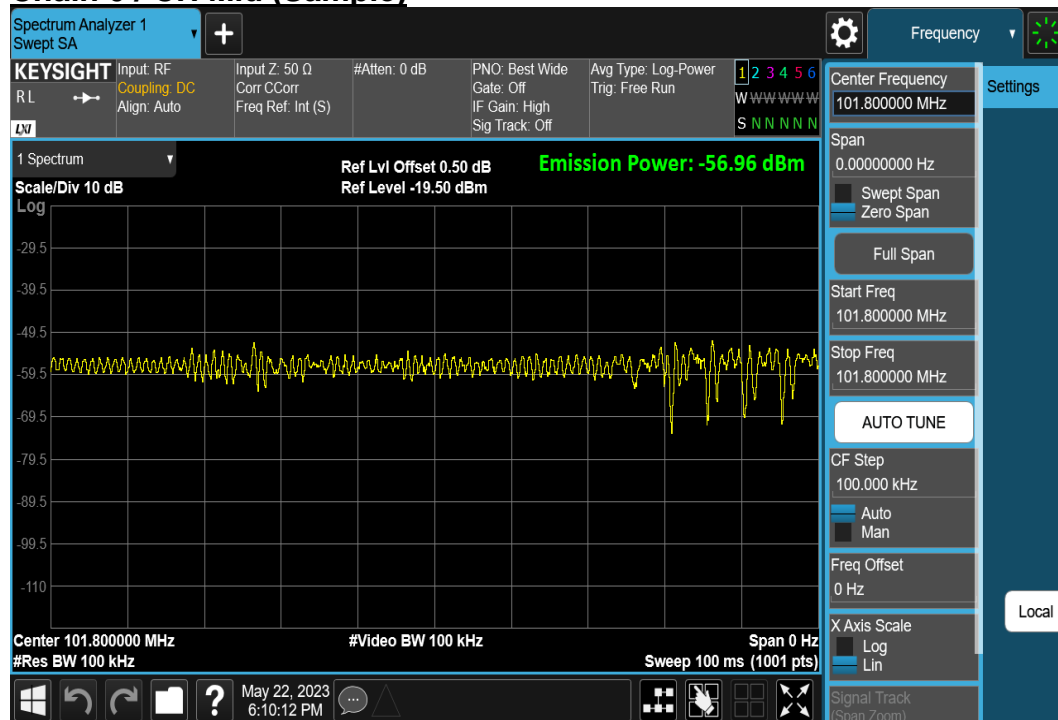
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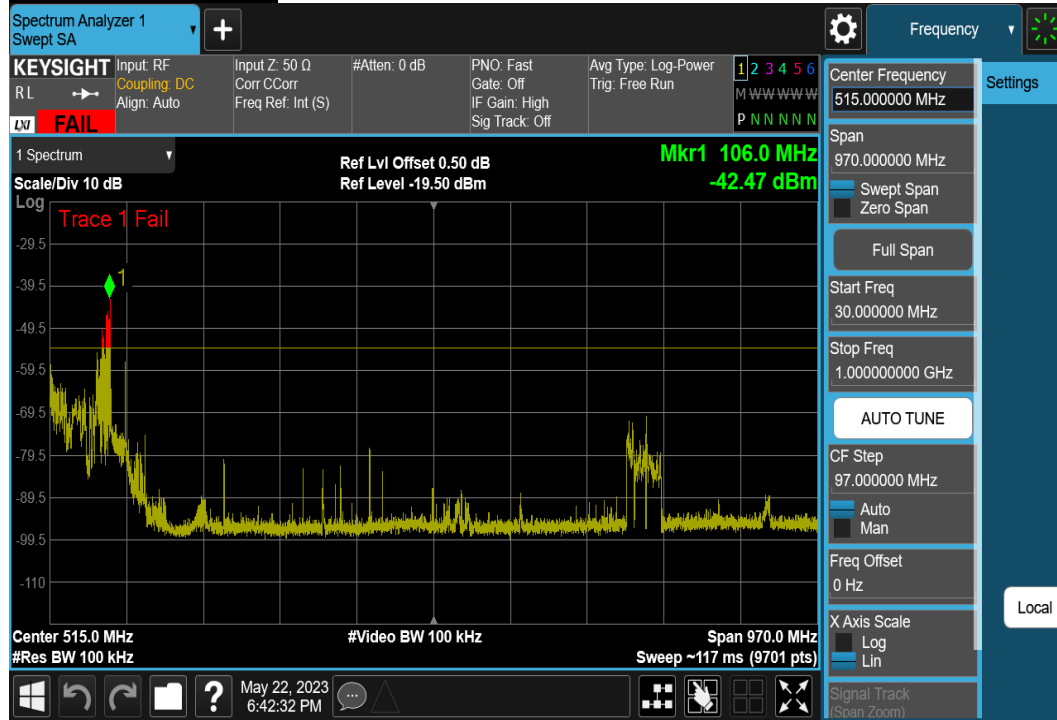
### Chain 0 / CH Mid



### Chain 0 / CH Mid (Sample)



### Chain 0 / CH High



### Chain 0 / CH High (Sample)





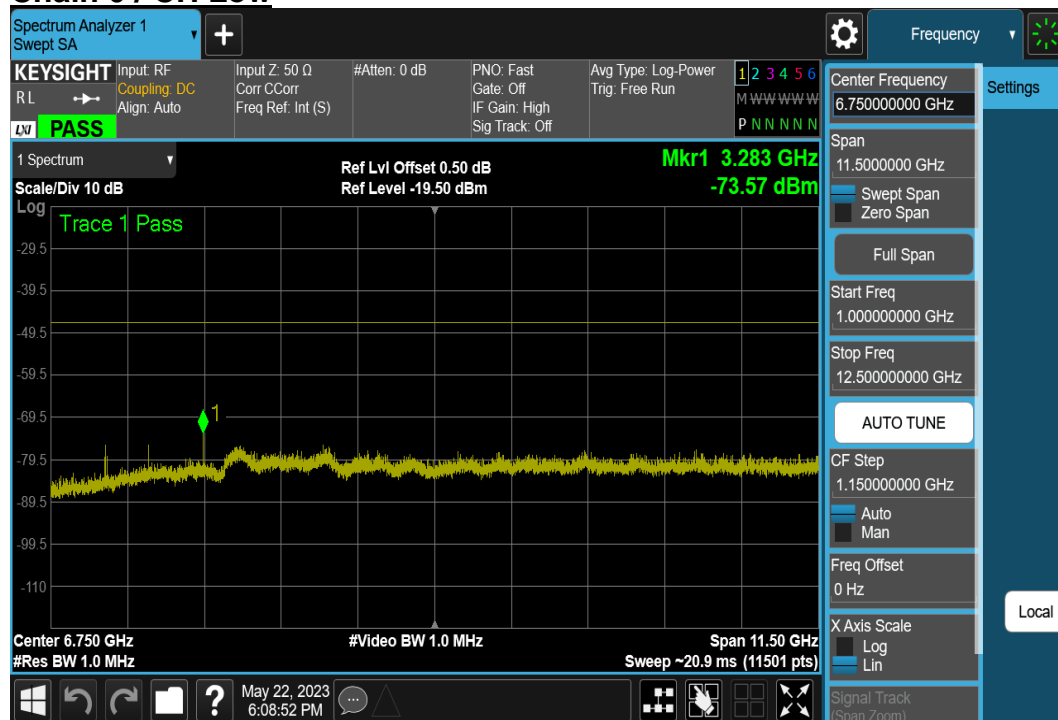
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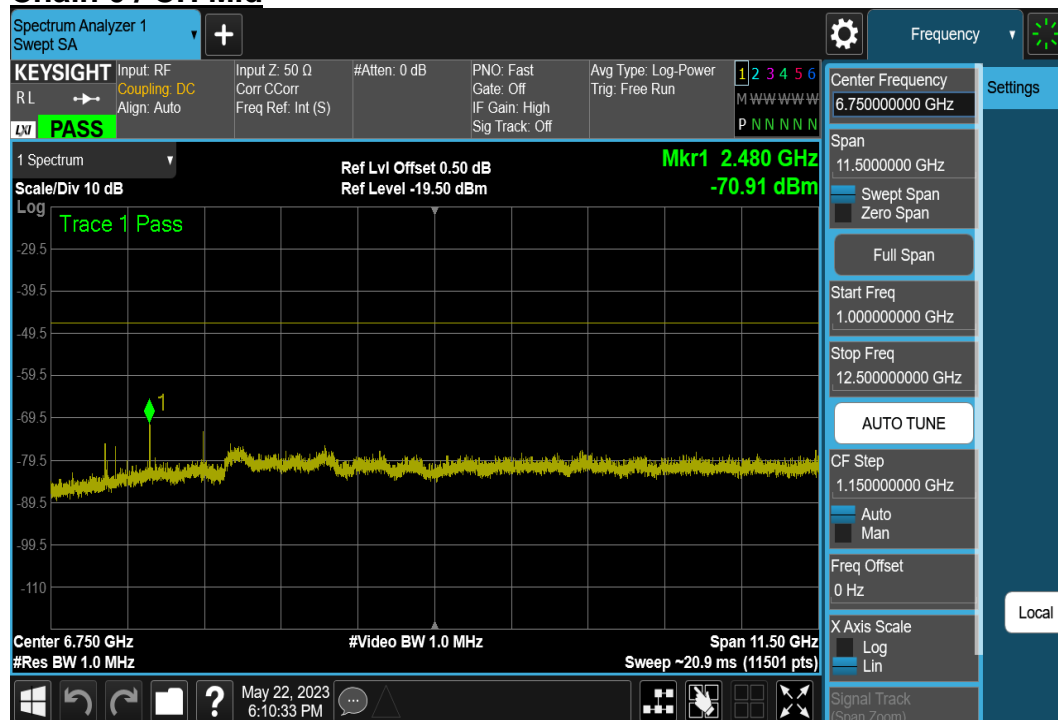
## 1 - 12.5GHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low

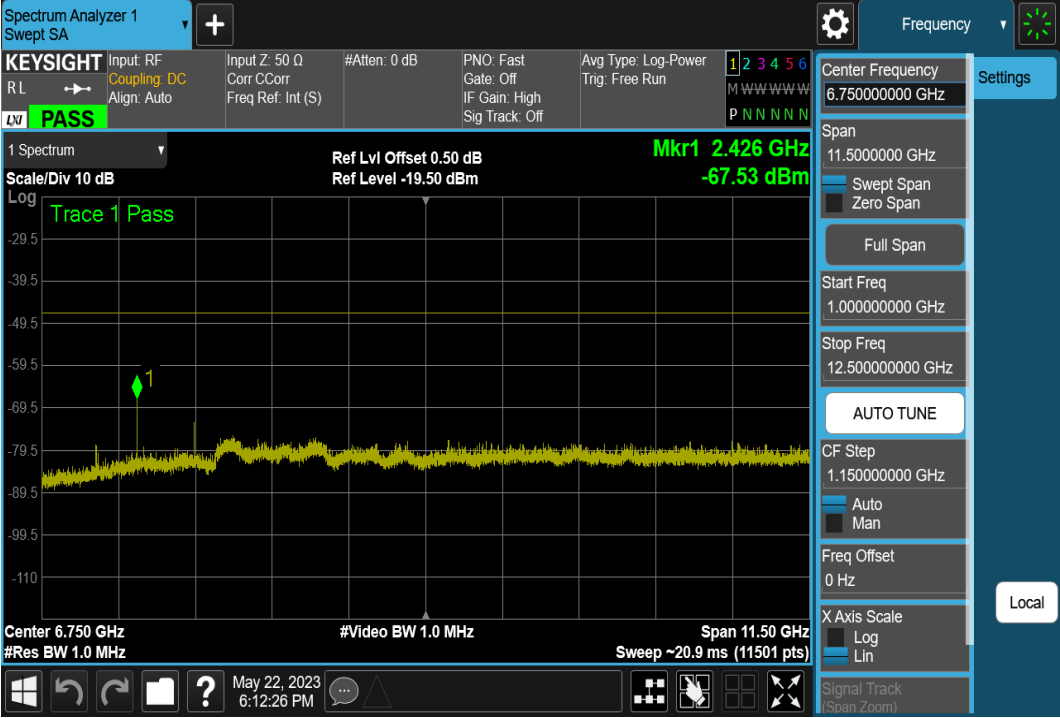


#### Chain 0 / CH Mid





Chain 0 / CH High



## 7. TEST RESULT FOR IEEE 802.11g (CH1~CH13)

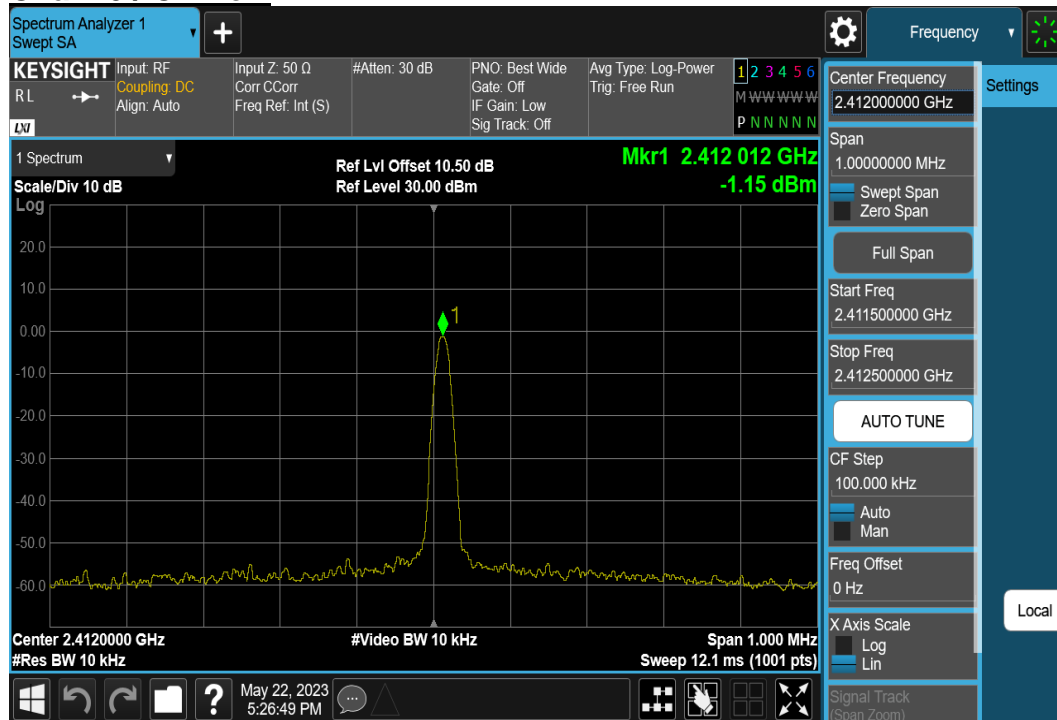
### 7.1 FREQUENCY ERROR

#### TEST RESULT

Frequency Tolerance						
802.11g	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
Reading Frequency (Chain0)	MHz	2412.012	2442.013	2472.015	$\geq$ -50.00	PASS
Frequency Tolerance (Chain0)	ppm	4.97512	5.32351	6.06796	$\leq$ 50.00	

#### TEST PLOTS

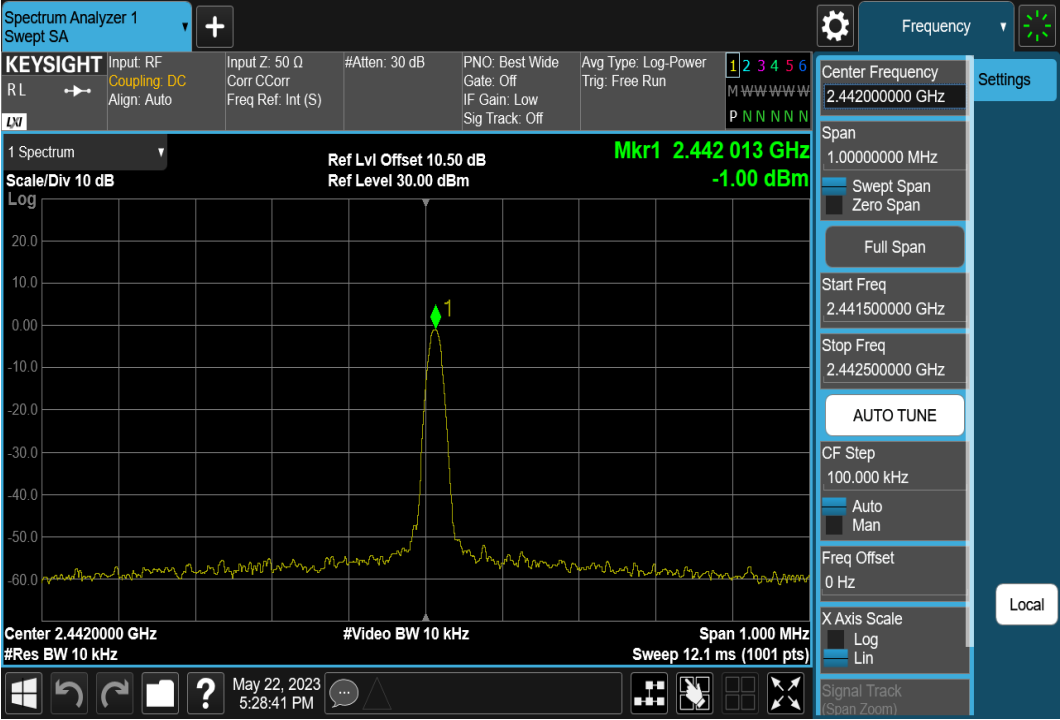
##### Chain 0 / CH Low



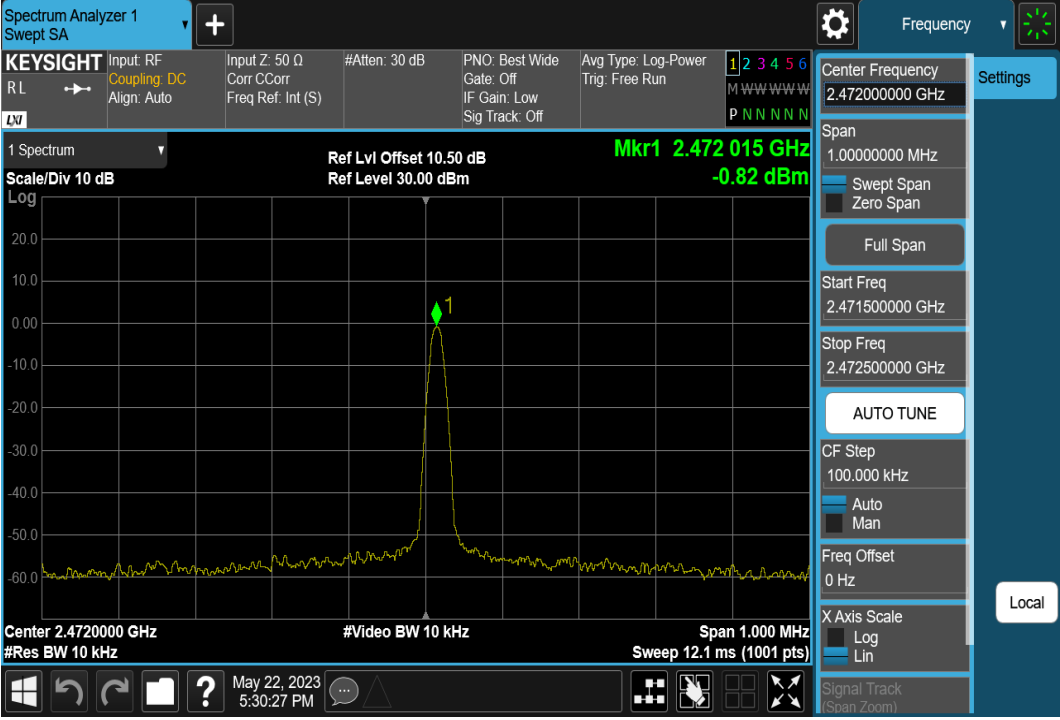




Chain 0 / CH Mid



Chain 0 / CH High



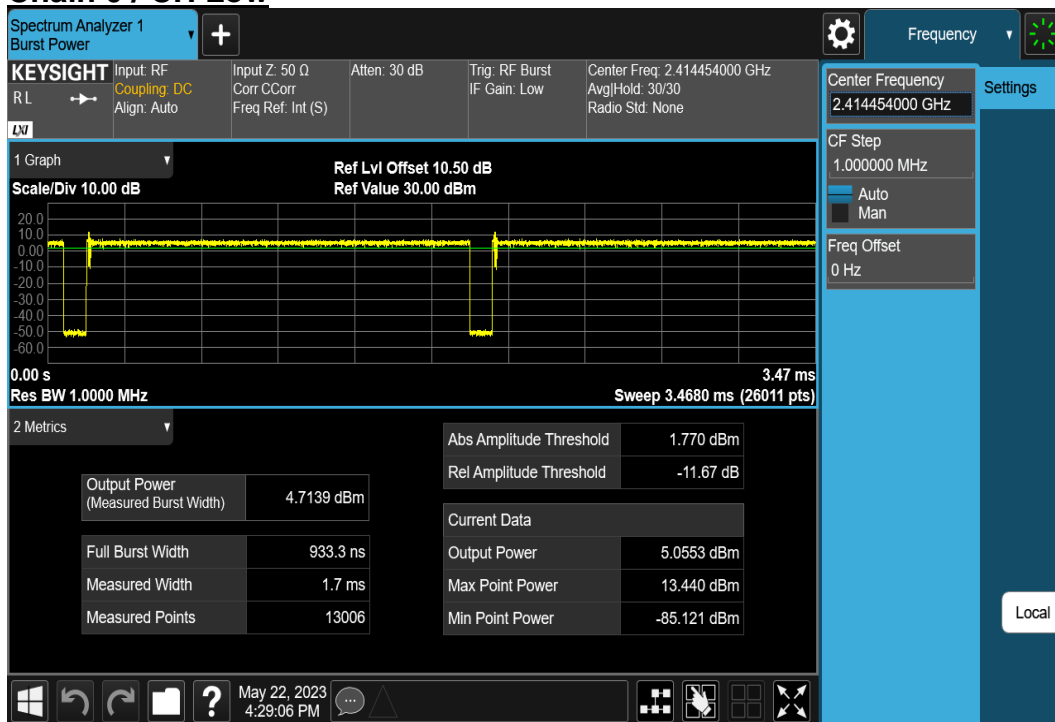
## 7.2 RF OUTPUT POWER

### TEST RESULT

RF Output Power						
802.11g	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
RF Output Power (Chain0)	mW/MHz	2.961	2.233	1.590	≤ 10.000	PASS
	dBm/MHz	4.7139	3.4892	2.0137	≤ 10.000	
RF Output Power Tolerance	%	-0.01	-24.58	-46.31	≤ 20	PASS
					≥ -80	

### TEST PLOTS

#### Chain 0 / CH Low

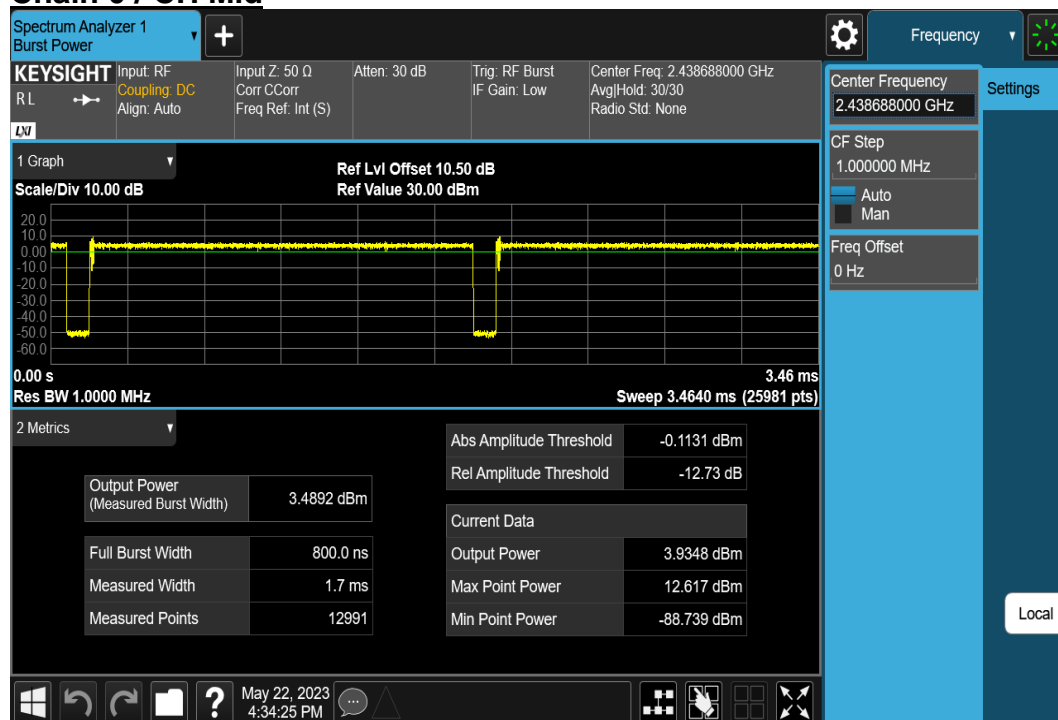




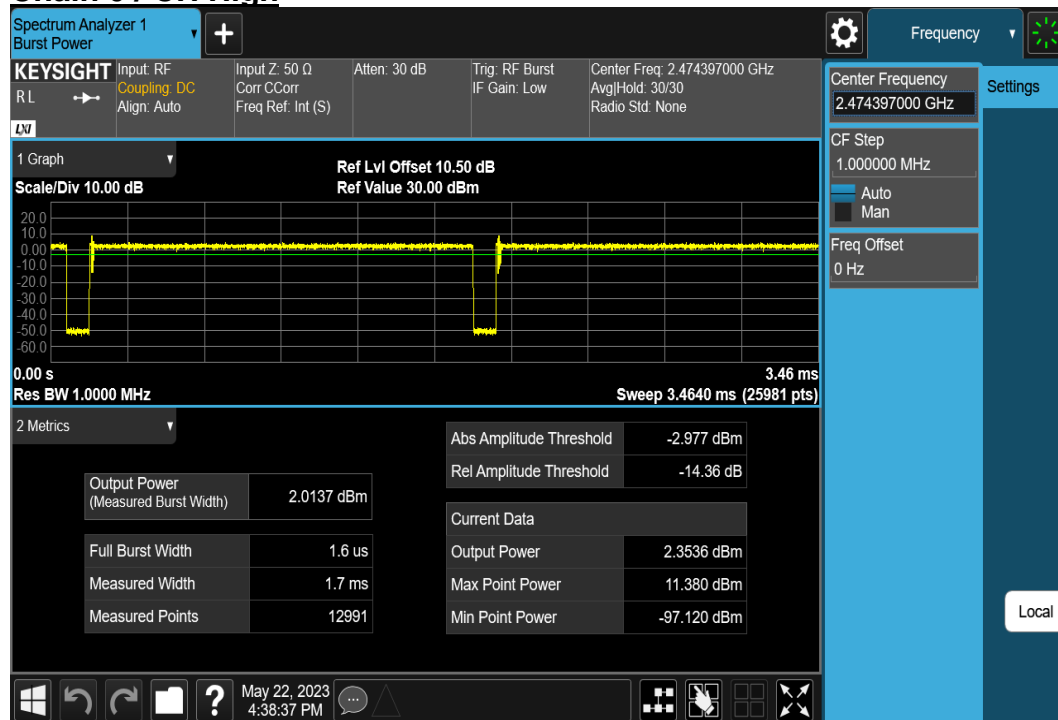
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## Chain 0 / CH Mid



## Chain 0 / CH High





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## 7.3 UNWANTED EMISSION STRENGTH

### TEST RESULT

Unwanted Emission Strength (Chain 0&1)						
802.11b	unit	-----	-----	-----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	-----	-----
Channel Number	Ch.	1	7	13	-----	-----
Under 2387MHz (Chain0)	μW/MHz	0.1995	0.2046	0.3690	≤ 2.50	PASS
	MHz	2159.50	2375.30	105.90	-----	
2387 ~ 2400MHz (Chain0)	μW/MHz	0.4335	0.1702	0.1486	≤ 25.00	PASS
	MHz	2398.50	2395.52	2387.65	-----	
2483.5 ~ 2496.5MHz (Chain0)	μW/MHz	0.1567	0.2070	0.4416	≤ 25.00	PASS
	MHz	2490.95	2487.17	2483.50	-----	
2496.5MHz ~ 12.5GHz (Chain0)	μW/MHz	0.3381	0.2979	0.2685	≤ 2.50	PASS
	MHz	3618.00	3785.00	3707.00	-----	



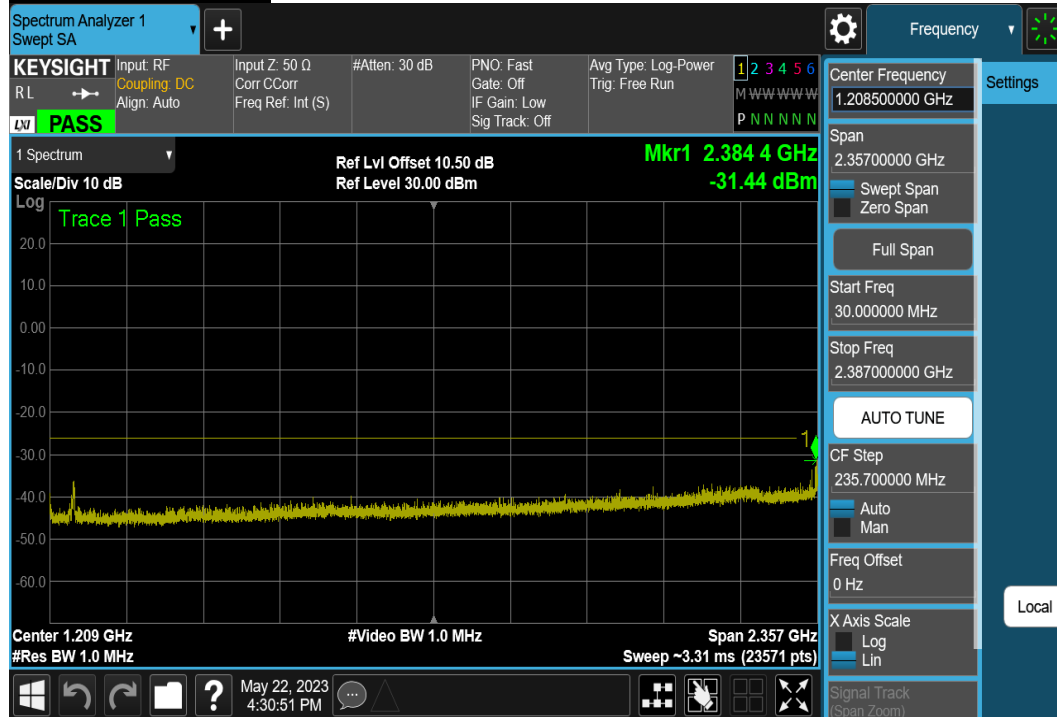
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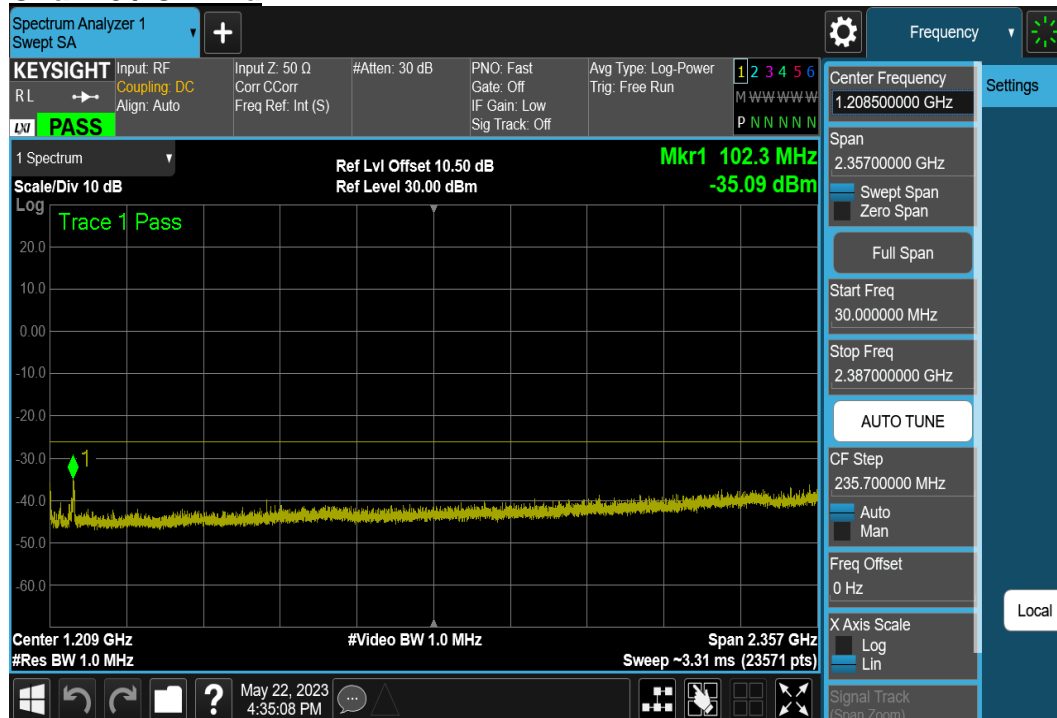
## Under 2387MHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low



#### Chain 0 / CH Mid

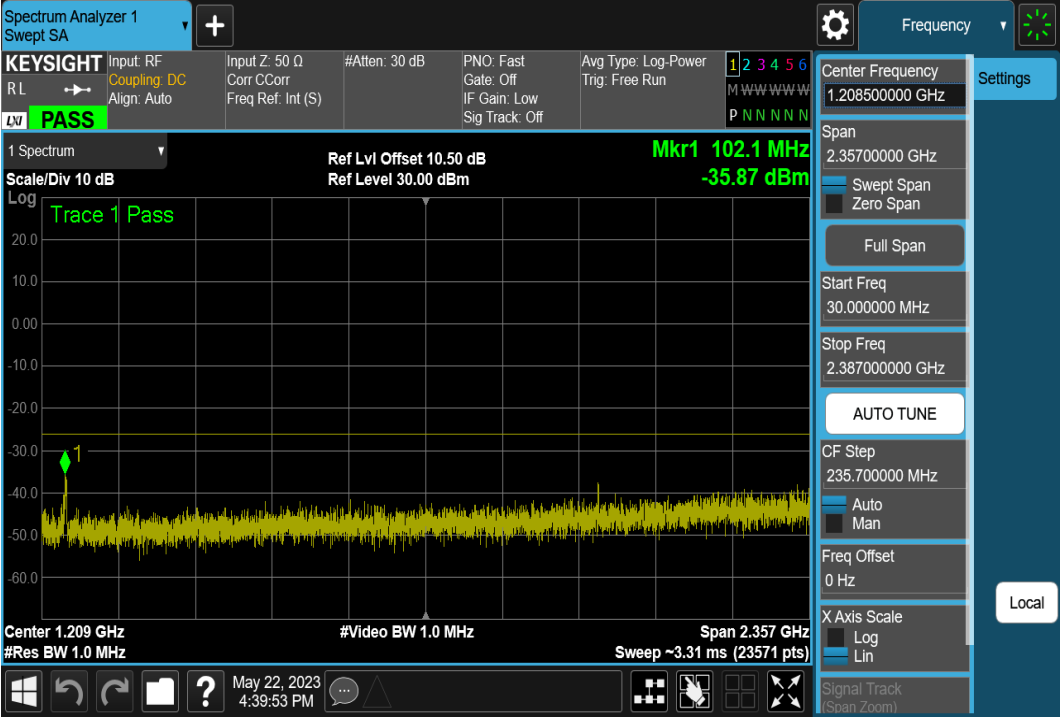




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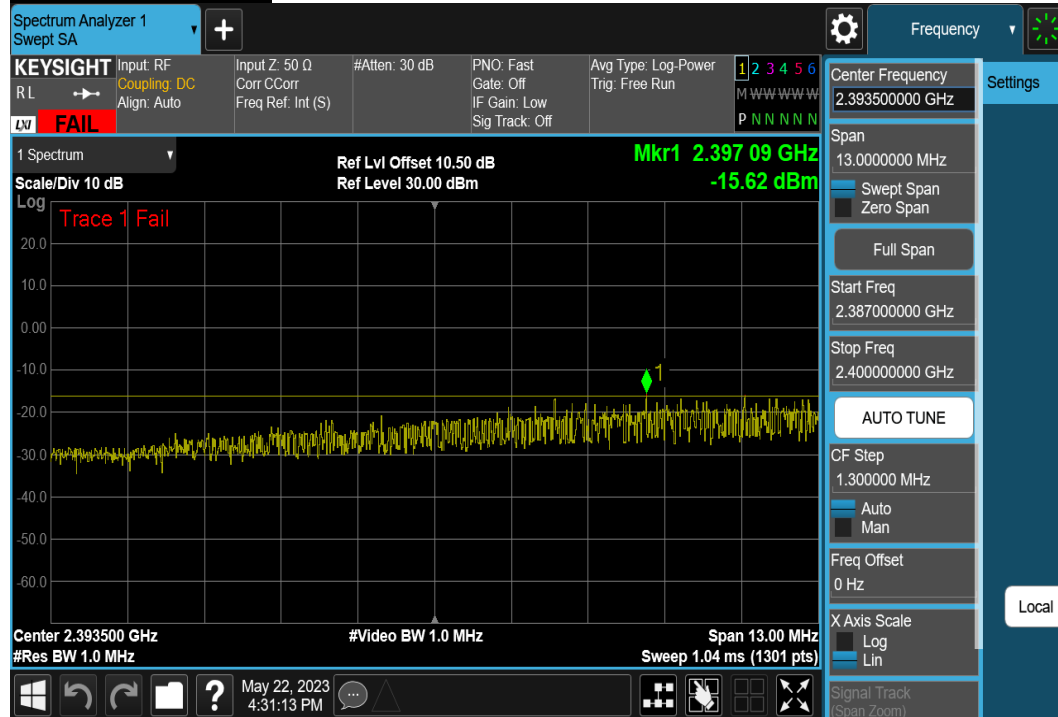
Chain 0 / CH High



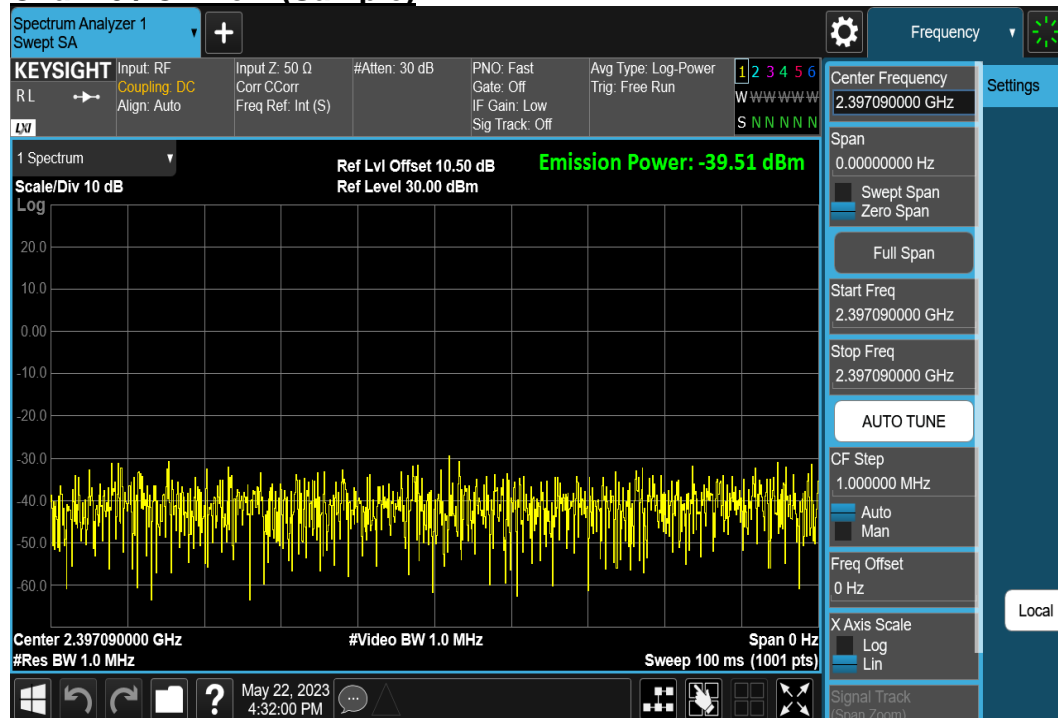
## 2387 ~ 2400MHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low

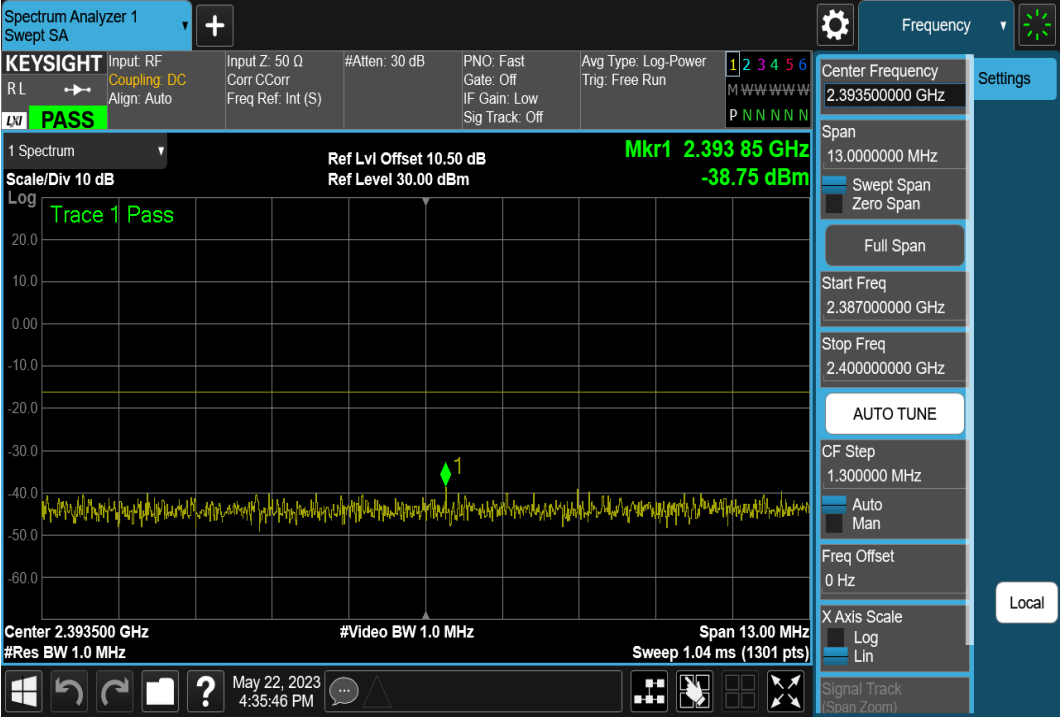


#### Chain 0 / CH Low (Sample)

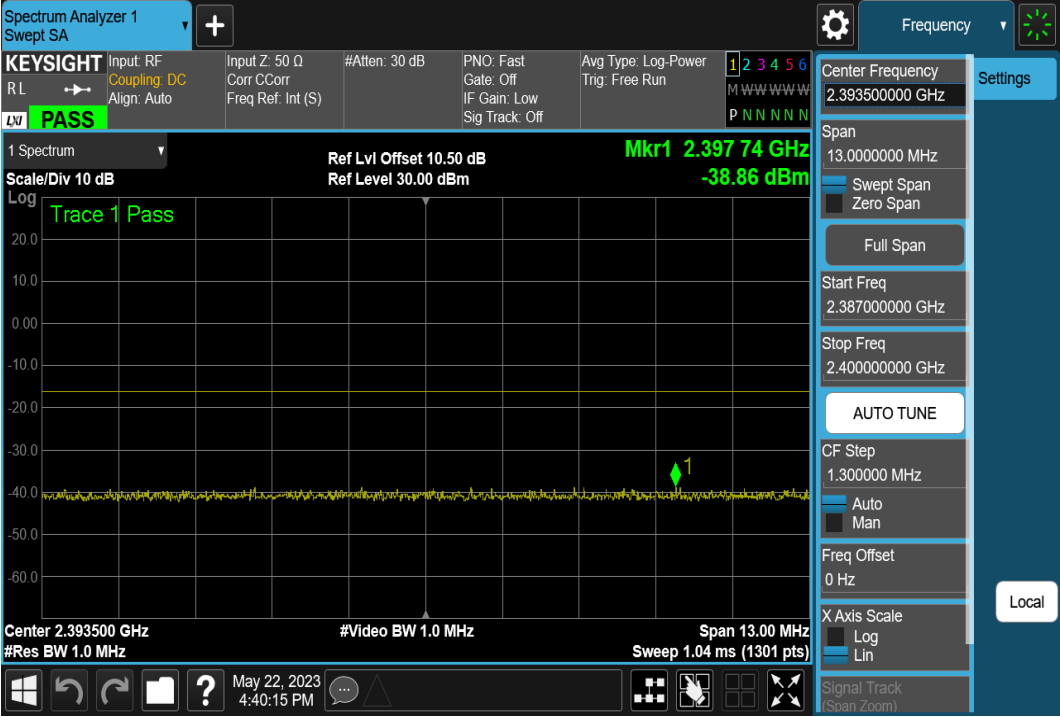




Chain 0 / CH Mid



Chain 0 / CH High







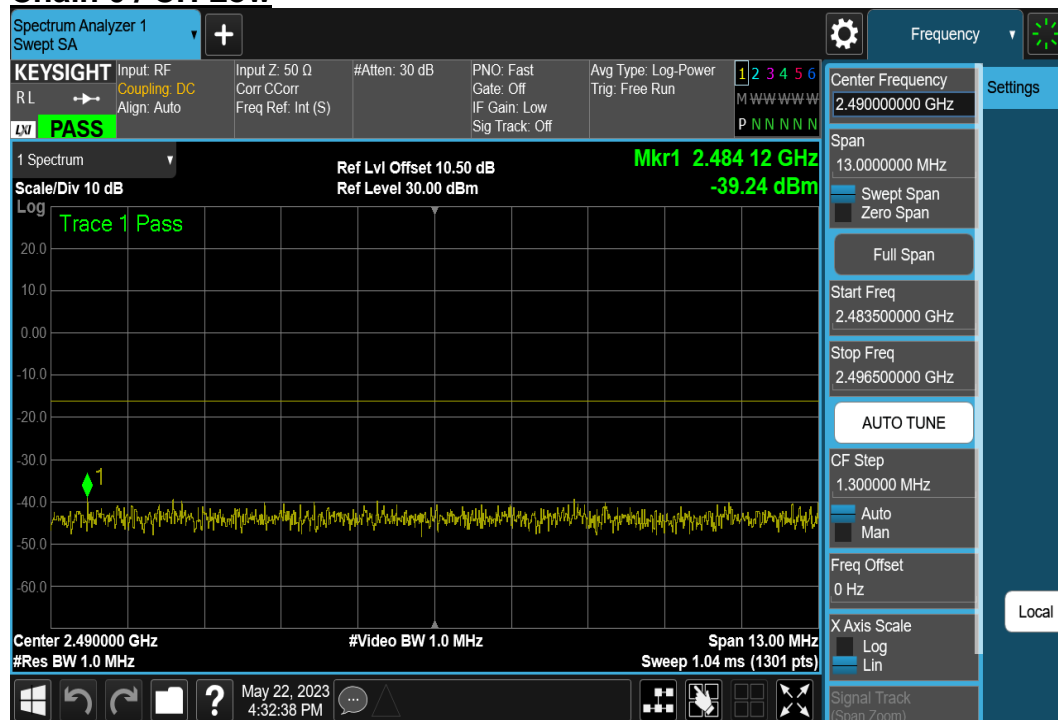
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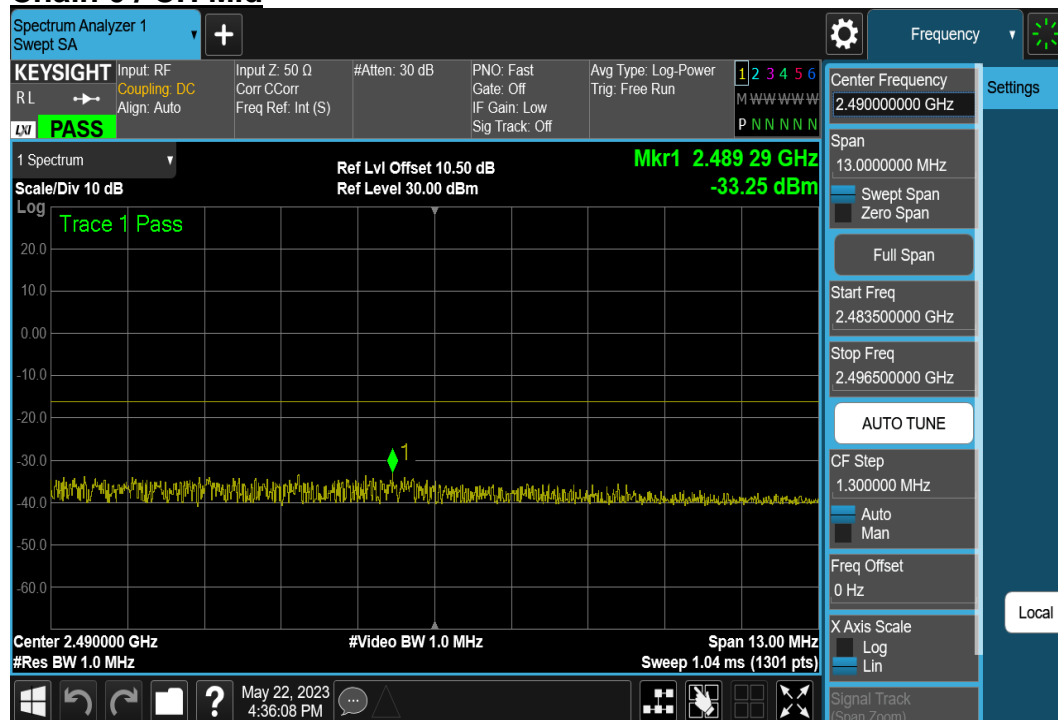
2483.5 ~ 2496.5MHz (Chain0)

## TEST PLOTS

### Chain 0 / CH Low



### Chain 0 / CH Mid

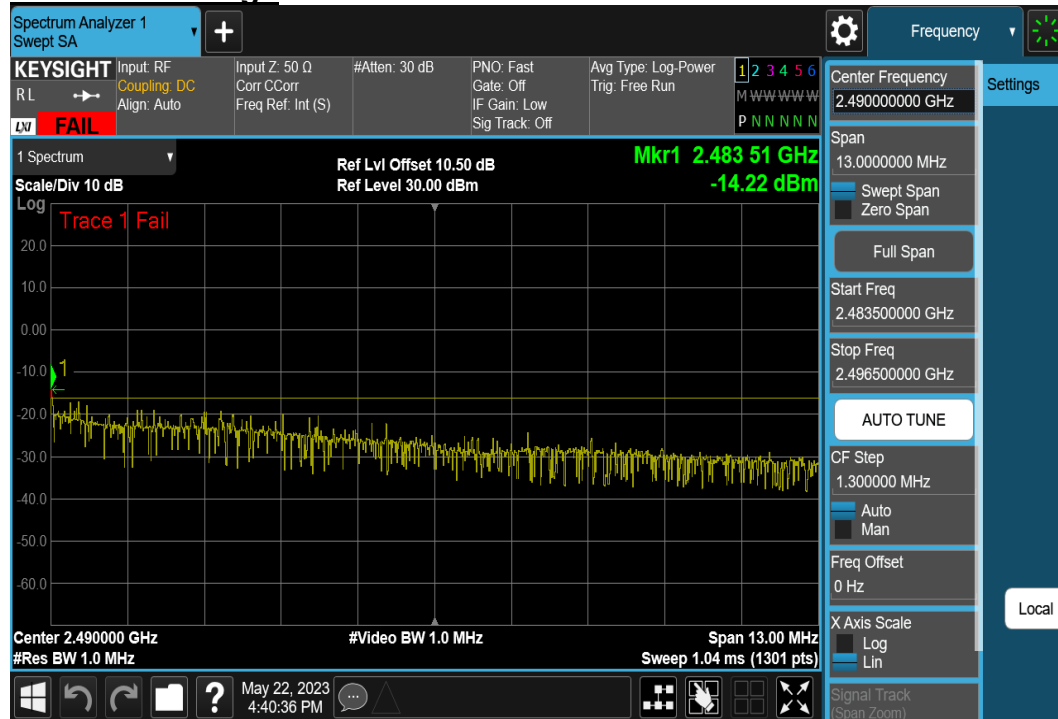




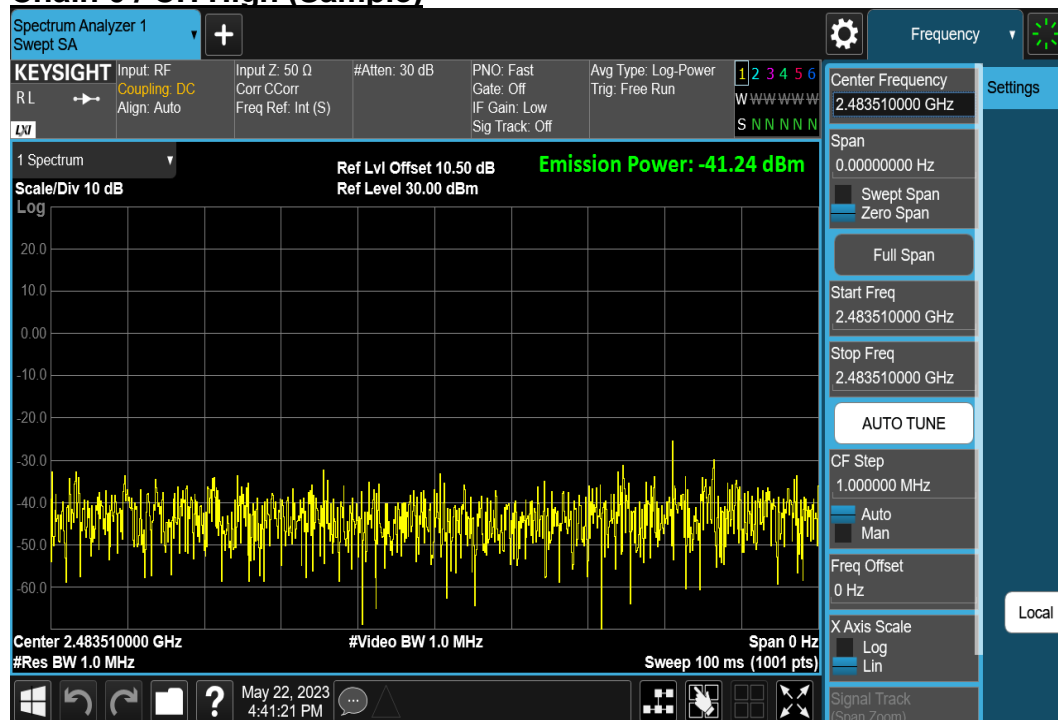
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### Chain 0 / CH High



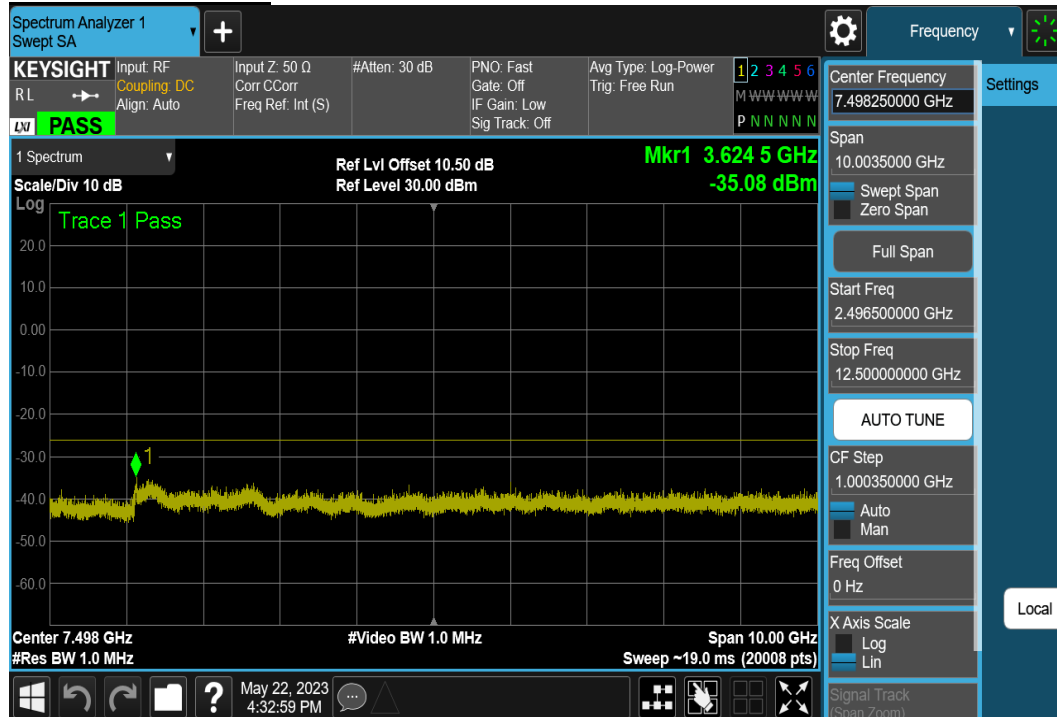
### Chain 0 / CH High (Sample)



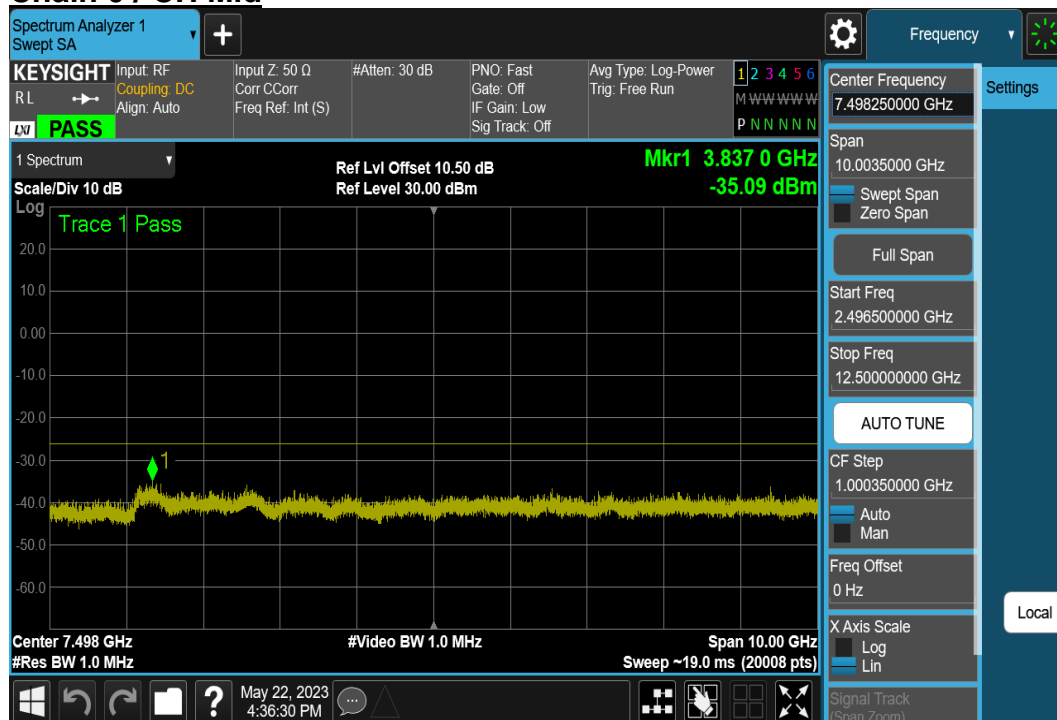
## 2496.5MHz ~ 12.5GHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low



#### Chain 0 / CH Mid

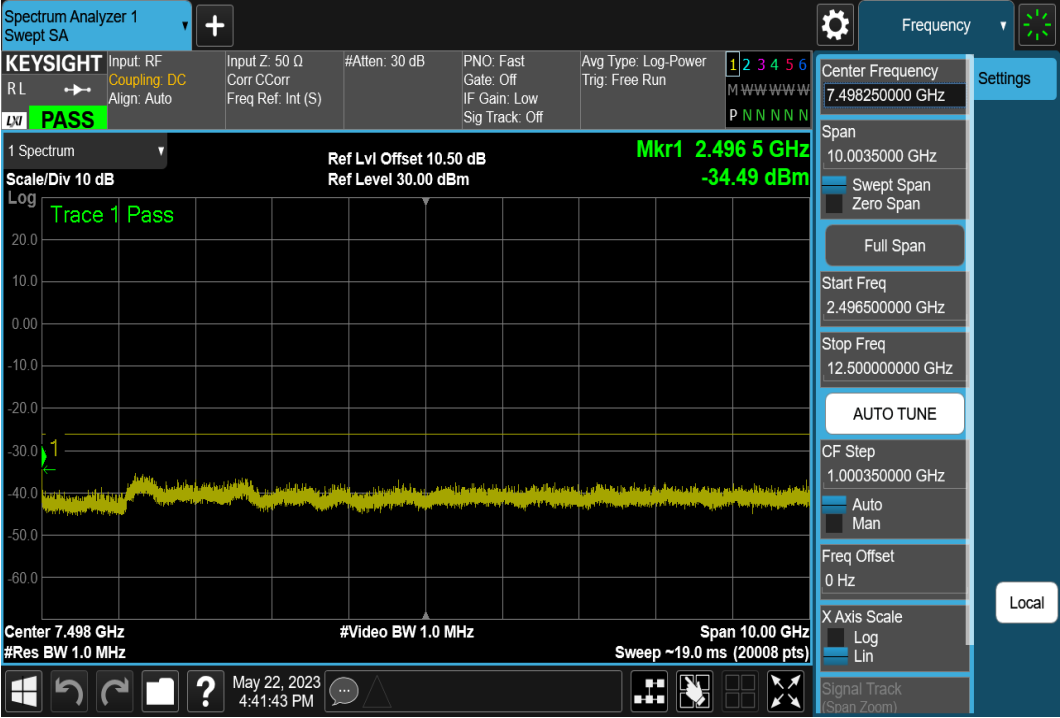




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Chain 0 / CH High





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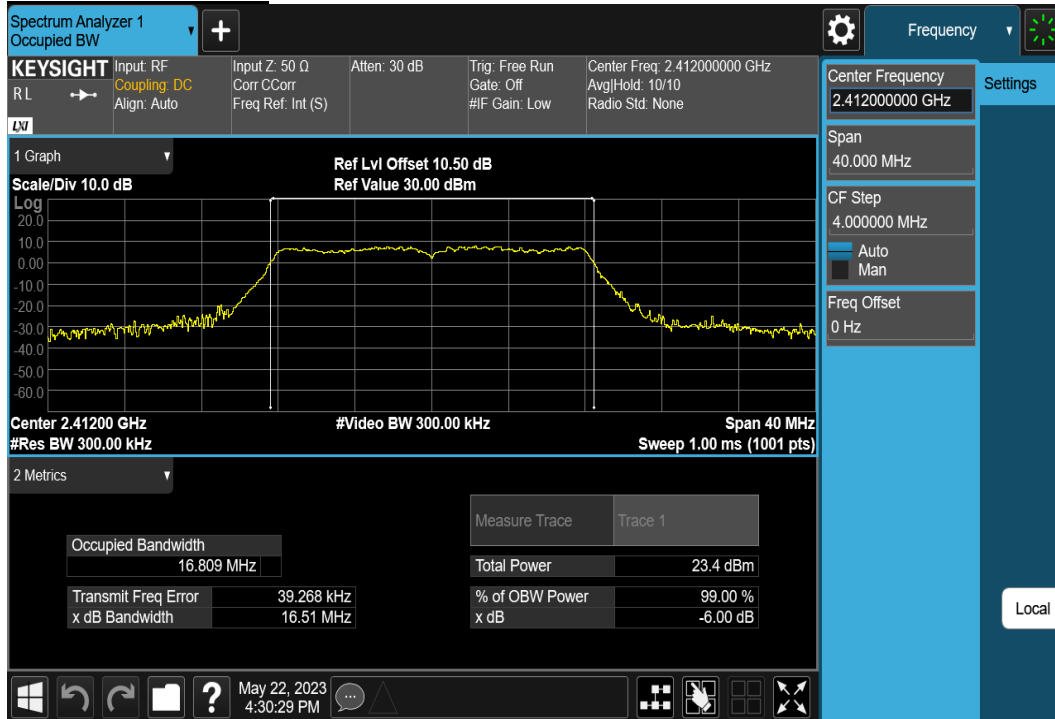
7.4 OCCUPIED BANDWIDTH (99%)

TEST RESULT

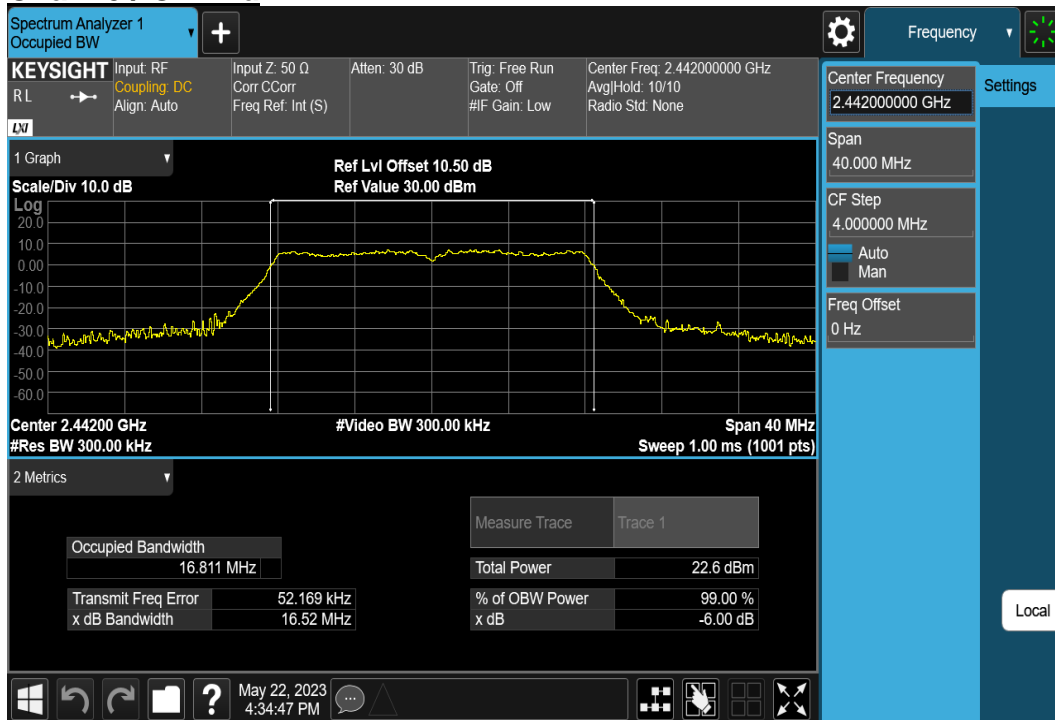
Occupied Bandwidth						
802.11g	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
Occupied Bandwidth (Chain0)	MHz	16.809	16.811	16.803	≤ 40	PASS

## TEST PLOTS

### Chain 0 / CH Low

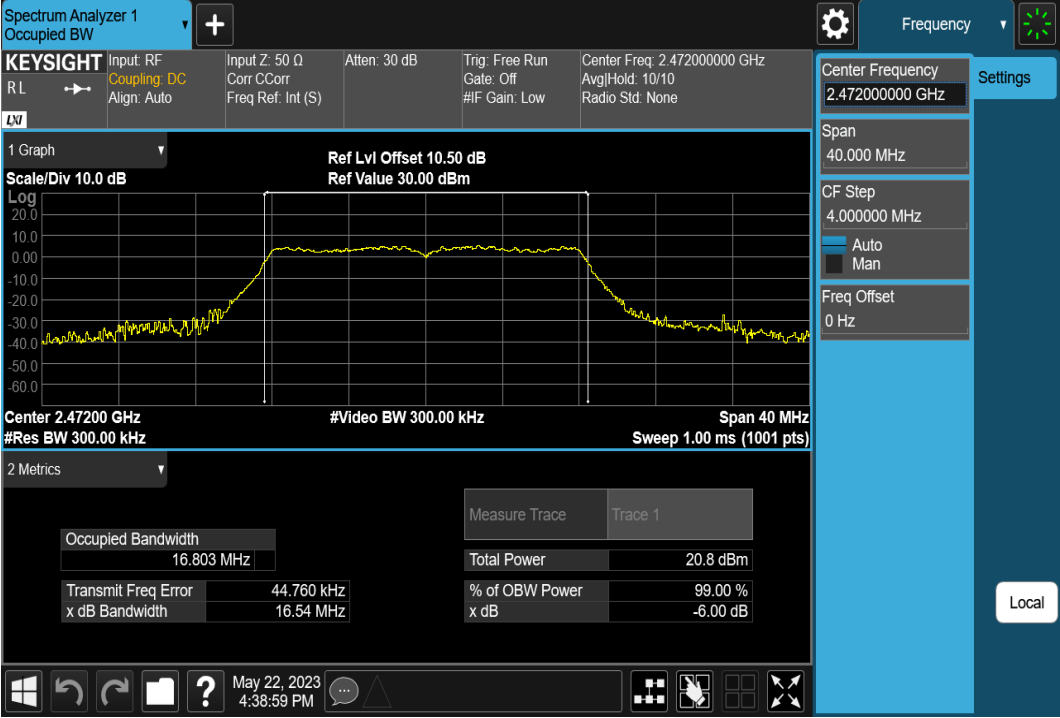


### Chain 0 / CH Mid





Chain 0 / CH High





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## 7.5 LIMITATION OF COLLATERAL EMISSIONS OF RECEIVER

### TEST RESULT

Secondarily emitted radio wave strength						
802.11g	unit	-----	-----	-----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	-----	-----
Channel Number	Ch.	1	7	13	-----	-----
Under 1GHz (Chain0)	nW	2.104	0.918	1.019	$\leq$ 4.00	PASS
	MHz	106.00	106.00	106.00	-----	
1 - 12.5GHz (Chain0)	nW	0.134	0.075	0.044	$\leq$ 20.00	PASS
	MHz	2441.00	2480.00	3283.00	-----	





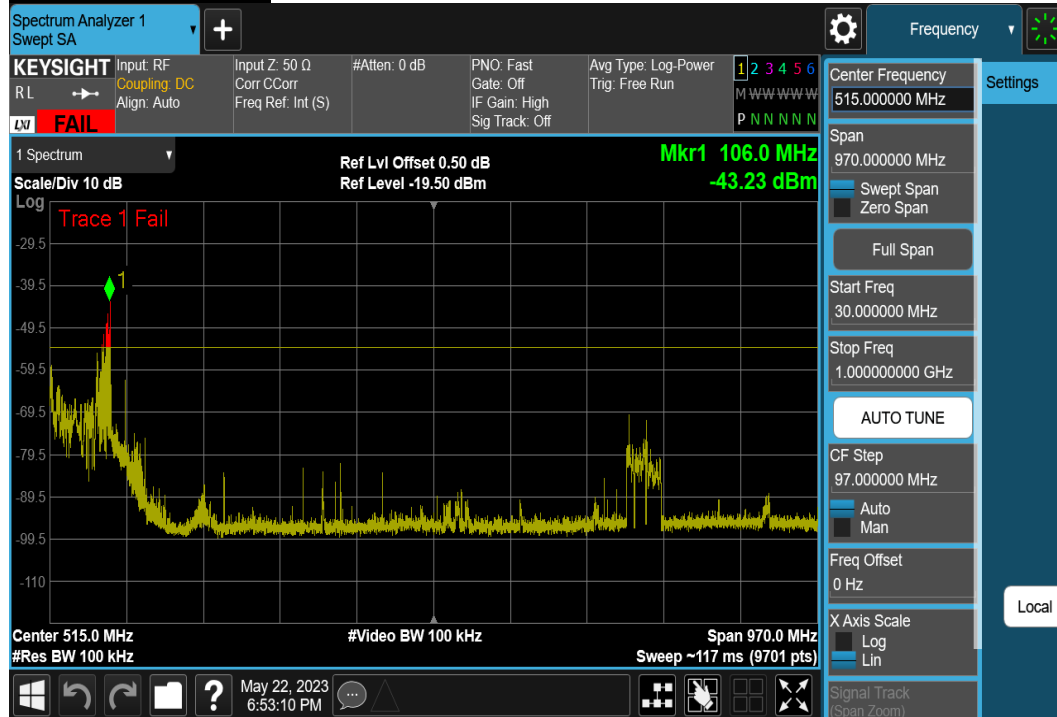
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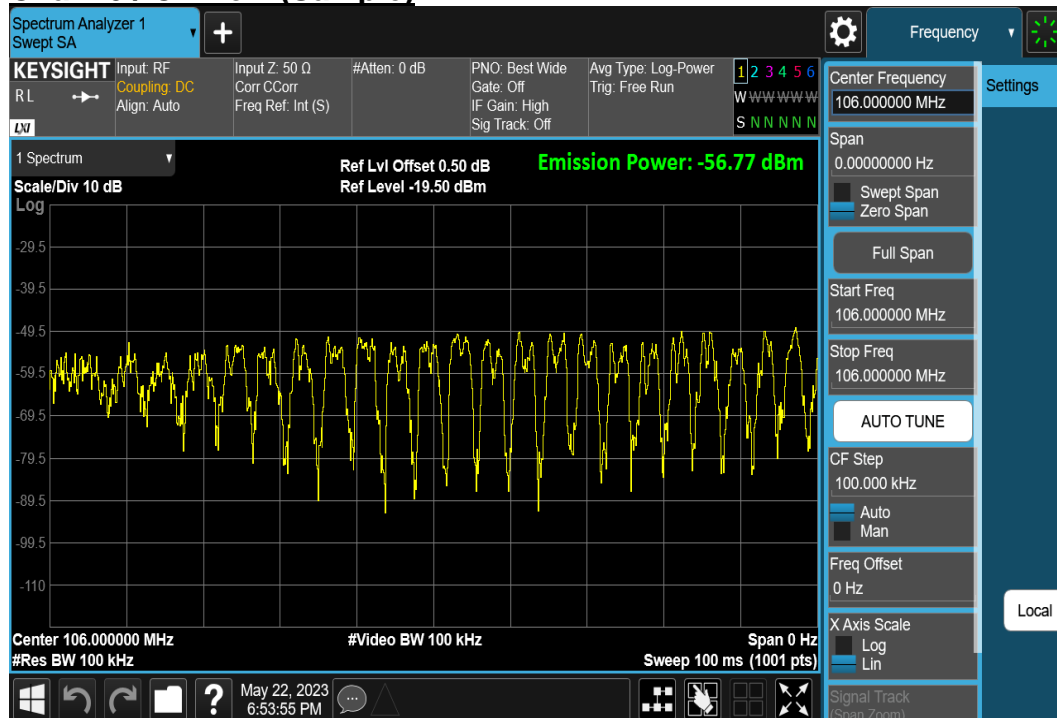
## Under 1GHz (Chain0)

### TEST PLOTS

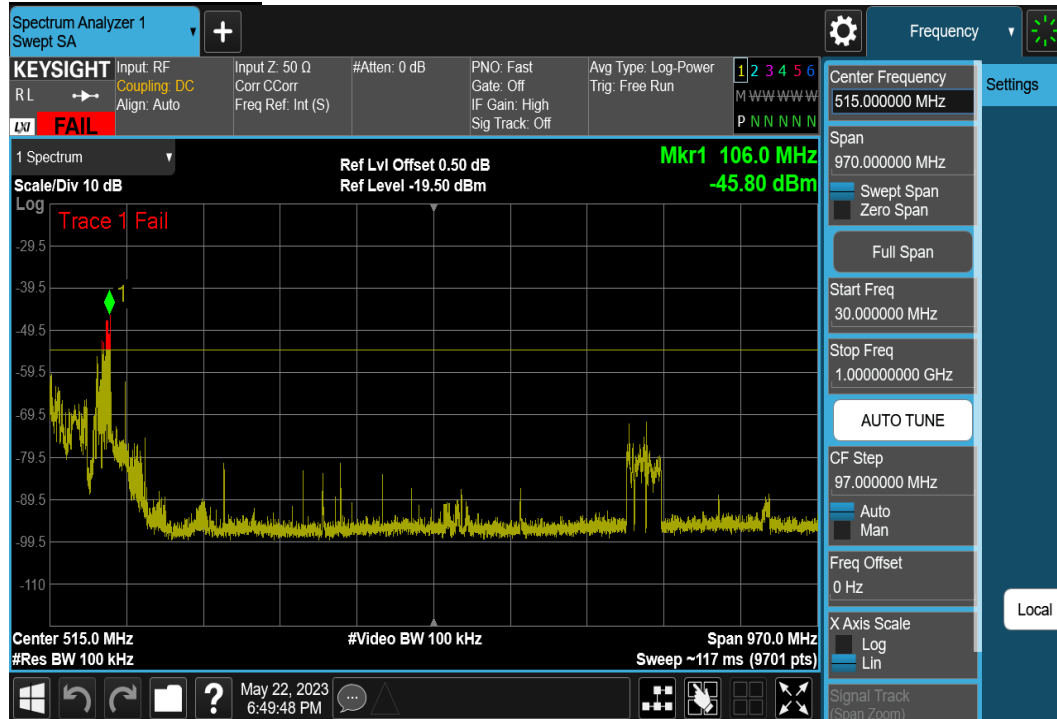
#### Chain 0 / CH Low



#### Chain 0 / CH Low (Sample)



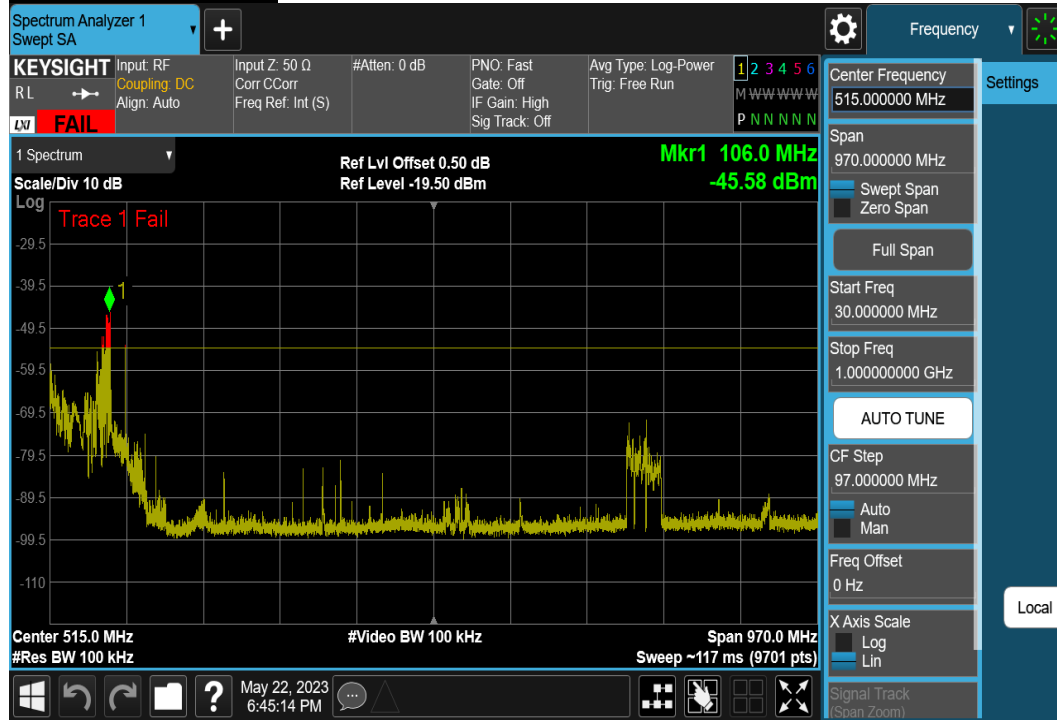
### Chain 0 / CH Mid



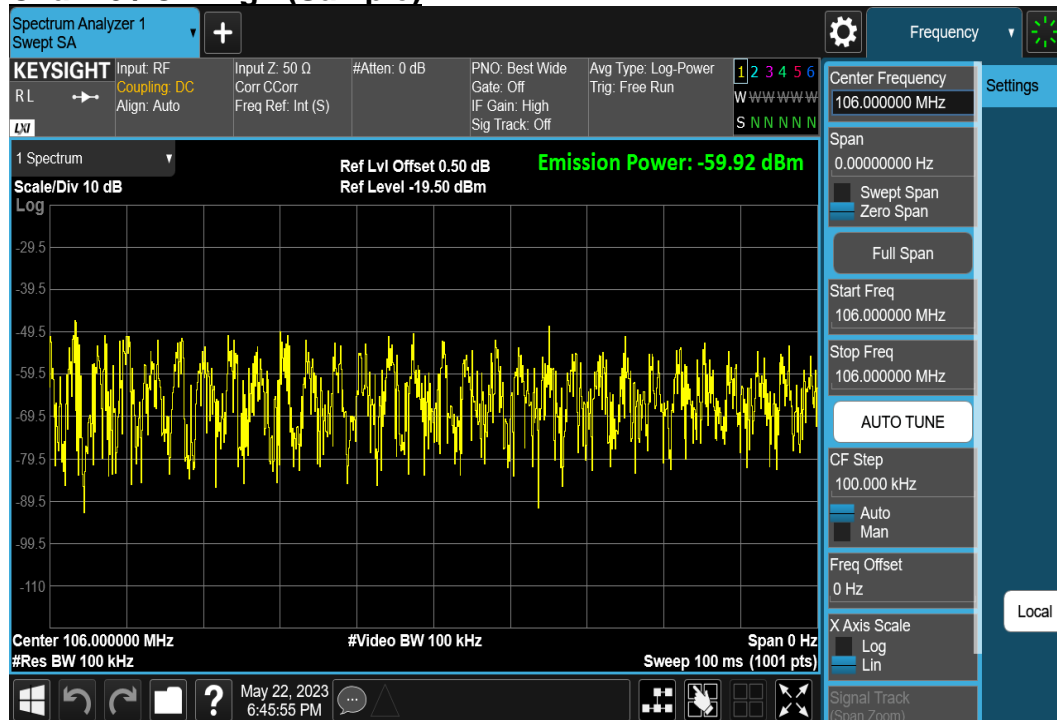
### Chain 0 / CH Mid (Sample)



## Chain 0 / CH High



## Chain 0 / CH High (Sample)





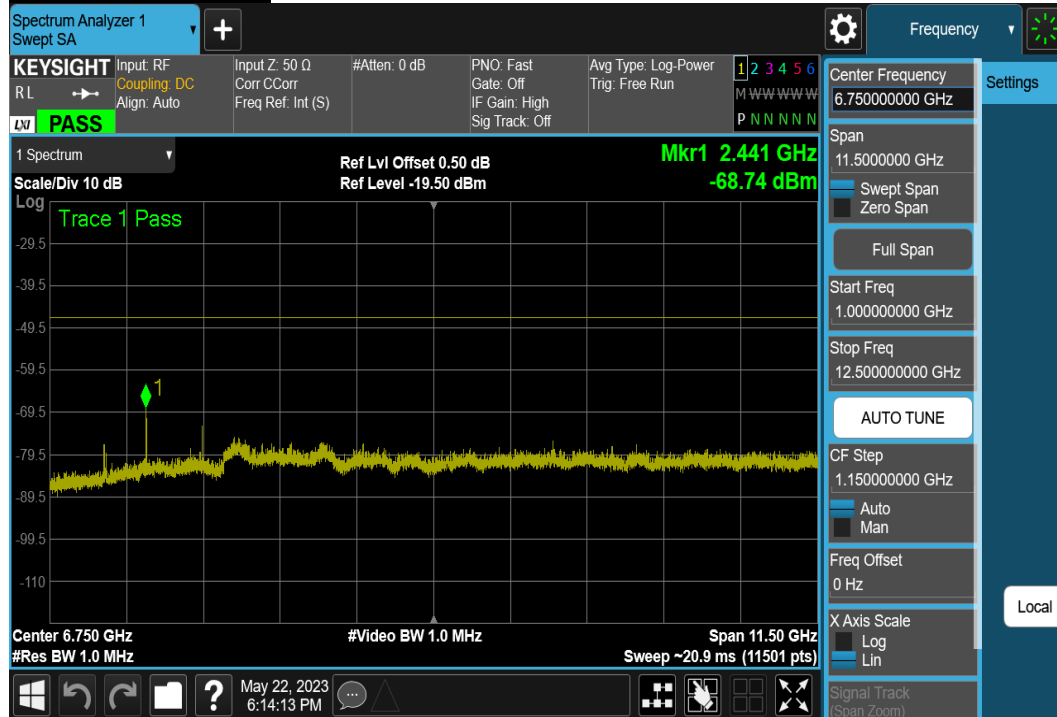
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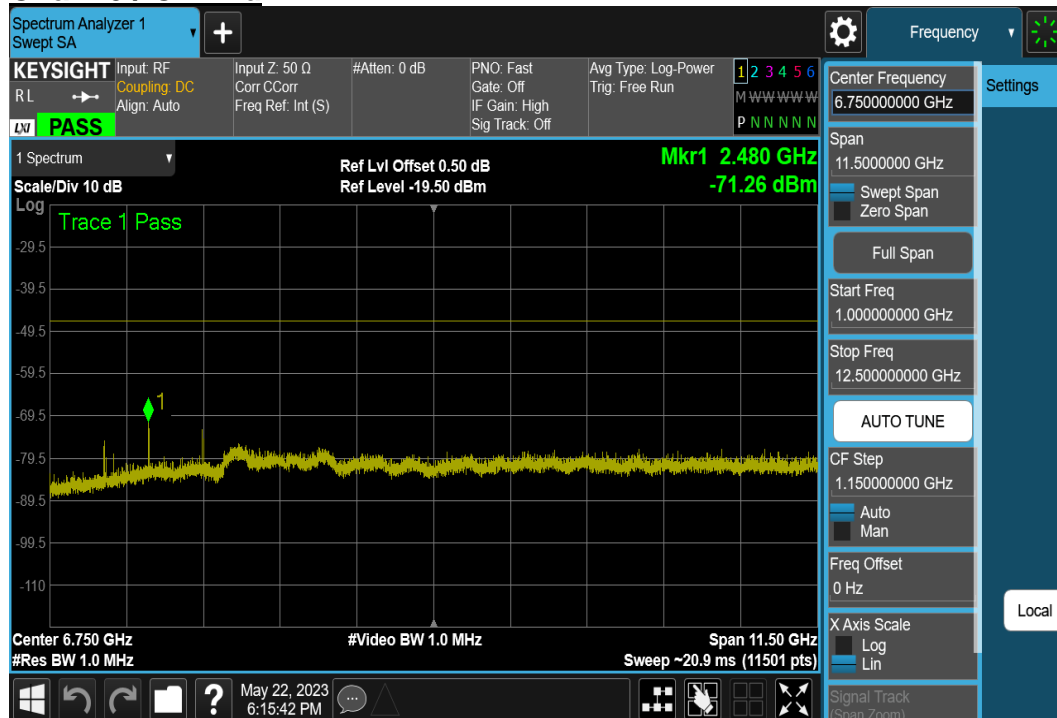
## 1 - 12.5GHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low

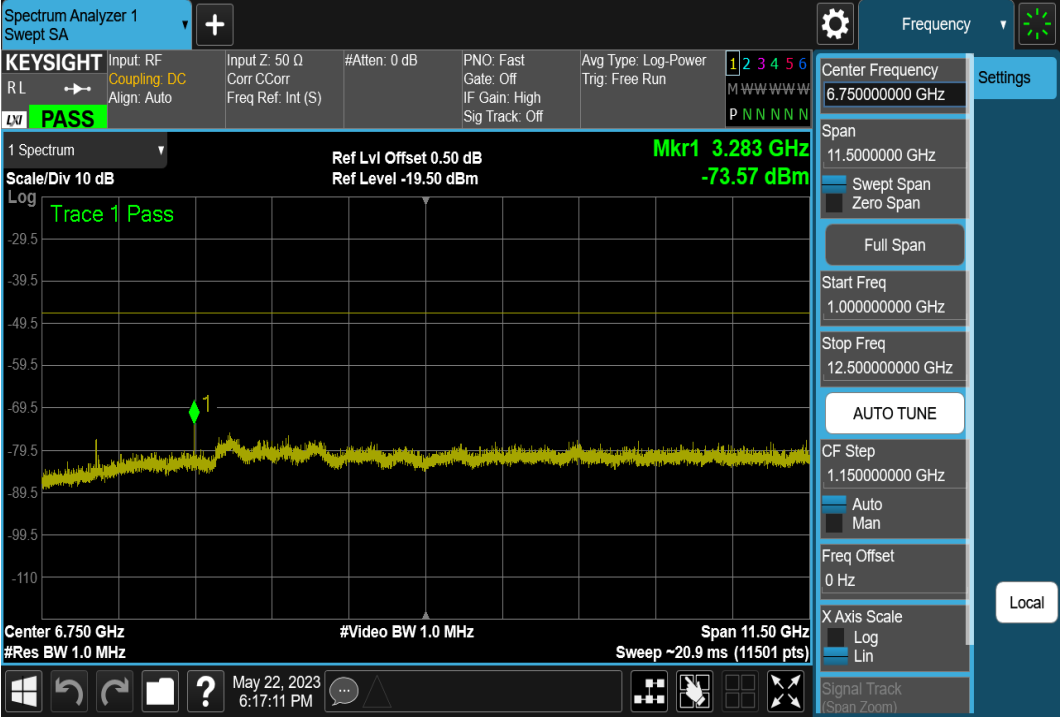


#### Chain 0 / CH Mid





Chain 0 / CH High





8. TEST RESULT FOR IEEE 802.11n HT20 (CH1~CH13)

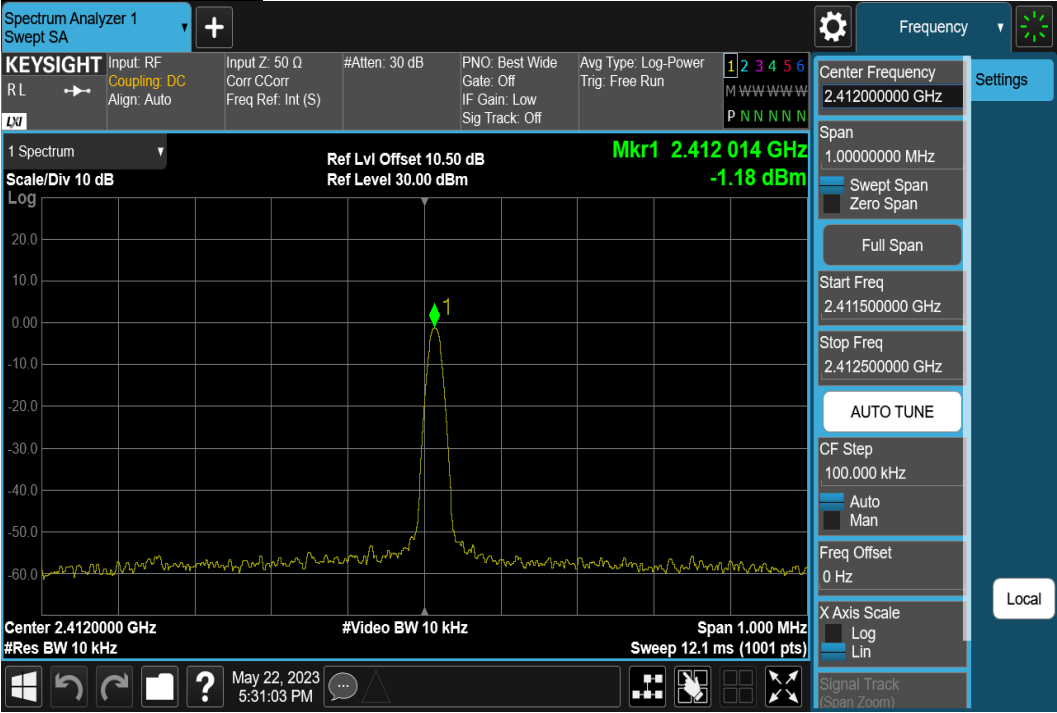
8.1 FREQUENCY ERROR

TEST RESULT

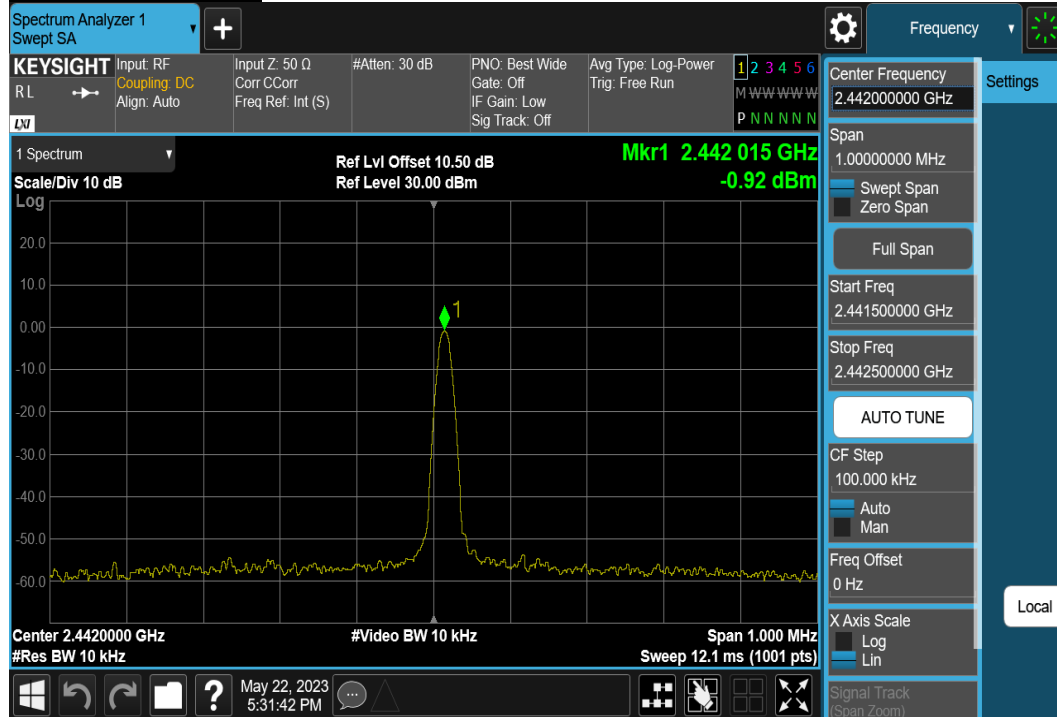
Frequency Tolerance						
802.11n_20MHz	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
Reading Frequency (Chain0)	MHz	2412.014	2442.015	2472.015	≥ -50.00	PASS
Frequency Tolerance (Chain0)	ppm	5.80431	6.14251	6.06796	≤ 50.00	

TEST PLOTS

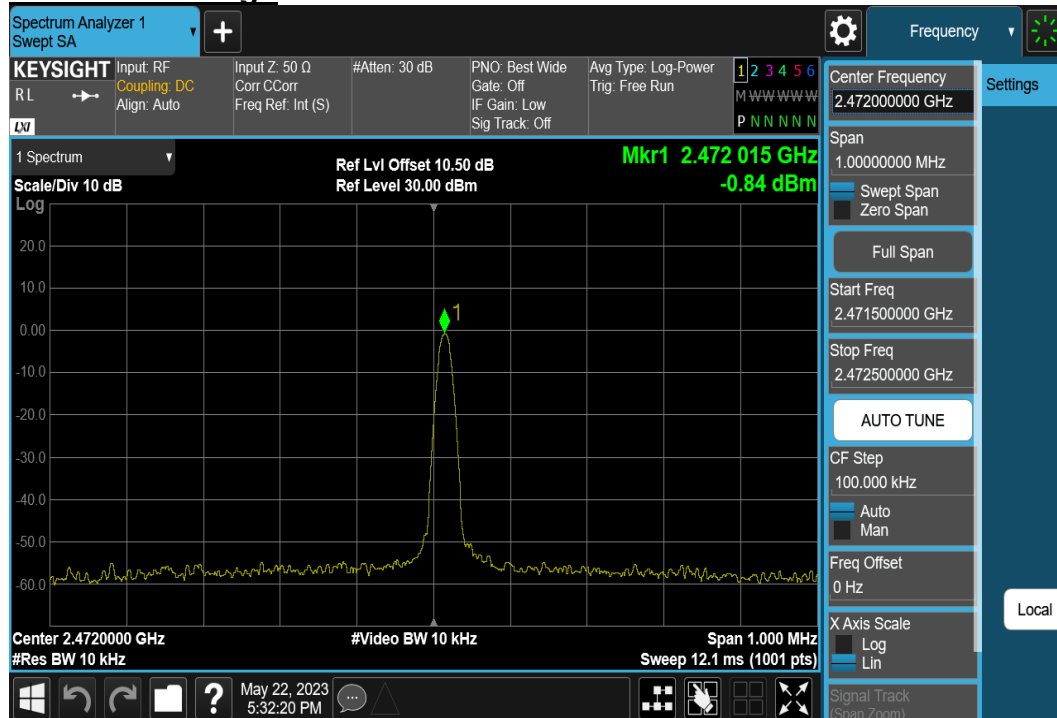
Chain 0 / CH Low



### Chain 0 / CH Mid



### Chain 0 / CH High



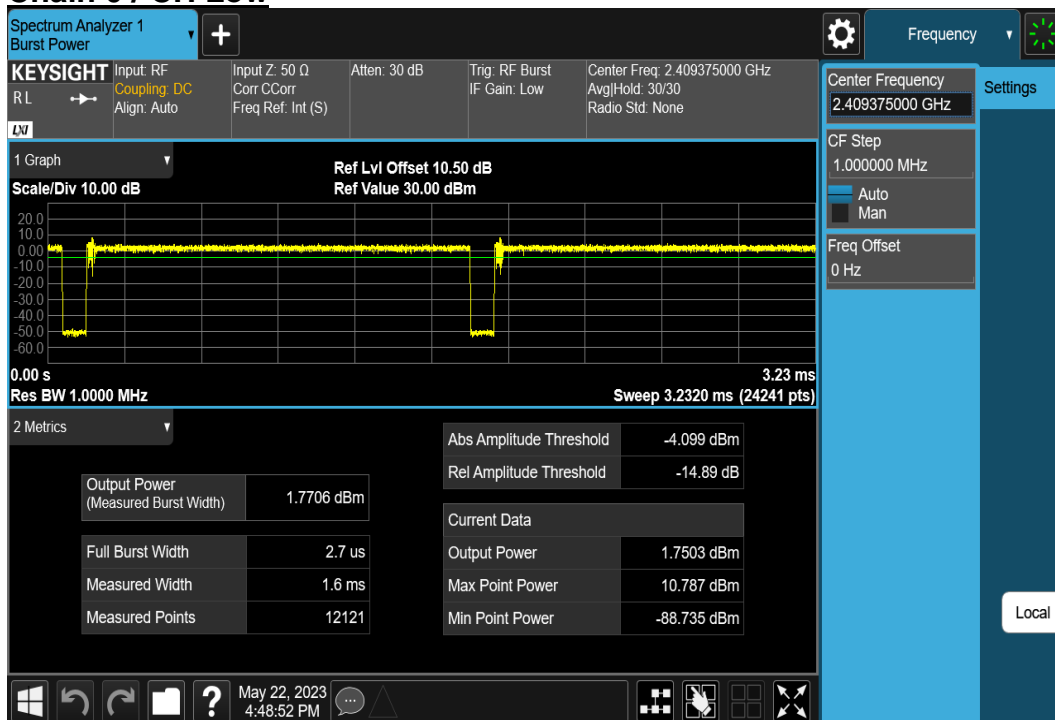
## 8.2 RF OUTPUT POWER

### TEST RESULT

RF Output Power						
802.11n_20MHz	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
RF Output Power (Chain0)	mW/MHz	1.503	1.617	1.556	≤ 10.000	PASS
	dBm/MHz	1.7706	2.0877	1.9201	≤ 10.000	
RF Output Power Tolerance	%	-7.03	0.01	-3.77	≤ 20	PASS
					≥ -80	

### TEST PLOTS

#### Chain 0 / CH Low



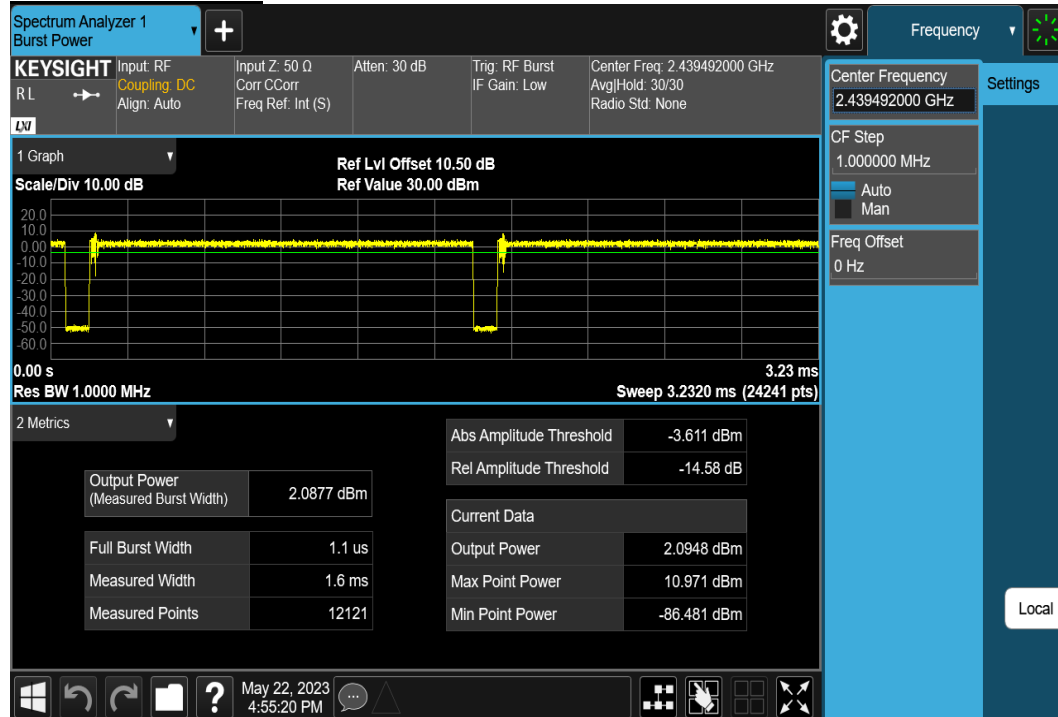




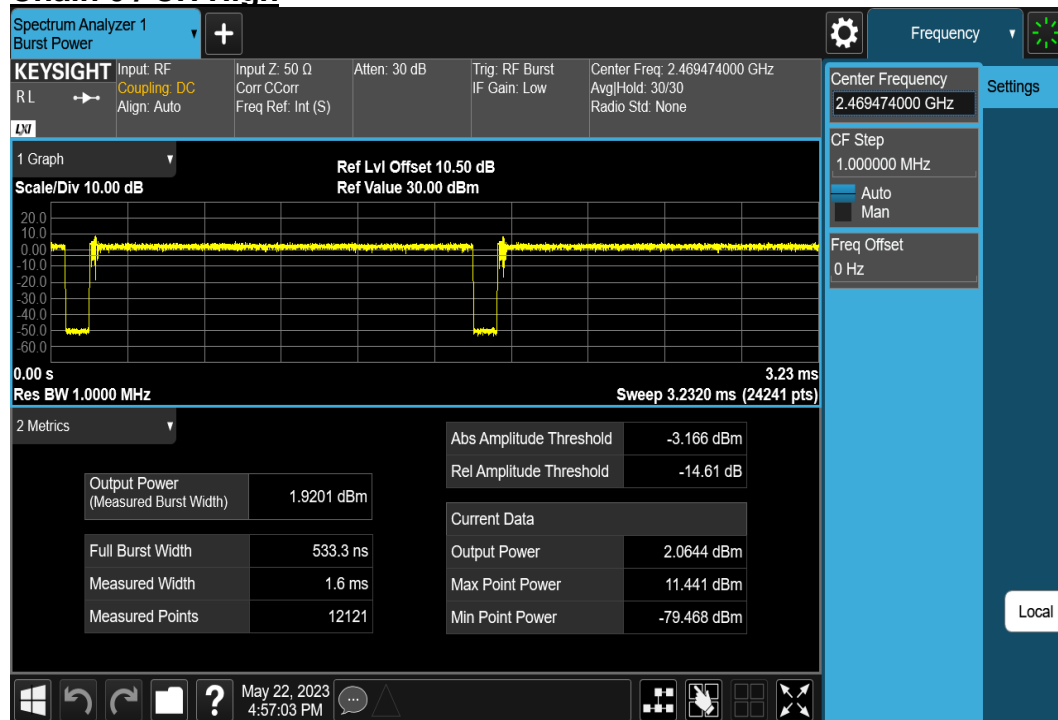
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## Chain 0 / CH Mid



## Chain 0 / CH High





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## 8.3 UNWANTED EMISSION STRENGTH

### TEST RESULT

Unwanted Emission Strength (Chain 0&1)						
802.11n_20MHz	unit	-----	-----	-----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	-----	-----
Channel Number	Ch.	1	7	13	-----	-----
Under 2387MHz (Chain0)	μW/MHz	0.3999	0.2113	0.1854	≤ 2.50	PASS
	MHz	2380.90	2383.60	2174.90	-----	
2387 ~ 2400MHz (Chain0)	μW/MHz	7.8705	0.2553	0.1517	≤ 25.00	PASS
	MHz	2396.23	2396.92	2387.40	-----	
2483.5 ~ 2496.5MHz (Chain0)	μW/MHz	0.1671	0.3420	0.0555	≤ 25.00	PASS
	MHz	2495.74	2484.54	2483.75	-----	
2496.5MHz ~ 12.5GHz (Chain0)	μW/MHz	0.2735	0.3126	0.3228	≤ 2.50	PASS
	MHz	3848.00	3793.00	3784.00	-----	



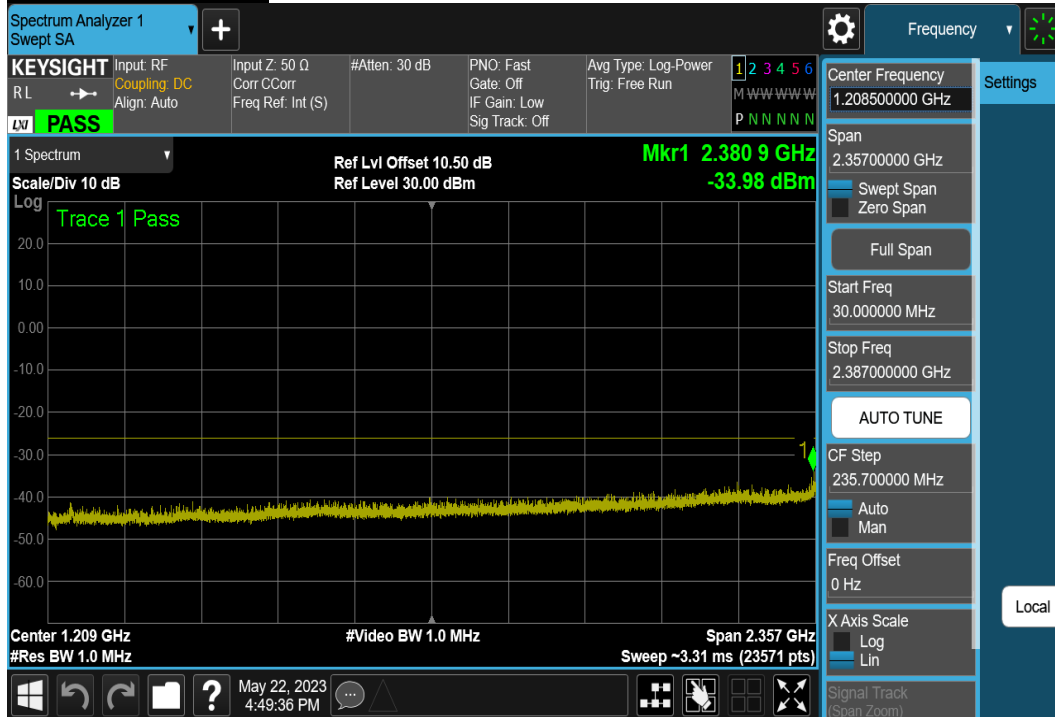
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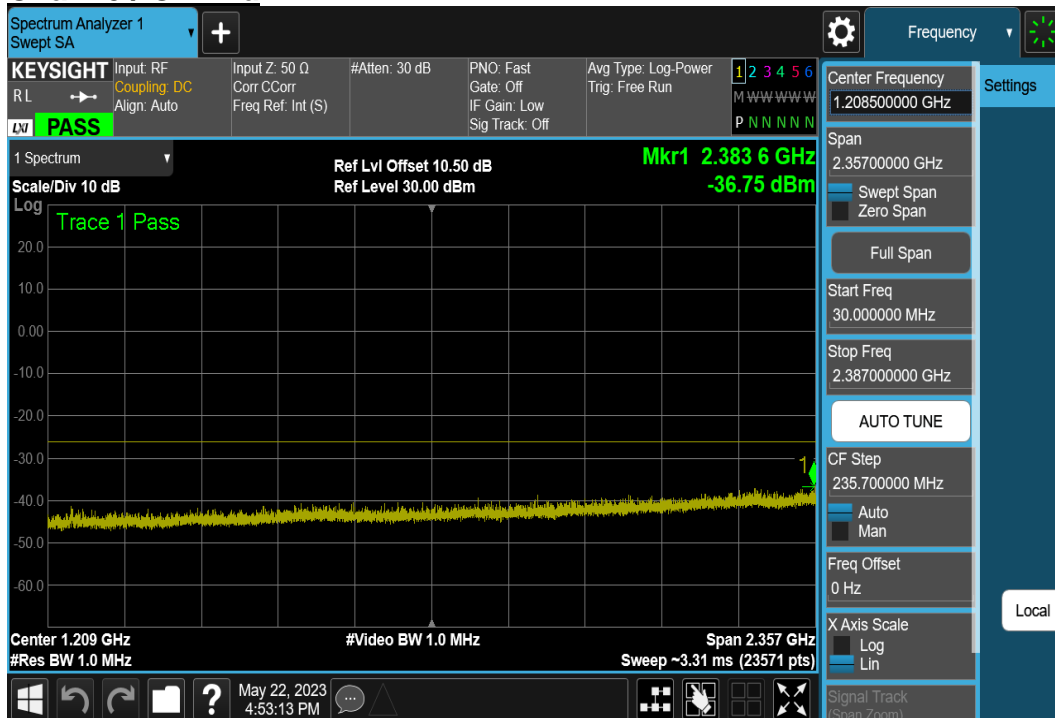
## Under 2387MHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low



#### Chain 0 / CH Mid





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Chain 0 / CH High





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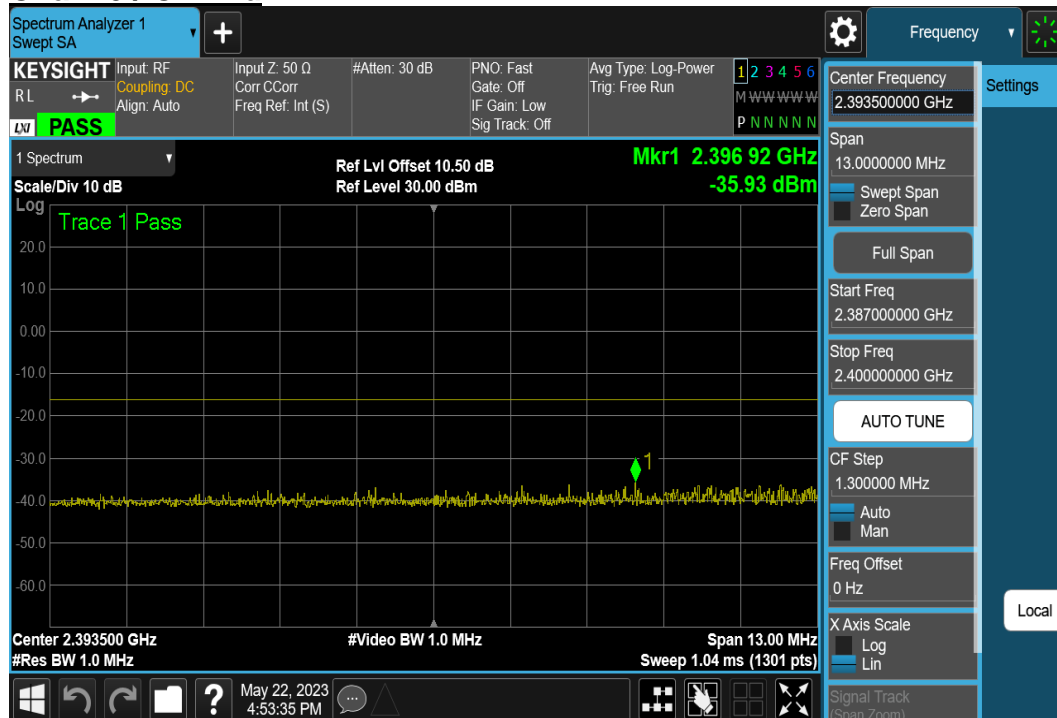
## 2387 ~ 2400MHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low

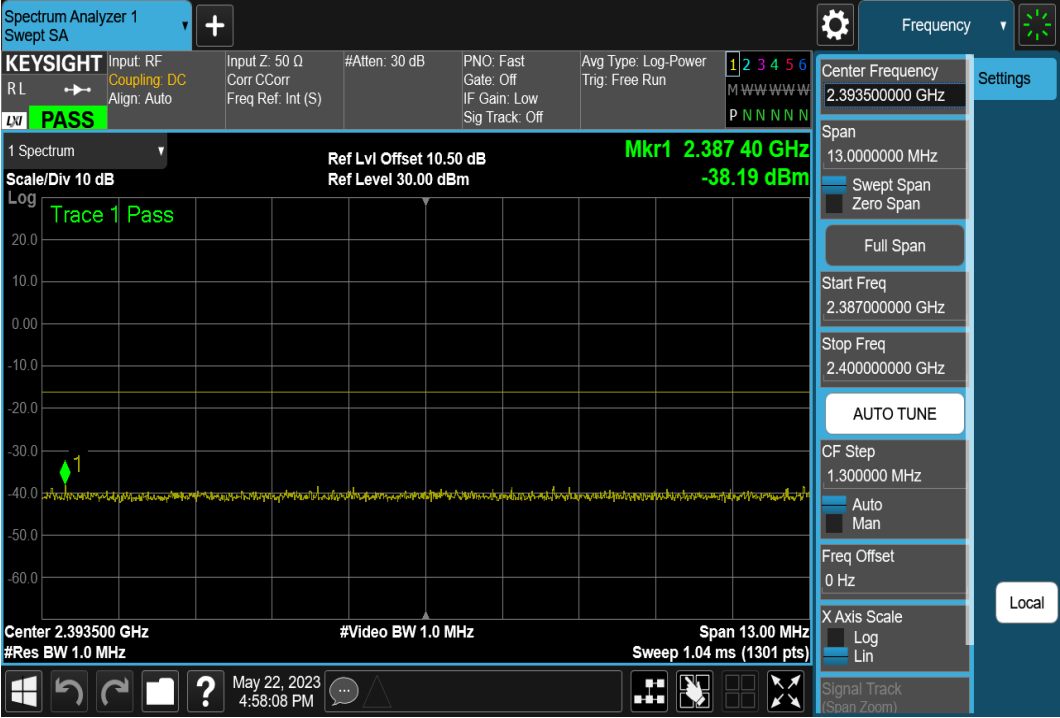


#### Chain 0 / CH Mid





Chain 0 / CH High





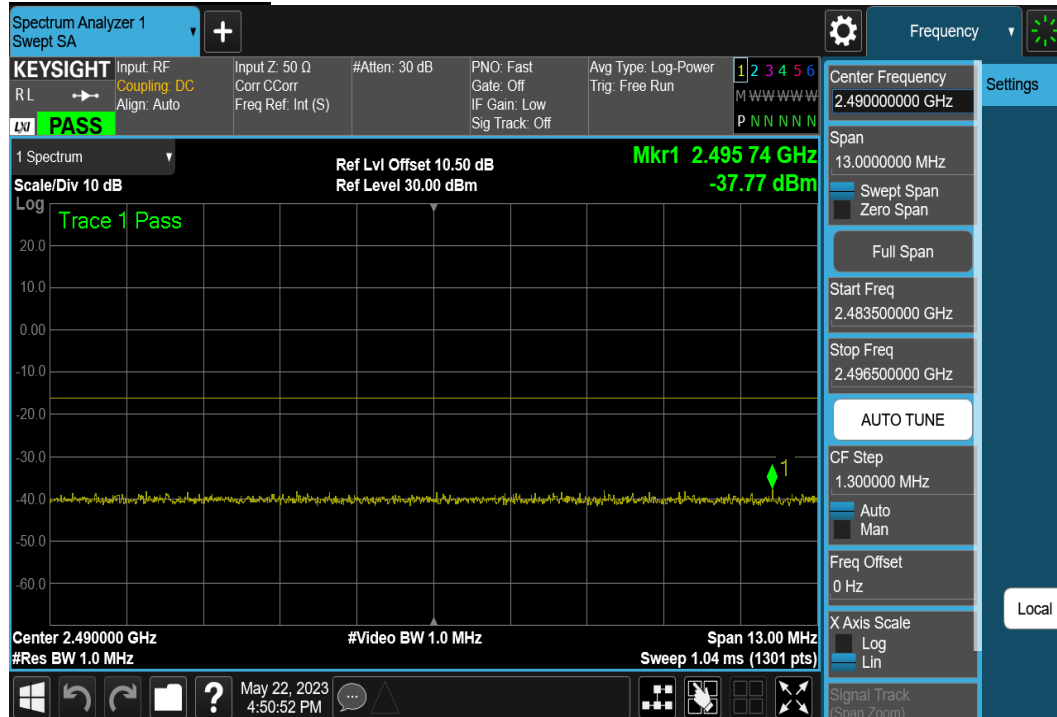
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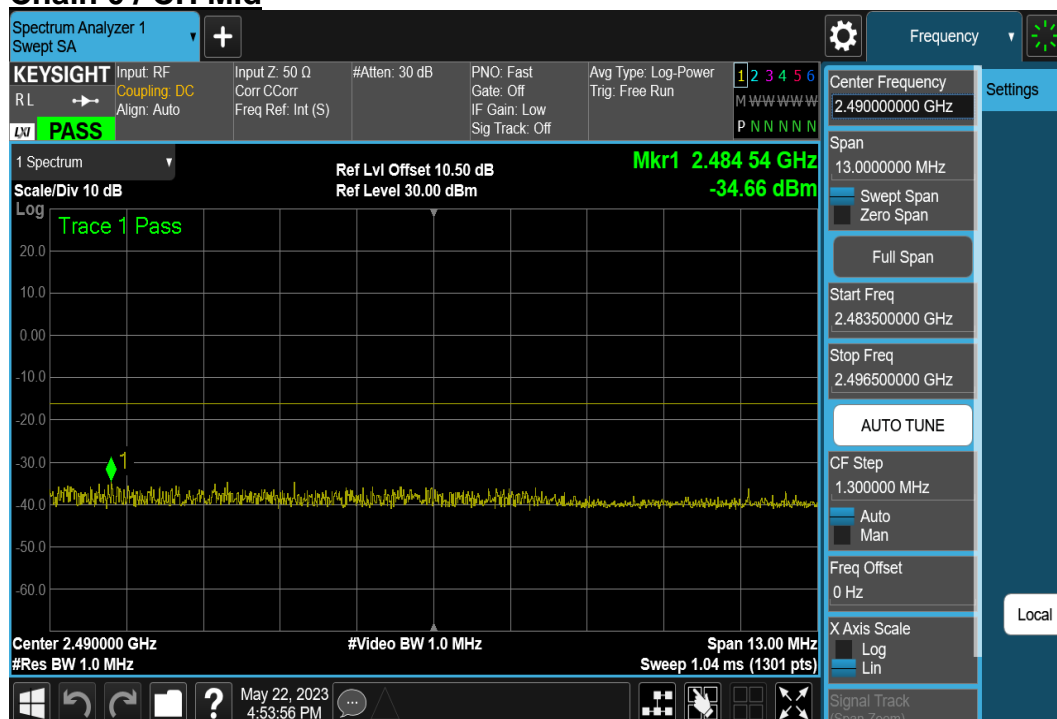
2483.5 ~ 2496.5MHz (Chain0)

## TEST PLOTS

### Chain 0 / CH Low



### Chain 0 / CH Mid





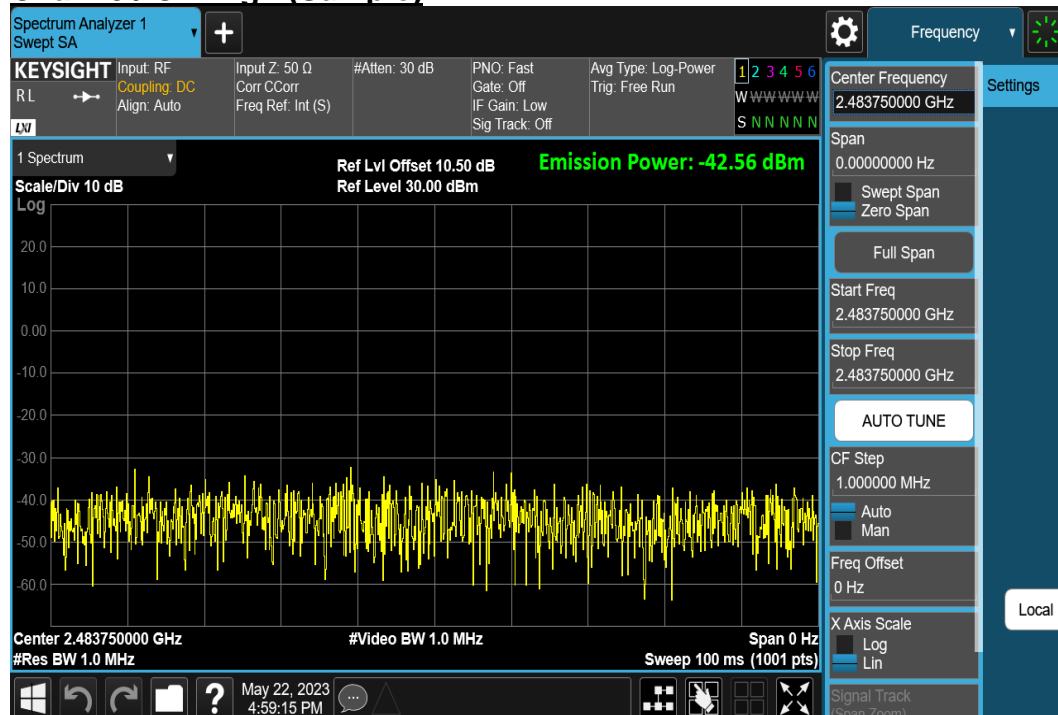
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### Chain 0 / CH High



### Chain 0 / CH High (Sample)







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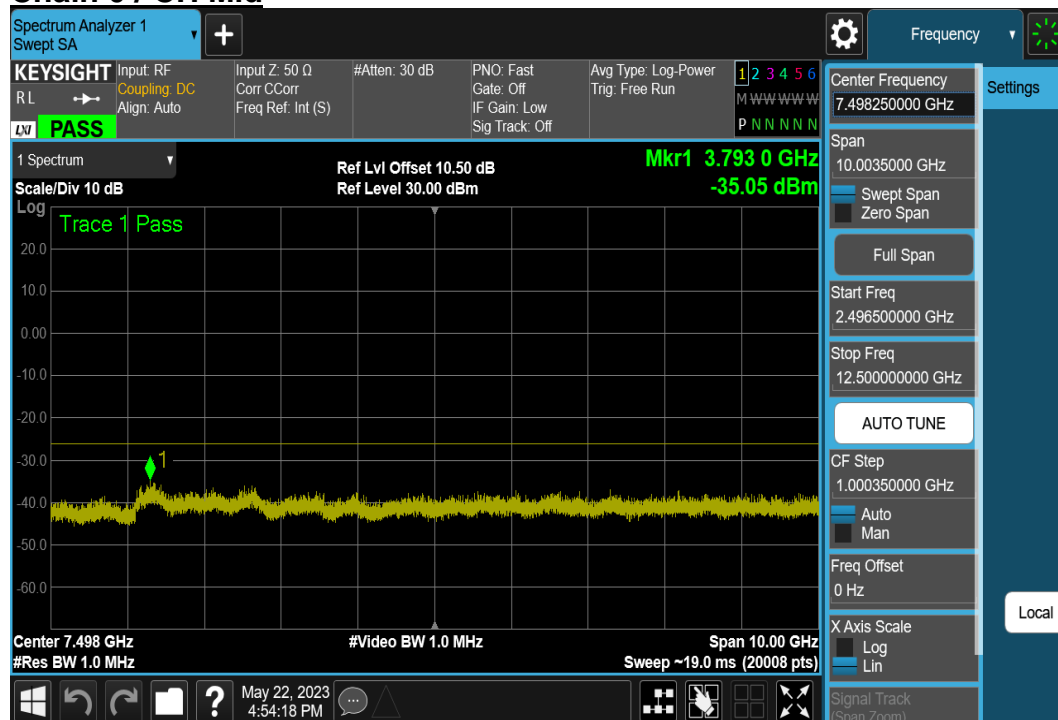
2496.5MHz ~ 12.5GHz (Chain0)

## TEST PLOTS

### Chain 0 / CH Low



### Chain 0 / CH Mid

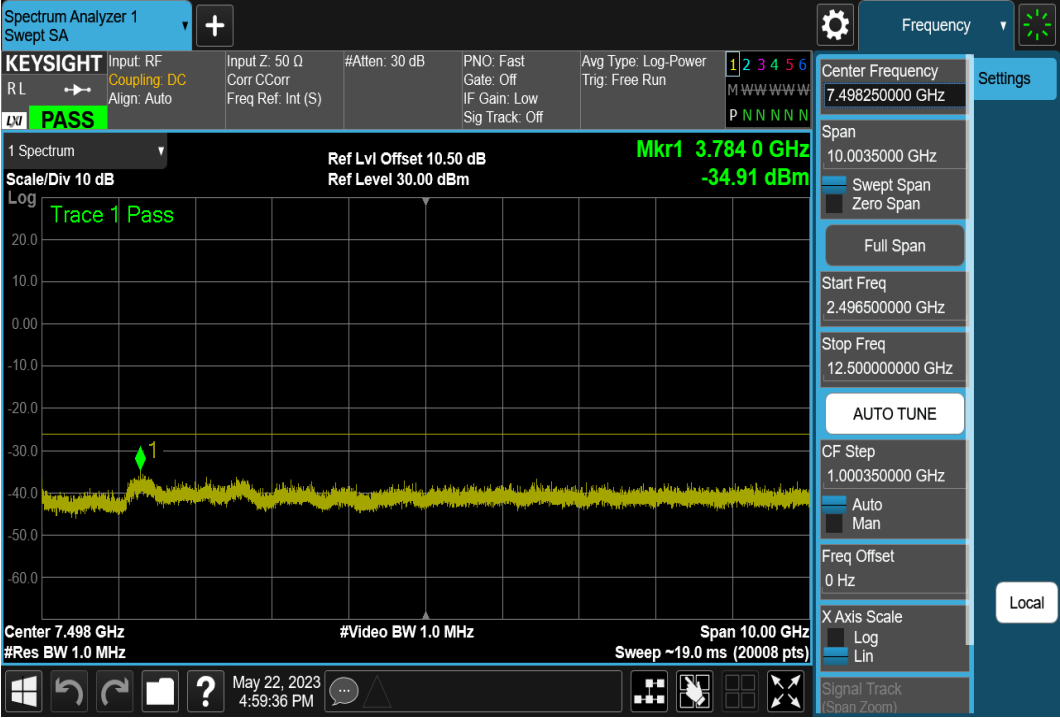




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Chain 0 / CH High





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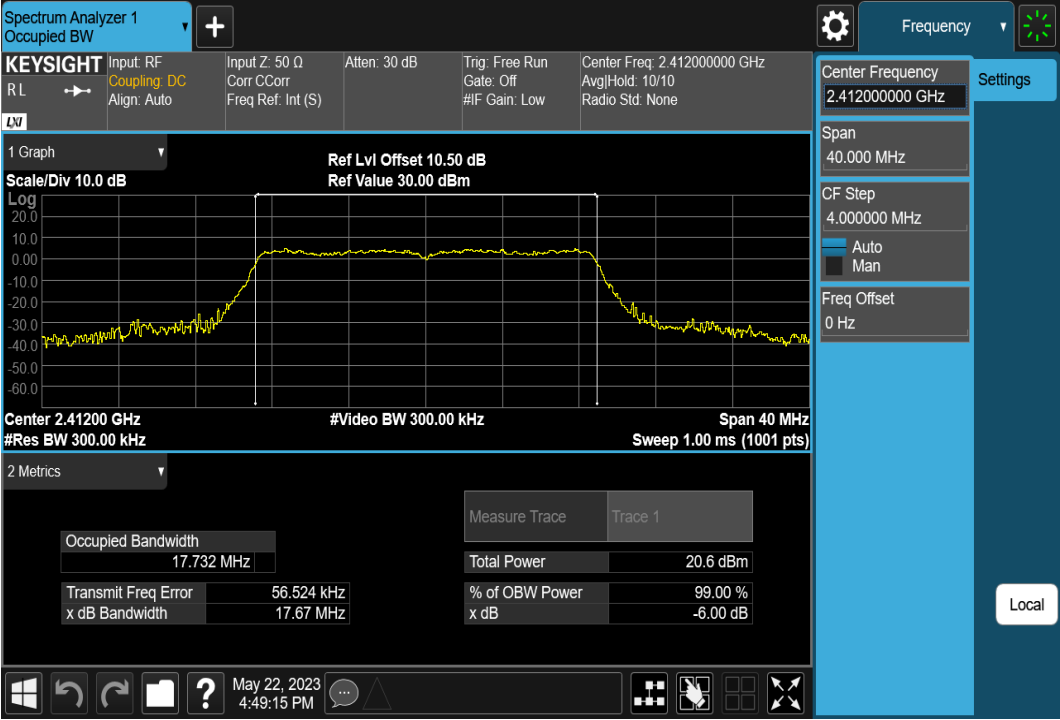
8.4 OCCUPIED BANDWIDTH (99%)

TEST RESULT

Occupied Bandwidth						
802.11n_20MHz	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	----	----
Channel Number	Ch.	1	7	13	----	----
Occupied Bandwidth (Chain0)	MHz	17.732	17.717	17.735	≤ 40	PASS



TEST PLOTS  
Chain 0 / CH Low



Chain 0 / CH Mid

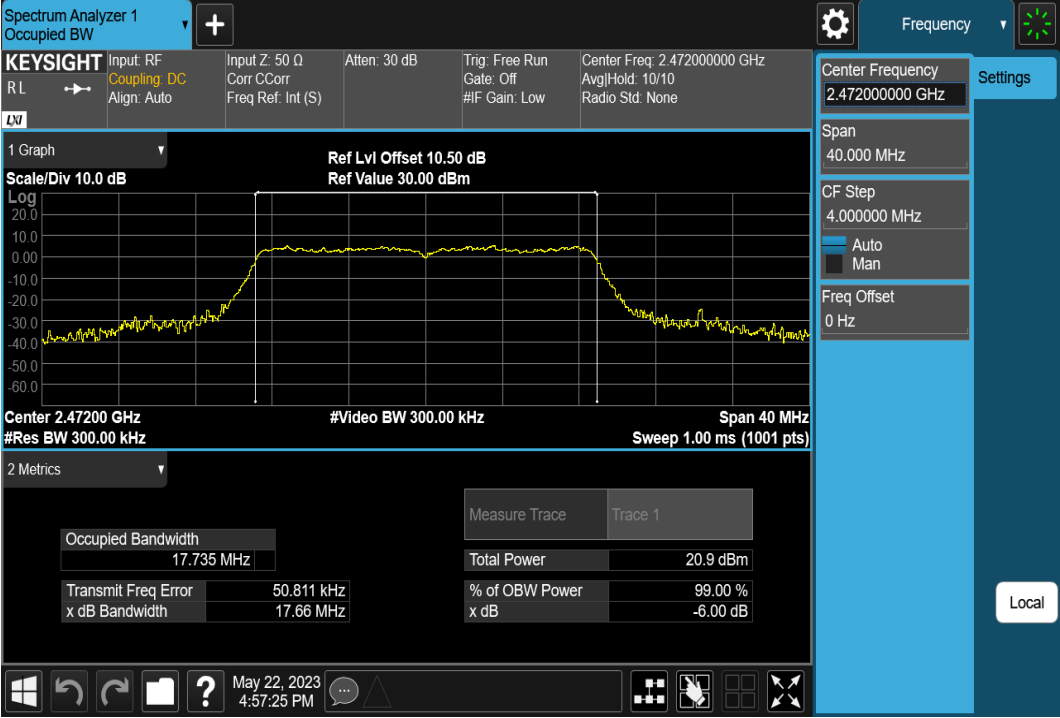




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Chain 0 / CH High





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## 8.5 LIMITATION OF COLLATERAL EMISSIONS OF RECEIVER

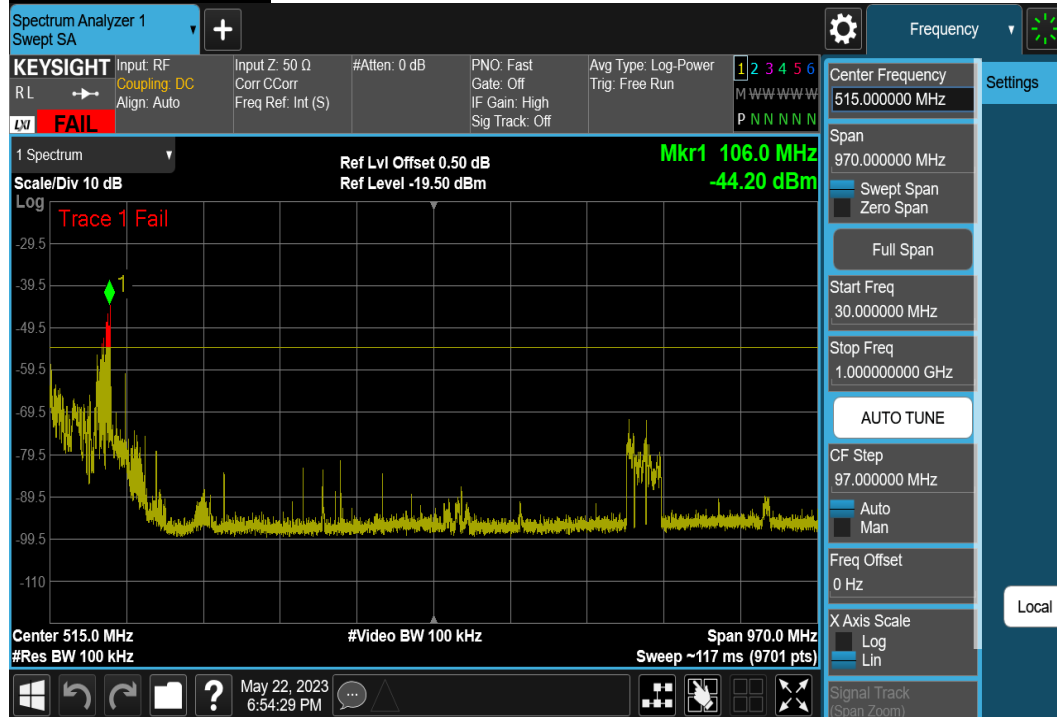
### TEST RESULT

Secondarily emitted radio wave strength						
802.11n_20MHz	unit	-----	-----	-----	Limit	Result
Measurement Frequency	MHz	2412	2442	2472	-----	-----
Channel Number	Ch.	1	7	13	-----	-----
Under 1GHz (Chain0)	nW	2.570	2.754	3.972	≤ 4.00	PASS
	MHz	106.00	106.00	106.00	-----	
1 - 12.5GHz (Chain0)	nW	0.051	0.044	0.054	≤ 20.00	PASS
	MHz	3283.00	3283.00	3283.00	-----	

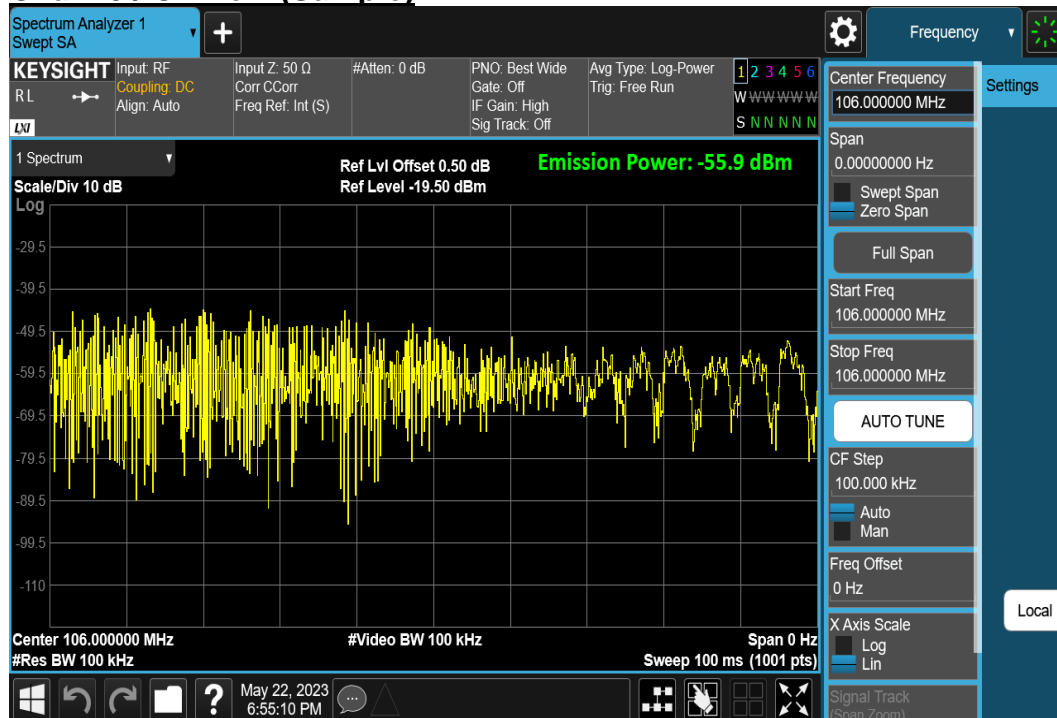
## Under 1GHz (Chain0)

### TEST PLOTS

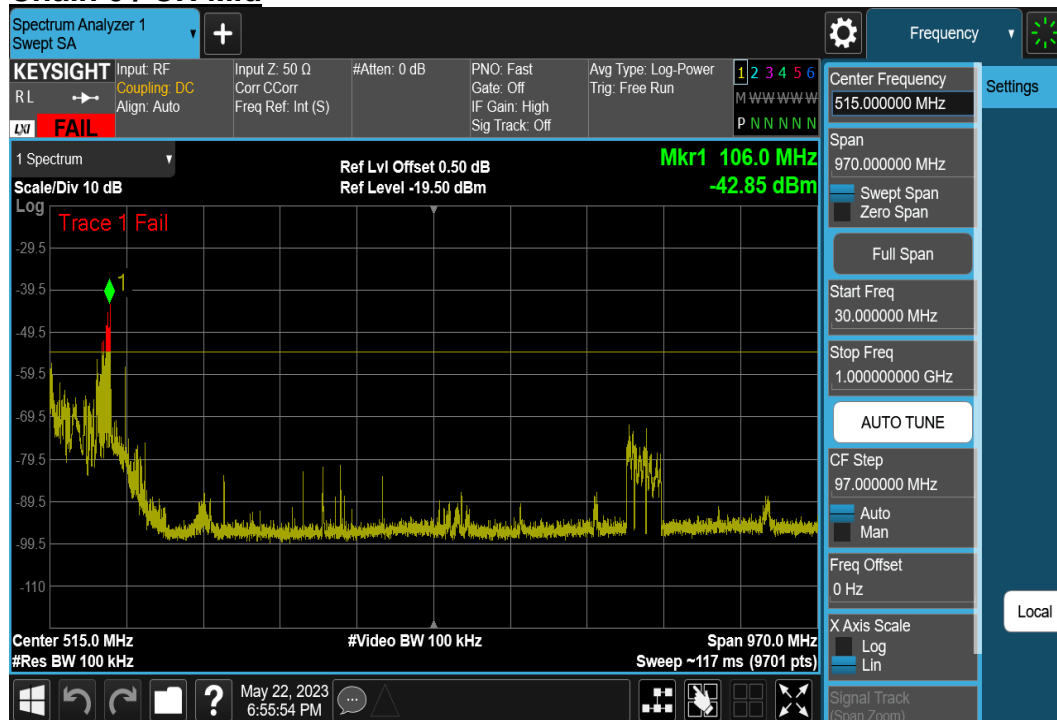
#### Chain 0 / CH Low



#### Chain 0 / CH Low (Sample)



## Chain 0 / CH Mid



## Chain 0 / CH Mid (Sample)

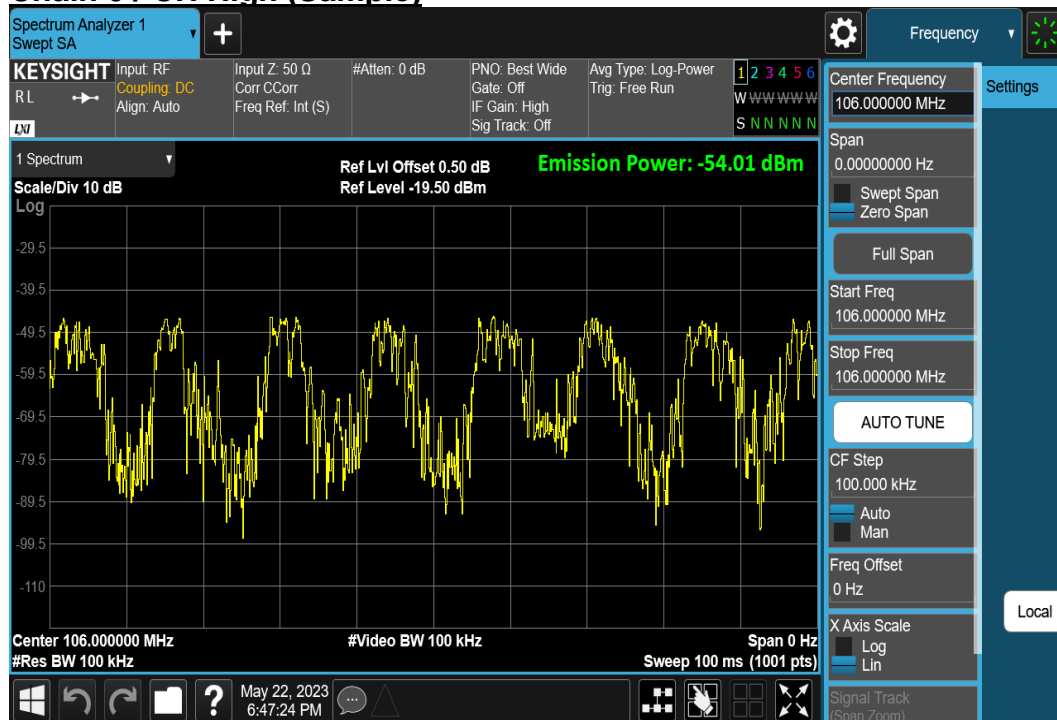




### Chain 0 / CH High



### Chain 0 / CH High (Sample)





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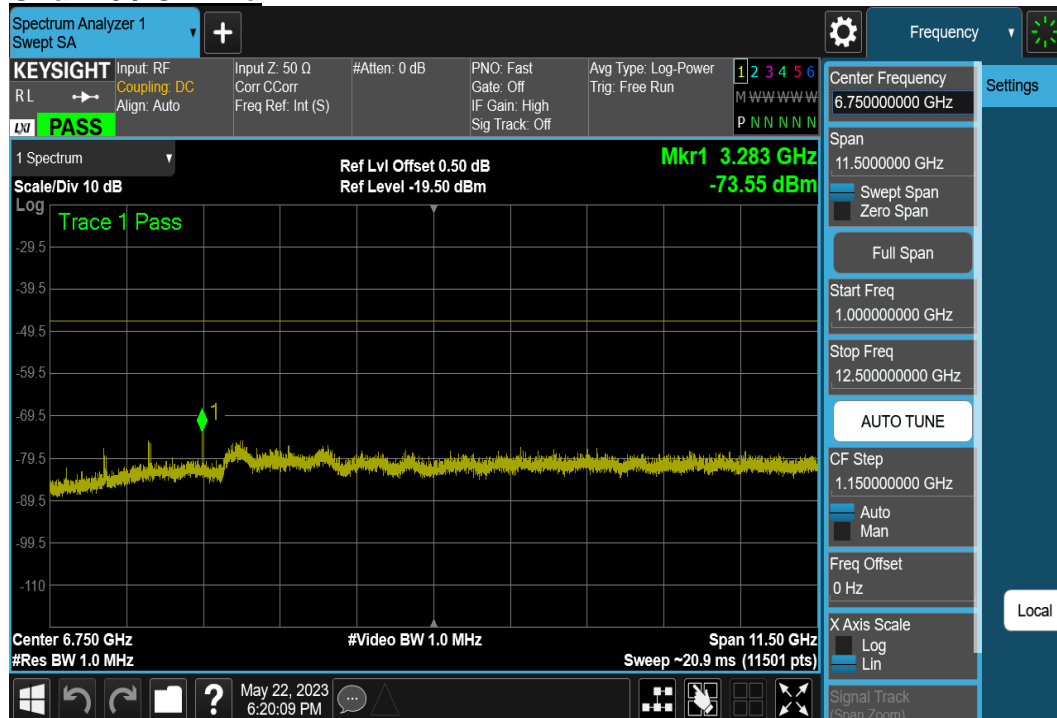
## 1 - 12.5GHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low

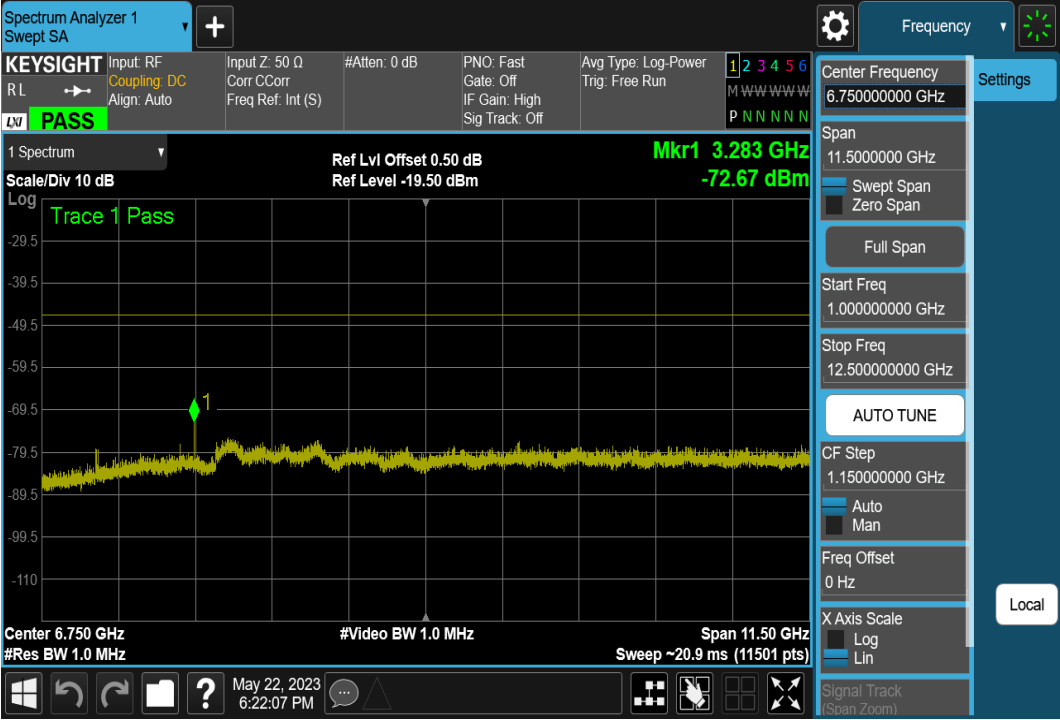


#### Chain 0 / CH Mid





Chain 0 / CH High



## 9. TEST RESULT FOR IEEE 802.11n HT40 (CH3~CH11)

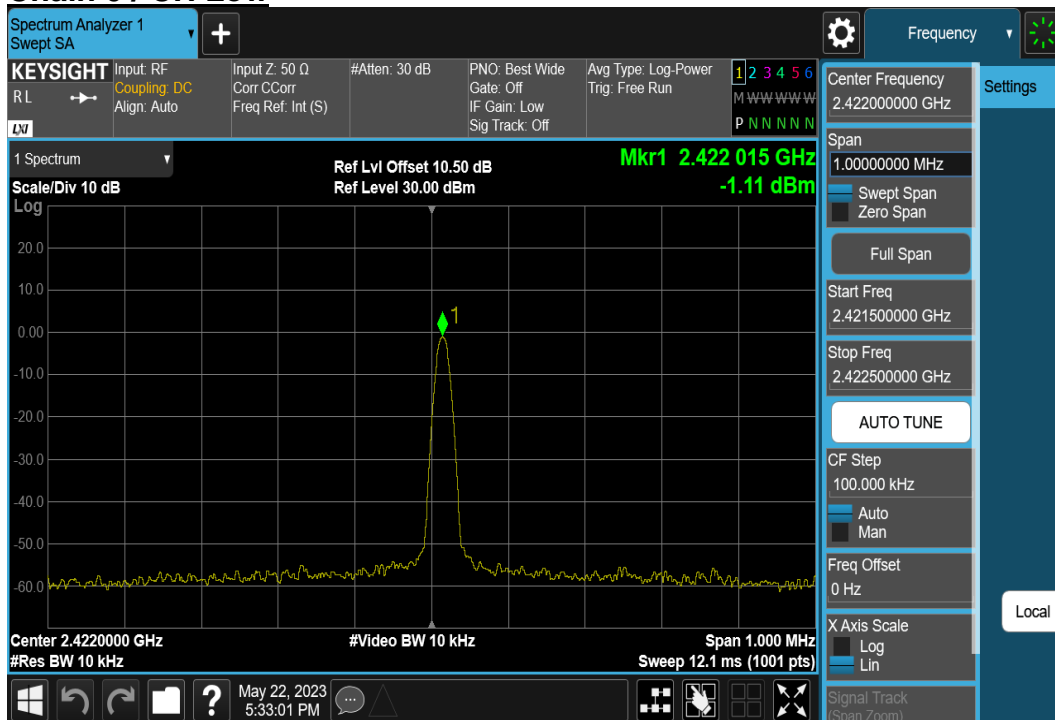
### 9.1 FREQUENCY ERROR

#### TEST RESULT

Frequency Tolerance						
802.11n_40MHz	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2422	2442	2462	----	----
Channel Number	Ch.	3	7	11	----	----
Reading Frequency (Chain0)	MHz	2422.015	2442.015	2462.015	$\geq$ -50.00	PASS
Frequency Tolerance (Chain0)	ppm	6.19323	6.14251	6.09261	$\leq$ 50.00	

#### TEST PLOTS

##### Chain 0 / CH Low

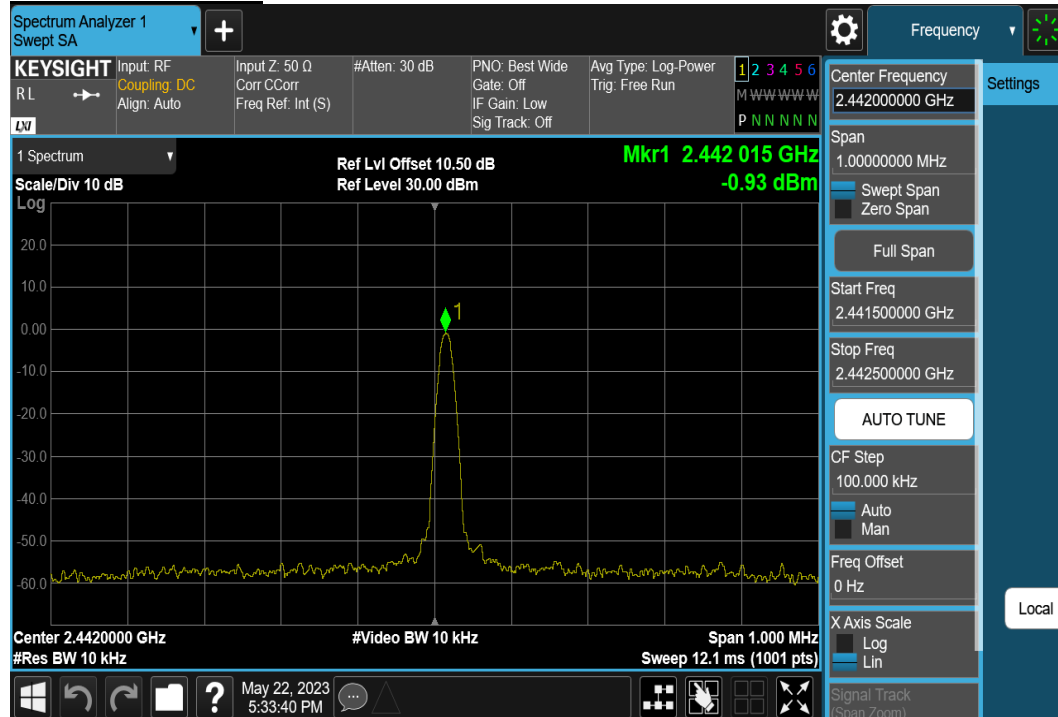




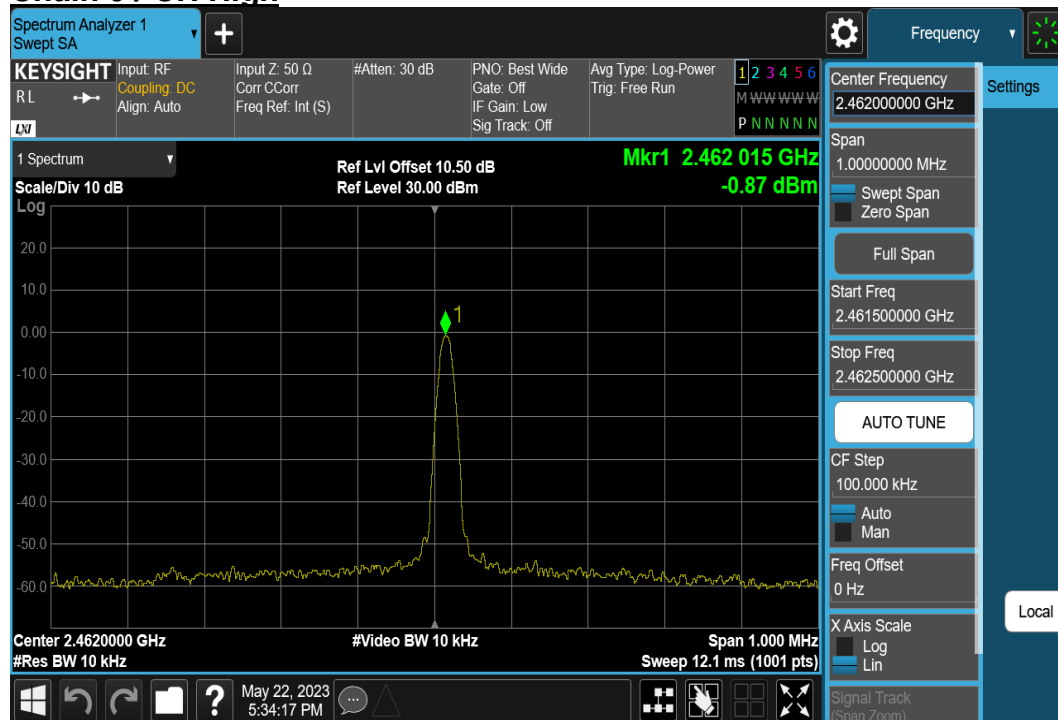
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## Chain 0 / CH Mid



## Chain 0 / CH High



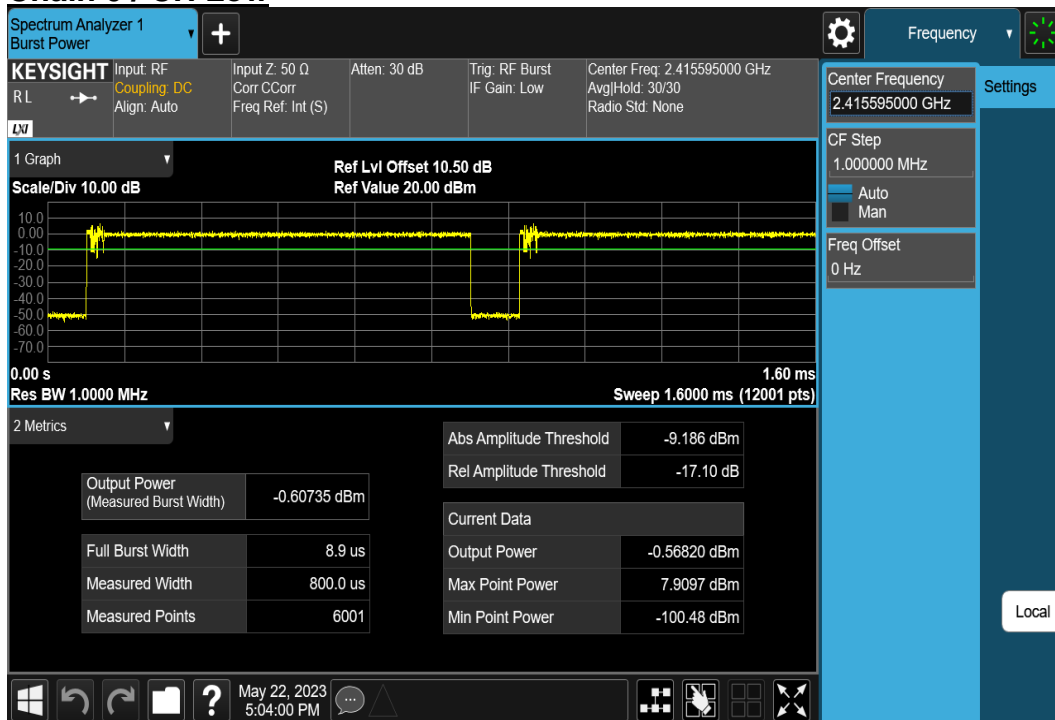
## 9.2 RF OUTPUT POWER

### TEST RESULT

RF Output Power						
802.11n_40MHz	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2422	2442	2462	----	----
Channel Number	Ch.	3	7	11	----	----
RF Output Power (Chain0)	mW/MHz	0.869	0.881	0.824	≤ 5.000	PASS
	dBm/MHz	-0.60735	-0.5499	-0.8399	≤ 6.990	
RF Output Power Tolerance	%	-1.31	0.01	-6.45	≤ 20	PASS
					≥ -80	

### TEST PLOTS

#### Chain 0 / CH Low





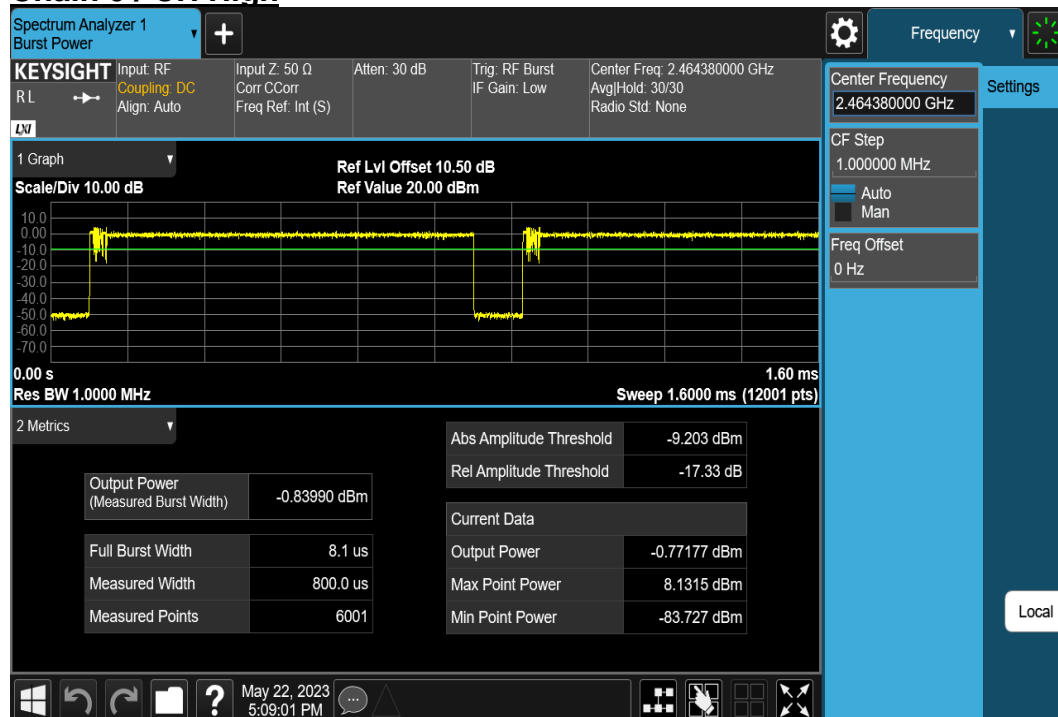
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## Chain 0 / CH Mid



## Chain 0 / CH High





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## 9.3 UNWANTED EMISSION STRENGTH

### TEST RESULT

Unwanted Emission Strength (Chain 0&1)						
802.11n_40MHz	unit	-----	-----	-----	Limit	Result
Measurement Frequency	MHz	2422	2442	2462	-----	-----
Channel Number	Ch.	3	7	11	-----	-----
Under 2387MHz (Chain0)	μW/MHz	1.1429	1.1776	0.2339	≤ 2.50	PASS
	MHz	2384.50	724.40	102.00	-----	
2387 ~ 2400MHz (Chain0)	μW/MHz	0.0735	0.8035	0.1122	≤ 25.00	PASS
	MHz	2399.85	2399.30	2398.04	-----	
2483.5 ~ 2496.5MHz (Chain0)	μW/MHz	0.4198	0.9931	0.0877	≤ 25.00	PASS
	MHz	2491.06	2485.17	2483.81	-----	
2496.5MHz ~ 12.5GHz (Chain0)	μW/MHz	0.2786	0.3648	0.2323	≤ 2.50	PASS
	MHz	3787.00	3742.50	5111.50	-----	





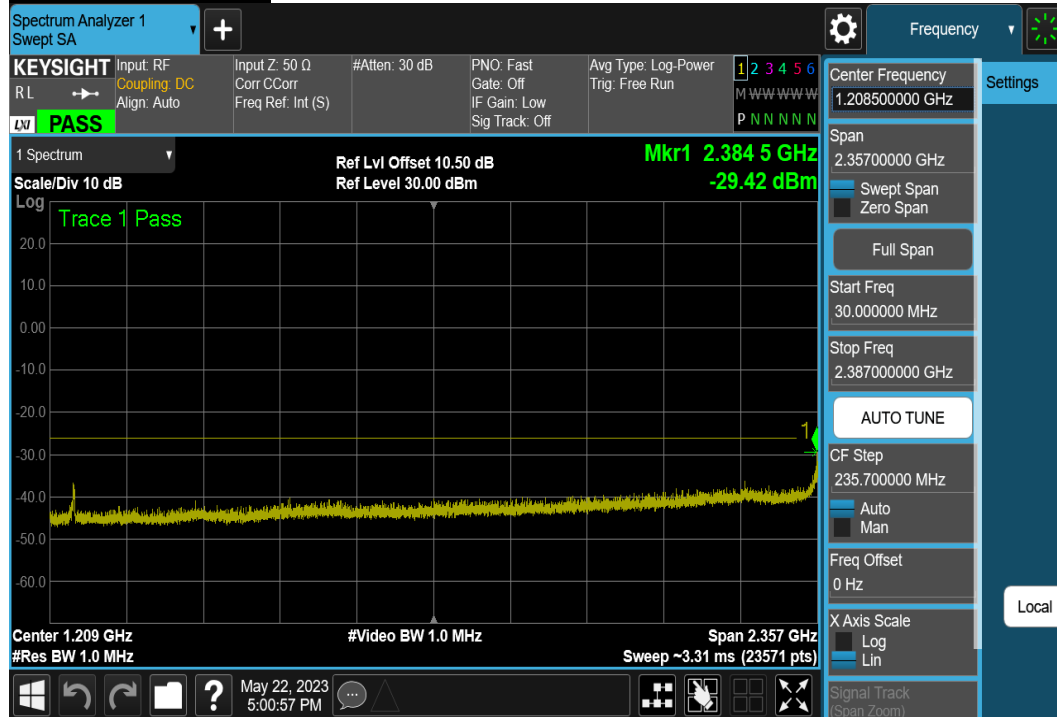
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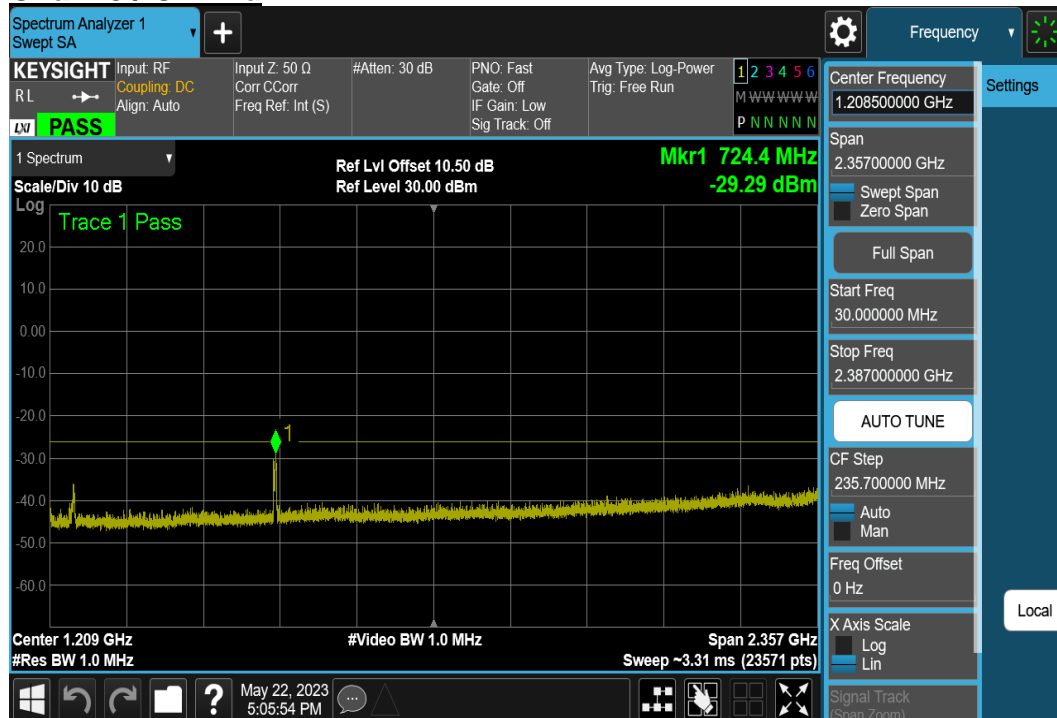
## Under 2387MHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low

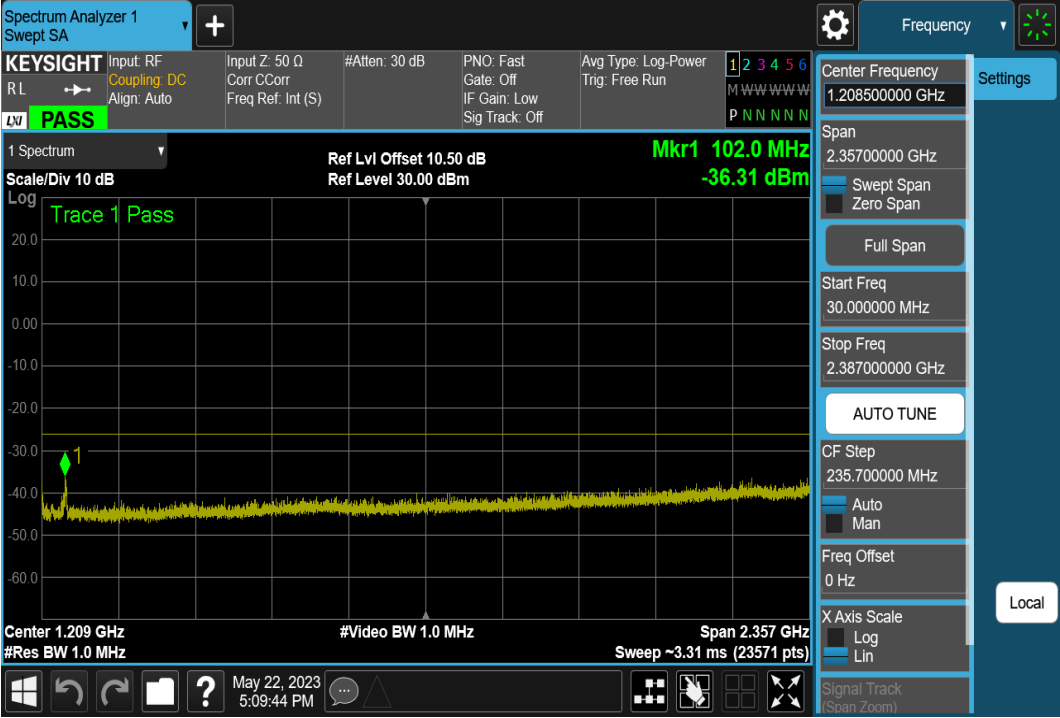


#### Chain 0 / CH Mid





Chain 0 / CH High





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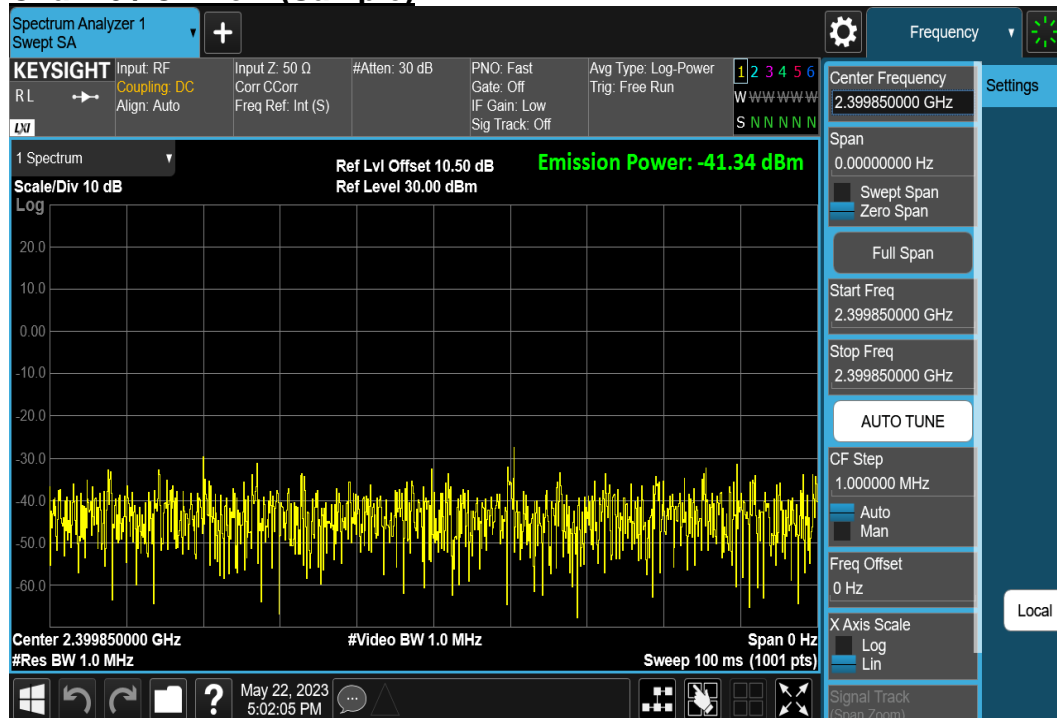
## 2387 ~ 2400MHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low



#### Chain 0 / CH Low (Sample)

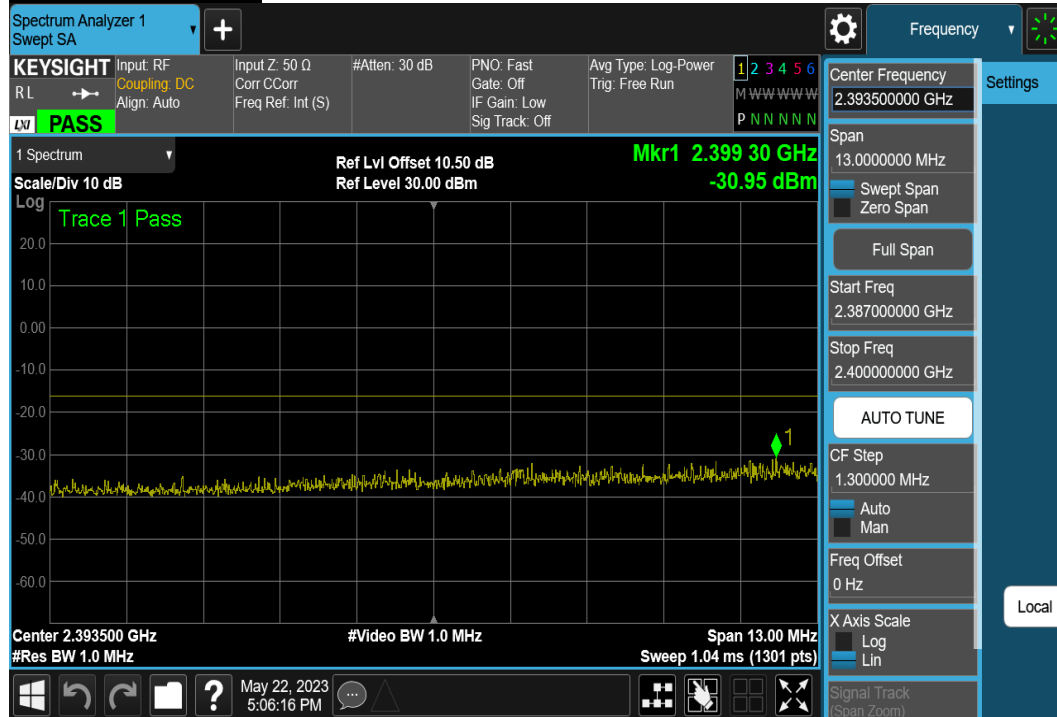




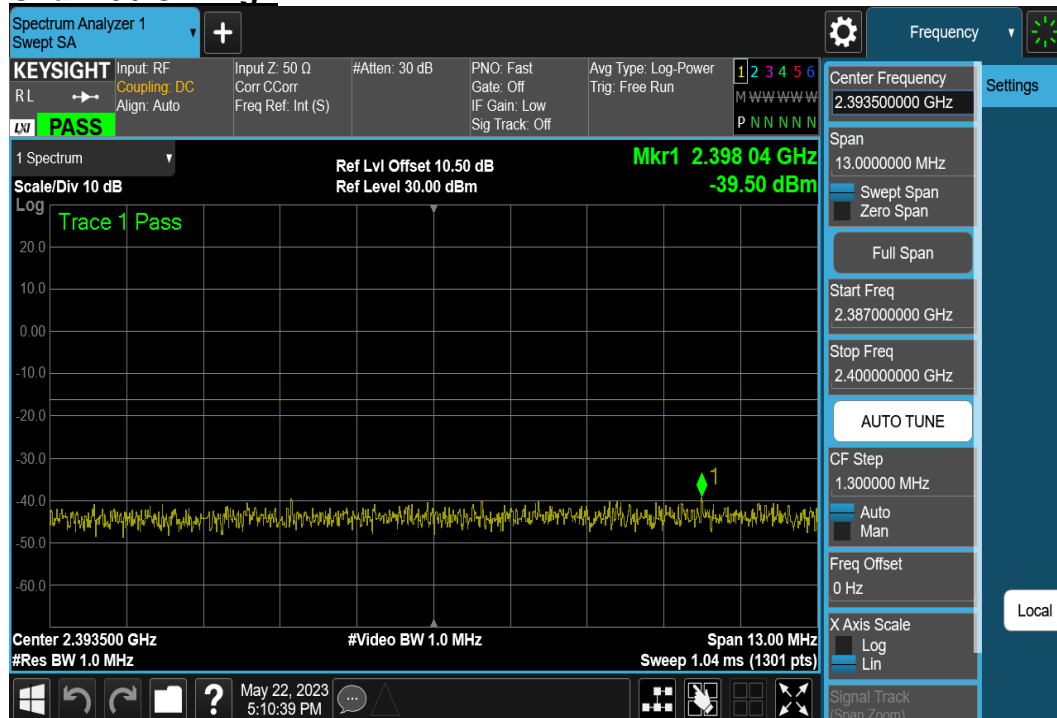
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### Chain 0 / CH Mid



### Chain 0 / CH High





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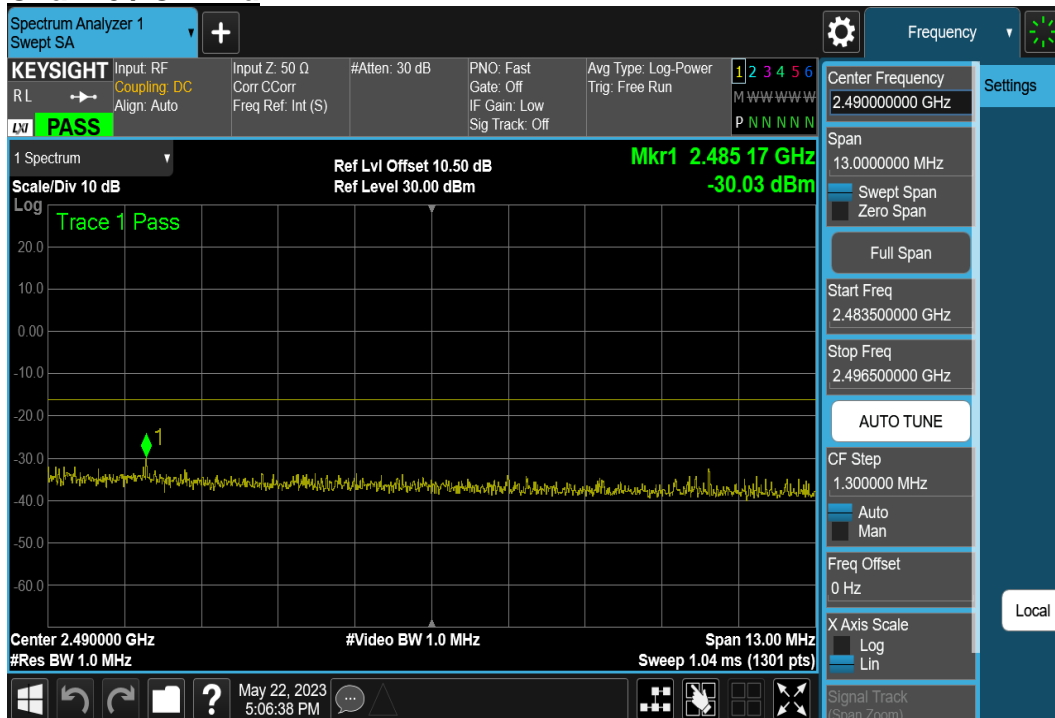
2483.5 ~ 2496.5MHz (Chain0)

## TEST PLOTS

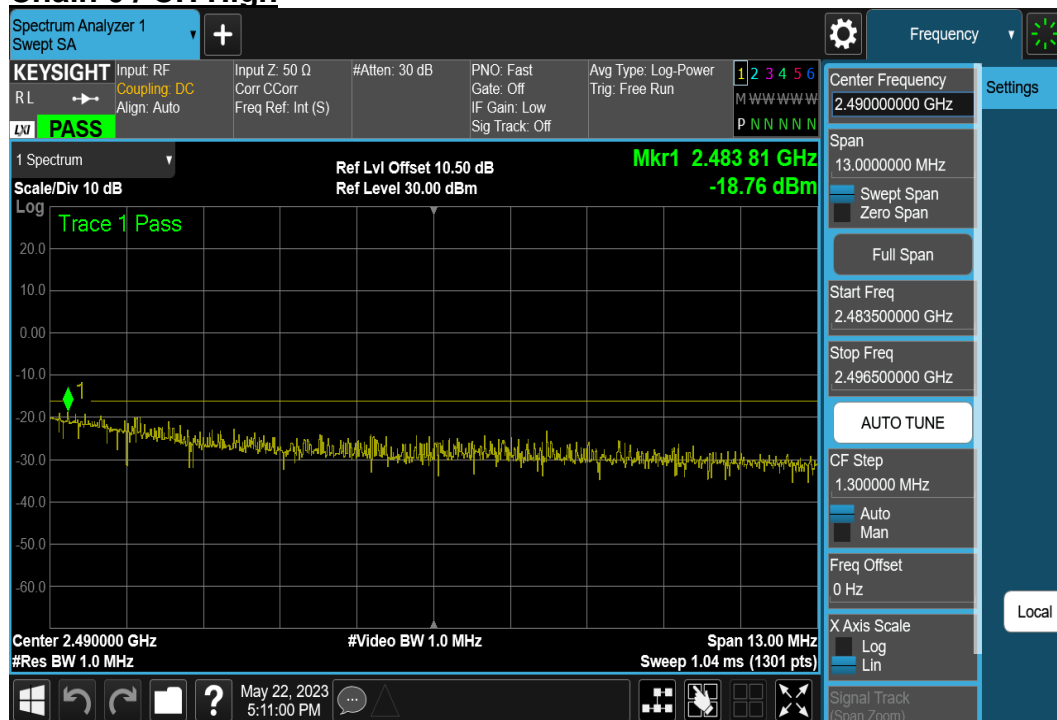
### Chain 0 / CH Low



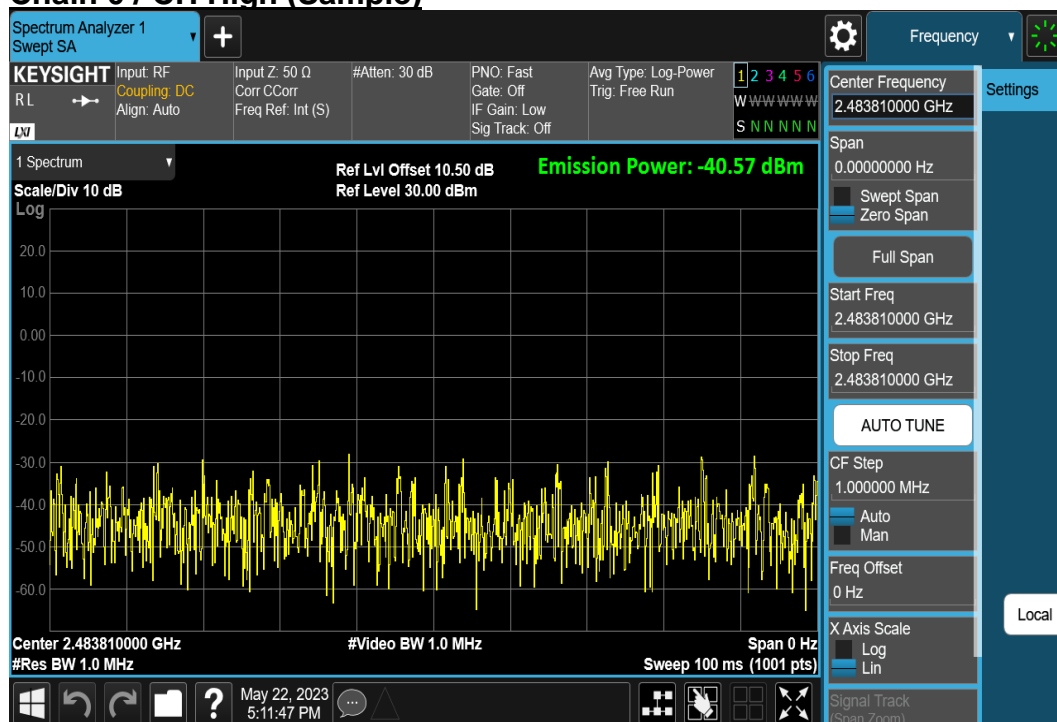
### Chain 0 / CH Mid



## Chain 0 / CH High



## Chain 0 / CH High (Sample)





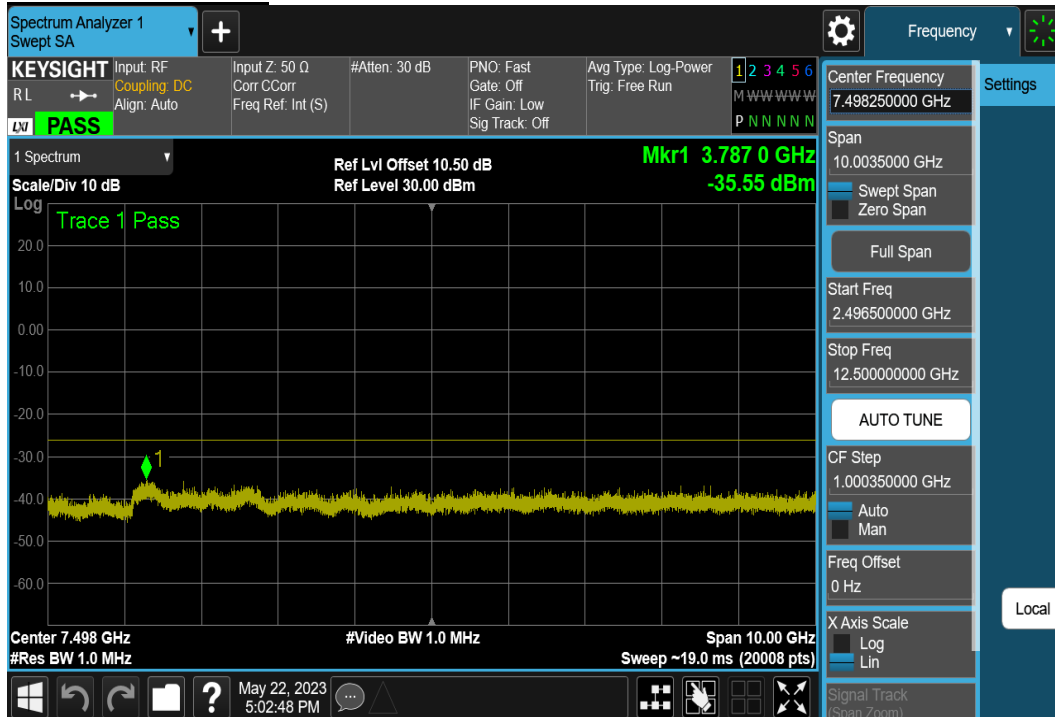
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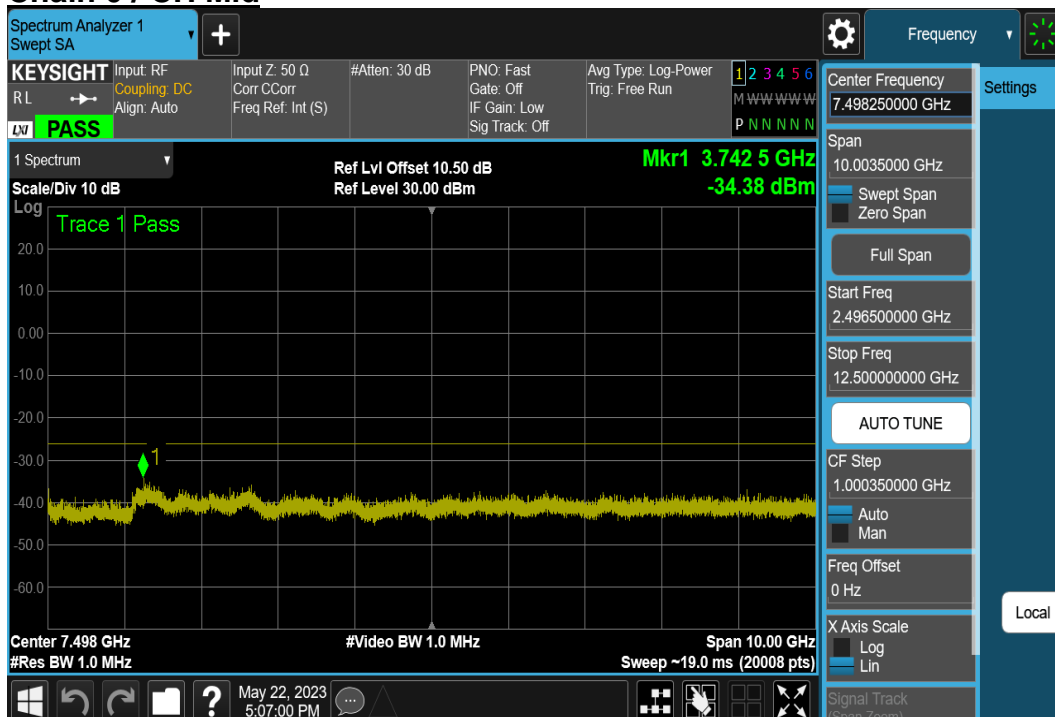
2496.5MHz ~ 12.5GHz (Chain0)

## TEST PLOTS

### Chain 0 / CH Low

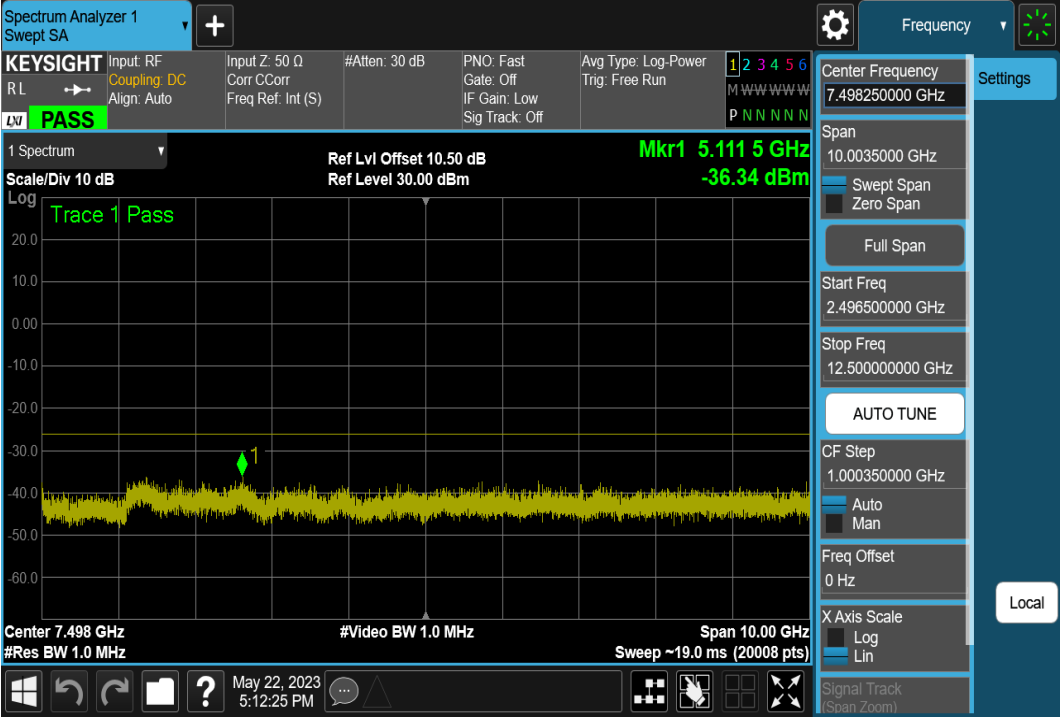


### Chain 0 / CH Mid





Chain 0 / CH High







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9.4 OCCUPIED BANDWIDTH (99%)

TEST RESULT

Occupied Bandwidth						
802.11n_40MHz	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2422	2442	2462	----	----
Channel Number	Ch.	3	7	11	----	----
Occupied Bandwidth (Chain0)	MHz	36.121	36.129	36.128	≤ 40	PASS

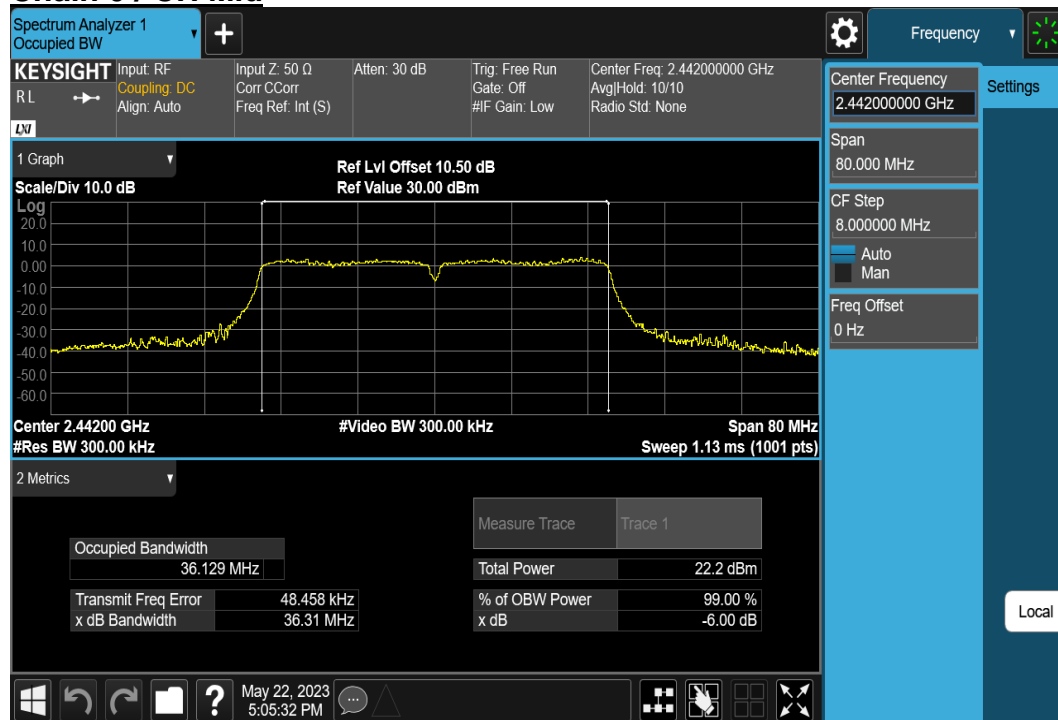
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## TEST PLOTS

## Chain 0 / CH Low

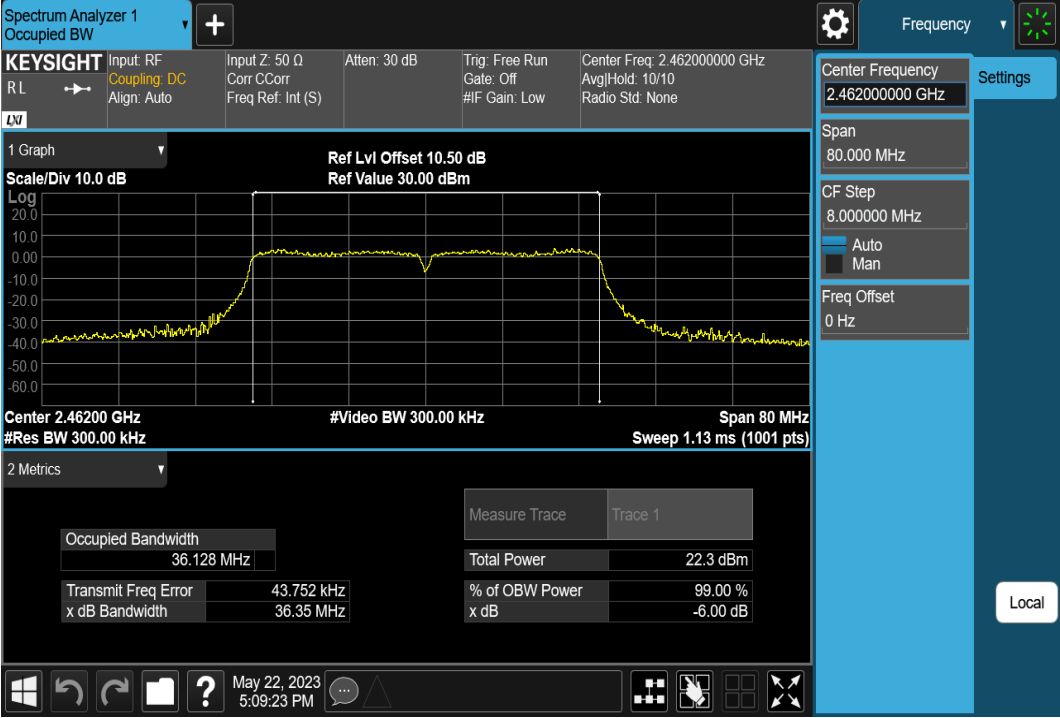


## Chain 0 / CH Mid





Chain 0 / CH High





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## 9.5 LIMITATION OF COLLATERAL EMISSIONS OF RECEIVER

### TEST RESULT

Secondarily emitted radio wave strength						
802.11n_40MHz	unit	-----	-----	-----	Limit	Result
Measurement Frequency	MHz	2422	2442	2462	-----	-----
Channel Number	Ch.	3	7	11	-----	-----
Under 1GHz (Chain0)	nW	2.518	1.510	2.825	≤ 4.00	PASS
	MHz	106.00	103.40	106.00	-----	
1 - 12.5GHz (Chain0)	nW	0.048	0.059	0.229	≤ 20.00	PASS
	MHz	3283.00	3424.00	2480.00	-----	



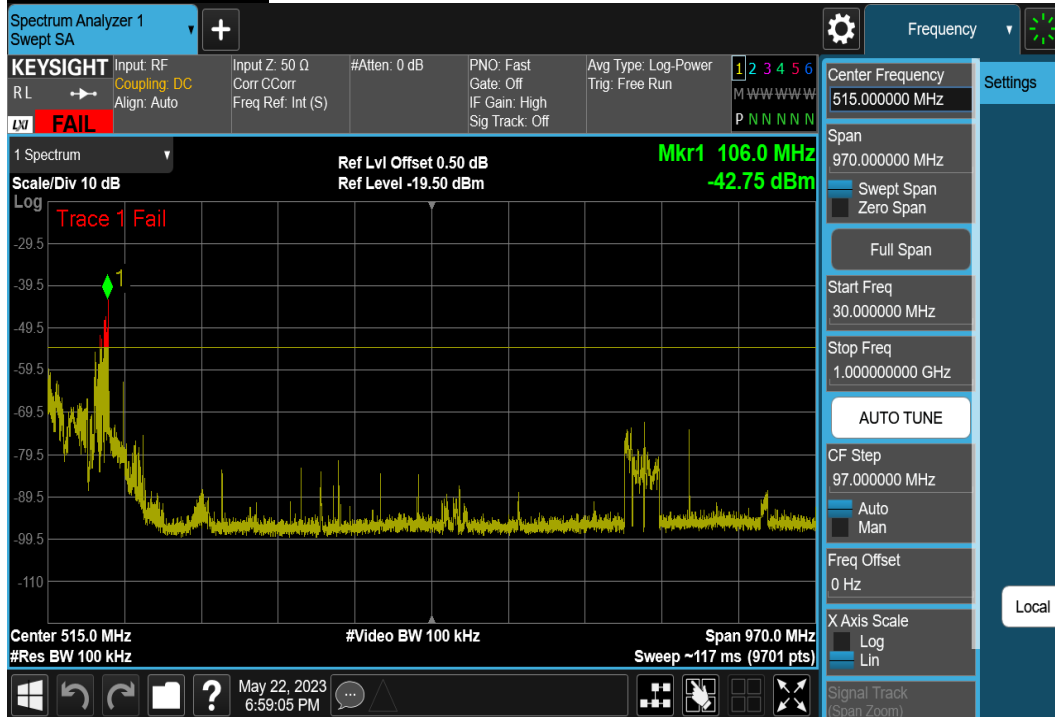
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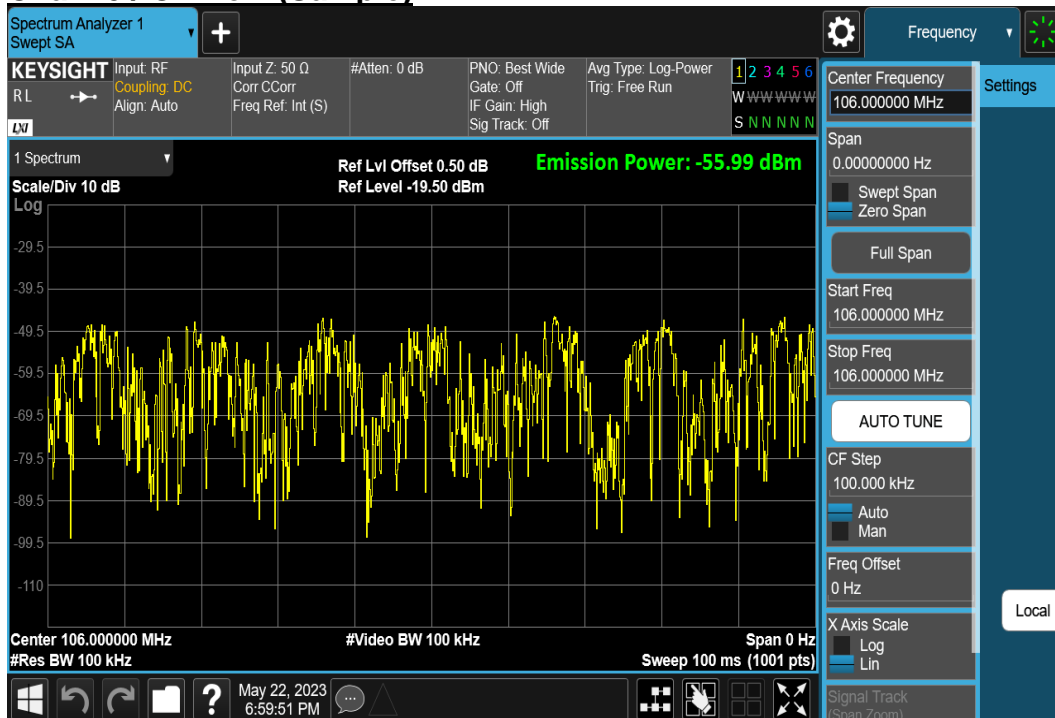
## Under 1GHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low



#### Chain 0 / CH Low (Sample)

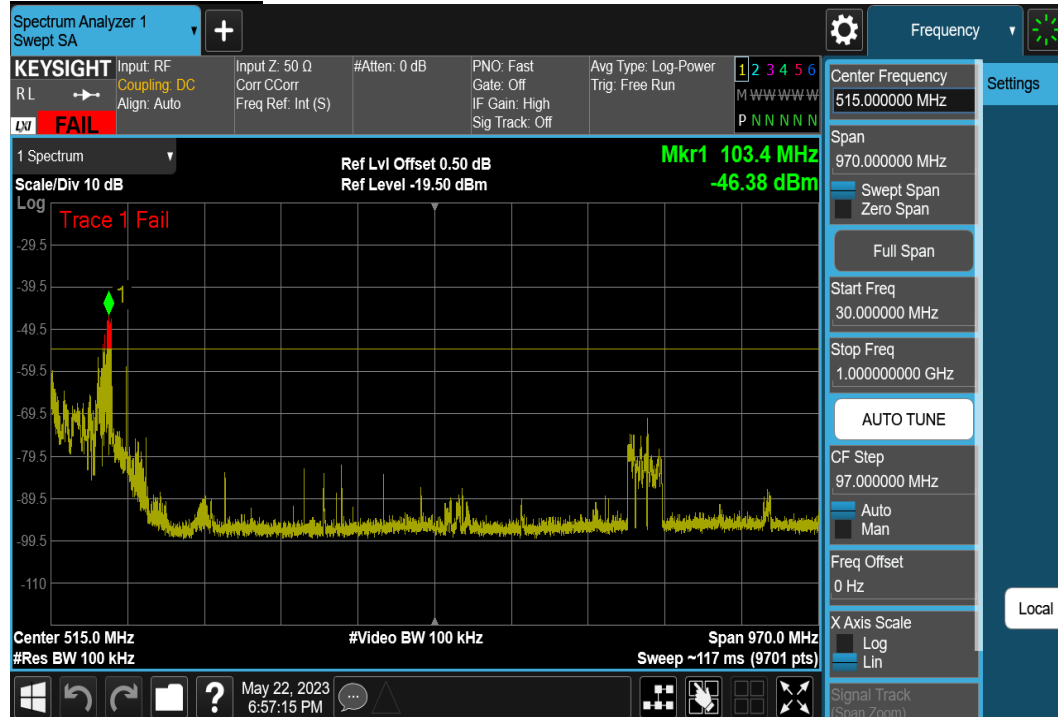




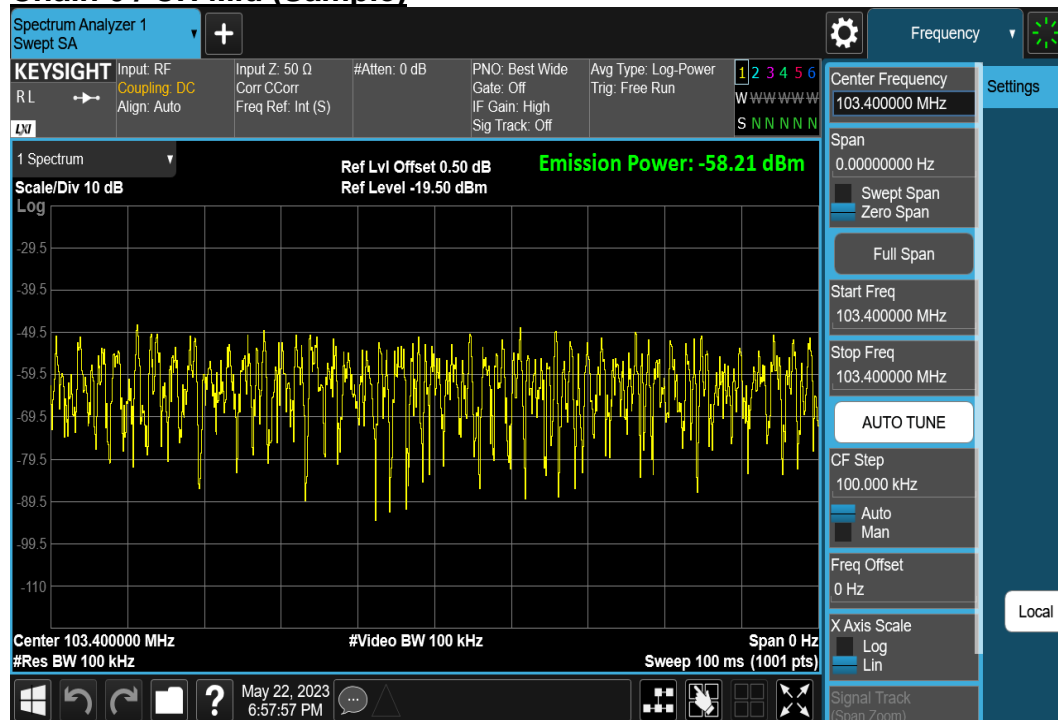
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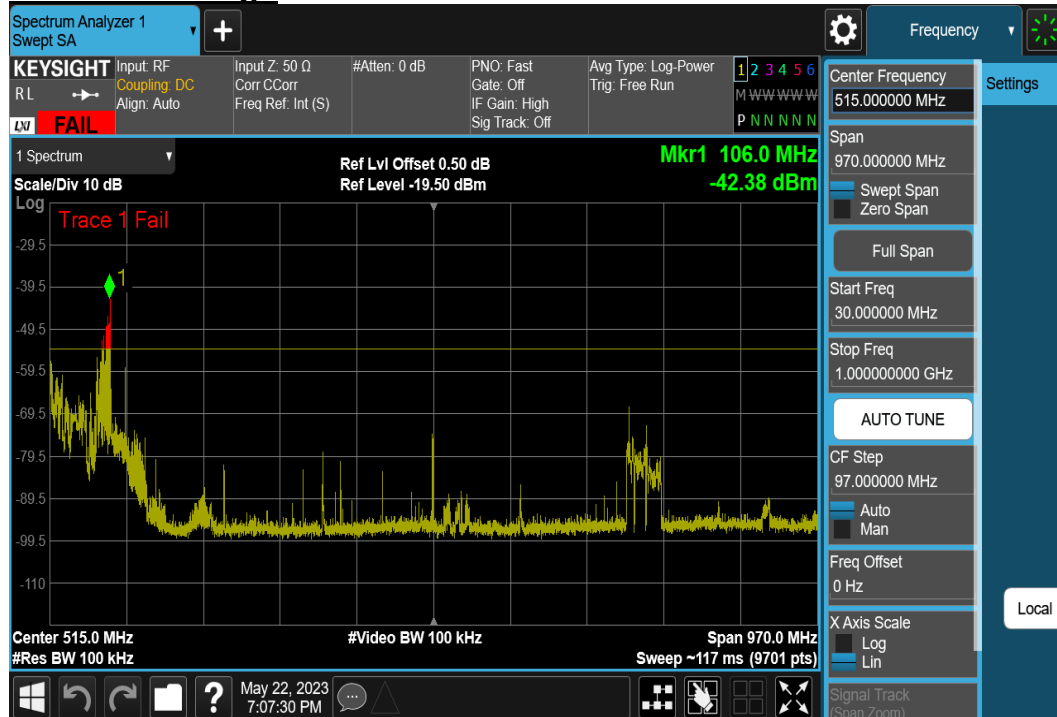
## Chain 0 / CH Mid



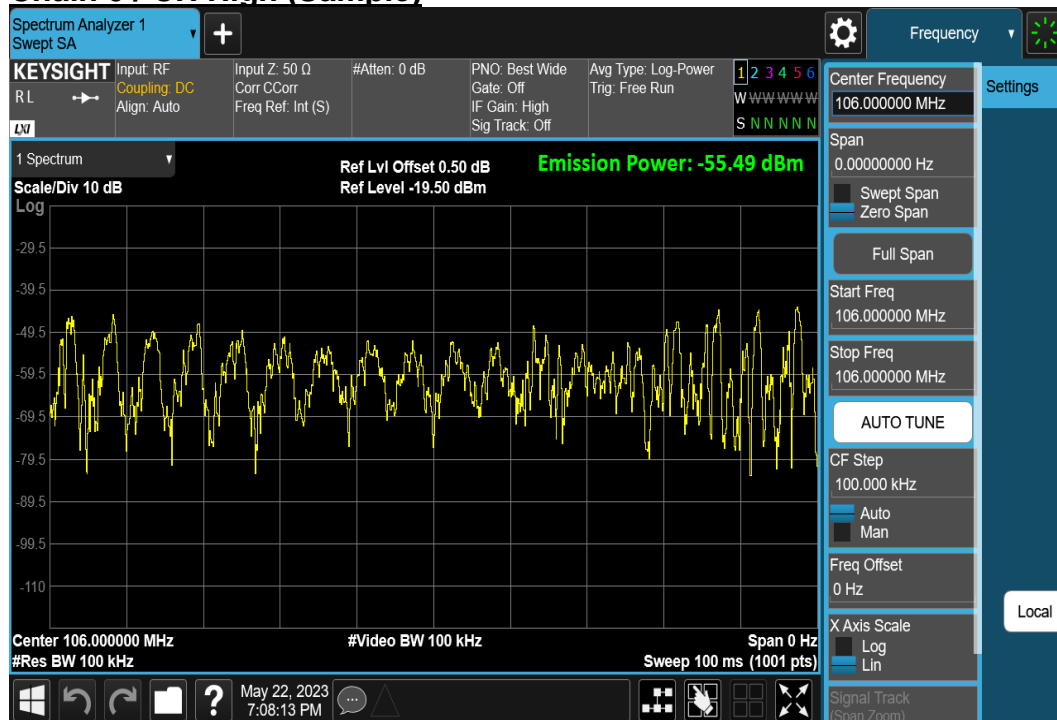
## Chain 0 / CH Mid (Sample)



## Chain 0 / CH High



## Chain 0 / CH High (Sample)





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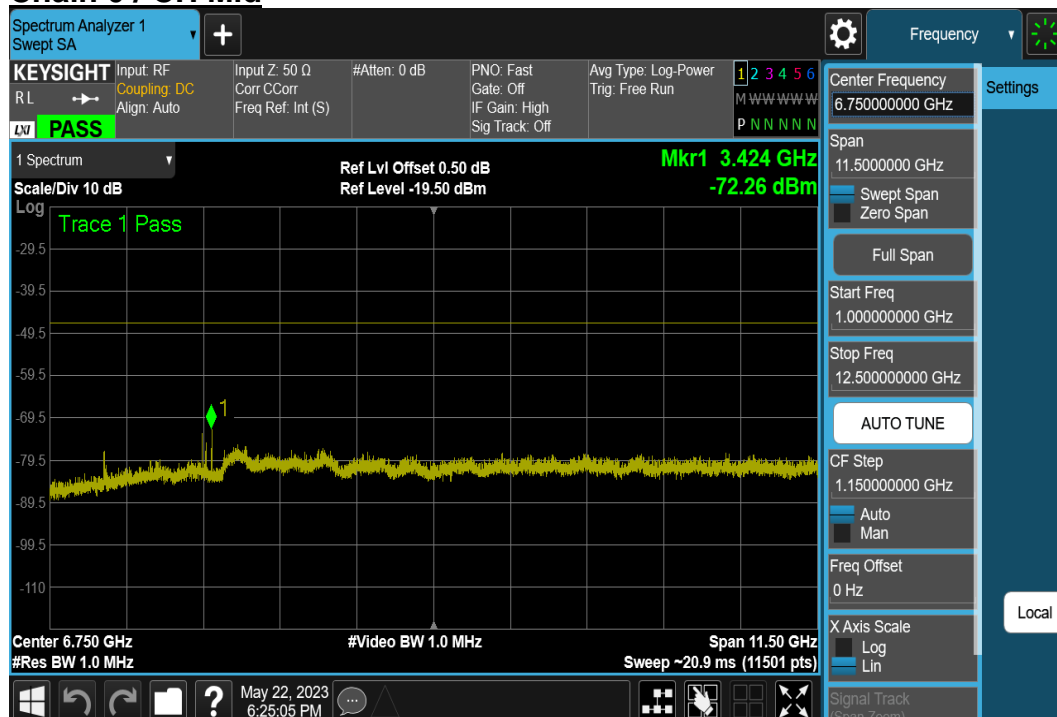
## 1 - 12.5GHz (Chain0)

### TEST PLOTS

#### Chain 0 / CH Low

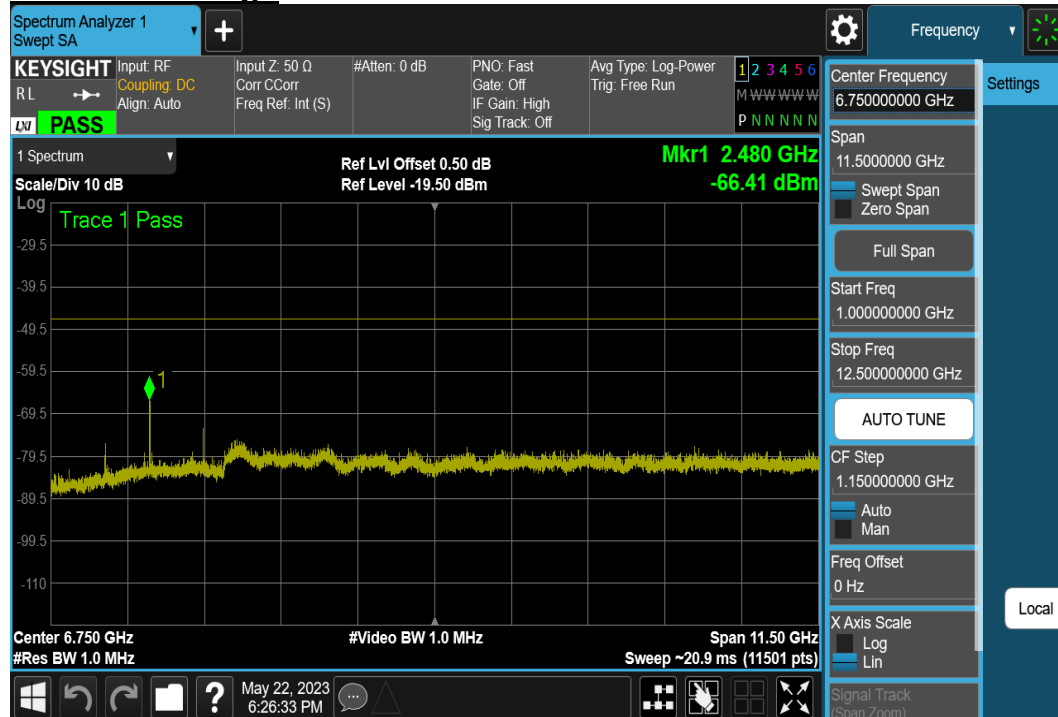


#### Chain 0 / CH Mid

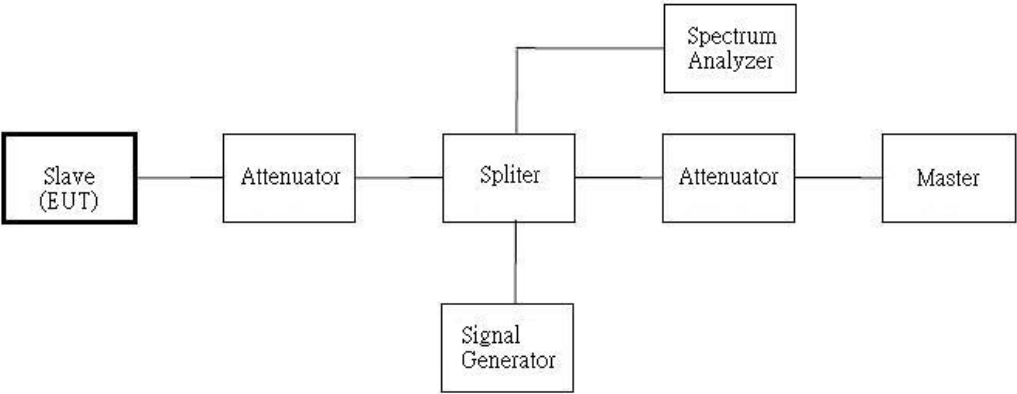




## Chain 0 / CH High



9.6 CARRIER SENSE CAPABILITY



Carrier Sense						
802.11n_40MHz	unit	----	----	----	Limit	Result
Measurement Frequency	MHz	2422	2442	2462	----	----
Channel Number	Ch.	3	7	11	----	----
Interference Level	dBm	-40.89	-40.96	-41.04	----	PASS
Carrier Sense Function	----	PASS	PASS	PASS	----	

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## 10. TEST RESULT FOR BLUETOOTH (CH0~CH78) (FOR GFSK)

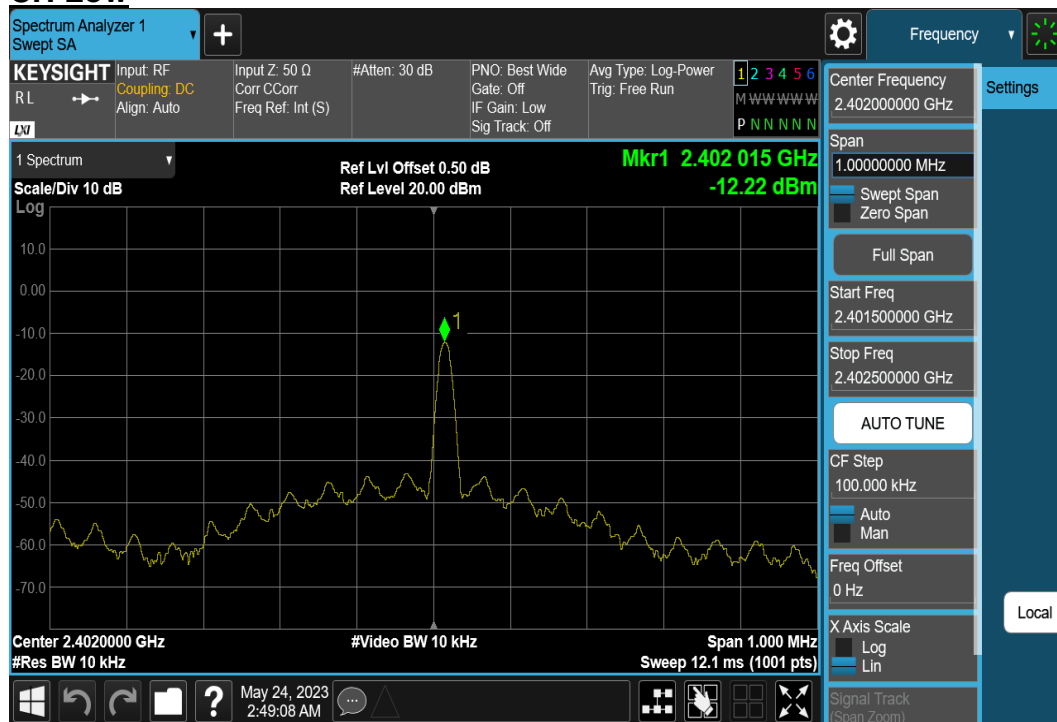
### 10.1 FREQUENCY ERROR

#### TEST RESULT

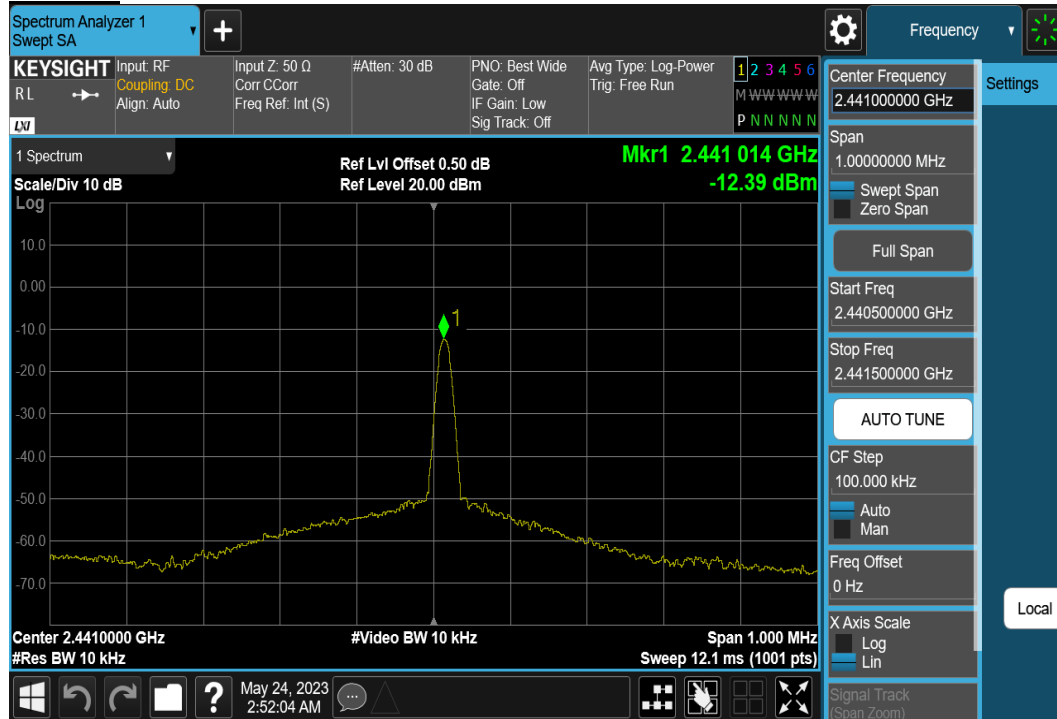
Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	----	----
Number of hopping channel	----	-	79	20	----	----
Reading Frequency	MHz	2402.015	2441.014	2480.015	----	----
Frequency Tolerance	ppm	6.244796	5.73535	6.048387	$-50 \leq x \leq +50$	PASS

#### TEST RESULT

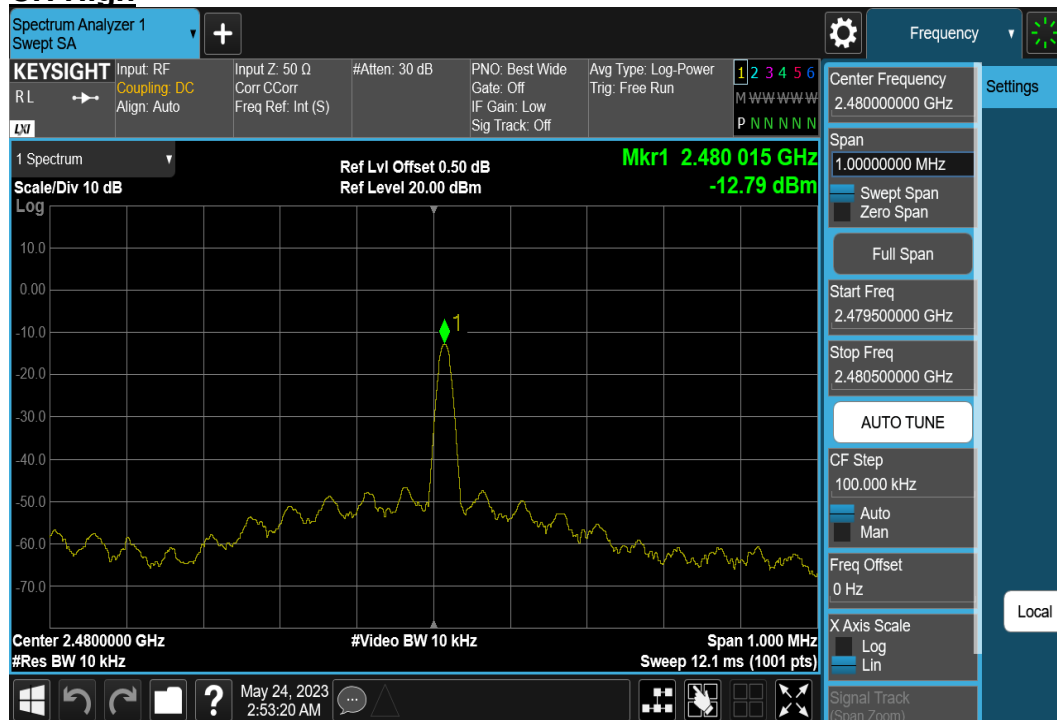
##### CH Low



## CH Mid



## CH High



## 10.2 ANTENNA POWER

### TEST RESULT

Measurement Frequency		MHz	2402	2441		2480	Limit	Result
Channel Number		Ch.	0	39		78	----	----
Number of hopping channel		----	-	79	20	-	----	----
Transmission Output Power	Calculated result	mW/MHz	-	0.053	0.208	-	≤ 3 mW/MHz	----
	Tolerance	%	-	0.00	0.00	-	-80 ≤ x ≤ +20	PASS
	Measured value	dBm	-	5.7427		-	----	----
	On Time	msec	-	2.890		-	----	----
	Dwell Time	msec	-	308.265		-	≤ 400 msec	PASS
	Burst Ratio	%	-	77.1		-	----	----

### TEST PLOTS

#### CH Mid



## 10.3 UNWANTED EMISSION STRENGTH

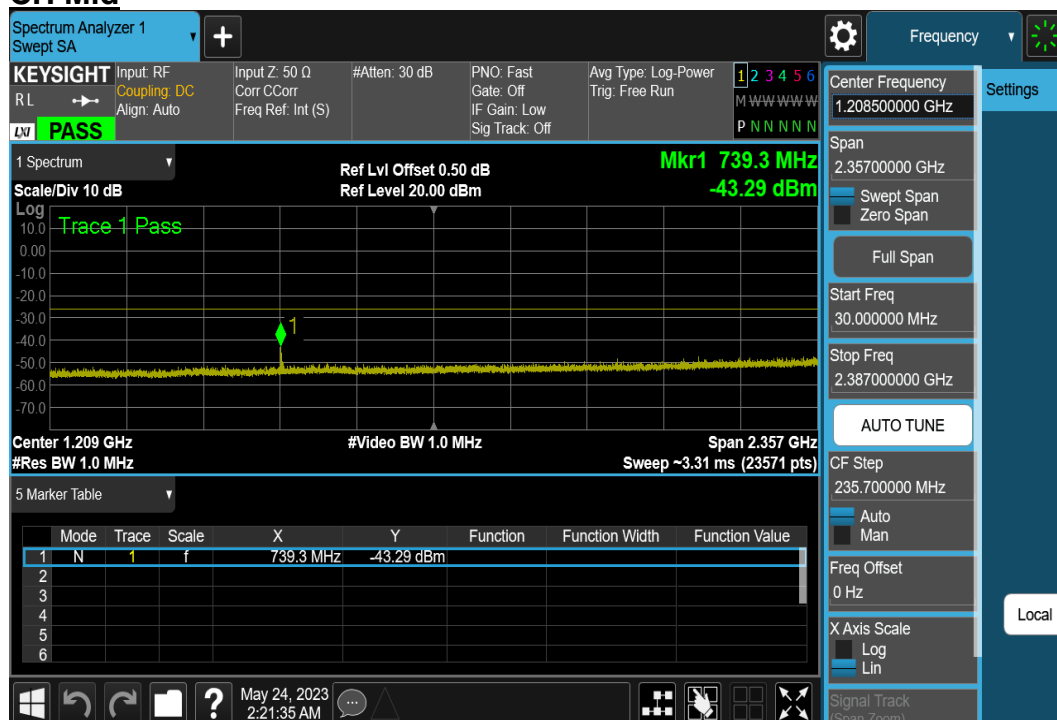
### TEST RESULT

Measurement Frequency		MHz	2402	2441	2480	Limit	Result
Channel Number		Ch.	0	39	78	-----	-----
Number of hopping channel		-----	-	79	20	-----	-----
Unwanted Emission Strength	Under 2387MHz	$\mu\text{W/MHz}$	-	0.046881	-	$\leq 2.5\mu\text{W/MHz}$	PASS
		MHz	-	739.30	-	-----	-----
	2387-2400MHz	$\mu\text{W/MHz}$	-	0.033343	-	$\leq 25\mu\text{W/MHz}$	PASS
		MHz	-	2399.39	-	-----	-----
	2483.5-2496.5MHz	$\mu\text{W/MHz}$	-	0.021777	-	$\leq 25\mu\text{W/MHz}$	PASS
		MHz	-	2484.20	-	-----	-----
	Over 2496.5MHz	$\mu\text{W/MHz}$	-	0.028576	-	$\leq 2.5\mu\text{W/MHz}$	PASS
		MHz	-	3766.50	-	-----	-----

### TEST PLOTS

#### Under 2387MHz

#### CH Mid



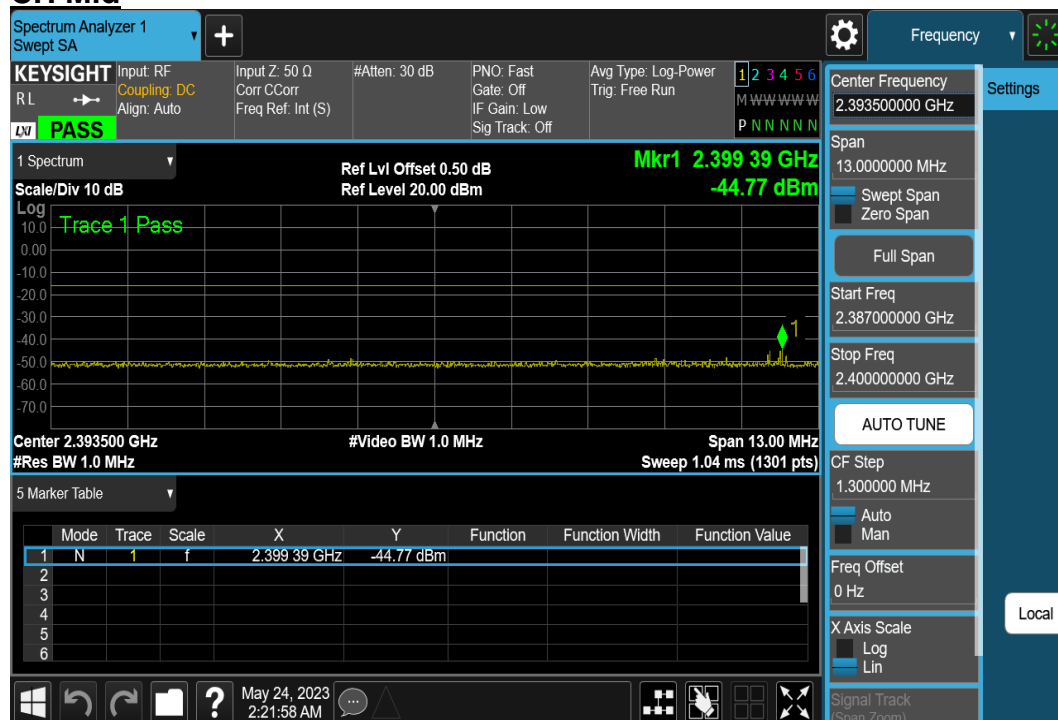


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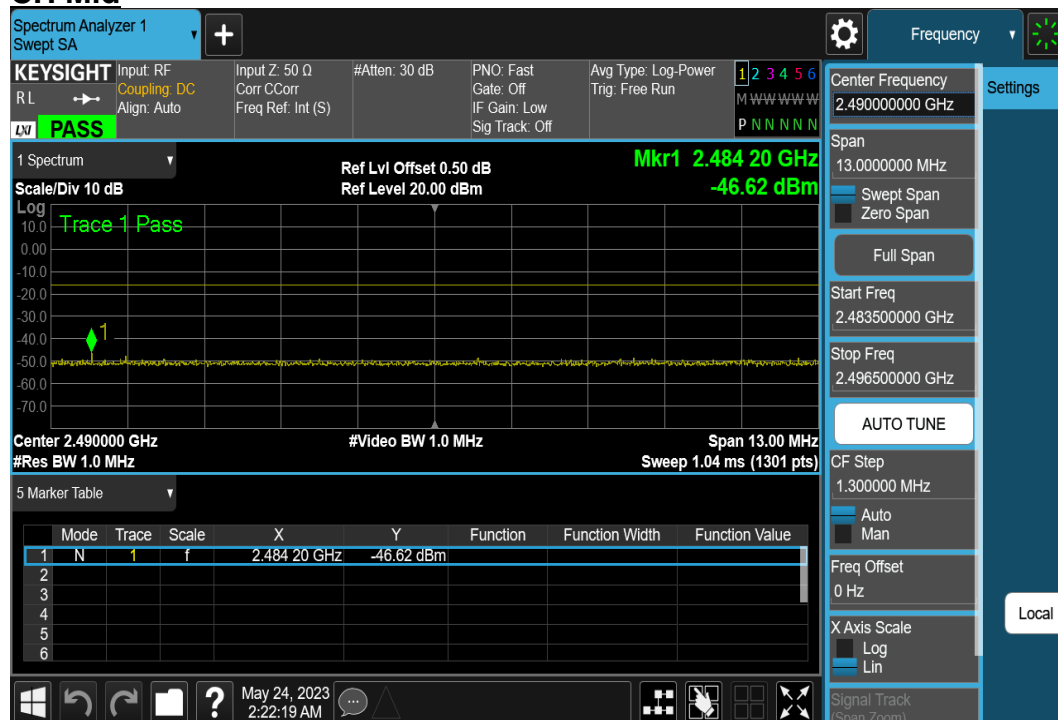
## 2387-2400MHz

### CH Mid



## 2483.5-2496.5MHz

### CH Mid

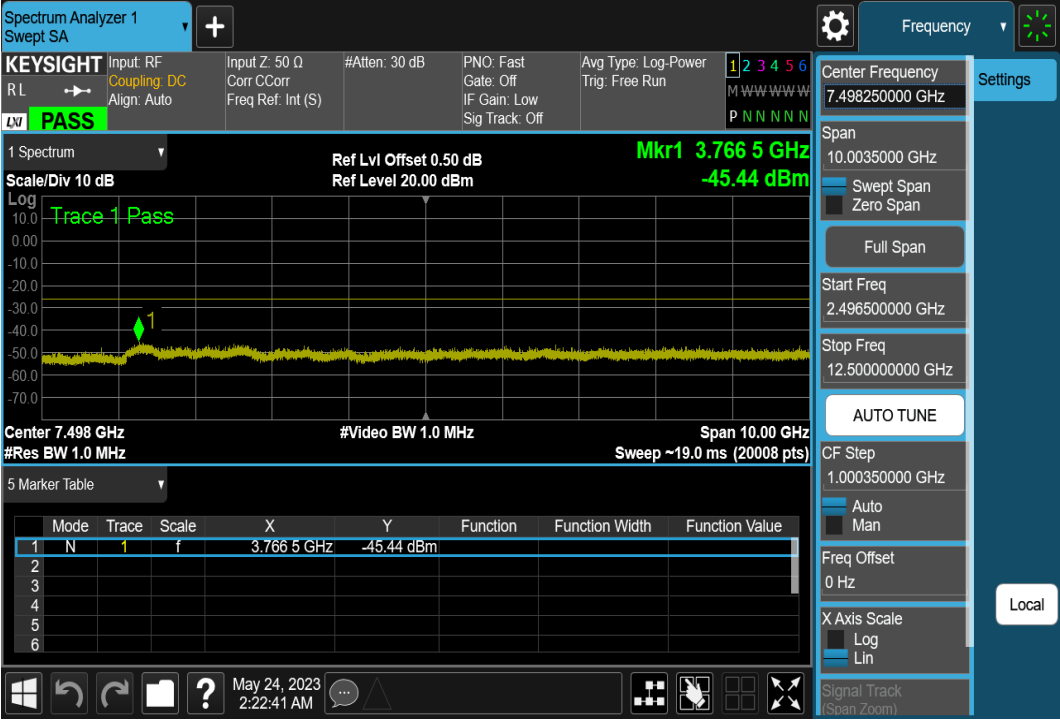




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Over 2496.5MHz  
CH Mid





## 10.4 OCCUPIED BANDWIDTH –NORMAL (99%)

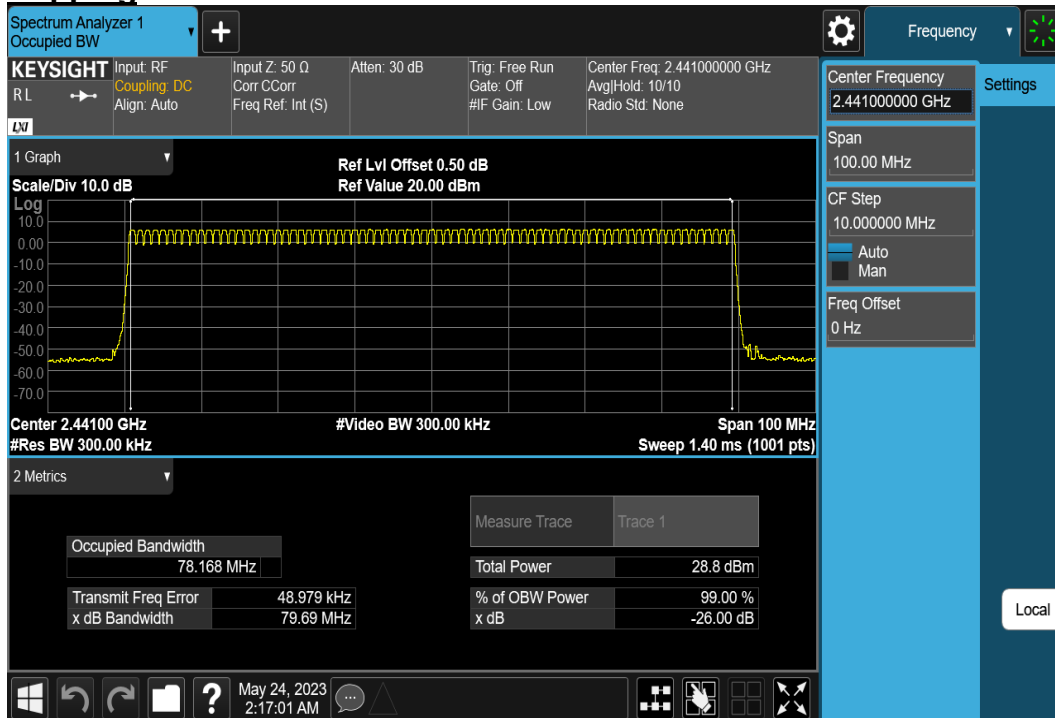
### TEST RESULT

#### BT, GFSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	-----	-----
Number of hopping channel	-----	-	79	20	-----	-----
Occupied Bandwidth	MHz	-	78.168	19.580	≤83.5 MHz	PASS

### TEST PLOTS

#### Hopping



## 10.5 SPREAD-SPECTRUM BANDWIDTH –NORMAL (90%)

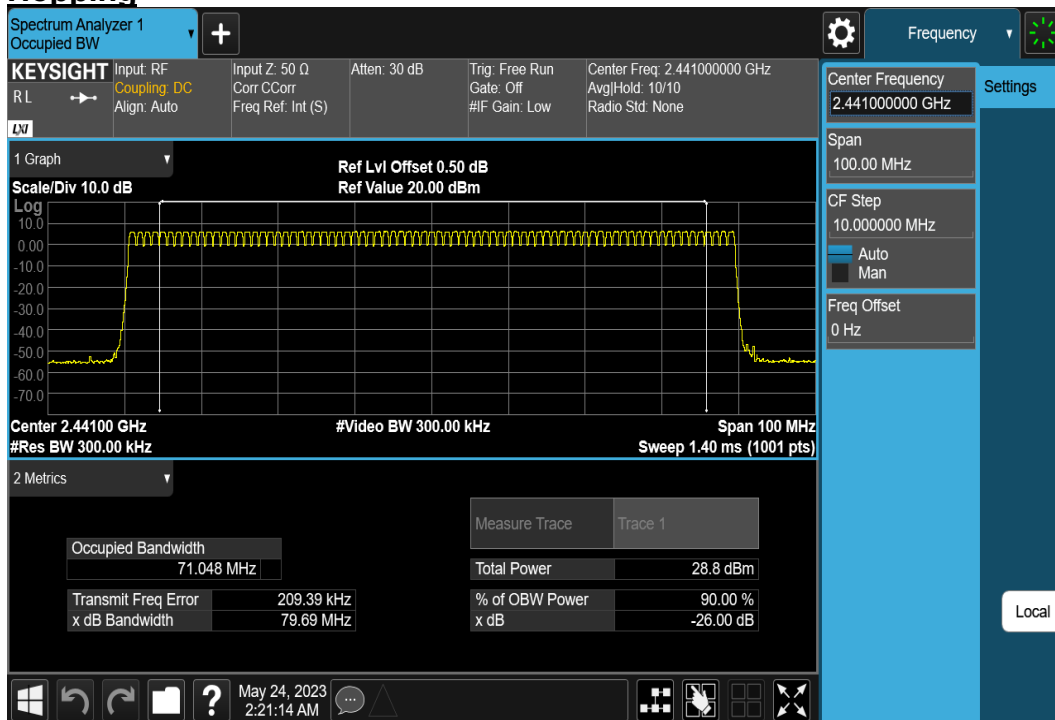
### TEST RESULT

#### BT, GFSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	-----	-----
Number of hopping channel	-----	-	79	20	-----	-----
Spread Bandwidth	MHz	-	71.048	18.041	≥ 0.5 MHz	<b>PASS</b>

### TEST PLOTS

#### Hopping



## 10.6 OCCUPIED BANDWIDTH –AFH-(99%)

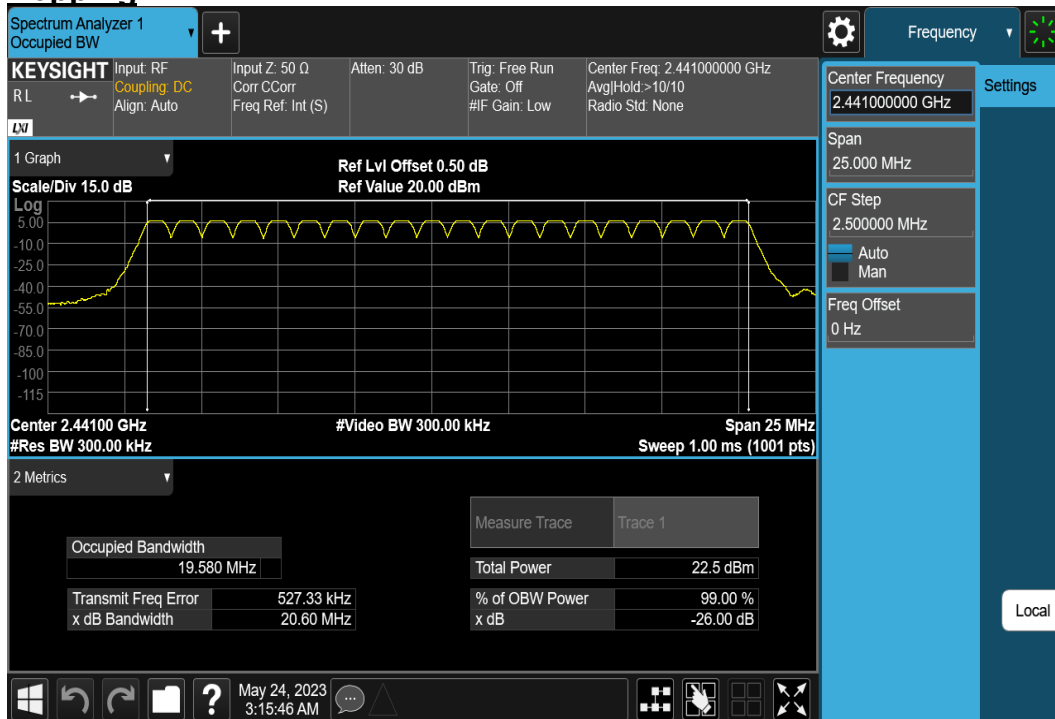
### TEST RESULT

#### BT, GFSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	----	----
Number of hopping channel	----	-	79	20	----	----
Occupied Bandwidth	MHz	-	78.168	19.580	≤83.5 MHz	PASS

### TEST PLOTS

#### Hopping



## 10.7 SPREAD-SPECTRUM BANDWIDTH –AFH(90%)

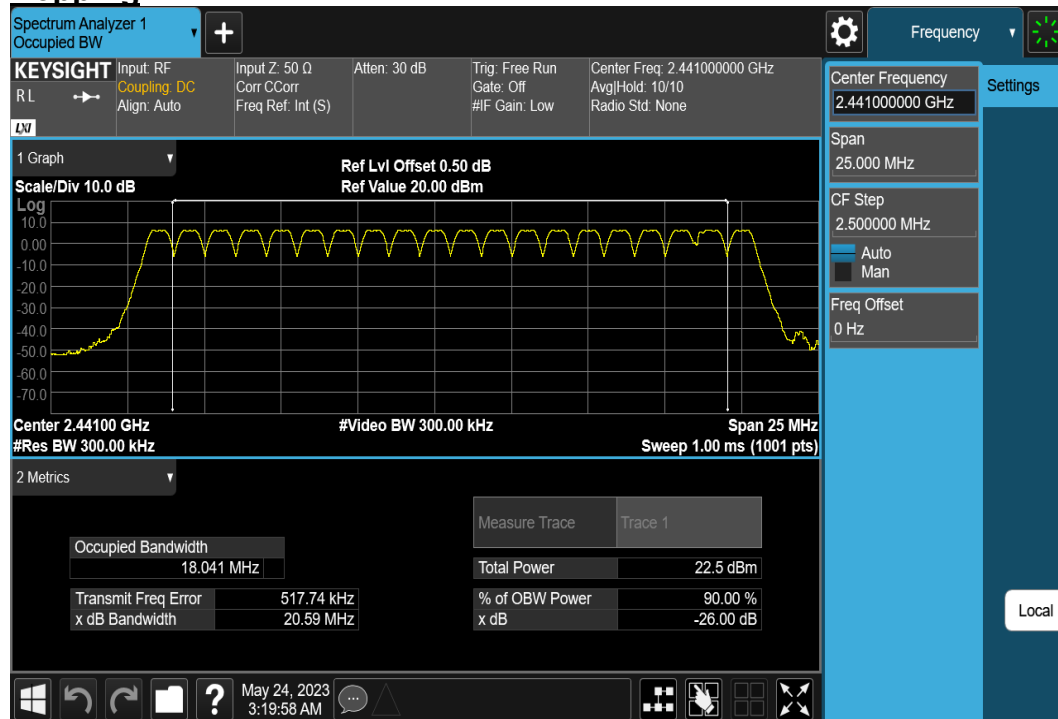
### TEST RESULT

#### BT, GFSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	-----	-----
Number of hopping channel	-----	-	79	20	-----	-----
Spread Bandwidth	MHz	-	71.048	18.041	≥ 0.5 MHz	<b>PASS</b>

### TEST PLOTS

#### Hopping



## 10.8 LIMITATION OF COLLATERAL EMISSIONS OF RECEIVER

### TEST RESULT

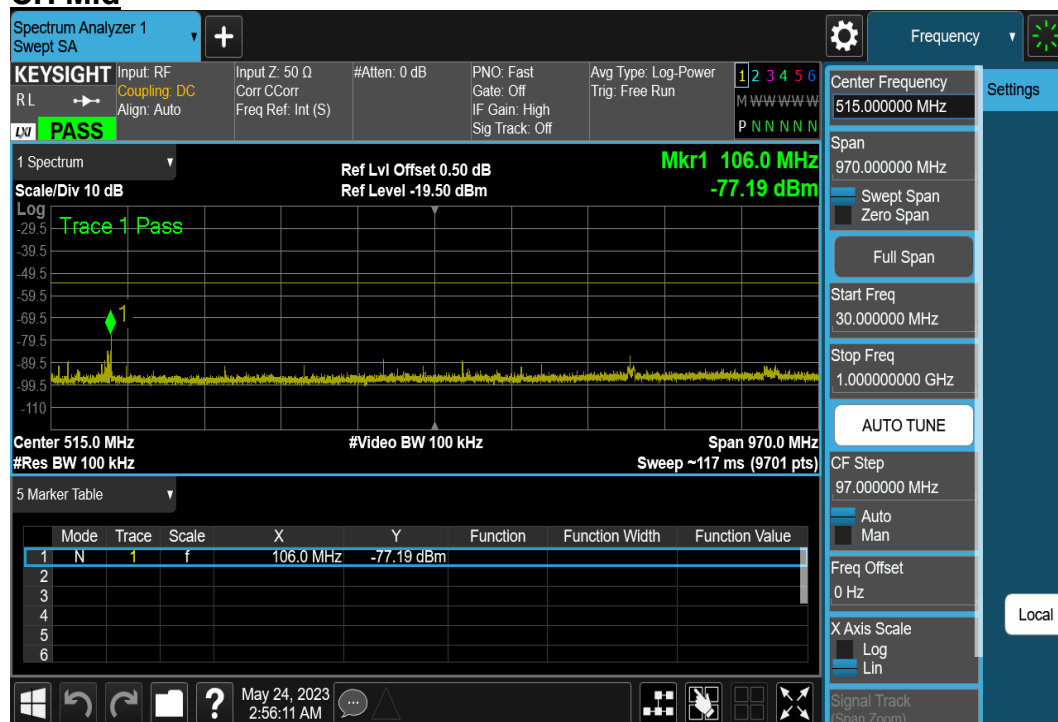
#### BT, GFSK:

Measurement Frequency		MHz	2402	2441		2480	Limit	Result	
Channel Number		Ch.	0	39		78	-----	-----	
Number of hopping channel		-----	-	79	20	-	-----	-----	
Secondarily Emitted Radio Wave Strength (RX Spurious)	Under 1GHz	nW	-	0.019099		-	≤ 4 nW	PASS	
		MHz	-	106.00		-	-----	-----	
	Over 1GHz	nW	-	0.051050		-	≤ 20 nW	PASS	
		MHz	-	3250.00		-	-----	-----	
	Tested Circuit Insertion Loss for RX Spurious								1

### TEST PLOTS

#### Under 1GHz

#### CH Mid

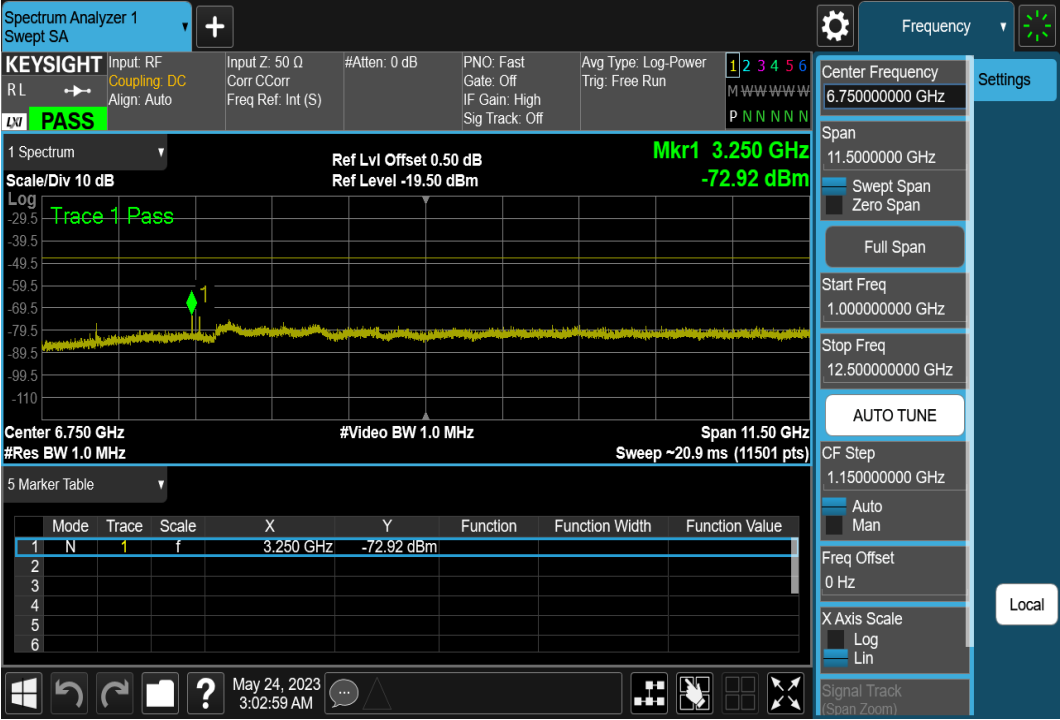




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Over 1GHz  
CH Mid



## 10.9 DWELL TIME

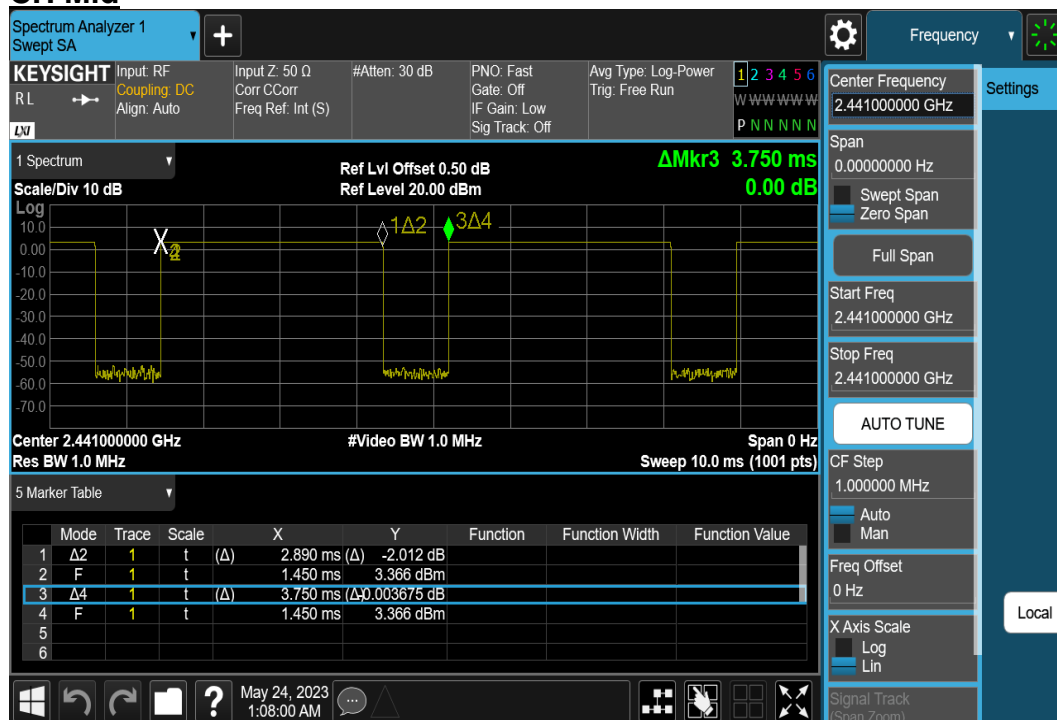
### TEST RESULT

Measurement Frequency		MHz	2402	2441		2480	Limit	Result
Channel Number		Ch.	0	39		78	----	----
Number of hopping channel		----	-	79	20	-	----	----
Transmission Output Power	Calculated result	mW/MHz	-	0.053	0.208	-	≤3 mW/MHz	----
	Tolerance	%	-	0.00	0.00	-	-80 ≤x≤ +20	PASS
	Measured value	dBm	-	5.7427		-	----	----
	On Time	msec	-	2.890		-	----	----
	Dwell Time	msec	-	308.265		-	≤400 msec	PASS
	Burst Ratio	%	-	77.1		-	----	----
Dwell Time		mSec	-	276.79		-	≤400 msec	PASS

### TEST PLOTS

Under 1GHz

CH Mid



## 11. TEST RESULT FOR BLUETOOTH (CH0~CH78) (FOR $\pi/4$ DQPSK)

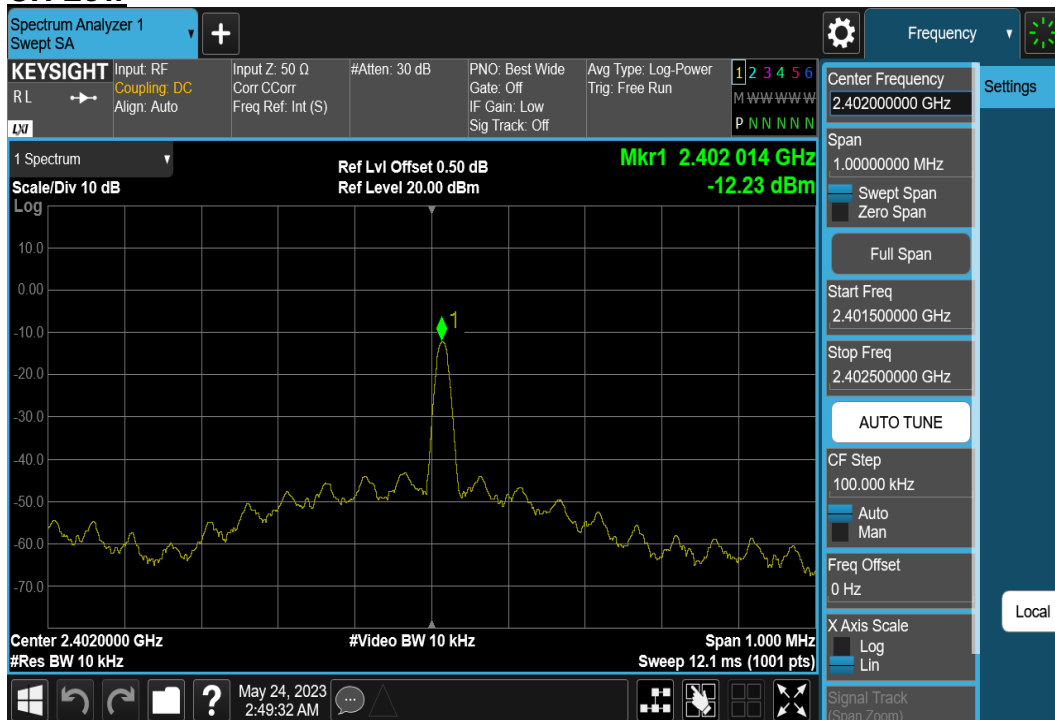
### 11.1 FREQUENCY ERROR

#### TEST RESULT

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	-----	-----
Number of hopping channel	-----	-	79	20	-----	-----
Reading Frequency	MHz	2402.014	2441.014	2480.015	-----	-----
Frequency Tolerance	ppm	5.828476	5.73535	6.048387	$-50 \leq x \leq +50$	<b>PASS</b>

#### TEST RESULT

##### CH Low



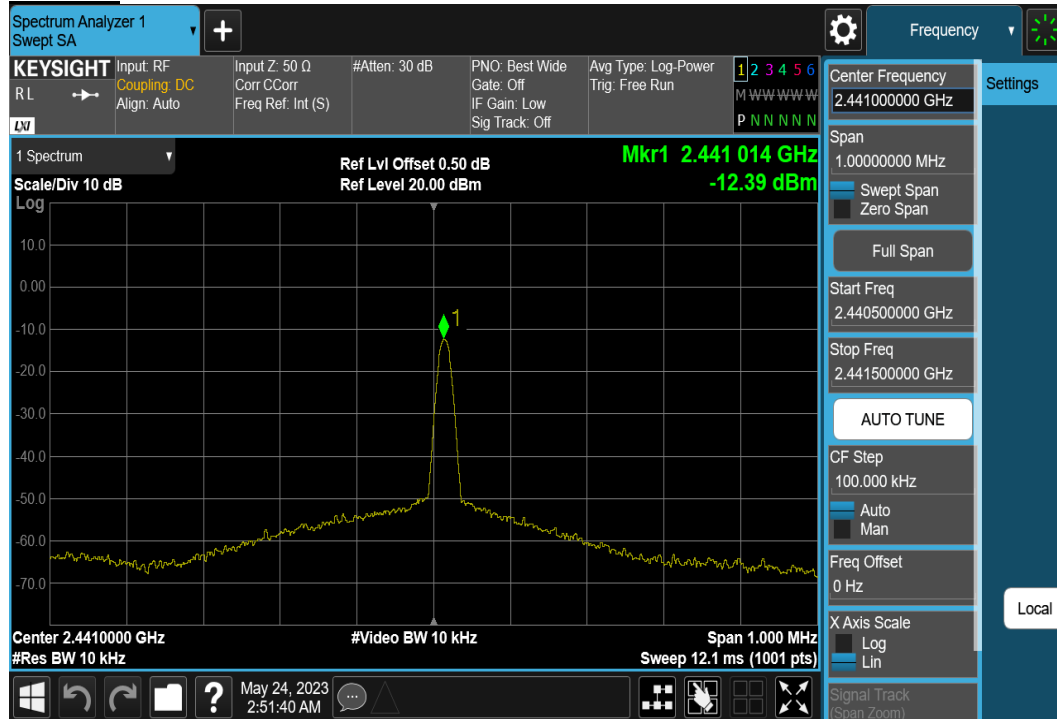




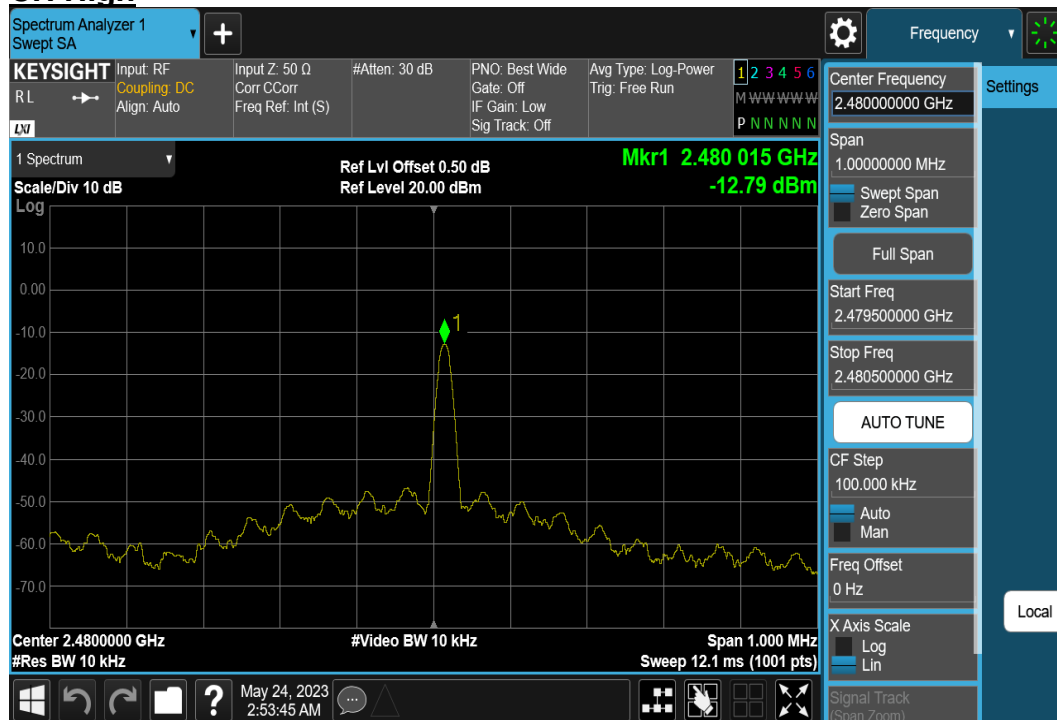
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## CH Mid



## CH High



## 11.2 ANTENNA POWER

### TEST RESULT

Measurement Frequency		MHz	2402	2441		2480	Limit	Result
Channel Number		Ch.	0	39		78	----	----
Number of hopping channel		----	-	79	20	-	----	----
Transmission Output Power	Calculated result	mW/MHz	-	0.056	0.219	-	≤ 3 mW/MHz	----
	Tolerance	%	-	0.00	0.00	-	-80 ≤ x ≤ +20	PASS
	Measured value	dBm	-	5.9935		-	----	----
	On Time	msec	-	2.880		-	----	----
	Dwell Time	msec	-	307.198		-	≤ 400 msec	PASS
	Burst Ratio	%	-	76.8		-	----	----

### TEST PLOTS

#### CH Mid



## 11.3 UNWANTED EMISSION STRENGTH

### TEST RESULT

Measurement Frequency		MHz	2402	2441	2480	Limit	Result
Channel Number		Ch.	0	39	78	-----	-----
Number of hopping channel		-----	-	79	20	-----	-----
Unwanted Emission Strength	Under 2387MHz	$\mu$ W/MHz	-	0.024434	-	$\leq 2.5\mu$ W/MHz	PASS
		MHz	-	1723.50	-	-----	-----
	2387-2400MHz	$\mu$ W/MHz	-	0.421697	-	$\leq 25\mu$ W/MHz	PASS
		MHz	-	2399.46	-	-----	-----
	2483.5-2496.5MHz	$\mu$ W/MHz	-	0.014191	-	$\leq 25\mu$ W/MHz	PASS
		MHz	-	2486.99	-	-----	-----
	Over 2496.5MHz	$\mu$ W/MHz	-	0.027353	-	$\leq 2.5\mu$ W/MHz	PASS
		MHz	-	3756.50	-	-----	-----

### TEST PLOTS

#### Under 2387MHz

#### CH Mid



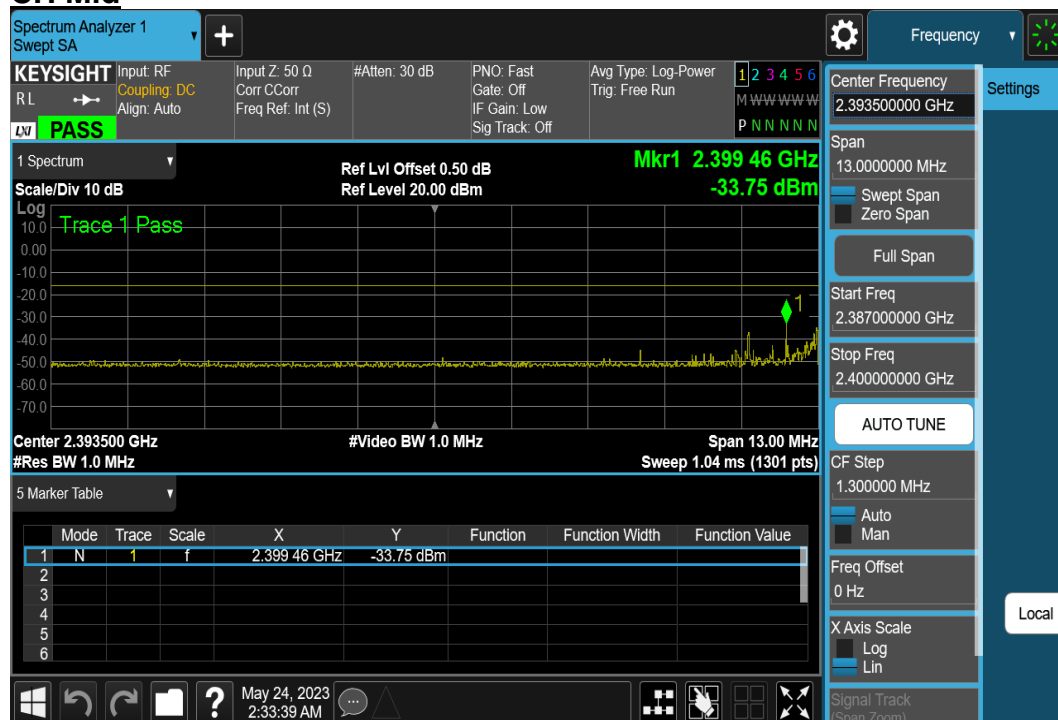


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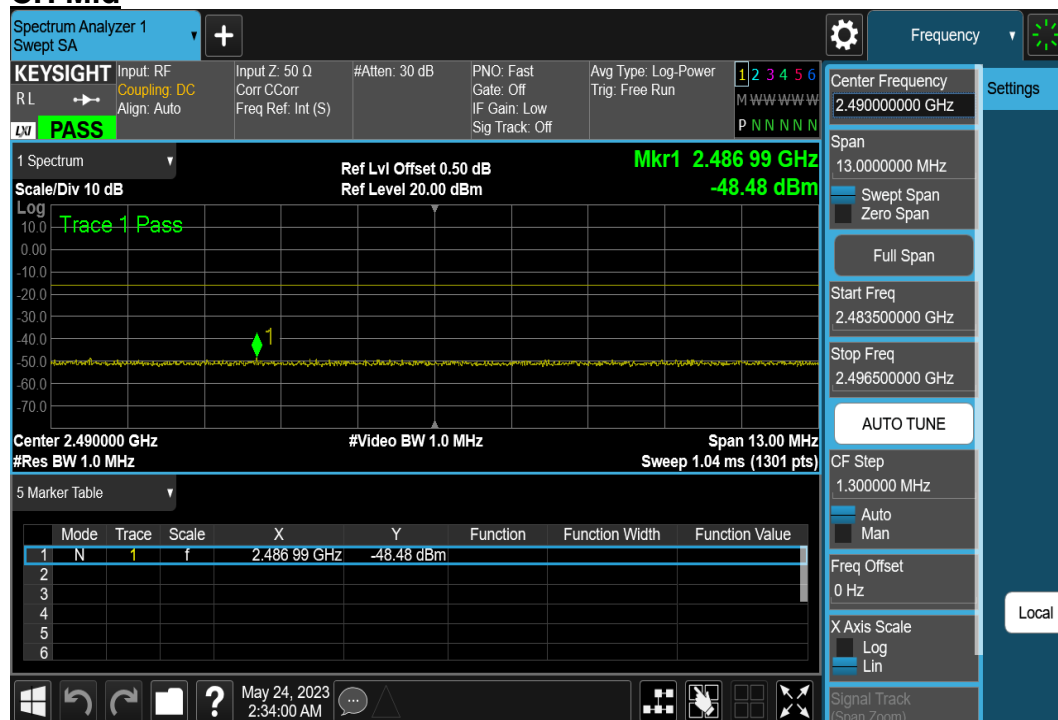
## 2387-2400MHz

### CH Mid



## 2483.5-2496.5MHz

### CH Mid

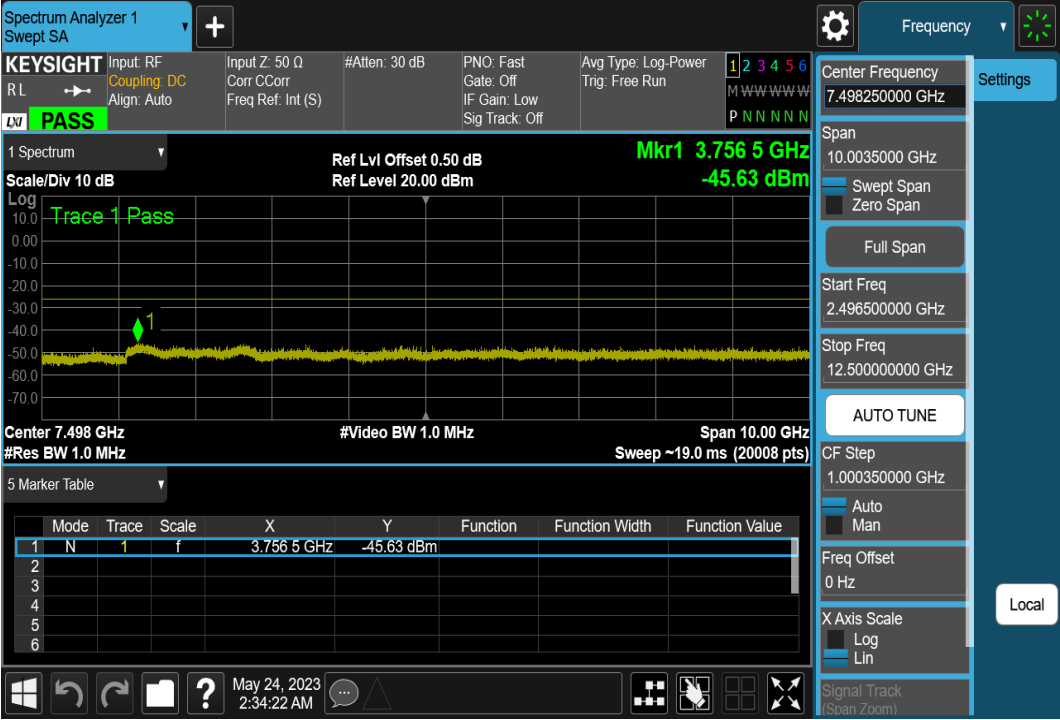




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Over 2496.5MHz  
CH Mid



## 11.4 OCCUPIED BANDWIDTH –NORMAL (99%)

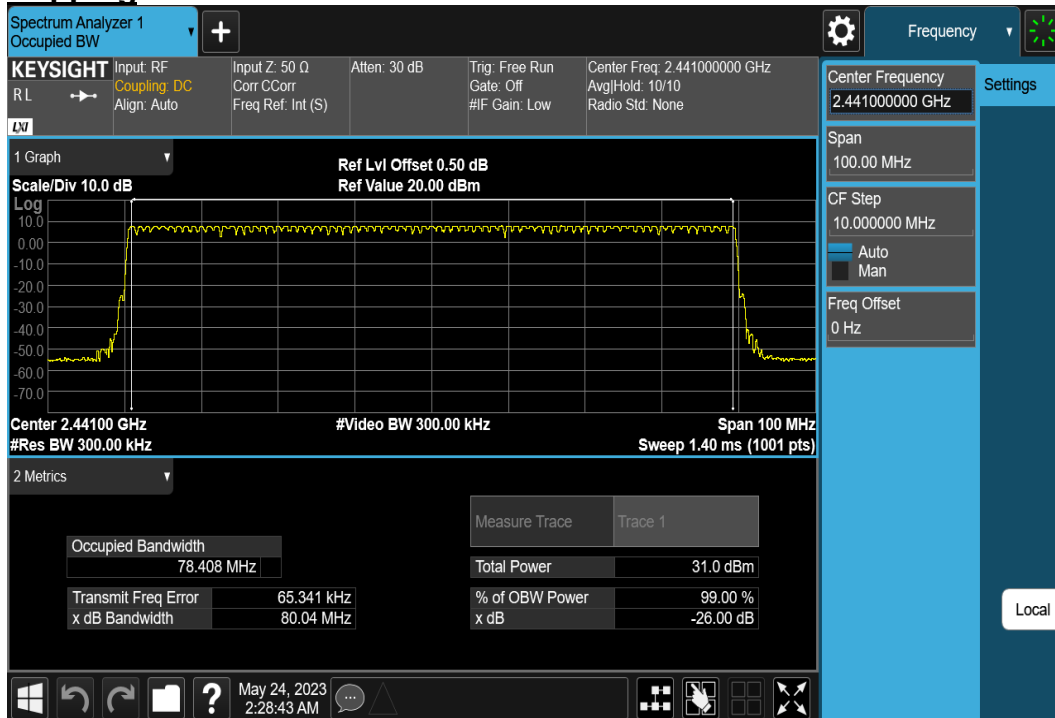
### TEST RESULT

#### BT, $\pi/4$ QPSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	-----	-----
Number of hopping channel	-----	-	79	20	-----	-----
Occupied Bandwidth	MHz	-	78.408	19.966	-	$\leq 83.5$ MHz <b>PASS</b>

### TEST PLOTS

#### Hopping



## 11.5 SPREAD-SPECTRUM BANDWIDTH –NORMAL (90%)

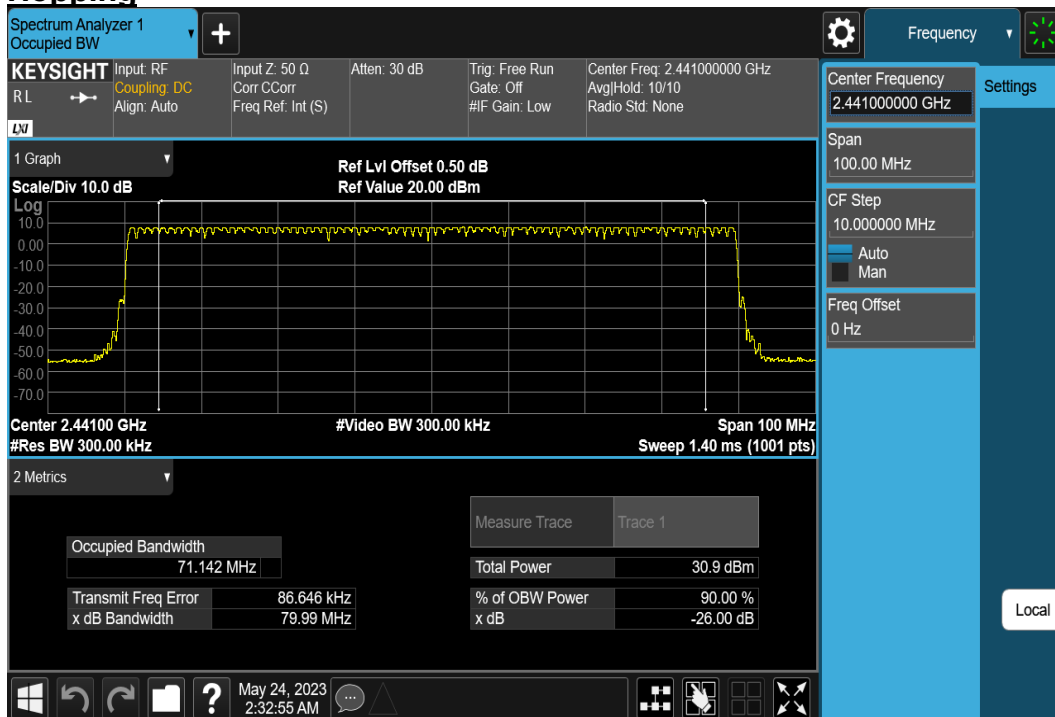
### TEST RESULT

#### BT, $\pi/4$ QPSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	-----	-----
Number of hopping channel	-----	-	79	20	-----	-----
Spread Bandwidth	MHz	-	71.142	18.192	$\geq 0.5$ MHz	<b>PASS</b>

### TEST PLOTS

#### Hopping



## 11.6 OCCUPIED BANDWIDTH –AFH-(99%)

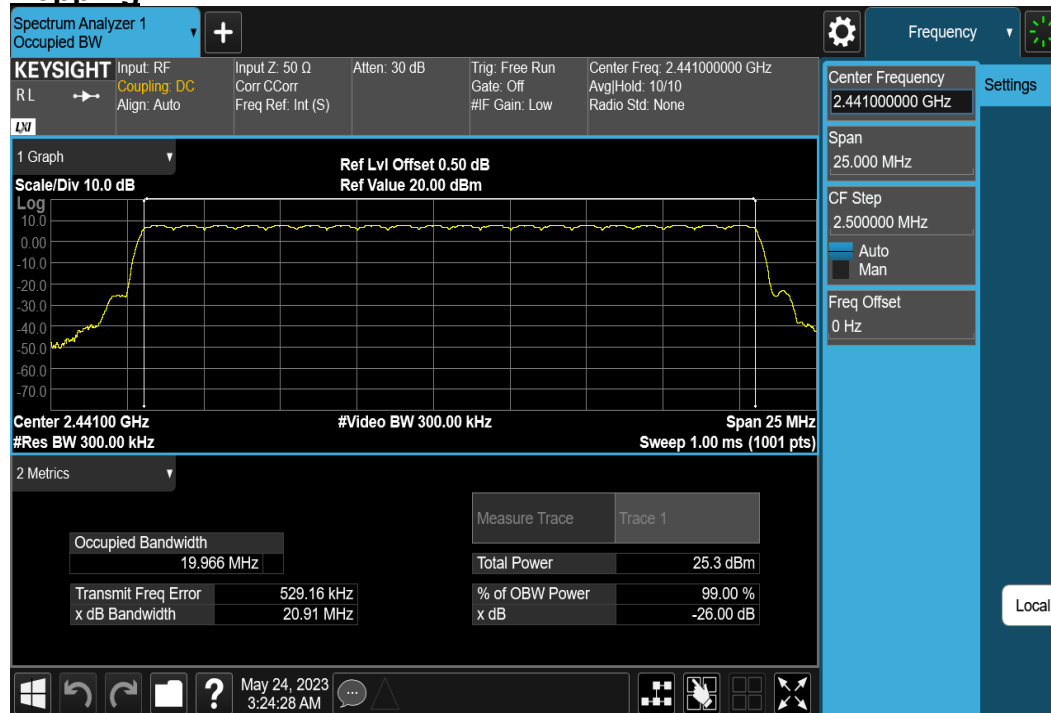
### TEST RESULT

#### BT, $\pi/4$ QPSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	----	----
Number of hopping channel	----	-	79	20	----	----
Occupied Bandwidth	MHz	-	78.408	19.966	$\leq 83.5$ MHz	<b>PASS</b>

### TEST PLOTS

#### Hopping





## 11.7 SPREAD-SPECTRUM BANDWIDTH –AFH(90%)

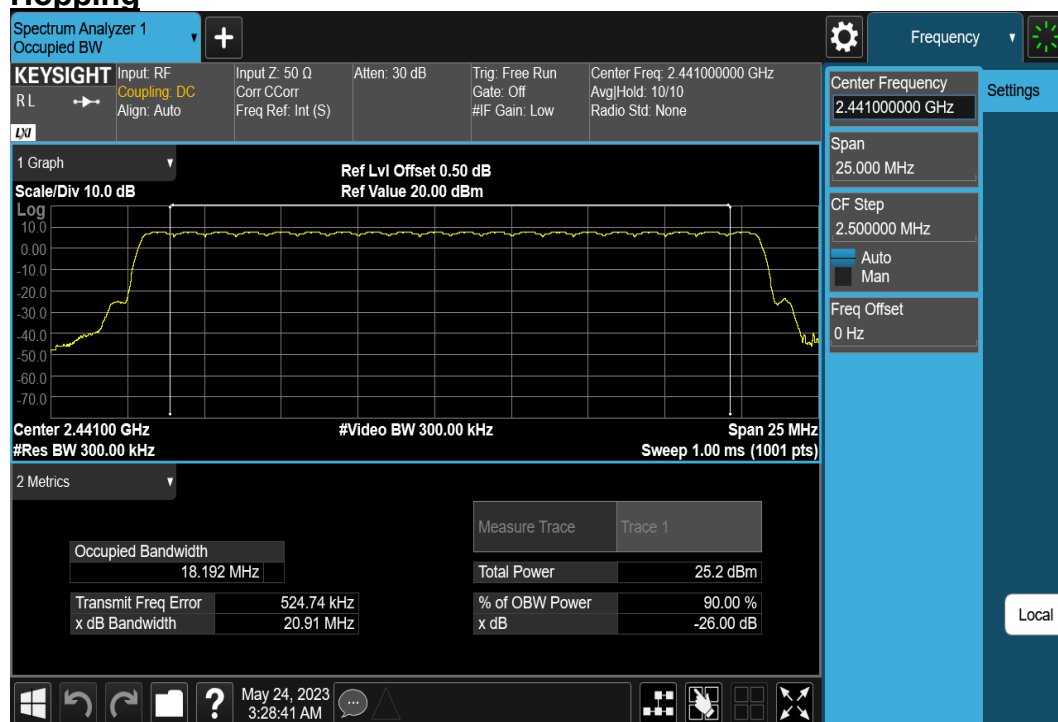
### TEST RESULT

#### BT, $\pi/4$ DQPSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	-----	-----
Number of hopping channel	-----	-	79	20	-----	-----
Spread Bandwidth	MHz	-	71.142	18.192	$\geq 0.5$ MHz	<b>PASS</b>

### TEST PLOTS

#### Hopping



## 11.8 LIMITATION OF COLLATERAL EMISSIONS OF RECEIVER

### TEST RESULT

#### BT, $\pi/4$ DQPSK

Measurement Frequency		MHz	2402	2441		2480	Limit	Result
Channel Number		Ch.	0	39		78	----	----
Number of hopping channel		----	-	79	20	-	----	----
Secondarily Emitted Radio Wave Strength (RX Spurious)	Under 1GHz	nW	-	0.009397		-	≤ 4 nW	PASS
		MHz	-	106.00		-	----	----
	Over 1GHz	nW	-	0.048195		-	≤ 20 nW	PASS
		MHz	-	3250.00		-	----	----
	Tested Circuit Insertion Loss for RX Spurious							1

### TEST PLOTS

#### Under 1GHz

#### CH Mid

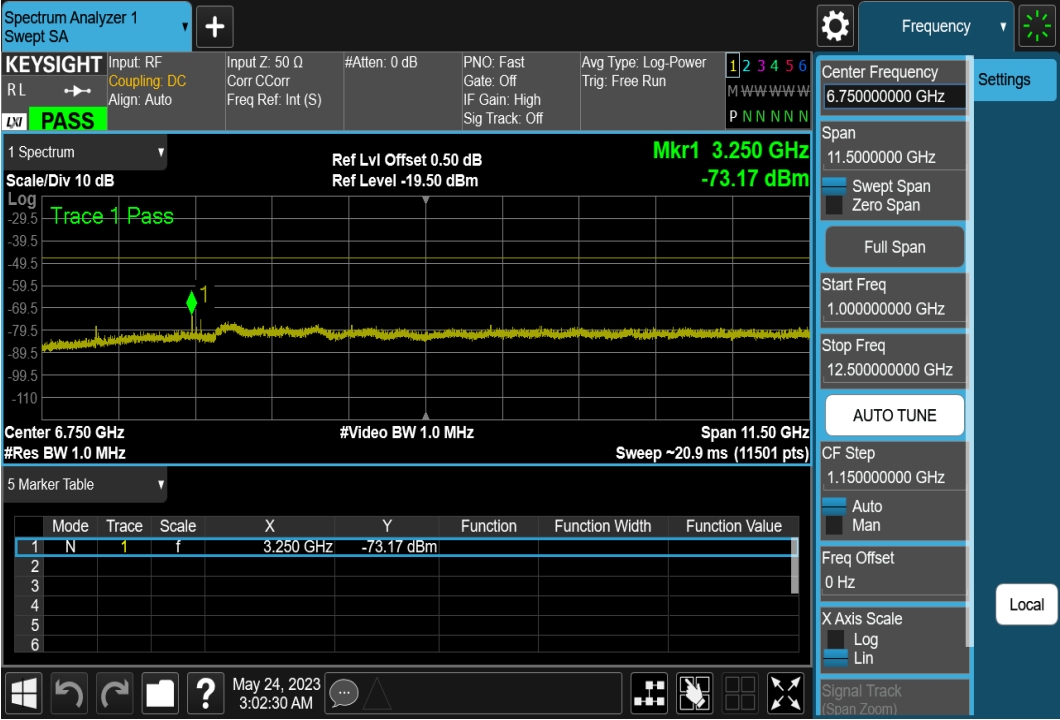




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Over 1GHz  
CH Mid



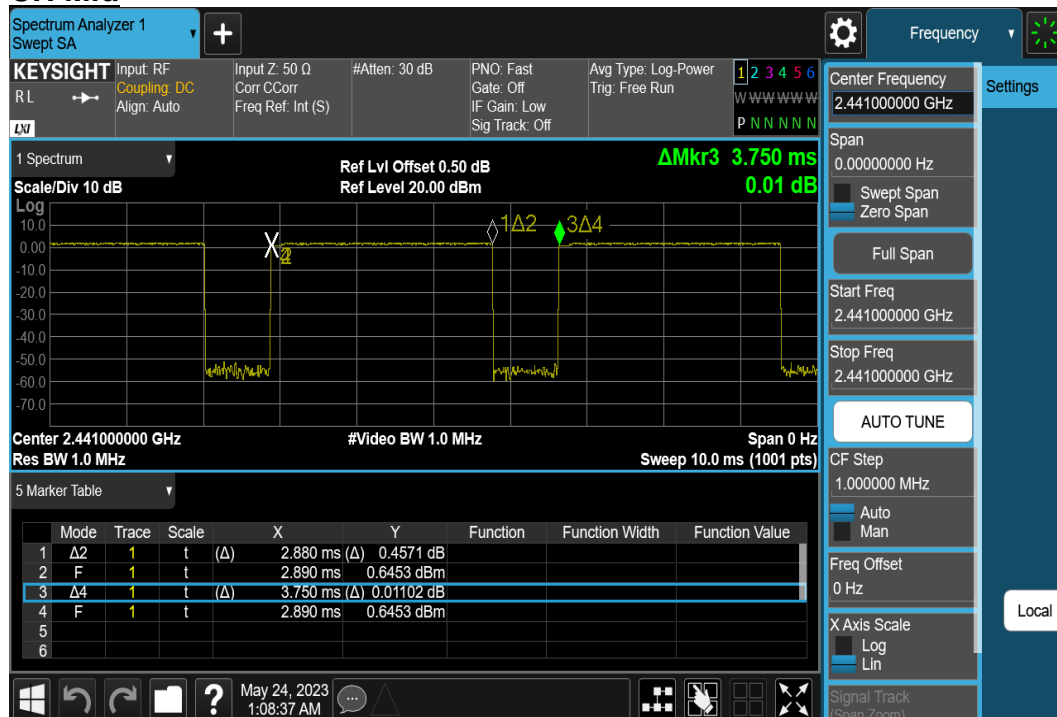
## 11.9 DWELL TIME

### TEST RESULT

Measurement Frequency		MHz	2402	2441		2480	Limit	Result
Channel Number		Ch.	0	39		78	----	----
Number of hopping channel		----	-	79	20	-	----	----
Transmission Output Power	Calculated result	mW/MHz	-	0.056	0.219	-	≤3 mW/MHz	----
	Tolerance	%	-	0.00	0.00	-	-80 ≤x≤ +20	PASS
	Measured value	dBm	-	5.9935		-	----	----
	On Time	msec	-	2.880		-	----	----
	Dwell Time	msec	-	307.198		-	≤400 msec	PASS
	Burst Ratio	%	-	76.8		-	----	----
Dwell Time		mSec	-	277.16		-	≤400 msec	PASS

### TEST PLOTS

#### Under 1GHz CH Mid



## 12. TEST RESULT FOR BLUETOOTH (CH0~CH78) (FOR 8DPSK)

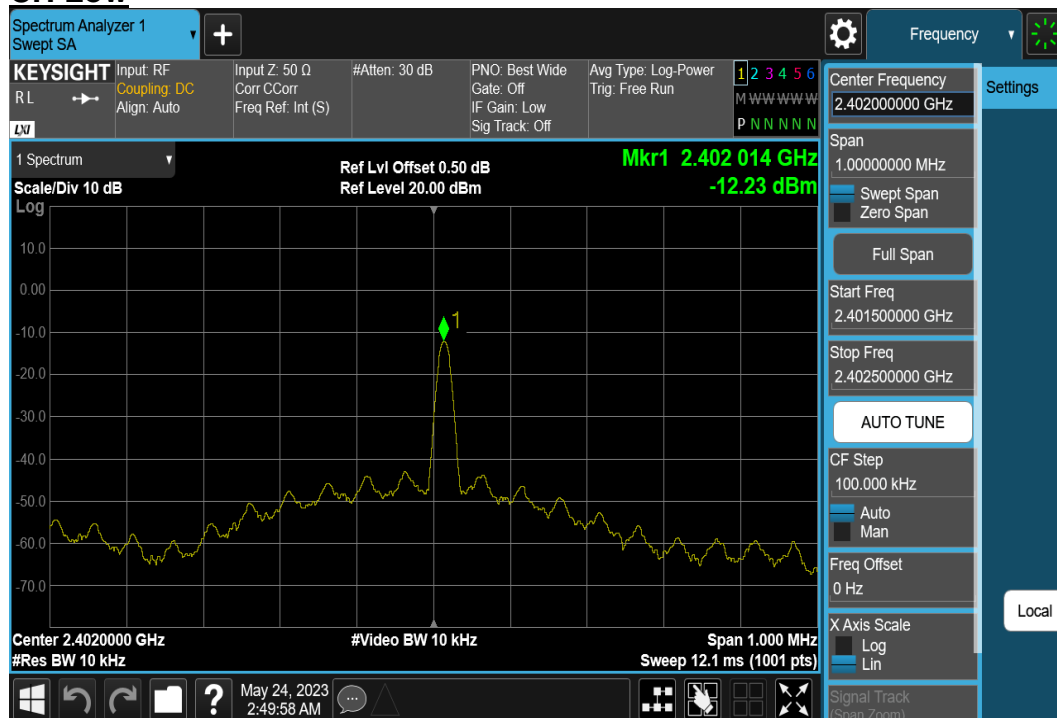
### 12.1 FREQUENCY ERROR

#### TEST RESULT

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	----	----
Number of hopping channel	----	-	79	20	----	----
Reading Frequency	MHz	2402.014	2441.015	2480.015	----	----
Frequency Tolerance	ppm	5.828476	6.14502	6.048387	$-50 \leq x \leq +50$	PASS

#### TEST RESULT

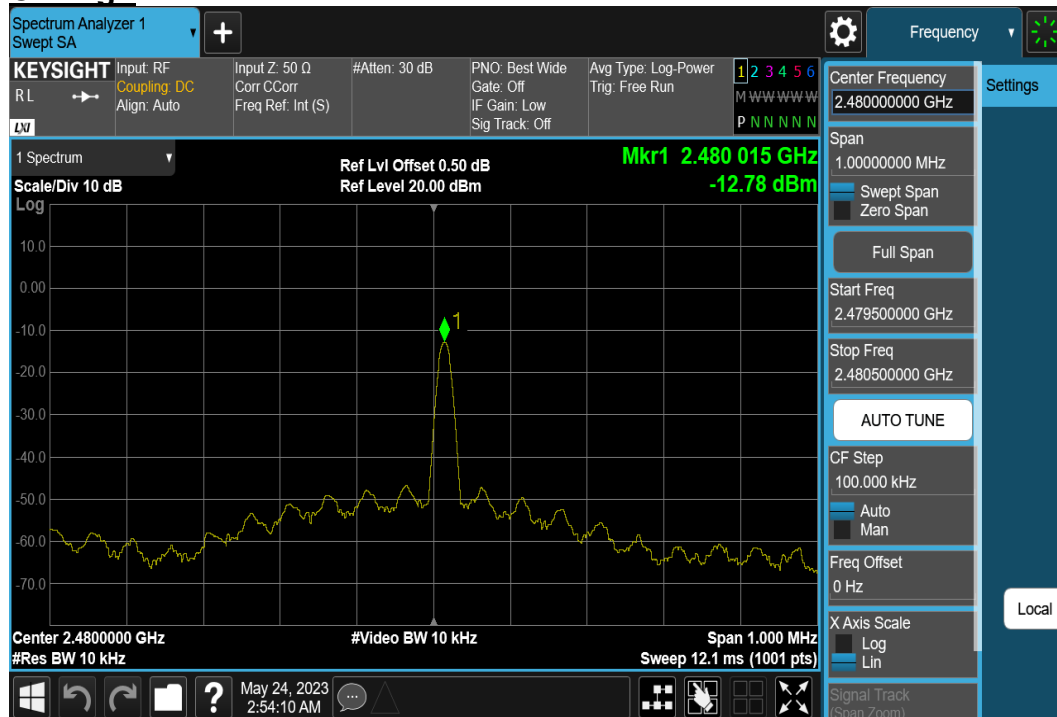
##### CH Low



## CH Mid



## CH High



## 12.2 ANTENNA POWER

### TEST RESULT

Measurement Frequency		MHz	2402	2441		2480	Limit	Result
Channel Number		Ch.	0	39		78	----	----
Number of hopping channel		----	-	79	20	-	----	----
Transmission Output Power	Calculated result	mW/MHz	-	0.051	0.197	-	≤ 3 mW/MHz	----
	Tolerance	%	-	0.00	0.00	-	-80≤x≤+20	PASS
	Measured value	dBm	-	5.5518		-	----	----
	On Time	msec	-	2.890		-	----	----
	Dwell Time	msec	-	308.265		-	≤400 msec	PASS
	Burst Ratio	%	-	77.1		-	----	----

### TEST PLOTS

#### CH Mid



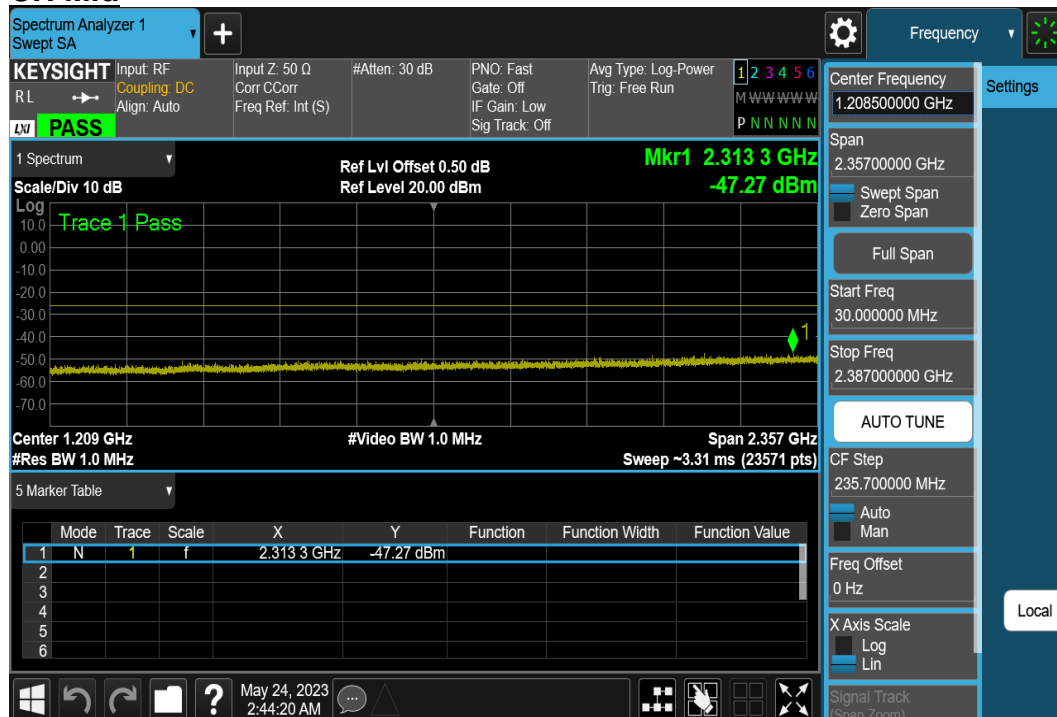
## 12.3 UNWANTED EMISSION STRENGTH

### TEST RESULT

Measurement Frequency		MHz	2402	2441	2480	Limit	Result
Channel Number		Ch.	0	39	78	-----	-----
Number of hopping channel		-----	-	79	20	-	-----
Unwanted Emission Strength	Under 2387MHz	$\mu$ W/MHz	-	0.018750	-	$\leq 2.5\mu$ W/MHz	PASS
		MHz	-	2313.30	-	-----	-----
	2387-2400MHz	$\mu$ W/MHz	-	0.060954	-	$\leq 25\mu$ W/MHz	PASS
		MHz	-	2399.05	-	-----	-----
	2483.5-2496.5MHz	$\mu$ W/MHz	-	0.119124	-	$\leq 25\mu$ W/MHz	PASS
		MHz	-	2483.56	-	-----	-----
	Over 2496.5MHz	$\mu$ W/MHz	-	0.035075	-	$\leq 2.5\mu$ W/MHz	PASS
		MHz	-	3845.50	-	-----	-----

### TEST PLOTS

#### Under 2387MHz CH Mid



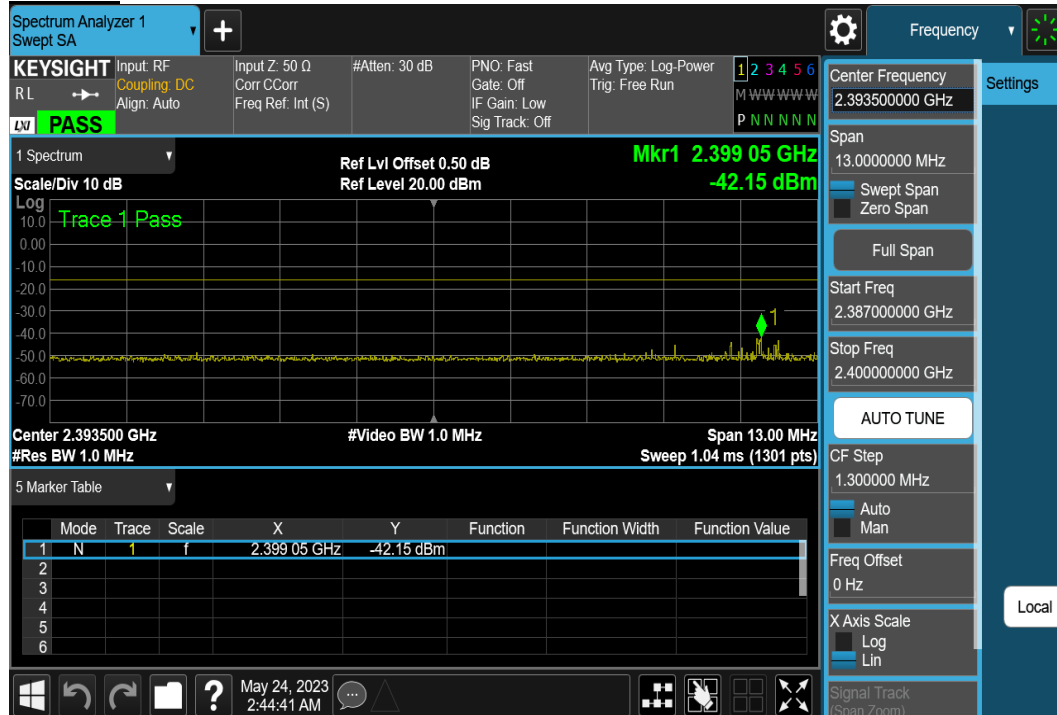




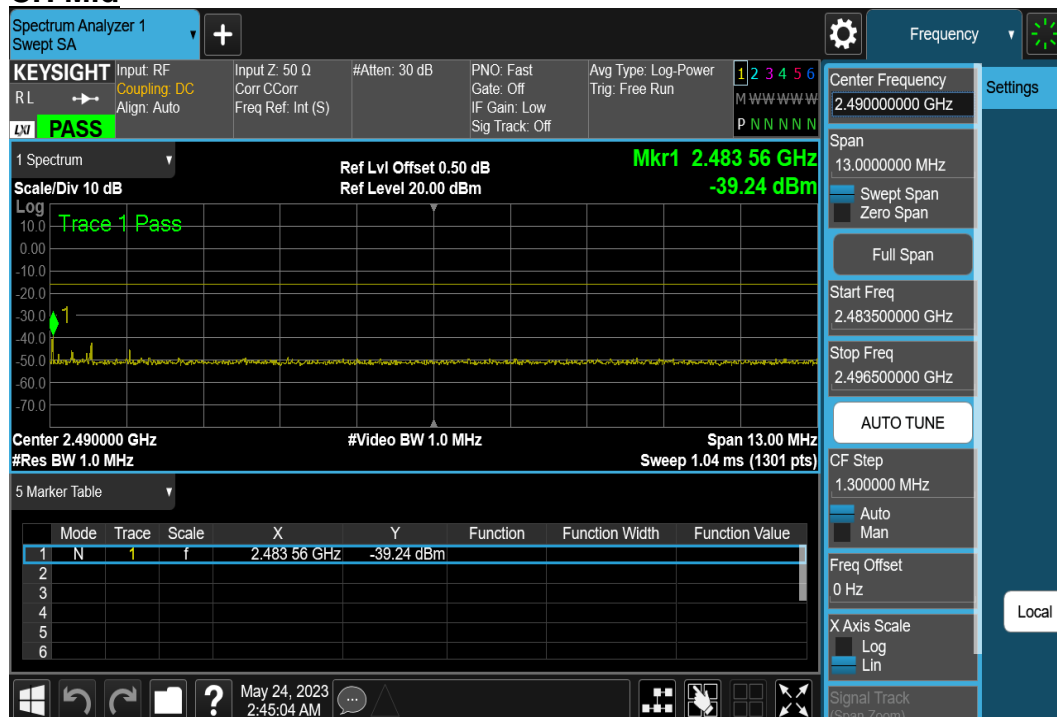
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## 2387-2400MHz CH Mid



## 2483.5-2496.5MHz CH Mid

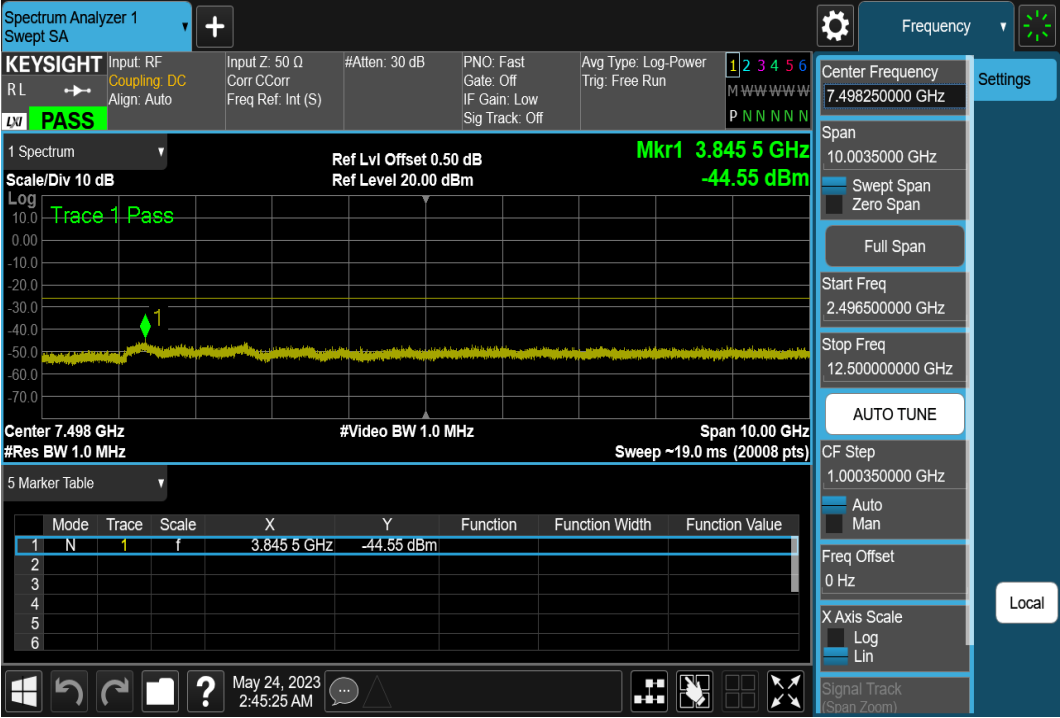




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Over 2496.5MHz  
CH Mid



## 12.4 OCCUPIED BANDWIDTH –NORMAL (99%)

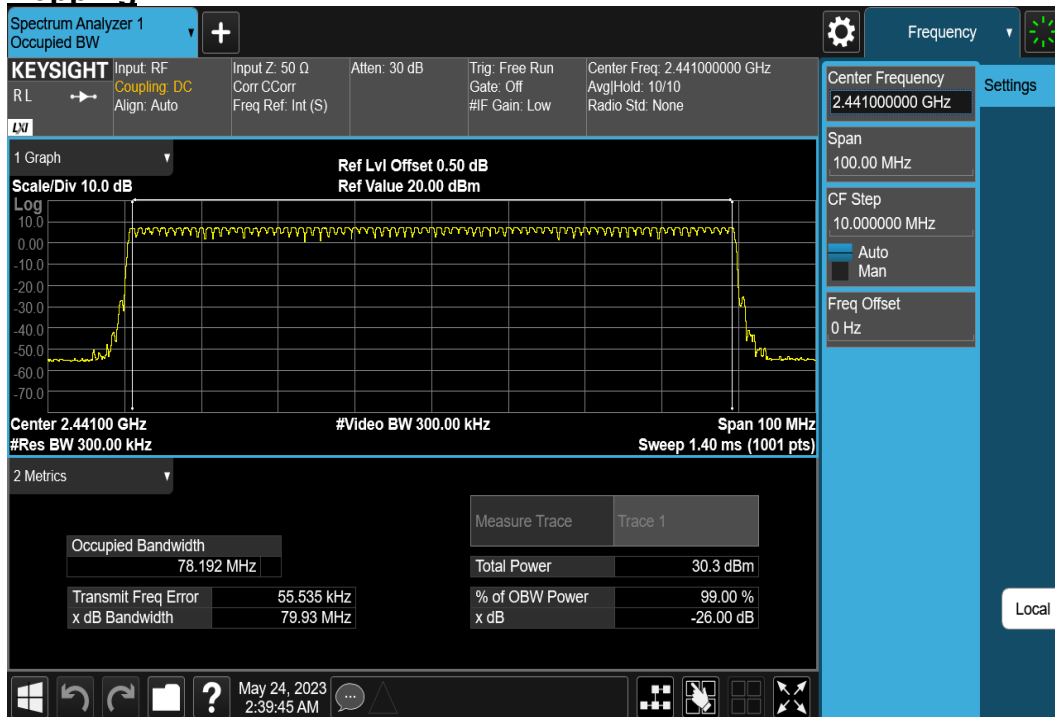
### TEST RESULT

#### BT, 8DPSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	-----	-----
Number of hopping channel	-----	-	79	20	-----	-----
Occupied Bandwidth	MHz	-	78.192	19.967	≤83.5 MHz	<b>PASS</b>

### TEST PLOTS

#### Hopping



## 12.5 SPREAD-SPECTRUM BANDWIDTH –NORMAL (90%)

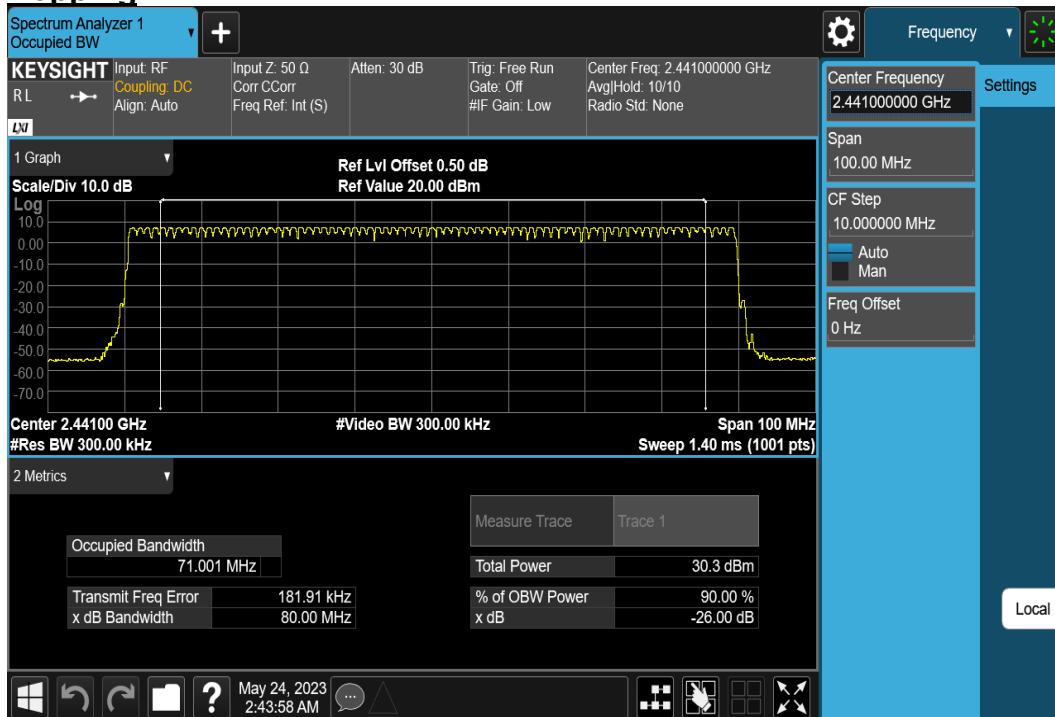
### TEST RESULT

#### BT, 8DPSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	-----	-----
Number of hopping channel	-----	-	79	20	-----	-----
Spread Bandwidth	MHz	-	71.001	18.198	≥ 0.5 MHz	<b>PASS</b>

### TEST PLOTS

#### Hopping



## 12.6 OCCUPIED BANDWIDTH –AFH-(99%)

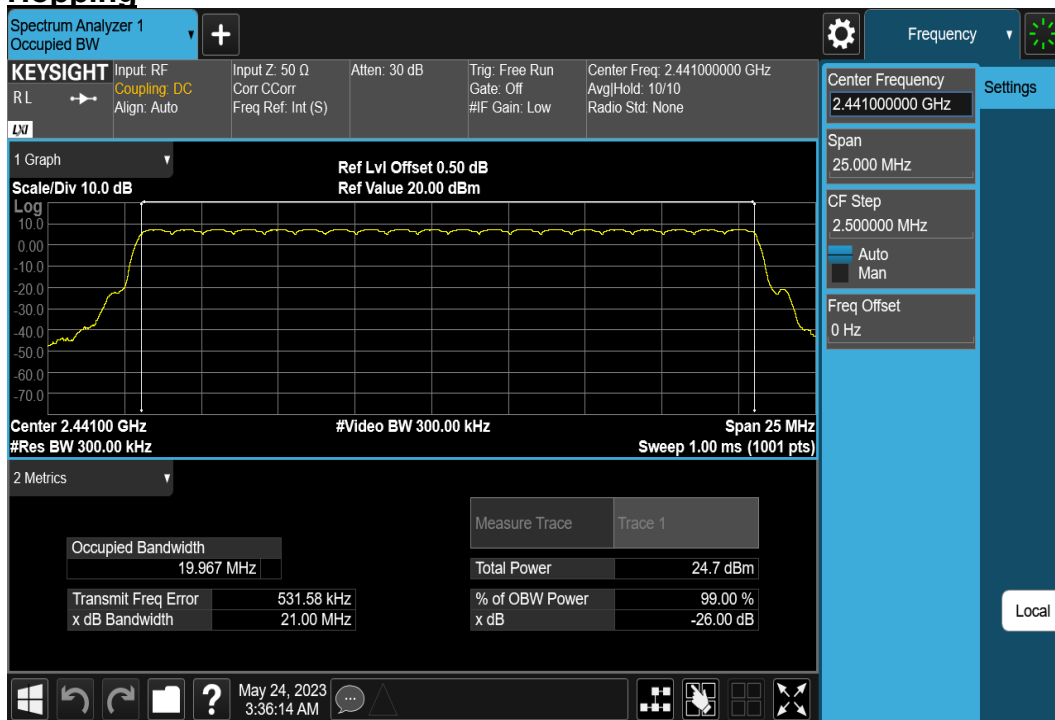
### TEST RESULT

#### BT, 8DPSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	----	----
Number of hopping channel	----	-	79	20	----	----
Occupied Bandwidth	MHz	-	78.192	19.967	≤83.5 MHz	PASS

### TEST PLOTS

#### Hopping



## 12.7 SPREAD-SPECTRUM BANDWIDTH –AFH(90%)

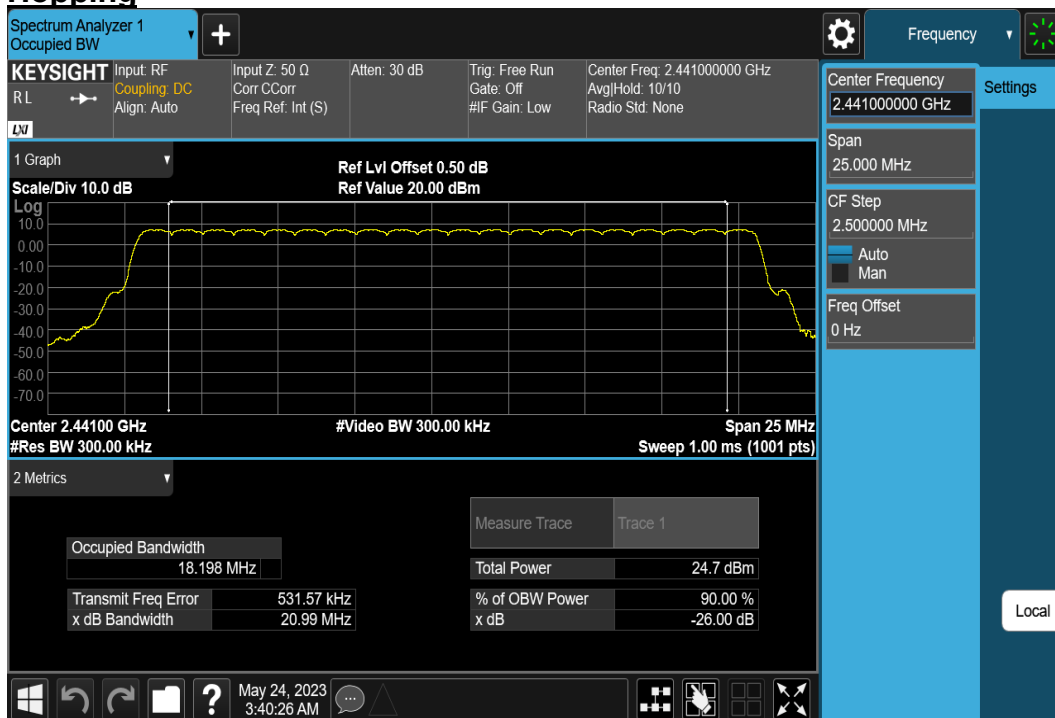
### TEST RESULT

#### BT, 8DPSK

Measurement Frequency	MHz	2402	2441	2480	Limit	Result
Channel Number	Ch.	0	39	78	----	----
Number of hopping channel	----	-	79	20	----	----
Spread Bandwidth	MHz	-	71.001	18.198	$\geq 0.5$ MHz	<b>PASS</b>

### TEST PLOTS

#### Hopping



## 12.8 LIMITATION OF COLLATERAL EMISSIONS OF RECEIVER

### TEST RESULT

#### BT, 8DPSK

Measurement Frequency		MHz	2402	2441		2480	Limit	Result	
Channel Number		Ch.	0	39		78	-----	-----	
Number of hopping channel		-----	-	79	20	-	-----	-----	
Secondarily Emitted Radio Wave Strength (RX Spurious)	Under 1GHz	nW	-	0.011508		-	≤ 4 nW	PASS	
		MHz	-	106.00		-	-----	-----	
	Over 1GHz	nW	-	0.091201		-	≤ 20 nW	PASS	
		MHz	-	3250.00		-	-----	-----	
	Tested Circuit Insertion Loss for RX Spurious								1

### TEST PLOTS

#### Under 1GHz

#### CH Mid

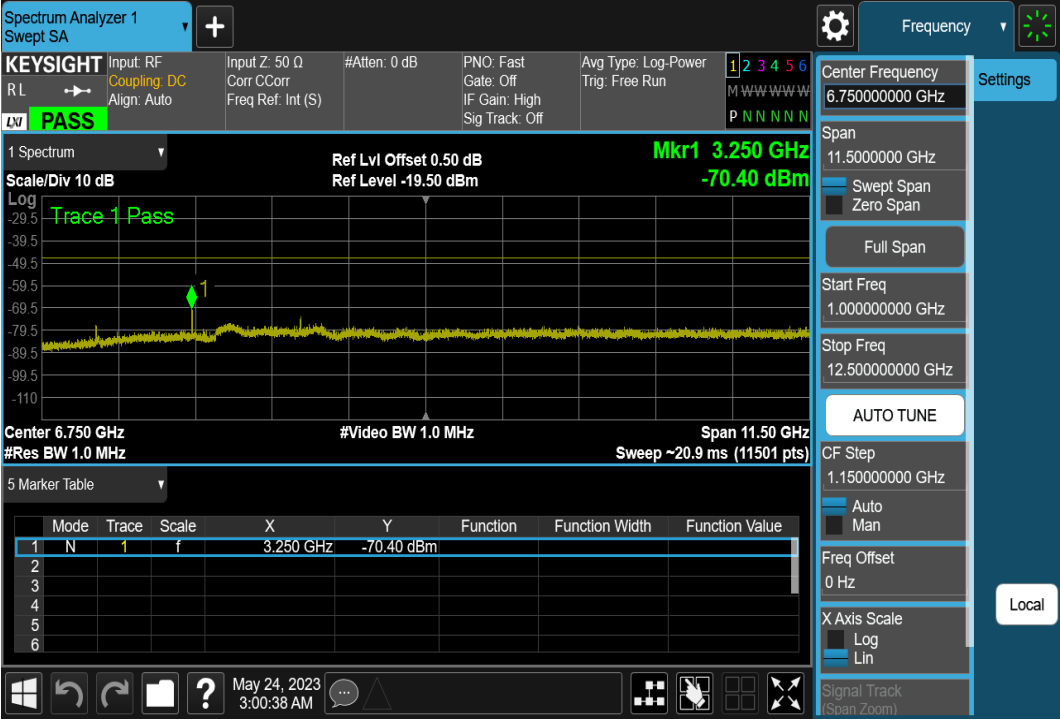




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Over 1GHz  
CH Mid





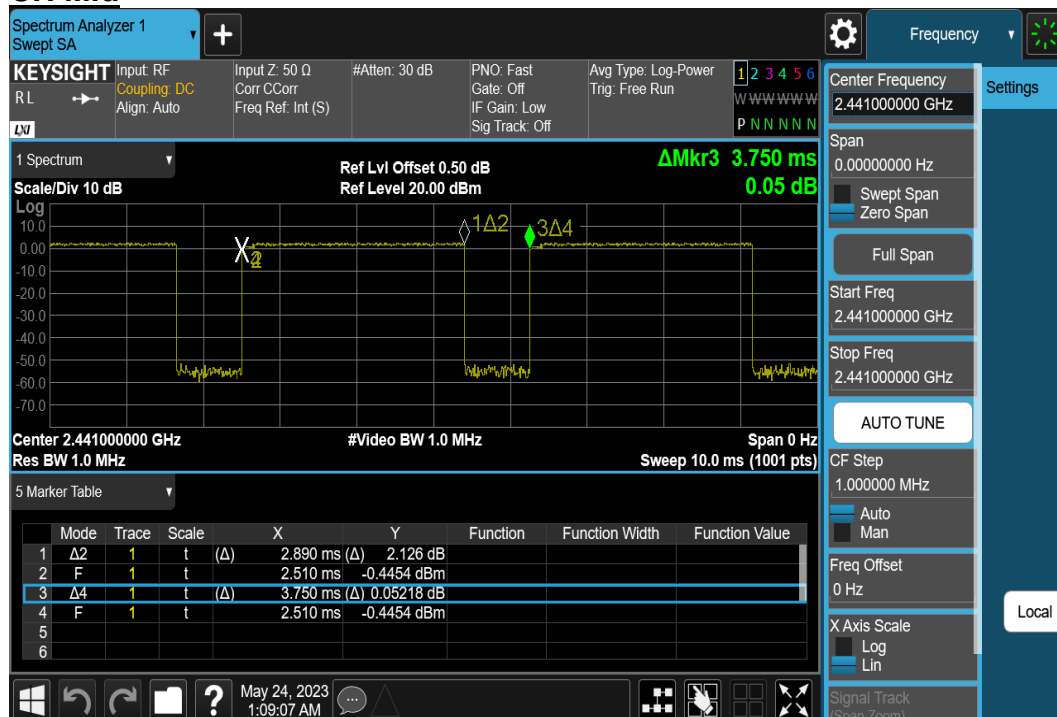
## 12.9 DWELL TIME

### TEST RESULT

Measurement Frequency		MHz	2402	2441		2480	Limit	Result
Channel Number		Ch.	0	39		78	----	----
Number of hopping channel		----	-	79	20	-	----	----
Transmission Output Power	Calculated result	mW/MHz	-	0.051	0.197	-	≤ 3 mW/MHz	----
	Tolerance	%	-	0.00	0.00	-	-80 ≤ x ≤ +20	PASS
	Measured value	dBm	-	5.5518		-	----	----
	On Time	msec	-	2.890		-	----	----
	Dwell Time	msec	-	308.265		-	≤ 400 msec	PASS
	Burst Ratio	%	-	77.1		-	----	----
Dwell Time		mSec	-	276.61		-	≤ 400 msec	PASS

### TEST PLOTS

#### Under 1GHz CH Mid



## 13. TEST RESULT FOR BLE 1M (CH0~CH39)(FOR GFSK)

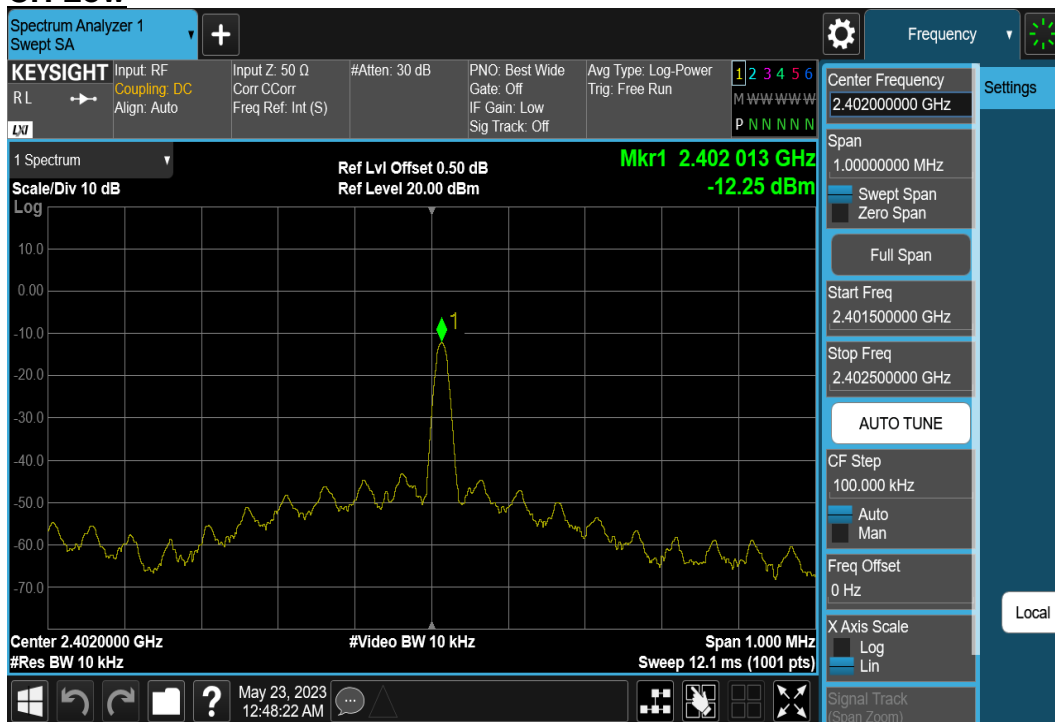
### 13.1 FREQUENCY ERROR

#### TEST RESULT

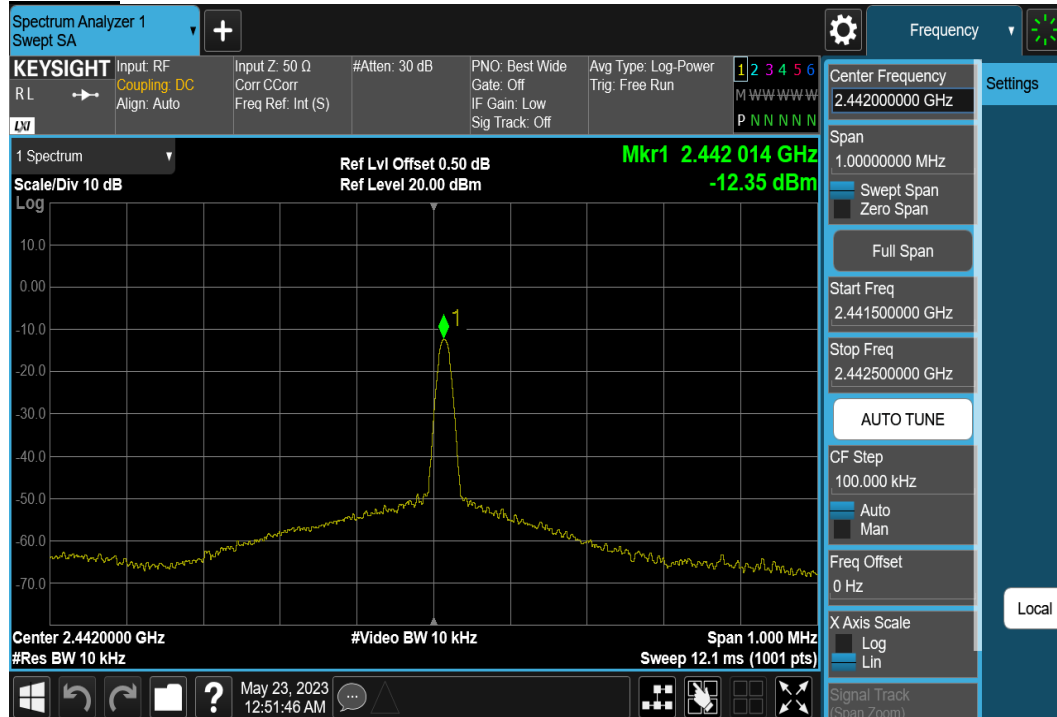
Measurement Frequency	MHz	2402	2442	2480	Result	NOTES
Channel Number	Ch.	0	20	39	-----	
Reading Frequency	MHz	2402.013	2442.014	2480.015	-----	
Frequency Tolerance	ppm	5.41216	5.73301	6.04839	<b>PASS</b>	

#### TEST PLOTS

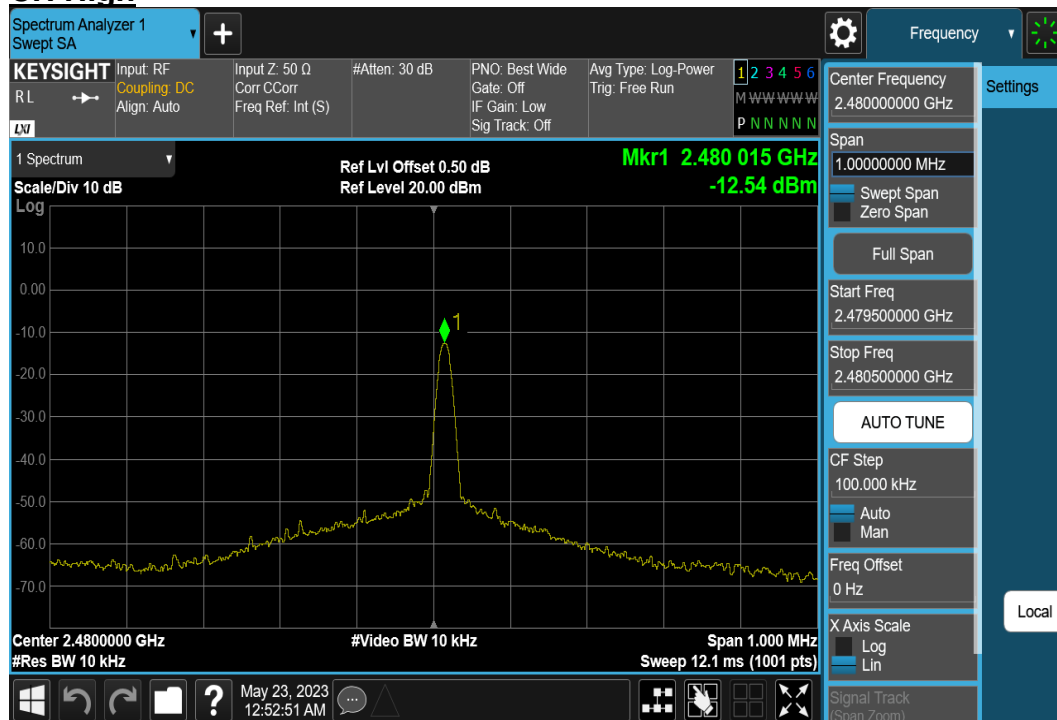
##### CH Low



## CH Mid



## CH High



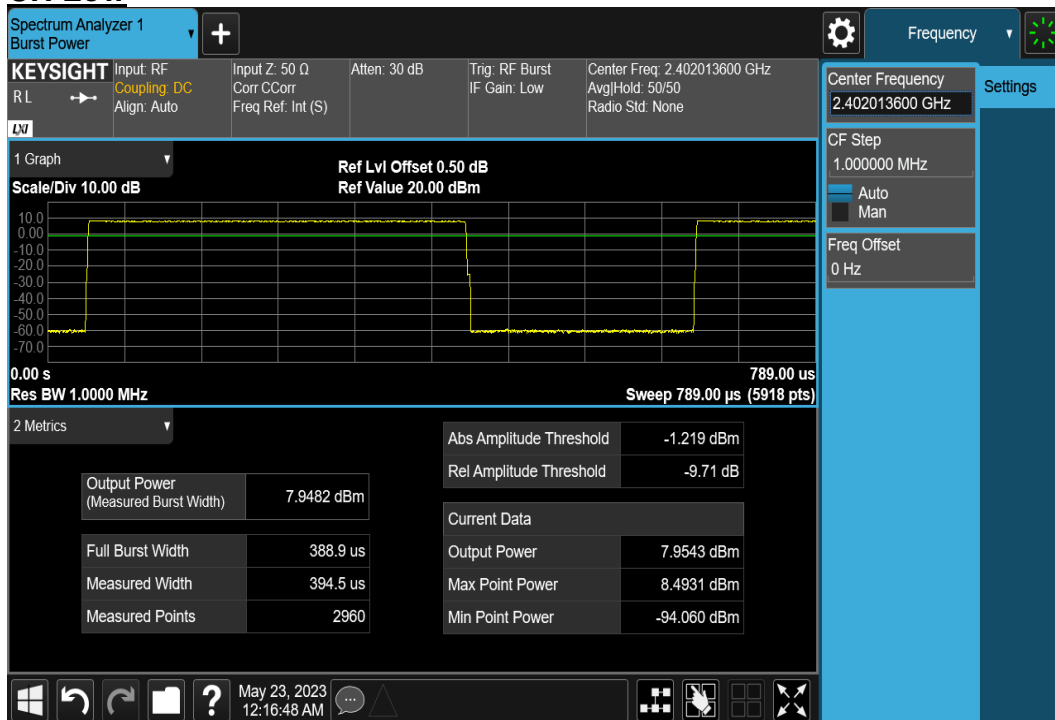
## 13.2 ANTENNA POWER

### TEST RESULT

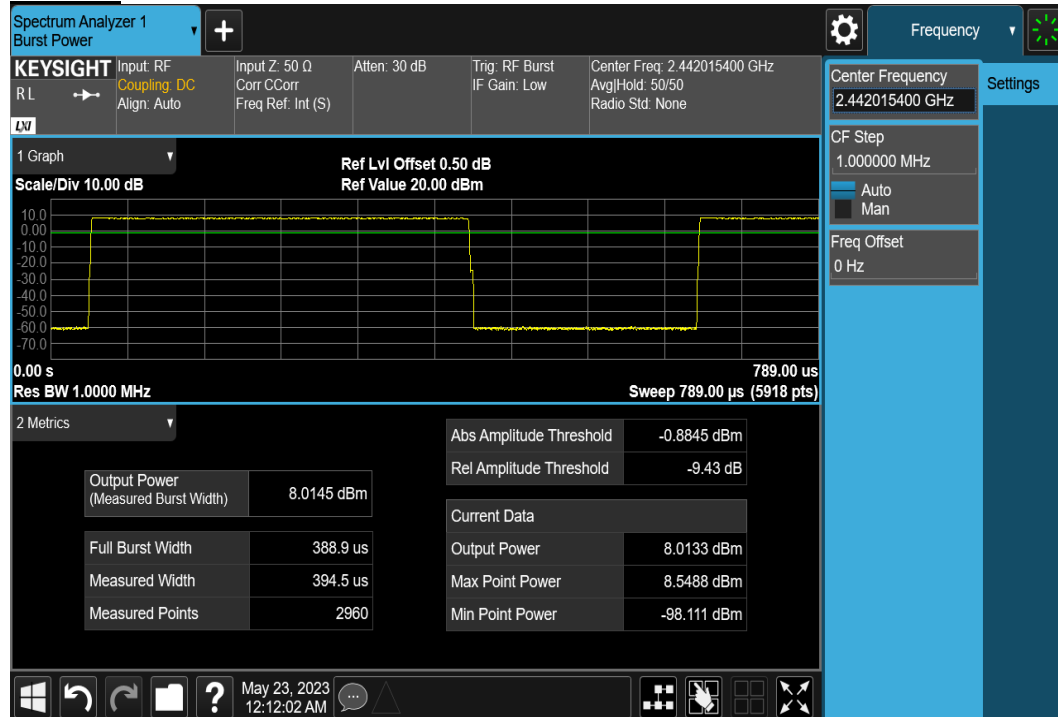
Measurement Frequency	MHz	2402	2442	2480	Result	NOTES
Channel Number	Ch.	0	20	39	-----	
RF Output Power	mW	6.235	6.331	6.218	<b>PASS</b>	
	dBm	7.9482	8.0145	7.9363		
RF Output Power Tolerance	%	-1.52	-0.01	-1.79	<b>PASS</b>	

### TEST PLOTS

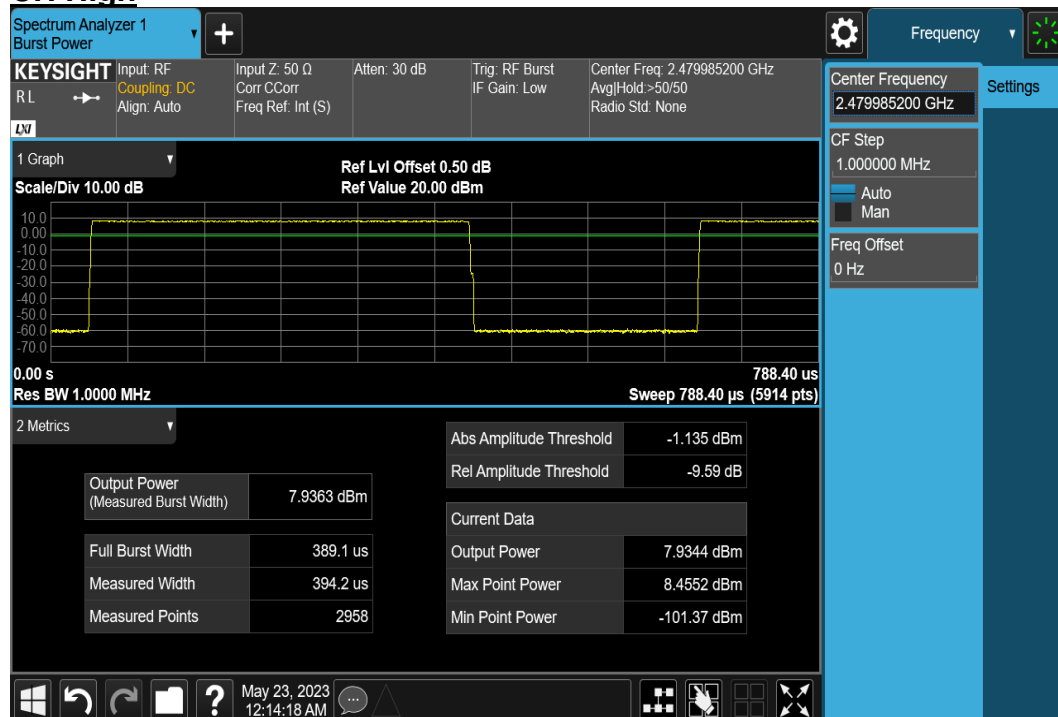
#### CH Low



## CH Mid



## CH High



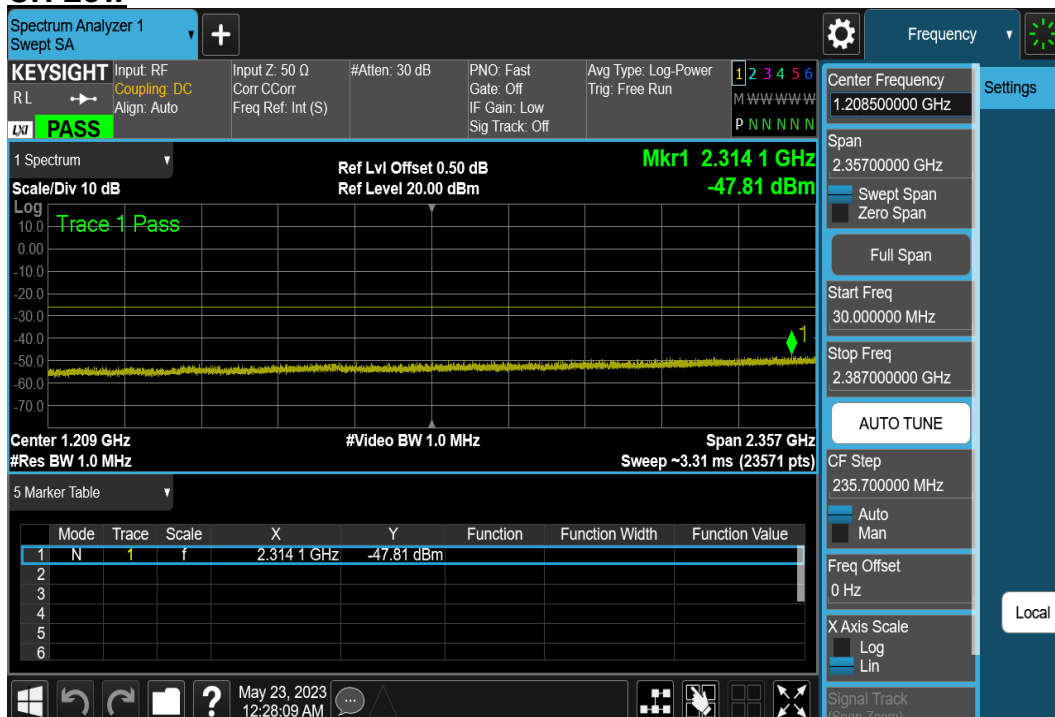
### 13.3 UNWANTED EMISSION STRENGTH

#### TEST RESULT

Measurement Frequency		MHz	2402	2442	2480	Result	NOTES
Channel Number		Ch.	0	20	39	-----	
Unwanted Emission Strength (TX1)	Under 2387MHz	$\mu$ W/MHz	0.016558	0.019953	0.018535	PASS	
		dBm/MHz	-47.81	-47.00	-47.32		
		MHz	2314.10	2311.50	2135.90		-----
	2387-2400MHz	$\mu$ W/MHz	1.659587	0.013428	0.012162	PASS	
		dBm/MHz	-27.80	-48.72	-49.15		
		MHz	2400.00	2395.60	2399.77		-----
	2483.5-2496.5MHz	$\mu$ W/MHz	0.013459	0.012853	0.098628	PASS	
		dBm/MHz	-48.71	-48.91	-40.06		
		MHz	2485.83	2487.81	2484.40		-----
	2496.5 - 12.5GHz	$\mu$ W/MHz	0.029580	0.026363	0.027290	PASS	
		dBm/MHz	-45.29	-45.79	-45.64		
		MHz	3795.50	8550.50	3729.50		-----

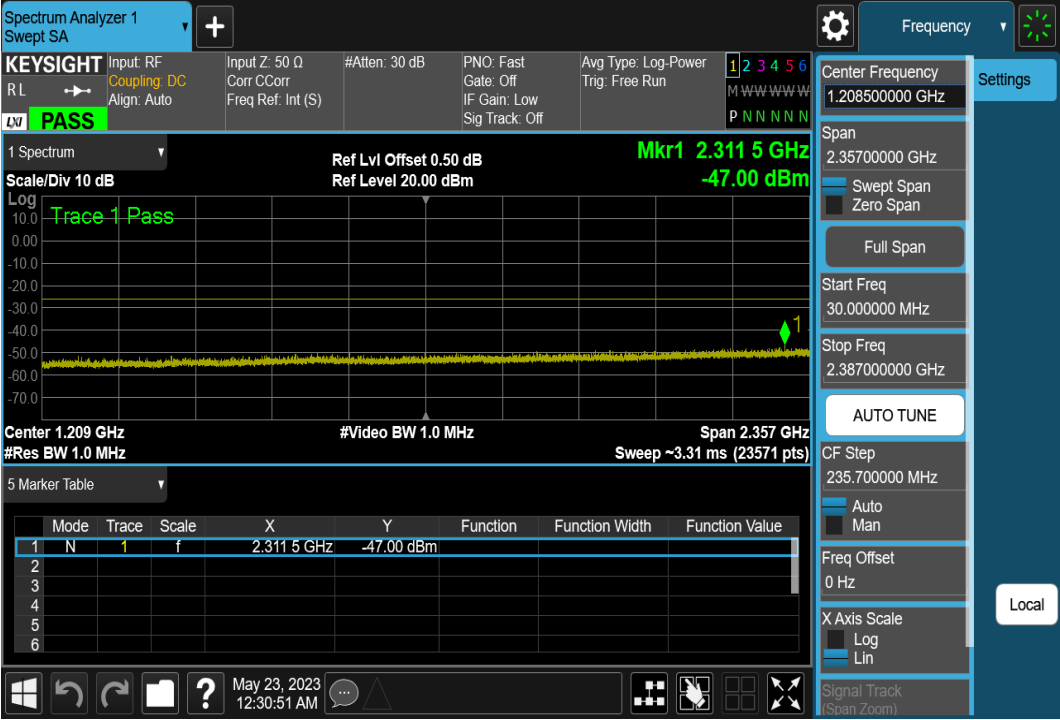
#### TEST PLOTS

##### Under 2387MHz CH Low





CH Mid



CH High

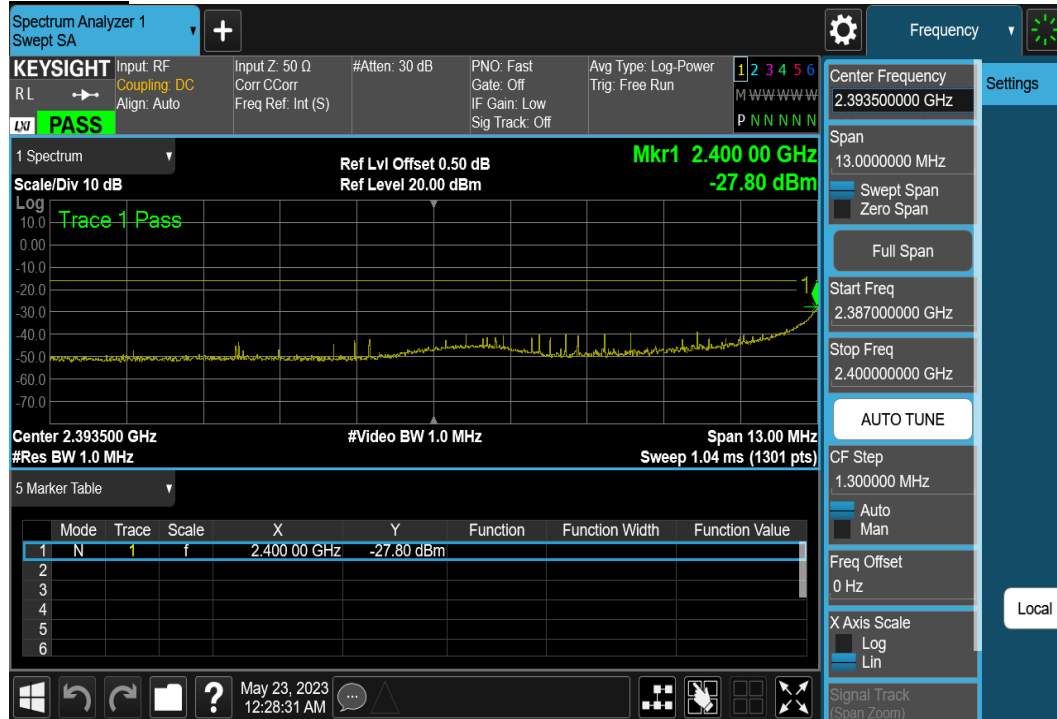




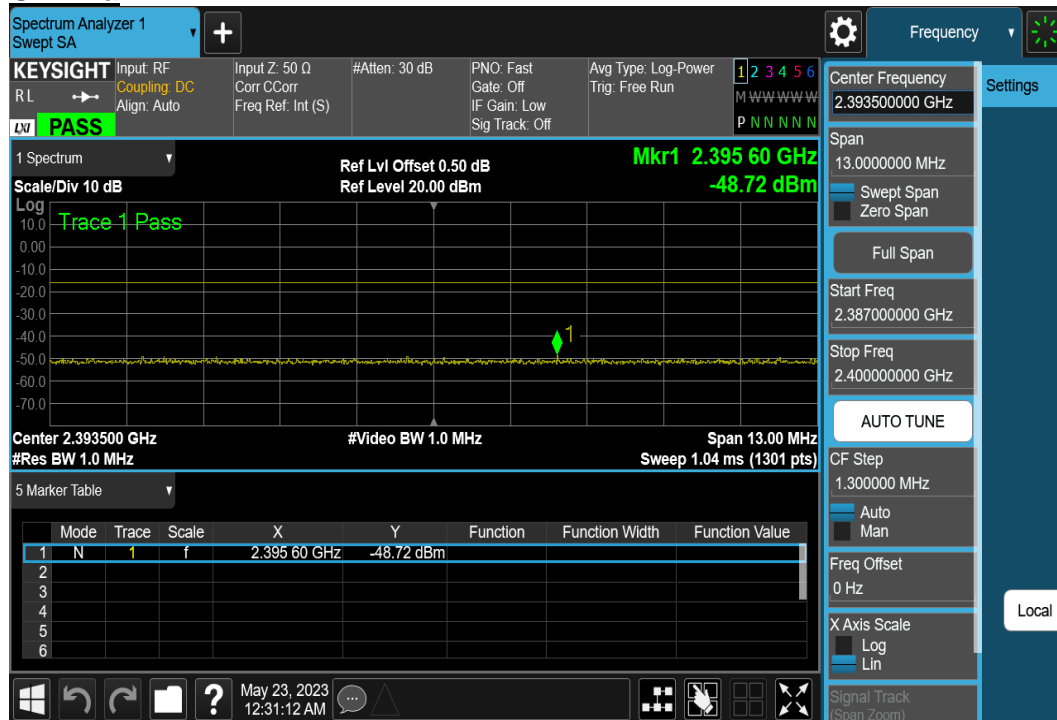
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## 2387-2400MHz CH Low



## CH Mid



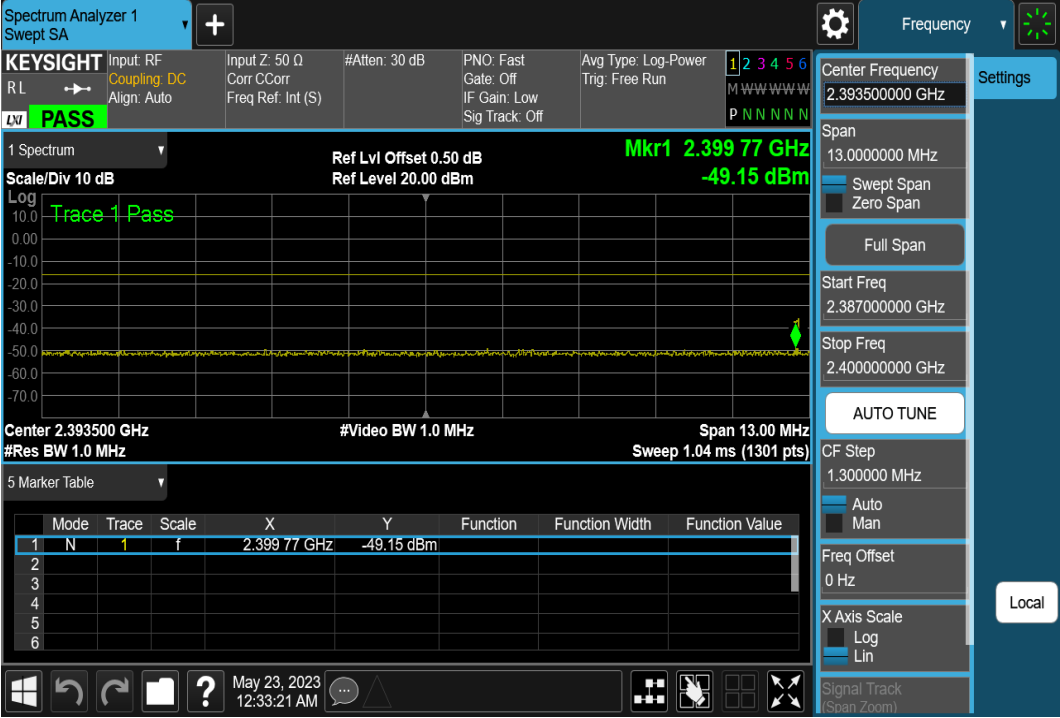




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CH High



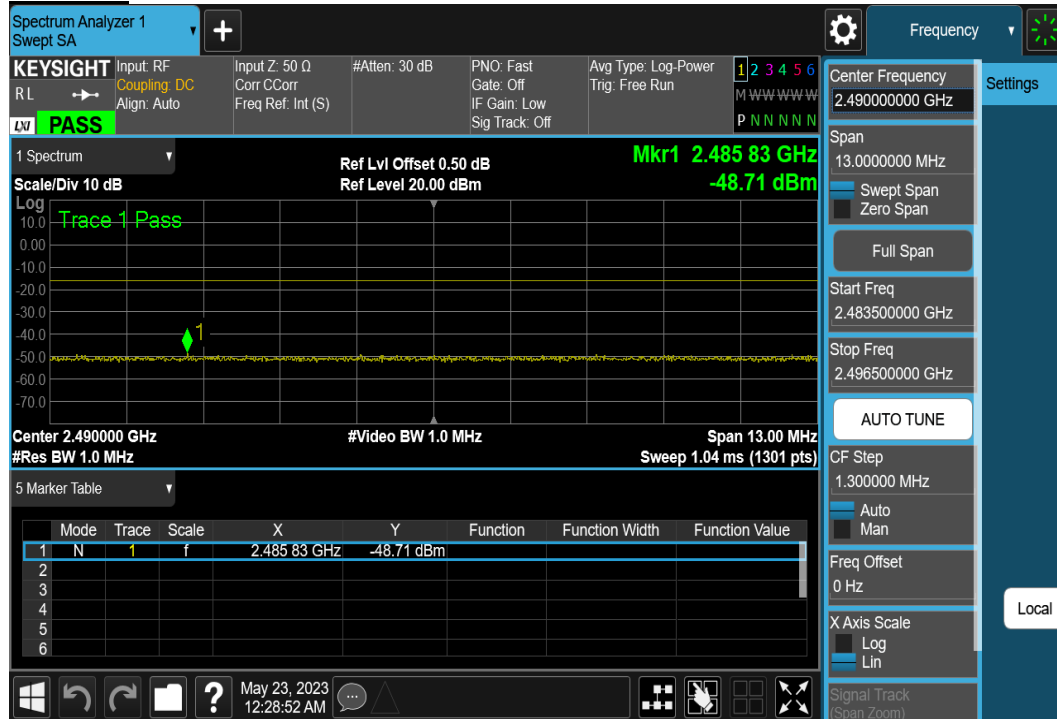


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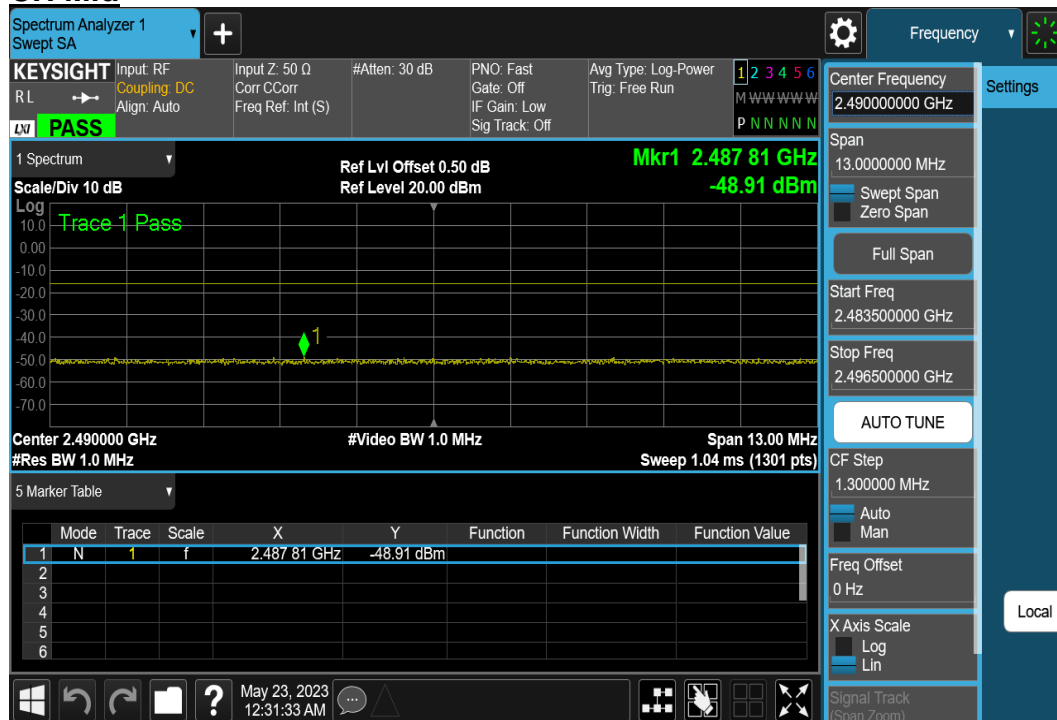
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## 2483.5-2496.5MHz

### CH Low

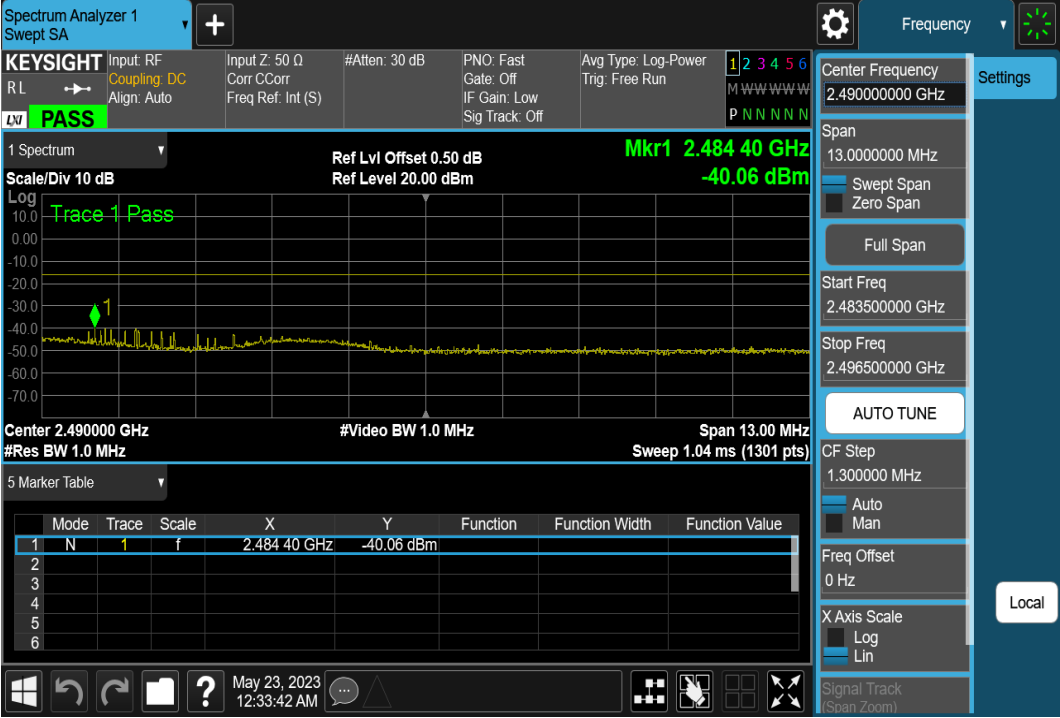


### CH Mid





CH High



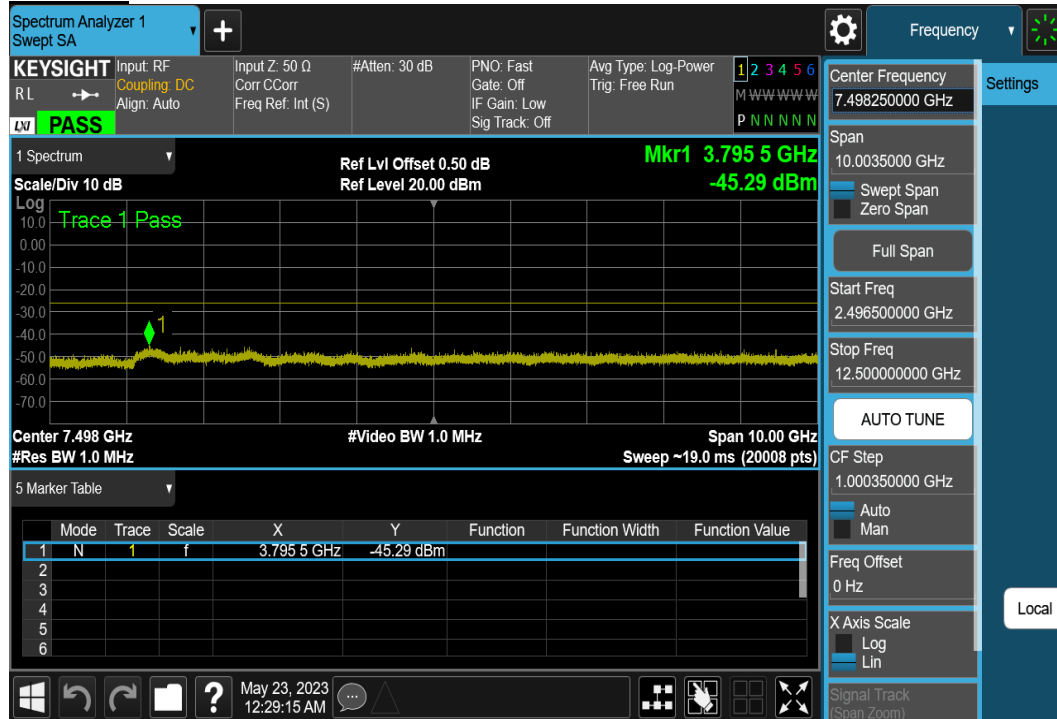


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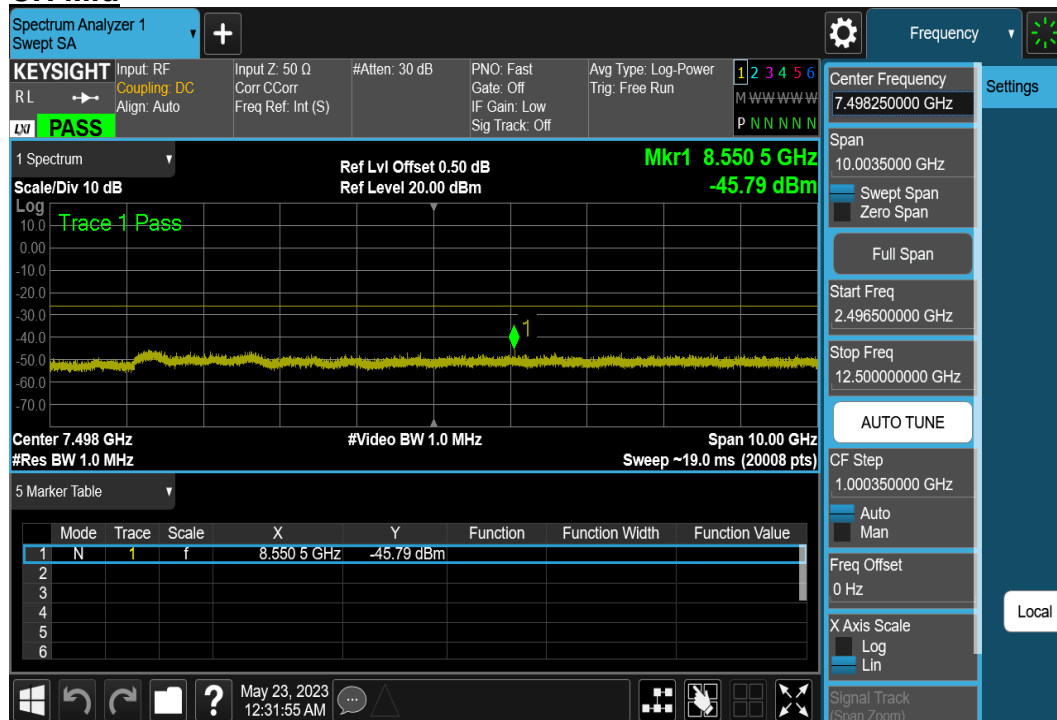
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## 2496.5 - 12.5GHz

### CH Low

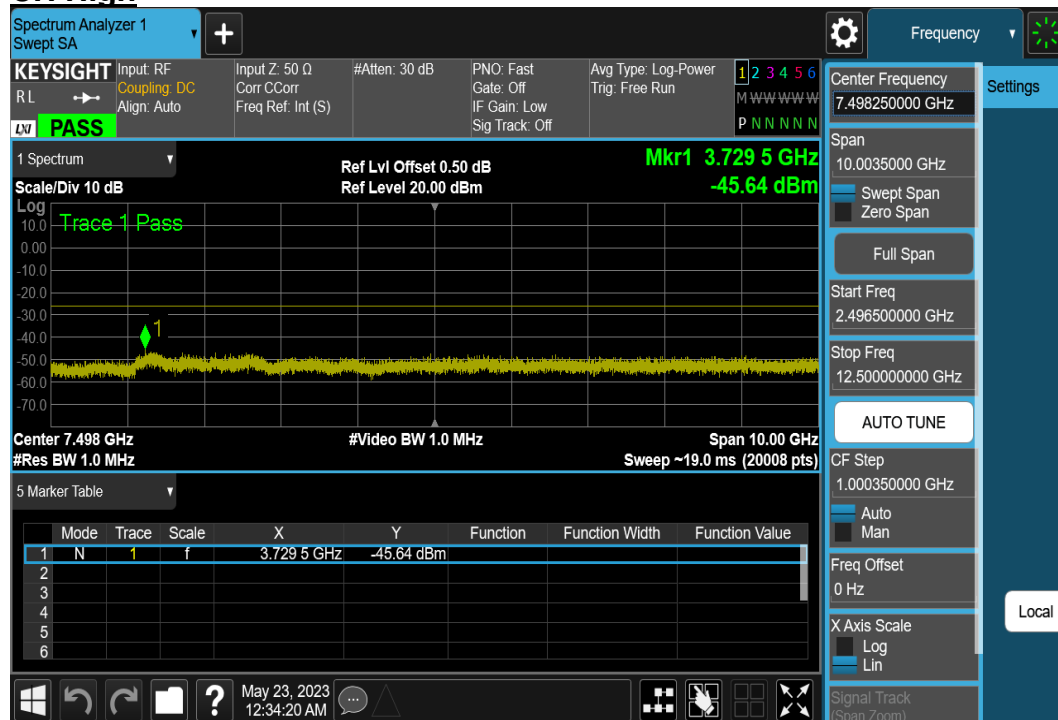


### CH Mid



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## CH High



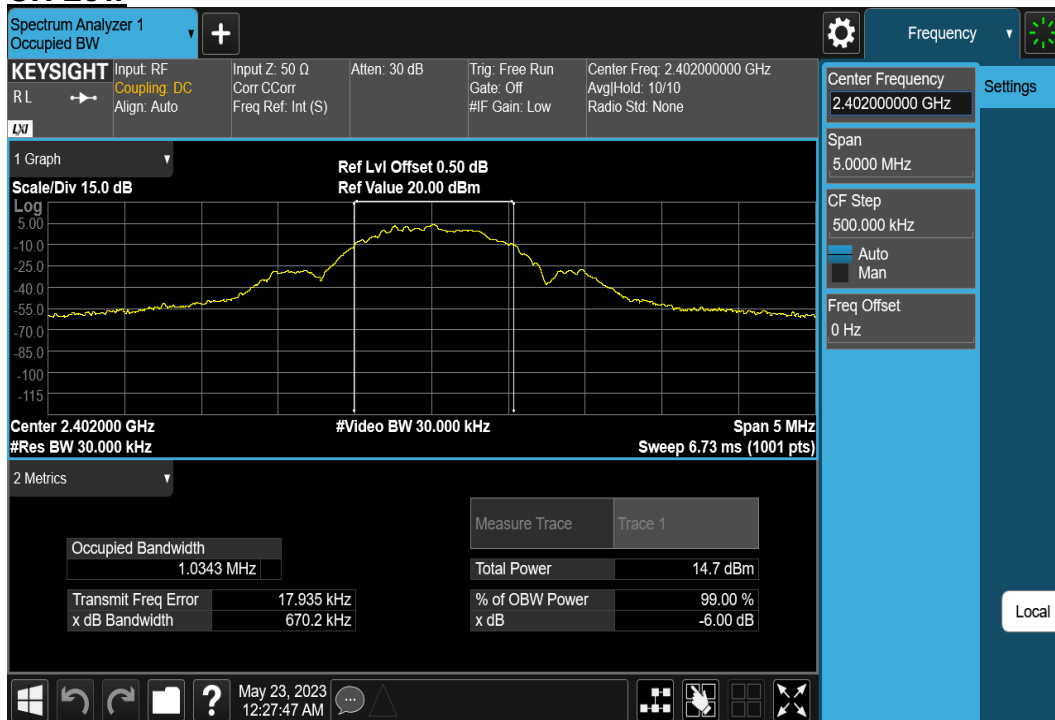
## 13.4 OCCUPIED BANDWIDTH (99%)

### TEST RESULT

Measurement Frequency	MHz	2402	2442	2480	Result	NOTES
Channel Number	Ch.	0	20	39	-----	
Occupied Bandwidth	MHz	1.0343	1.0354	1.0342	<b>PASS</b>	

### TEST PLOTS

#### CH Low



## CH Mid



## CH High



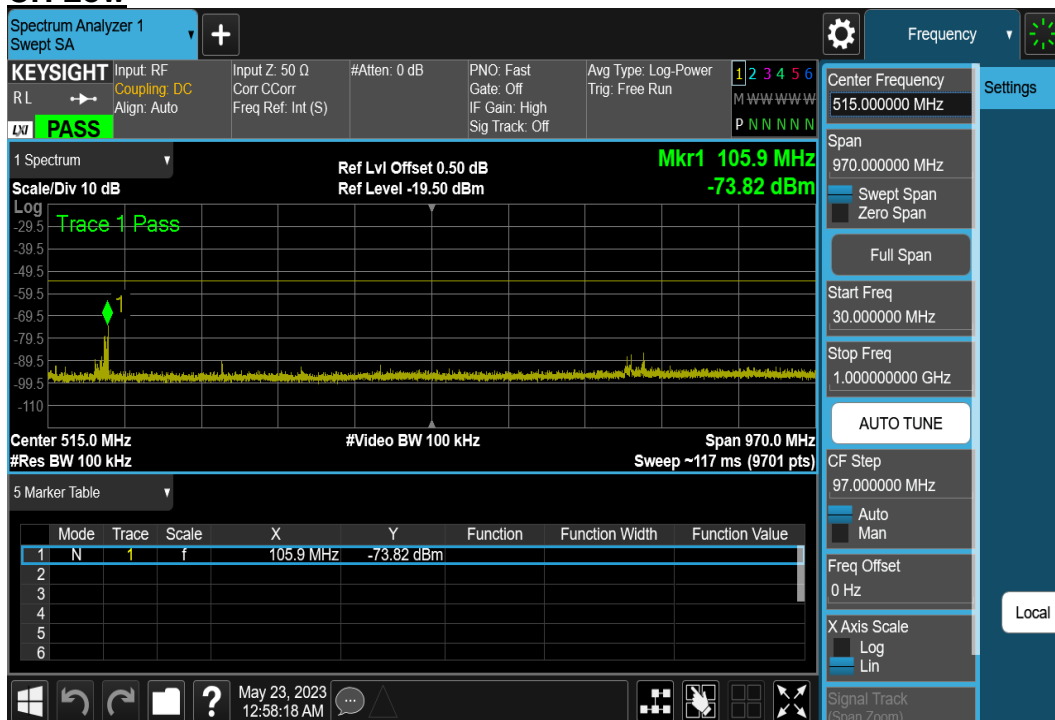
## 13.5 LIMITATION OF COLLATERAL EMISSIONS OF RECEIVER

### TEST RESULT

Measurement Frequency		MHz	2402	2442	2480	Result	NOTES
Channel Number		Ch.	0	20	39	-----	
Secondarily Emitted Radio Wave Strength (RX Spurious) (RX1)	Under 1GHz	nW/MHz	0.0415	0.0547	0.0522	<b>PASS</b>	
		dBm/MHz	-73.82	-72.62	-72.82		
		MHz	105.90	106.00	106.00		
	1 - 12.5GHz	nW/MHz	0.0422	0.1706	0.3319	<b>PASS</b>	
		dBm/MHz	-73.75	-67.68	-64.79		
		MHz	3249.00	1945.00	2402.00		

### TEST PLOTS

#### Under 1GHz CH Low



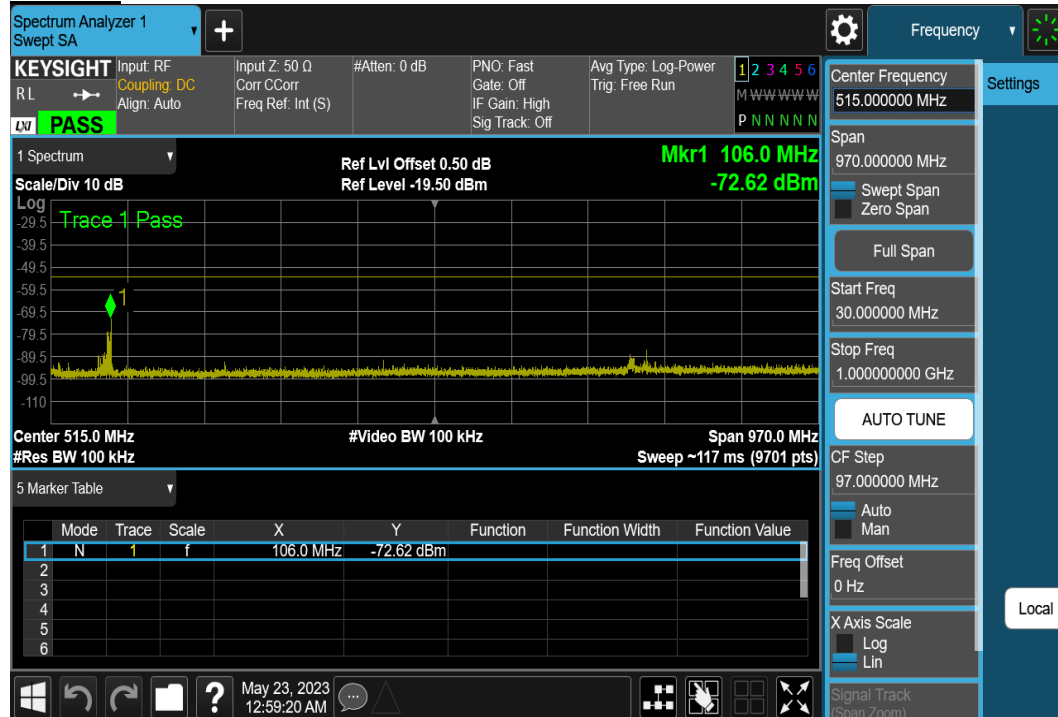




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## CH Mid



## CH High



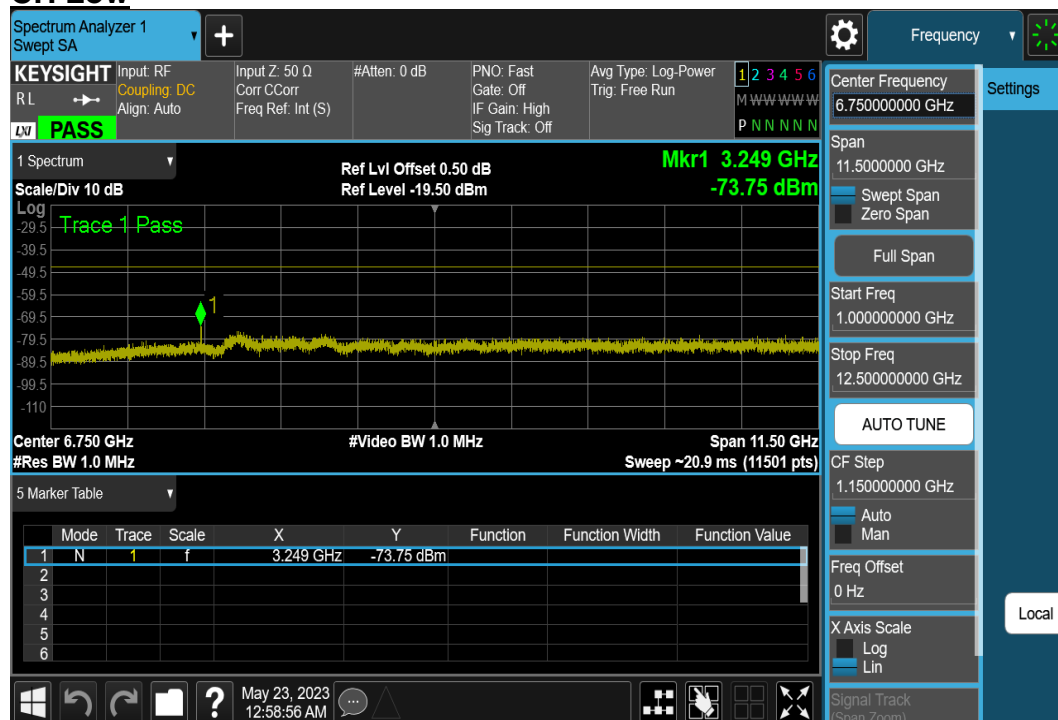


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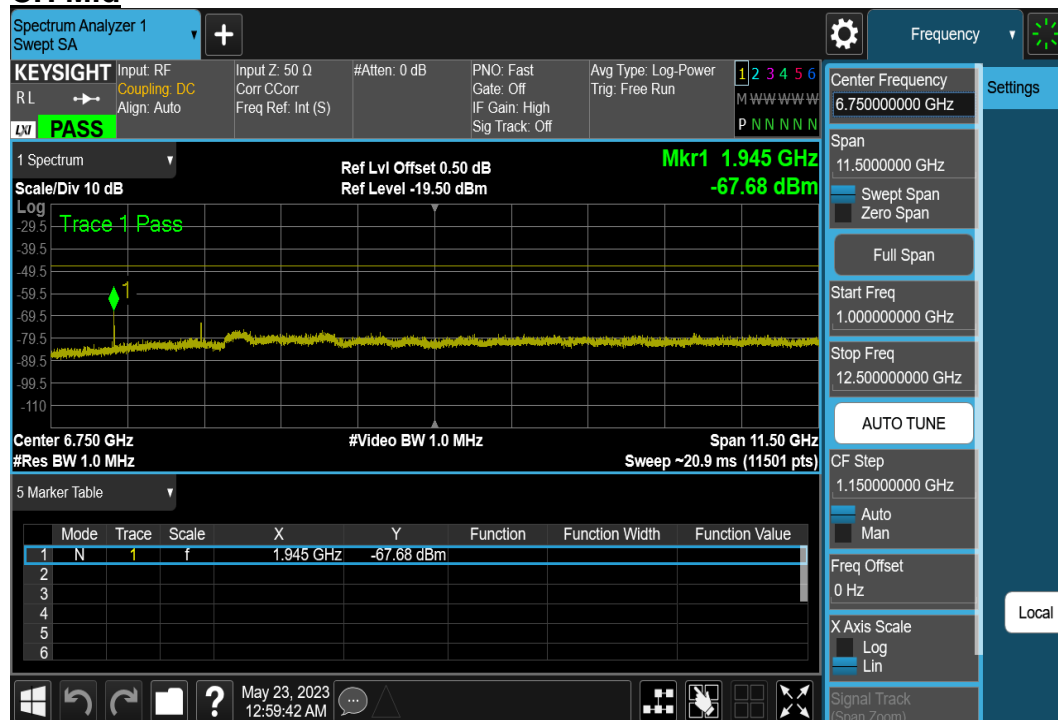
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## 1 - 12.5GHz

### CH Low

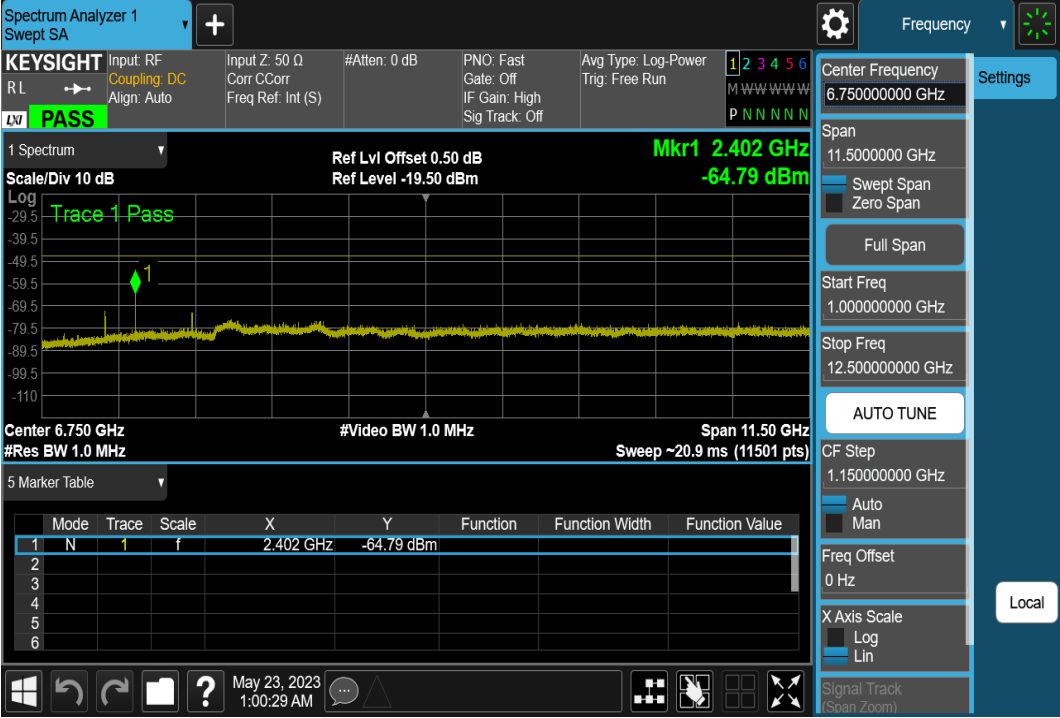


### CH Mid





CH High



## 14. TEST RESULT FOR BLE 2M (CH0~CH39)(FOR GFSK)

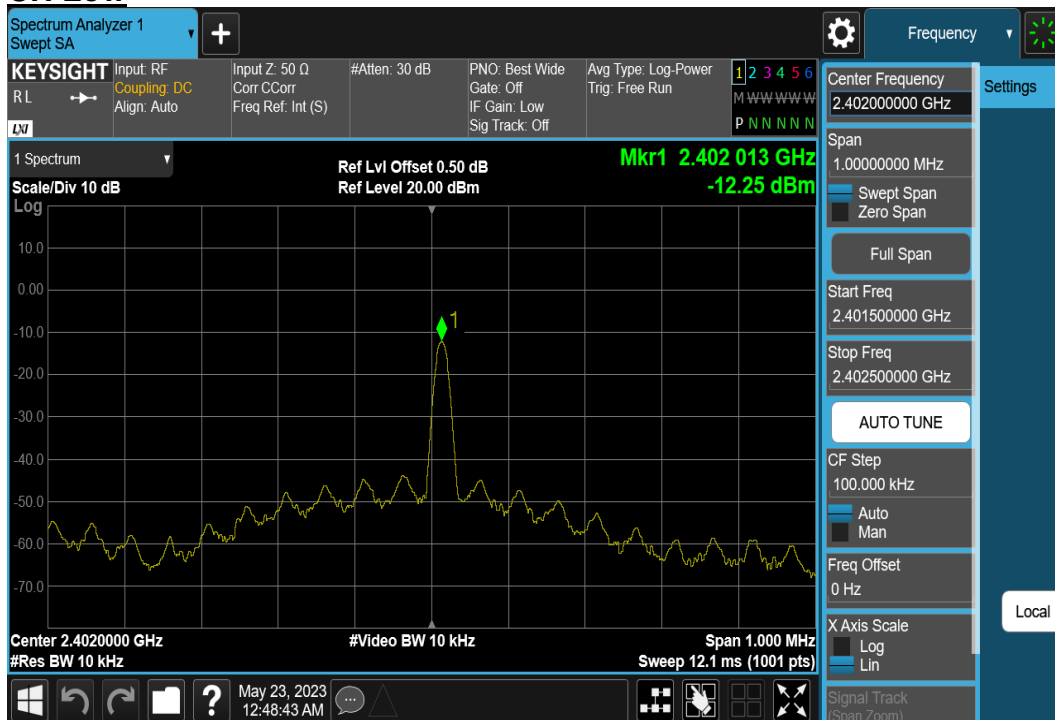
### 14.1 FREQUENCY ERROR

#### TEST RESULT

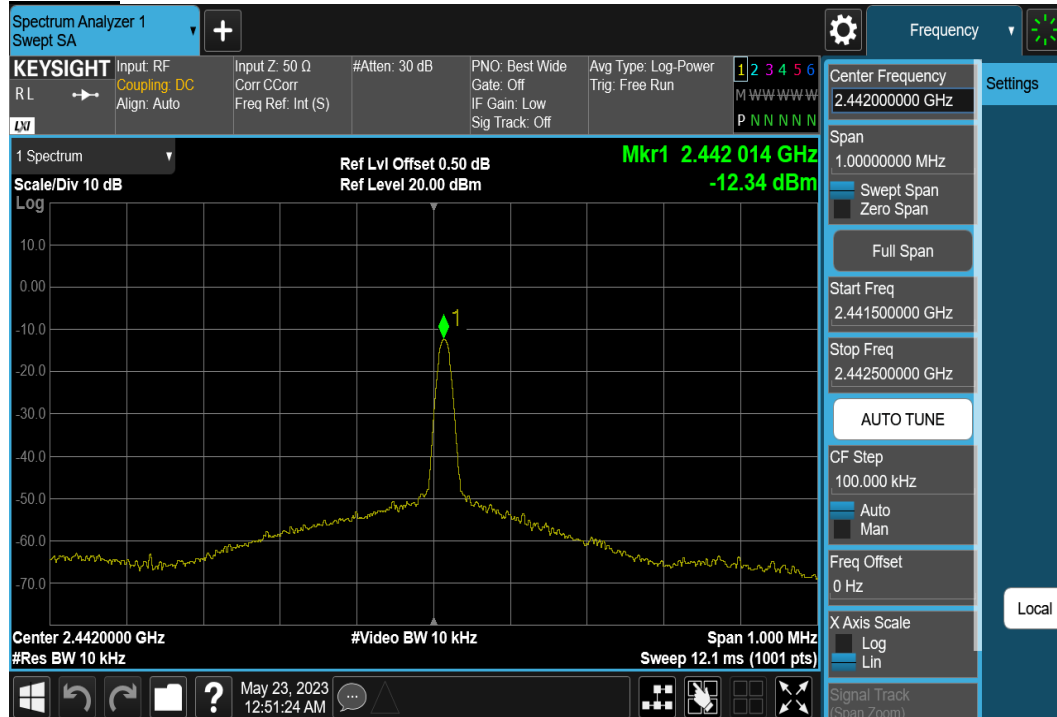
Measurement Frequency	MHz	2402	2442	2480	Result	NOTES
Channel Number	Ch.	0	20	39	-----	
Reading Frequency	MHz	2402.013	2442.014	2480.015	-----	
Frequency Tolerance	ppm	5.41216	5.73301	6.04839	<b>PASS</b>	

#### TEST PLOTS

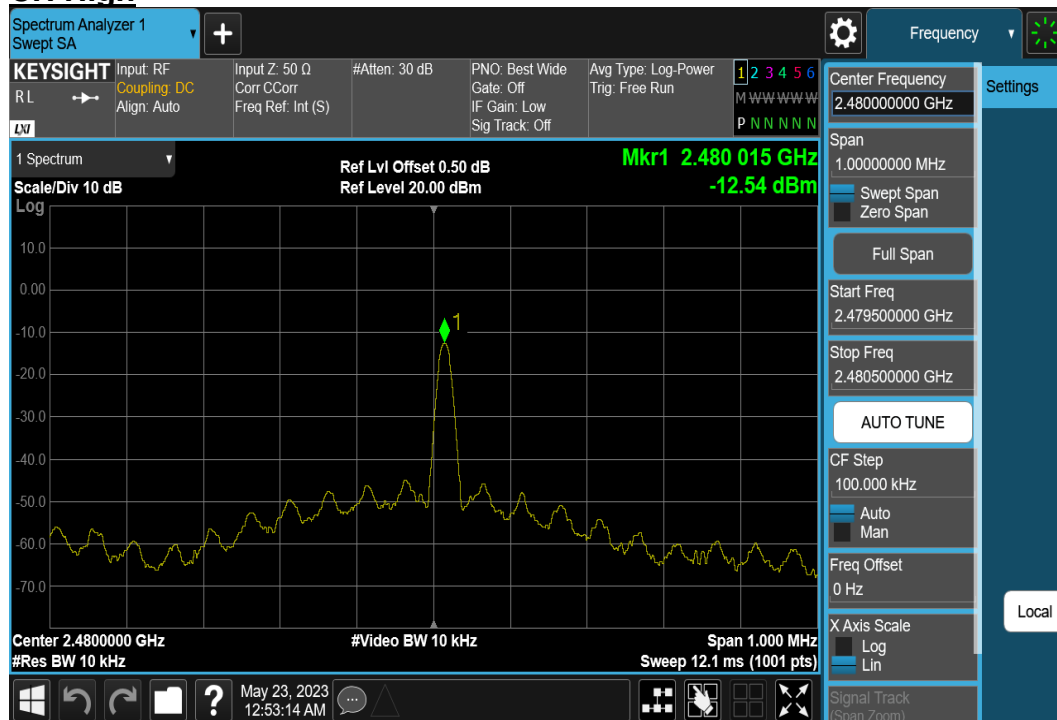
##### CH Low



## CH Mid



## CH High



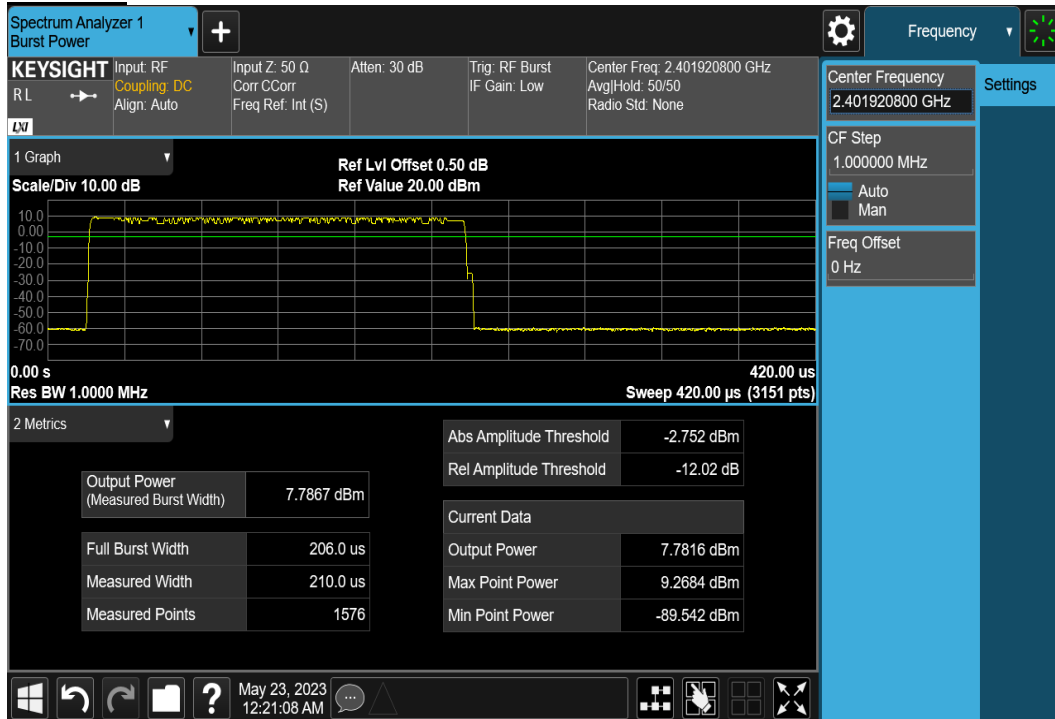
## 14.2 ANTENNA POWER

### TEST RESULT

Measurement Frequency	MHz	2402	2442	2480	Result	NOTES
Channel Number	Ch.	0	20	39	----	
RF Output Power	mW	6.007	6.040	5.934	<b>PASS</b>	
	dBm	7.7867	7.8103	7.7334		
RF Output Power Tolerance	%	-0.54	0.01	-1.75	<b>PASS</b>	

### TEST PLOTS

#### CH Low

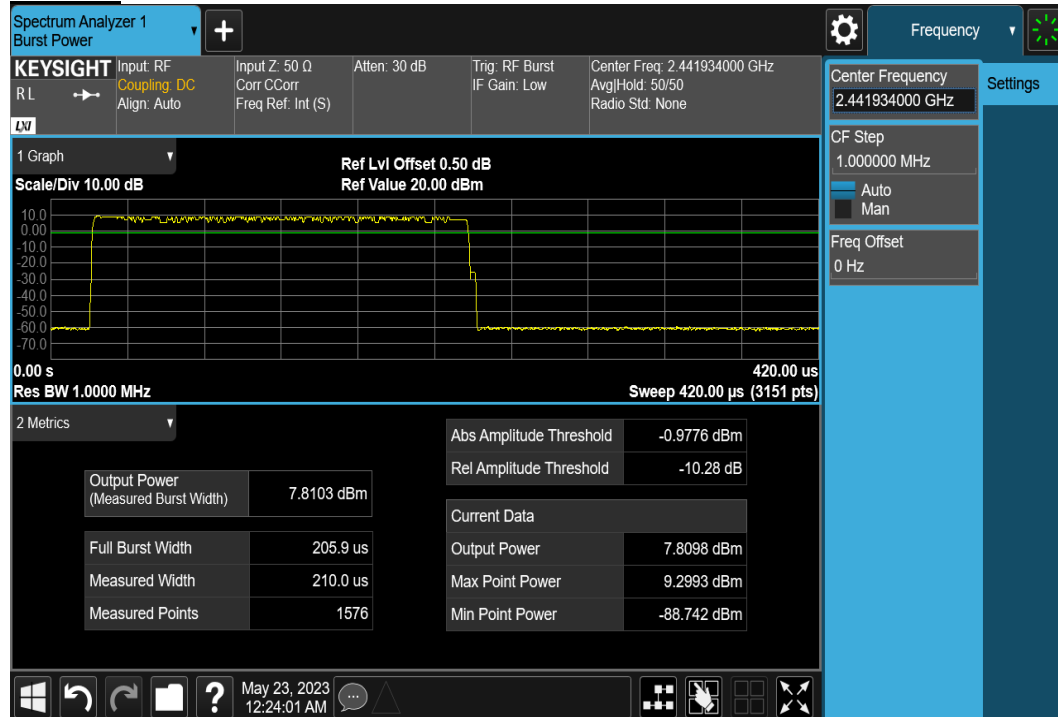




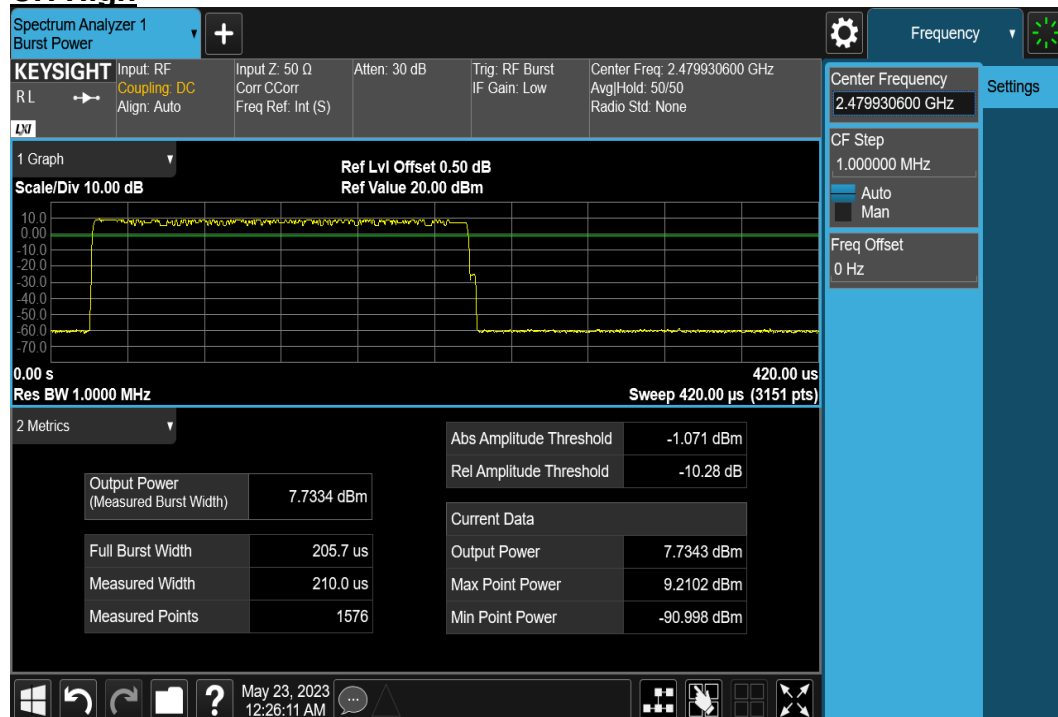
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## CH Mid



## CH High



## 14.3 UNWANTED EMISSION STRENGTH

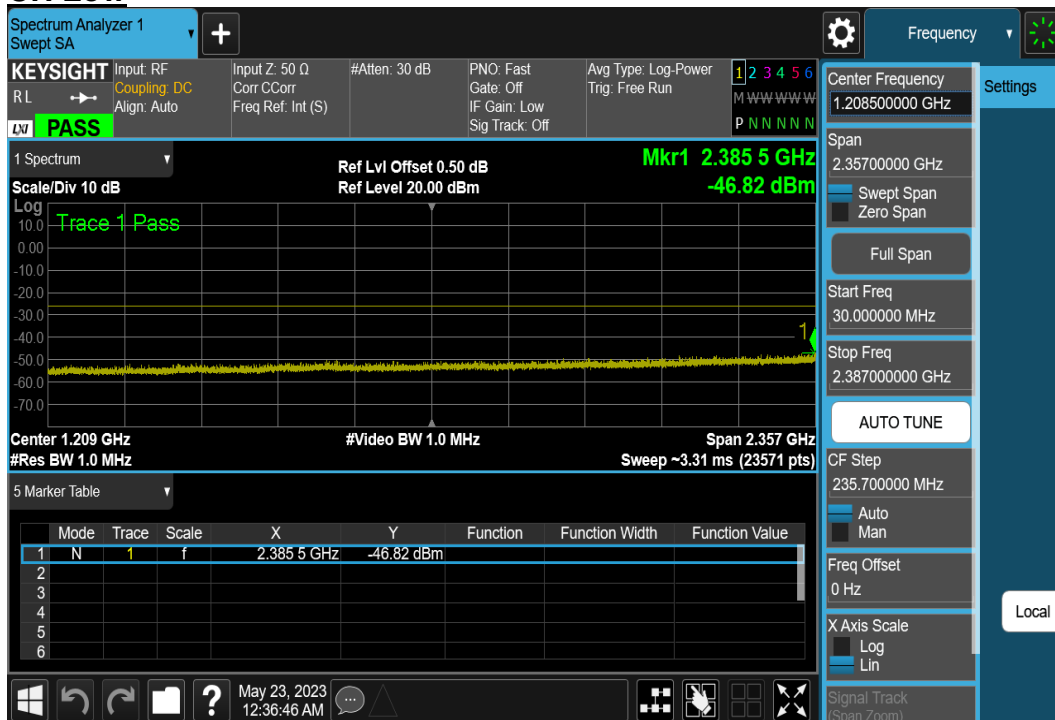
### TEST RESULT

Measurement Frequency		MHz	2402	2442	2480	Result	NOTES
Channel Number		Ch.	0	20	39	-----	
Unwanted Emission Strength (TX1)	Under 2387MHz	$\mu$ W/MHz	0.020797	0.018664	0.020749	<b>PASS</b>	
		dBm/MHz	-46.82	-47.29	-46.83		
		MHz	2385.50	2250.30	2360.90		
	2387-2400MHz	$\mu$ W/MHz	4.027170	0.012764	0.013868	<b>PASS</b>	
		dBm/MHz	-23.95	-48.94	-48.58		
		MHz	2400.00	2398.93	2397.80		
	2483.5-2496.5MHz	$\mu$ W/MHz	0.014622	0.014421	0.217771	<b>PASS</b>	
		dBm/MHz	-48.35	-48.41	-36.62		
		MHz	2489.45	2489.32	2483.51		
	2496.5 - 12.5GHz	$\mu$ W/MHz	0.036141	0.029040	0.024774	<b>PASS</b>	
		dBm/MHz	-44.42	-45.37	-46.06		
		MHz	3813.00	3824.50	5119.50		

### TEST PLOTS

#### Under 2387MHz

#### CH Low



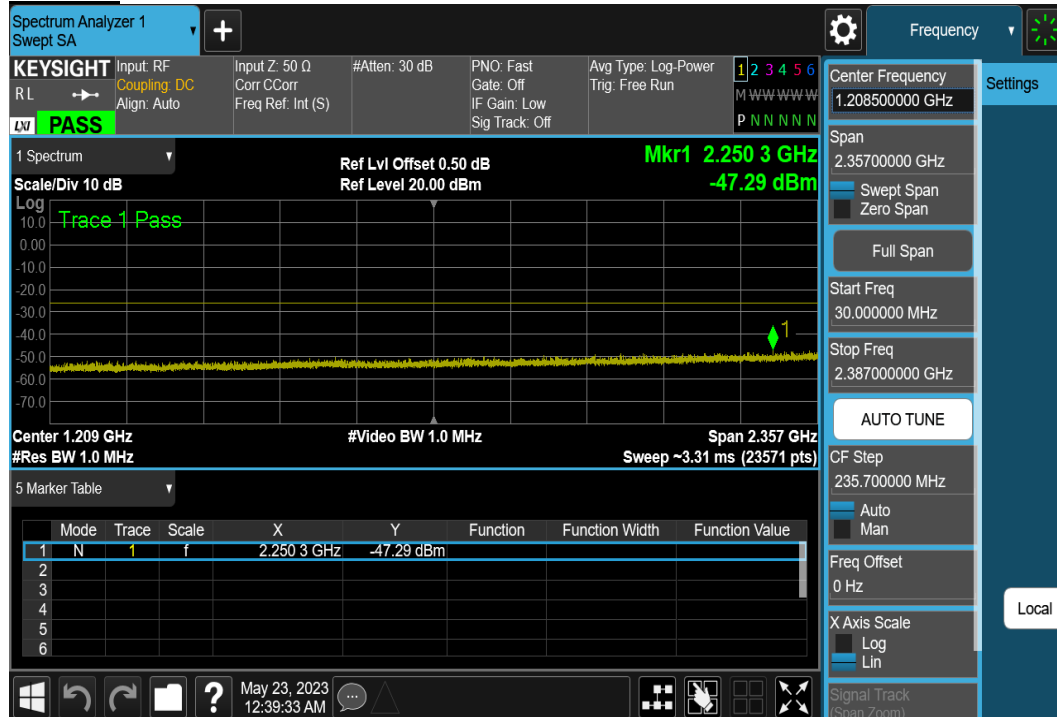




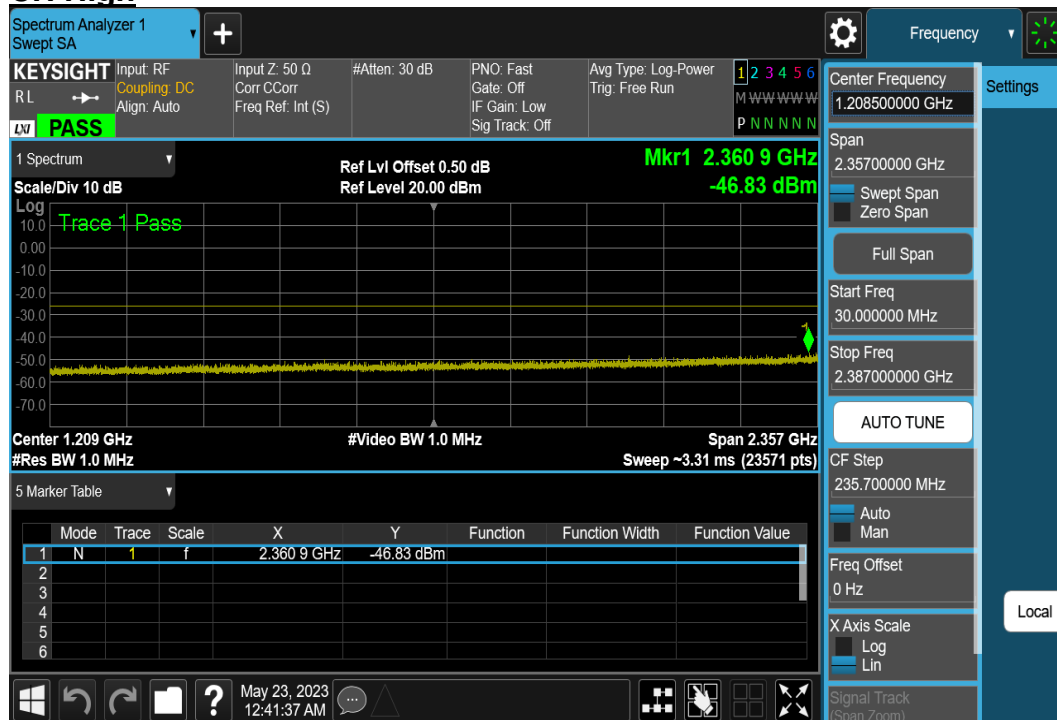
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## CH Mid



## CH High

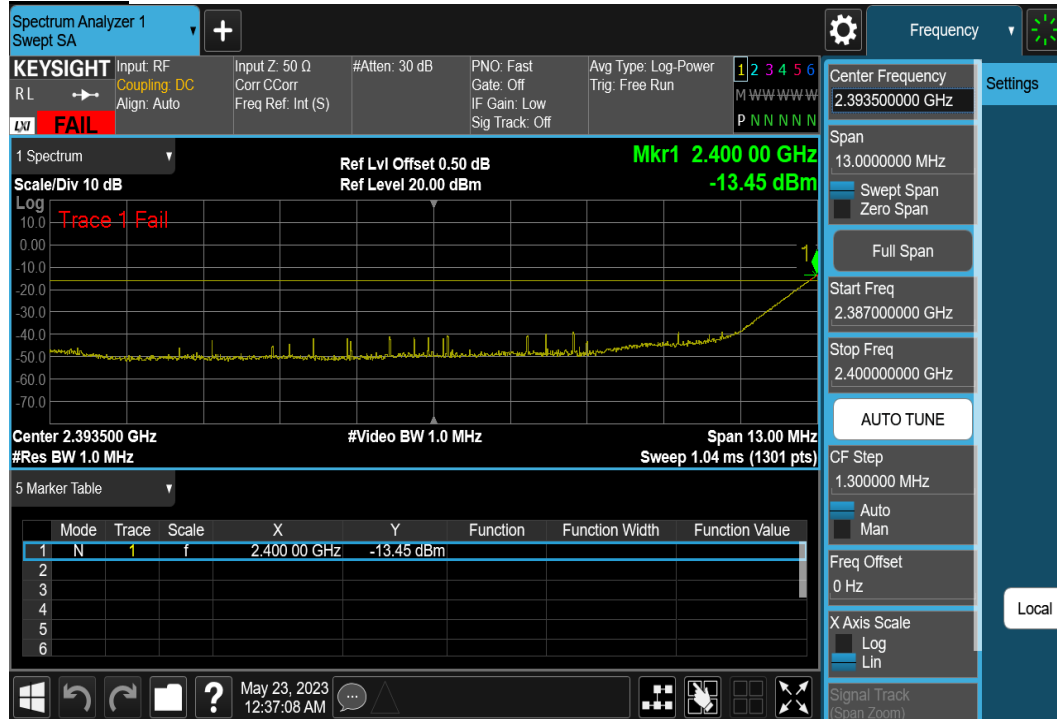




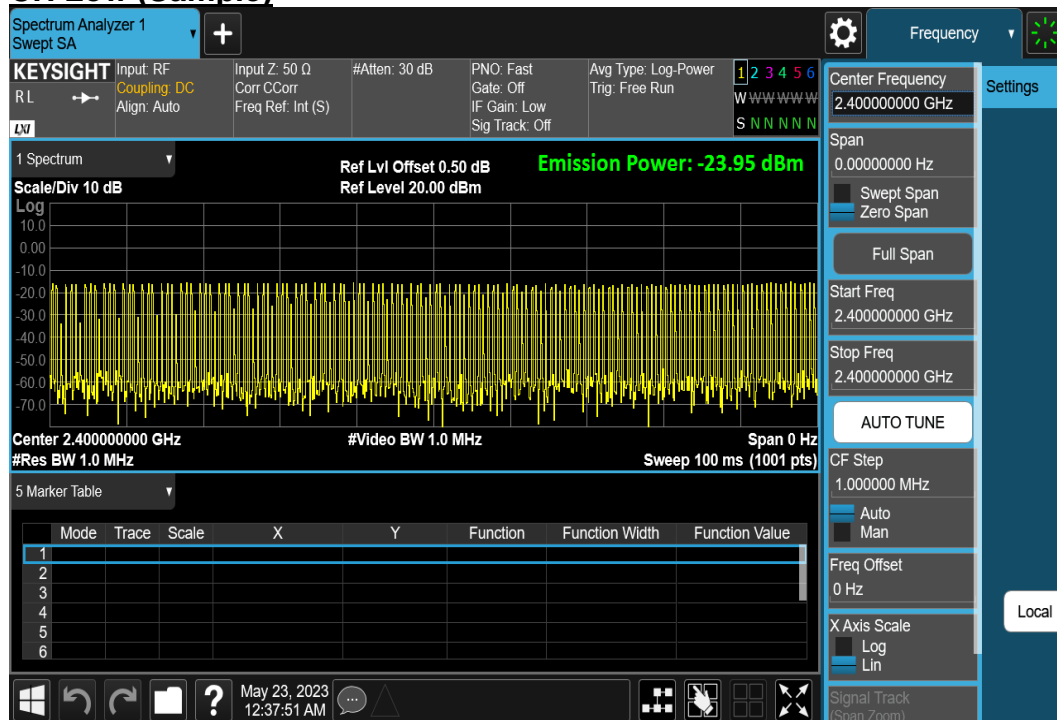
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## 2387-2400MHz CH Low



## CH Low (Sample)

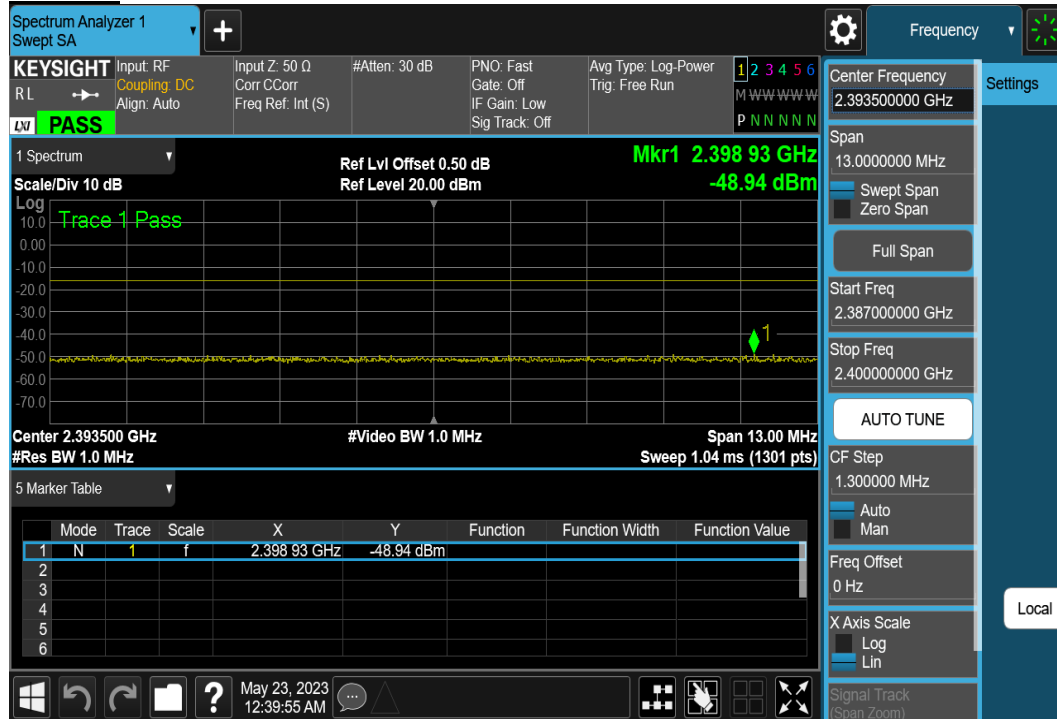




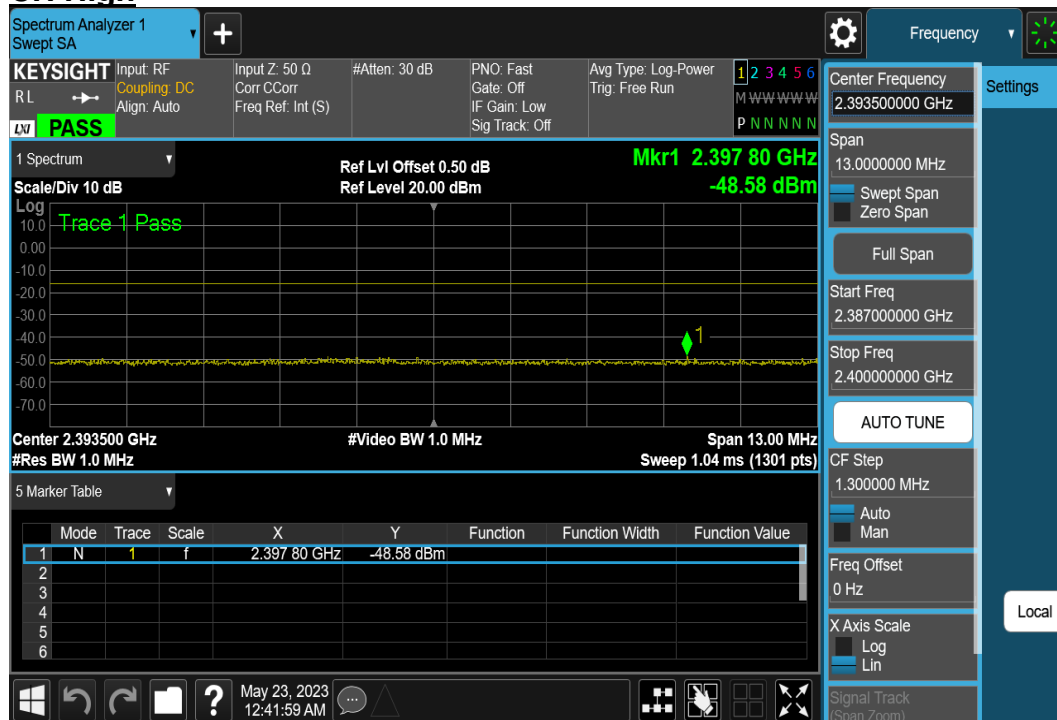
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## CH Mid

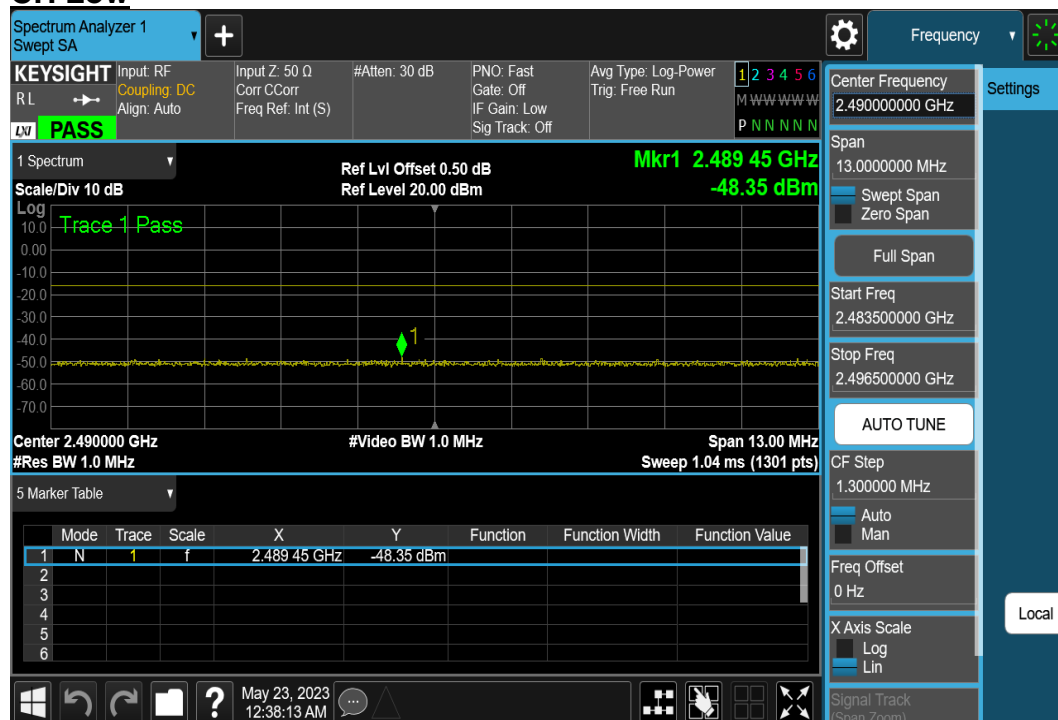


## CH High

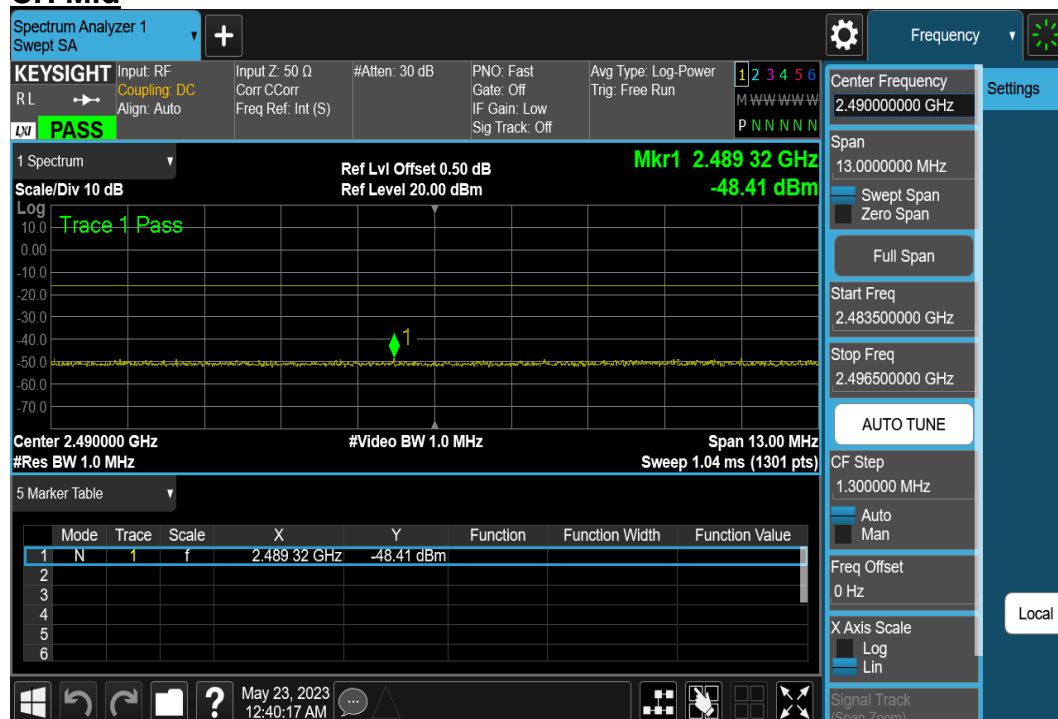


## 2483.5-2496.5MHz

### CH Low



### CH Mid

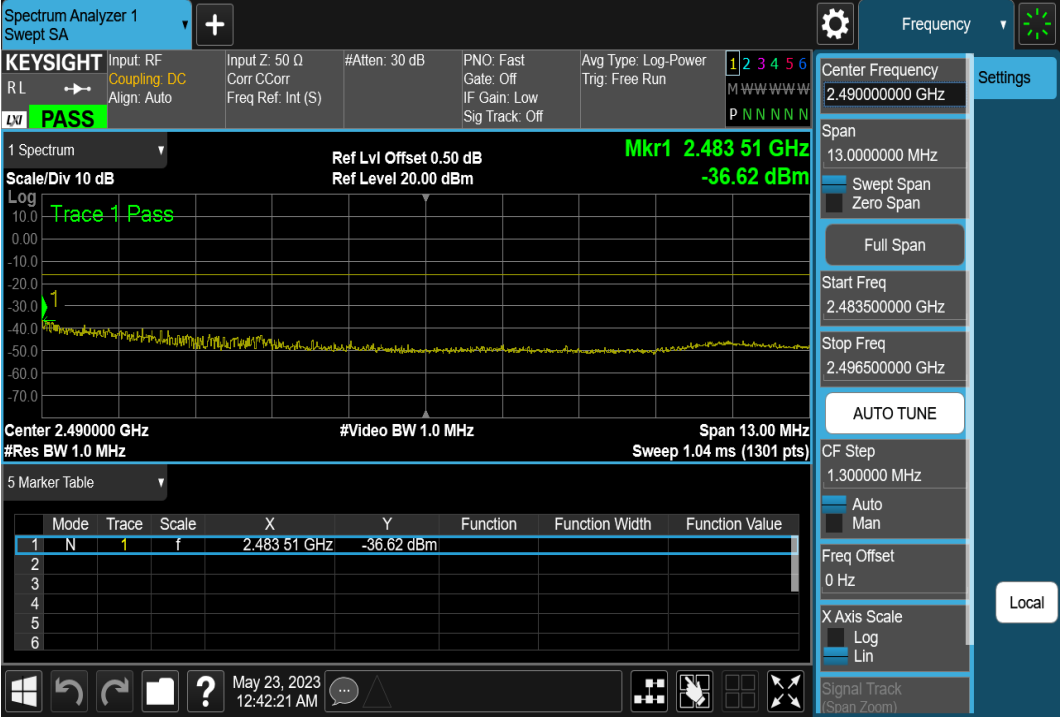




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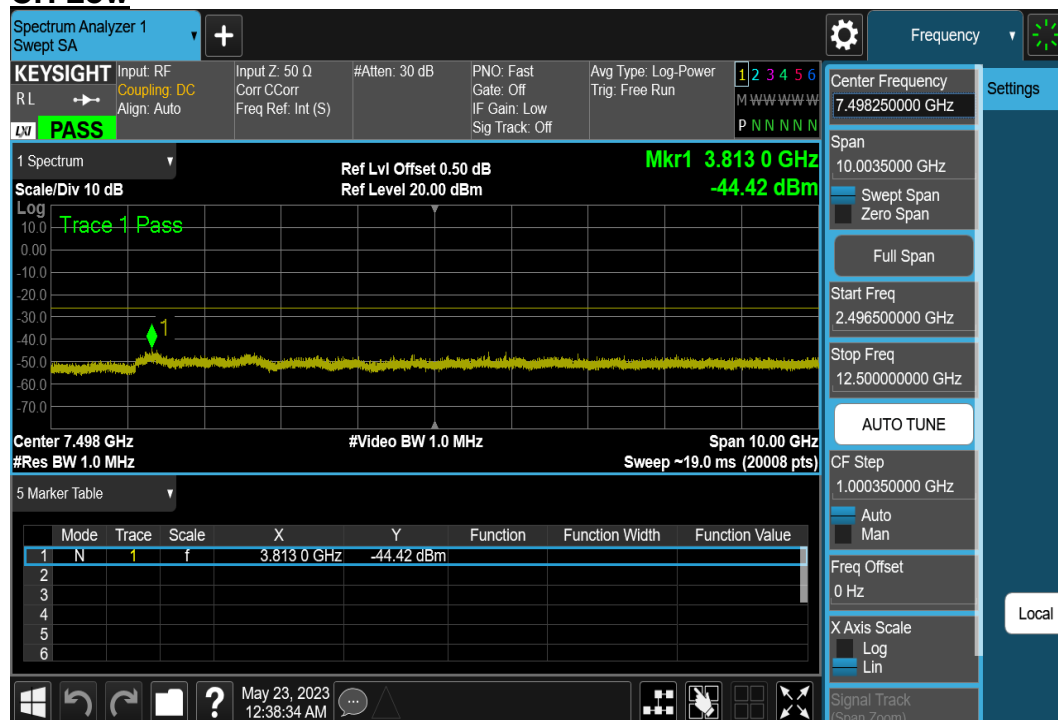
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CH High

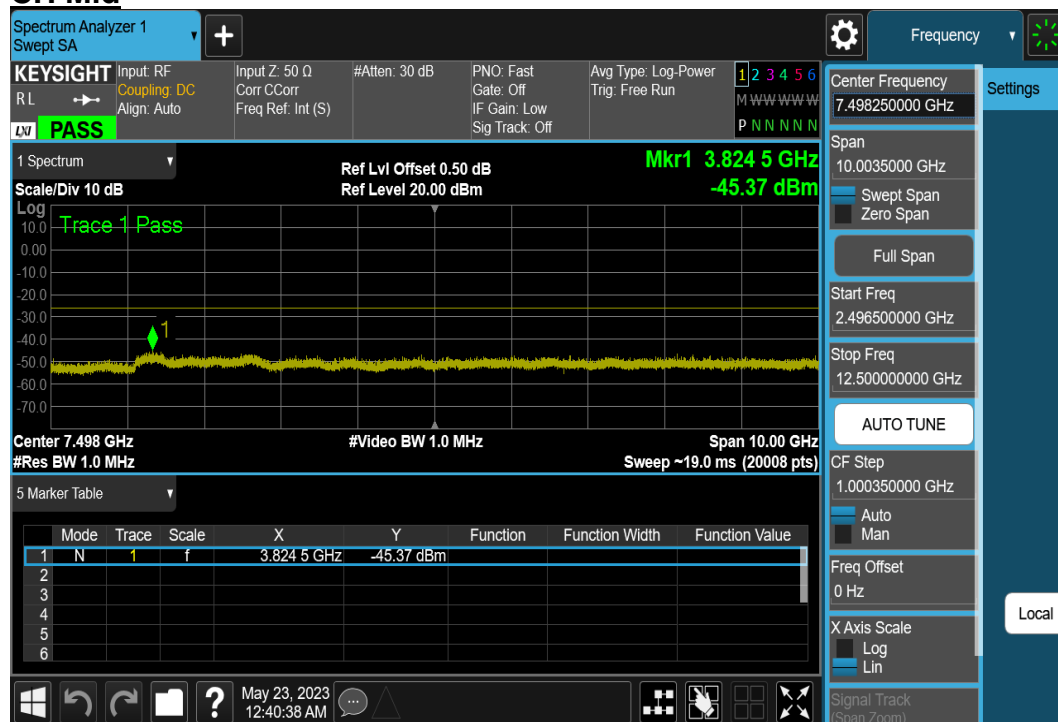


## 2496.5 - 12.5GHz

### CH Low



### CH Mid

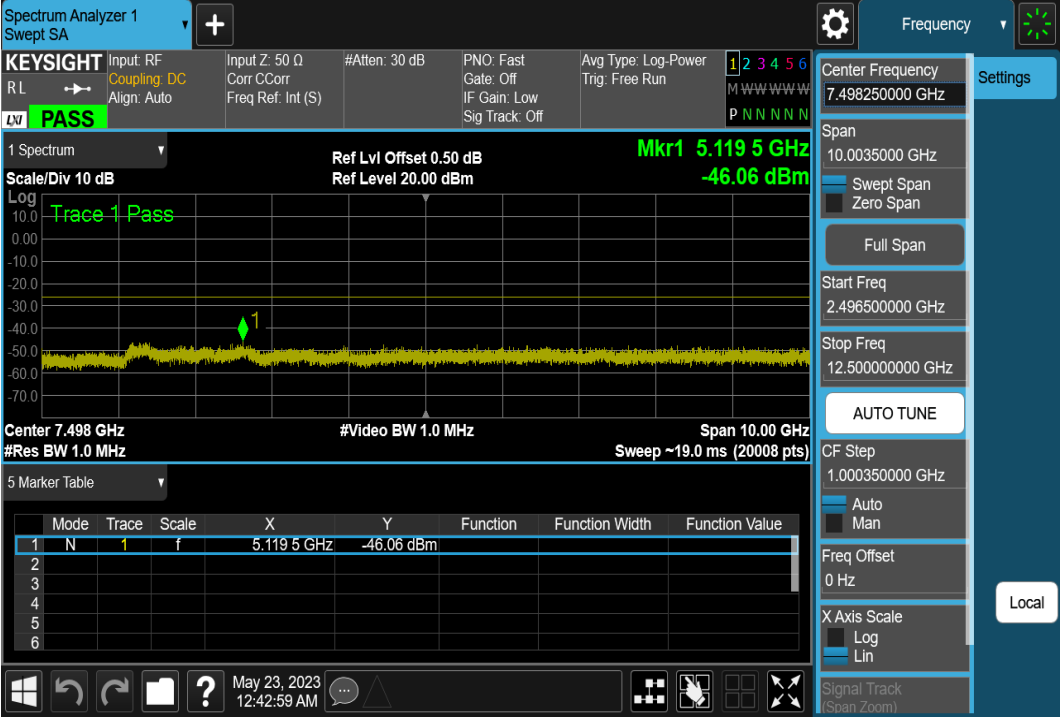




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CH High





14.4 OCCUPIED BANDWIDTH (99%)

TEST RESULT

Measurement Frequency	MHz	2402	2442	2480	Result	NOTES
Channel Number	Ch.	0	20	39	-----	
Occupied Bandwidth	MHz	2.0458	2.0460	2.0475	PASS	

TEST PLOTS

CH Low

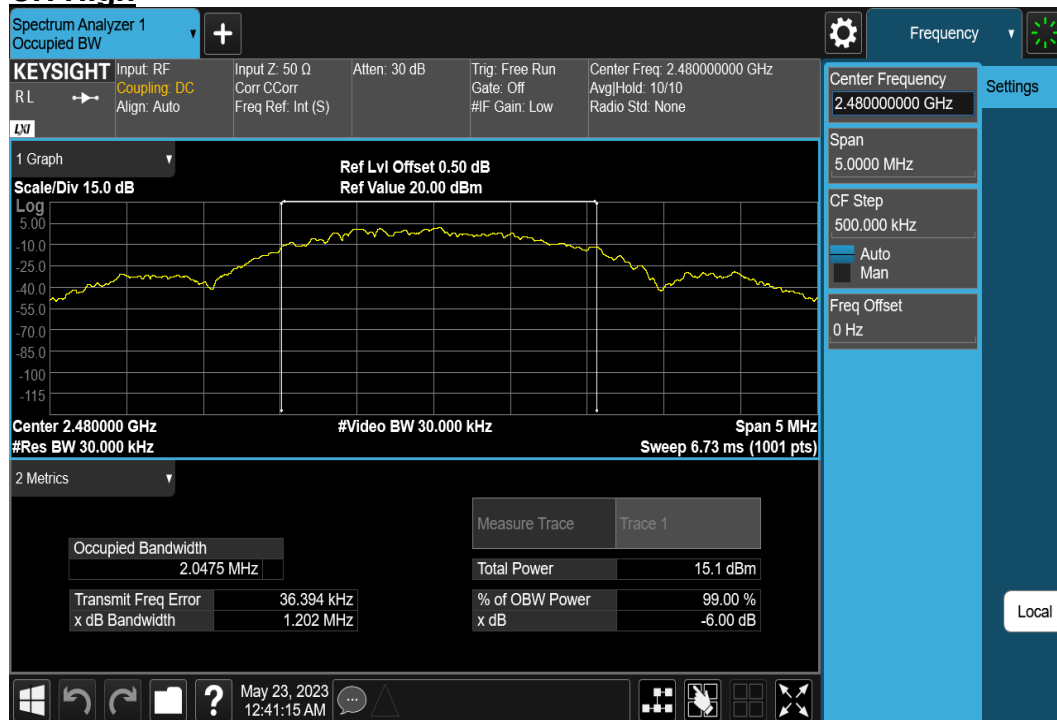




## CH Mid



## CH High



## 14.5 LIMITATION OF COLLATERAL EMISSIONS OF RECEIVER

### TEST RESULT

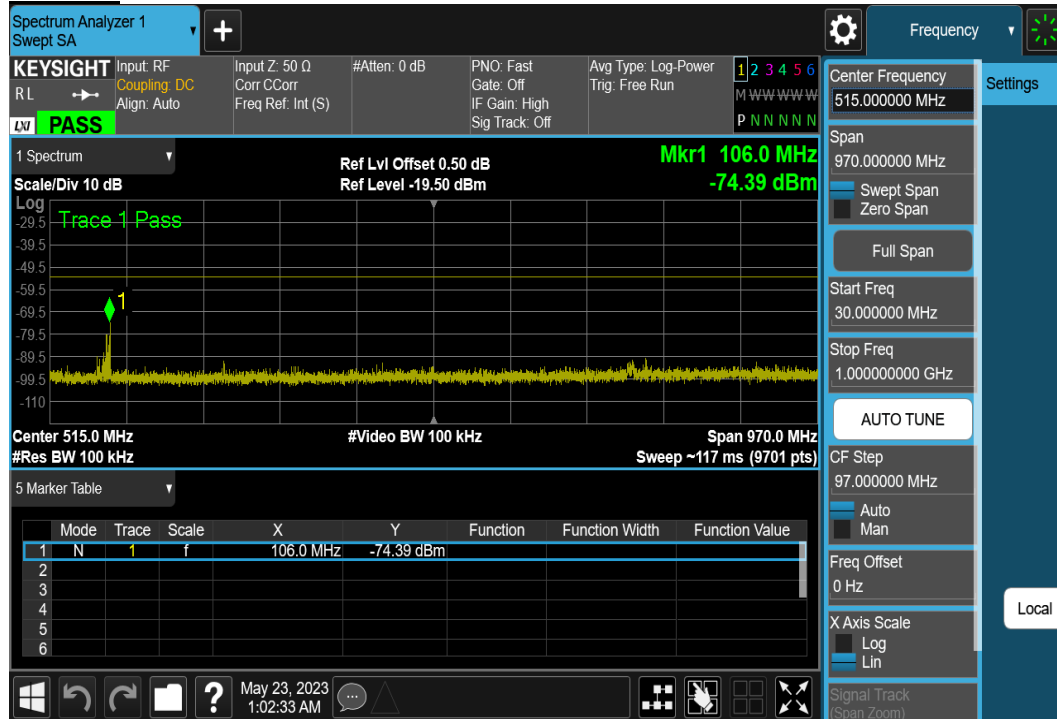
Measurement Frequency		MHz	2402	2442	2480	Result	NOTES
Channel Number		Ch.	0	20	39	-----	
Secondarily Emitted Radio Wave Strength (RX Spurious) (RX1)	Under 1GHz	nW/MHz	0.0376	0.0364	0.0410	<b>PASS</b>	
		dBm/MHz	-74.25	-74.39	-73.87		
		MHz	106.00	106.00	106.00		-----
	1 - 12.5GHz	nW/MHz	0.3119	0.3556	0.1114	<b>PASS</b>	
		dBm/MHz	-65.06	-64.49	-69.53		
		MHz	2480.00	1944.00	1945.00		-----

### TEST PLOTS

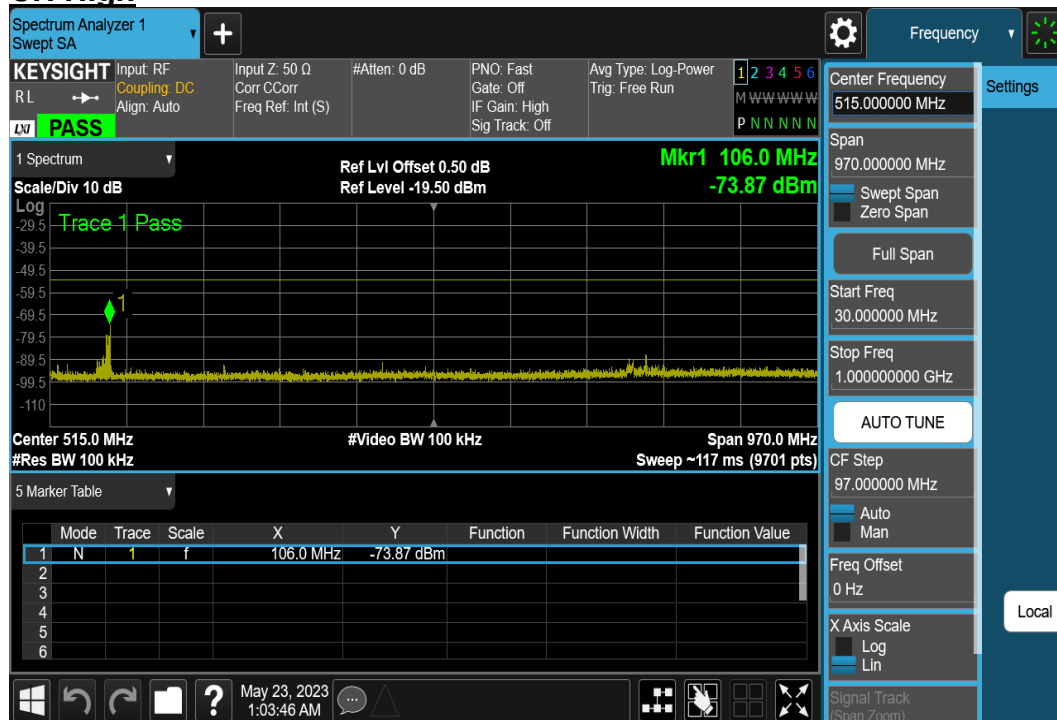
#### Under 1GHz CH Low



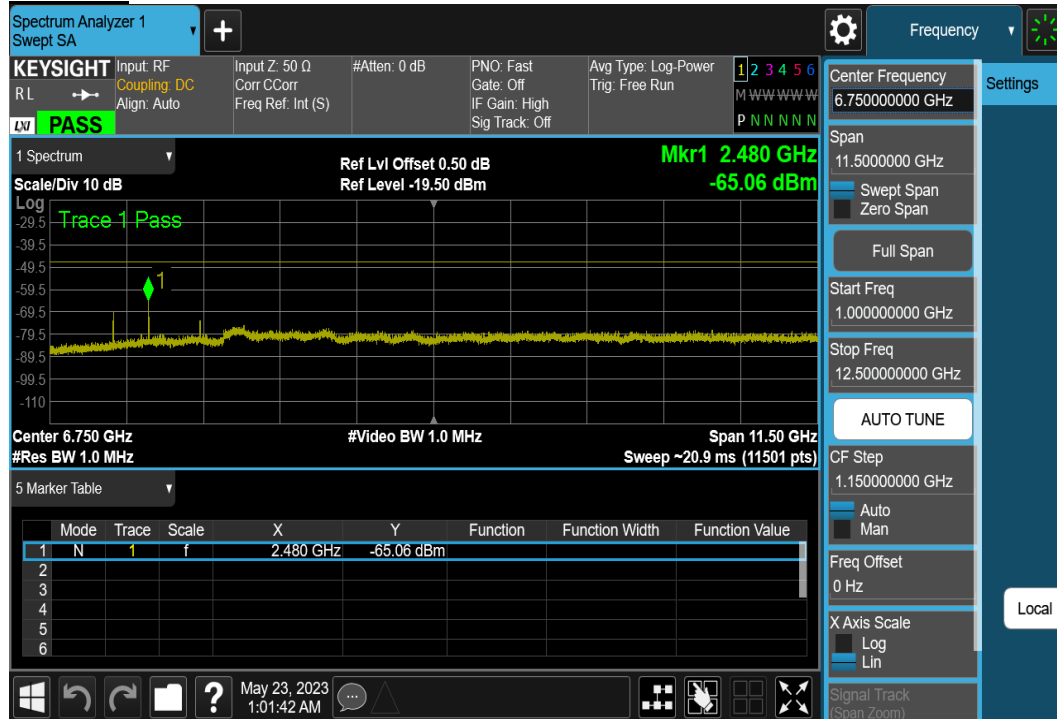
## CH Mid



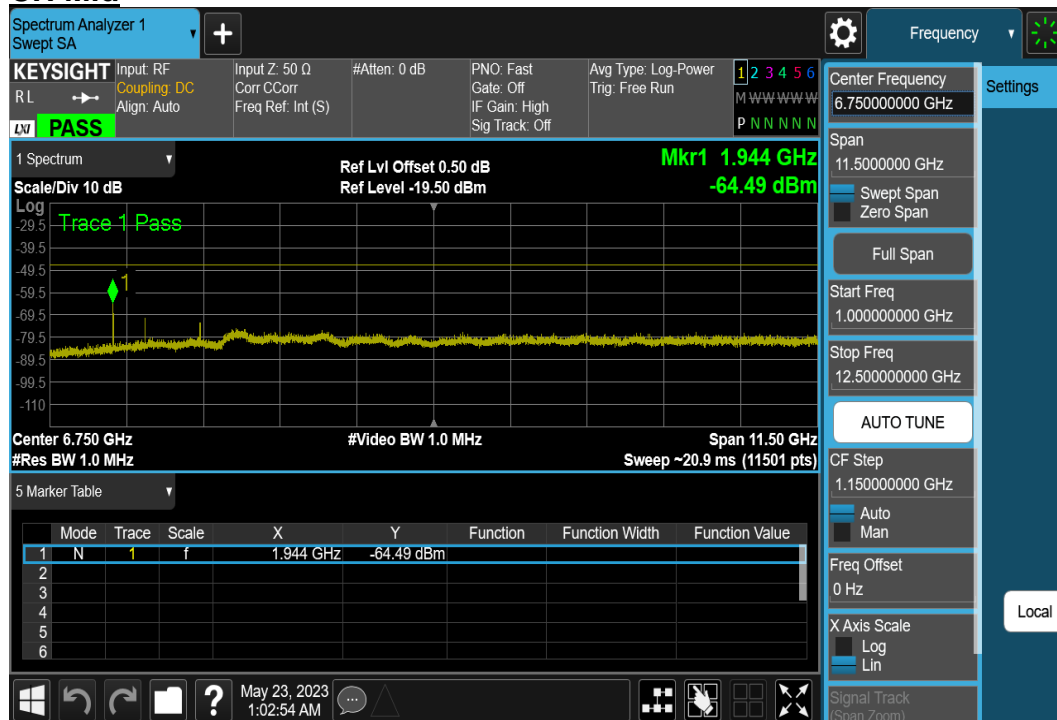
## CH High



## 1 - 12.5GHz CH Low

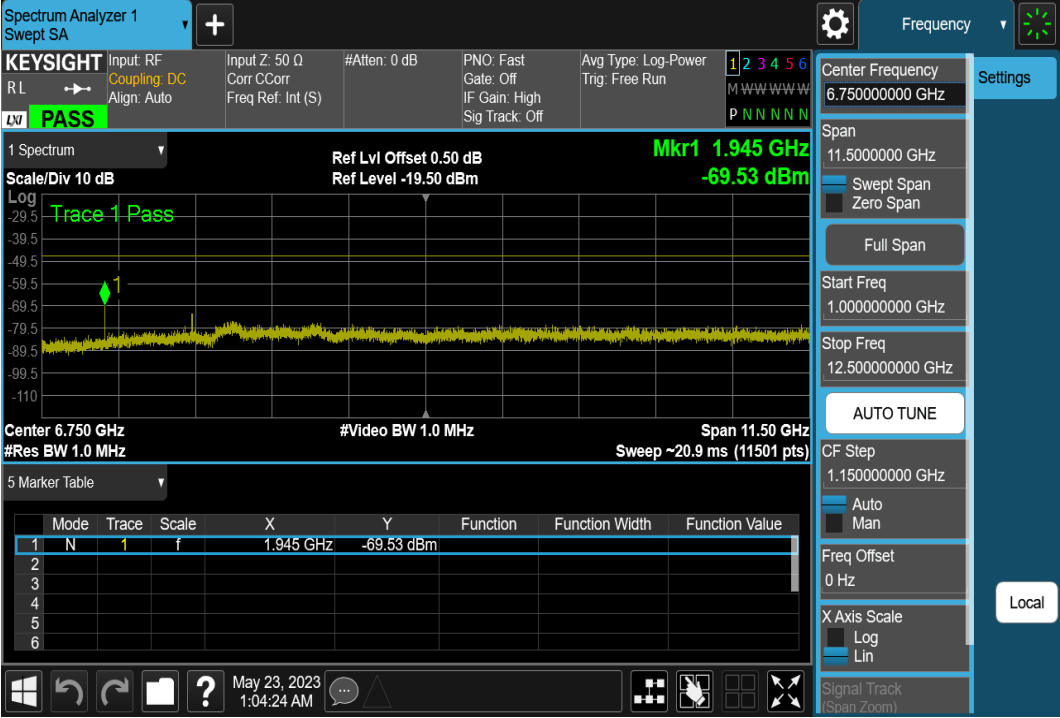


## CH Mid

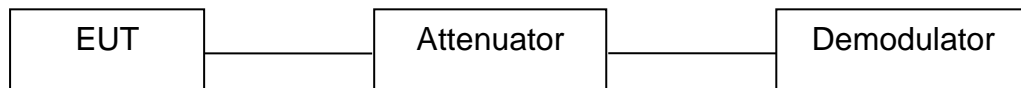




CH High



## 15. Interference Prevention Function



Interference Prevention Function	By identifying the characteristics of the modulation scheme of the received radio waves and others, shall be able to identify the reflected waves of the radio waves which local station transmitted and the radio waves transmitted by other radio stations.
MAC address	Bluetooth: 00-1F-7B-4A-00-01 WIFI: 00:1f:7b:1e:30:25
Result	<b>Pass</b>

**- End of Test Report -**

## APPENDIX A - PHOTOGRAPHS OF TEST SETUP

