



RF Test Report

FCC ID: 2A7R3-ASIMOUNT3

Test Report No.: RF250328004-01-003

Product(s) Name: ASI Mount

Model(s): AM3

Trade Mark: ZWO

Applicant: SUZHOU ZWO CO., LTD.

Address: Building 2, Peninsula Life Plaza, Moon bay road 6 SuZhou Industrial Park, JiangSu, China

Receipt Date: 2025.04.02

Test Date: 2025.04.08~2025.05.08

Issued Date: 2025.05.12

Standards: 47 CFR FCC Part 15, Subpart C(Section 15.247)
ANSI C63.10:2013

Testing Laboratory: Shenzhen Haiyun Standard Technical Co., Ltd.

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REPORT ISSUED HISTORY

Original Report Issue Date: 2025.05.12

- No additional attachment
- Additional attachments were issued following record

Attachment No.	Issue Date	Description



1.. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC CFR Title 47, Part 15, Subpart C				
Standard(s) Section	Test Item	Test Result	Judgment	Remark
15.207	AC Power Line Conducted Emissions	APPENDIX A	PASS	-----
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	PASS	-----
15.247(a)(2)	Bandwidth	APPENDIX E	PASS	-----
15.247(b)(3)	Maximum Output Power	APPENDIX F	PASS	-----
15.247(d)	Conducted Spurious Emission	APPENDIX G	PASS	-----
15.247(e)	Power Spectral Density	APPENDIX H	PASS	-----
15.203	Antenna Requirement	-----	PASS	Note(2)

Note:

- (1) "N/A" denotes test is not applicable to this device.
- (2) The device what use a permanently attached antenna were considered sufficient to comply with the provisions of 15.203.

1.1. TEST FACILITY

Company:	Shenzhen Haiyun Standard Technical CO., Ltd.
Address:	No. 110-113, 115, 116, Block B, Jinyuan Business Building, Bao'an District, Shenzhen, China
CNAS Registration Number:	CNAS L18252
CAB identifier	CN0145
FCC Test Firm Registration Number	457288
A2LA Certificate Number	6823.01
Telephone:	0755-26024411

1.2. MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Parameter	Uncertainty
Occupied Channel Bandwidth	±102kHz
RF power conducted	±0.243dB
Power Spectral Density	±0.743dB
Conducted Spurious Emission	±1.328dB
Conducted emission(9kHz~30MHz) AC main	±2.68dB
Radiated emission(9kHz~30MHz)	±3.50dB
Radiated emission (30MHz~1GHz)	±4.20dB
Radiated emission (1GHz~18GHz)	±5.10dB
Radiated emission (18GHz~40GHz)	±5.26dB

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3. TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
AC Power Line Conducted Emissions	24.2°C	51%	AC 120V/60Hz	Freedom Zhuo
Radiated Emissions-9 kHz to 30 MHz	23.6°C	52%	AC 120V/60Hz	Lemon He
Radiated Emissions-30 MHz to 1000 MHz	23.6°C	52%	AC 120V/60Hz	Lemon He
Radiated Emissions-Above 1000 MHz	23.6°C	52%	AC 120V/60Hz	Lemon He
Bandwidth	23.4°C	53%	DC 12V	Albert Fan
Maximum Output Power	23.4°C	53%	DC 12V	Albert Fan
Conducted Spurious Emission	23.4°C	53%	DC 12V	Albert Fan
Power Spectral Density	23.4°C	53%	DC 12V	Albert Fan

Note: Adapter supply voltage AC 120V/60Hz.

2.. GENERAL INFORMATION

2.1. GENERAL DESCRIPTION OF EUT

Test sample no.	POC250328004-S001
Product Name	ASI Mount
Test Model	AM3
Trade Mark	ZWO
Power supply	DC 12V from adapter
Operate temperature	0°C-45°C
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Type	GFSK
Bit Rate of Transmitter	1Mbps, 2Mbps
Max. Output Power	3.29 dBm (0.0021W)
Antenna gain	0.23 dBi
Antenna type	PCB Antenna

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	20	2442
01	2404	21	2444
02	2406	22	2446
03	2408	23	2448
04	2410	24	2450
05	2412	25	2452
06	2414	26	2454
07	2416	27	2456
08	2418	28	2458
09	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

2.2. DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1	TX Mode_1Mbps Channel 00/19/39
Mode 2	TX Mode_2Mbps Channel 00/19/39
Mode 3	TX Mode_1Mbps Channel 39

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

AC power line conducted emissions test	
Final Test Mode	Description
Mode 3	TX Mode_1Mbps Channel 39

Radiated emissions test – Below 1GHz	
Final Test Mode	Description
Mode 3	TX Mode_1Mbps Channel 39

Radiated emissions test – Above 1GHz	
Final Test Mode	Description
Mode 1	TX Mode_1Mbps Channel 00/19/39
Mode 2	TX Mode_2Mbps Channel 00/19/39

Conducted test	
Final Test Mode	Description
Mode 1	TX Mode_1Mbps Channel 00/19/39
Mode 2	TX Mode_2Mbps Channel 00/19/39

Note:

- (1) For radiated emission above 1 GHz test, the spurious points of 1GHz~18GHz and 18GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.
- (2) For AC power line conducted emissions and radiated emissions below 1 GHz test, the TX Mode_1Mbps Channel 39 is found to be the worst case and recorded.



2.3. PARAMETERS OF TEST SOFTWARE

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

Test Software Version	EspRFTestTool		
Frequency (MHz)	2402	2440	2480
1Mbps	default	default	default
2Mbps	default	default	default

2.4. SUPPORT UNITS

No.	Equipment	Model	Manufacturer	Series No
1	Adapter	KPL-060F-VI	SUZHOU ZWO CO..LTD	/
1	Astronomical Box	ASIAIR Plus	SUZHOU ZWO CO..LTD	/

3.. AC POWER LINE CONDUCTED EMISSIONS

3.1. LIMIT

Frequency of Emission (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56*	56 to 46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

3.2. TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

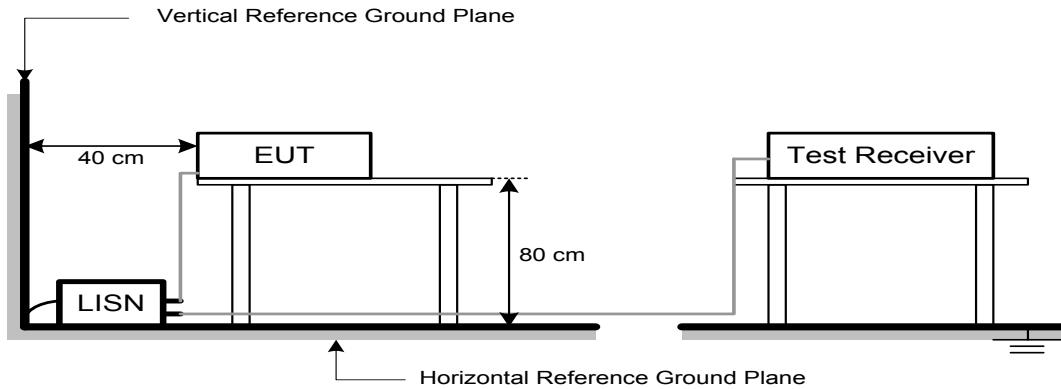
The following table is the setting of the receiver:

Receiver Parameters	Setting
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.3. DEVIATION FROM TEST STANDARD

No deviation.

3.4. TEST SETUP



3.5. EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.6. TEST RESULTS

Please refer to the APPENDIX A.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』 . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a “ * ” marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150 kHz to 30 MHz.



4.. RADIATED EMISSIONS

4.1. LIMIT

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (9 kHz-1000 MHz)

Frequency (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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	(dB _{UV} /m at 3 m)	
	Peak	Average
Above 1000	74	54

Note:

- (1) The limit for radiated test was performed according to FCC CFR Title 47, Part 15, Subpart C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dB_{UV}/m)=20log Emission level (uV/m).

4.2. TEST PROCEDURE

- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1 GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1 GHz)
- h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1 GHz)
- i. For the actual test configuration, please refer to the related Item –EUT Test Photos.

The following table is the setting of the receiver:

Spectrum Parameters	Setting
Start ~ Stop Frequency	9 kHz~150 kHz for RBW 200 Hz
Start ~ Stop Frequency	0.15 MHz~30 MHz for RBW 9 kHz
Start ~ Stop Frequency	30 MHz~1000 MHz for RBW 100 kHz

Spectrum Parameters	Setting
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1 MHz / 3 MHz for PK value 1 MHz / 1/T Hz for AVG value

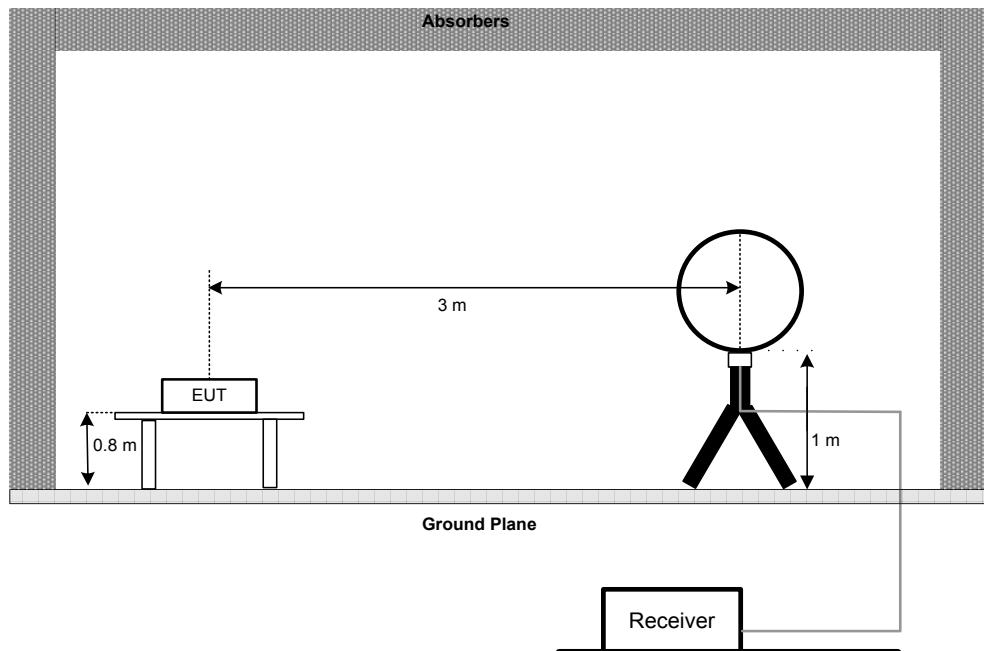
Spectrum Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector
Start ~ Stop Frequency	1 GHz~26.5 GHz for PK/AVG detector

4.3. DEVIATION FROM TEST STANDARD

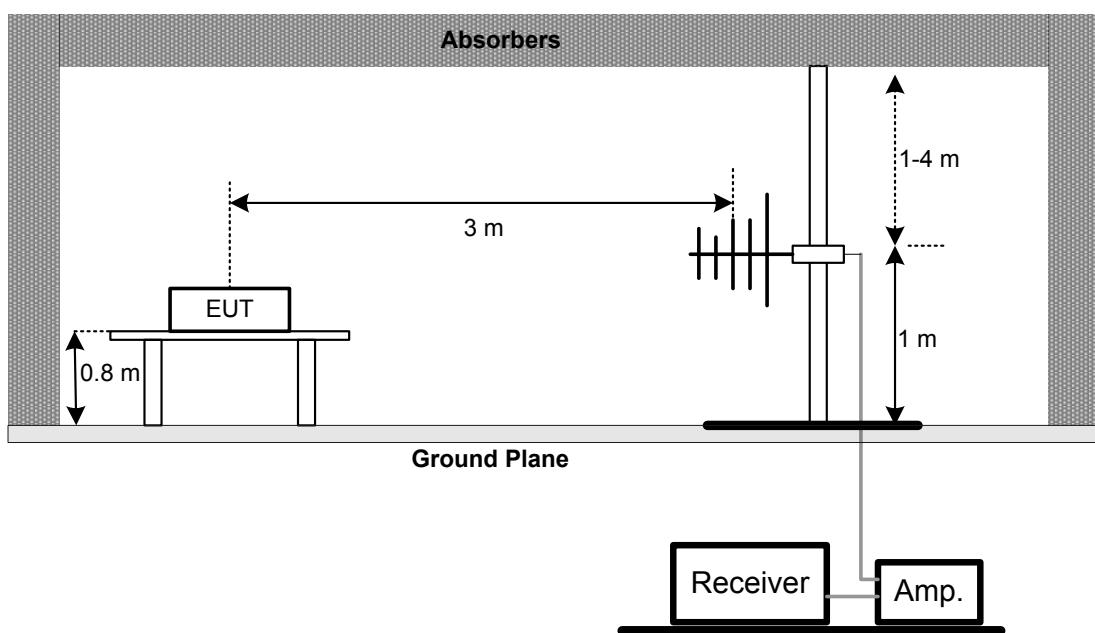
No deviation.

4.4. TEST SETUP

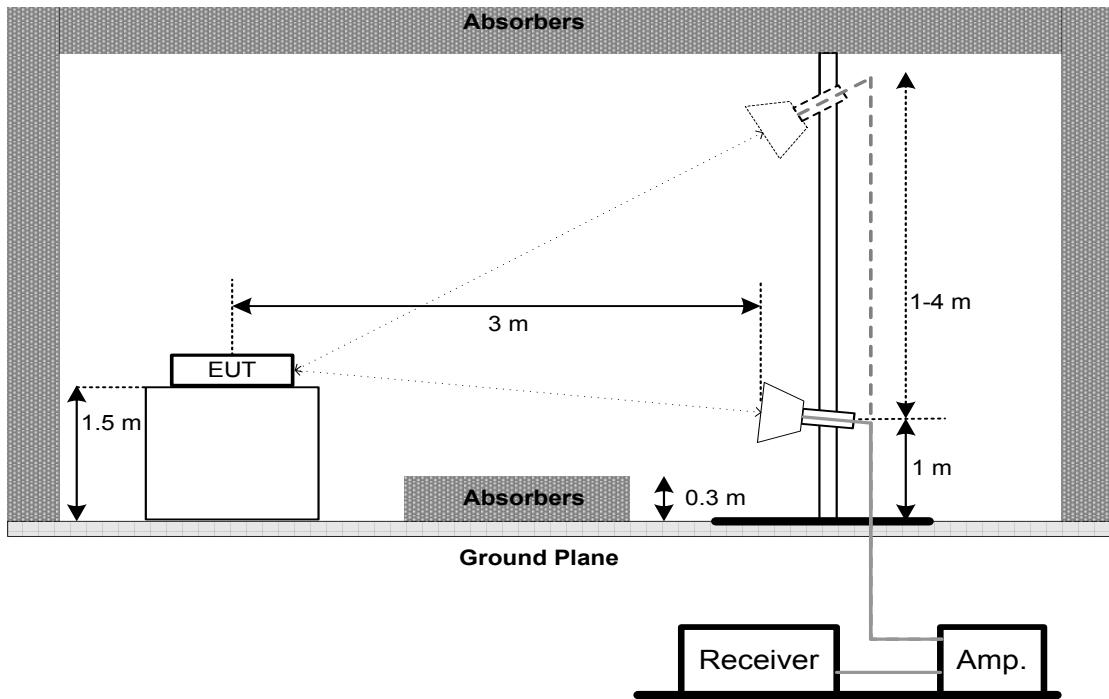
9 kHz to 30 MHz



30 MHz to 1 GHz



Above 1 GHz



4.5. EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6. TEST RESULT - 9 kHz TO 30 MHz

Please refer to the APPENDIX B.

Remark:

- (1) Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB).
- (2) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.7. TEST RESULT - 30 MHz TO 1000 MHz

Please refer to the APPENDIX C.

4.8. TEST RESULT - ABOVE 1000 MHz

Please refer to the APPENDIX D.

Remark:

- (1) No limit: This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

5.. BANDWIDTH

5.1. LIMIT

Section	Test Item	Limit
FCC 15.247(a)(2)	6 dB Bandwidth	>= 500 kHz
	99% Emission Bandwidth	-

5.2. TEST PROCEDURE

- The EUT was directly connected to the tonscend test system and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

For 6 dB Bandwidth:

Spectrum Parameters	Setting
Span Frequency	> Measurement Bandwidth
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

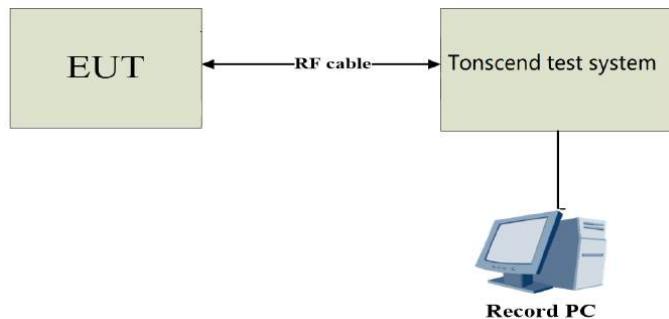
For 99% Emission Bandwidth:

Spectrum Parameters	Setting
Span Frequency	Between 1.5 times and 5.0 times the OBW
RBW	1% to 5% of the OBW
VBW	approximately three times RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.3. DEVIATION FROM STANDARD

No deviation.

5.4. TEST SETUP



5.5. EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6. TEST RESULTS

Please refer to the APPENDIX E.

6.. MAXIMUM OUTPUT POWER

6.1. LIMIT

Section	Test Item	Limit
FCC 15.247(b)(3)	Maximum Output Power	1.0000 watt or 30.00 dBm

6.2. TEST PROCEDURE

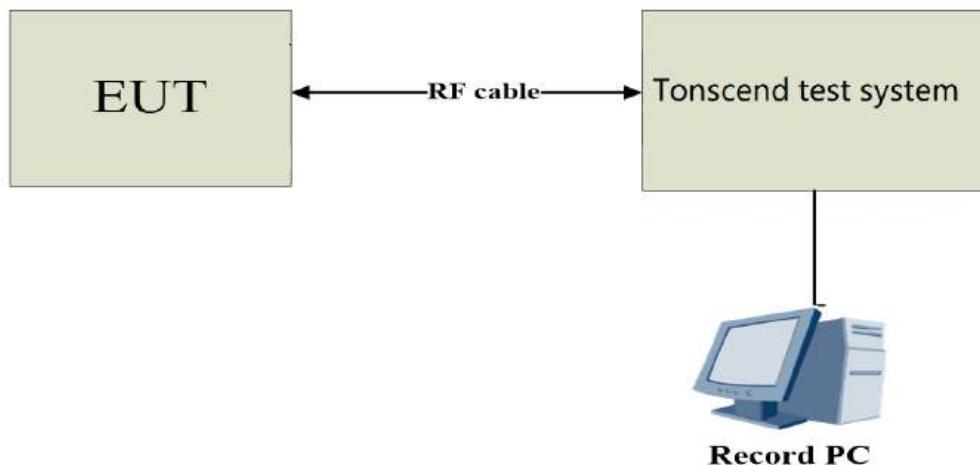
- The EUT was directly connected to the tonscend test system and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	$\geq 3 \times \text{RBW}$
RBW	$\geq \text{DTS BW}$
VBW	$\geq 3 \times \text{RBW}$
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

6.3. DEVIATION FROM STANDARD

No deviation.

6.4. TEST SETUP



6.5. EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.6. TEST RESULTS

Please refer to the APPENDIX F.

7.. CONDUCTED SPURIOUS EMISSION

7.1. LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

7.2. TEST PROCEDURE

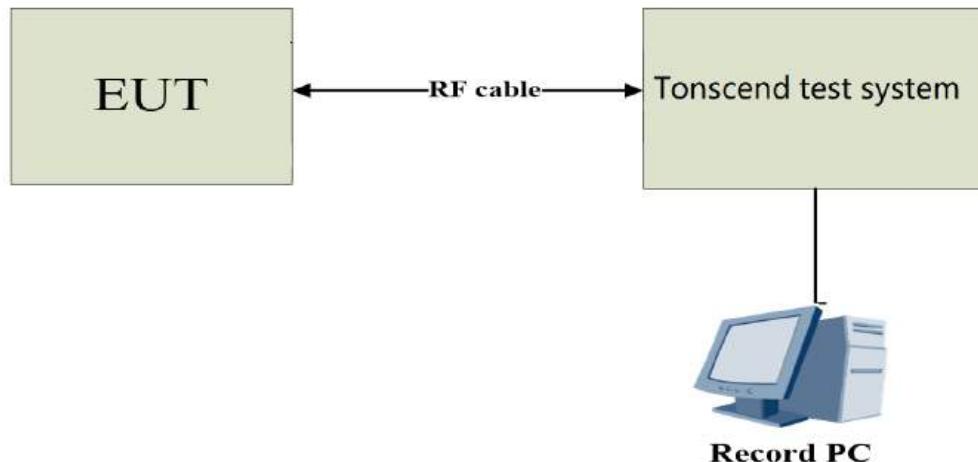
- The EUT was directly connected to the tonsend test system and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Start Frequency	30 MHz
Stop Frequency	26.5 GHz
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

7.3. DEVIATION FROM STANDARD

No deviation.

7.4. TEST SETUP



7.5. EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.6. TEST RESULTS

Please refer to the APPENDIX G.

8.. POWER SPECTRAL DENSITY

8.1. LIMIT

Section	Test Item	Limit
FCC 15.247(e)	Power Spectral Density	8 dBm (in any 3 kHz)

8.2. TEST PROCEDURE

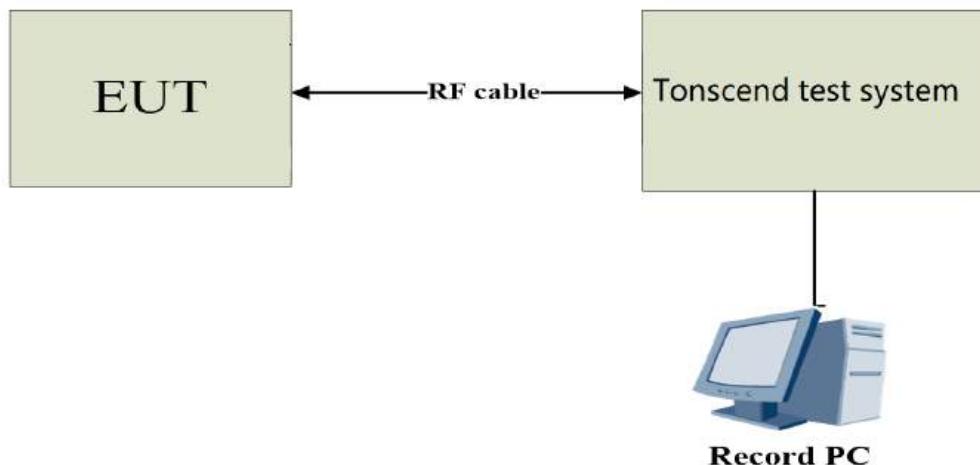
- The EUT was directly connected to the tonscend test system and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	1.5*DTS BW
RBW	3 kHz
VBW	10 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.3. DEVIATION FROM STANDARD

No deviation.

8.4. TEST SETUP



8.5. EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

8.6. TEST RESULTS

Please refer to the APPENDIX H.



9.. MEASUREMENT INSTRUMENTS LIST

No.	Name of Equipment	Manufacturer	Model Number	Serial Number	Inventory No.	Last Calibration	Due Calibration
Radiated Emission							
1	Test receiver	Rohde&Schwarz	ESU	100184	JLE011	2025/3/1	2026/2/28
2	Log periodic antenna	Schwarzbeck	VULB 9168	1151	JLE012	2025/4/12	2026/4/11
3	Low frequency amplifier	/	LNA 0920N	2014	JLE023	2025/3/1	2026/2/28
4	High frequency amplifier	Schwarzbeck	BBV 9718	9718-284	JLE024	2025/3/1	2026/2/28
5	Horn Antenna	SCHWARZBECK	BBHA 9120 D	02670	JLE028	2025/4/12	2026/4/11
6	Temp&Humidity Recorder	Meideshi	JR900	/	JLE021	2025/4/15	2026/4/14
7	Horn Antenna	SCHWARZBECK	BBHA 9170	9170#685	JLE029	2024/7/15	2025/7/14
8	Loop Antenna	SCHWARZBECK	FMZB1519B	00029	JLE030	2024/7/15	2025/7/14
9	Broadband preamplifier	Schwarzbeck	BBV9721	9721-019	JLE025	2025/3/1	2026/2/28
10	Test software	Farad Technology Co., Ltd	EZ-EMC Ver.TW-03A2				
Conducted Emission							
1	LISN	Rohde&Schwarz	ENV216	100075	JLE002	2025/3/1	2026/2/28
2	ISN	Schwarzbeck	CATE 5 8158	#171	JLE003	2025/2/21	2026/2/20
3	ISN	Schwarzbeck	CAT 3 8158	00187	JLE032	2025/2/21	2026/2/20
4	Test receiver	Rohde&Schwarz	ESCI	100718	JLE010	2025/3/1	2026/2/28
5	Pulse limiter	Rohde&Schwarz	ESH3-Z2	102299	JLE047	2025/3/1	2026/2/28
6	Temp&Humidity Recorder	Meideshi	JR900	/	JLE020	2025/4/15	2026/4/14
7	Test software	Farad Technology Co., Ltd	EZ-EMC Ver.TW-03A2				
RF Conducted Emissions							
1	MXA Signal Analyzer	Keysight	N9021B	MY6008016 9	JLE050	2025/3/1	2026/2/28
2	RF Control Unit	dsusoft	JS0806-2	21G8060449	JLE053	2025/3/1	2026/2/28
3	power supply unit	dsusoft	JS0806-4ADC	N/A	JLE055	2025/3/1	2026/2/28
4	VXG Signal Generator	Keysight	M9384B	MY6127078 7	JLE051	2025/6/10	2025/6/09
5	EXG Analog Signal Generator	Keysight	N5173B	MY5910128 2	JLE052	2025/3/1	2026/2/28
6	Wideband Radio Communication Tester	Rohde&Schwarz	CMW500	1201.0002K 50-116064-D t	JLE054	2025/3/1	2026/2/28
7	Test software	dsusoft	JS1120-3 Ver.3.2.22.0				



10.. ANTENNA REQUIREMENT

Test standard: FCC part 15.203

According to the manufacturer declared, the EUT has a PCB antenna, the antenna gain is 0.23 dBi and the antenna connector is designed with permanent attachment and no consideration of replacement.

Therefore the EUT is considered sufficient to comply with the provision.

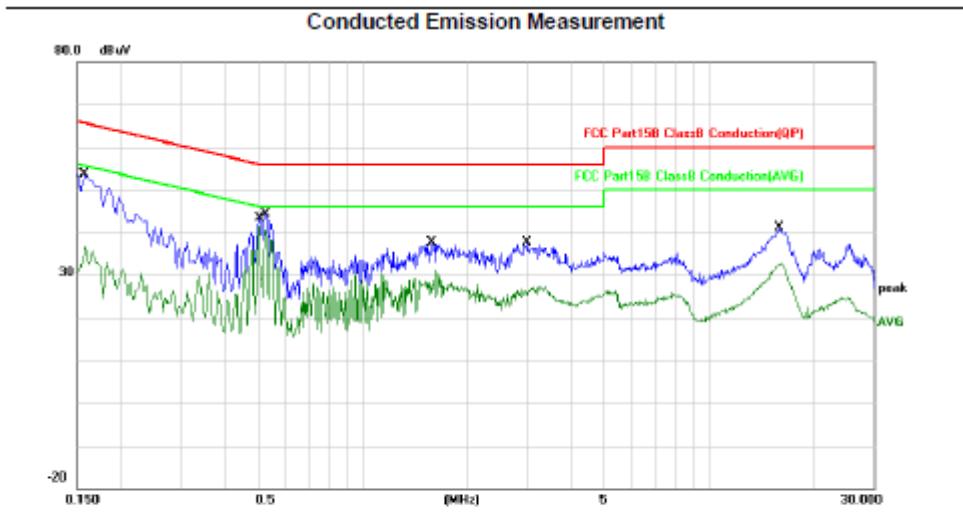
Refer to EUT Photo for further details.



APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS



Test Mode	TX Mode_1Mbps Channel 39	Phase	Line
-----------	--------------------------	-------	------



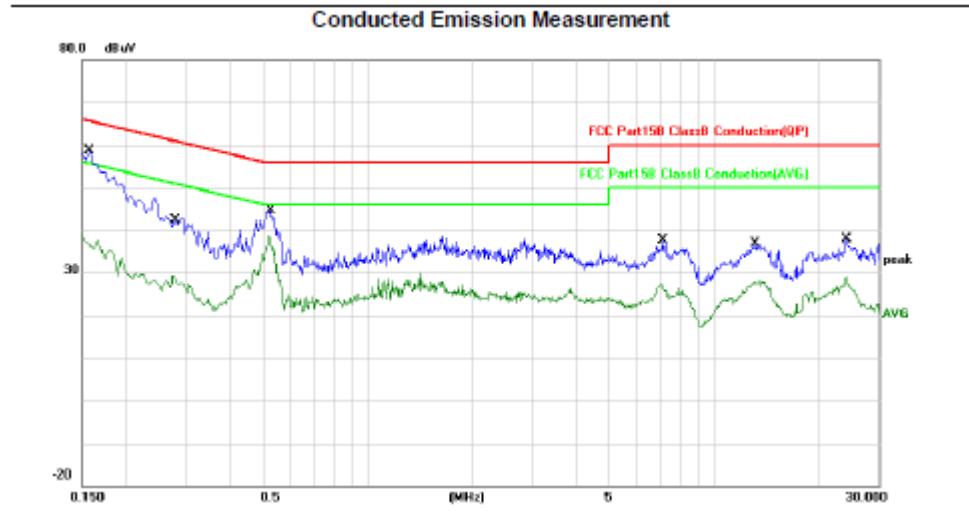
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
1		0.1580	31.47	20.10	51.57	65.57	-14.00	QP	
2		0.1580	14.87	20.10	34.97	55.57	-20.60	AVG	
3		0.5080	23.11	20.14	43.25	56.00	-12.75	QP	
4 *		0.5080	21.38	20.14	41.50	48.00	-4.50	AVG	
5		0.5280	22.47	20.11	42.58	56.00	-13.42	QP	
6		0.5280	20.53	20.11	40.84	48.00	-5.36	AVG	
7		1.5880	12.11	19.99	32.10	56.00	-23.90	QP	
8		1.5880	5.57	19.99	25.58	48.00	-20.44	AVG	
9		2.9880	11.27	20.23	31.50	56.00	-24.50	QP	
10		2.9880	5.12	20.23	25.35	48.00	-20.65	AVG	
11		15.8980	5.55	20.37	25.92	60.00	-34.08	QP	
12		15.8980	-0.15	20.37	20.22	50.00	-29.78	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.



Test Mode	TX Mode_1Mbps Channel 39	Phase	Neutral
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No.	Mk.	Freq. MHz	Reading Level	Correct Factor	Measure- ment	Limit	Over	Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.1580	32.18	20.31	52.49	65.57	-13.08	QP	
2		0.1580	16.10	20.31	36.41	55.57	-19.16	AVG	
3		0.2788	16.58	20.09	36.67	60.85	-24.18	QP	
4		0.2788	4.29	20.09	24.38	50.85	-26.47	AVG	
5		0.5260	21.78	20.04	41.82	56.00	-14.18	QP	
6 *		0.5260	17.02	20.04	37.08	46.00	-8.94	AVG	
7		7.1080	11.06	20.44	31.50	60.00	-28.50	QP	
8		7.1080	6.21	20.44	26.65	50.00	-23.35	AVG	
9		13.2080	6.86	20.48	27.34	60.00	-32.66	QP	
10		13.2080	1.92	20.48	22.40	50.00	-27.60	AVG	
11		24.1820	10.03	20.40	30.43	60.00	-29.57	QP	
12		24.1820	4.91	20.40	25.31	50.00	-24.69	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.



APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

Radiated emission: 9KHz-30MHz

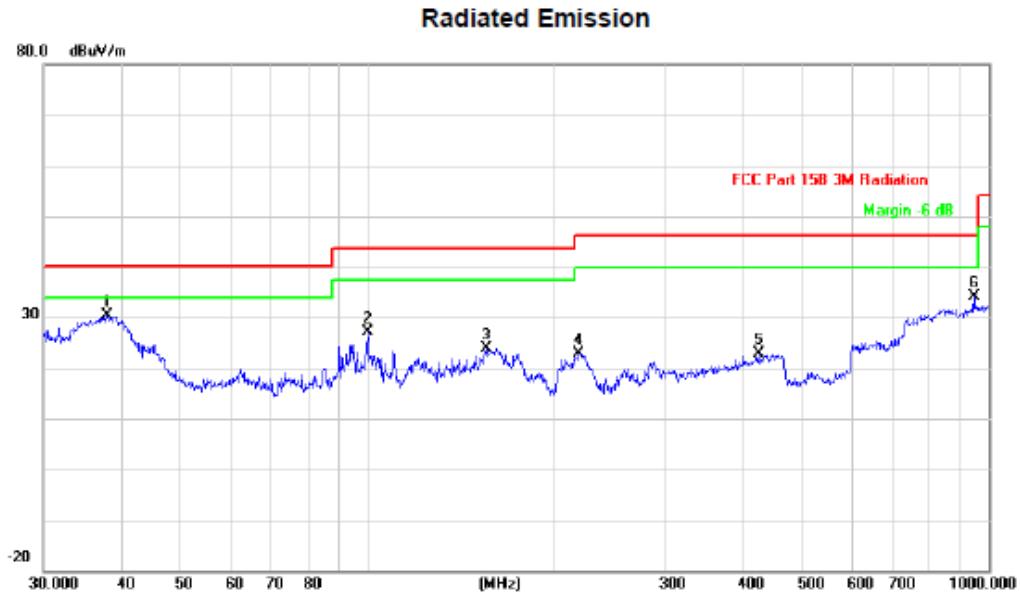
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.



APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

Test Mode	TX Mode_1Mbps Channel 39	Polarization	Vertical
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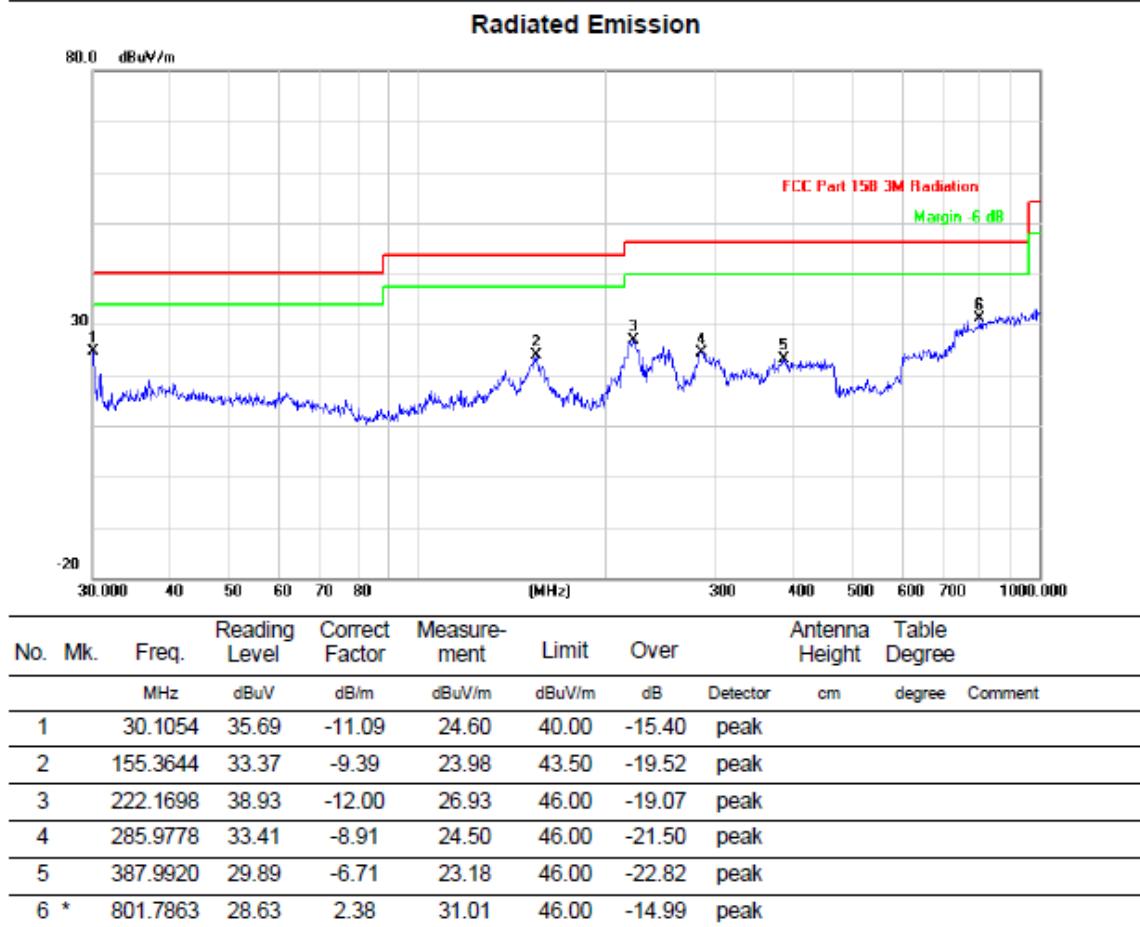


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree
1	*	37.9450	40.60	-10.29	30.31	40.00	-9.69	peak		
2		99.8777	40.62	-13.60	27.02	43.50	-16.48	peak		
3		154.8204	33.14	-9.37	23.77	43.50	-19.73	peak		
4		218.3084	35.25	-12.25	23.00	46.00	-23.00	peak		
5		425.0280	28.00	-5.23	22.77	46.00	-23.23	peak		
6		945.4400	30.14	3.88	34.02	46.00	-11.98	peak		

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX Mode_1Mbps Channel 39	Polarization	Horizontal
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REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.
 (2) Margin Level = Measurement Value - Limit Value.



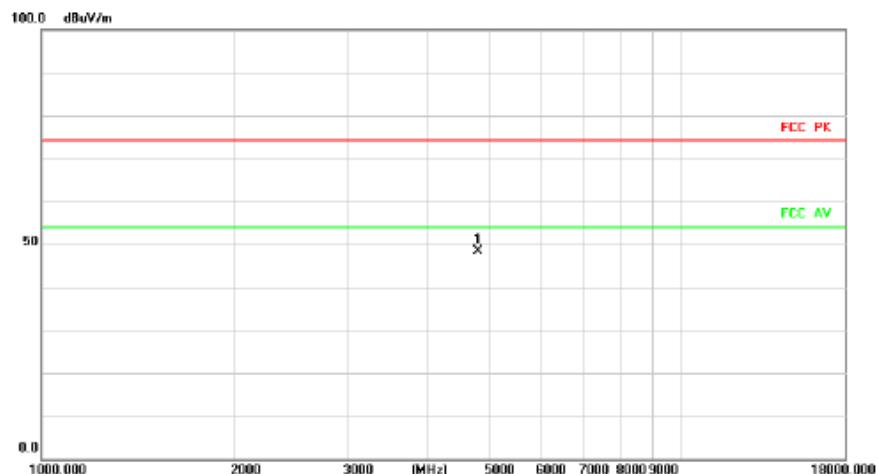
APPENDIX D - RADIATED EMISSION - ABOVE 1000 MHZ



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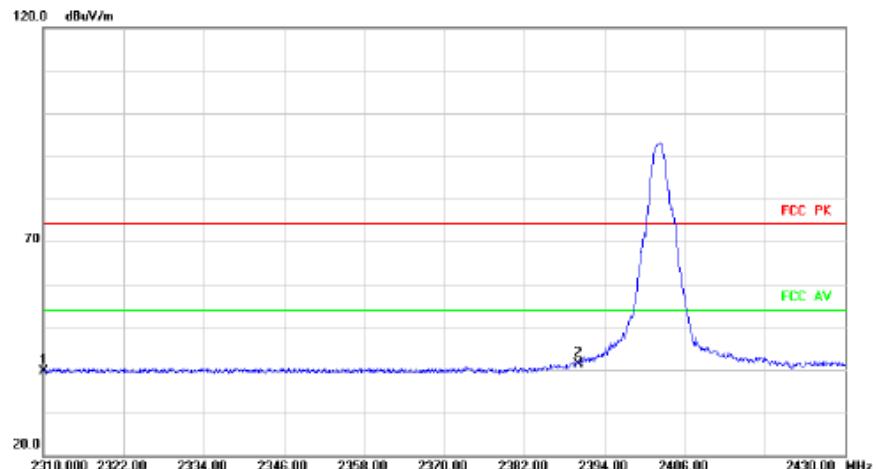
Test Mode	TX 2402 MHz_1Mbps	Polarization	Vertical
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Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table		
			Level	Factor	ment			Height	Degree		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4804.000	52.22	-3.72	48.50	74.00	-25.50	peak			

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table		
			Level	Factor	ment			Height	Degree		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	52.25	-12.53	39.72	74.00	-34.28	peak			
2	*	2390.000	53.71	-12.27	41.44	74.00	-32.56	peak			



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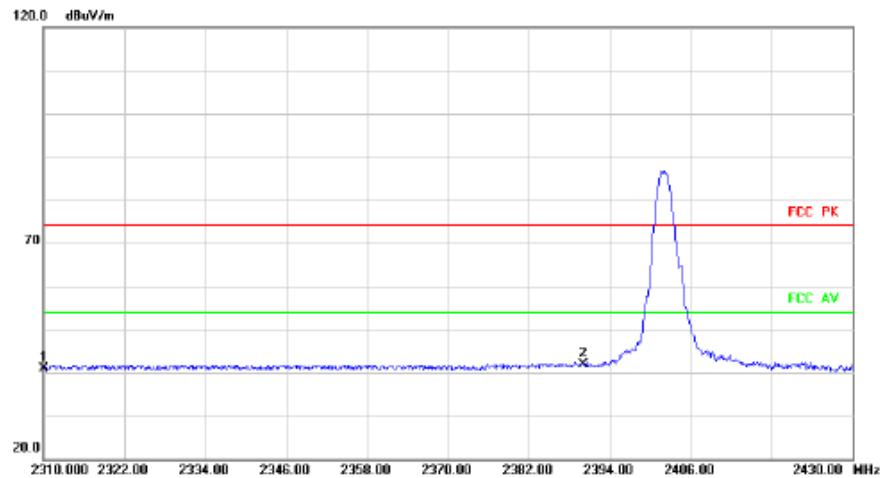
Test Mode	TX 2402 MHz_1Mbps	Polarization	Horizontal
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Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
			Level	Factor	ment					Degree
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4804.000	49.95	-3.72	46.23	74.00	-27.77	peak		

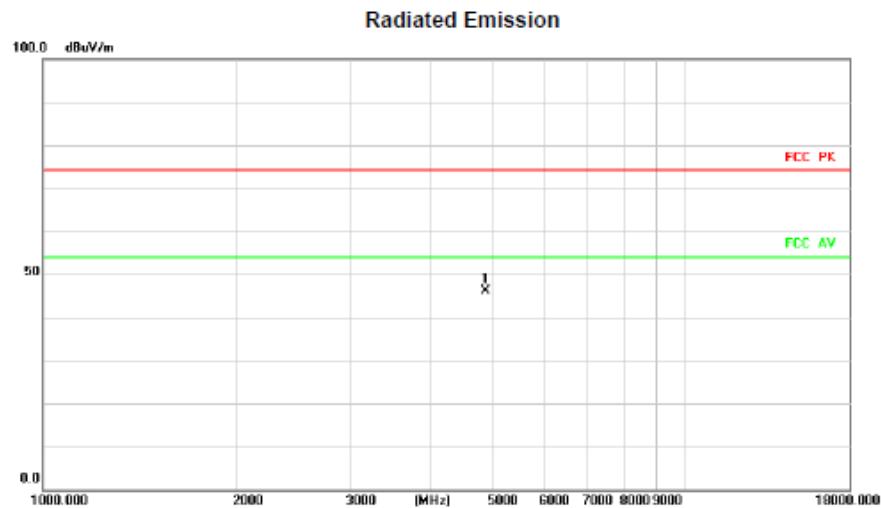
Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
			Level	Factor	ment					Degree
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	53.31	-12.53	40.78	74.00	-33.22	peak		
2	*	2390.000	54.11	-12.27	41.84	74.00	-32.16	peak		

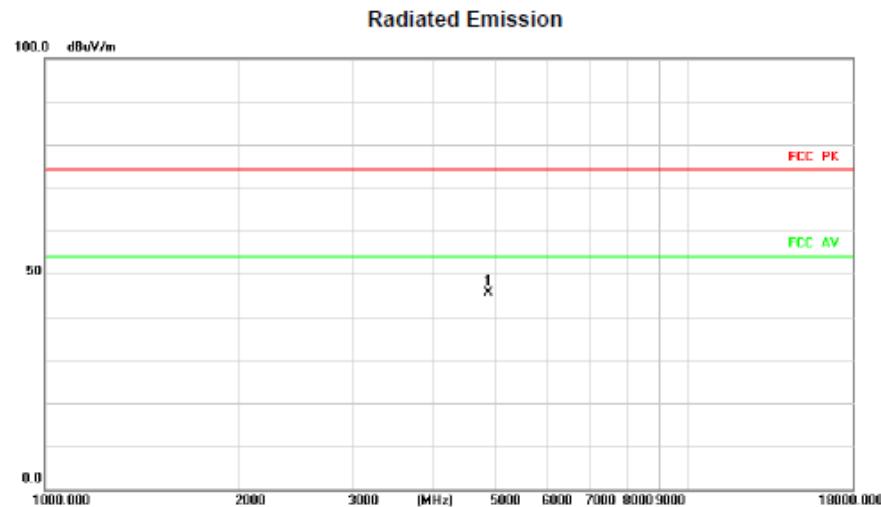


Test Mode	TX 2440 MHz_1Mbps	Polarization	Vertical
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	Comment	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4880.000	50.13	-3.95	46.18	74.00	-27.82	peak			

Test Mode	TX 2440 MHz_1Mbps	Polarization	Horizontal
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	Comment	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4880.000	49.69	-3.95	45.74	74.00	-28.26	peak			



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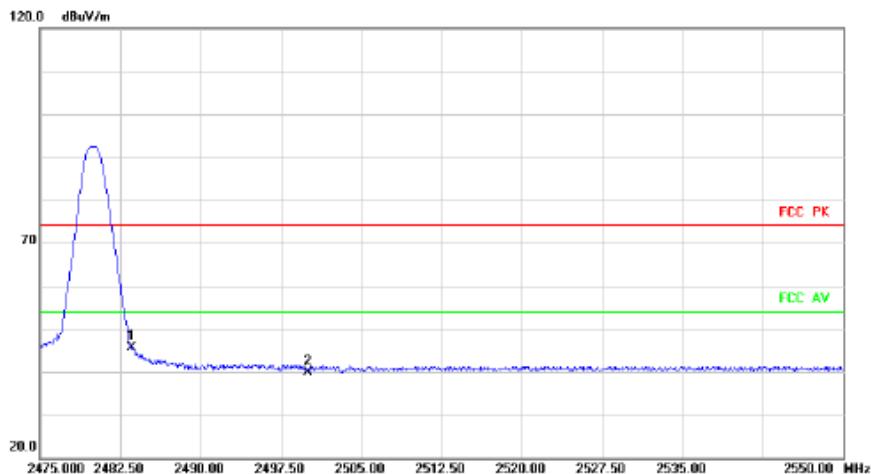
Test Mode	TX 2480 MHz_1Mbps	Polarization	Vertical
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Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	Antenna Height	Table Degree	Comment	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	
1	*	4980.000	51.30	-4.02	47.28	74.00	-26.72	peak			

Radiated Emission



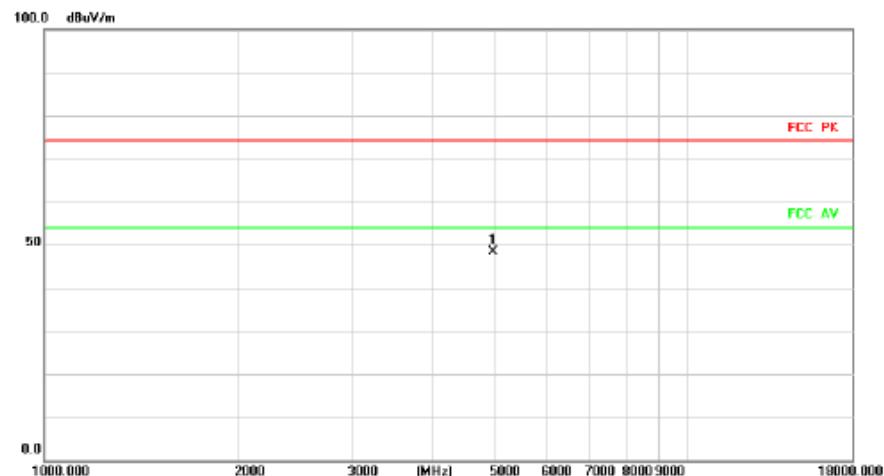
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	Antenna Height	Table Degree	Comment	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	
1	*	2483.500	57.09	-11.38	45.71	74.00	-28.29	peak			
2		2500.000	51.07	-11.17	39.90	74.00	-34.10	peak			



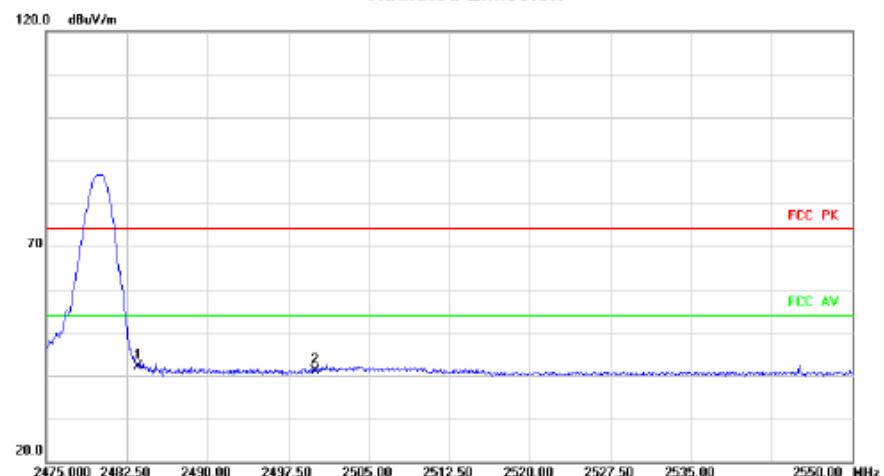
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Test Mode	TX 2480 MHz_1Mbps	Polarization	Horizontal
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Radiated Emission

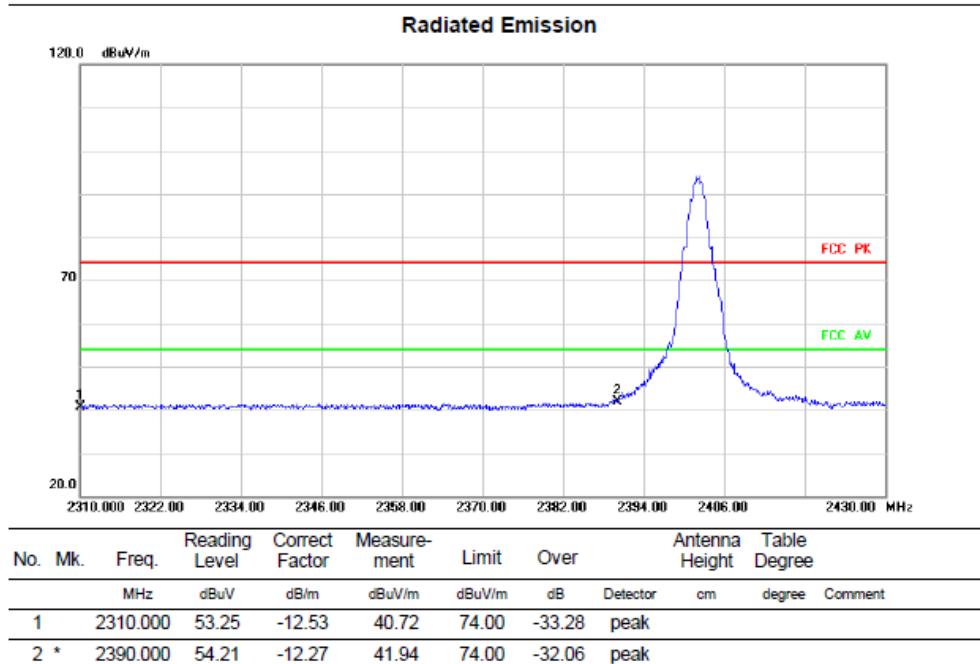
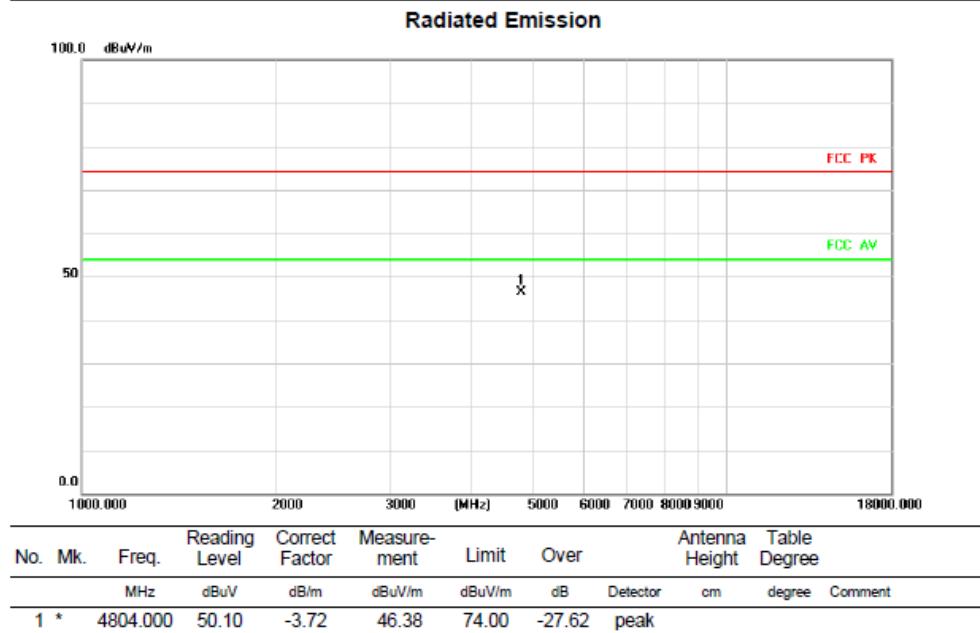


Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
1	*	2483.500	53.50	-11.38	42.12	74.00	-31.88	peak	
2		2500.000	52.42	-11.17	41.25	74.00	-32.75	peak	

Test Mode	TX 2402 MHz_2Mbps	Polarization	Vertical
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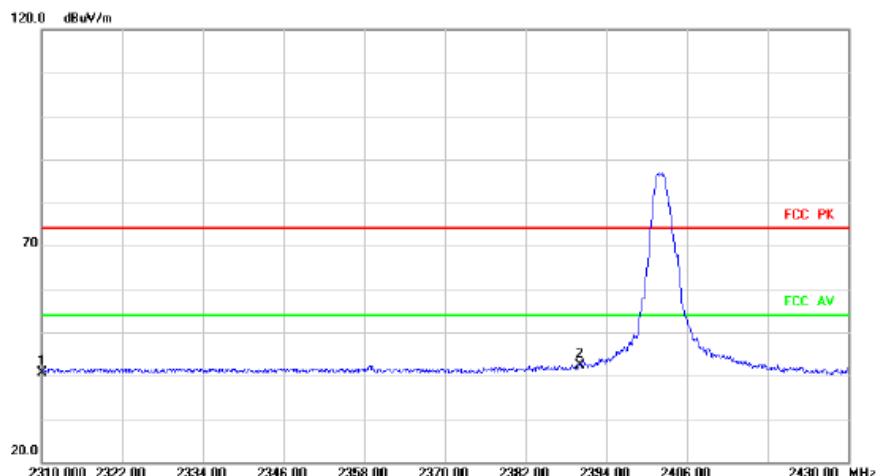
Test Mode	TX 2402 MHz_2Mbps	Polarization	Horizontal
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Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table		
			Level	Factor	ment						
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1 *		4804.000	51.63	-3.72	47.91	74.00	-26.09	peak			

Radiated Emission

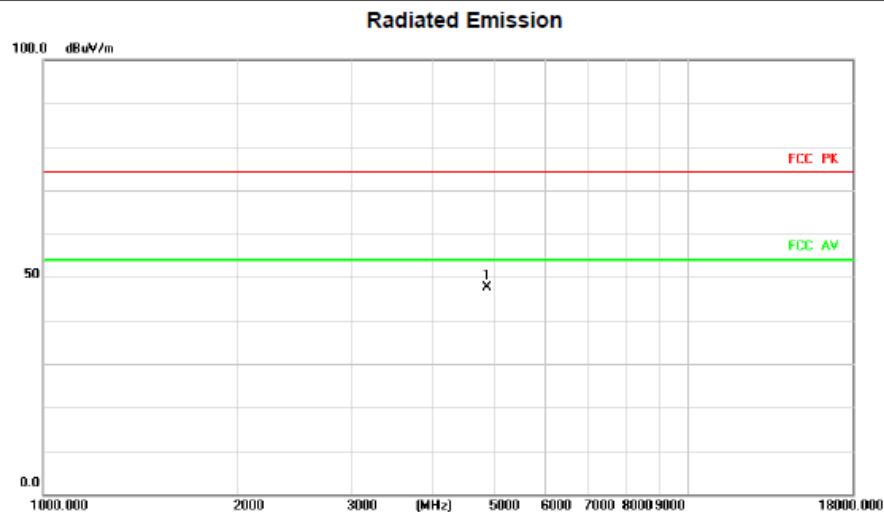


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table		
			Level	Factor	ment						
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	53.12	-12.53	40.59	74.00	-33.41	peak			
2 *		2390.000	54.61	-12.27	42.34	74.00	-31.66	peak			



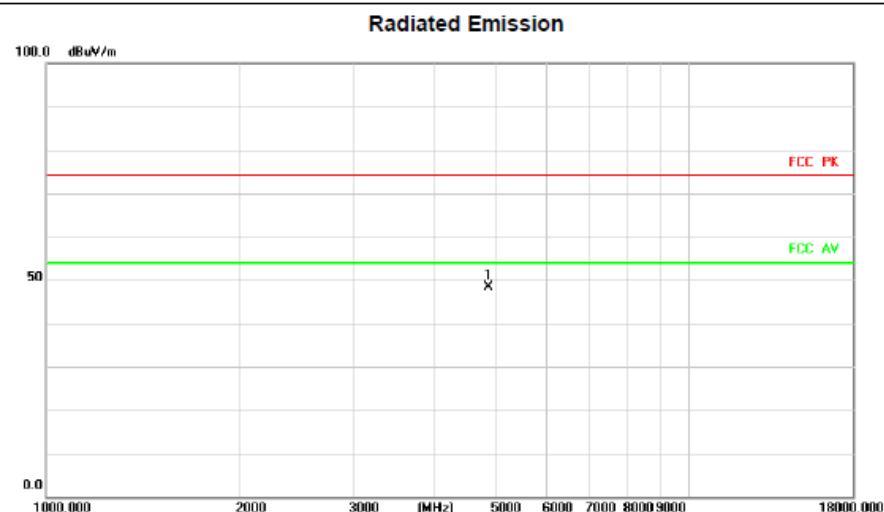
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Test Mode	TX 2440 MHz_2Mbps	Polarization	Vertical
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	Comment	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1 *		4880.000	51.53	-3.95	47.58	74.00	-26.42	peak			

Test Mode	TX 2440 MHz_2Mbps	Polarization	Horizontal
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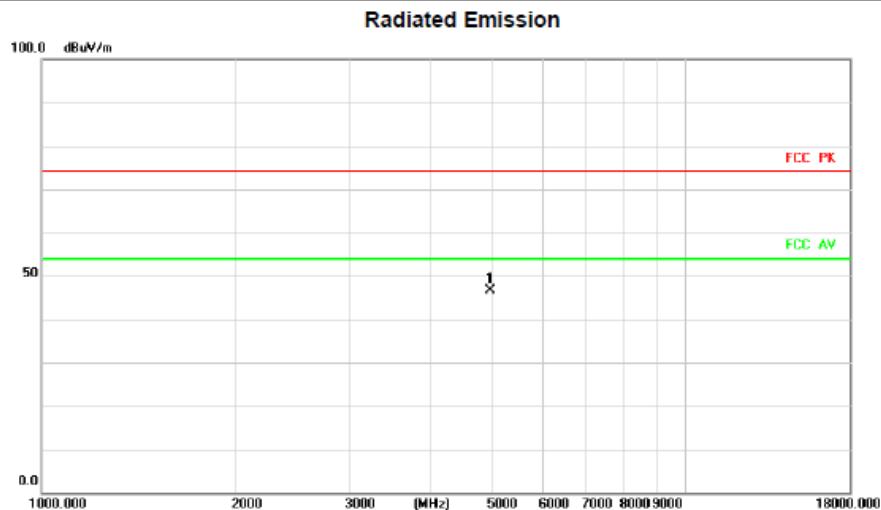


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	Comment	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1 *		4880.000	52.26	-3.95	48.31	74.00	-25.69	peak			

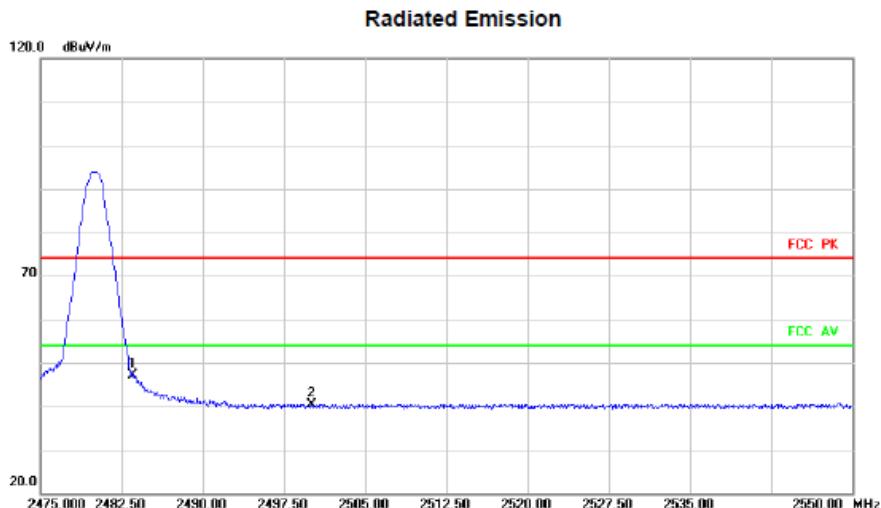


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Test Mode	TX 2480 MHz_2Mbps	Polarization	Vertical
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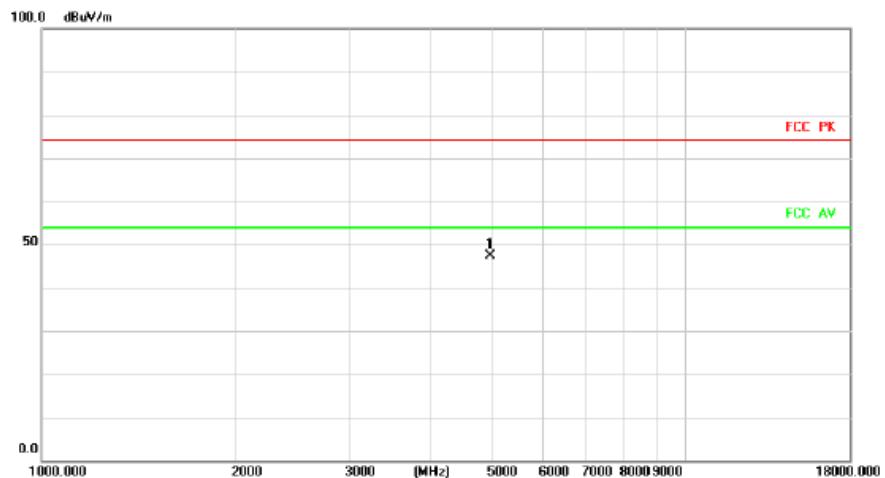
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	Comment	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1 *		4960.000	50.53	-4.02	46.51	74.00	-27.49	peak			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	Comment	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1 *		2483.500	58.59	-11.38	47.21	74.00	-26.79	peak			
2		2500.000	51.57	-11.17	40.40	74.00	-33.60	peak			

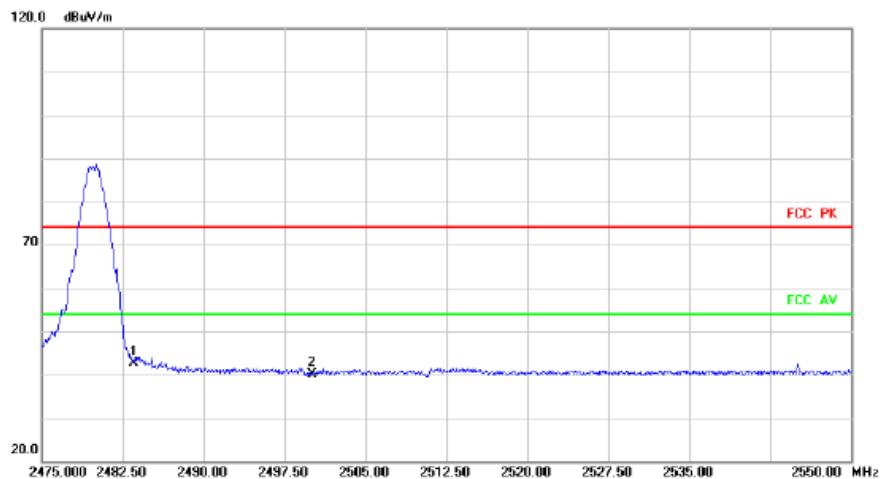
Test Mode	TX 2480 MHz_2Mbps	Polarization	Horizontal
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Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
			Level	Factor	ment			Height	Degree	
		MHz	dBuV	dB/m	dBuV/m	dB	Detector	cm	degree	Comment
1 *		4960.000	51.38	-4.02	47.36	74.00	-26.64	peak		

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
			Level	Factor	ment			Height	Degree	
		MHz	dBuV	dB/m	dBuV/m	dB	Detector	cm	degree	Comment
1 *		2483.500	54.00	-11.38	42.62	74.00	-31.38	peak		
2		2500.000	51.42	-11.17	40.25	74.00	-33.75	peak		

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

The high frequency, which started from 18GHz to 25GHz, was pre-scanned and the result which was 20dB lower than the limit line was not recorded in this report.

APPENDIX E - BANDWIDTH

DTS Bandwidth

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.636	2401.716	2402.352	0.5	PASS
BLE_1M	Ant1	2440	0.628	2439.720	2440.348	0.5	PASS
BLE_1M	Ant1	2480	0.632	2479.720	2480.352	0.5	PASS
BLE_2M	Ant1	2402	1.088	2401.492	2402.580	0.5	PASS
BLE_2M	Ant1	2440	1.100	2439.492	2440.592	0.5	PASS
BLE_2M	Ant1	2480	1.112	2479.492	2480.604	0.5	PASS

Test Graphs









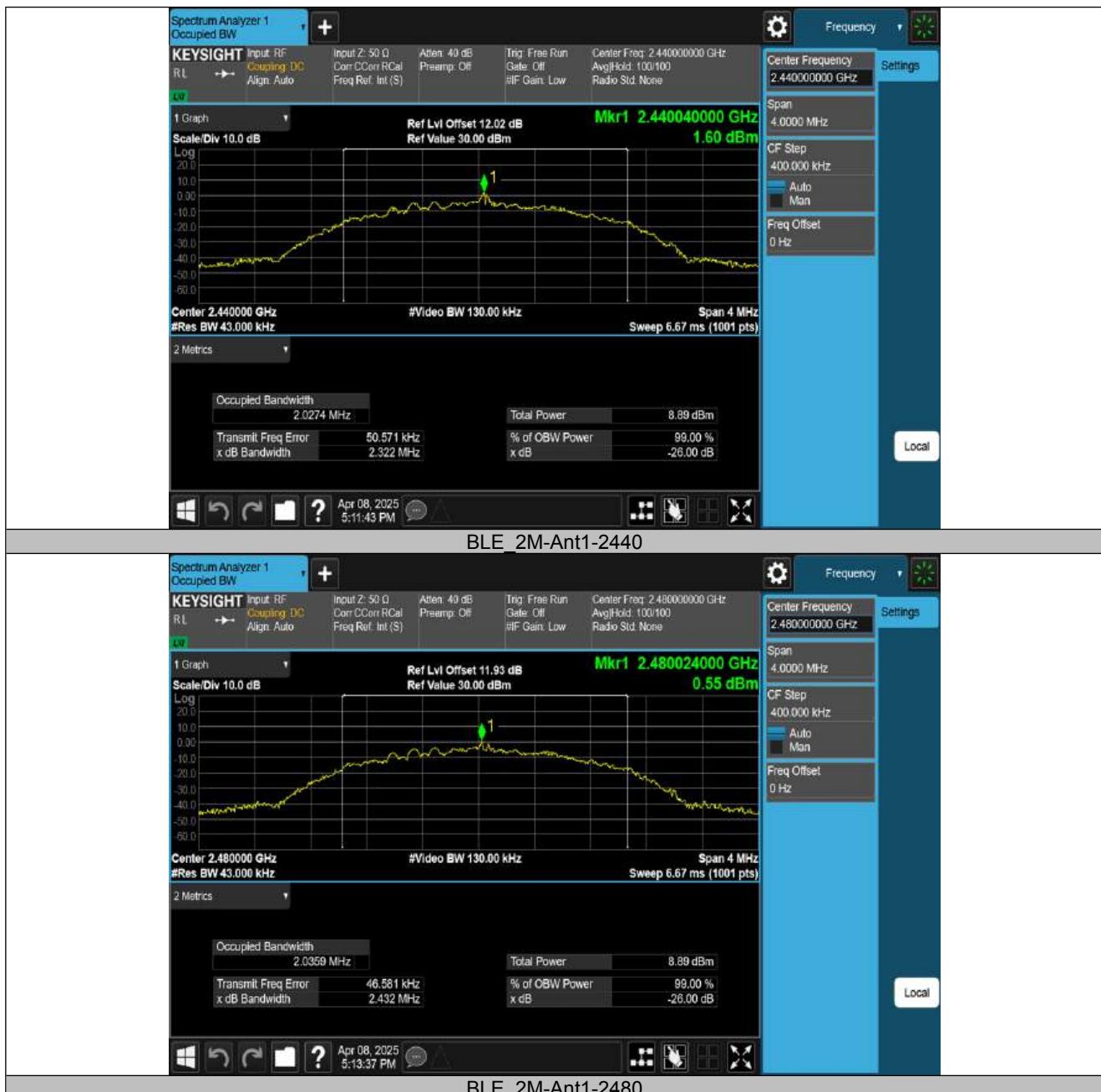
Occupied Channel Bandwidth

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0227	2401.5245	2402.5472	---	---
BLE_1M	Ant1	2440	1.0210	2439.5264	2440.5474	---	---
BLE_1M	Ant1	2480	1.0259	2479.5217	2480.5476	---	---
BLE_2M	Ant1	2402	2.0256	2401.0363	2403.0619	---	---
BLE_2M	Ant1	2440	2.0274	2439.0369	2441.0643	---	---
BLE_2M	Ant1	2480	2.0359	2479.0286	2481.0645	---	---

Test Graphs





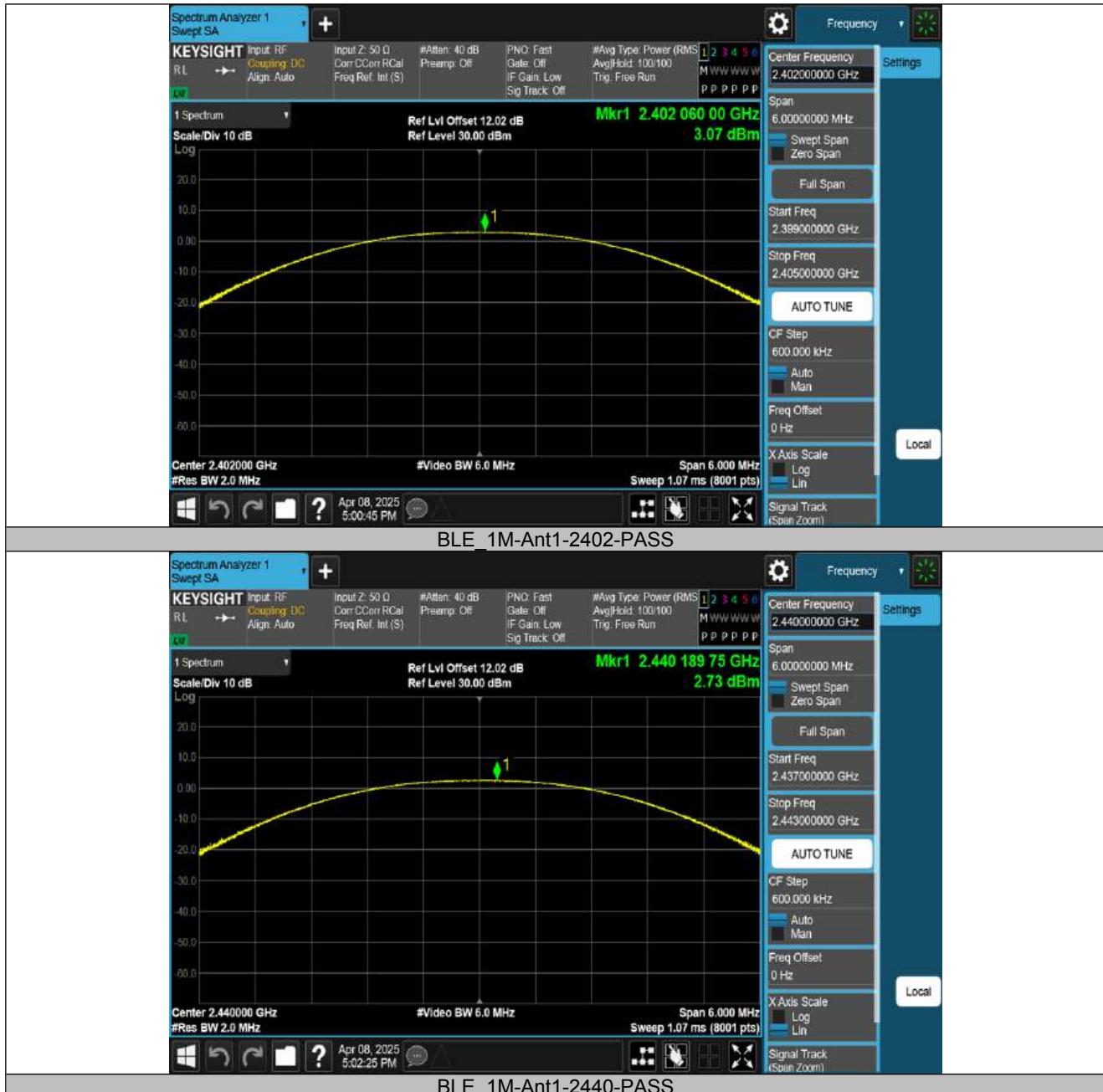


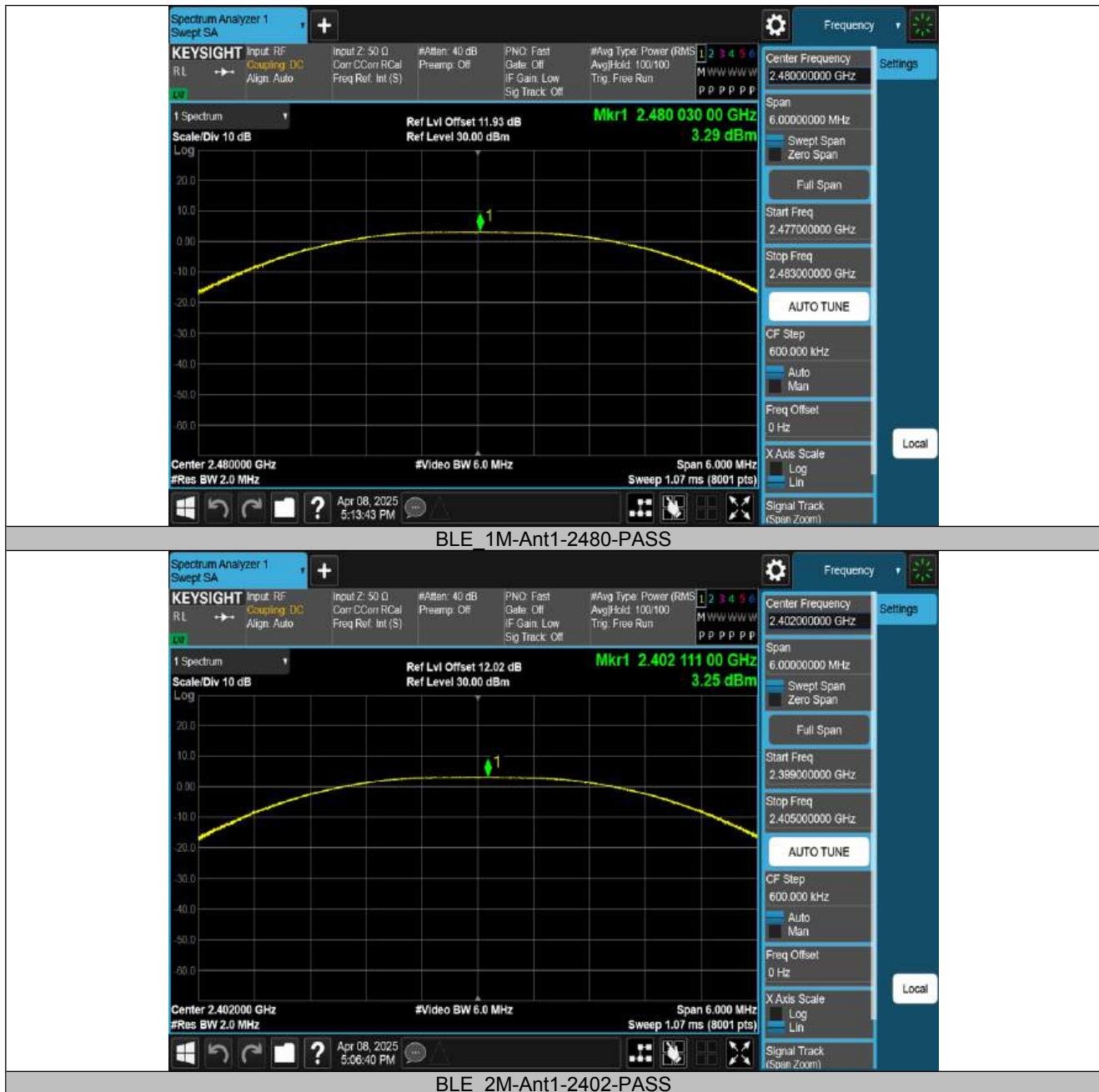
APPENDIX F - MAXIMUM OUTPUT POWER

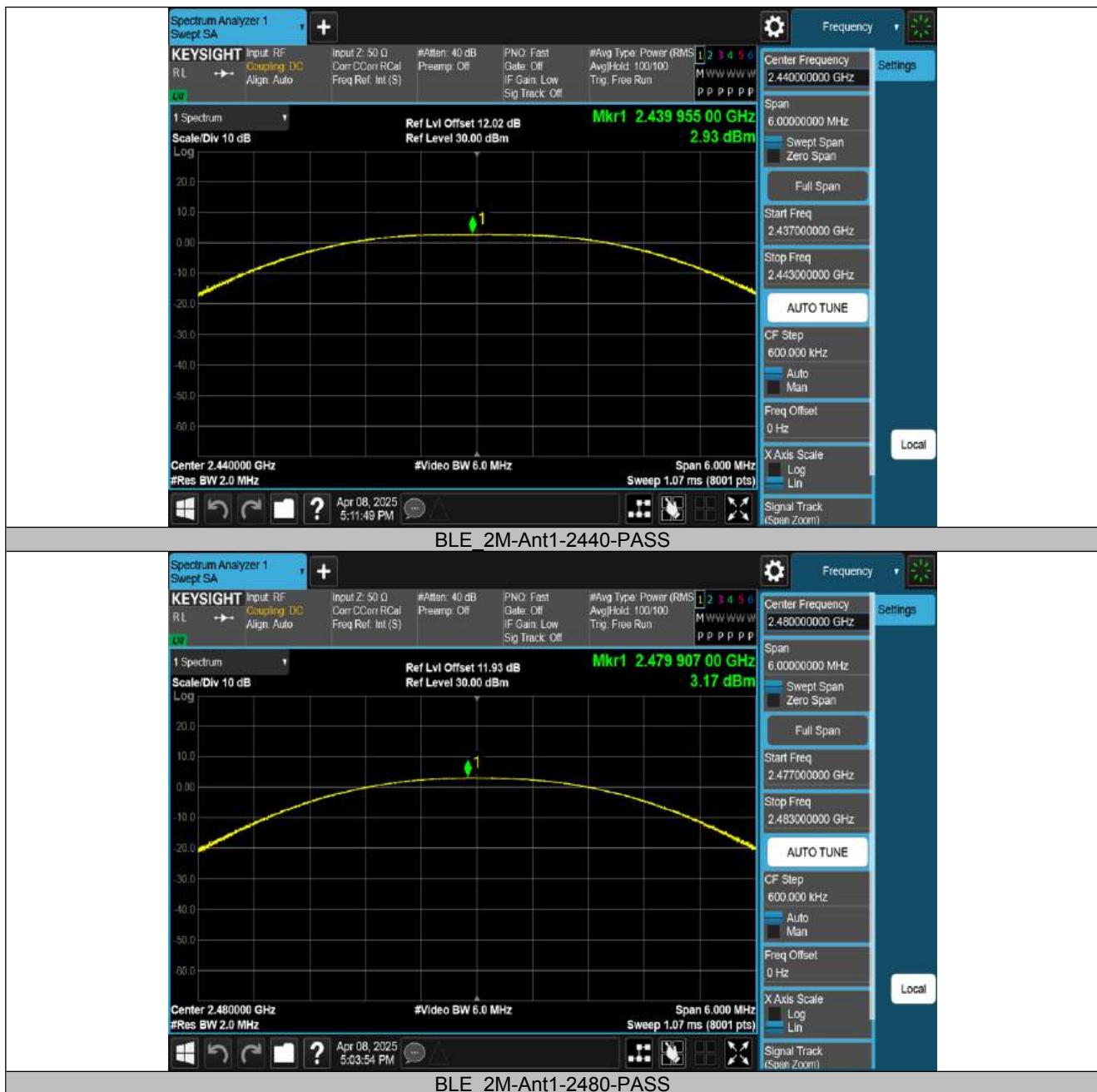
TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	3.07	≤30	PASS
BLE_1M	Ant1	2440	2.74	≤30	PASS
BLE_1M	Ant1	2480	3.29	≤30	PASS
BLE_2M	Ant1	2402	3.25	≤30	PASS
BLE_2M	Ant1	2440	2.94	≤30	PASS
BLE_2M	Ant1	2480	3.17	≤30	PASS



Test Graphs Peak





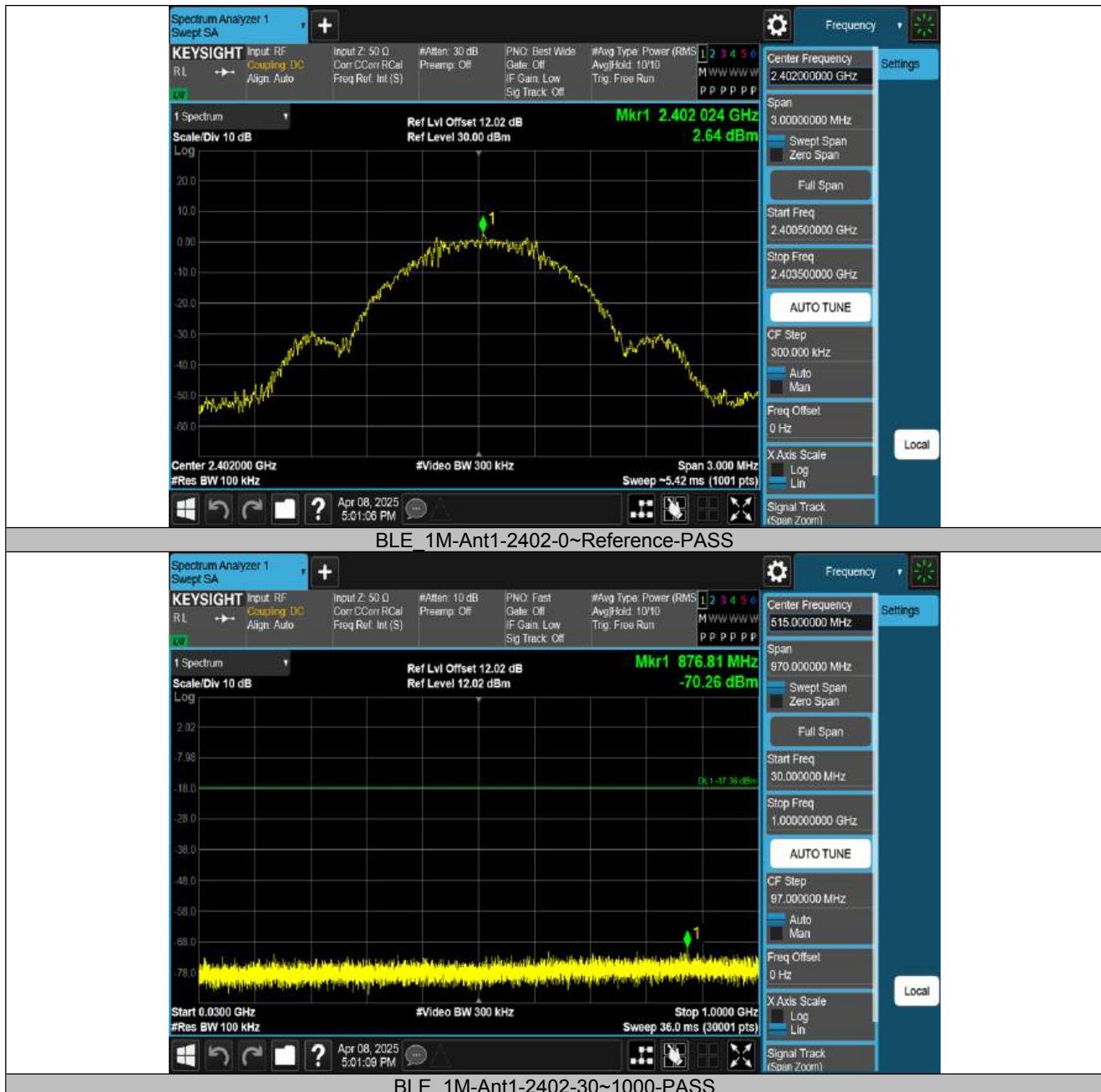




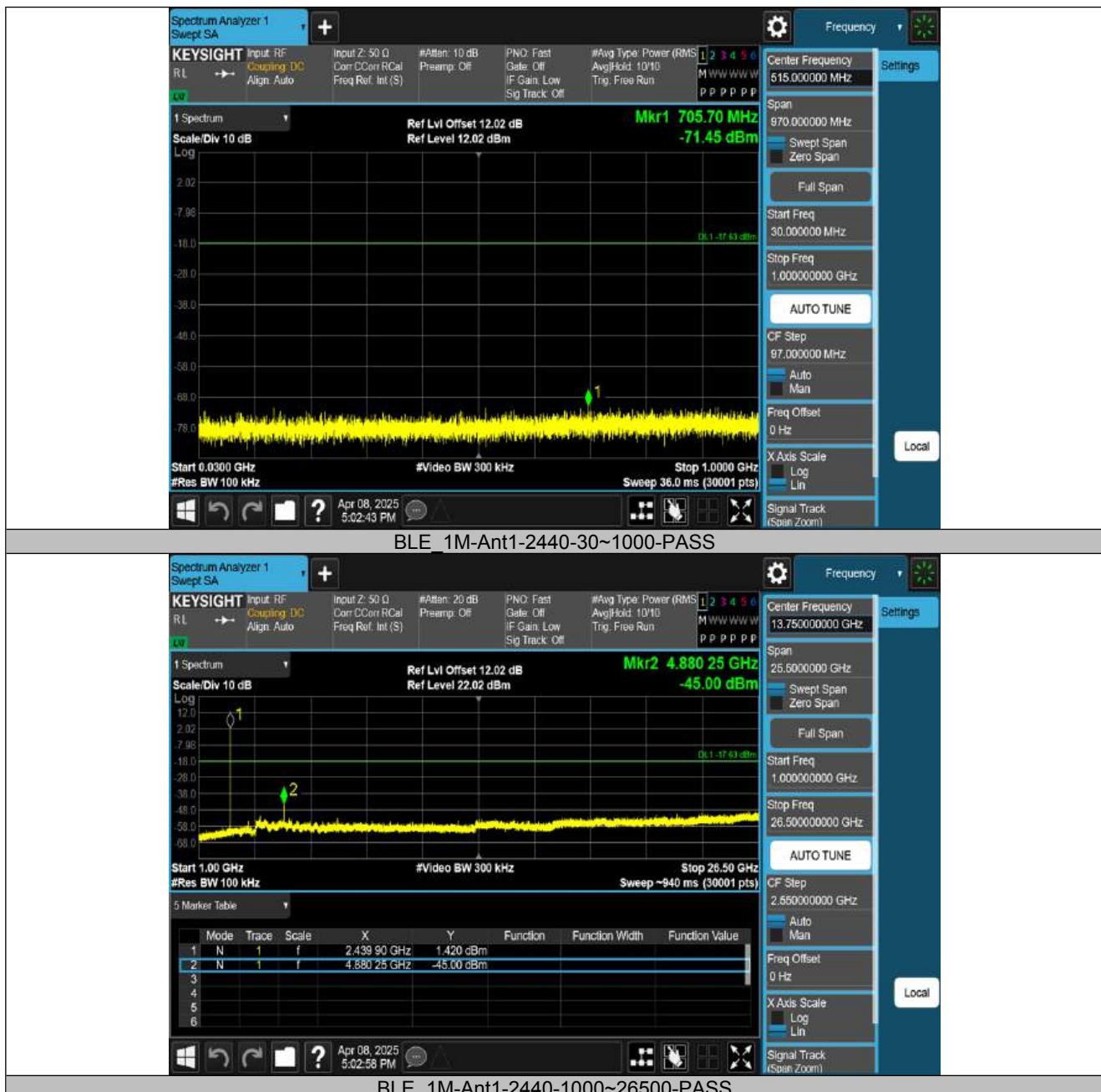
APPENDIX G - CONDUCTED SPURIOUS EMISSION



Conducted Spurious Emission







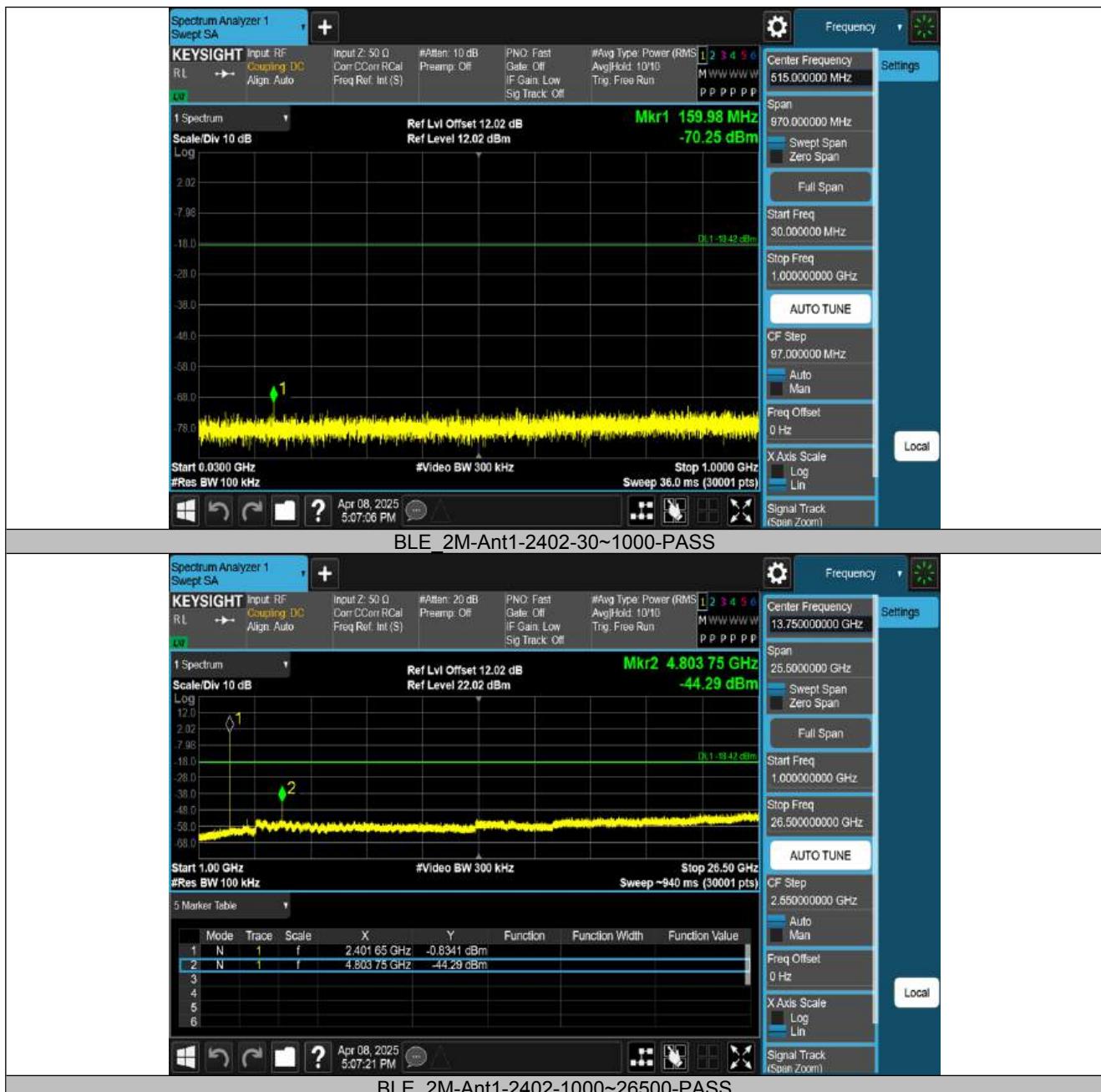


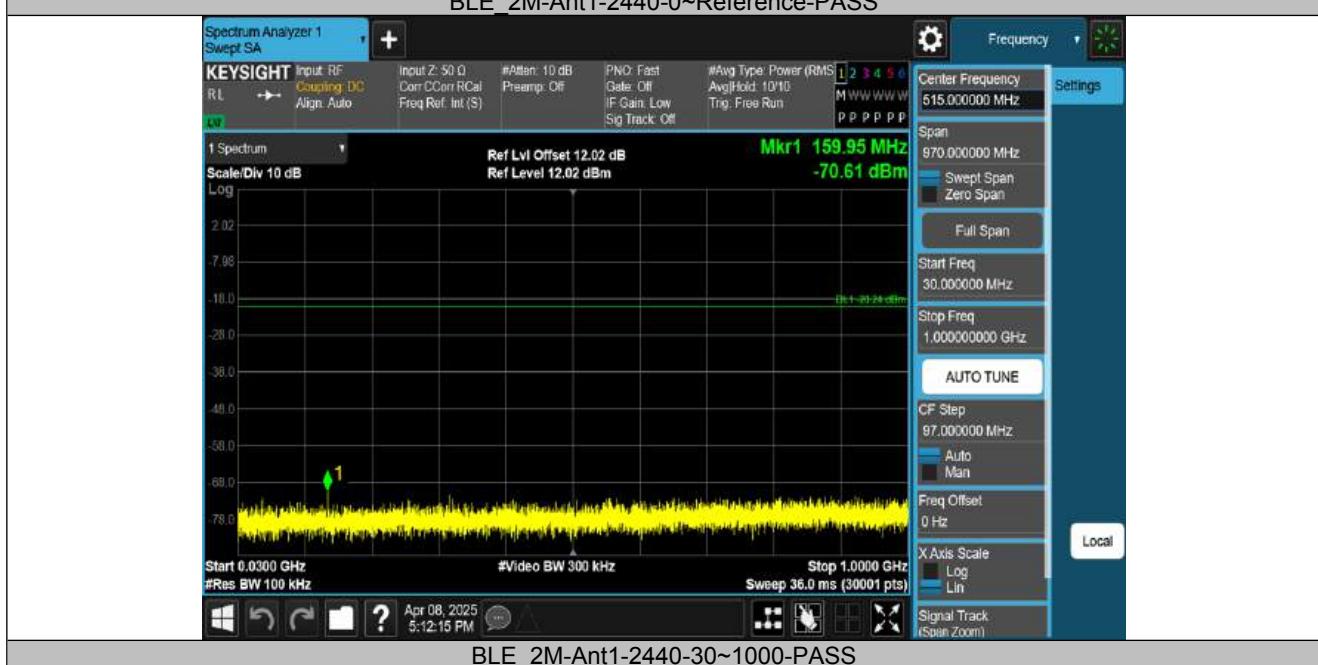
BLE_1M-Ant1-2480-0~Reference-PASS

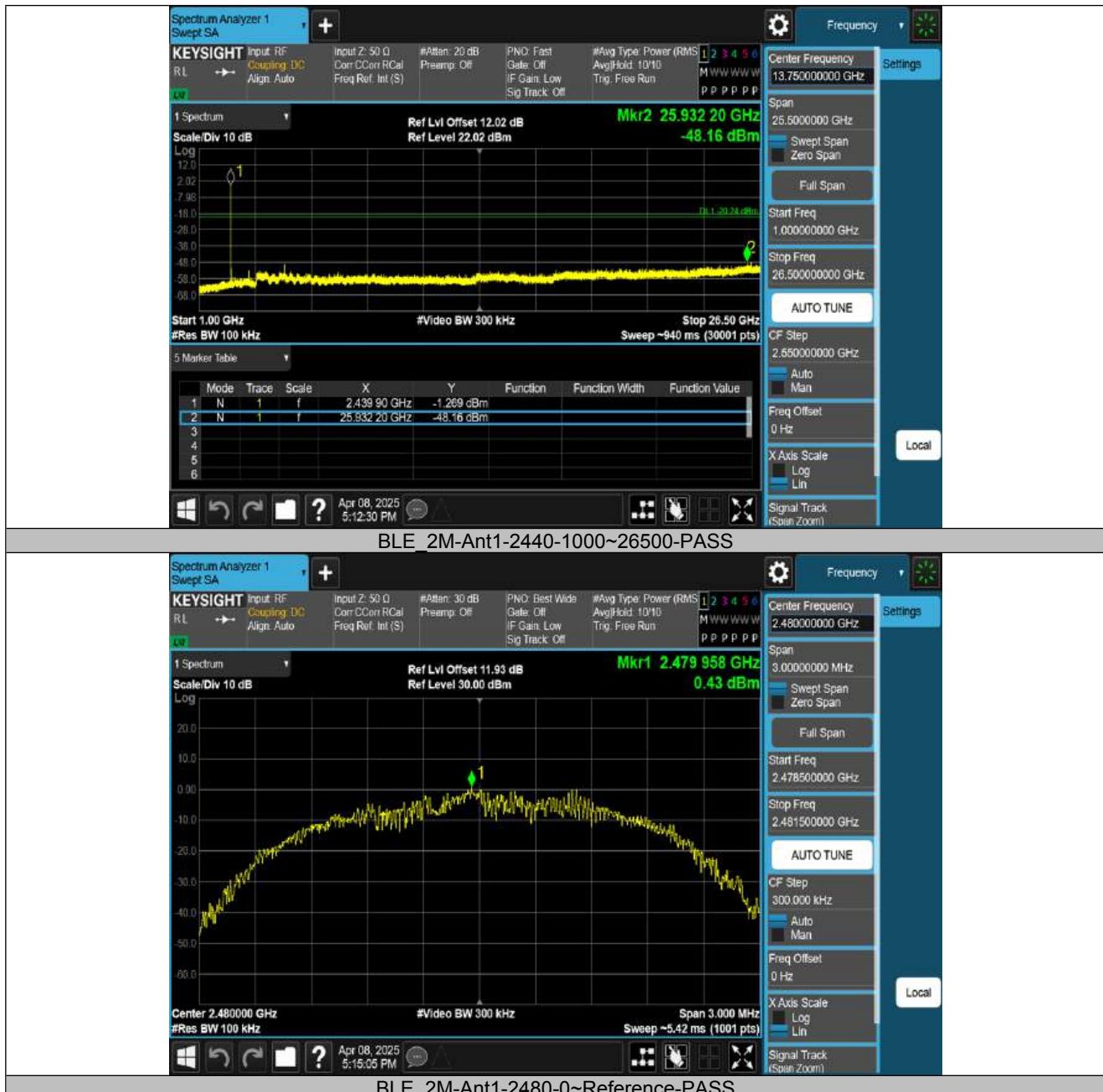


BLE_1M-Ant1-2480-30~1000-PASS











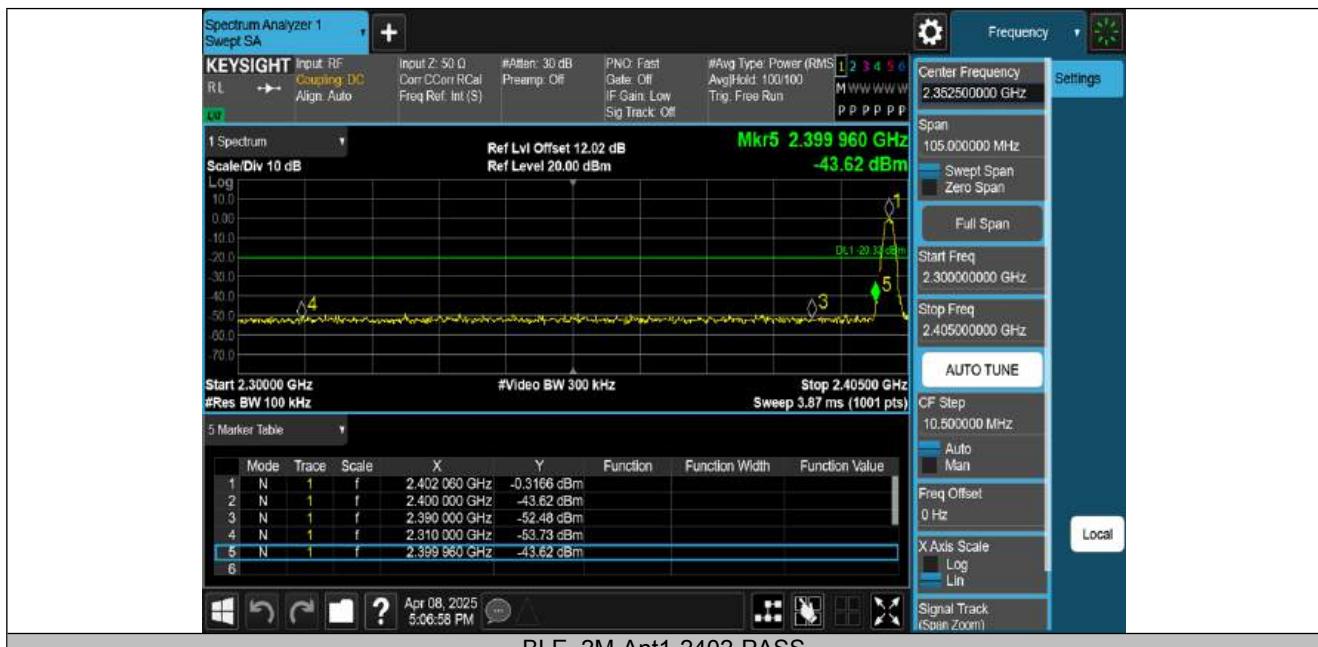
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Band edge measurements



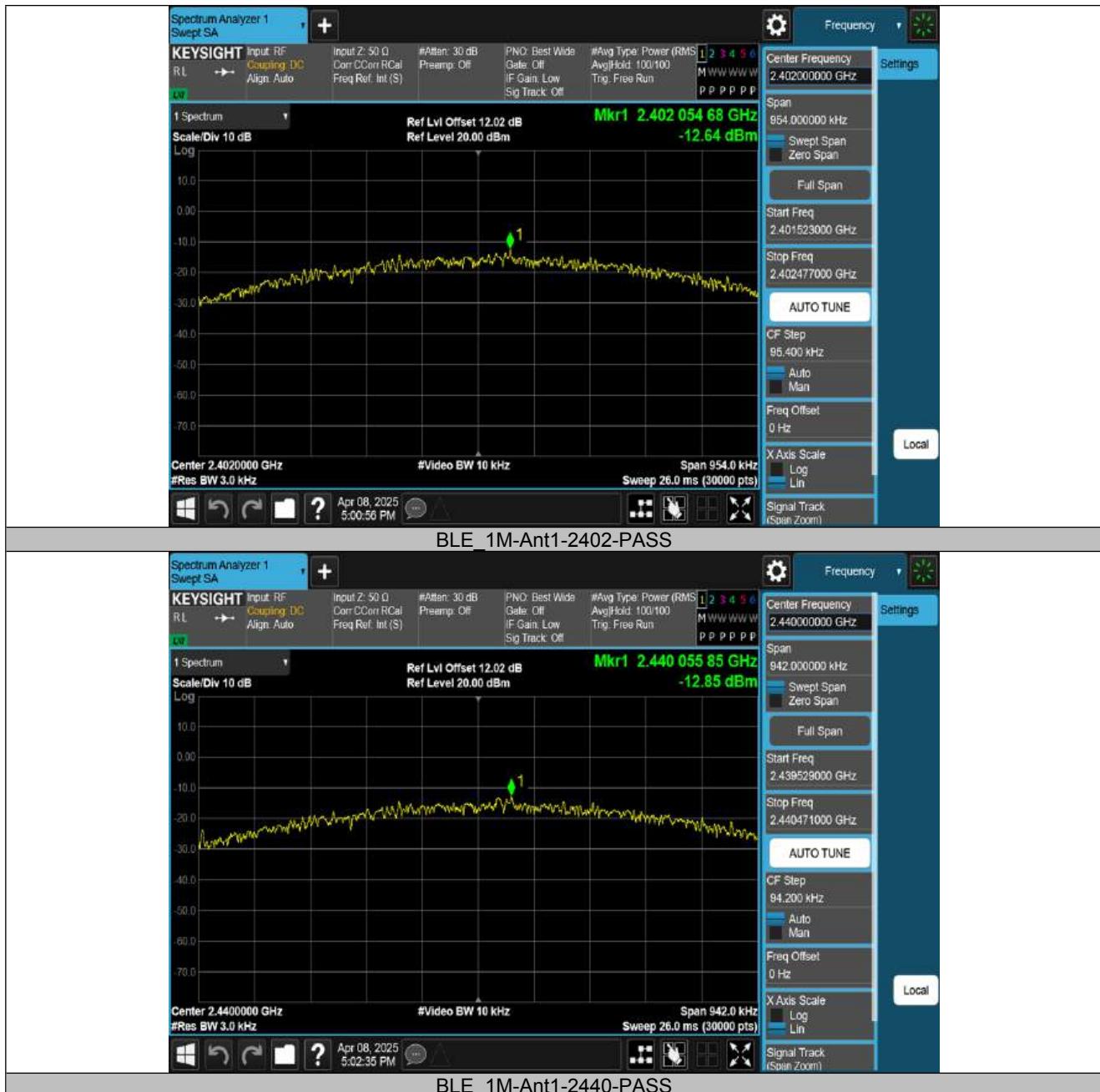


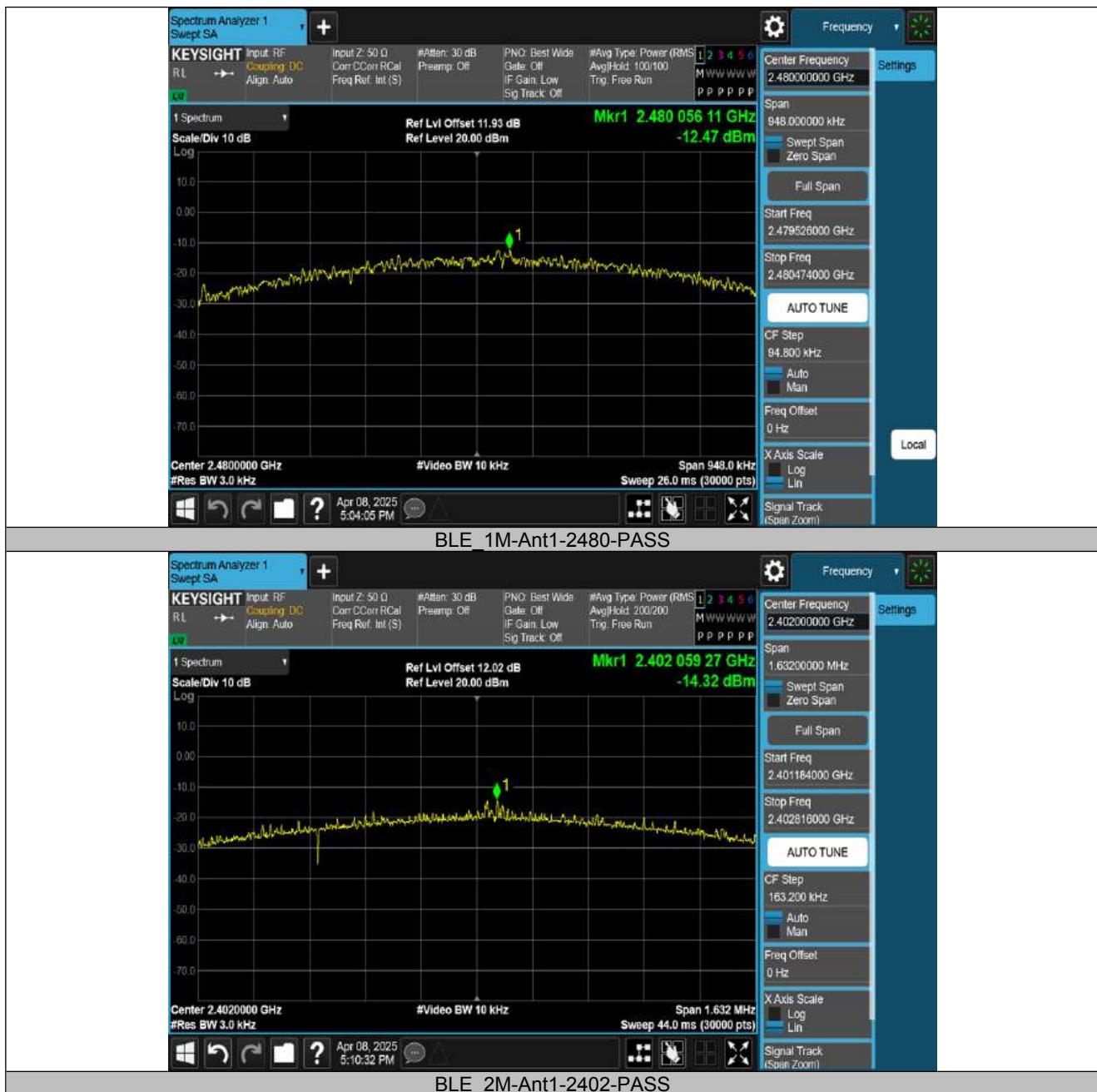
APPENDIX H - POWER SPECTRAL DENSITY

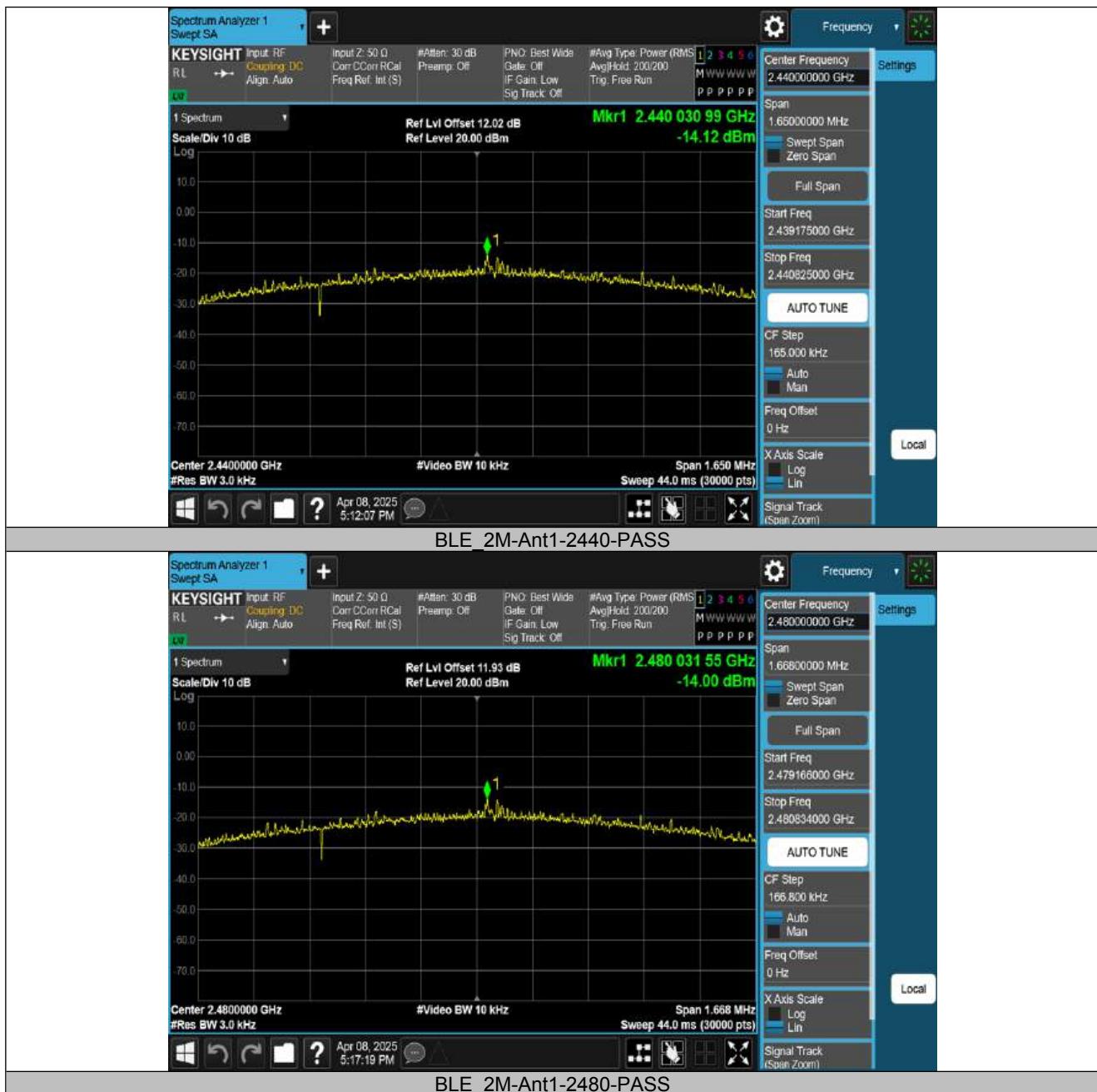
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-12.64	≤8.00	PASS
BLE_1M	Ant1	2440	-12.85	≤8.00	PASS
BLE_1M	Ant1	2480	-12.47	≤8.00	PASS
BLE_2M	Ant1	2402	-14.29	≤8.00	PASS
BLE_2M	Ant1	2440	-14.12	≤8.00	PASS
BLE_2M	Ant1	2480	-14.01	≤8.00	PASS



Test Graphs







Statement

1. The report is invalid without the official seal or special seal of Shenzhen Haiyun Standard Technology Co., Ltd. (hereinafter referred to as the unit).
2. The report is invalid without the signature of the approver.
3. The report is invalid if altered arbitrarily.
4. The report shall not be partially copied without the written approval of the unit.
5. The reported test results are only valid for the tested samples.
6. If there is any objection to the test report, it shall be submitted to the test unit within 15 days from the date of receiving the report, and the overdue shall not be accepted.

Shenzhen Haiyun Standard Technology Co., Ltd.

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Tel: 0755-26024411

Email: service@hy-lab.cn

End of Test Report