

Test Report

Report No.: MTi240424012-17E1
Date of issue: 2024-06-04
Applicant: SHENZHEN POWEROAK NEWENER CO., LTD
Product: Portable Power Station
Model(s): AC240P
FCC ID: 2AYT3-AC240P

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.cn>

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Test Result Certification	
Applicant:	SHENZHEN POWEROAK NEWENER CO., LTD
Address:	F19, BLD No.1, Kaidaer, Tongsha Rd No.168, Xili Street, Nanshan, Shenzhen, China
Manufacturer:	SHENZHEN POWEROAK NEWENER CO., LTD
Address:	F19, BLD No.1, Kaidaer, Tongsha Rd No.168, Xili Street, Nanshan, Shenzhen, China
Product description	
Product name:	Portable Power Station
Trade mark:	BLUETTI
Model name:	AC240P
Series Model(s):	N/A
Standards:	47 CFR Part 15.247
Test Method:	ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02
Date of Test	
Date of test:	2024-05-28 to 2024-05-31
Test result:	Pass

Test Engineer	:	<i>James Qin</i>
		(James Qin)
Reviewed By	:	<i>David. Lee</i>
		(David Lee)
Approved By	:	<i>Leon Chen</i>
		(Leon Chen)

1 General Description

1.1 Description of the EUT

Product name:	Portable Power Station
Model name:	AC240P
Series Model(s):	N/A
Model difference:	N/A
Electrical rating:	Input: AC: 120V 50/60Hz, 20A Max DC: 11V-30V/ 8.2A PV: 11V-60V/ 21A Max., 1200W Max. Output: AC: 120V~ 50/60Hz, 2400VA, 2400W Max. DC: 12V/ 30A USB-A: DC5V/ 3A, 9V/ 2A, 12V/ 1.5A, 18W Each USB-C: DC 5/9/12/15/20V 3A, 20V5A Cigarette Lighter port: DC 12V/ 10A AC and DC output: 2500W Total Battery Capacity: 1843Wh, DC51.2V/ 36Ah
Hardware version:	19.0601.0718-02
Software version:	2160-02
Accessories:	N/A
Test sample(s) number:	MTi240424012-17S1001
RF specification	
Operating frequency range:	802.11b/g/n20:2412~2462 MHz 802.11n40:2422~2452 MHz
Modulation type:	IEEE 802.11b : DSSS (DBPSK, DQPSK, CCK) IEEE 802.11g/n (HT20/HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna(s) type:	PCB ANT
Antenna(s) gain:	3.76 dBi

1.2 Description of test modes

No.	Emission test modes
Mode1	TX-802.11b
Mode2	TX-802.11g
Mode3	TX-802.11N(HT20)
Mode4	TX-802.11N(HT40)

1.2.1 Operation channel list

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447	/	/

Note: The test software provided by manufacturer is used to control EUT for working in engineering mode, that enables selectable channel, and capable of continuous transmitting mode.

Test Software:	EspRFTTestTool		
802.11b		802.11g	
Channel	Power setting	Channel	Power setting
1	0	1	0
6	0	6	0
13	0	13	0
802.11n (HT20)		802.11n (HT40)	
Channel	Power setting	Channel	Power setting
1	0	3	0
6	0	6	0
13	0	9	0

1.3 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C ~ 35°C
Humidity:	20% RH ~ 75% RH
Atmospheric pressure:	98 kPa ~ 101 kPa

1.4 Description of support units

Support equipment list			
Description	Model	Serial No.	Manufacturer
/	/	/	/

Support cable list			
Description	Length (m)	From	To
/	/	/	/

1.5 Measurement uncertainty

Measurement	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	±3.1dB
Occupied channel bandwidth	±3 %
RF output power, conducted	±1 dB
Power Spectral Density, conducted	±1 dB
Unwanted Emissions, conducted	±1 dB
Temperature	±1 °C
Humidity	± 5 %

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

2 Summary of Test Result

No.	Item	Standard	Requirement	Result
1	Antenna requirement	47 CFR Part 15.247	47 CFR 15.203	Pass
2	Conducted Emission at AC power line	47 CFR Part 15.247	47 CFR 15.207(a)	Pass
3	6dB Bandwidth	47 CFR Part 15.247	47 CFR 15.247(a)(2)	Pass
4	Maximum Conducted Output Power	47 CFR Part 15.247	47 CFR 15.247(b)(3)	Pass
5	Power Spectral Density	47 CFR Part 15.247	47 CFR 15.247(e)	Pass
6	RF conducted spurious emissions and band edge measurement	47 CFR Part 15.247	47 CFR 15.247(d), 15.209, 15.205	Pass
7	Band edge emissions (Radiated)	47 CFR Part 15.247	47 CFR 15.247(d), 15.209, 15.205	Pass
8	Radiated emissions (below 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d), 15.209, 15.205	Pass
9	Radiated emissions (above 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d), 15.209, 15.205	Pass

3 Test Facilities and accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No.7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573
IC Registration No.:	21760
CABID:	CN0093

4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
Conducted Emission at AC power line						
1	EMI Test Receiver	Rohde&schwarz	ESCI3	101368	2024-03-20	2025-03-19
2	Artificial mains network	Schwarzbeck	NSLK 8127	183	2024-03-21	2025-03-20
3	Artificial Mains Network	Rohde & Schwarz	ESH2-Z5	100263	2024-03-20	2025-03-19
6dB Bandwidth Maximum Conducted Output Power Power Spectral Density RF conducted spurious emissions and band edge measurement						
1	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2024-03-20	2025-03-19
2	ESG Series Analog Ssignal Generator	Agilent	E4421B	GB40051240	2024-03-21	2025-03-20
3	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2024-03-21	2025-03-20
4	Synthesized Sweeper	Agilent	83752A	3610A01957	2024-03-21	2025-03-20
5	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2024-03-21	2025-03-20
6	RF Control Unit	Tonscend	JS0806-1	19D8060152	2024-03-21	2025-03-20
7	Band Reject Filter Group	Tonscend	JS0806-F	19D8060160	2024-03-21	2025-03-20
8	ESG Vector Signal Generator	Agilent	N5182A	MY50143762	2024-03-20	2025-03-19
9	DC Power Supply	Agilent	E3632A	MY40027695	2024-03-21	2025-03-20
Band edge emissions (Radiated) Radiated emissions (above 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2024-03-20	2025-03-19
2	Double Ridged Broadband Horn Antenna	schwarabeck	BBHA 9120 D	2278	2023-06-17	2025-06-16
3	Amplifier	Agilent	8449B	3008A01120	2024-03-20	2025-03-19
4	MXA signal analyzer	Agilent	N9020A	MY54440859	2024-03-21	2025-03-20
5	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2024-03-21	2025-03-20
6	Horn antenna	Schwarzbeck	BBHA 9170	00987	2023-06-17	2025-06-16
7	Pre-amplifier	Space-Dtronics	EWLAN1840 G	210405001	2024-03-21	2025-03-20
Radiated emissions (below 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2024-03-20	2025-03-19
2	TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-1338	2023-06-11	2025-06-10
3	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2024-03-23	2025-03-22
4	Amplifier	Hewlett-Packard	8447F	3113A06184	2024-03-20	2025-03-19

5 Evaluation Results (Evaluation)

5.1 Antenna requirement

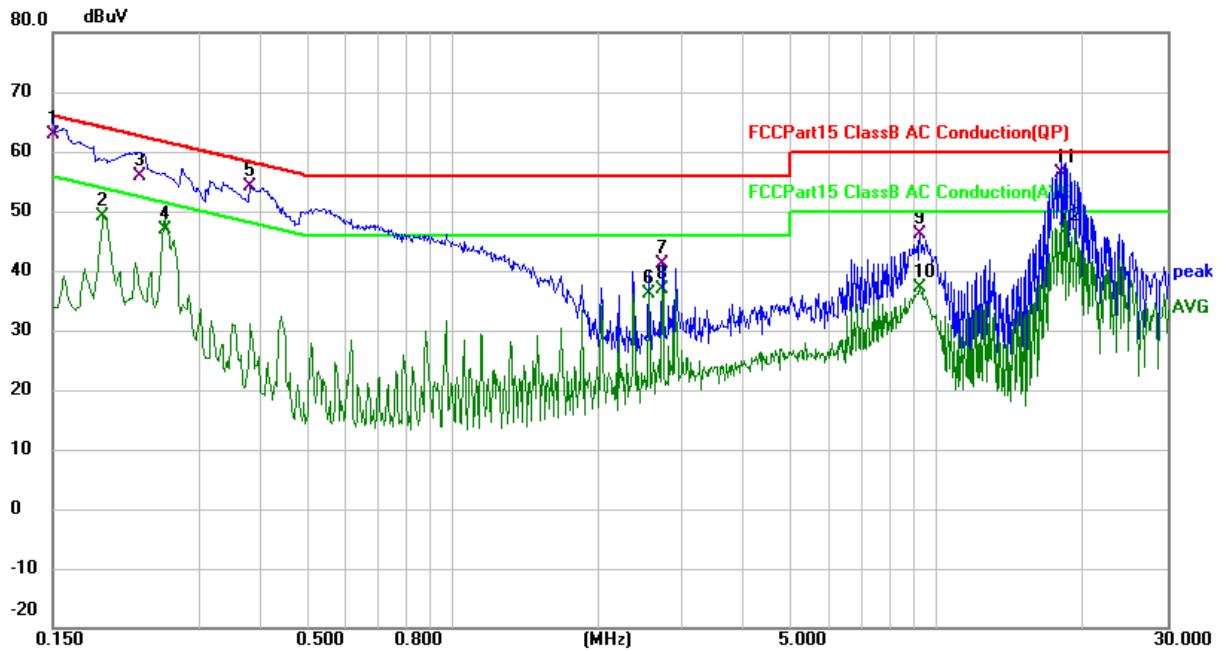
Test Requirement:	Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
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5.1.1 Conclusion:

The antenna of the EUT is permanently attached. The EUT complies with the requirement of FCC PART 15.203.
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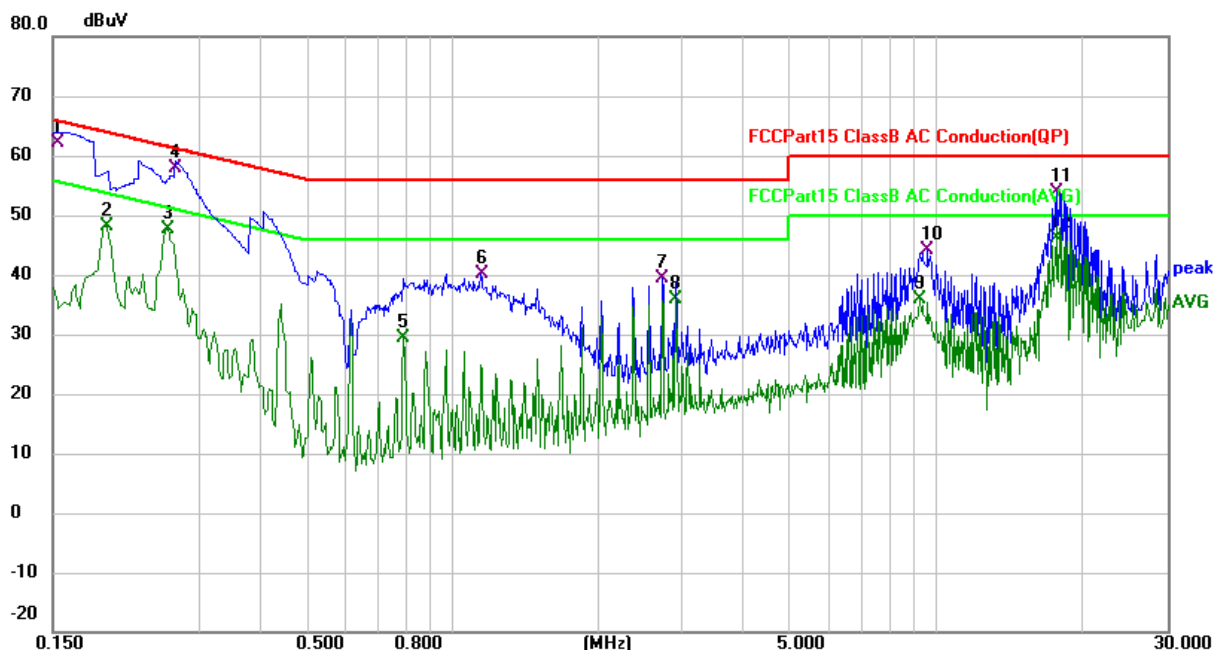
6.1.3 Test Data:

Mode1 / Line: Line / CH: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1507	52.53	10.38	62.91	65.96	-3.05	QP	
2		0.1900	38.36	10.76	49.12	54.04	-4.92	AVG	
3		0.2260	45.15	10.85	56.00	62.60	-6.60	QP	
4		0.2540	35.92	10.91	46.83	51.63	-4.80	AVG	
5		0.3810	42.86	11.22	54.08	58.26	-4.18	QP	
6		2.5579	25.51	10.64	36.15	46.00	-9.85	AVG	
7		2.7339	30.57	10.64	41.21	56.00	-14.79	QP	
8		2.7339	26.21	10.64	36.85	46.00	-9.15	AVG	
9		9.2659	35.29	10.74	46.03	60.00	-13.97	QP	
10		9.2659	26.44	10.74	37.18	50.00	-12.82	AVG	
11		18.1779	45.31	11.12	56.43	60.00	-3.57	QP	
12		18.5300	35.46	11.12	46.58	50.00	-3.42	AVG	

Mode1 / Line: Neutral / CH: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1539	51.63	10.38	62.01	65.79	-3.78	QP	
2		0.1940	37.48	10.76	48.24	53.86	-5.62	AVG	
3		0.2580	36.82	10.93	47.75	51.50	-3.75	AVG	
4	*	0.2686	47.05	10.95	58.00	61.16	-3.16	QP	
5		0.7940	17.34	12.15	29.49	46.00	-16.51	AVG	
6		1.1458	27.29	12.92	40.21	56.00	-15.79	QP	
7		2.7339	28.80	10.64	39.44	56.00	-16.56	QP	
8		2.9140	25.23	10.64	35.87	46.00	-10.13	AVG	
9		9.2659	25.09	10.74	35.83	50.00	-14.17	AVG	
10		9.6178	33.39	10.74	44.13	60.00	-15.87	QP	
11		17.8259	42.86	11.11	53.97	60.00	-6.03	QP	
12		17.8259	34.92	11.11	46.03	50.00	-3.97	AVG	

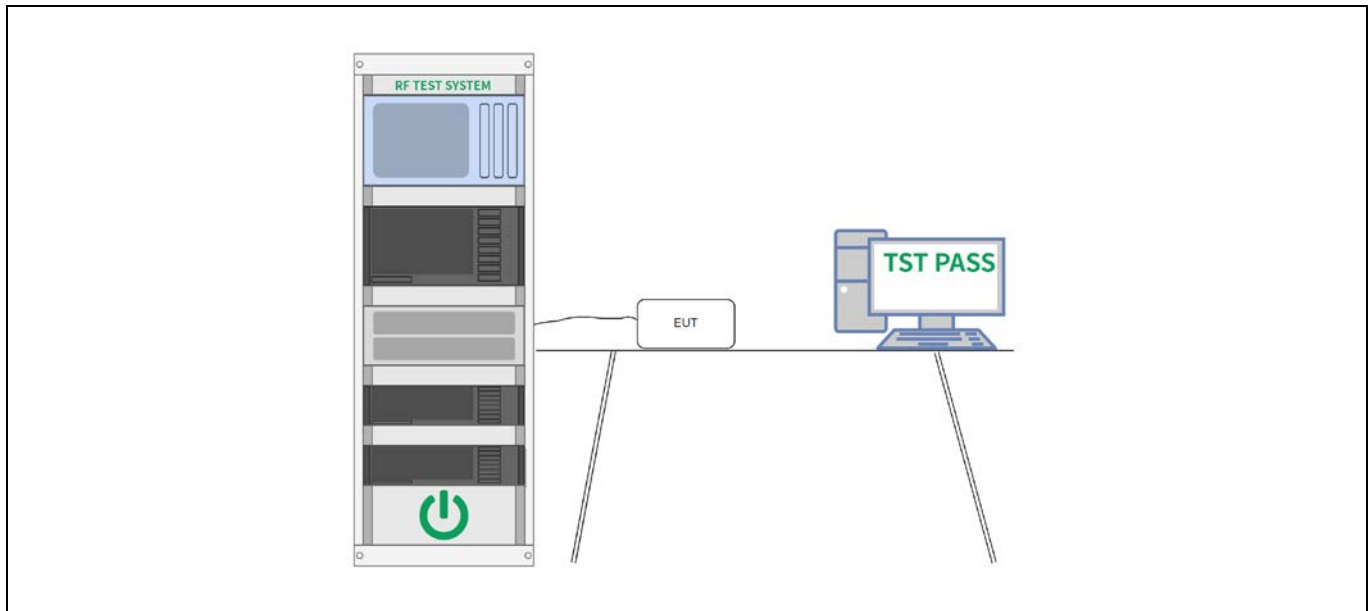
6.2 6dB Bandwidth

Test Requirement:	47 CFR 15.247(a)(2)
Test Limit:	Refer to 47 CFR 15.247(a)(2), Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	ANSI C63.10-2013, section 11.8 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	a) Set RBW = 100 kHz. b) Set the VBW \geq [3 × RBW]. c) Detector = peak. d) Trace mode = max hold. e) Sweep = auto couple. f) Allow the trace to stabilize. g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	19.8 °C	Humidity:	38.6 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4				
Final test mode:	Mode1, Mode2, Mode3, Mode4				

6.2.2 Test Setup Diagram:



6.2.3 Test Data:

Please Refer to Appendix for Details.

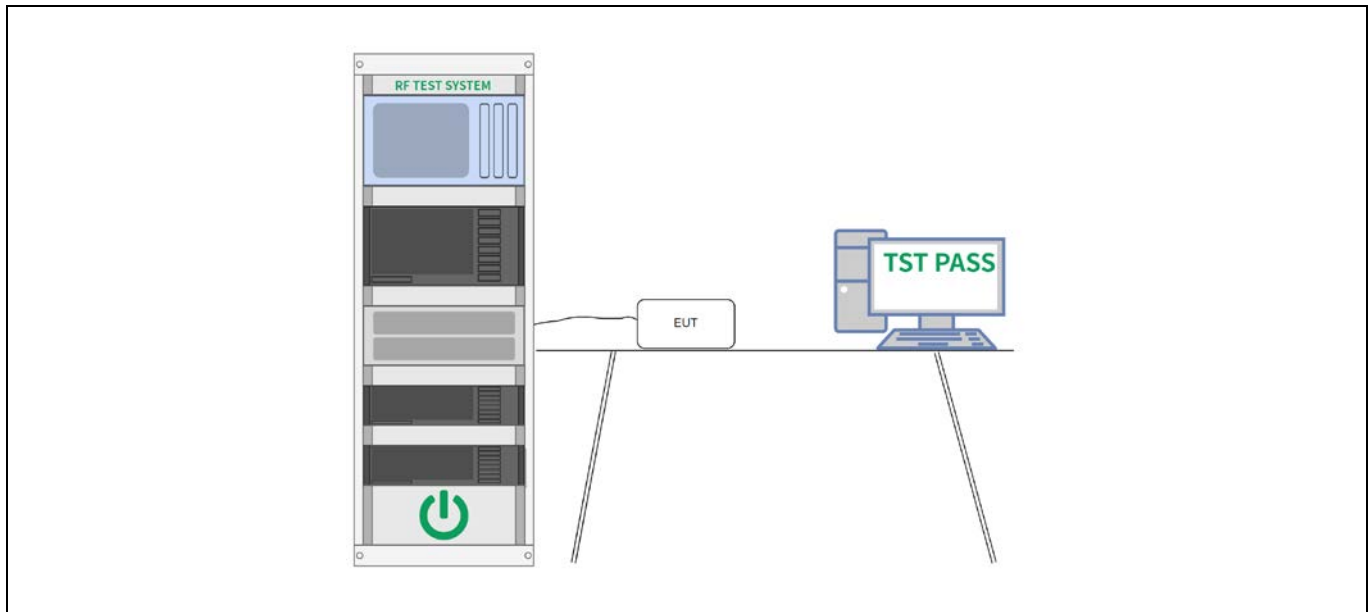
6.3 Maximum Conducted Output Power

Test Requirement:	47 CFR 15.247(b)(3)
Test Limit:	Refer to 47 CFR 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
Test Method:	ANSI C63.10-2013, section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2013, section 11.9.1 Maximum peak conducted output power

6.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	19.8 °C	Humidity:	38.6 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4				
Final test mode:	Mode1, Mode2, Mode3, Mode4				

6.3.2 Test Setup Diagram:



6.3.3 Test Data:

Please Refer to Appendix for Details.

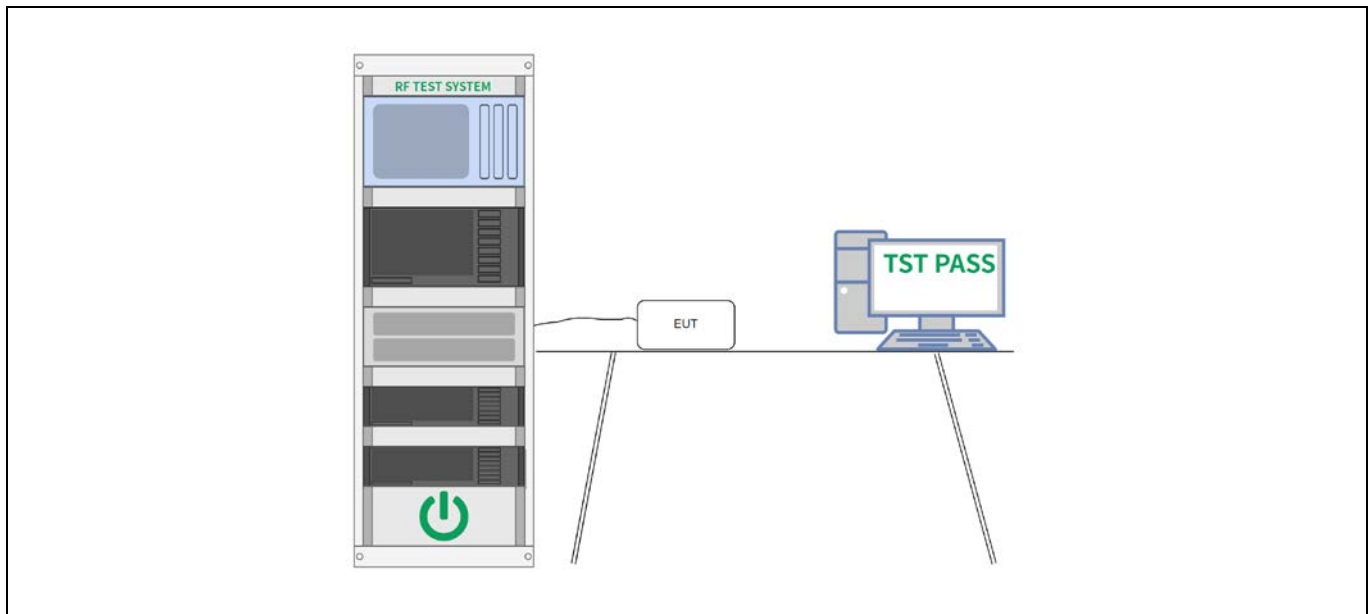
6.4 Power Spectral Density

Test Requirement:	47 CFR 15.247(e)
Test Limit:	Refer to 47 CFR 15.247(e), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.
Test Method:	ANSI C63.10-2013, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2013, section 11.10, Maximum power spectral density level in the fundamental emission

6.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	19.8 °C	Humidity:	38.6 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4				
Final test mode:	Mode1, Mode2, Mode3, Mode4				

6.4.2 Test Setup Diagram:



6.4.3 Test Data:

Please Refer to Appendix for Details.

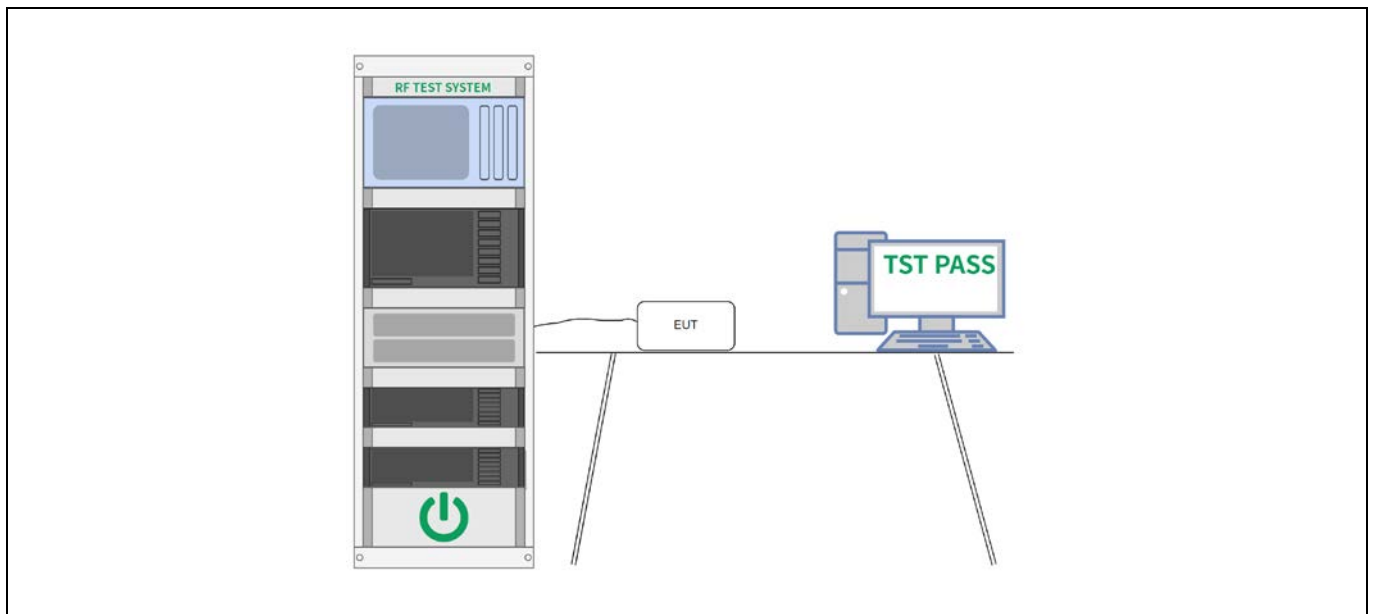
6.5 RF conducted spurious emissions and band edge measurement

Test Requirement:	47 CFR 15.247(d), 15.209, 15.205
Test Limit:	Refer to 47 CFR 15.247(d), 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 conducted power limits. If the transmitter complies with the conducted 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 § 15.209(a) is not required.
Test Method:	ANSI C63.10-2013 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2013 Section 11.11.1, Section 11.11.2, Section 11.11.3

6.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	19.8 °C	Humidity:	38.6 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4				
Final test mode:	Mode1, Mode2, Mode3, Mode4				

6.5.2 Test Setup Diagram:



6.5.3 Test Data:

Please Refer to Appendix for Details.

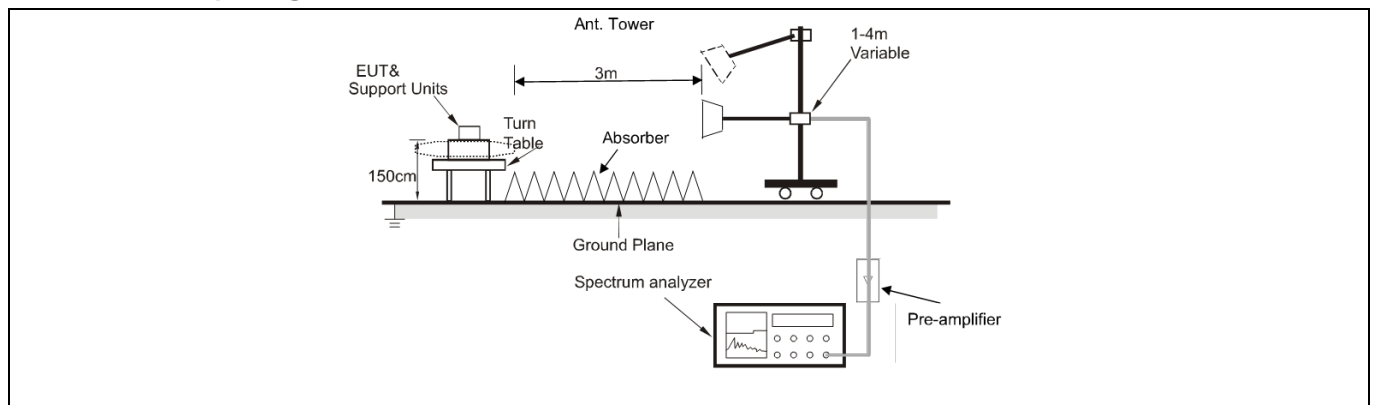
6.6 Band edge emissions (Radiated)

Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	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
	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.		
Test Method:	ANSI C63.10-2013 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	ANSI C63.10-2013 section 6.10.5.2		

6.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24 °C	Humidity:	50 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4				
Final test mode:	Mode1				
Note: The amplitude of spurious emissions which are attenuated more than 20 dB below the limits are not reported.					

6.6.2 Test Setup Diagram:



Mode1 / Polarization: Horizontal / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1		2310.000	47.60	-2.66	44.94	74.00	-29.06	peak
2		2310.000	36.26	-2.66	33.60	54.00	-20.40	AVG
3		2390.000	60.26	-2.03	58.23	74.00	-15.77	peak
4	*	2390.000	51.68	-2.03	49.65	54.00	-4.35	AVG

Mode1 / Polarization: Vertical / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1		2310.000	43.27	-2.66	40.61	74.00	-33.39	peak
2		2310.000	31.21	-2.66	28.55	54.00	-25.45	AVG
3		2390.000	52.37	-2.03	50.34	74.00	-23.66	peak
4	*	2390.000	46.70	-2.03	44.67	54.00	-9.33	AVG

Mode1 / Polarization: Horizontal / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1		2483.500	50.64	-1.91	48.73	74.00	-25.27	peak
2	*	2483.500	41.75	-1.91	39.84	54.00	-14.16	AVG
3		2500.000	46.60	-1.80	44.80	74.00	-29.20	peak
4		2500.000	37.53	-1.80	35.73	54.00	-18.27	AVG

Mode1 / Polarization: Vertical / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1		2483.500	58.53	-1.91	56.62	74.00	-17.38	peak
2	*	2483.500	51.90	-1.91	49.99	54.00	-4.01	AVG
3		2500.000	56.04	-1.80	54.24	74.00	-19.76	peak
4		2500.000	46.97	-1.80	45.17	54.00	-8.83	AVG

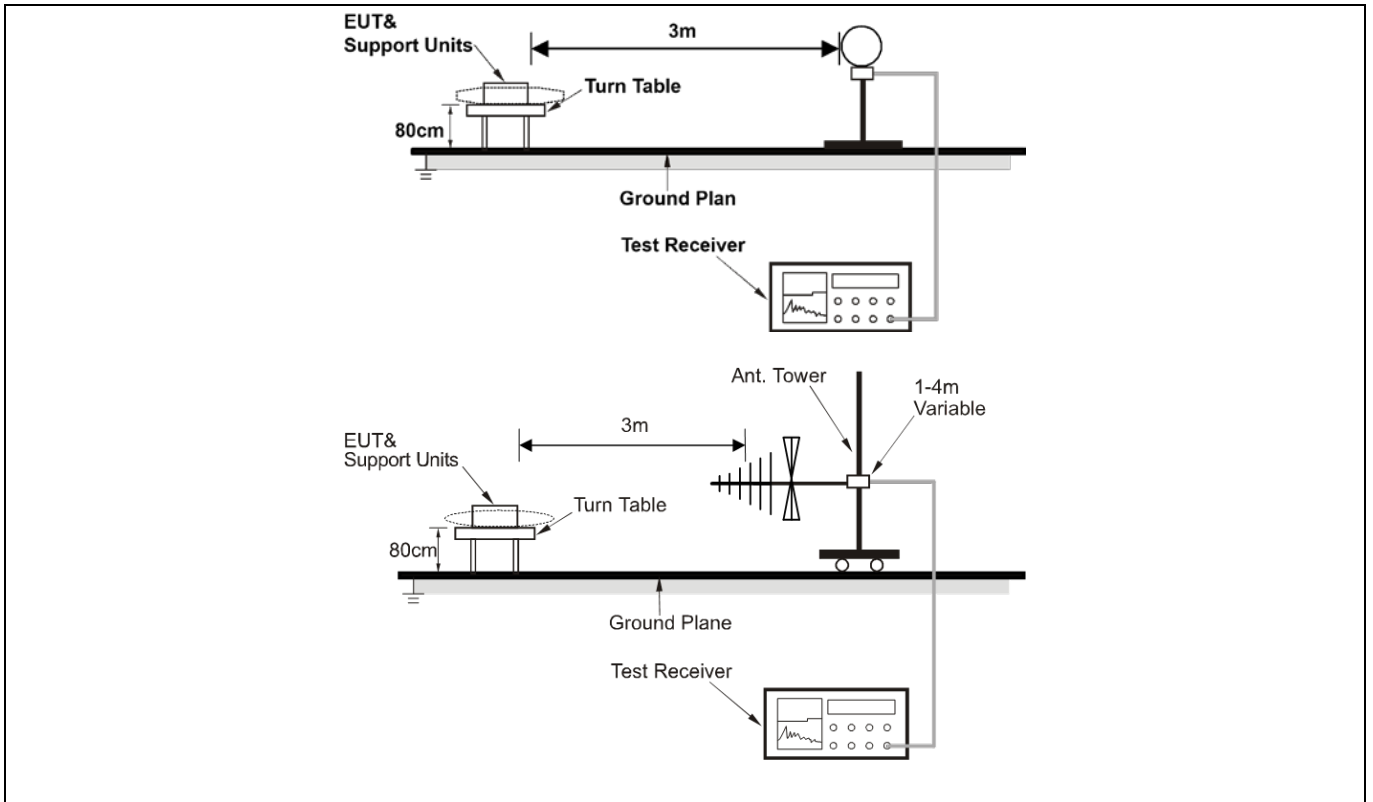
6.7 Radiated emissions (below 1GHz)

Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	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
	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.		
Test Method:	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	ANSI C63.10-2013 section 6.6.4		

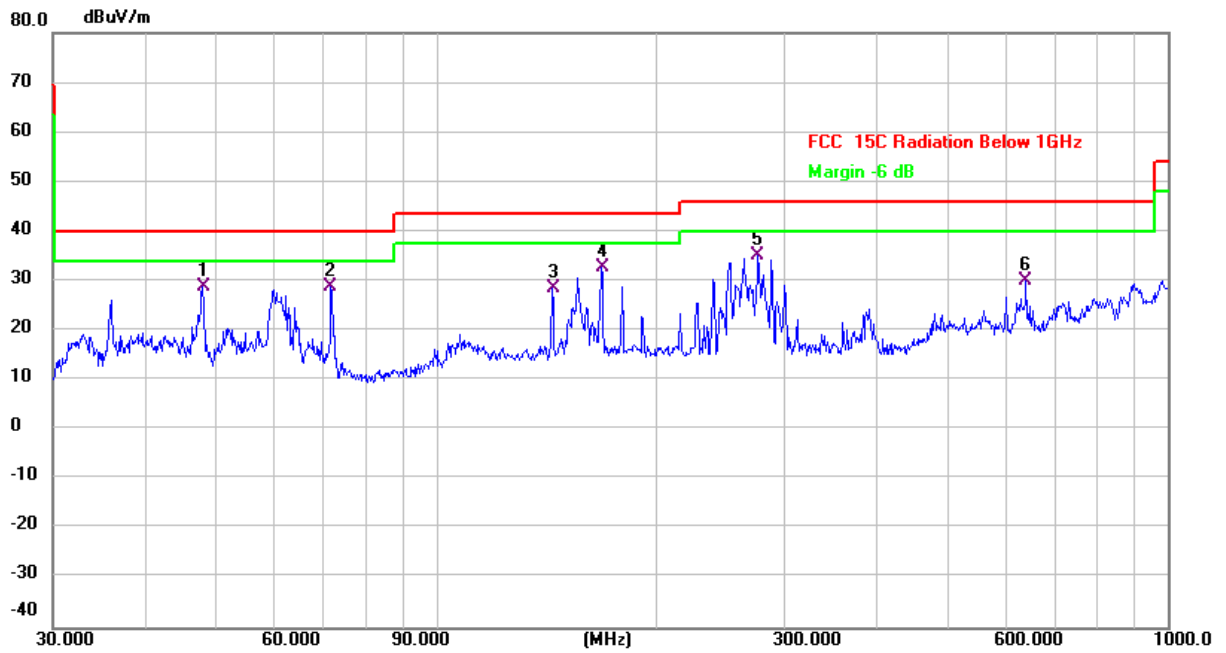
6.7.1 E.U.T. Operation:

Operating Environment:			
Temperature:	24 °C	Humidity:	50 %
		Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4		
Final test mode:	Mode1		
Note: The amplitude of spurious emissions which are attenuated more than 20 dB below the limits are not reported. All modes of operation of the EUT were investigated, and only the worst-case results are reported. There were no emissions found below 30MHz within 20dB of the limit.			

6.7.2 Test Setup Diagram:

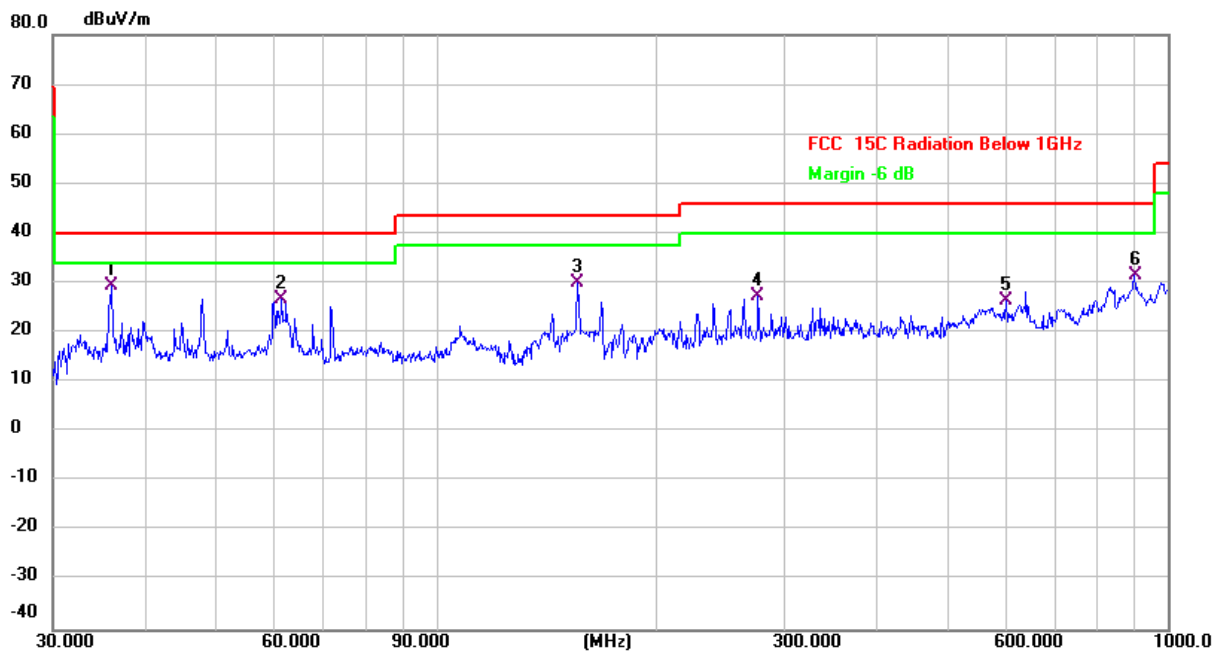


Mode1 / Polarization: Horizontal / CH: H



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		47.9939	36.39	-7.51	28.88	40.00	-11.12	QP	
2		71.8319	40.16	-11.26	28.90	40.00	-11.10	QP	
3		143.8294	39.06	-10.56	28.50	43.50	-15.00	QP	
4	*	167.8241	43.66	-11.01	32.65	43.50	-10.85	QP	
5		276.1234	42.45	-7.32	35.13	46.00	-10.87	QP	
6		640.6109	30.63	-0.53	30.10	46.00	-15.90	QP	

Mode1 / Polarization: Vertical / CH: H



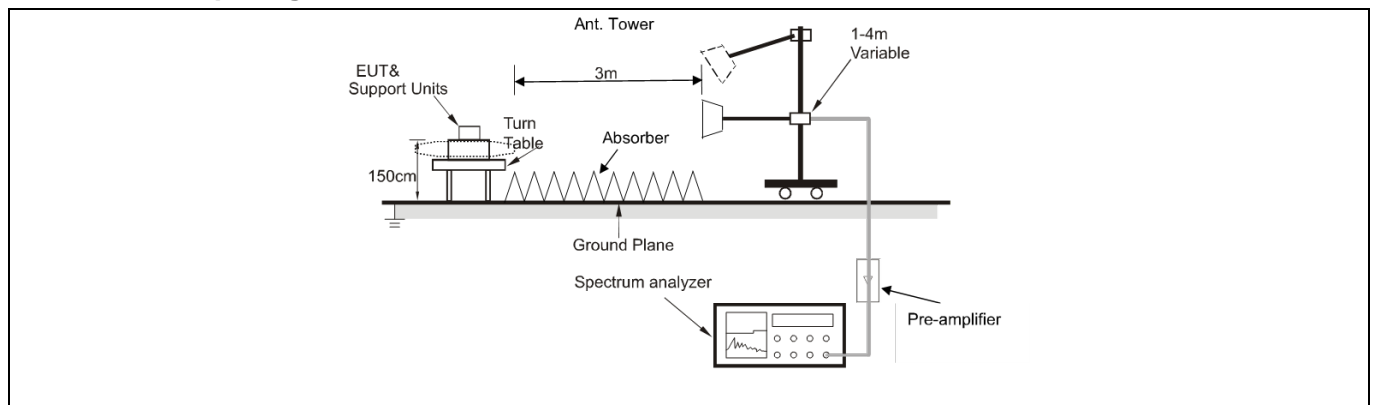
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	36.1269	39.29	-9.75	29.54	40.00	-10.46	QP	
2		61.5617	36.02	-9.29	26.73	40.00	-13.27	QP	
3		155.9100	40.45	-10.28	30.17	43.50	-13.33	QP	
4		276.1234	34.70	-7.32	27.38	46.00	-18.62	QP	
5		601.4265	29.37	-2.99	26.38	46.00	-19.62	QP	
6		900.1473	28.29	3.39	31.68	46.00	-14.32	QP	

6.8 Radiated emissions (above 1GHz)

Test Requirement:	In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	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
	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.		
Test Method:	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	ANSI C63.10-2013 section 6.6.4		

6.8.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24 °C	Humidity:	50 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4				
Final test mode:	Mode1				
Note: Test frequency are from 1GHz to 25GHz, the amplitude of spurious emissions which are attenuated more than 20 dB below the limits are not reported. All modes of operation of the EUT were investigated, and only the worst-case results are reported.					

6.8.2 Test Setup Diagram:


Mode1 / Polarization: Horizontal / CH: L

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	4824.000	46.87	2.81	49.68	74.00	-24.32	peak
2	4824.000	40.45	2.81	43.26	54.00	-10.74	AVG
3	7236.000	37.26	9.10	46.36	74.00	-27.64	peak
4	7236.000	31.22	9.10	40.32	54.00	-13.68	AVG
5	9648.000	39.03	10.98	50.01	74.00	-23.99	peak
6 *	9648.000	33.16	10.98	44.14	54.00	-9.86	AVG

Mode1 / Polarization: Vertical / CH: L

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	4824.000	46.74	2.81	49.55	74.00	-24.45	peak
2	4824.000	40.45	2.81	43.26	54.00	-10.74	AVG
3	7236.000	37.46	9.10	46.56	74.00	-27.44	peak
4	7236.000	31.14	9.10	40.24	54.00	-13.76	AVG
5	9648.000	40.73	10.98	51.71	74.00	-22.29	peak
6 *	9648.000	34.59	10.98	45.57	54.00	-8.43	AVG

Mode1 / Polarization: Horizontal / CH: M

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	4874.000	48.05	3.02	51.07	74.00	-22.93	peak
2	4874.000	42.60	3.02	45.62	54.00	-8.38	AVG
3	7311.000	38.13	8.97	47.10	74.00	-26.90	peak
4	7311.000	32.39	8.97	41.36	54.00	-12.64	AVG
5	9748.000	41.24	11.95	53.19	74.00	-20.81	peak
6 *	9748.000	35.67	11.95	47.62	54.00	-6.38	AVG

Mode1 / Polarization: Vertical / CH: M

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	4874.000	46.57	3.02	49.59	74.00	-24.41	peak
2	4874.000	40.30	3.02	43.32	54.00	-10.68	AVG
3	7311.000	38.38	8.97	47.35	74.00	-26.65	peak
4	7311.000	32.29	8.97	41.26	54.00	-12.74	AVG
5	9748.000	39.36	11.95	51.31	74.00	-22.69	peak
6 *	9748.000	33.41	11.95	45.36	54.00	-8.64	AVG

Mode1 / Polarization: Horizontal / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1		4924.000	44.58	3.27	47.85	74.00	-26.15	peak
2		4924.000	38.42	3.27	41.69	54.00	-12.31	AVG
3		7386.000	38.55	9.16	47.71	74.00	-26.29	peak
4		7386.000	32.46	9.16	41.62	54.00	-12.38	AVG
5		9848.000	39.77	11.50	51.27	74.00	-22.73	peak
6	*	9848.000	33.76	11.50	45.26	54.00	-8.74	AVG

Mode1 / Polarization: Vertical / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1		4924.000	47.14	3.27	50.41	74.00	-23.59	peak
2		4924.000	41.09	3.27	44.36	54.00	-9.64	AVG
3		7386.000	38.79	9.16	47.95	74.00	-26.05	peak
4		7386.000	32.69	9.16	41.85	54.00	-12.15	AVG
5		9848.000	40.27	11.50	51.77	74.00	-22.23	peak
6	*	9848.000	33.68	11.50	45.18	54.00	-8.82	AVG

Photographs of the test setup

Refer to Appendix - Test Setup Photos

Photographs of the EUT

Refer to Appendix - EUT Photos

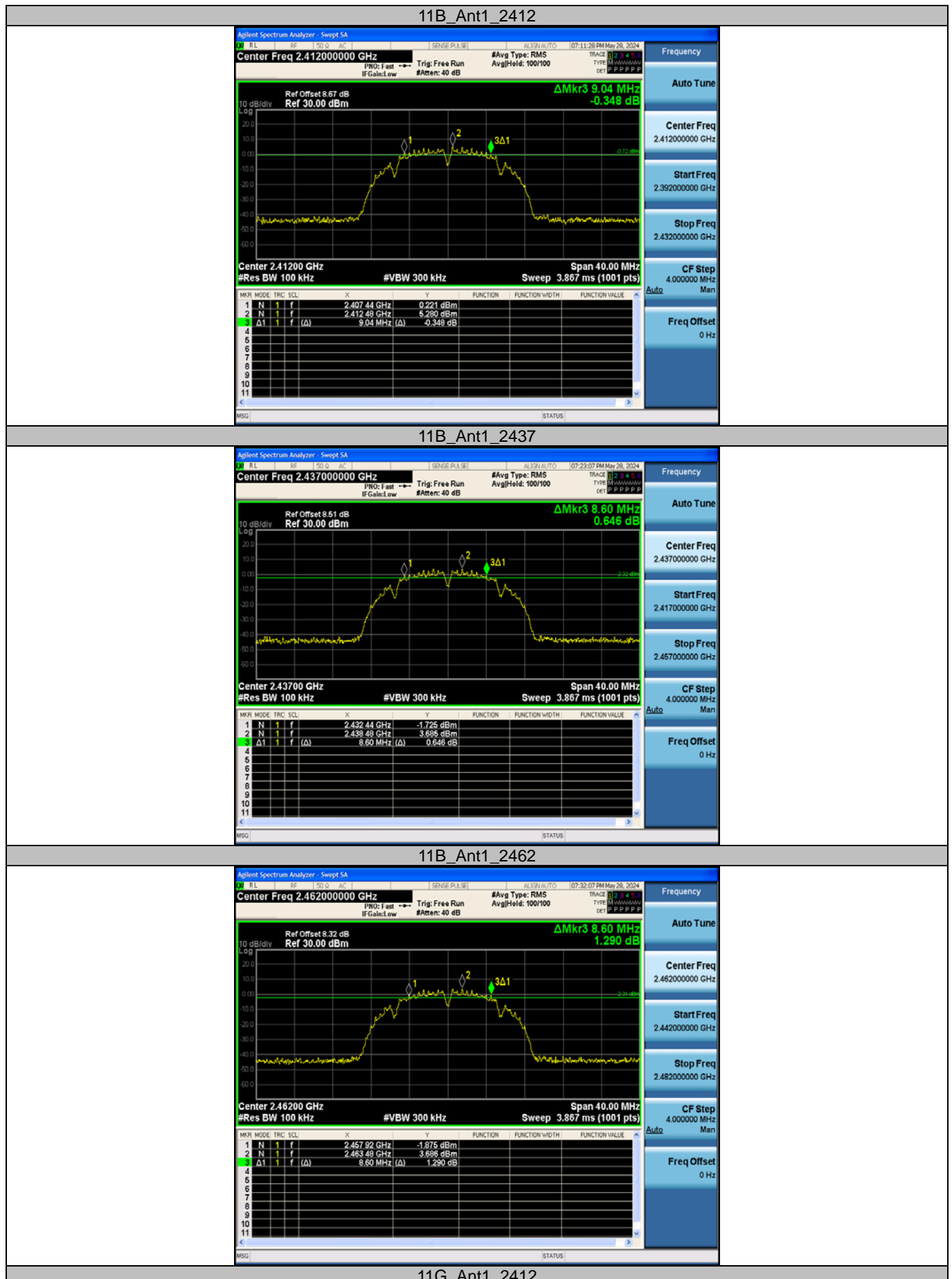
Appendix

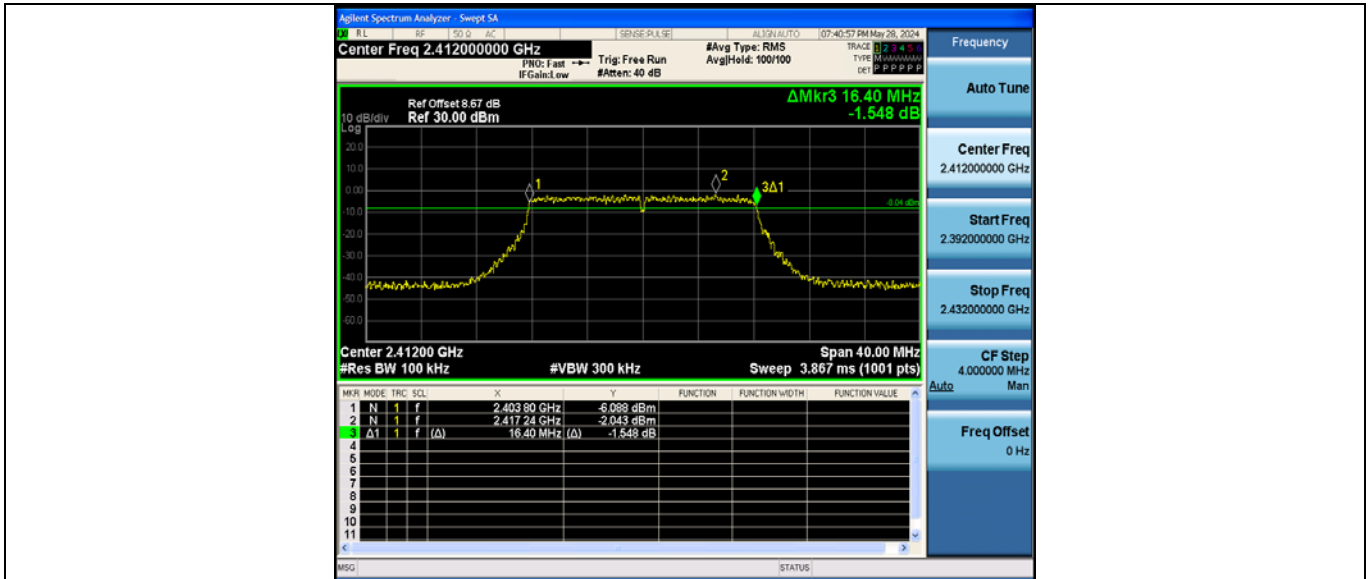
Appendix A: 6dB Bandwidth

Test Result

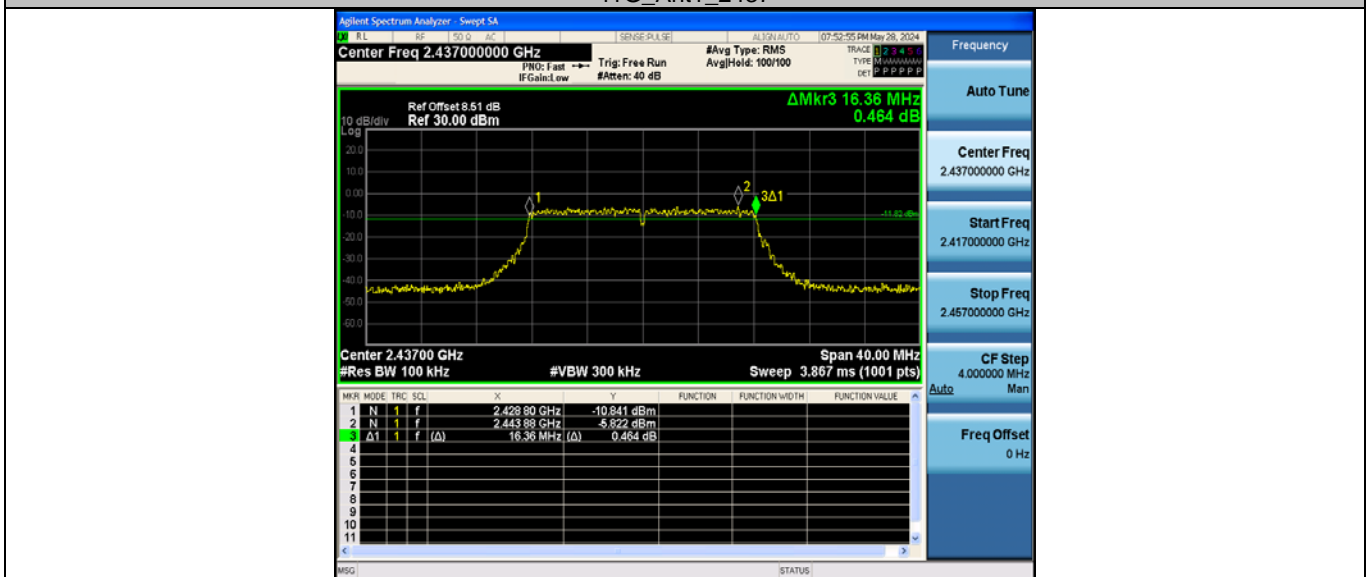
Test Mode	Antenna	Frequency [MHz]	DTS BW [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	9.040	0.5	PASS
		2437	8.600	0.5	PASS
		2462	8.600	0.5	PASS
11G	Ant1	2412	16.400	0.5	PASS
		2437	16.360	0.5	PASS
		2462	16.360	0.5	PASS
11N20SISO	Ant1	2412	17.000	0.5	PASS
		2437	17.000	0.5	PASS
		2462	16.960	0.5	PASS
11N40SISO	Ant1	2422	32.880	0.5	PASS
		2437	32.960	0.5	PASS
		2452	32.880	0.5	PASS

Test Graphs

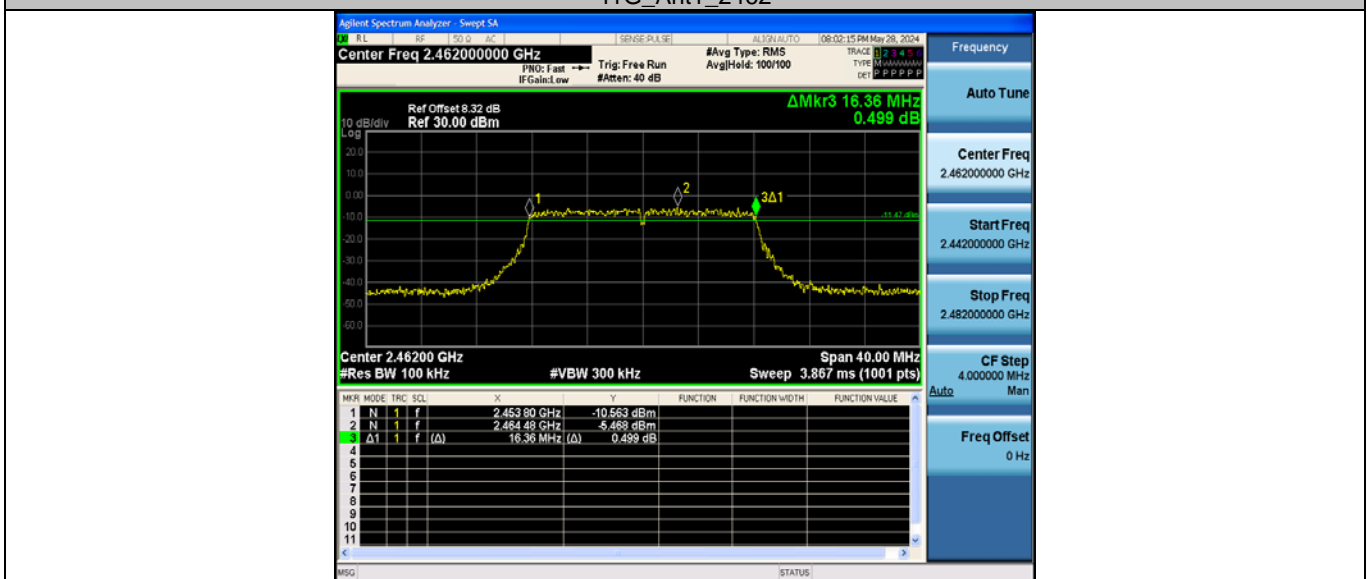




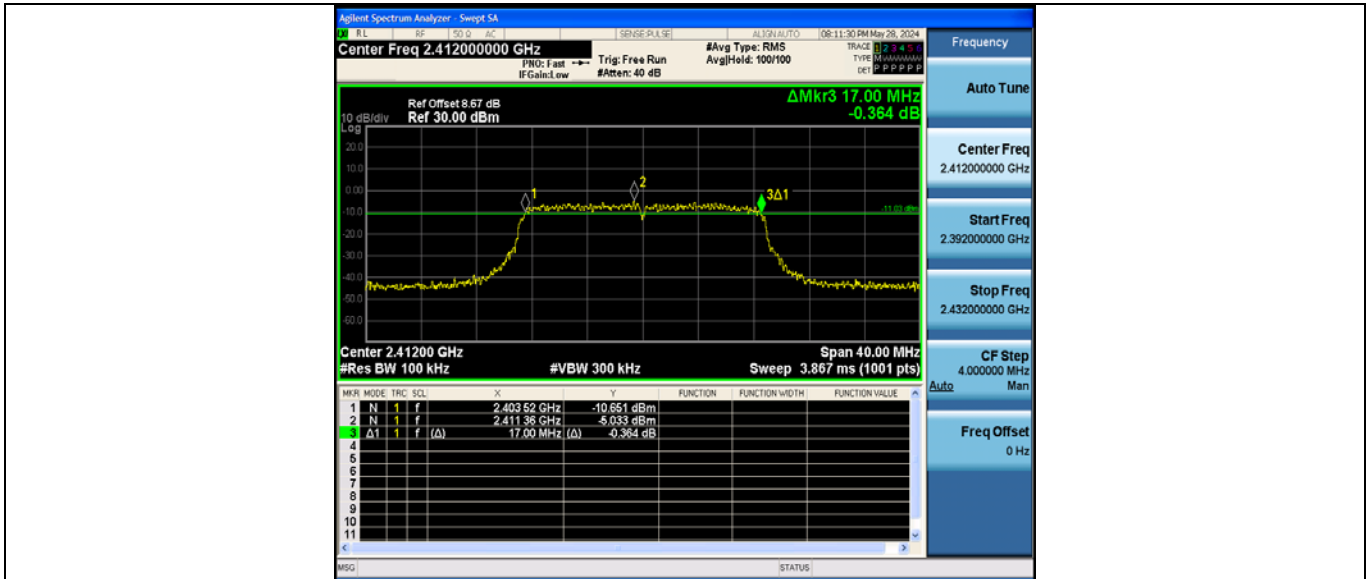
11G_Ant1_2437



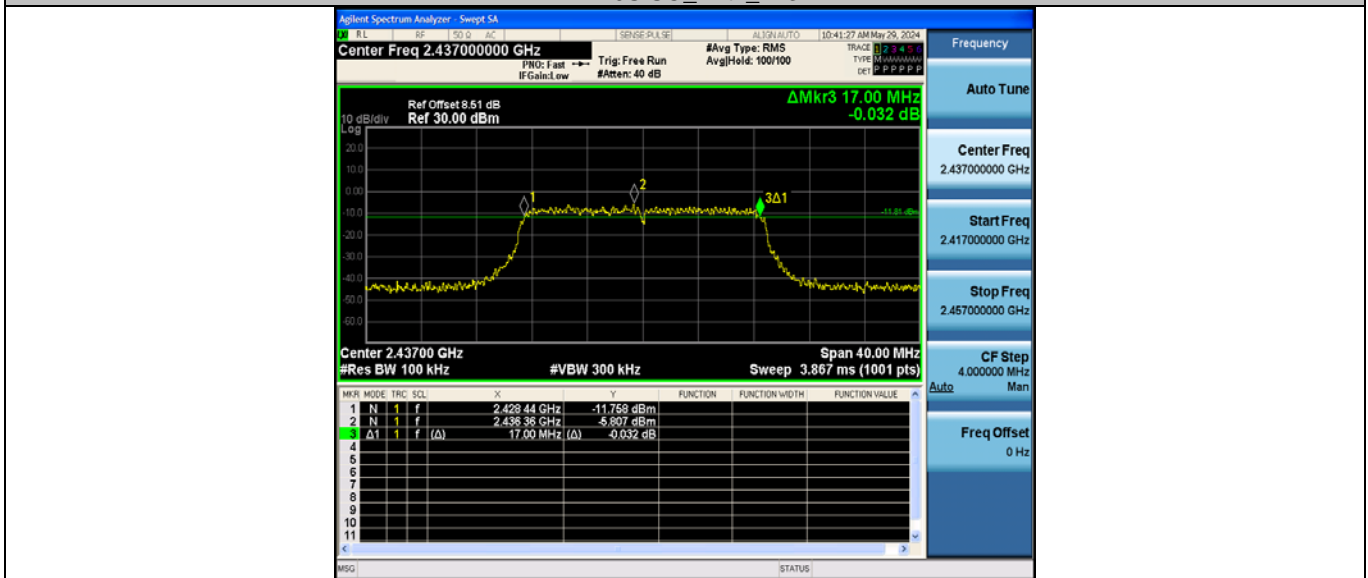
11G_Ant1_2462



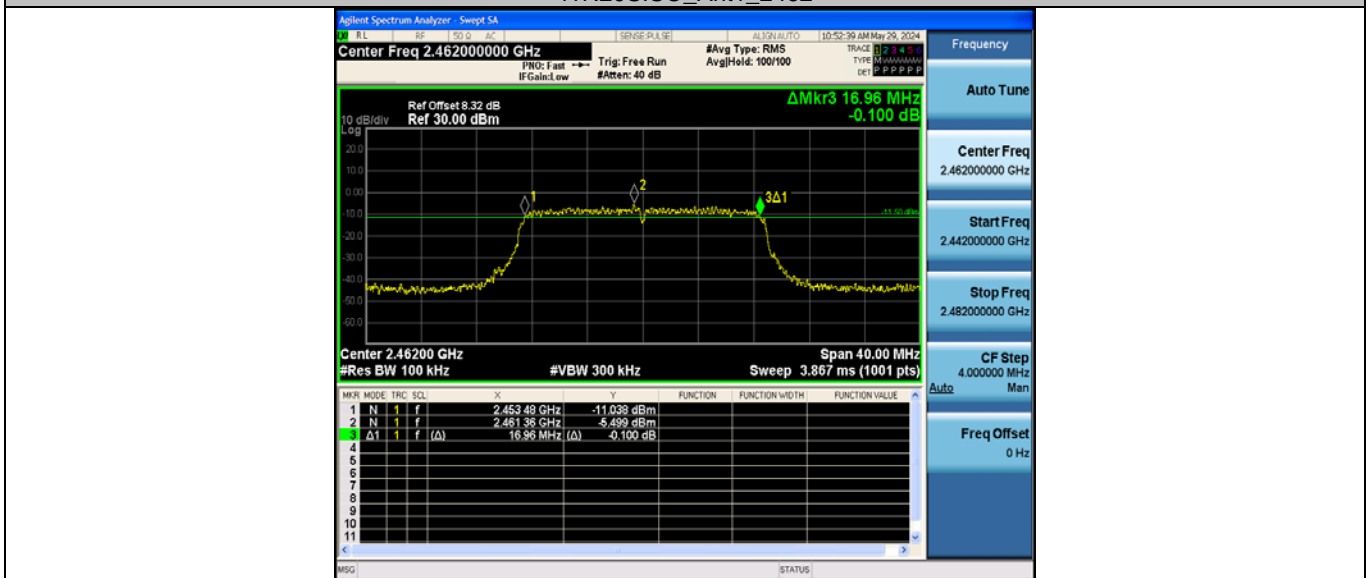
11N20SISO_Ant1_2412



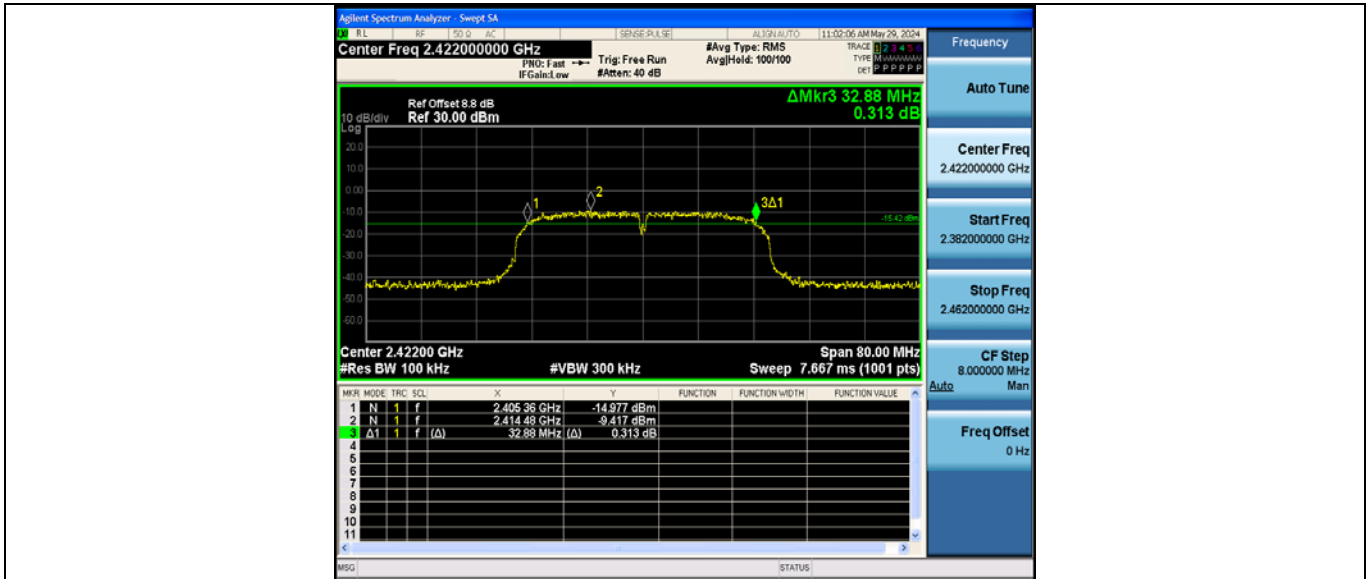
11N20SISO_Ant1_2437



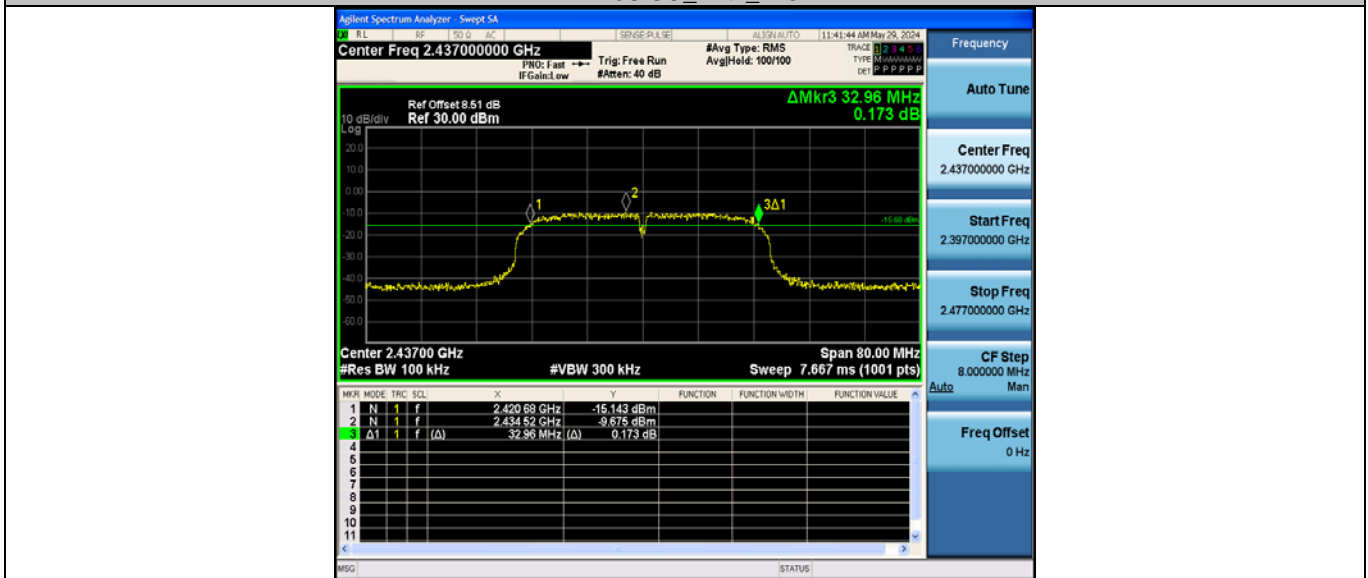
11N20SISO_Ant1_2462



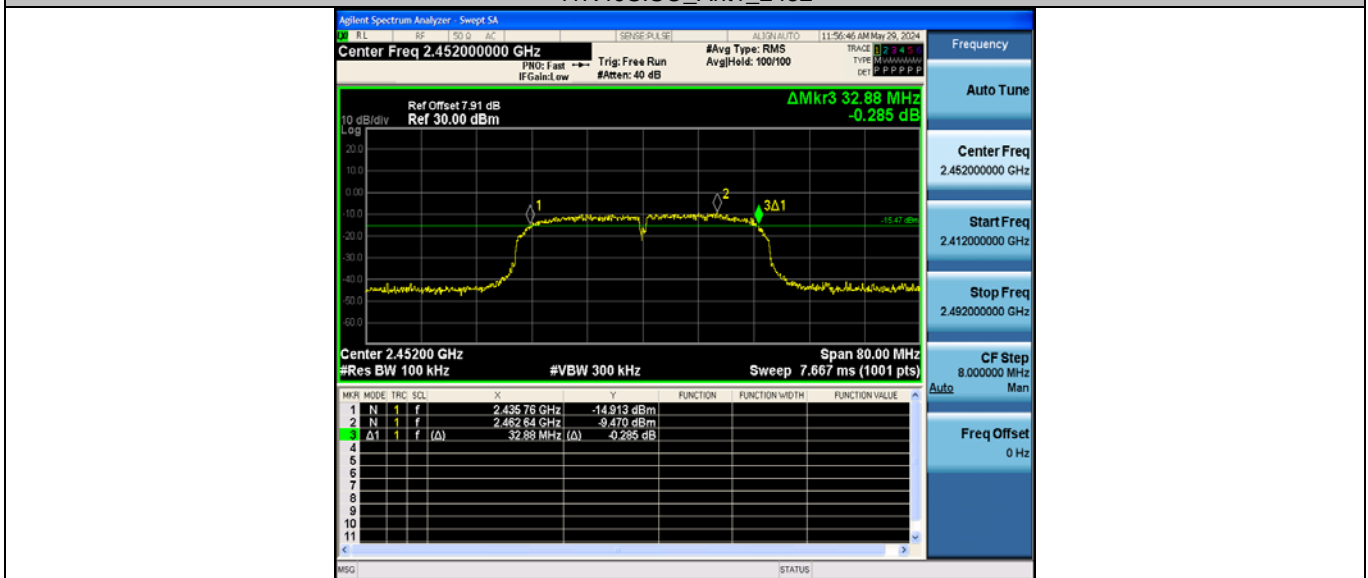
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



Appendix B: Maximum conducted output power

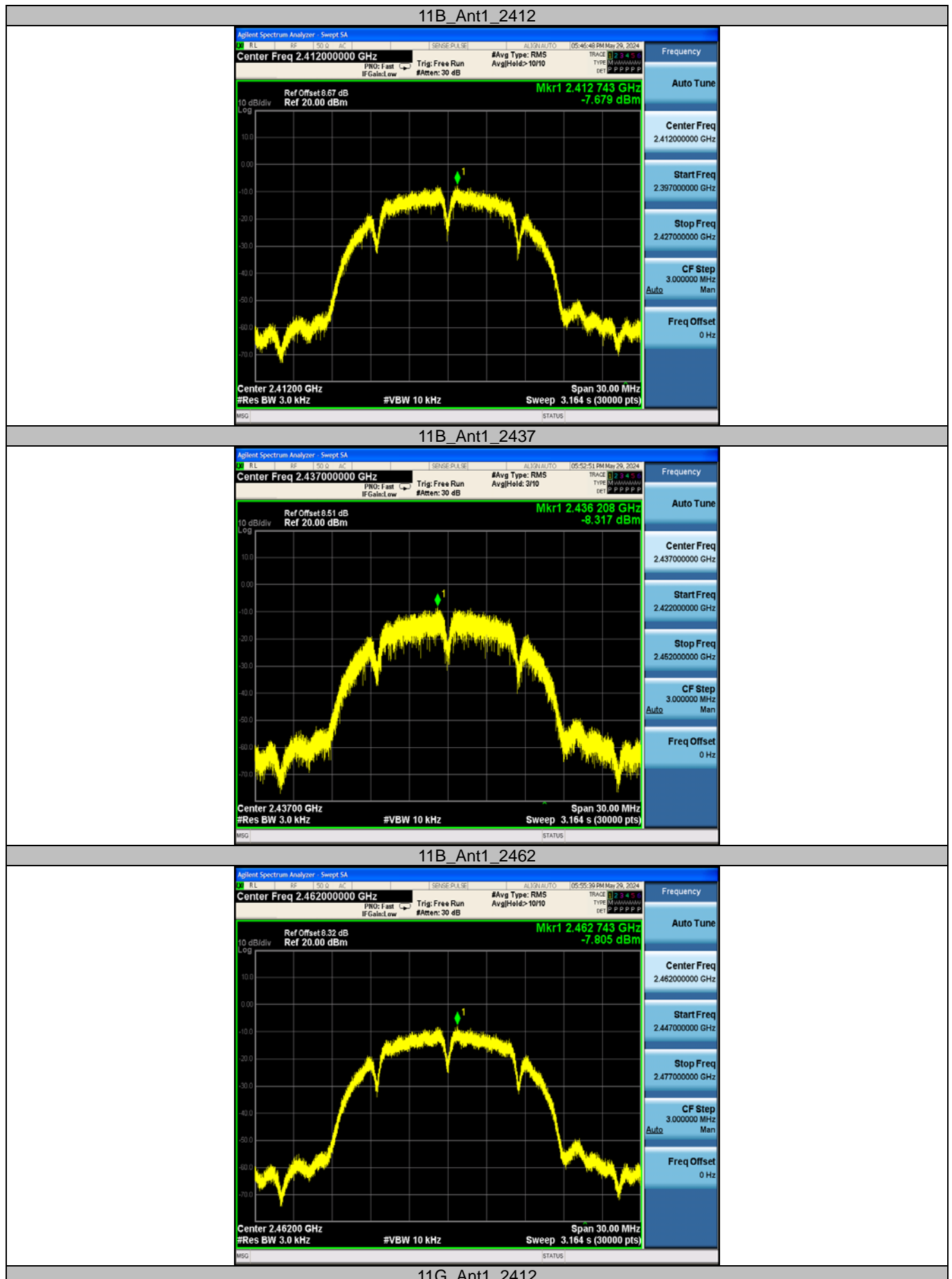
Test Result Peak

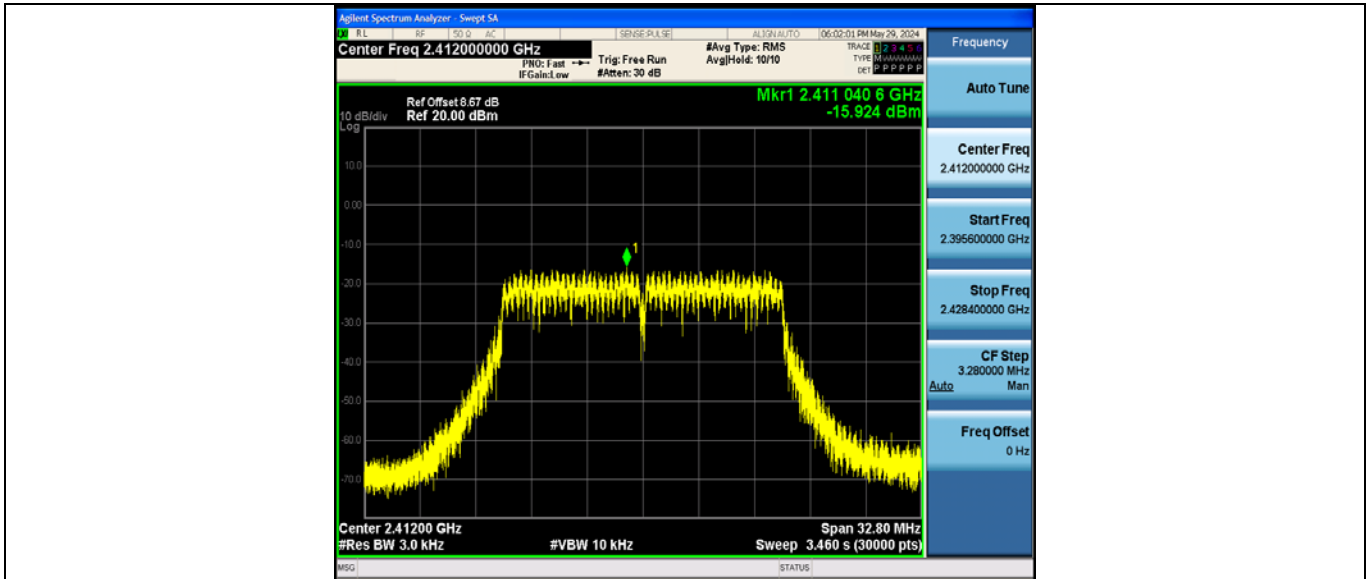
Test Mode	Antenna	Frequency [MHz]	Peak Power [dBm]	Conducted Limit [dBm]	Verdict
11B	Ant1	2412	19.59	≤30.00	PASS
		2437	18.81	≤30.00	PASS
		2462	18.88	≤30.00	PASS
11G	Ant1	2412	22.05	≤30.00	PASS
		2437	22.11	≤30.00	PASS
		2462	21.58	≤30.00	PASS
11N20SISO	Ant1	2412	22.59	≤30.00	PASS
		2437	21.25	≤30.00	PASS
		2462	22.05	≤30.00	PASS
11N40SISO	Ant1	2422	22.14	≤30.00	PASS
		2437	21.35	≤30.00	PASS
		2452	21.19	≤30.00	PASS

Appendix C: Maximum power spectral density

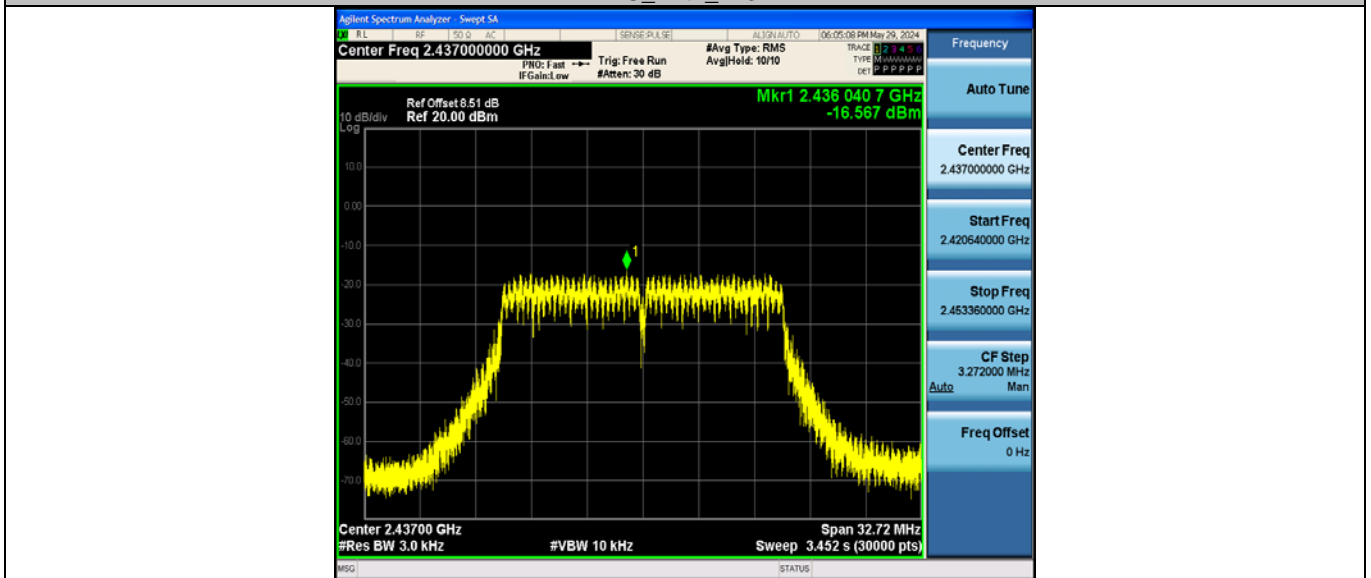
Test Mode	Antenna	Frequency [MHz]	Result [dBm/3-100kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant1	2412	-7.68	≤8.00	PASS
		2437	-8.32	≤8.00	PASS
		2462	-7.81	≤8.00	PASS
11G	Ant1	2412	-15.92	≤8.00	PASS
		2437	-16.57	≤8.00	PASS
		2462	-16.51	≤8.00	PASS
11N20SISO	Ant1	2412	-16.16	≤8.00	PASS
		2437	-16.41	≤8.00	PASS
		2462	-16.46	≤8.00	PASS
11N40SISO	Ant1	2422	-17.98	≤8.00	PASS
		2437	-17.42	≤8.00	PASS
		2452	-16.64	≤8.00	PASS

Test Graphs

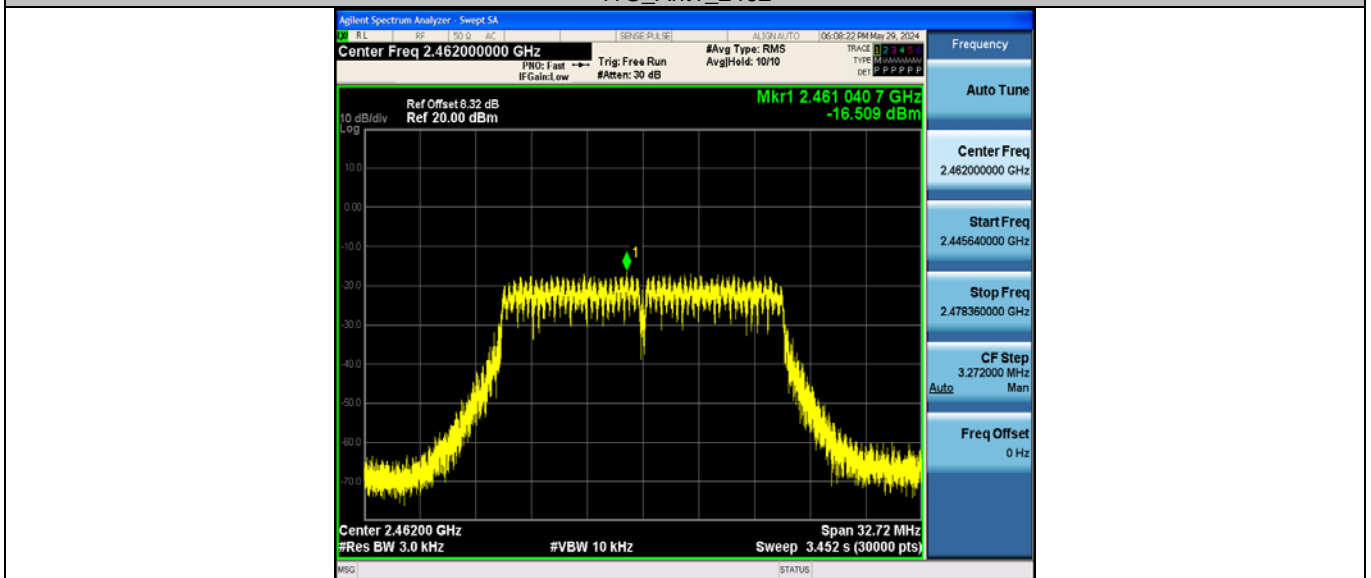




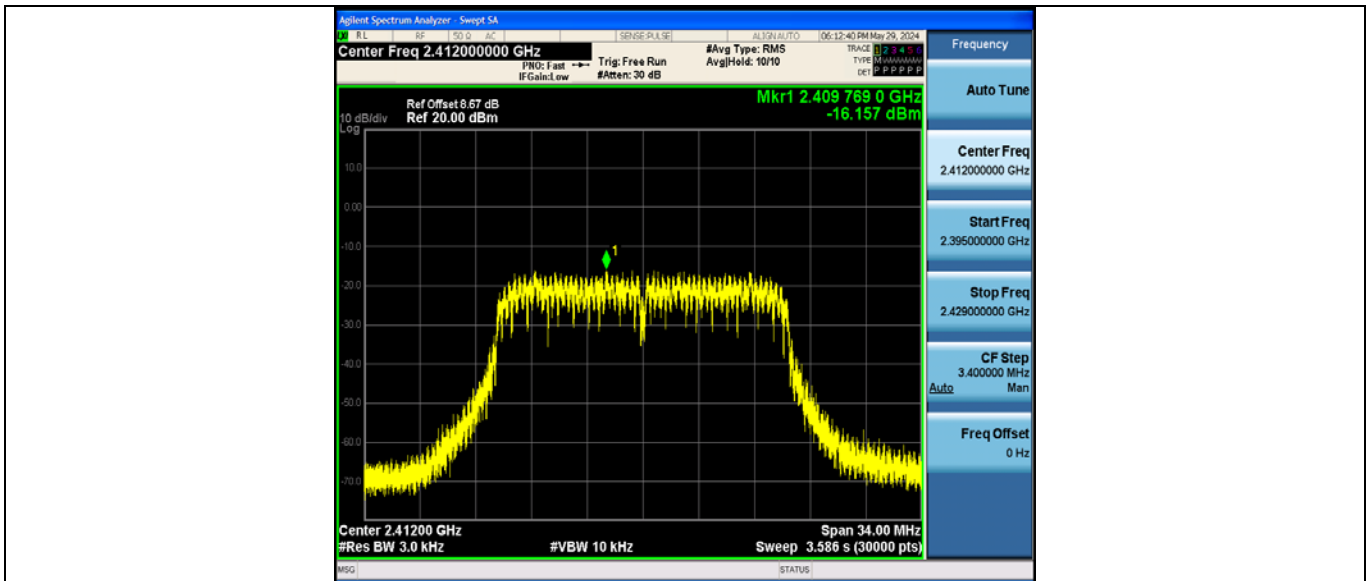
11G_Ant1_2437



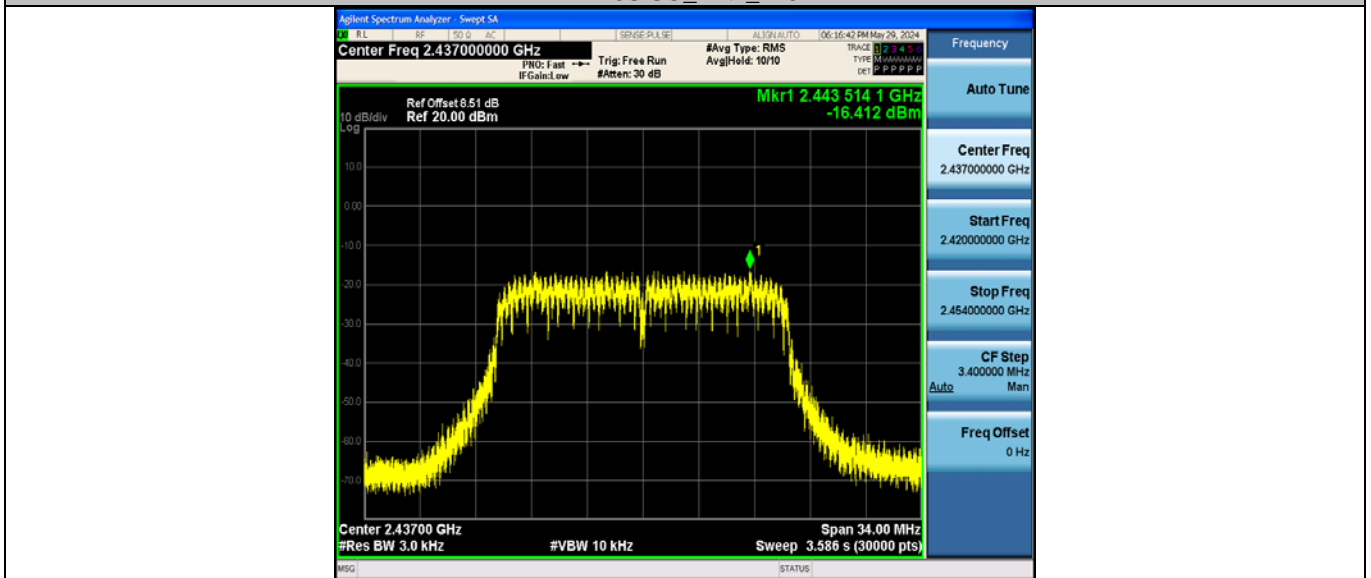
11G_Ant1_2462



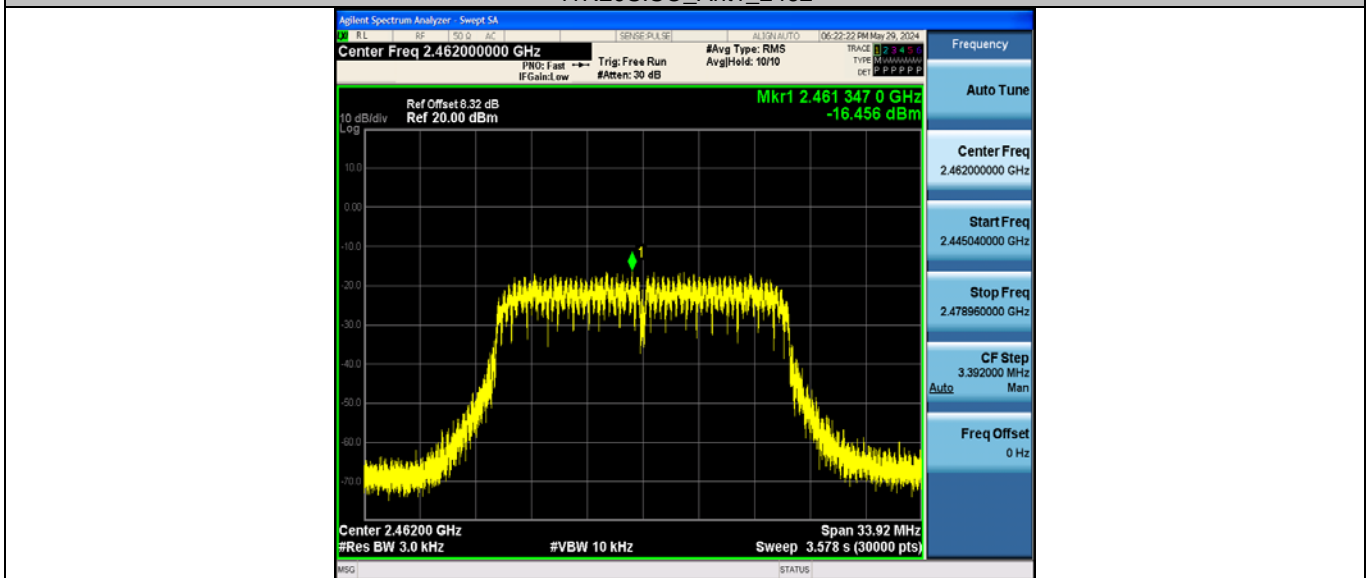
11N20SISO_Ant1_2412



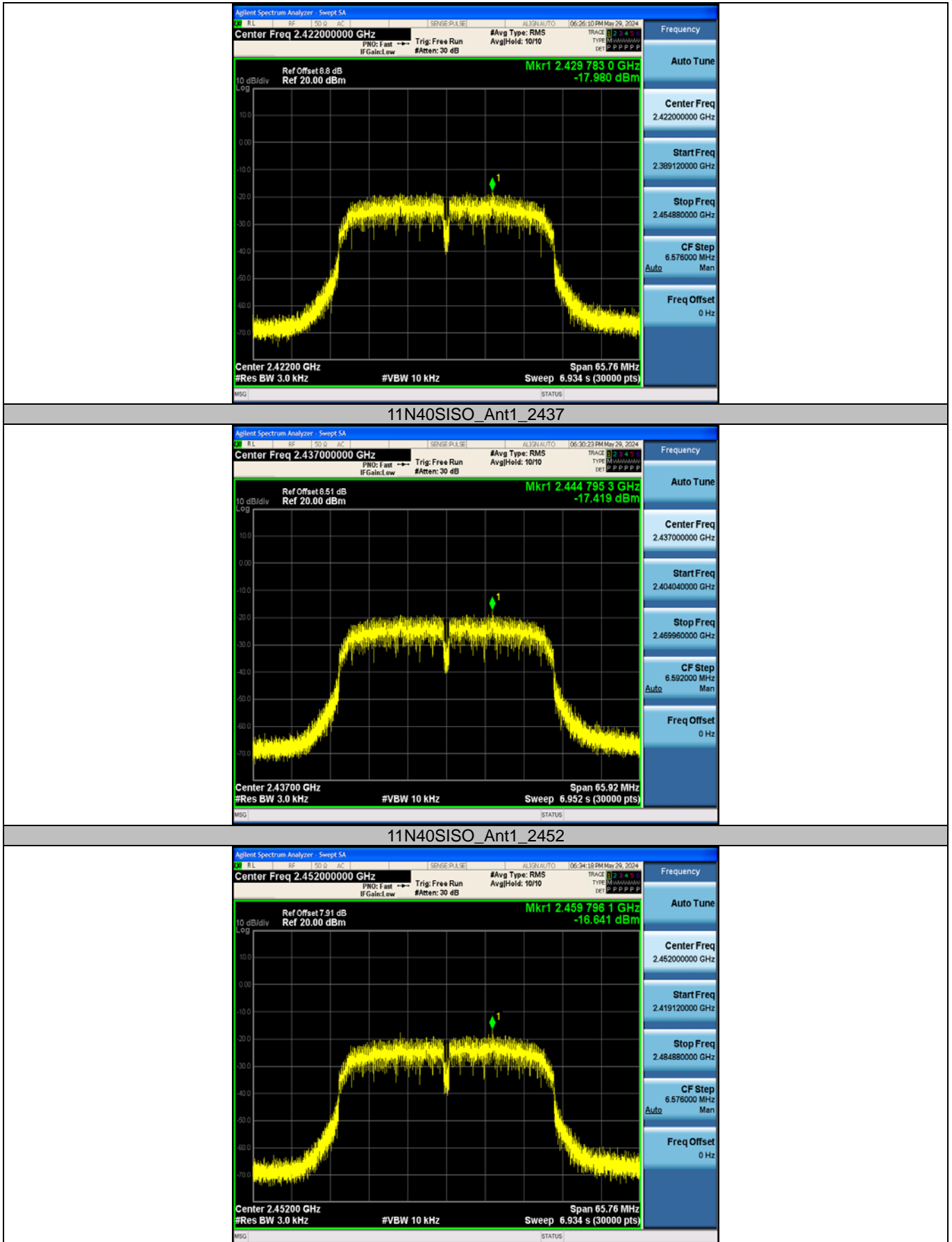
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

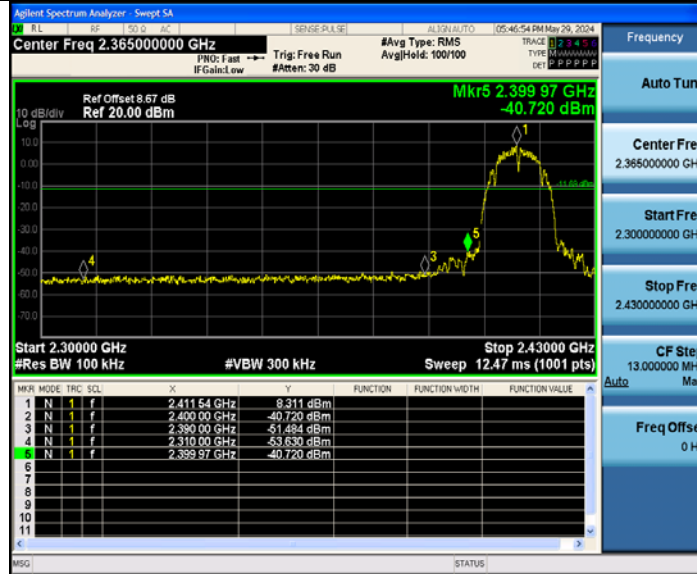


11N40SISO_Ant1_2422

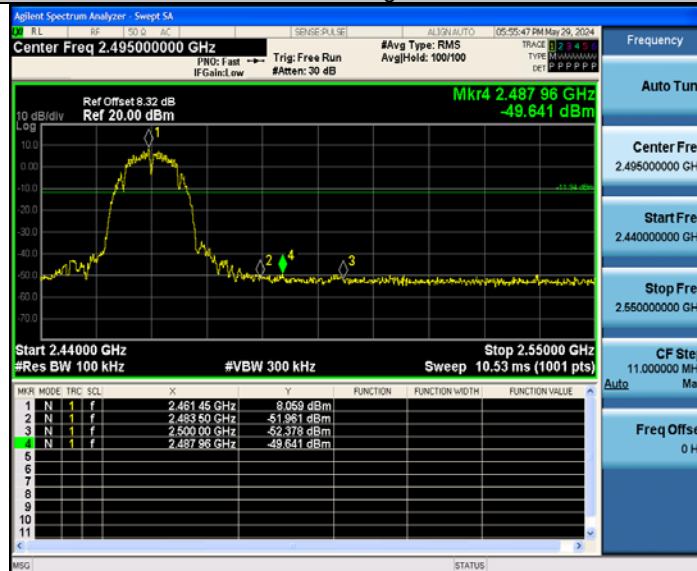


Appendix D: Band edge measurements

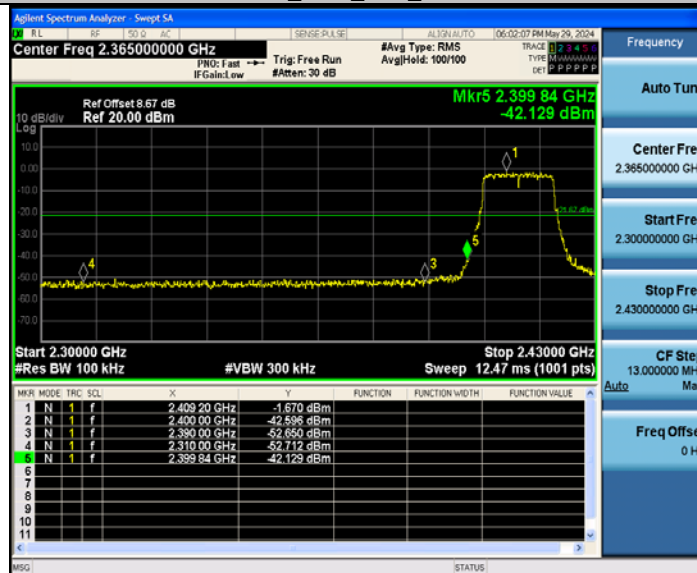
11B_Ant1_Low_2412



11B_Ant1_High_2462



11G_Ant1_Low_2412



11G_Ant1_High_2462