
FCC Test Report

Report No.: AGC15271221103FE02

FCC ID : 2BAGI-COMMANDER

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : 509

BRAND NAME : 509

MODEL NAME : Delta V Commander, Mach V Commander

APPLICANT : 509

DATE OF ISSUE : Jan. 16, 2023

STANDARD(S) : FCC Part 15.247

REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jan. 16, 2023	Valid	Initial Release

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TABLE OF CONTENTS

1. VERIFICATION OF COMPLIANCE	4
2. GENERAL INFORMATION	5
2.1. PRODUCT DESCRIPTION	5
2.2. TABLE OF CARRIER FREQUENCIES	5
2.3. RELATED SUBMITTAL(S)/GRANT(S)	6
2.4. TEST METHODOLOGY	6
2.5. SPECIAL ACCESSORIES	6
2.6. EQUIPMENT MODIFICATIONS	6
2.7. ANTENNA REQUIREMENT	6
3. MEASUREMENT UNCERTAINTY	7
4. DESCRIPTION OF TEST MODES	8
5. SYSTEM TEST CONFIGURATION	9
5.1. CONFIGURATION OF TESTED SYSTEM	9
5.2. EQUIPMENT USED IN TESTED SYSTEM	9
5.3. SUMMARY OF TEST RESULTS	9
6. TEST FACILITY	10
7. PEAK OUTPUT POWER	11
7.1. MEASUREMENT PROCEDURE	11
7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	11
7.3. LIMITS AND MEASUREMENT RESULT	12
8. BANDWIDTH	16
8.1. MEASUREMENT PROCEDURE	16
8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	16
8.3. LIMITS AND MEASUREMENT RESULTS	16
9. CONDUCTED SPURIOUS EMISSION	24
9.1. MEASUREMENT PROCEDURE	24
9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	24
9.3. MEASUREMENT EQUIPMENT USED	24
9.4. LIMITS AND MEASUREMENT RESULT	24
10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY	36
10.1. MEASUREMENT PROCEDURE	36
10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	36
10.3. MEASUREMENT EQUIPMENT USED	36
10.4. LIMITS AND MEASUREMENT RESULT	36
11. RADIATED EMISSION	40
11.1. MEASUREMENT PROCEDURE	40
11.2. TEST SETUP	41
11.3. LIMITS AND MEASUREMENT RESULT	42
11.4. TEST RESULT	42
APPENDIX A: PHOTOGRAPHS OF TEST SETUP	56
APPENDIX B: PHOTOGRAPHS OF EUT	56

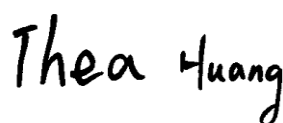


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1. VERIFICATION OF COMPLIANCE

Applicant	509
Address	2818 N. Sullivan Rd. Suite 110, Spokane Valley, Washington 99216, United States
Manufacturer	Dongguan Weima sport equipment Co., Ltd.
Address	No. 12 Linhainan Road, Shatian Town, Dongguan City, Guangdong Province, China. Dongguan
Factory	Dongguan Weima sport equipment Co., Ltd.
Address	No. 12 Linhainan Road, Shatian Town, Dongguan City, Guangdong Province, China. Dongguan
Product Designation	509
Brand Name	509
Test Model	Delta V Commander
Series Model	Mach V Commander
Declaration of Difference	All the same except for the model name(Delta V Commander:with heated Shield. Mach V Commander: without heated Shield).
Date of receipt of test item	Dec. 13, 2022
Date of test	Dec. 13, 2022 to Jan. 11, 2023
Deviation	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-US-BLE/RF

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC part 15.247.

Prepared By		
	Thea Huang (Project Engineer)	Jan. 16, 2023
Reviewed By		
	Calvin Liu (Reviewer)	Jan. 16, 2023
Approved By		
	Max Zhang (Authorized Officer)	Jan. 16, 2023

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as a “509”. It is designed by way of utilizing the GFSK technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz
RF Output Power	BLE GFSK 1Mbps:0.507dBm (Max); BLE GFSK 2Mbps:0.491dBm (Max)
Bluetooth Version	V5.2
Modulation	BR <input type="checkbox"/> GFSK, EDR <input type="checkbox"/> π /4-DQPSK, <input type="checkbox"/> 8DPSK BLE <input checked="" type="checkbox"/> GFSK 1Mbps <input checked="" type="checkbox"/> GFSK 2Mbps
Number of channels	40 Channels
Antenna Designation	Chip Antenna (Comply with requirements of the FCC part 15.203)
Antenna Gain	1.8dBi
Hardware Version	A9-TL V1.1
Software Version	V1.0
Power Supply	DC 3.7V by battery

2.2. TABLE OF CARRIER FREQUENCIES

Frequency Band	Channel Number	Frequency
2400~2483.5MHz	0	2402 MHz
	1	2404 MHz
	:	:
	38	2478 MHz
	39	2480 MHz

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2.3. RELATED SUBMITTAL(S)/GRANT(S)

This submittal(s) (test report) is intended for **FCC ID: 2BAGI-COMMANDER** filing to comply with the FCC Part 15.247 requirements.

2.4. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2.7. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

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3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 3.1 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 4.0 \text{ dB}$
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.8 \text{ dB}$
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$
Uncertainty of spurious emissions, conducted	$U_c = \pm 2.7 \%$
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2 \%$

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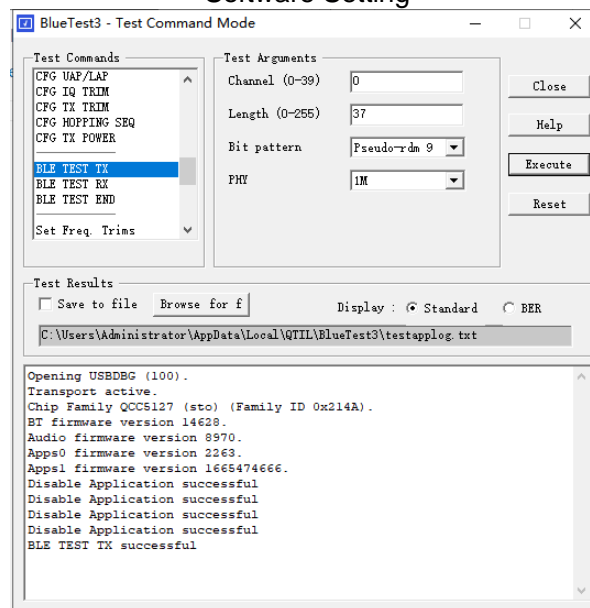
4. DESCRIPTION OF TEST MODES

BLE GFSK 1Mbps:	
NO.	TEST MODE DESCRIPTION
1	Low channel TX
2	Middle channel TX
3	High channel TX
BLE GFSK 2Mbps:	
NO.	TEST MODE DESCRIPTION
1	Low channel TX
2	Middle channel TX
3	High channel TX

Note:

1. Only the result of the worst case was recorded in the report, if no other cases.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.

Software Setting



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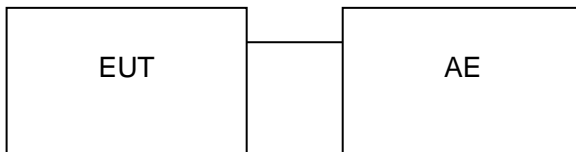
5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF TESTED SYSTEM

Radiated Emission Configure:



Conducted Emission Configure:



5.2. EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	509	Delta V Commander	2BAGI-COMMANDER	EUT

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
15.247 (b)(3)	Peak Output Power	Compliant
15.247 (a)(2)	6 dB Bandwidth	Compliant
15.247 (d)	Conducted Spurious Emission	Compliant
15.247 (e)	Maximum Conducted Output Power Density	Compliant
15.209	Radiated Emission	Compliant
15.207	Conducted Emission	Not applicable

Note: The BT function cannot transmit when charging.

6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance (Shenzhen) Co., Ltd is accredited by A2LA

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Mar. 28, 2022	Mar. 27, 2023
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Aug. 04, 2022	Aug. 03, 2023
2.4GHz Filter	EM Electronics	2400-2500	N/A	Mar. 22, 2022	Mar. 21, 2024
Attenuator	ZHINAN	E-002	N/A	Aug. 04, 2022	Aug. 03, 2024
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 02, 2022	Sep. 01, 2024
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2021	Jan. 07, 2023
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 05, 2023	Jan. 04, 2025
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A

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7. PEAK OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

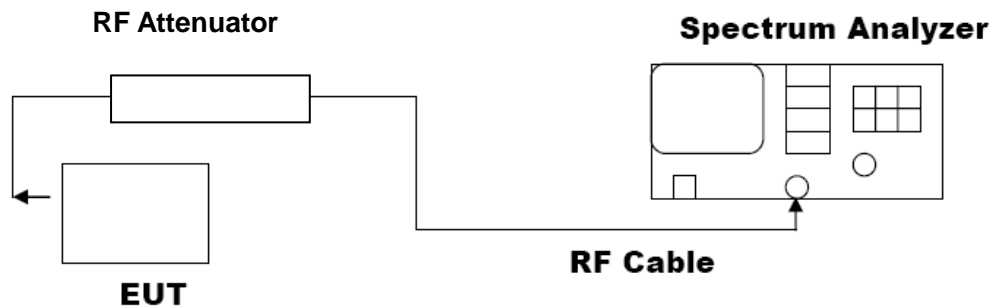
For peak power test:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. $RBW \geq DTS \text{ bandwidth}$
3. $VBW \geq 3 * RBW$.
4. $SPAN \geq VBW$.
5. Sweep: Auto.
6. Detector function: Peak.
7. Trace: Max hold.

Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

PEAK POWER TEST SETUP

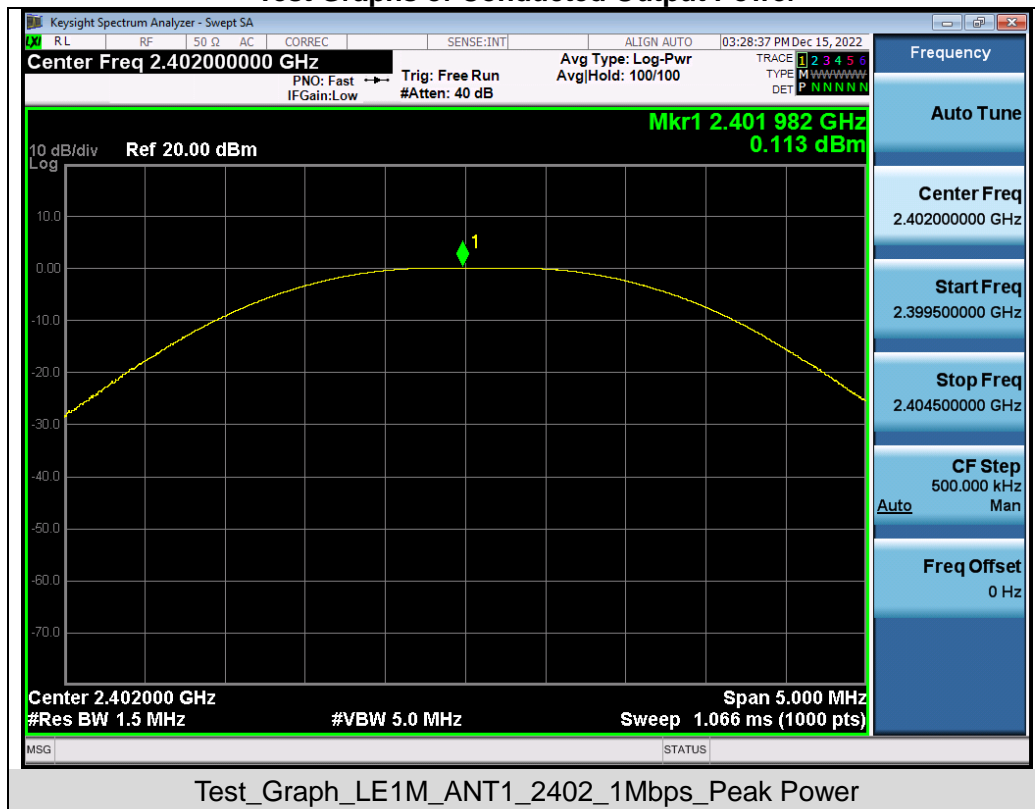


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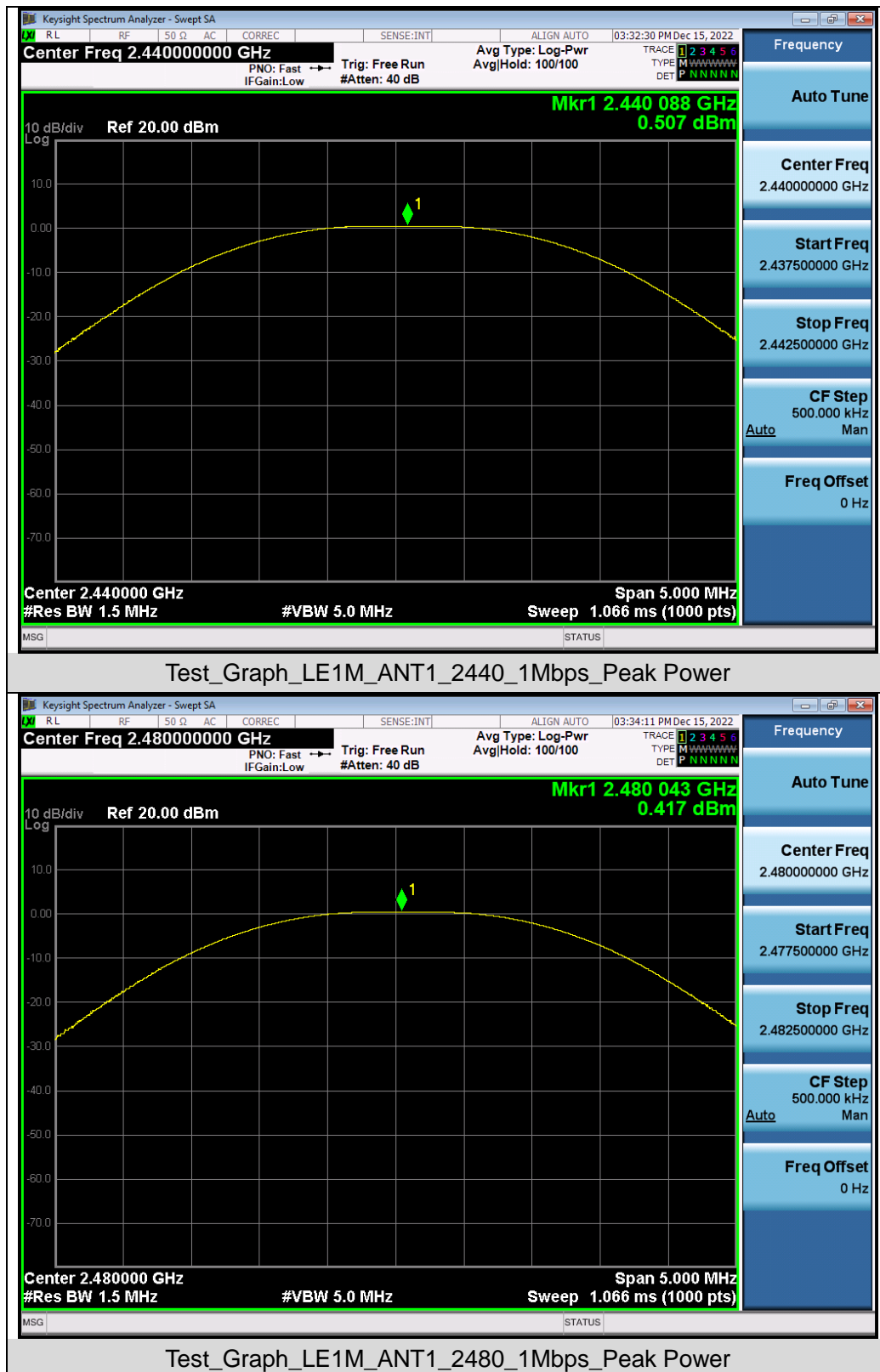
7.3. LIMITS AND MEASUREMENT RESULT

Test Data of Conducted Output Power				
Test Mode	Test Channel (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail
GFSK 1M	2402	0.113	≤ 30	Pass
	2440	0.507	≤ 30	Pass
	2480	0.417	≤ 30	Pass

Test Graphs of Conducted Output Power



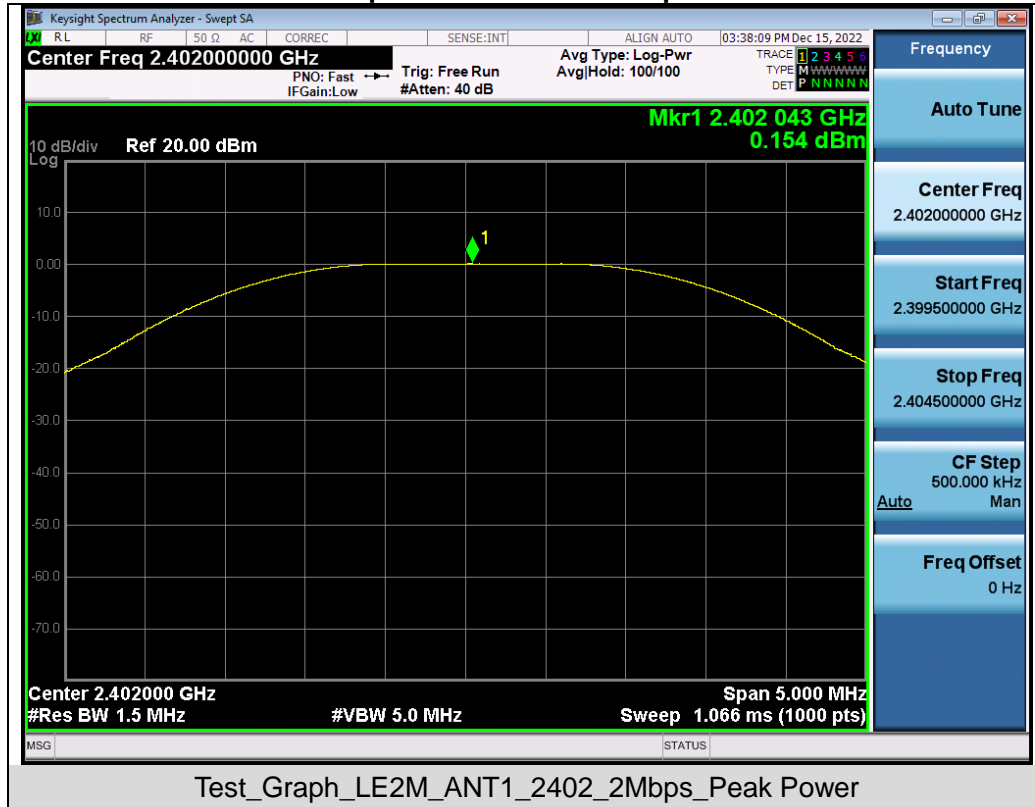
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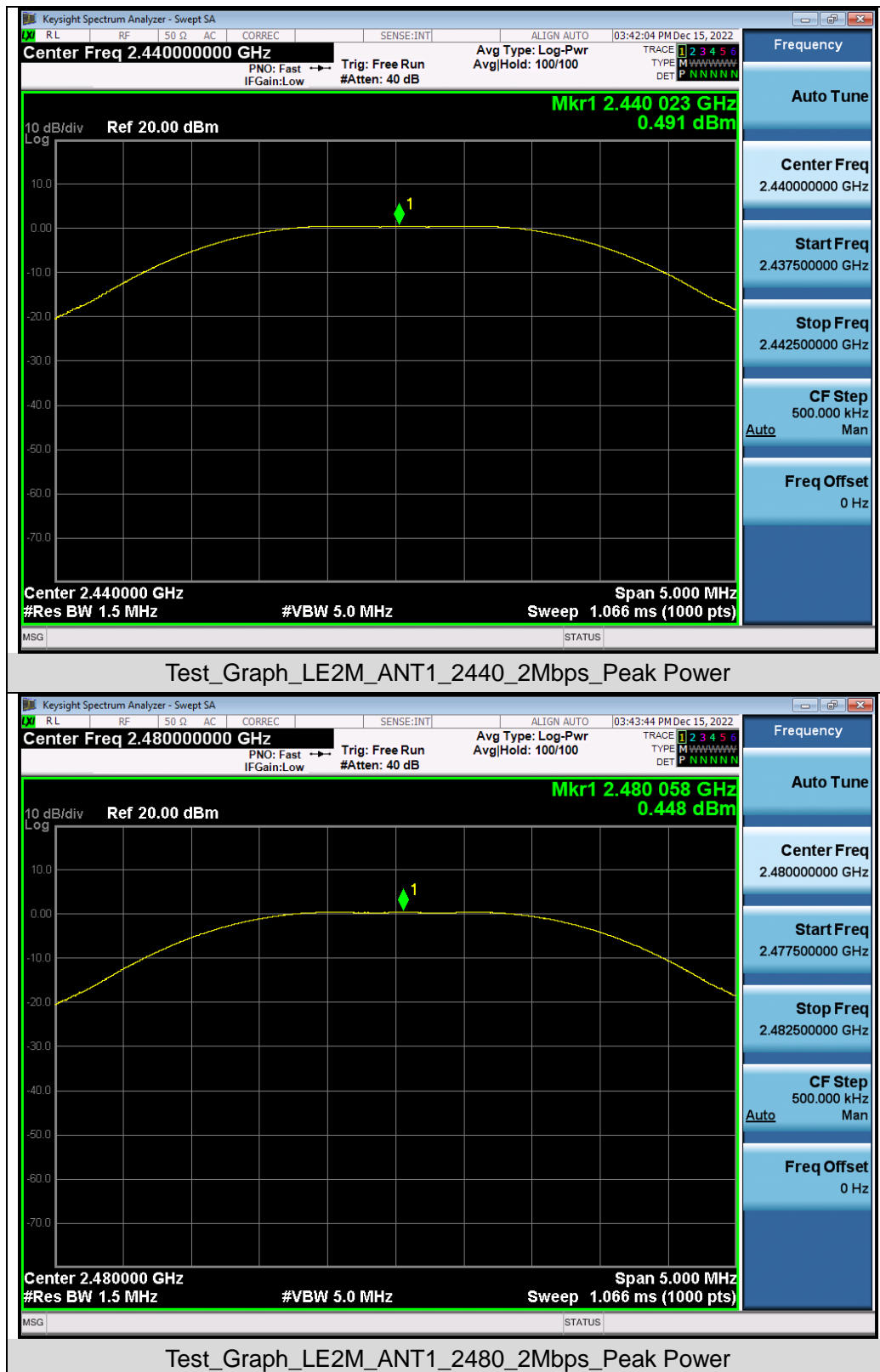
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Test Data of Conducted Output Power				
Test Mode	Test Channel (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail
GFSK 2M	2402	0.154	≤ 30	Pass
	2440	0.491	≤ 30	Pass
	2480	0.448	≤ 30	Pass

Test Graphs of Conducted Output Power



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8. BANDWIDTH

8.1. MEASUREMENT PROCEDURE

6dB bandwidth:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 kHz, VBW \geq 3 \times RBW.
4. Set SPA Trace 1 Max hold, then View.

Occupied bandwidth:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel
The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

8.3. LIMITS AND MEASUREMENT RESULTS

Test Data of Occupied Bandwidth and DTS Bandwidth					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-6dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
GFSK 1M	2402	1.043	0.716	≥ 0.5	Pass
	2440	1.041	0.713	≥ 0.5	Pass
	2480	1.040	0.711	≥ 0.5	Pass

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Test Graphs of Occupied Bandwidth

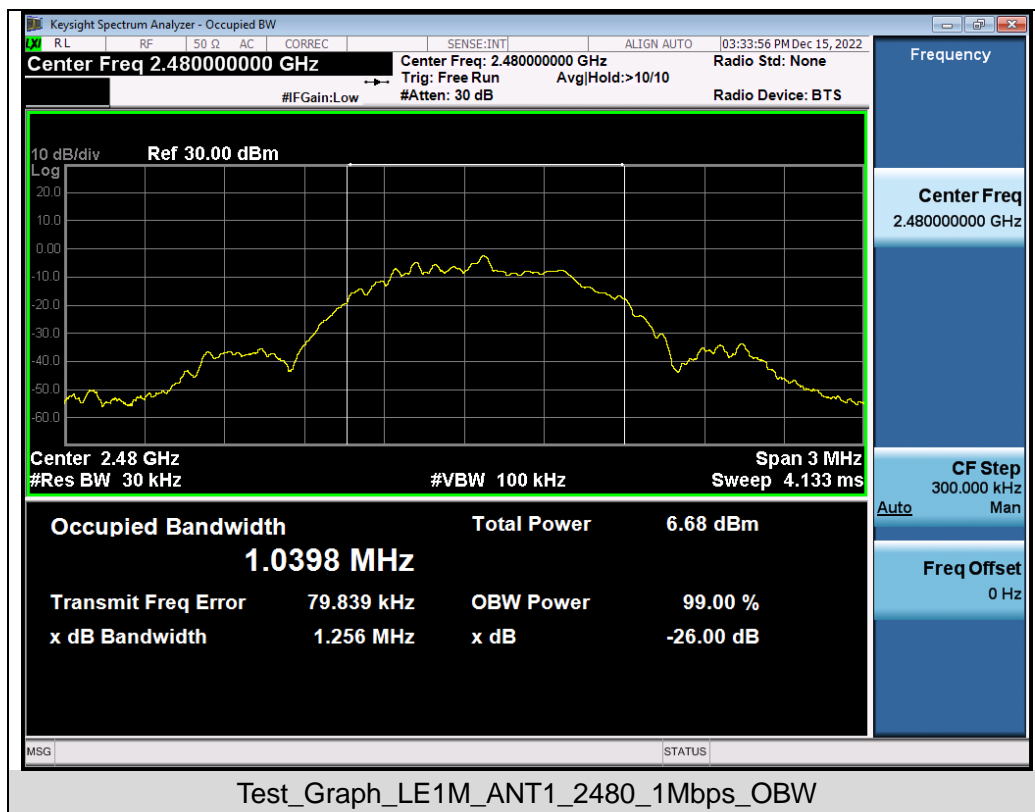


Test_Graph_LE1M_ANT1_2402_1Mbps_OBW

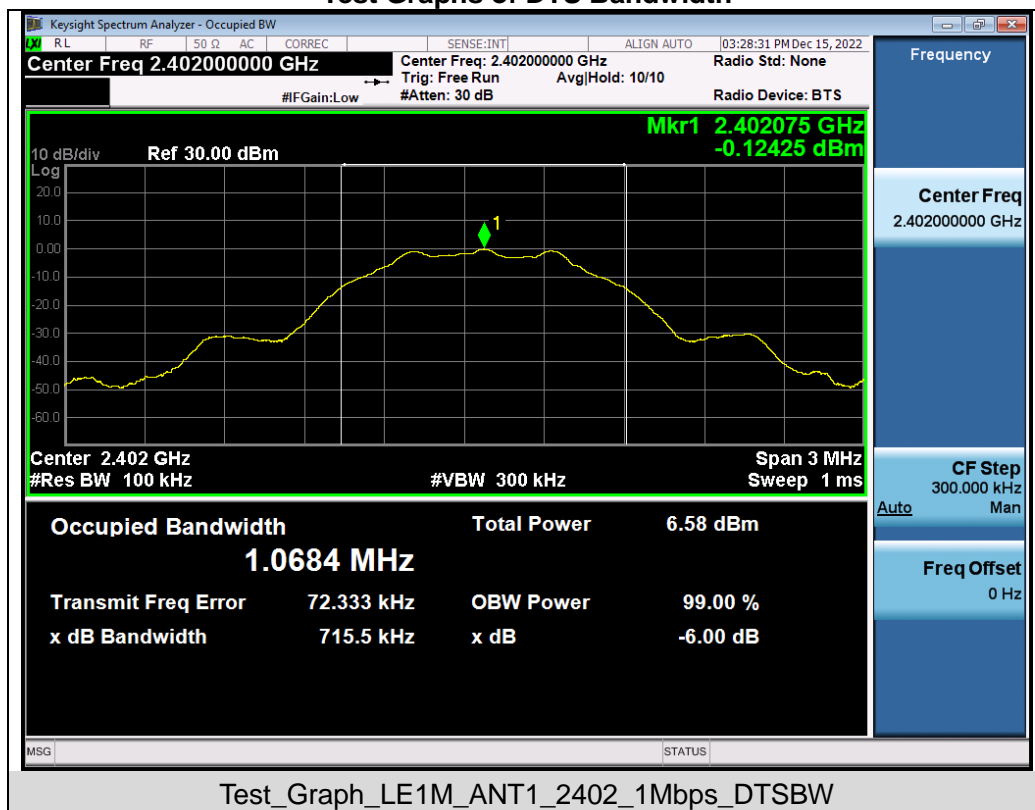


Test_Graph_LE1M_ANT1_2440_1Mbps_OBW

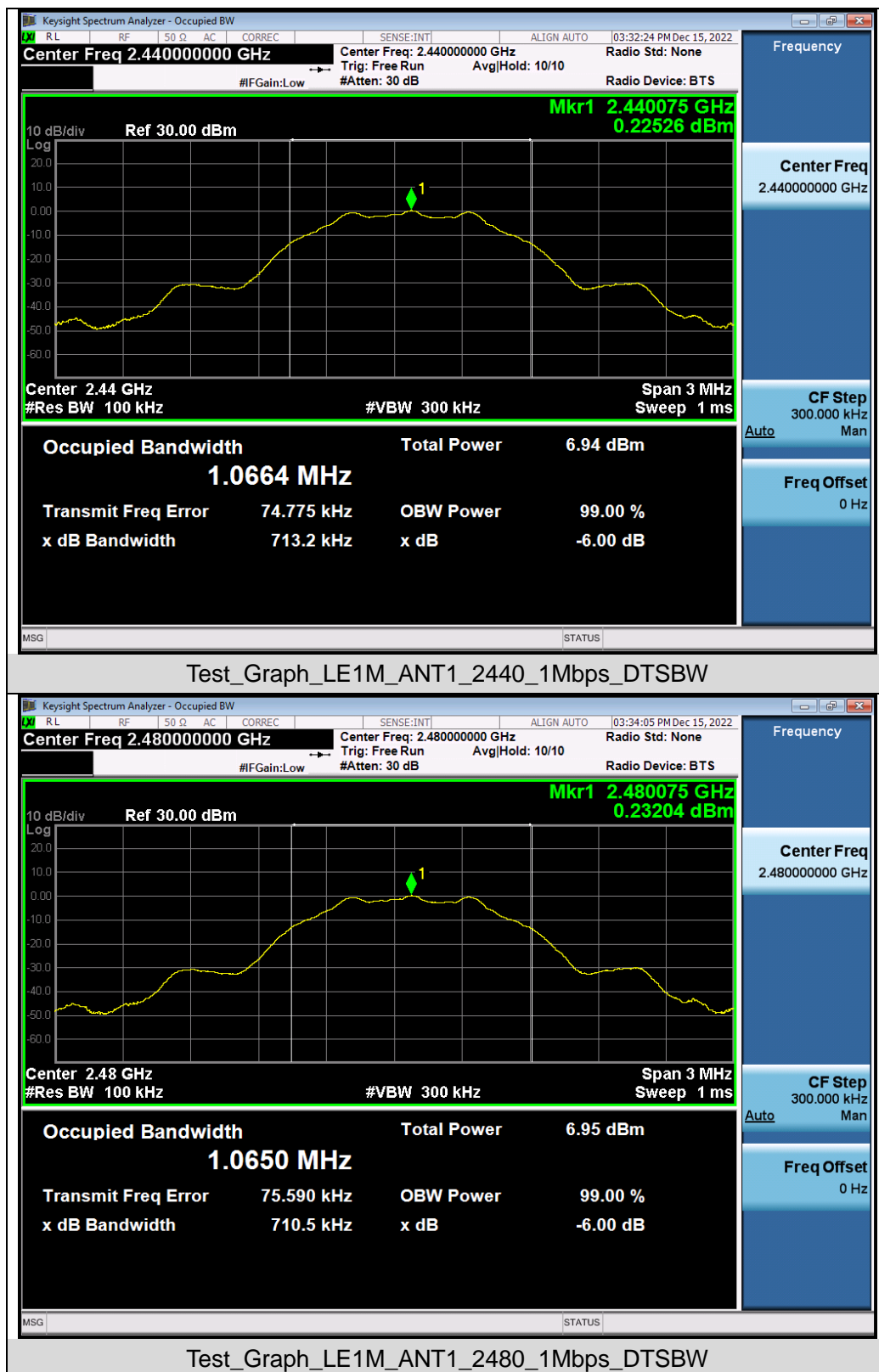
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Test Graphs of DTS Bandwidth



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Test Data of Occupied Bandwidth and DTS Bandwidth					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-6dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
GFSK 2M	2402	2.055	1.258	≥ 0.5	Pass
	2440	2.054	1.211	≥ 0.5	Pass
	2480	2.050	1.207	≥ 0.5	Pass

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Test Graphs of Occupied Bandwidth

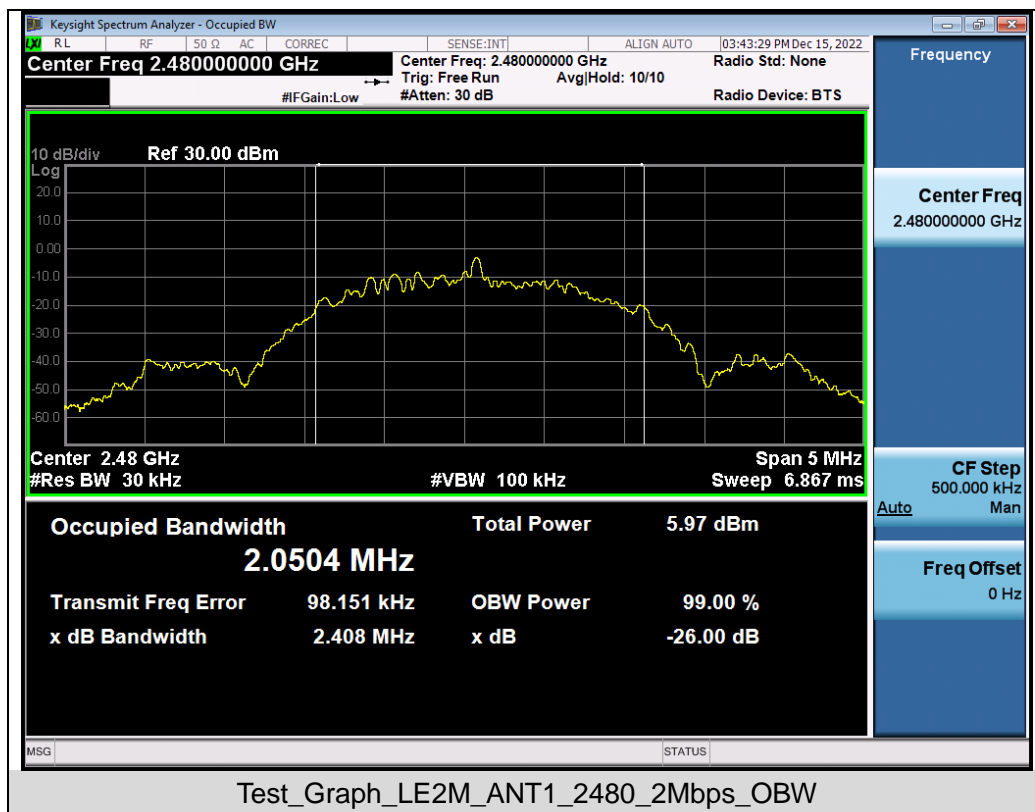


Test_Graph_LE2M_ANT1_2402_2Mbps_OBW

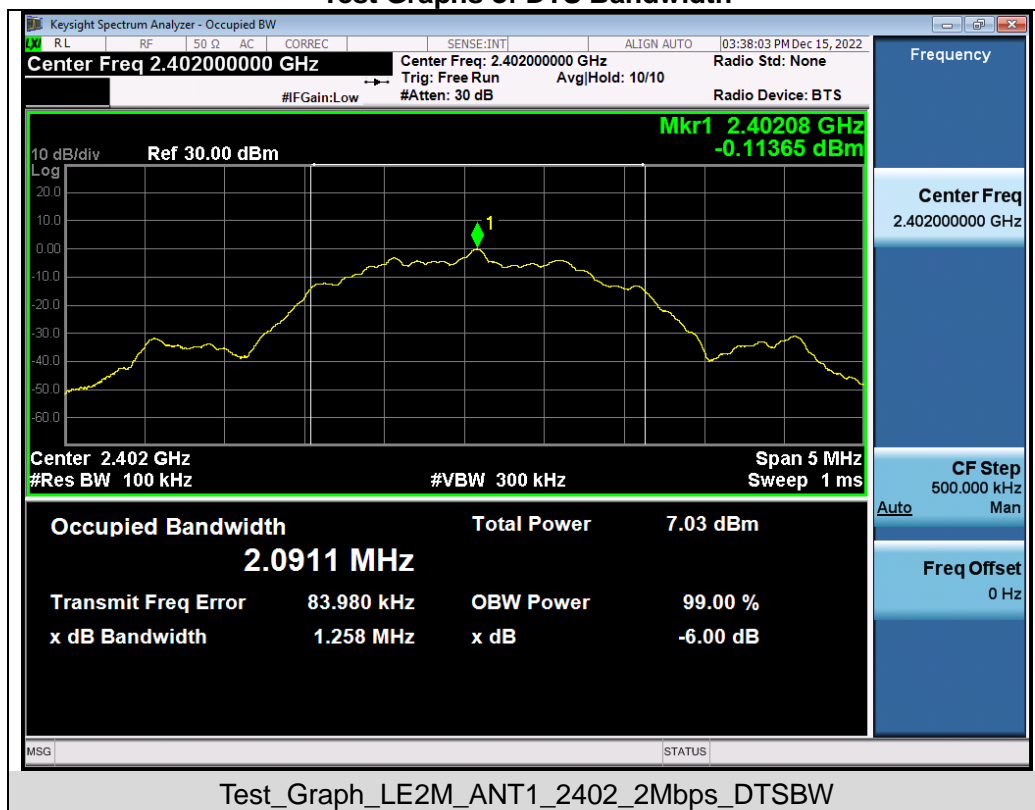


Test_Graph_LE2M_ANT1_2440_2Mbps_OBW

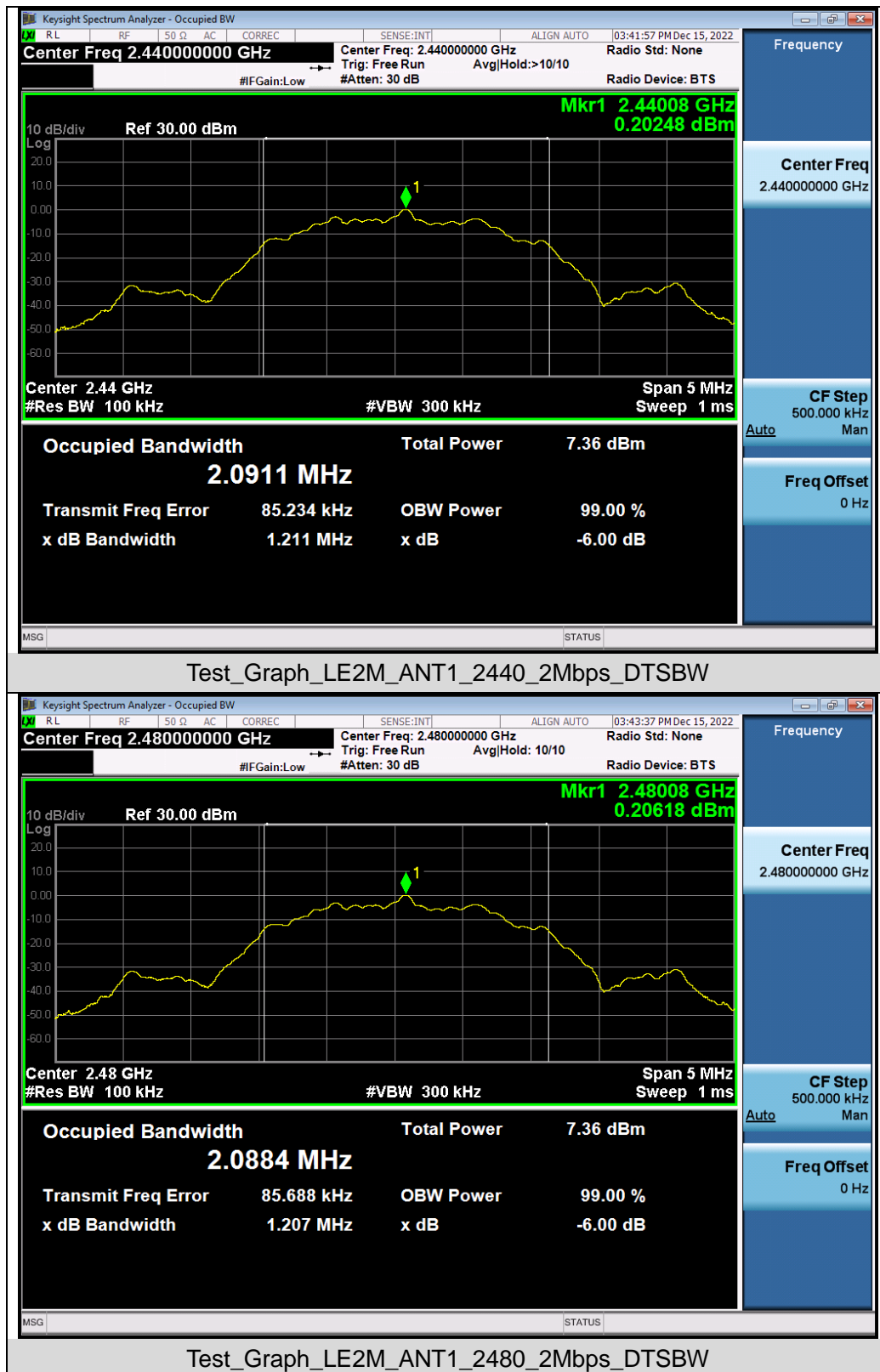
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Test Graphs of DTS Bandwidth



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9. CONDUCTED SPURIOUS EMISSION

9.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the reference level	PASS

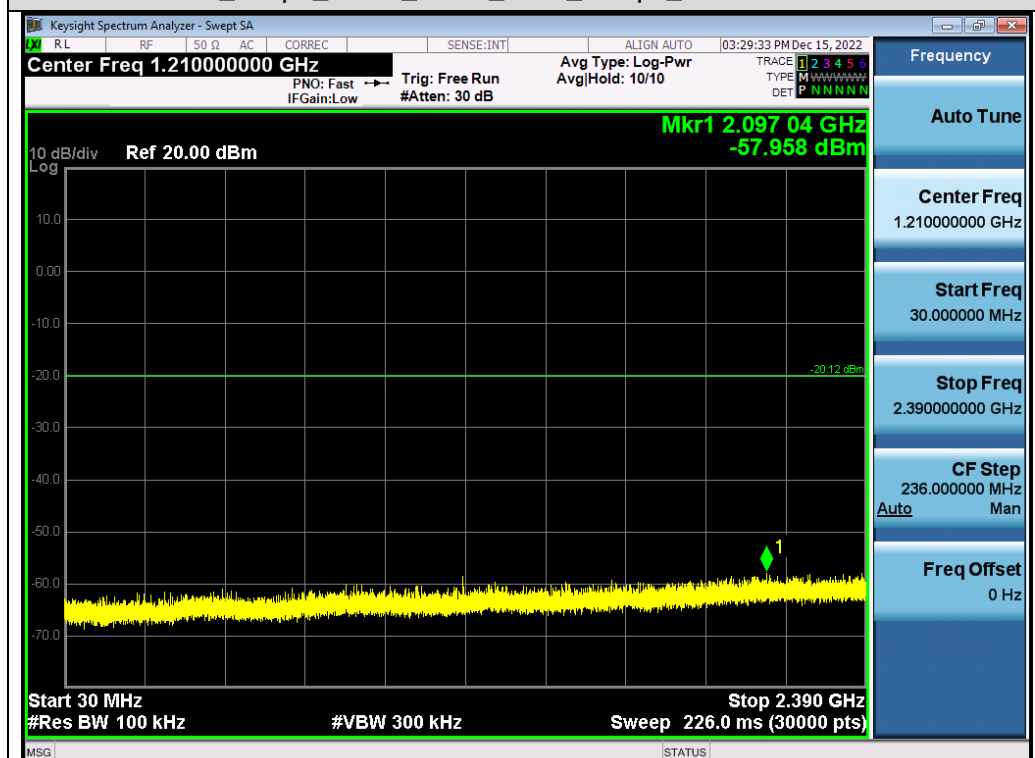
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Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>

Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands

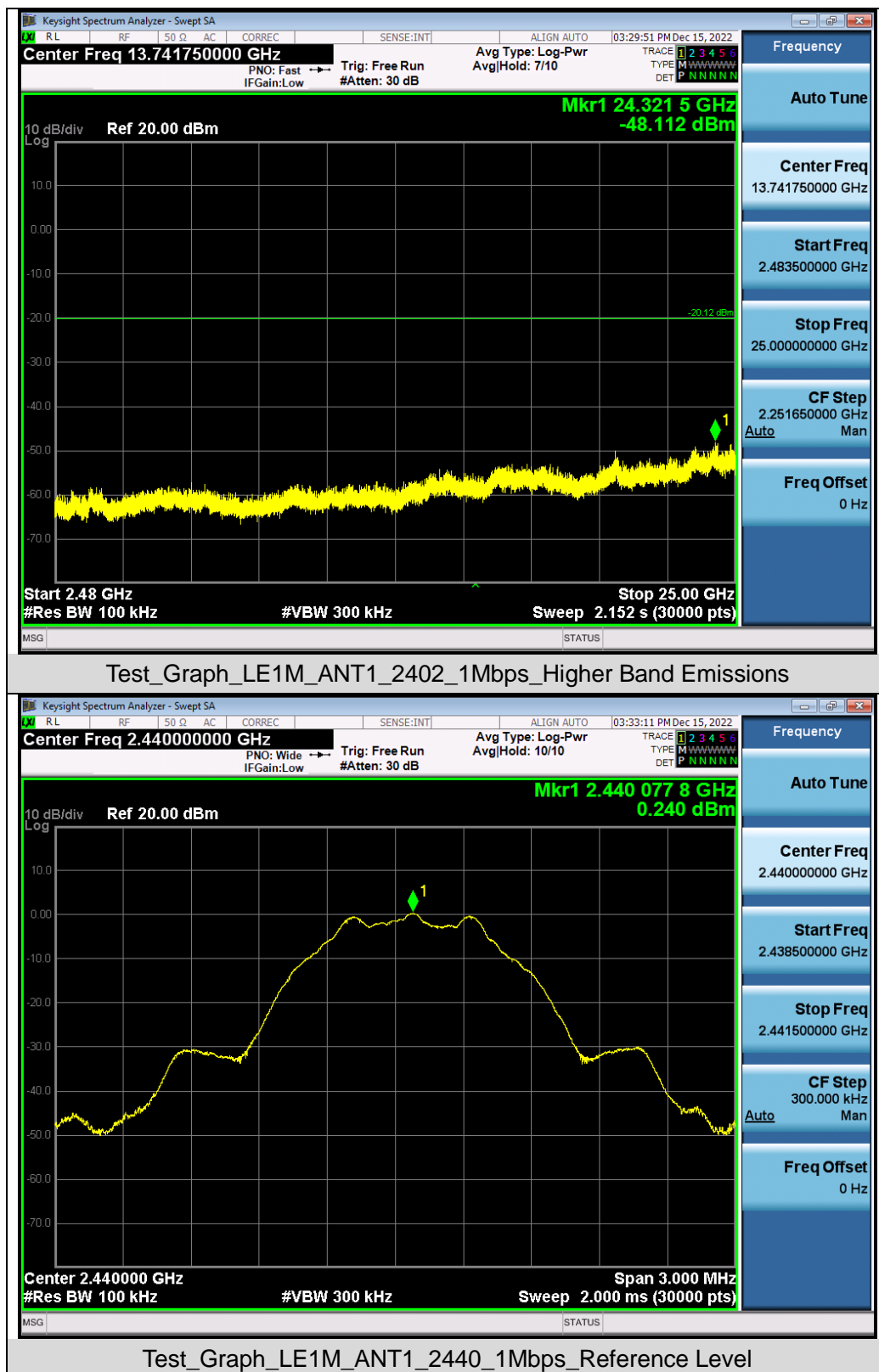


Test_Graph_LE1M_ANT1_2402_1Mbps_Reference Level

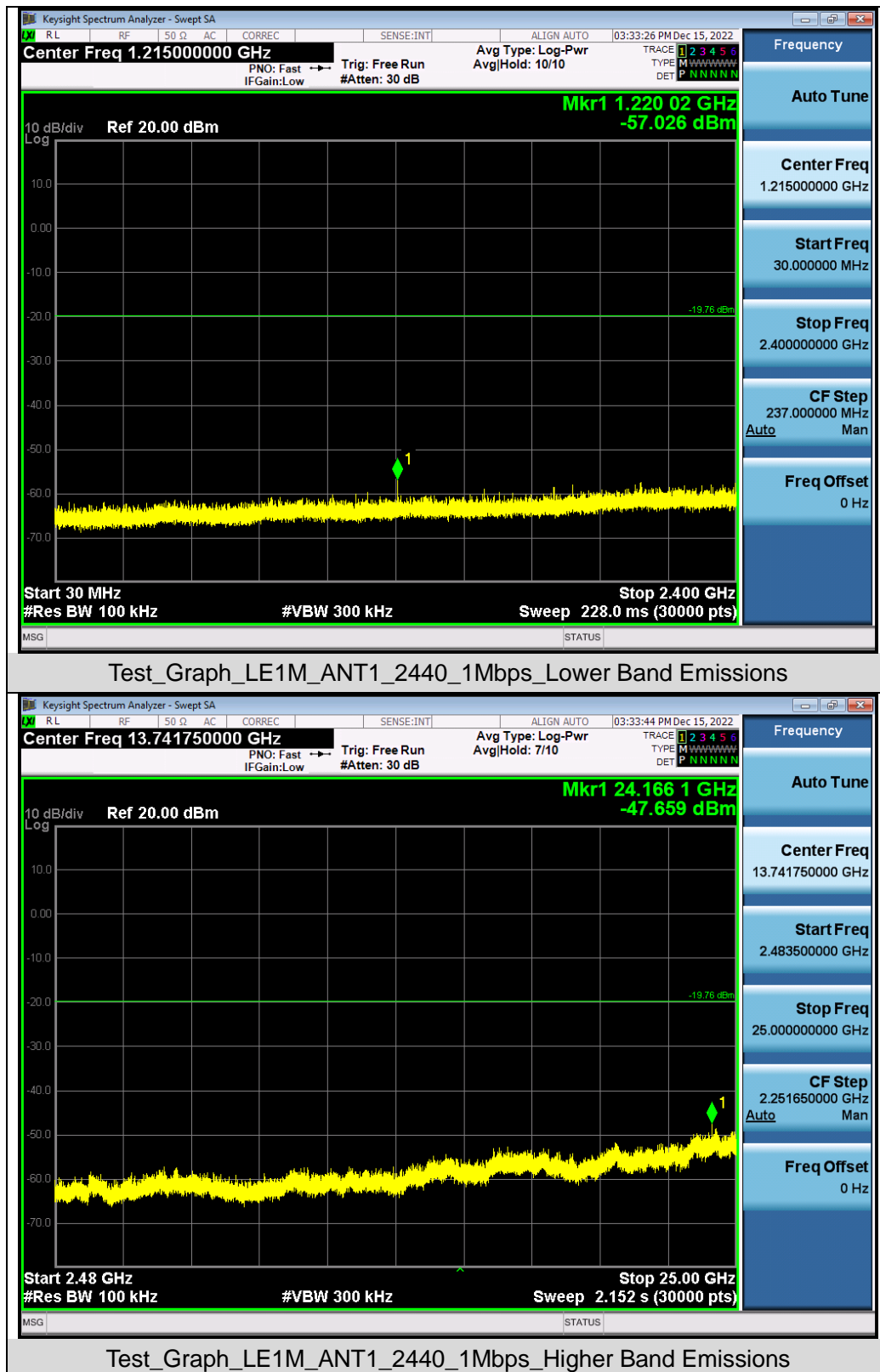


Test_Graph_LE1M_ANT1_2402_1Mbps_Lower Band Emissions

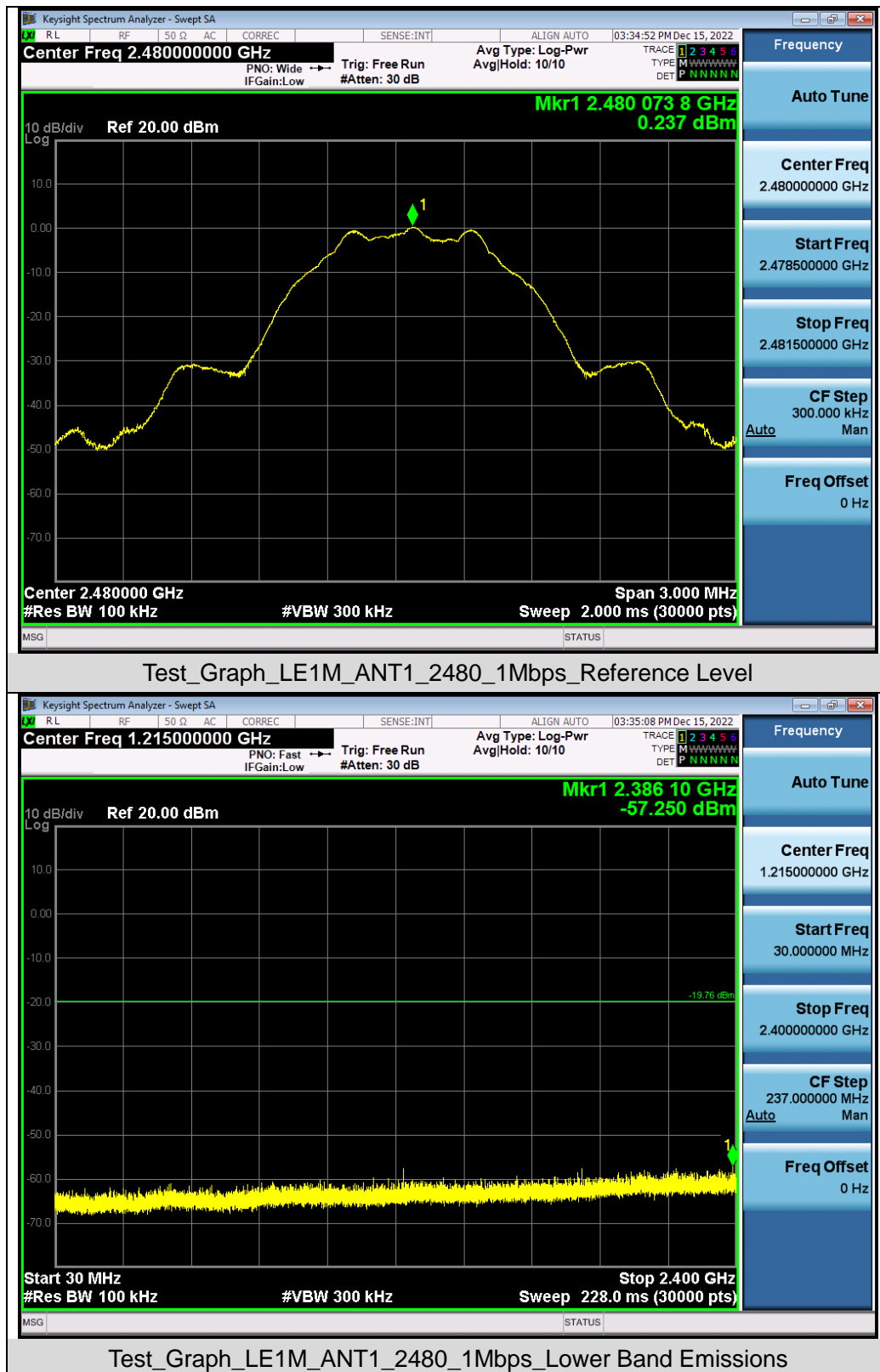
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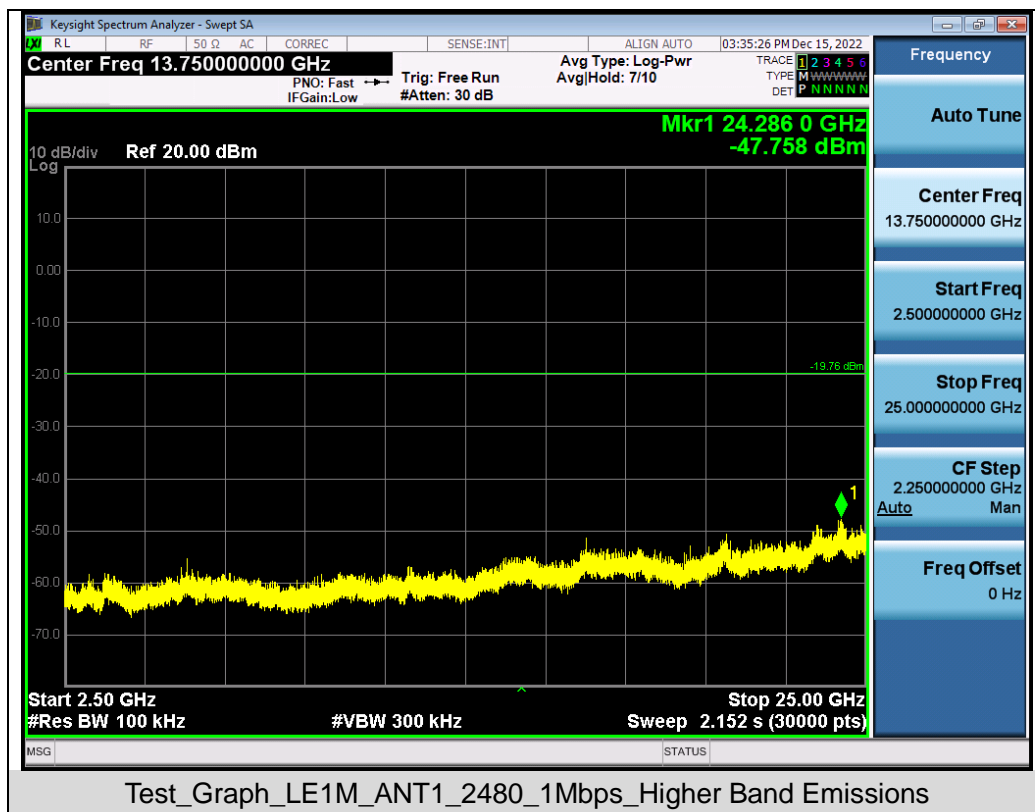
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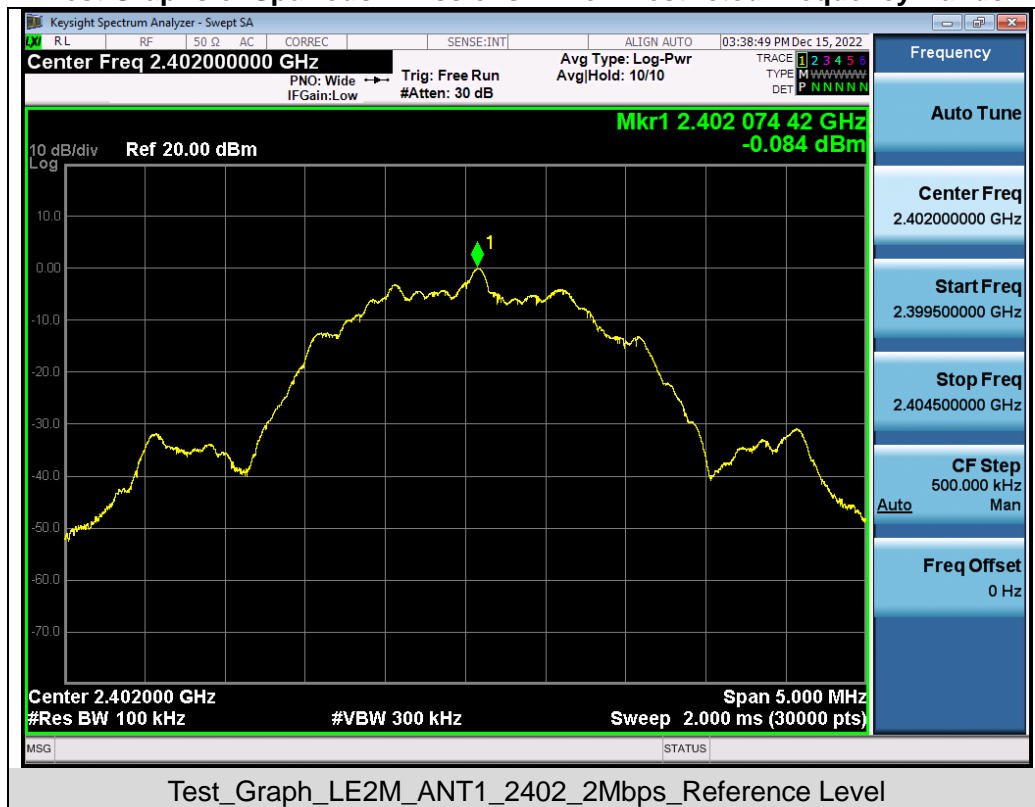
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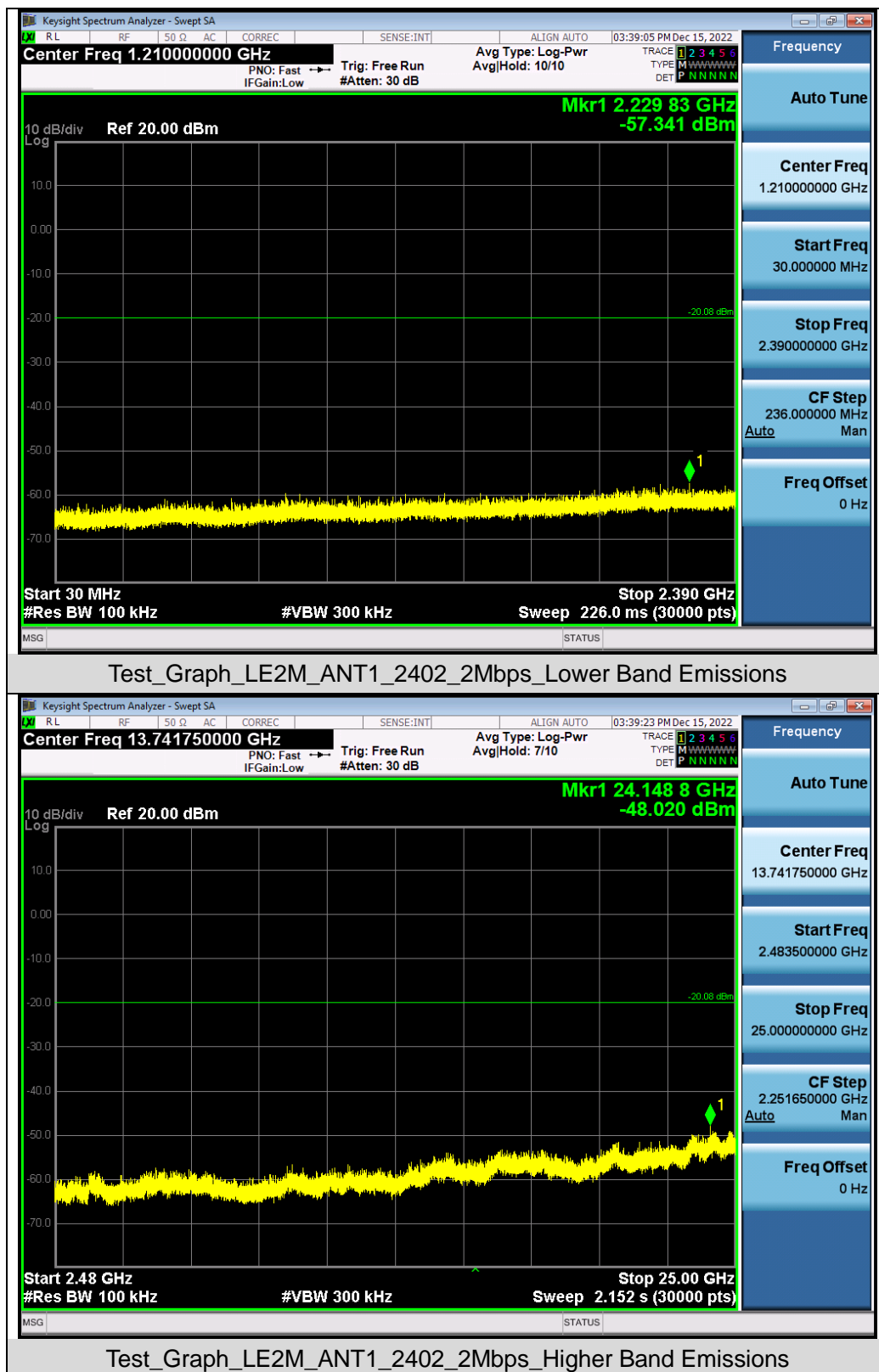
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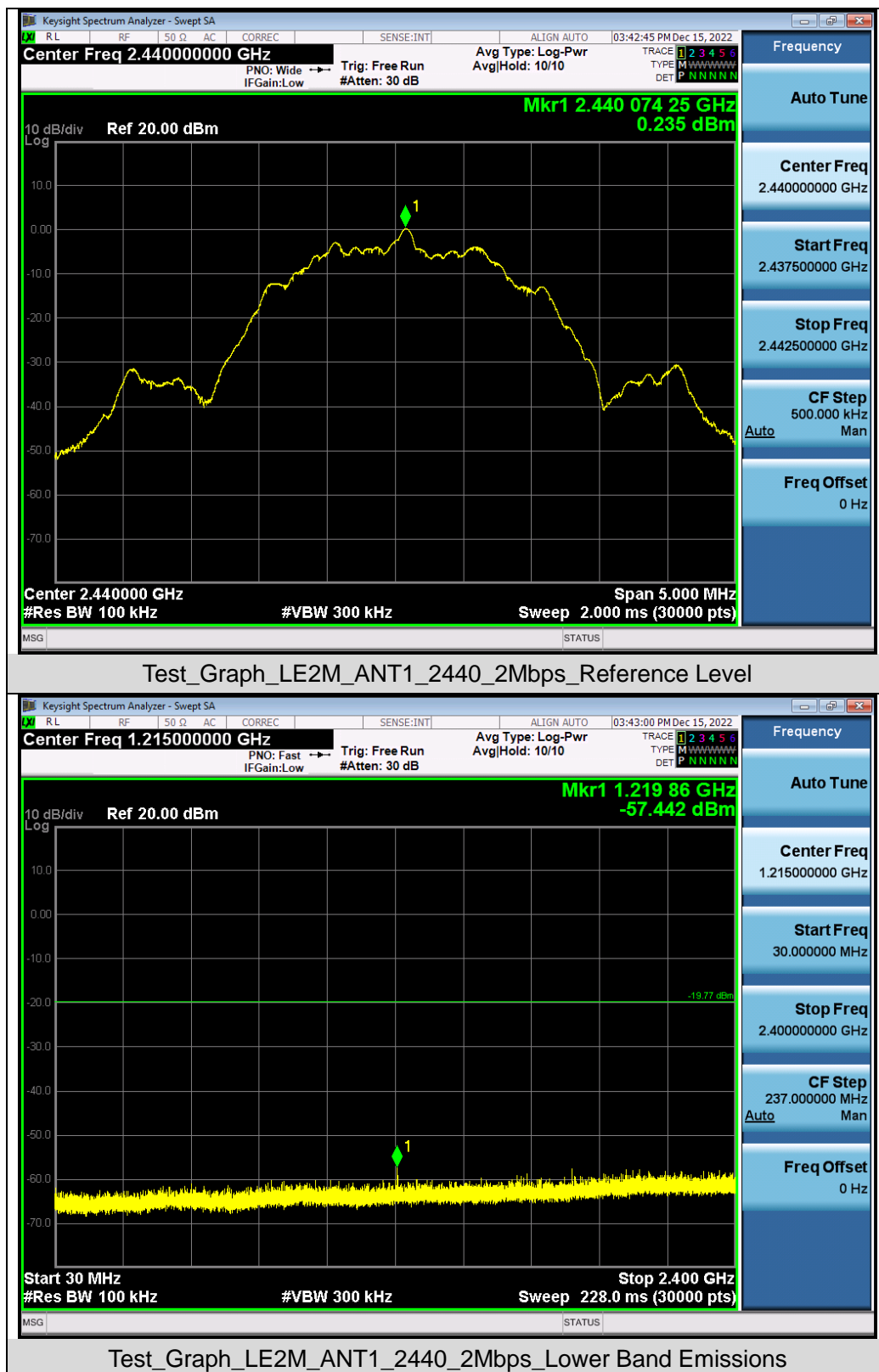
Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands



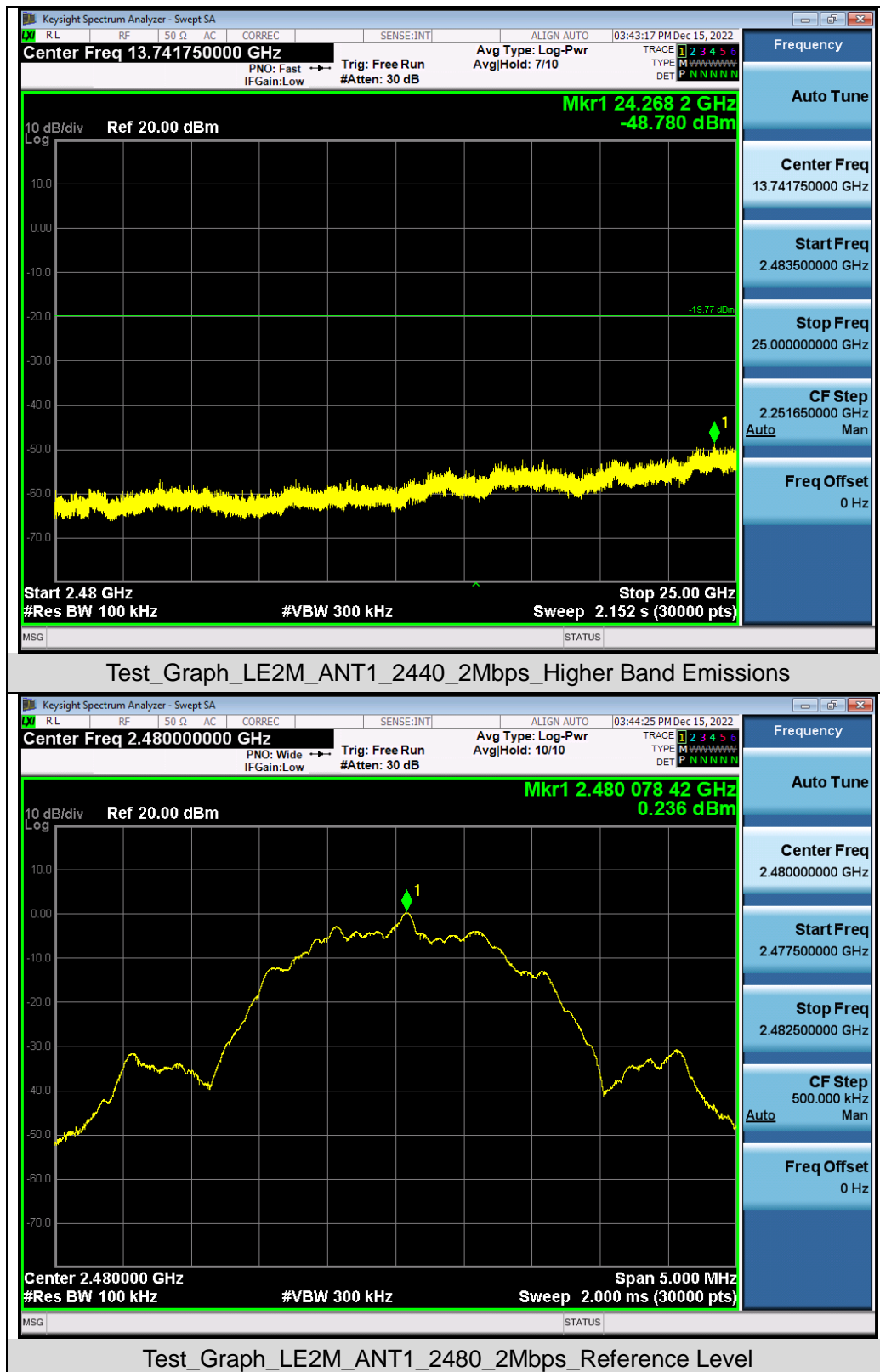
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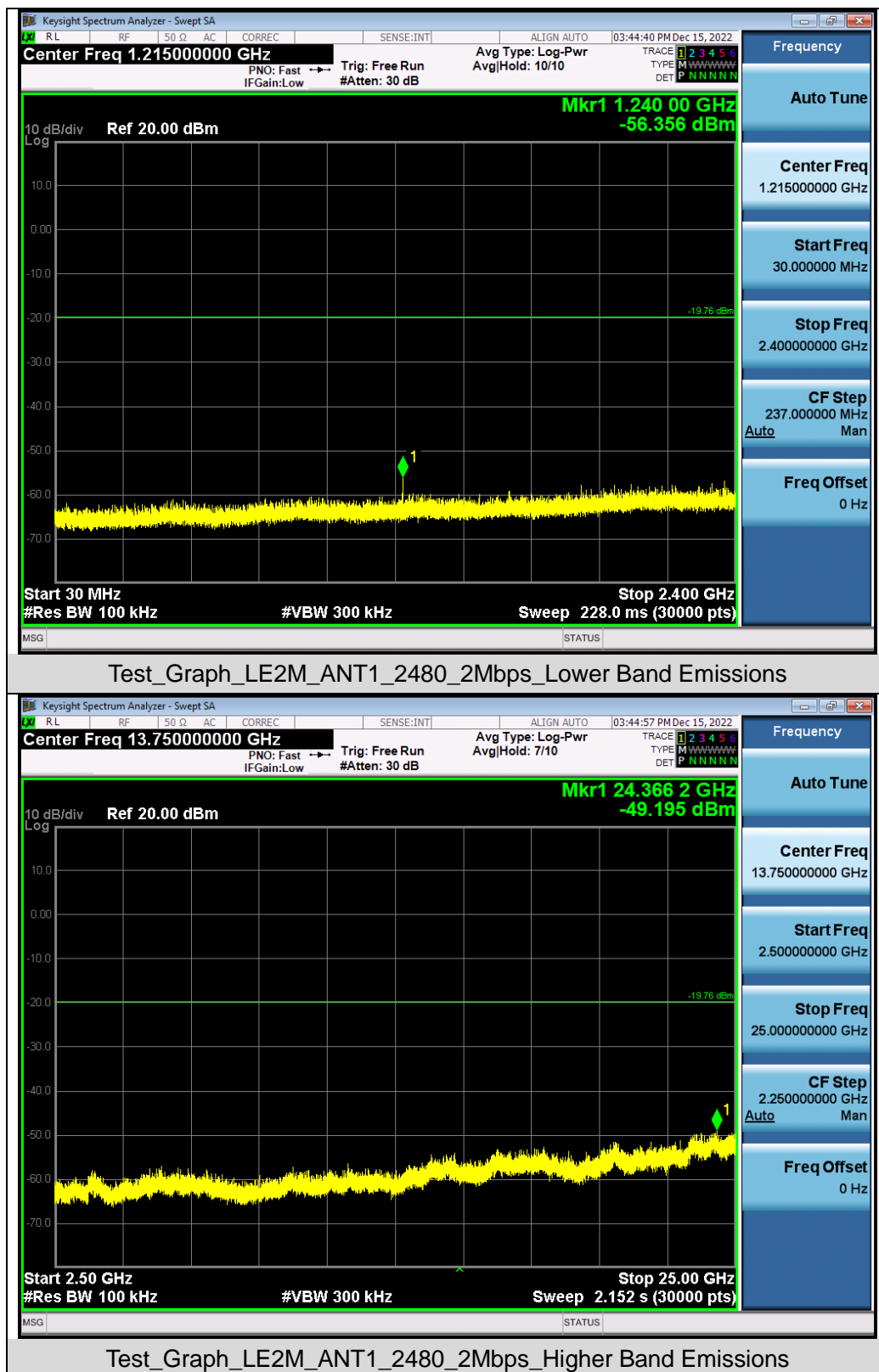
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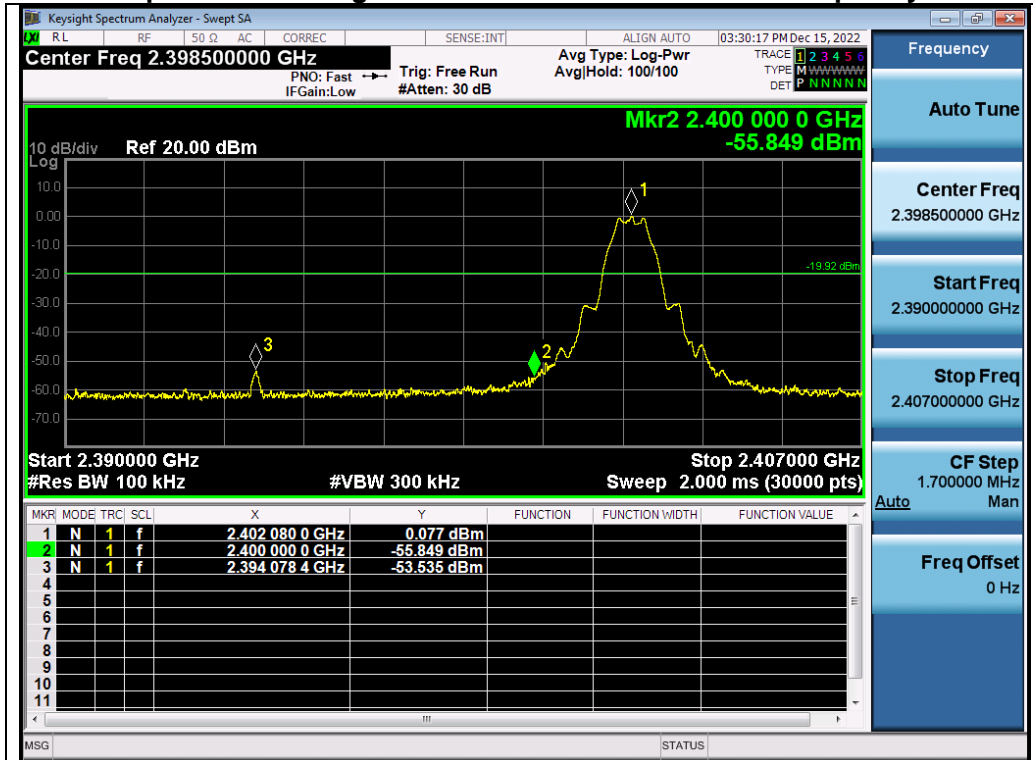


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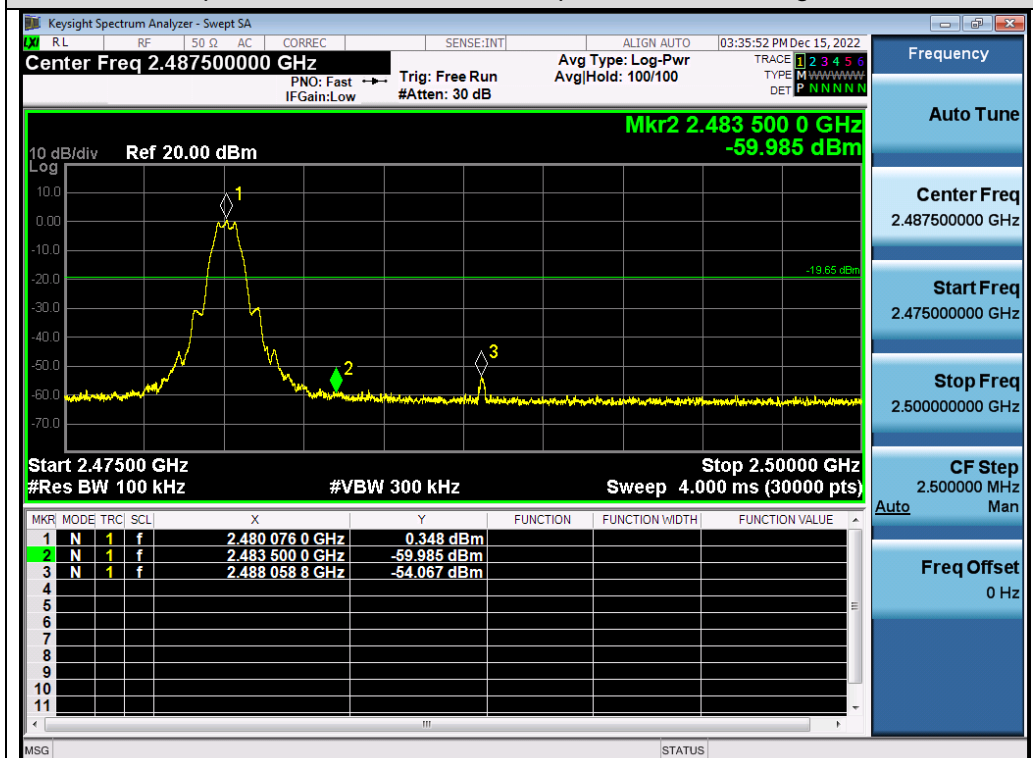


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Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands



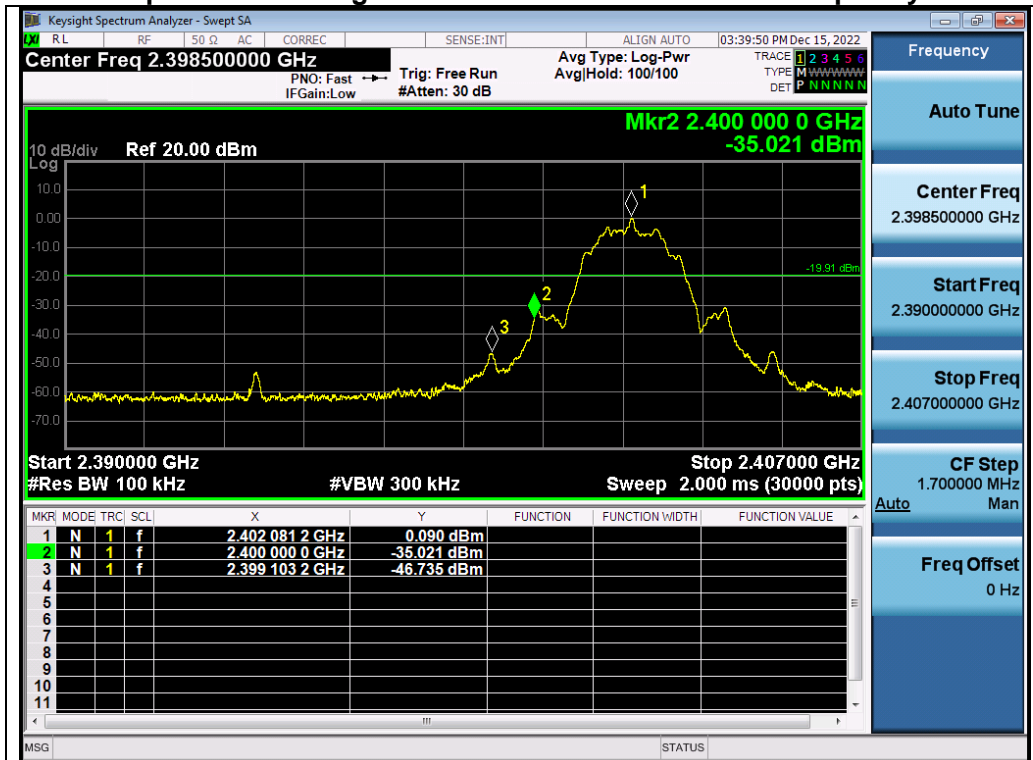
Test_Graph_LE1M_ANT1_2402_1Mbps_Lower Band Edge Emissions



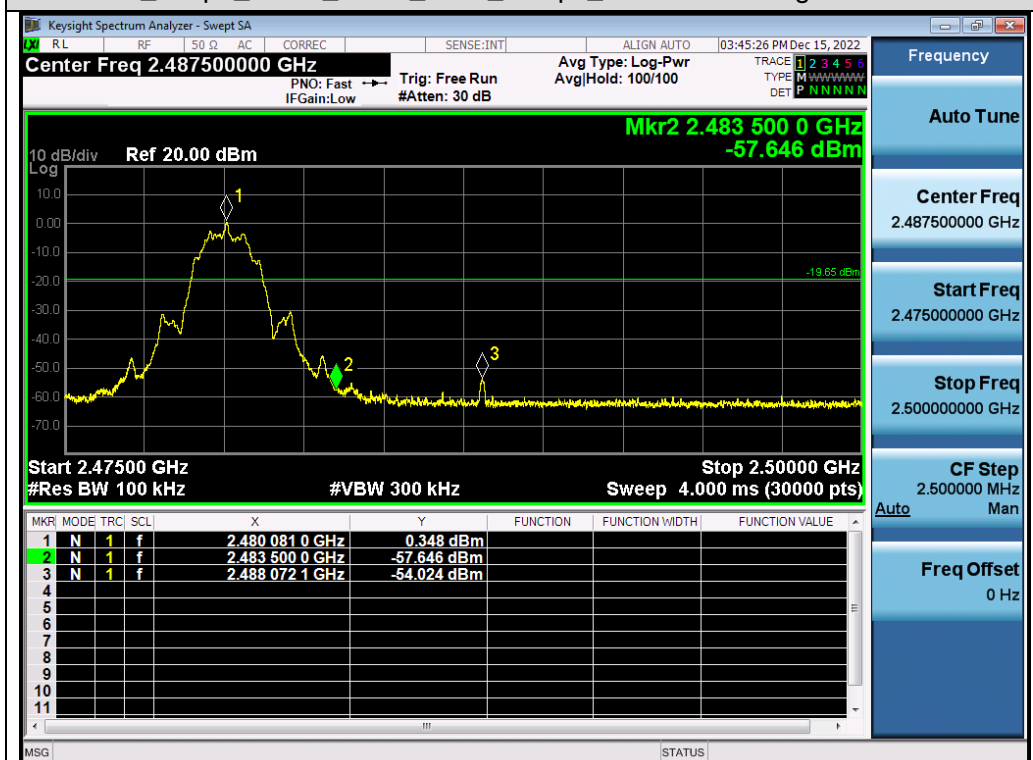
Test_Graph_LE1M_ANT1_2480_1Mbps_Higher Band Edge Emissions

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Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands



Test_Graph_LE2M_ANT1_2402_2Mbps_Lower Band Edge Emissions



Test_Graph_LE2M_ANT1_2480_2Mbps_Higher Band Edge Emissions

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10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

10.1. MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set the SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the KDB 558074 item 8.4 was used in this testing.

10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer to Section 7.2.

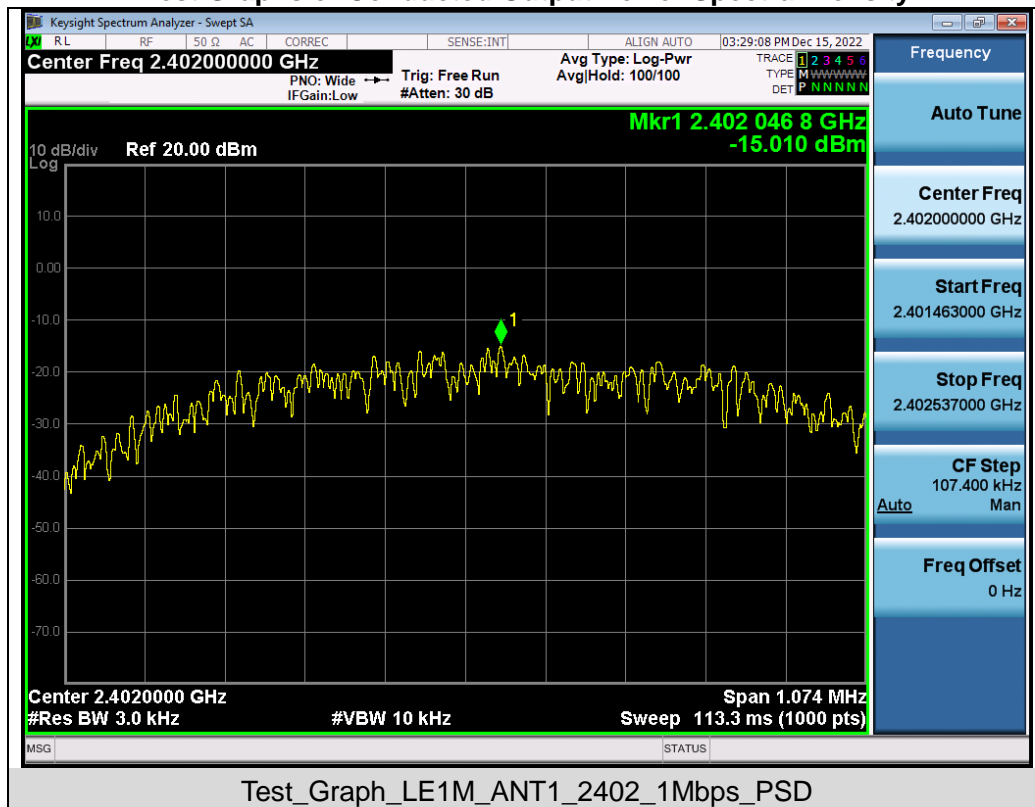
10.3. MEASUREMENT EQUIPMENT USED

Refer to Section 6.

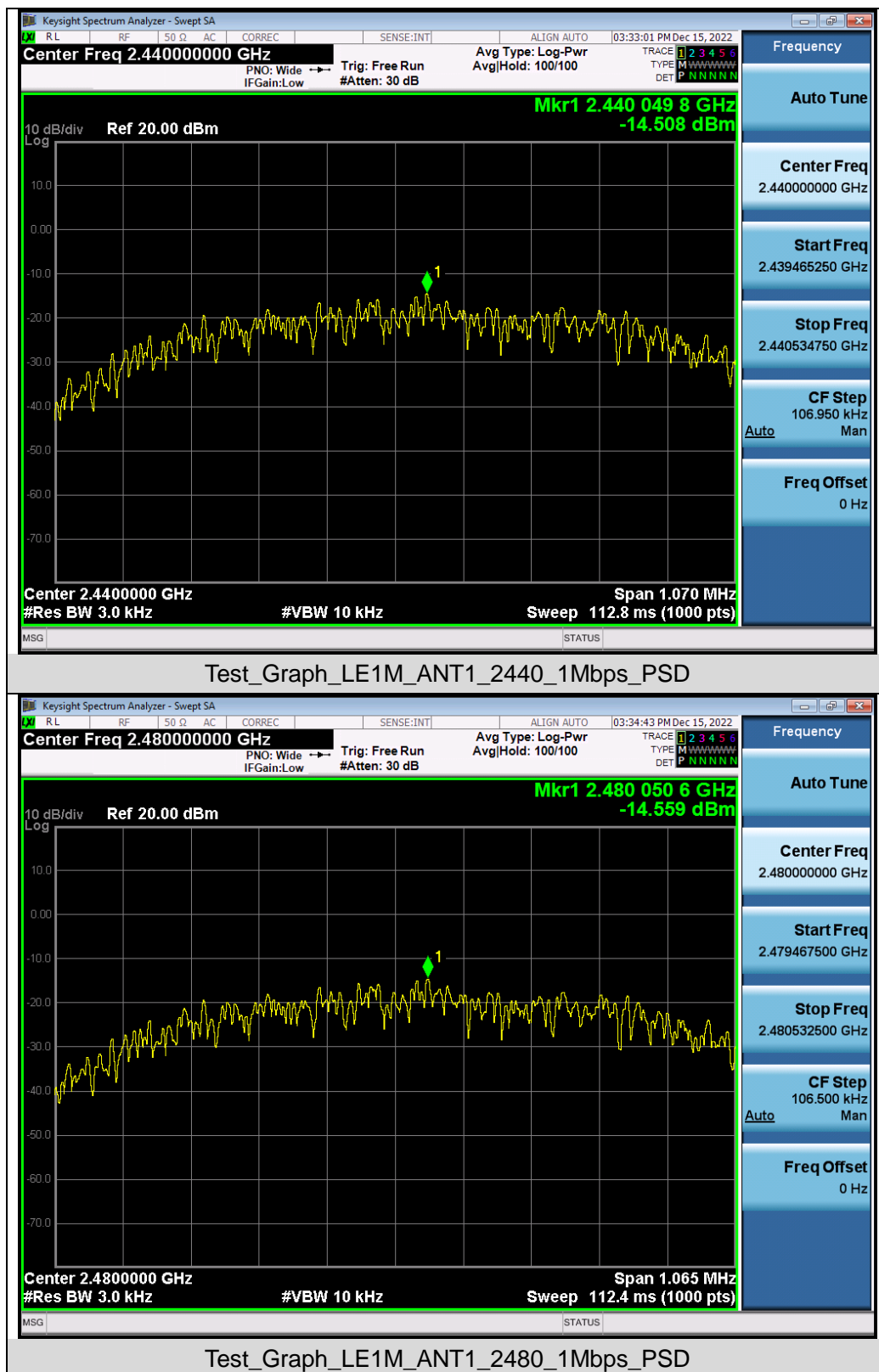
10.4. LIMITS AND MEASUREMENT RESULT

Test Data of Conducted Output Power Spectral Density				
Test Mode	Test Channel (MHz)	Power density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail
GFSK 1M	2402	-15.010	≤ 8	Pass
	2440	-14.508	≤ 8	Pass
	2480	-14.559	≤ 8	Pass

Test Graphs of Conducted Output Power Spectral Density



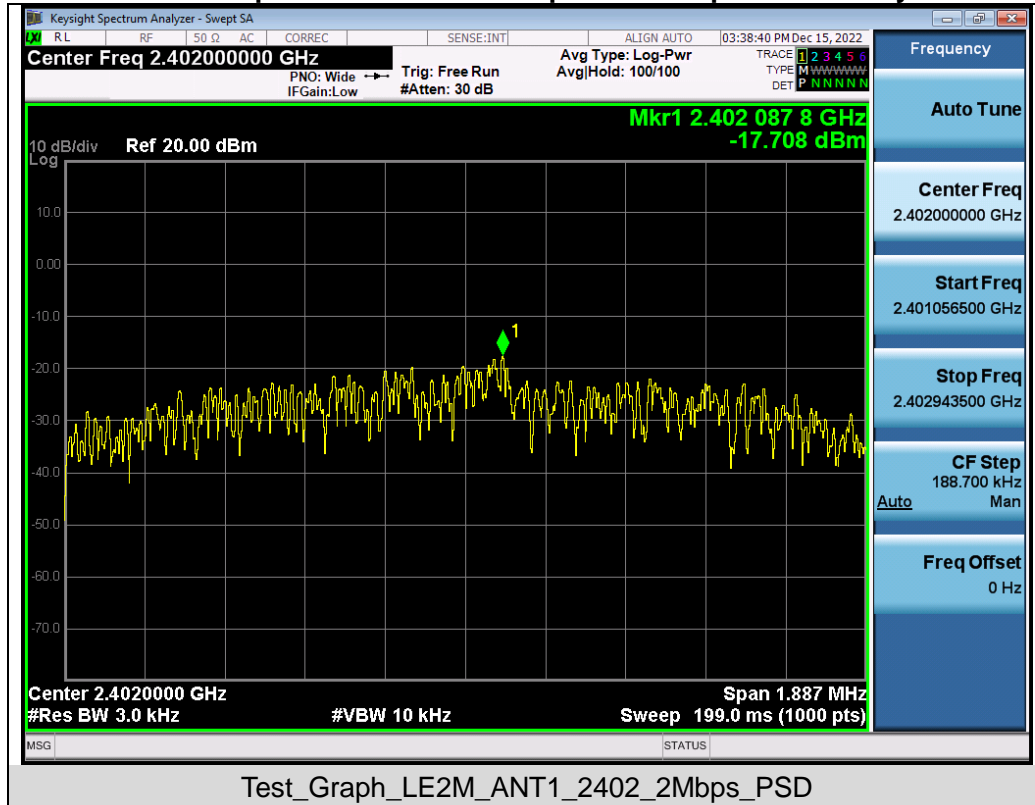
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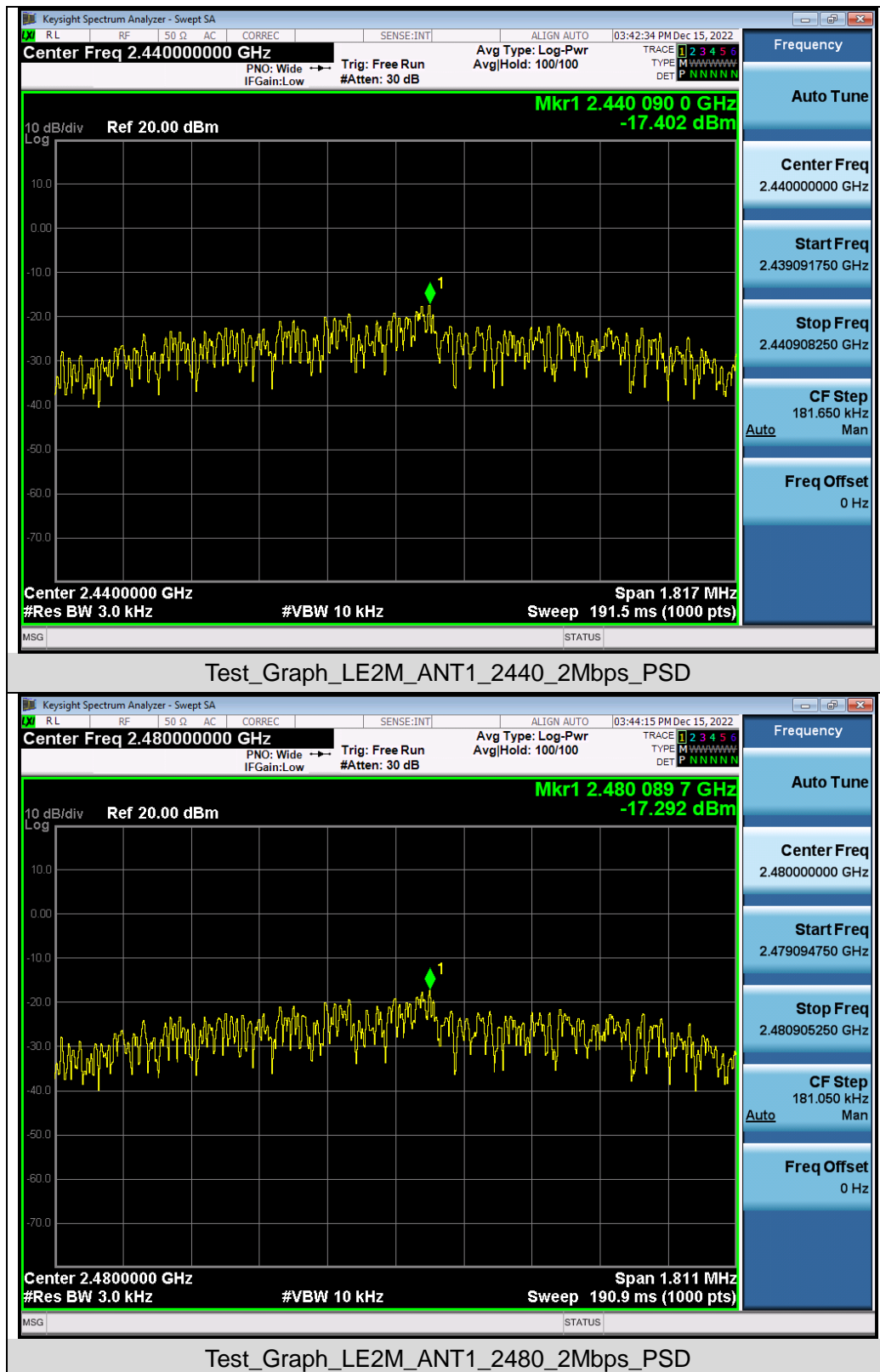
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Test Data of Conducted Output Power Spectral Density				
Test Mode	Test Channel (MHz)	Power density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail
GFSK 2M	2402	-17.708	≤ 8	Pass
	2440	-17.402	≤ 8	Pass
	2480	-17.292	≤ 8	Pass

Test Graphs of Conducted Output Power Spectral Density



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11. RADIATED EMISSION

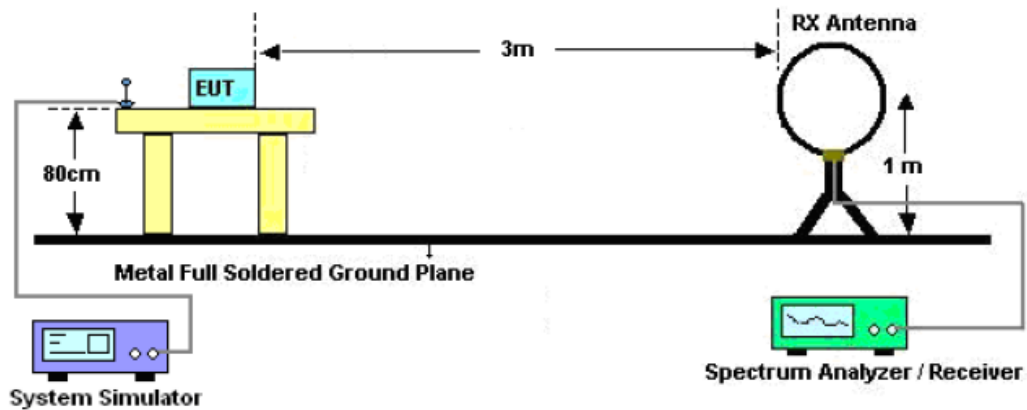
11.1. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

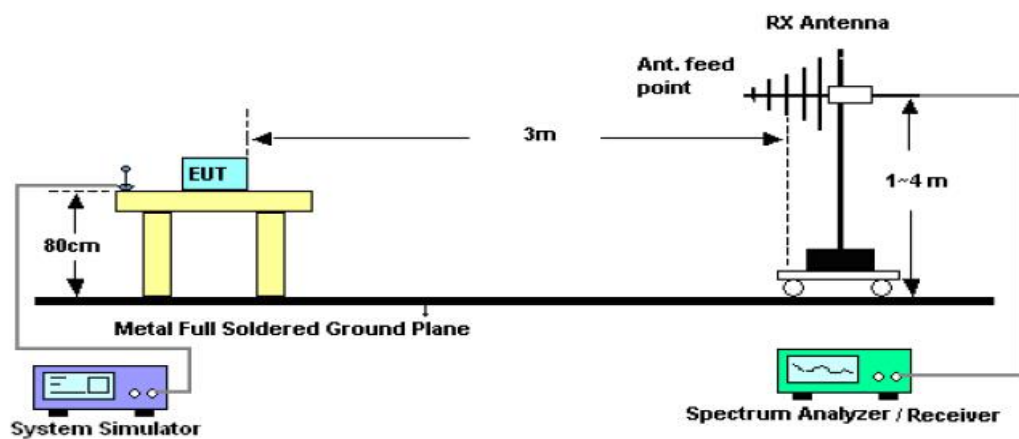
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11.2. TEST SETUP

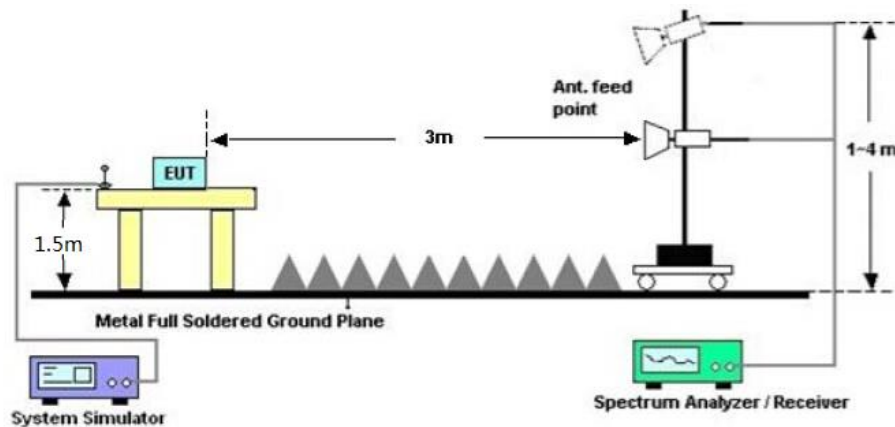
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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11.3. LIMITS AND MEASUREMENT RESULT

15.209 Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

11.4. TEST RESULT

Radiated emission below 30MHz

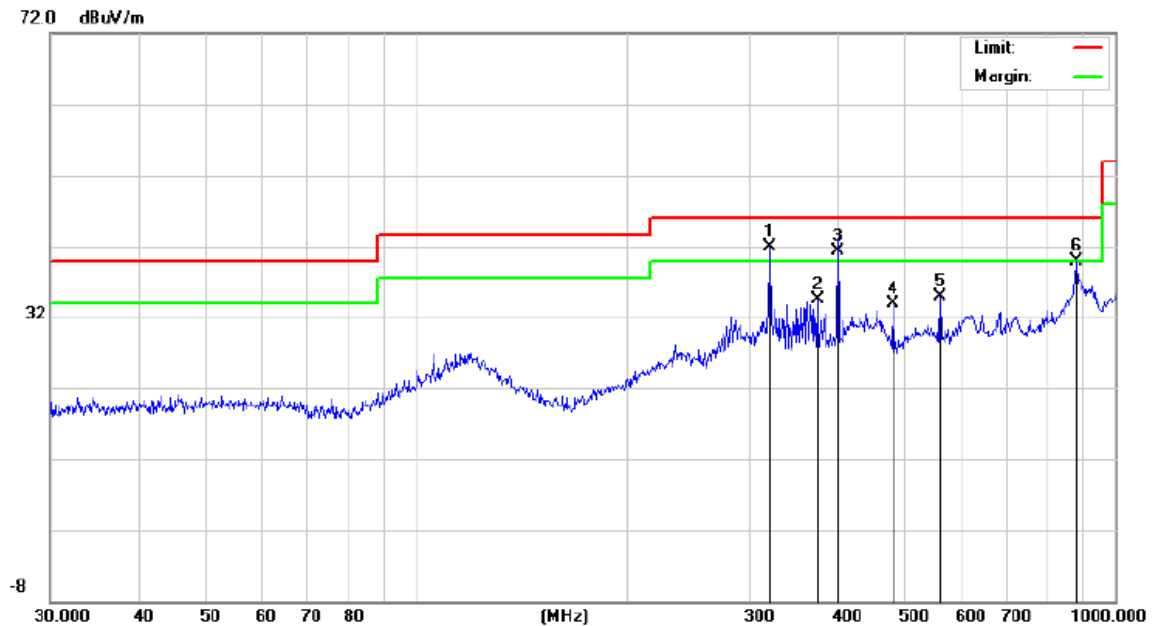
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

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Radiated emission from 30MHz to 1000MHz

EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

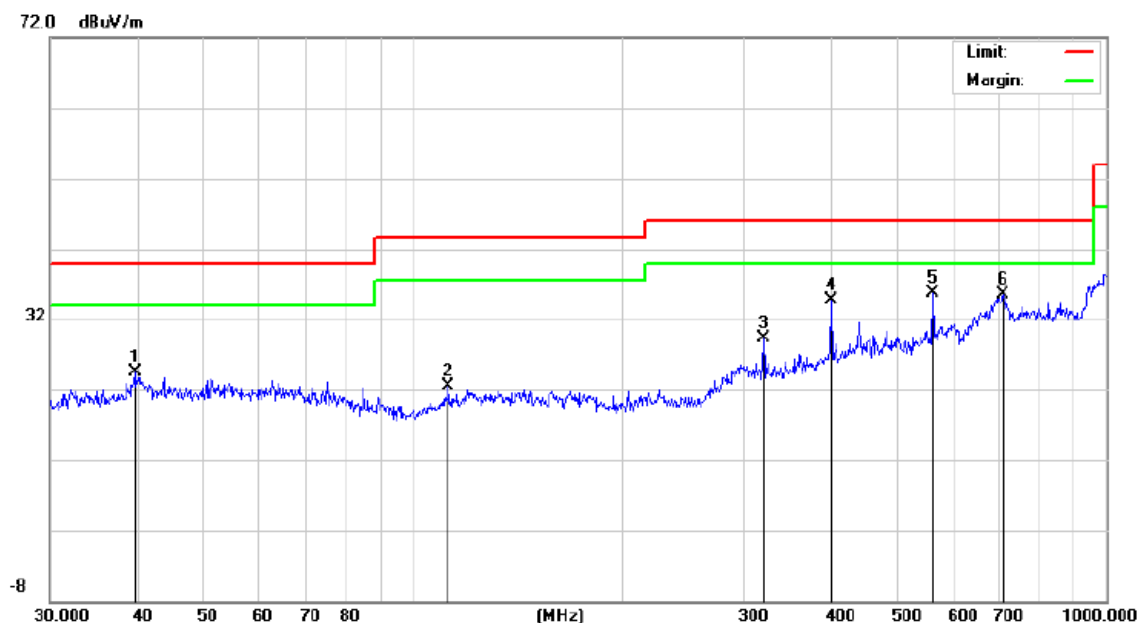


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1	*	319.9370	15.49	26.49	41.98	46.00	-4.02	peak
2		374.6225	10.20	24.31	34.51	46.00	-11.49	peak
3	!	400.4319	17.76	23.47	41.23	46.00	-4.77	QP
4		480.5276	11.05	22.83	33.88	46.00	-12.12	peak
5		560.6928	10.65	24.20	34.85	46.00	-11.15	peak
6		878.3214	7.84	32.03	39.87	46.00	-6.13	peak

RESULT: PASS

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EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		39.7146	7.62	16.86	24.48	40.00	-15.52	peak
2		112.5244	6.65	15.77	22.42	43.50	-21.08	peak
3		319.9370	9.08	20.30	29.38	46.00	-16.62	peak
4		400.4319	12.49	22.21	34.70	46.00	-11.30	peak
5	*	560.6928	11.05	24.63	35.68	46.00	-10.32	peak
6		709.1823	6.08	29.50	35.58	46.00	-10.42	peak

RESULT: PASS

Note:

- Factor=Antenna Factor + Cable loss, Over=Measurement-Limit.
- All test modes had been tested. The BLE GFSK 1Mbps mode 2 is the worst case and recorded in the report.

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Radiated emission above 1GHz

EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804.000	43.62	0.08	43.7	74	-30.3	peak
4804.000	35.48	0.08	35.56	54	-18.44	AVG
7206.000	38.59	2.21	40.8	74	-33.2	peak
7206.000	31.33	2.21	33.54	54	-20.46	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804.000	44.78	0.08	44.86	74	-29.14	peak
4804.000	34.49	0.08	34.57	54	-19.43	AVG
7206.000	38.63	2.21	40.84	74	-33.16	peak
7206.000	30.51	2.21	32.72	54	-21.28	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4880.000	44.77	0.14	44.91	74	-29.09	peak
4880.000	35.59	0.14	35.73	54	-18.27	AVG
7320.000	39.48	2.36	41.84	74	-32.16	peak
7320.000	31.56	2.36	33.92	54	-20.08	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4880.000	45.83	0.14	45.97	74	-28.03	peak
4880.000	38.52	0.14	38.66	54	-15.34	AVG
7320.000	40.49	2.36	42.85	74	-31.15	peak
7320.000	32.67	2.36	35.03	54	-18.97	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960.000	44.58	0.22	44.8	74	-29.2	peak
4960.000	35.47	0.22	35.69	54	-18.31	AVG
7440.000	38.41	2.64	41.05	74	-32.95	peak
7440.000	29.33	2.64	31.97	54	-22.03	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960.000	42.56	0.22	42.78	74	-31.22	peak
4960.000	34.33	0.22	34.55	54	-19.45	AVG
7440.000	38.48	2.64	41.12	74	-32.88	peak
7440.000	29.57	2.64	32.21	54	-21.79	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

RESULT: PASS

Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin=Level-Limit.

The “Factor” value can be calculated automatically by software of measurement system.

All test modes had been tested. The BLE GFSK 1Mbps is the worst case and recorded in the report.

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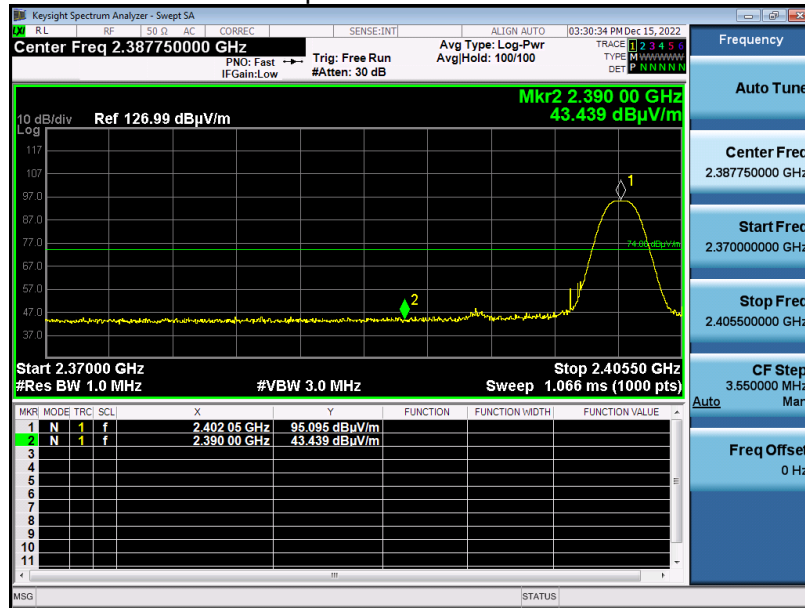
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BLE GFSK 1Mbps:

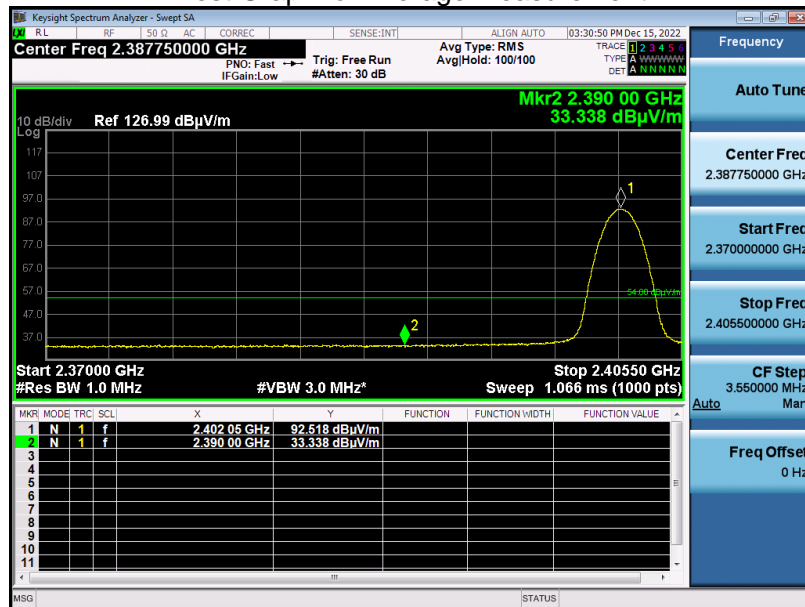
Test result for band edge emission at restricted bands

EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



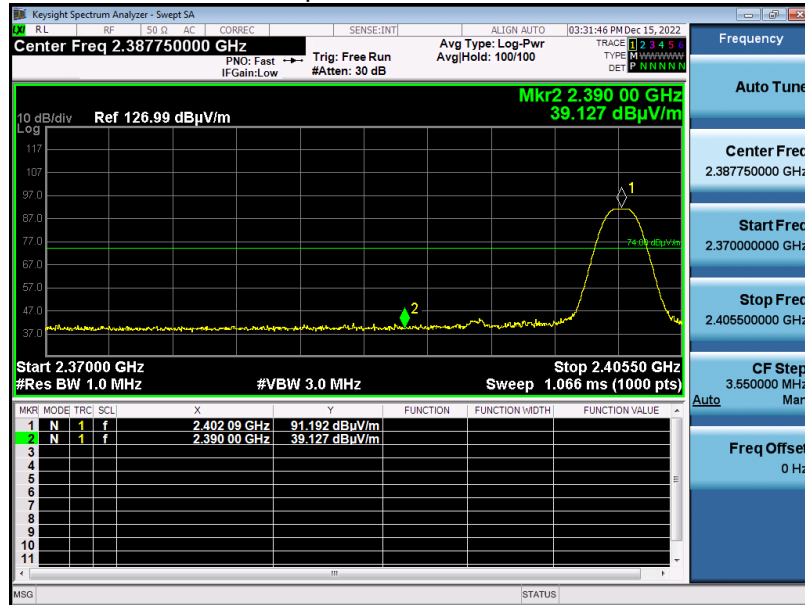
RESULT: PASS

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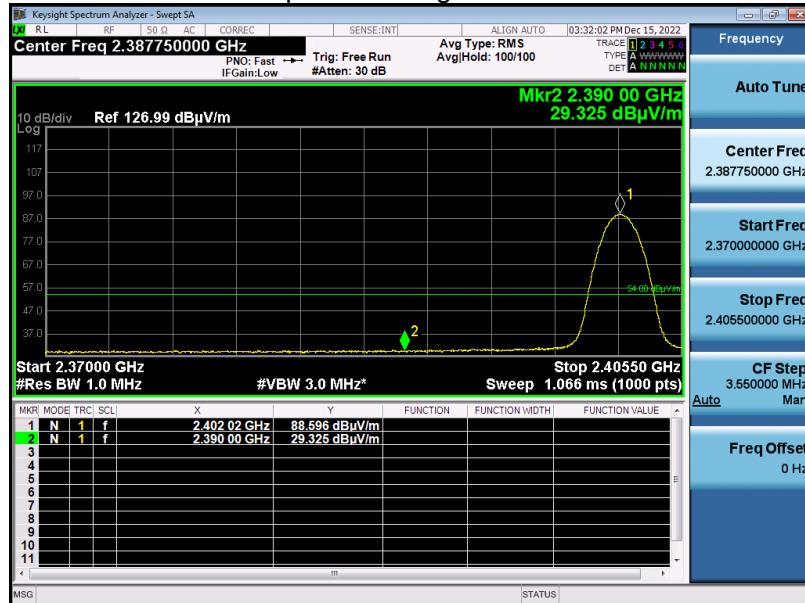
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EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



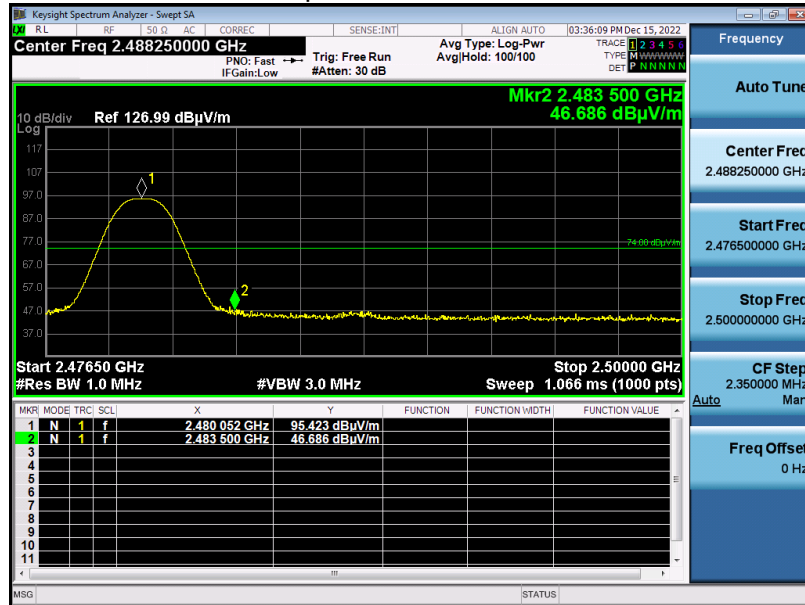
RESULT: PASS

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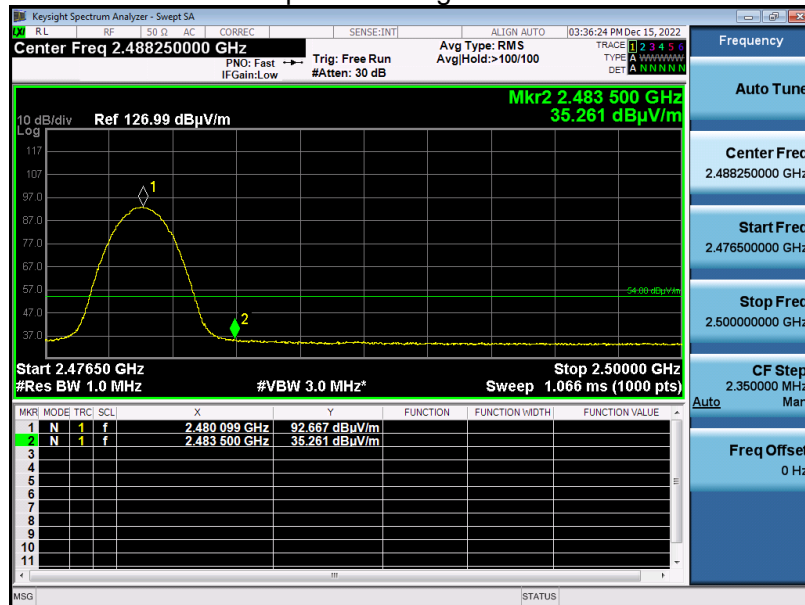
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EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



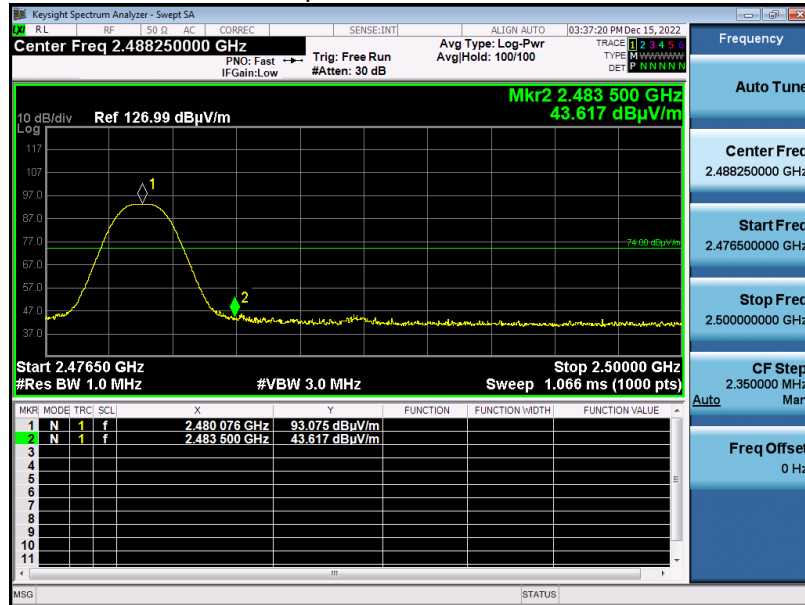
RESULT: PASS

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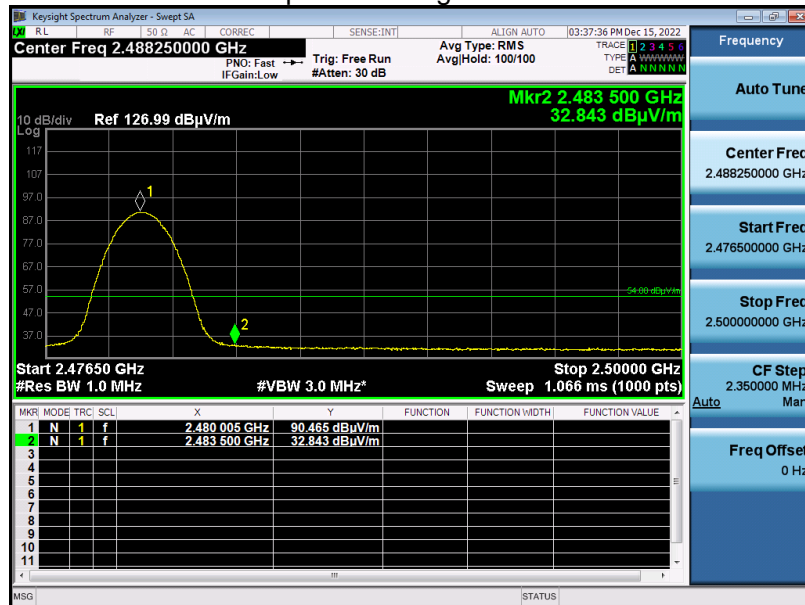
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EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



RESULT: PASS

Note: The factor had been edited in the “Input Correction” of the Spectrum Analyzer.

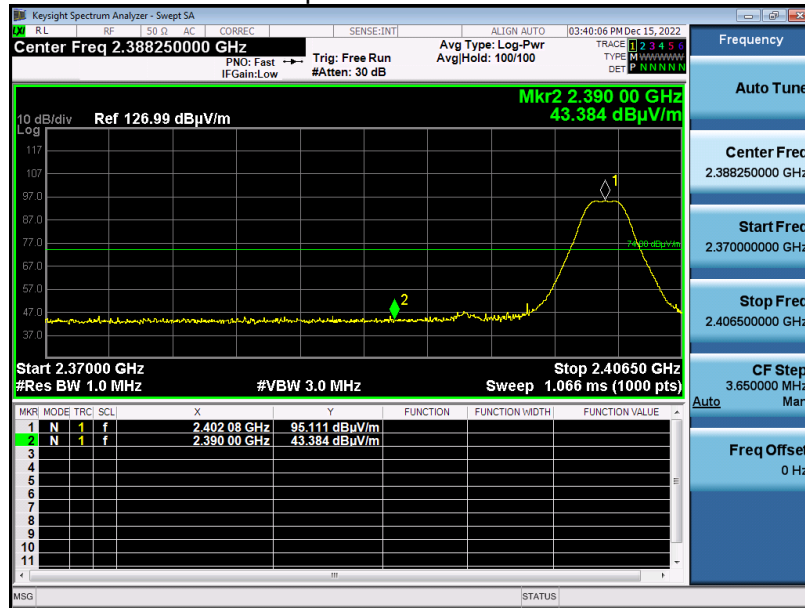
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BLE GFSK 2Mbps:

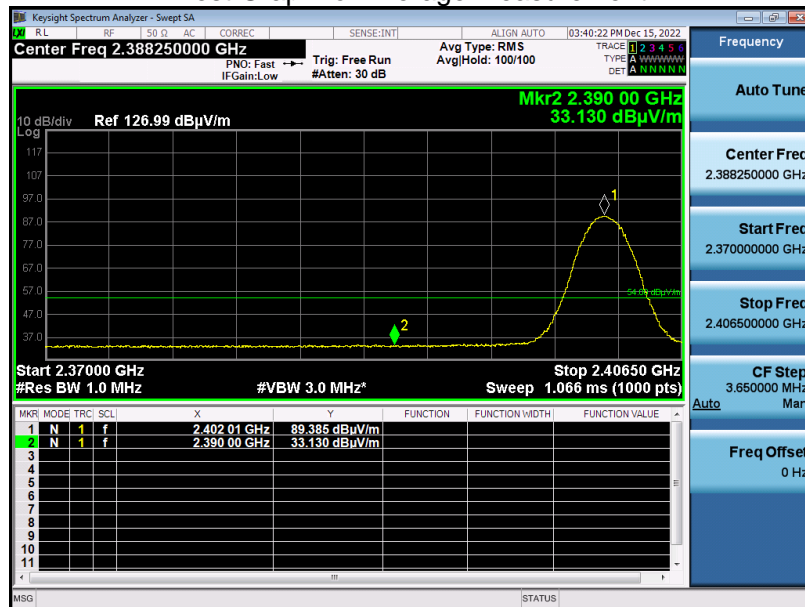
Test result for band edge emission at restricted bands

EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



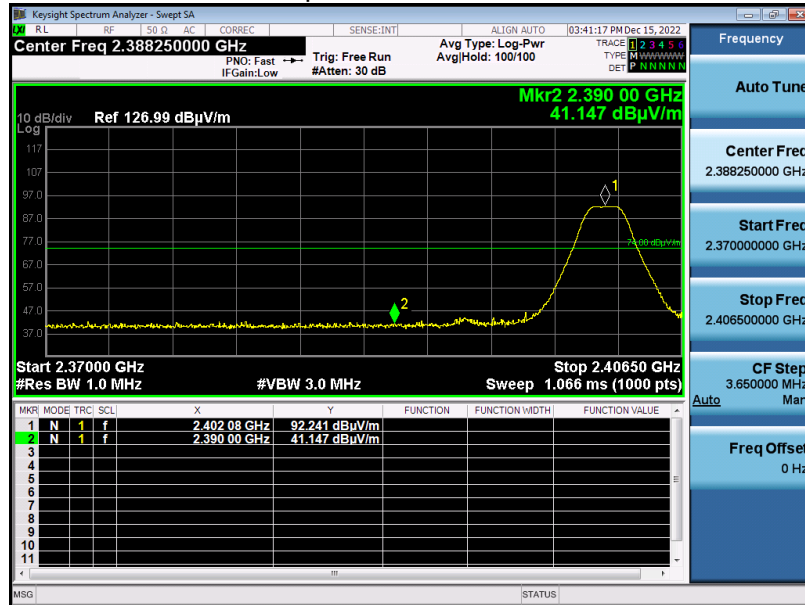
RESULT: PASS

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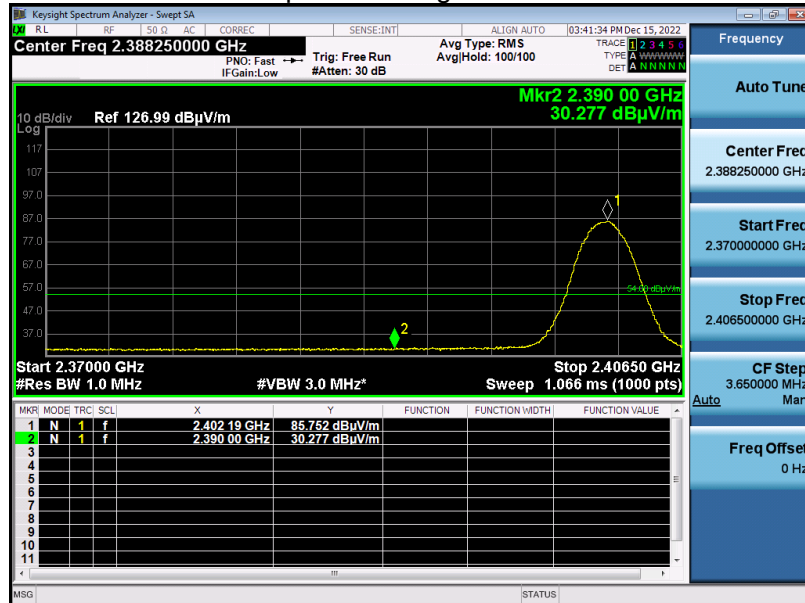
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EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



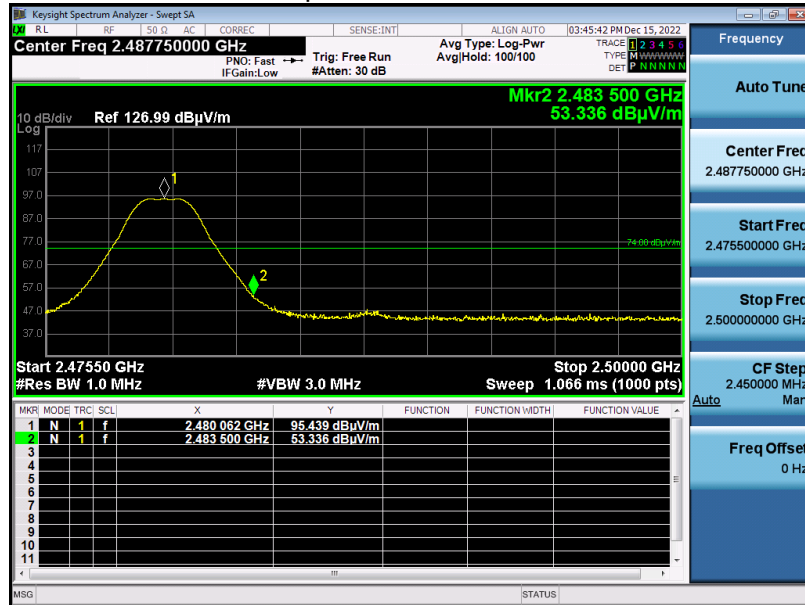
RESULT: PASS

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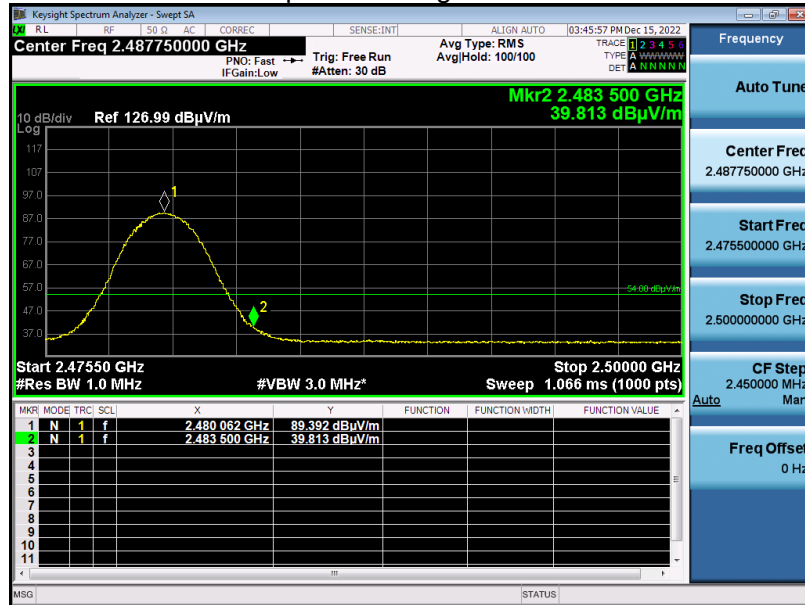
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EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



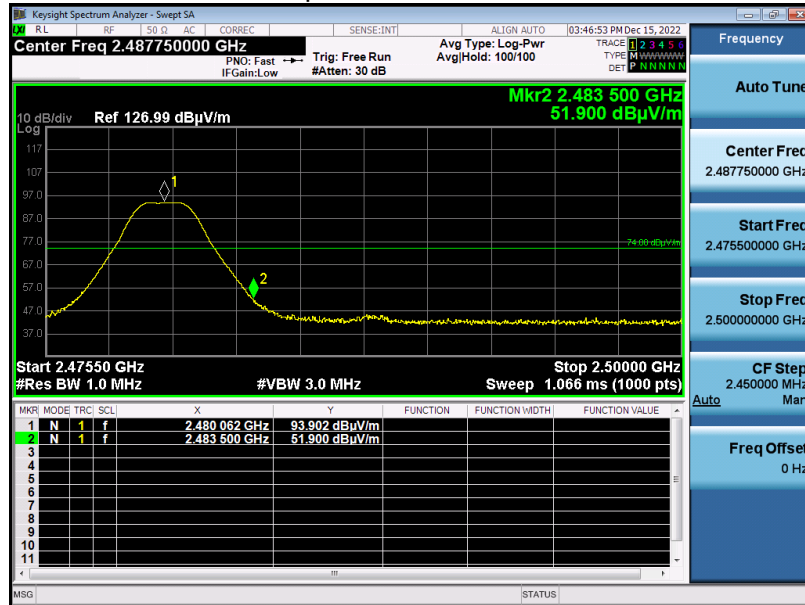
RESULT: PASS

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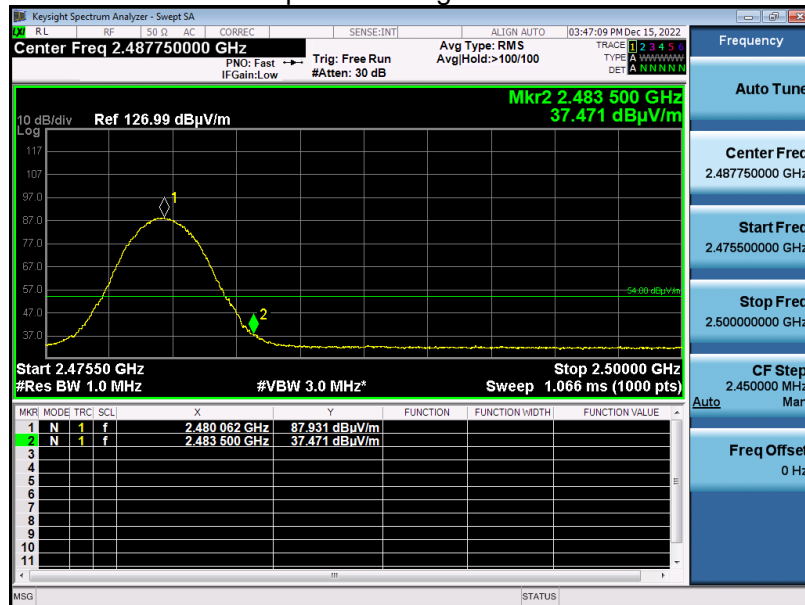
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EUT	509	Model Name	Delta V Commander
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



RESULT: PASS

Note: The factor had been edited in the “Input Correction” of the Spectrum Analyzer.

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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC15271221103AP02

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC15271221103AP03

----END OF REPORT----

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7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
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