REPORT No.: SZ24120252W01

TEST REPORT

APPLICANT	:	Realme Chongqing Mobile Telecommunications Corp., Ltd.
PRODUCT NAME	:	Wireless Earphone
MODEL NAME	:	RMA2407
BRAND NAME	:	realme
FCC ID	:	2AUYFRMA2407
STANDARD(S)	:	47 CFR Part 15 Subpart C
RECEIPT DATE	:	2024-12-30
TEST DATE	:	2025-01-06 to 2025-02-16
ISSUE DATE	:	2025-03-12

Edited by: Zeng Xiaoying (Rapporteur)

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MORLAB

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DIRECTORY

Change History		
Version	**Date**	**Reason for change**
1.0	2025-03-12	First edition

1. Summary of Test Result

No.	Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
1	15.203	Antenna Requirement	N/A	N/A	PASS	No deviation
2	N/A	Duty Cycle of Test Signal	Jan. 14, 2025 Feb. 12, 2025	Li Zikai	PASS	No deviation
3	15.247(b)	Maximum Peak Conducted Output Power	Jan. 17, 2025 Feb. 12, 2025	Li Zikai	PASS	No deviation
4	15.247(b)	Maximum Average Conducted Output Power	Jan. 17, 2025 Feb. 12, 2025	Li Zikai	PASS	No deviation
5	15.247(a)	Bandwidth	Jan. 14, 2025 Feb. 12, 2025	Li Zikai	PASS	No deviation
6	15.247(d)	Conducted Spurious Emission and Band Edge	Jan. 14, 2025 Feb. 12, 2025	Li Zikai	PASS	No deviation
7	15.247(e)	Power Spectral Density	Jan. 14, 2025 Feb. 12, 2025	Li Zikai	PASS	No deviation
8	15.207	Conducted Emission	Jan. 06, 2025	Fan Shengquan	PASS	No deviation
9	15.247(d)	Restricted Frequency Bands	Jan. 06, 2025 Feb. 16, 2025	Zhong Xiangyun	PASS	No deviation
10	15.209, 15.247(d)	Radiated Emission	Jan. 06, 2025 Feb. 16, 2025	Zhong Xiangyun	PASS	No deviation

Note 1: The tests were performed according to the method of measurements prescribed in ANSI C63.10-2013 and KDB 558074 D01 v05r02.

Note 2: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 3: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

1.1. Testing Applied Standards

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

• 47 CFR Part 15 Subpart C Radio Frequency Devices

1.2. Test Equipment List

1.2.1 Conducted Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
EXA Signal Analzyer	MY53470836	N9010A	Agilent	2024.02.19	2025.02.18
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial Cable	CB02	RF02	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A

1.2.2 Conducted Emission Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2025.01.06	2026.01.05
LISN	8127449	NSLK 8127	Schwarzbeck	2024.02.02	2025.02.01
				2025.01.09	2026.01.18
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2024.05.30	2025.05.29
RF Coaxial Cable (DC-100MHz)	BNC	MRE04	Qualwave	N/A	N/A

1.2.3 List of Software Used

Description	Manufacturer	Software Version
Test System	MaiWei	2.0.0.0
JS32-RE	Tonscend	5.0.0
TS+ -[JS32-CE]	Tonscend	2.5.0.0

1.2.4 Radiated Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Signal Analyzer	MY56060145	N9020A	Agilent	2024.05.30	2025.05.29
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2024.06.22	2025.06.21
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2024.06.03	2025.06.02
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2024.06.22	2025.06.21
Test Antenna – Horn	BBHA9170 #773	BBHA9170	Schwarzbeck	2024.06.22	2025.06.21
Preamplifier (10MHz-6GHz)	46732	S10M100L3802	LUCIX CORP.	2024.05.30	2025.05.29
Preamplifier (2GHz-18GHz)	61171/61172	S020180L3203	LUCIX CORP.	2024.05.30	2025.05.29
Preamplifier (18GHz-40GHz)	DS77209	DCLNA0118-40C-S	Decentest	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE001	PE330	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE002	CLU18	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE003	CLU18	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-40GHz)	22290045	QA360-40-KK-0.5	Qualwave	N/A	N/A
RF Coaxial Cable (DC-40GHz)	22290046	QA360-40-KKF-2	Qualwave	N/A	N/A
RF Coaxial Cable (DC-18GHz)	22120181	QA500-18-NN-5	Qualwave	N/A	N/A
Notch Filter	N/A	WRCG-2400-2483.5-60SS	Wainwright	N/A	N/A
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.05.10	2025.05.09

1.3. Measurement Uncertainty

Test Items	Uncertainty	Remark
Peak Output Power	±2.22dB	Confidence levels of 95%
Power Spectral Density	±2.22dB	Confidence levels of 95%
Bandwidth	±5%	Confidence levels of 95%
Conducted Spurious Emission	±2.77dB	Confidence levels of 95%
Restricted Frequency Bands	±5%	Confidence levels of 95%
Radiated Emission	±2.95dB	Confidence levels of 95%
Conducted Emission	±2.44dB	Confidence levels of 95%

1.4. Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525
FCC Designation Number:	CN1192
FCC Test Firm Registration Number:	226174

2. General Description

2.1. Information of Applicant and Manufacturer

Applicant:	Realme Chongqing Mobile Telecommunications Corp., Ltd.
Applicant Address:	No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China
Manufacturer:	Realme Chongqing Mobile Telecommunications Corp., Ltd.
Manufacturer Address:	No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China

2.2. Information of EUT

Product Name:	Wireless Earphone	
Sample No.:	1#, 2#, 5#, 11#, 13#	
Hardware Version:	Earphone: V4 Charging case: V5	
Software Version:	Earphone: V1.1.0.40 Charging case: V029	
Equipment Type:	Bluetooth LE	
Bluetooth Version:	5.4	
Modulation Type:	GFSK	
Data Rate:	1Mbps, 2Mbps	
Operating Frequency Range:	2402MHz-2480MHz	
Antenna Type:	FPC Antenna	
Antenna Gain:	Left: -1.61dBi; Right: -1.86dBi	
Accessory Information:	Battery (Earphone)	
	Brand Name:	VDL
	Model No.:	112570B
	Serial No.:	N/A
	Capacity:	62mAh
	Rated Voltage:	3.89V
	Charge Limit:	4.48V
	Manufacturer:	Chongqing VDL Electronics Co., Ltd.

Accessory Information:	Battery (Charging case)	
	Brand Name:	VDL
	Model No.:	801830PF8
	Serial No.:	N/A
	Capacity:	530mAh
	Rated Voltage:	3.89V
	Charge Limit:	4.48V
	Manufacturer:	Chongqing VDL Electronics Co., Ltd.

Note 1: We use the dedicated software to control the EUT continuous transmission.

Note 2: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

2.3. Channel List of EUT

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	**2402**	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	**38**	**2478**
9	2420	**19**	**2440**	29	2460	**39**	**2480**

Note 1: The black bold channels were selected for test.

2.4. Test Configuration of EUT

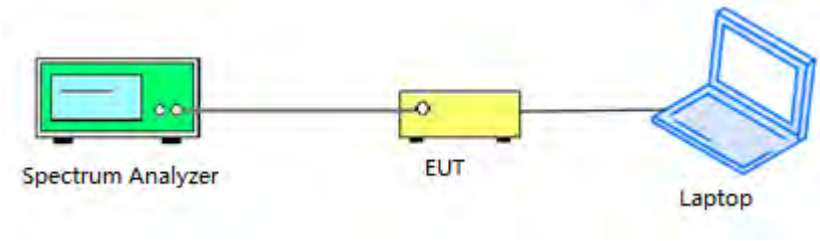
Test mode is used to control the EUT under the maximum power level during test.

2.5. Test Conditions

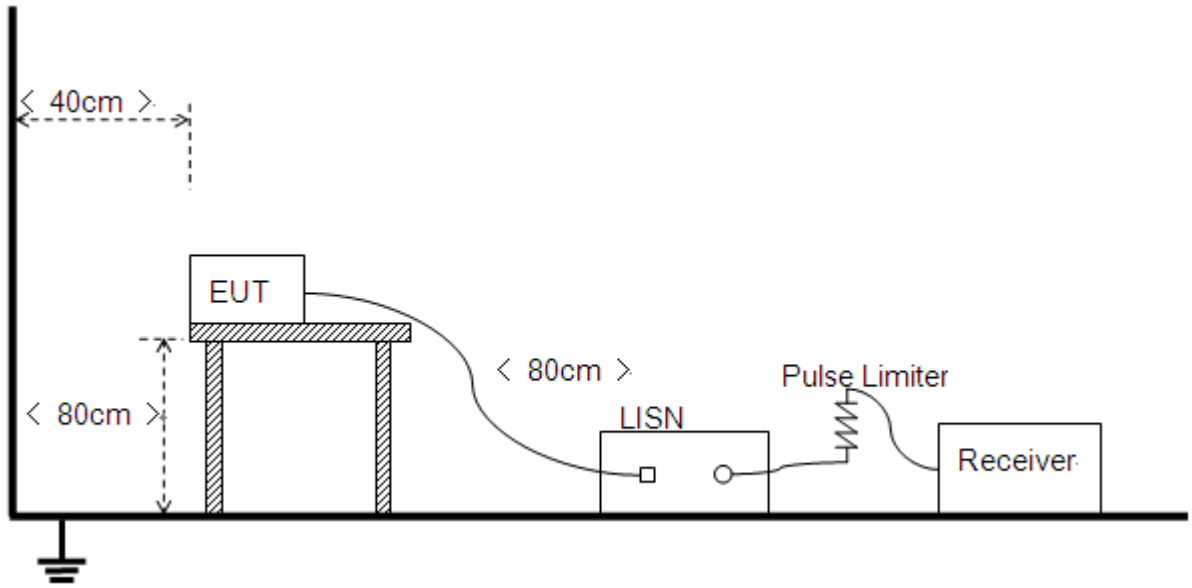
Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106

2.6. Test Setup Layout Diagram

2.6.1.Conducted Measurement

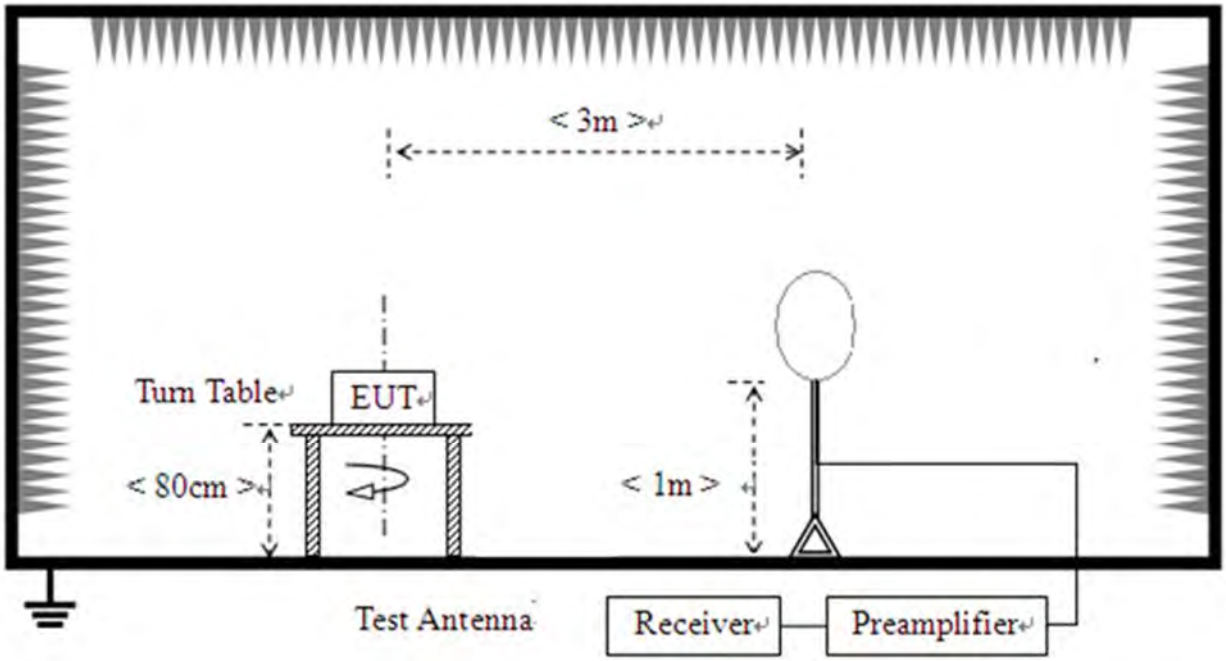


2.6.2.Conducted Emission Measurement

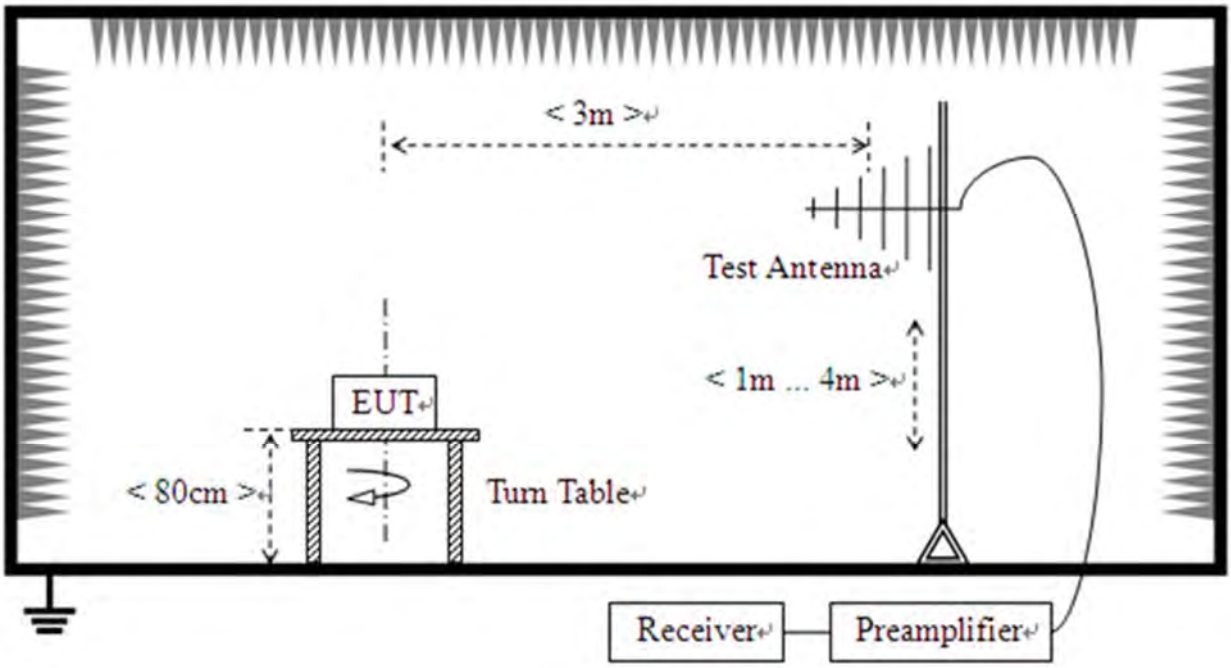


2.6.3.Radiation Measurement

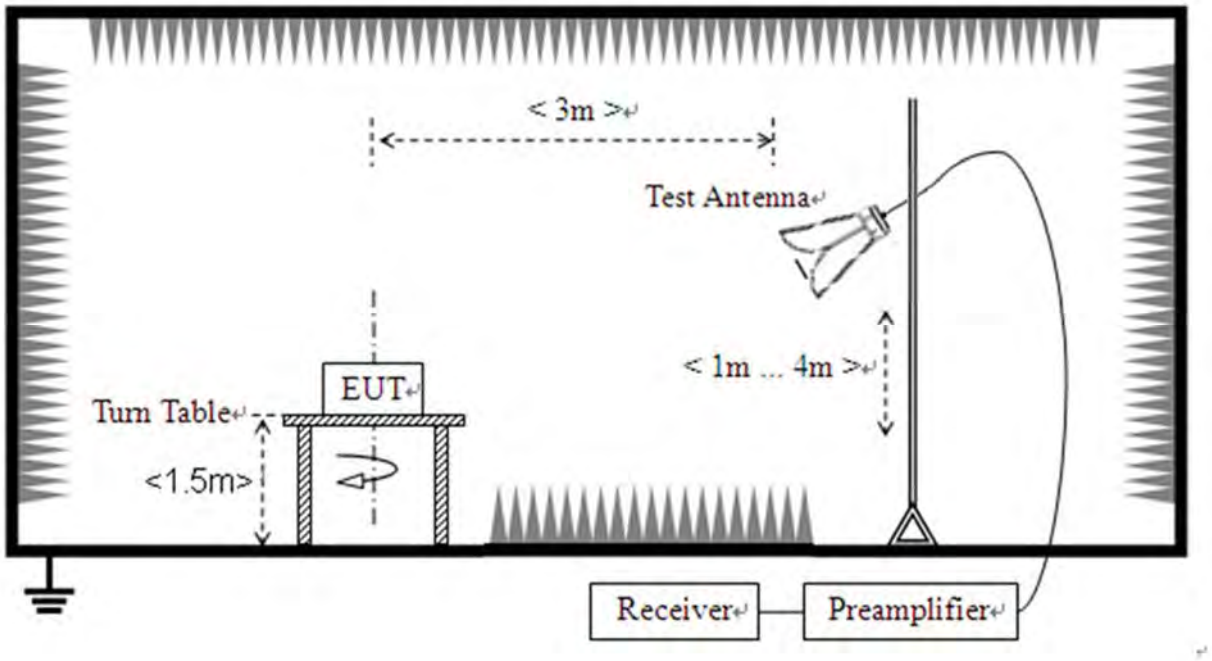
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



3. Test Results

3.1. Antenna Requirement

3.1.1.Requirement

According to FCC 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.

3.1.2.Test Result

Antenna location	Antenna Type	Coupling Method
☒Internal ☐External	☒FPC Antenna ☐Spring Antenna ☐Ceramic Antenna ☐Integrated Antenna ☐Dipole Antenna ☐PCB Antenna ☐PIFA Antenna ☐On-board Antenna	☐I-PEX Connector ☐SMA Connector ☐RP-SMA Connector ☒Metal Shrapnel ☐Layout

3.2. Duty Cycle of Test Signal

3.2.1.Requirement

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%).When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be used to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration(T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data are being acquired (i.e.,no transmitter OFF-time is to be considered).
When continuous transmission cannot be achieved and sweep triggering/signal gating cannot be implemented, alternative procedures are provided that can be used to measure the average power; however, they will require an additional measurement of the transmitter duty cycle (D). Within this sub clause, the duty cycle refers to the fraction of time over which the transmitter is ON and is transmitting at its maximum power control level. The duty cycle is considered to be constant if variations are less than ±2%; otherwise, the duty cycle is considered to be non constant.

3.2.2.Test Result

Refer to Annex A.1 in this report.

3.3. Maximum Peak Conducted Output Power

3.3.1.Requirement

According to FCC section 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed 1 Watt.

3.3.2.Test Procedures

KDB 558074 Section 8.3.1 was used in order to prove compliance.

3.3.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.3.4.Test Result

Refer to Annex A.2 in this report.

3.4. Maximum Average Conducted Output Power

3.4.1.Requirement

According to FCC section 15.247(b)(3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum average conducted output power of the intentional radiator shall not exceed 1 Watt.

3.4.2.Test Procedures

KDB 558074 Section 8.3.2 was used in order to prove compliance.

3.4.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.4.4.Test Result

Refer to Annex A.3 in this report.

3.5.6 dB Bandwidth

3.5.1.Requirement

According to FCC section 15.247(a) (2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

3.5.1.Test Procedures

The steps for the first option are as follows:
a) Set analyzer center frequency to channel center frequency
b) Set RBW to100kHz
c) Set VBW to 300kHz
d) Detector = peak.
e) Trace mode = max hold
f) Sweep time = auto couple
g) Allow the trace to fully stabilize
h) 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 by6 dB relative to the maximum level measured in the fundamental emission
The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW ≥ 3 ×RBW, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥6 dB.

3.5.2.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.5.3.Test Result

Refer to Annex A.4 in this report.

3.6. Conducted Spurious Emissions and Band Edge

3.6.1.Requirement

According to FCC section 15.247(d), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

3.6.2.Test Procedures

KDB 558074 Section 8.5 and 8.7 was used in order to prove compliance.

3.6.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.6.4.Test Result

Refer to Annex A.5 and A.6 in this report.

3.7. Power Spectral Density

3.7.1.Requirement

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm 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.

3.7.2.Test Procedures

The measured power spectral density was calculated by the reading of the spectrum analyzer and calibration. Following is the test procedure for PSD test:
a) Set analyzer center frequency to channel center frequency
b) Set span to1.5 times DTS
c) Set RBW to 3kHz
d) Set VBW to 10kHz
e) Detector = peak
f) Sweep time = auto couple
g) Trace mode = max hold
h) Allow trace to fully stabilize
i) Use the peak marker function to determine the maximum amplitude level within the RBW

3.7.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.7.4.Test Result

Refer to Annex A.7 in this report.

3.8. Conducted Emission

3.8.1.Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency Range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note:

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.8.2.Test Procedures

The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.

3.8.3.Test Setup Layout

Refer to chapter 2.6.2 in this report.

3.8.4.Test Result

Refer to Annex A.8 in this report.

3.9. Restricted Frequency Bands

3.9.1.Requirement

According to FCC section 15.247(d), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, 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).

3.9.2.Test Procedures

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.
For the Test Antenna:
Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1GHz
VBW = 3 MHz
Sweep = auto
Detector function = peak/average
Trace = max hold
Allow the trace to stabilize

3.9.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.9.4.Test Result

Refer to Annex A.8 in this report.

3.10. Radiated Emission

3.10.1.Requirement

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
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

Note1: For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
Note2: For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

3.10.2.Test Procedures

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz.The antenna to EUT distance is 3meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

3.10.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.10.4.Test Result

Refer to Annex A.9 in this report.

Annex A Test Data and Result

A.1. Duty Cycle of Test Signal

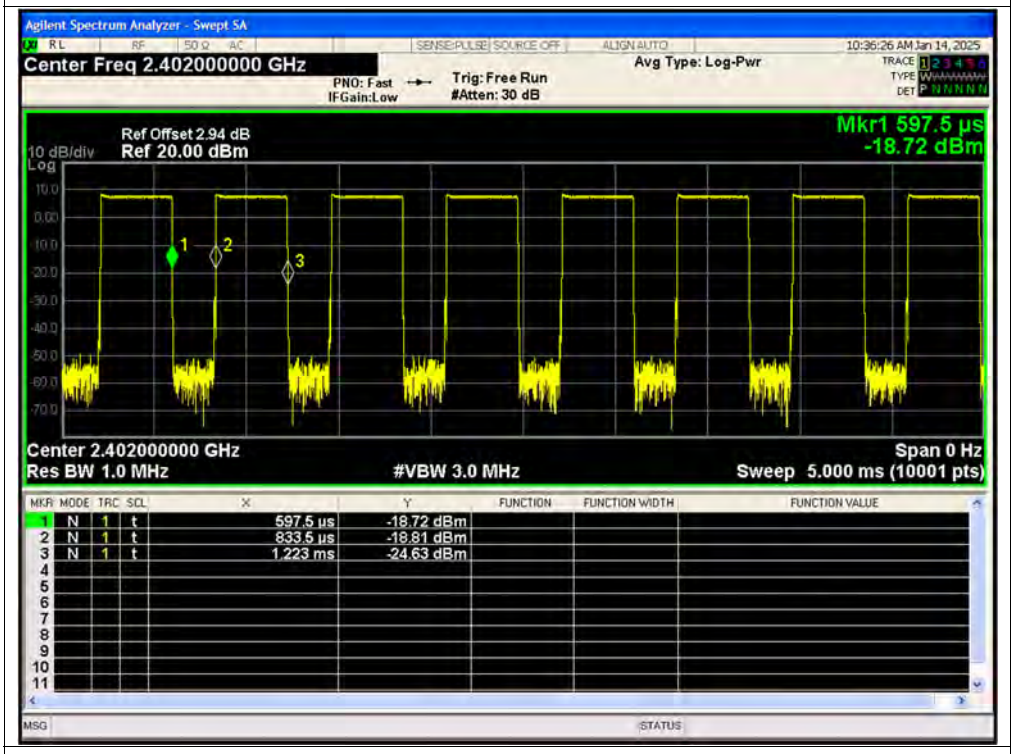
Left:

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	62.27	2.06	2.57
NVNT	BLE 1M	2440	Ant1	62.32	2.05	2.57
NVNT	BLE 1M	2480	Ant1	62.24	2.06	2.57
NVNT	BLE 2M	2404	Ant1	32.88	4.83	4.87
NVNT	BLE 2M	2440	Ant1	32.88	4.83	4.87
NVNT	BLE 2M	2478	Ant1	32.88	4.83	4.87

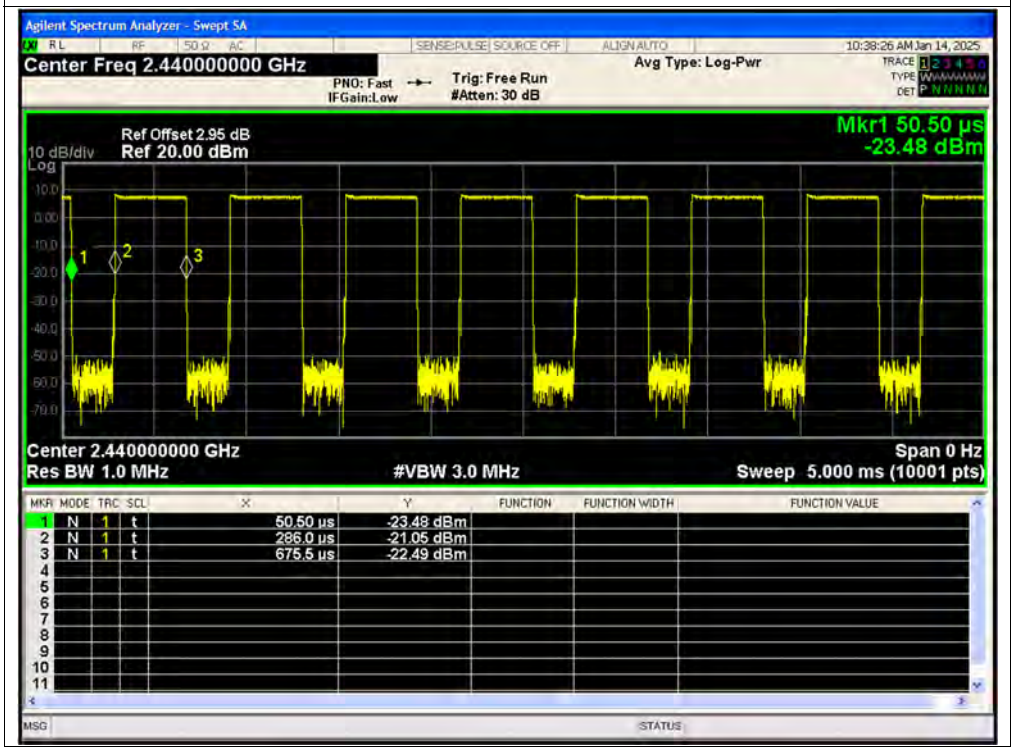
Right:

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	62.4	2.05	2.56
NVNT	BLE 1M	2440	Ant1	62.4	2.05	2.56
NVNT	BLE 1M	2480	Ant1	62.32	2.05	2.57
NVNT	BLE 2M	2404	Ant1	32.8	4.84	4.88
NVNT	BLE 2M	2440	Ant1	32.88	4.83	4.87
NVNT	BLE 2M	2478	Ant1	32.85	4.83	4.87

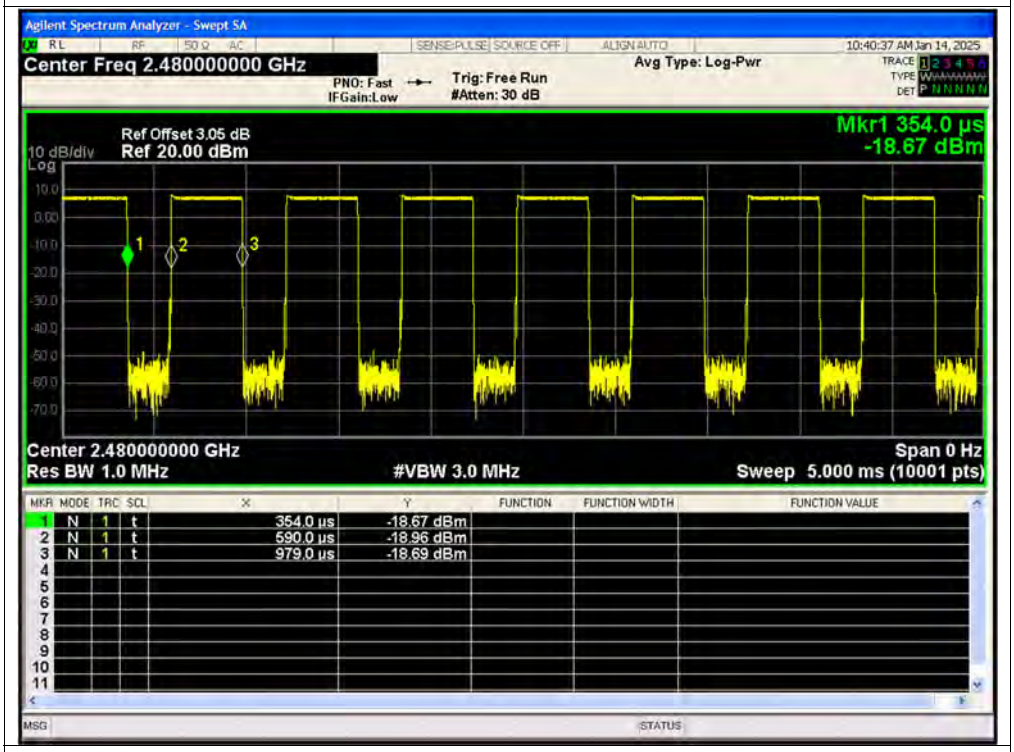
Left
Test Graphs
Duty Cycle NVNT BLE 1M 2402MHz Ant1



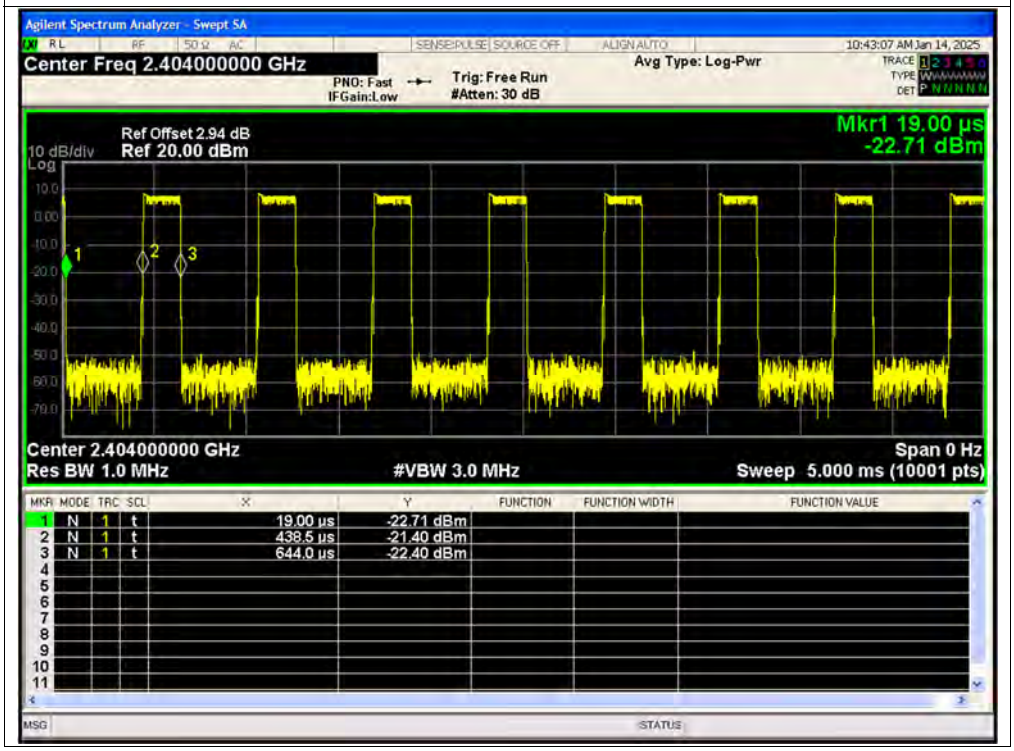
Duty Cycle NVNT BLE 1M 2440MHz Ant1



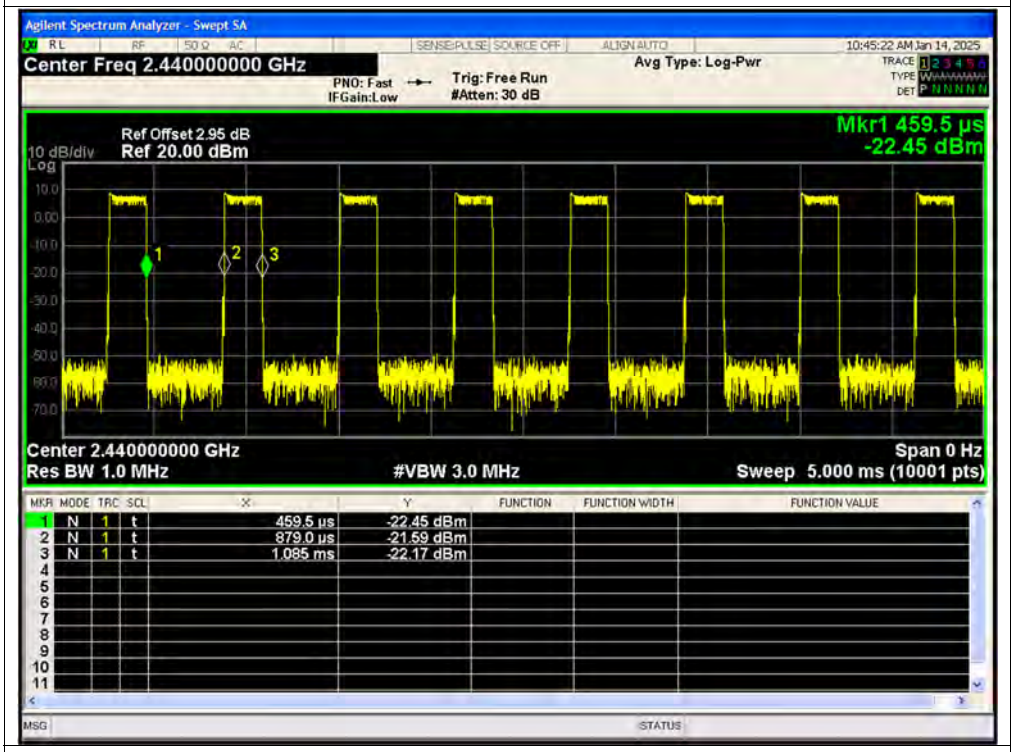
Duty Cycle NVNT BLE 1M 2480MHz Ant1



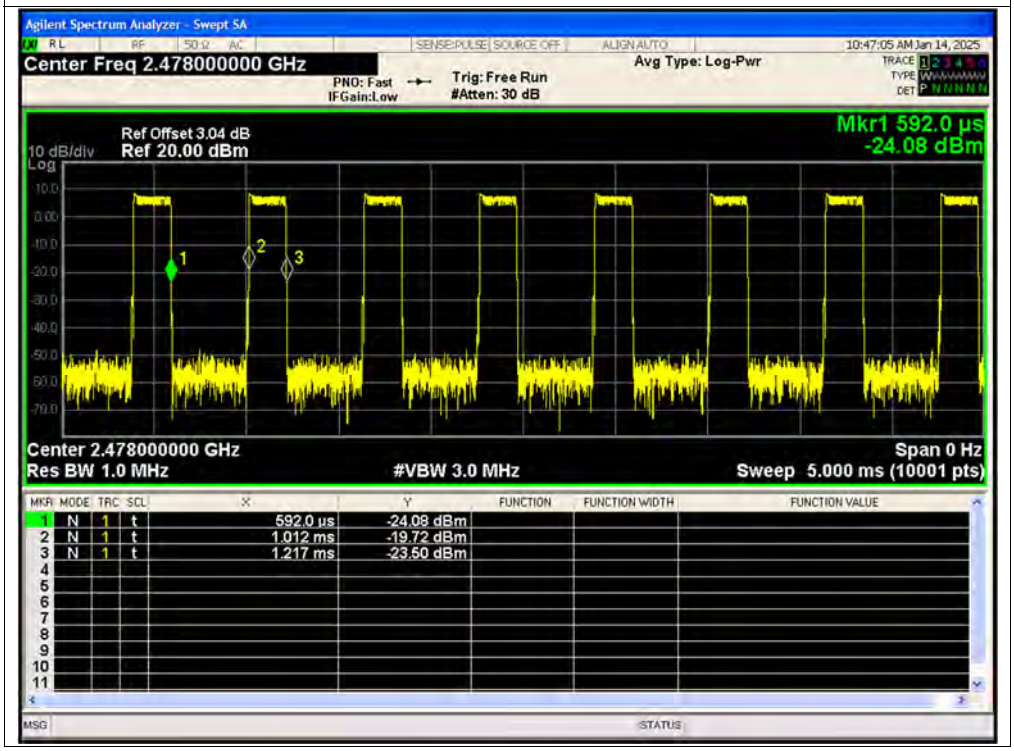
Duty Cycle NVNT BLE 2M 2404MHz Ant1



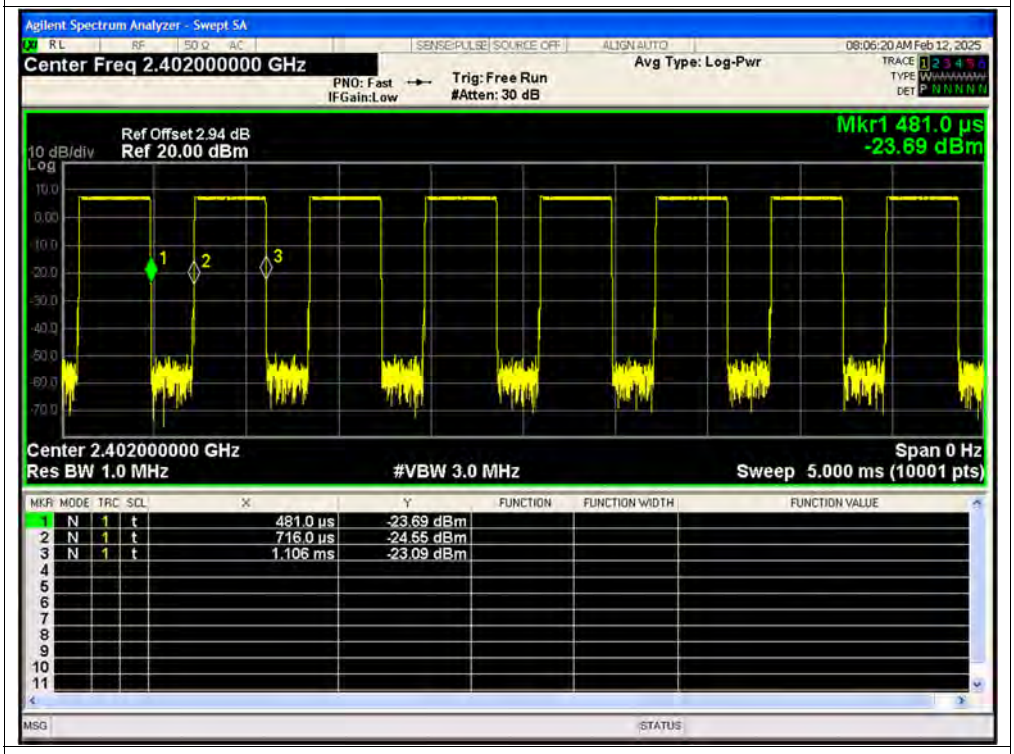
Duty Cycle NVNT BLE 2M 2440MHz Ant1



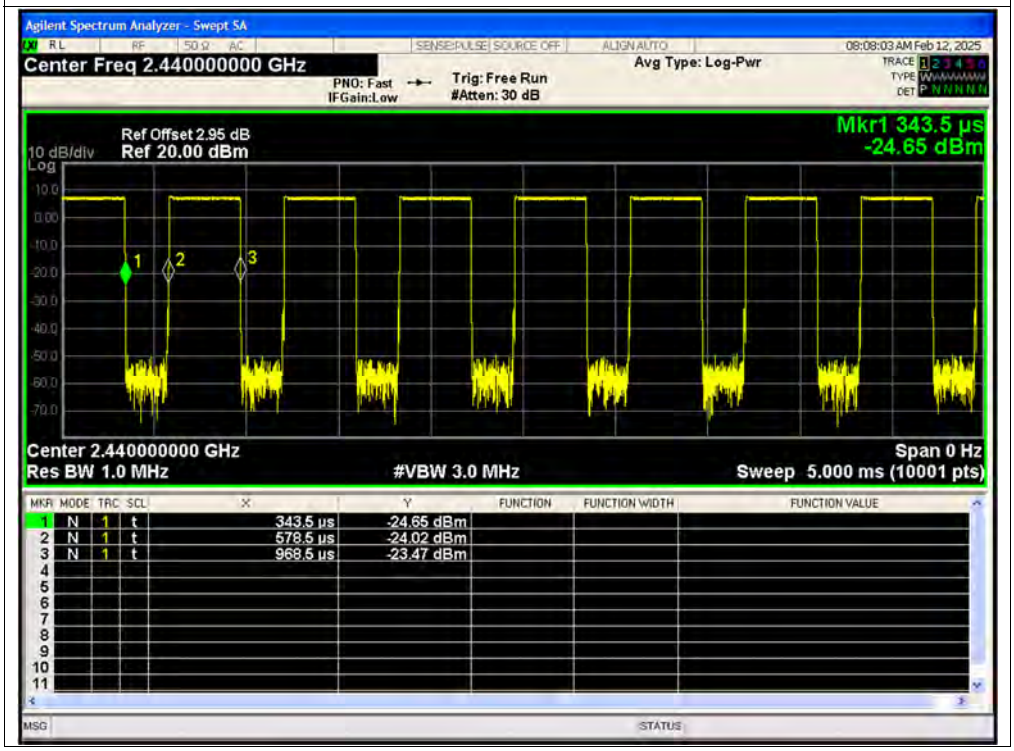
Duty Cycle NVNT BLE 2M 2478MHz Ant1



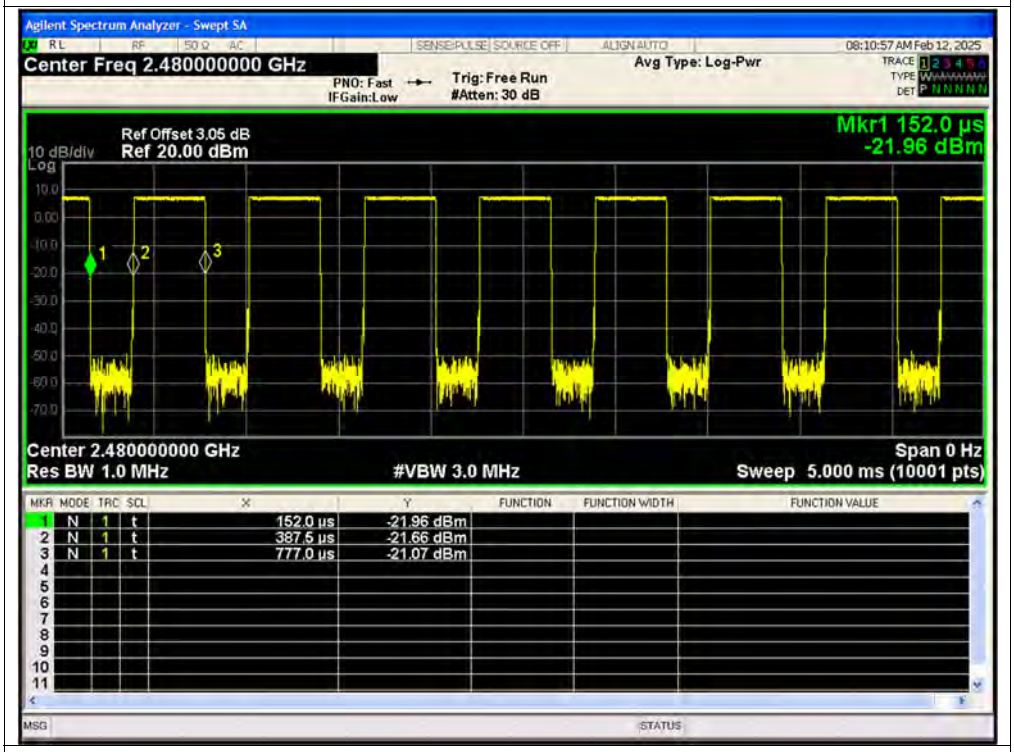
Right
Test Graphs
Duty Cycle NVNT BLE 1M 2402MHz Ant1



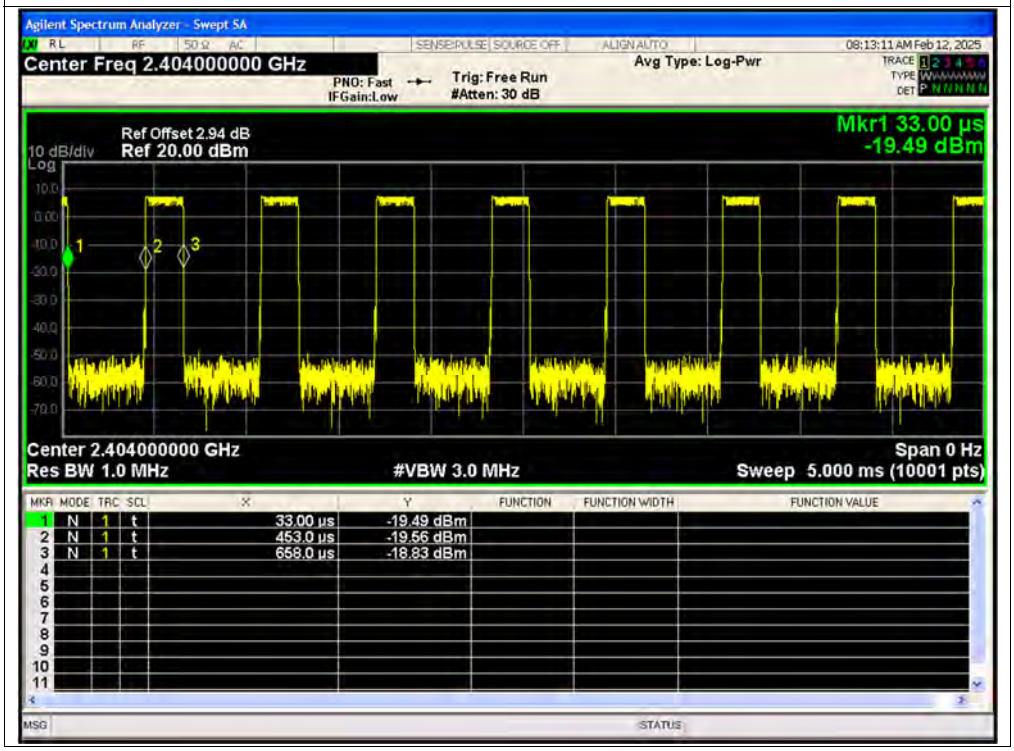
Duty Cycle NVNT BLE 1M 2440MHz Ant1



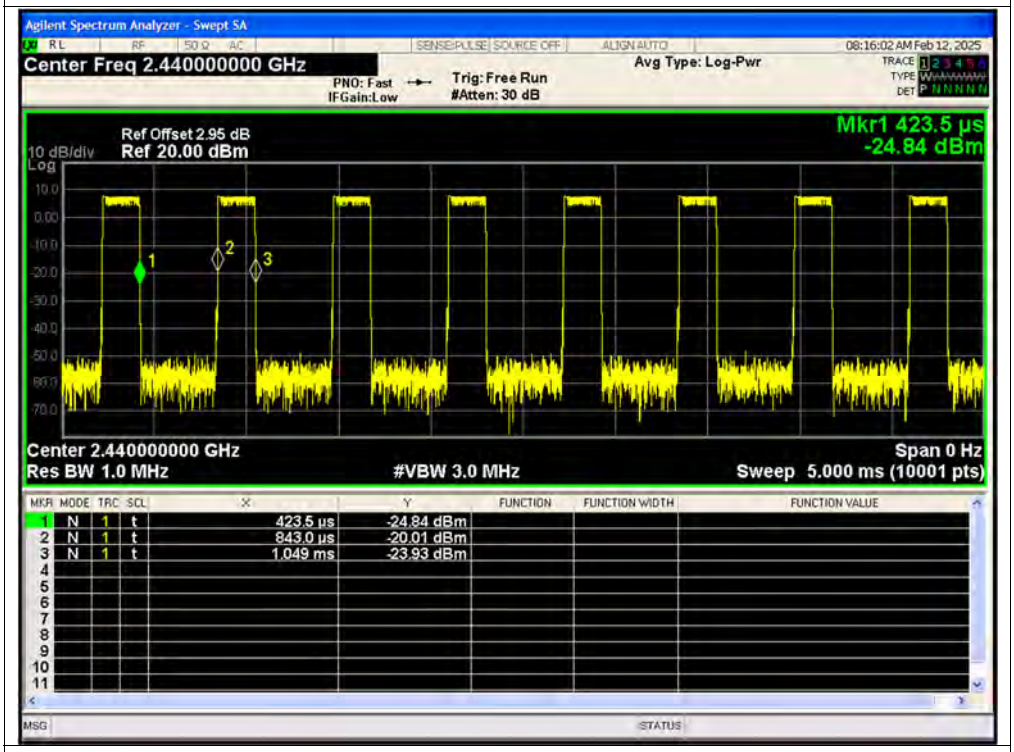
Duty Cycle NVNT BLE 1M 2480MHz Ant1



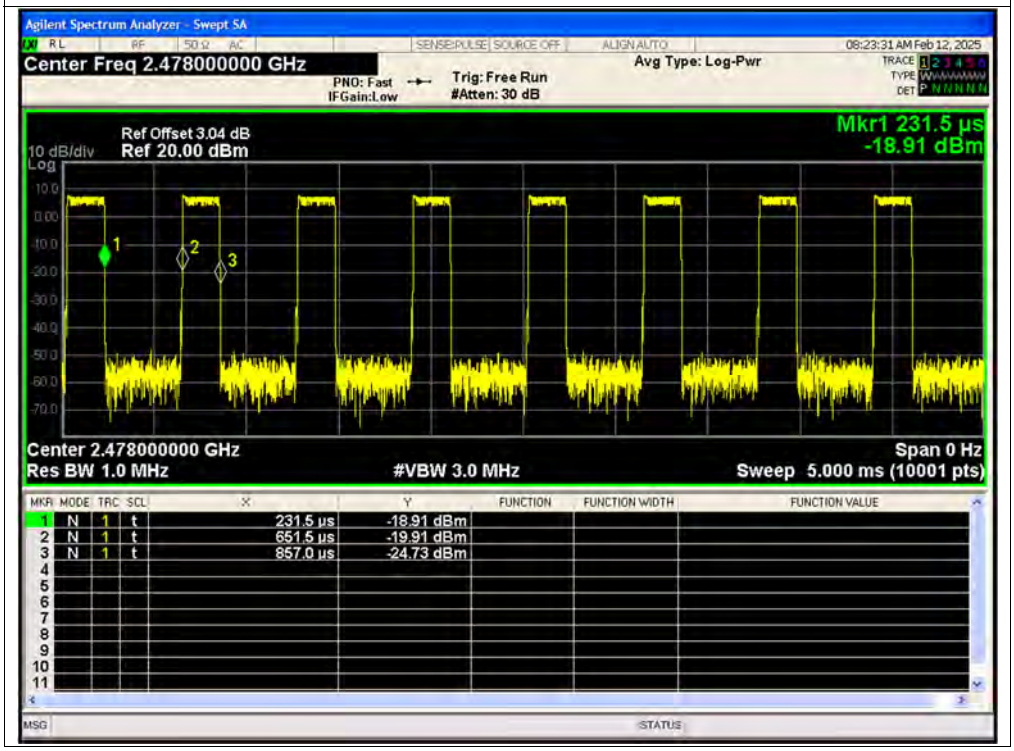
Duty Cycle NVNT BLE 2M 2404MHz Ant1



Duty Cycle NVNT BLE 2M 2440MHz Ant1



Duty Cycle NVNT BLE 2M 2478MHz Ant1



A.2. Maximum Peak Conducted Output Power

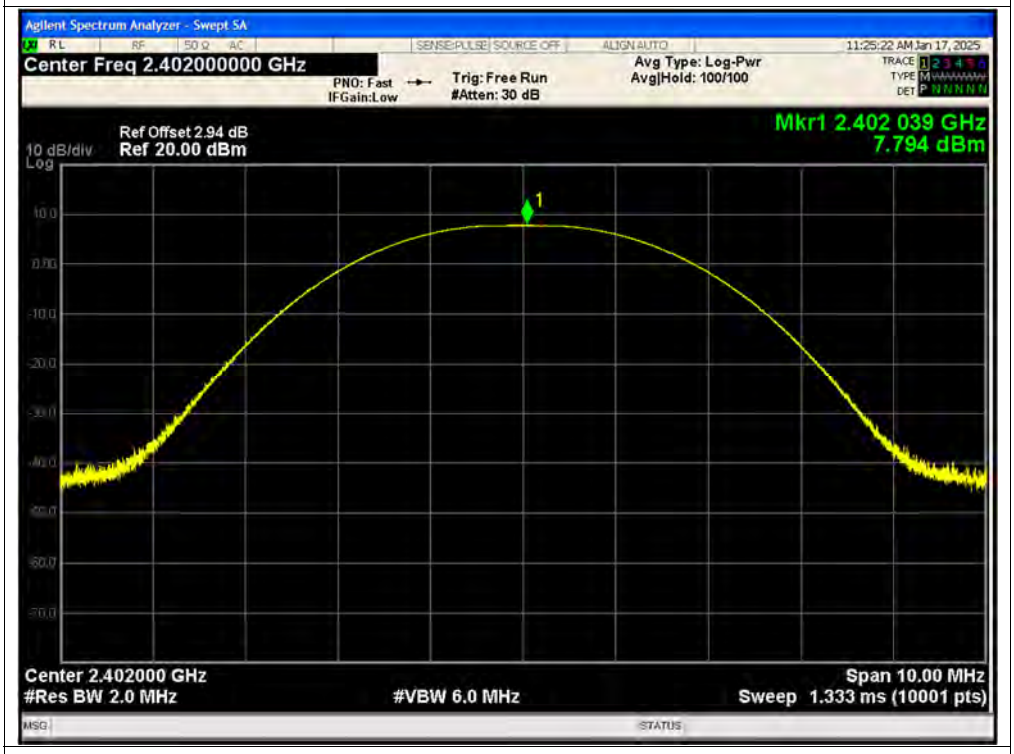
Left:

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit Conducted (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	7.79	0	7.79	0.00601	30	Pass
NVNT	BLE 1M	2440	Ant1	7.83	0	7.83	0.00607	30	Pass
NVNT	BLE 1M	2480	Ant1	7.48	0	7.48	0.0056	30	Pass
NVNT	BLE 2M	2404	Ant1	7.75	0	7.75	0.00596	30	Pass
NVNT	BLE 2M	2440	Ant1	7.83	0	7.83	0.00607	30	Pass
NVNT	BLE 2M	2478	Ant1	7.5	0	7.5	0.00562	30	Pass

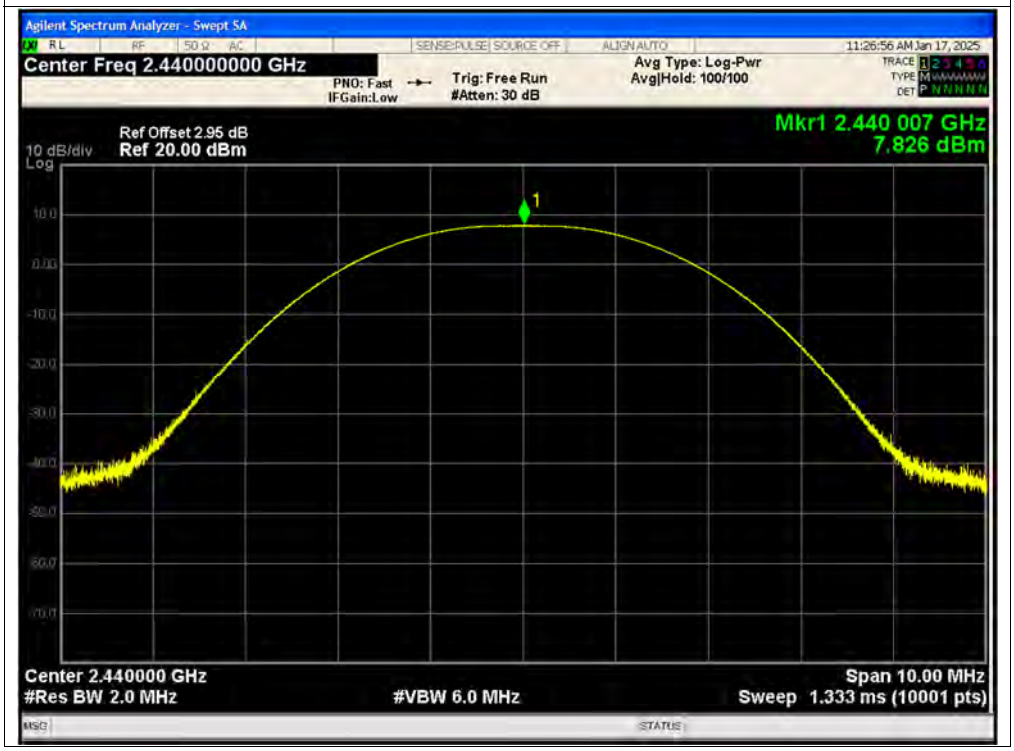
Right:

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit Conducted (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	7.56	0	7.56	0.0057	30	Pass
NVNT	BLE 1M	2440	Ant1	7.64	0	7.64	0.00581	30	Pass
NVNT	BLE 1M	2480	Ant1	7.45	0	7.45	0.00556	30	Pass
NVNT	BLE 2M	2404	Ant1	7.52	0	7.52	0.00565	30	Pass
NVNT	BLE 2M	2440	Ant1	7.75	0	7.75	0.00596	30	Pass
NVNT	BLE 2M	2478	Ant1	7.56	0	7.56	0.0057	30	Pass

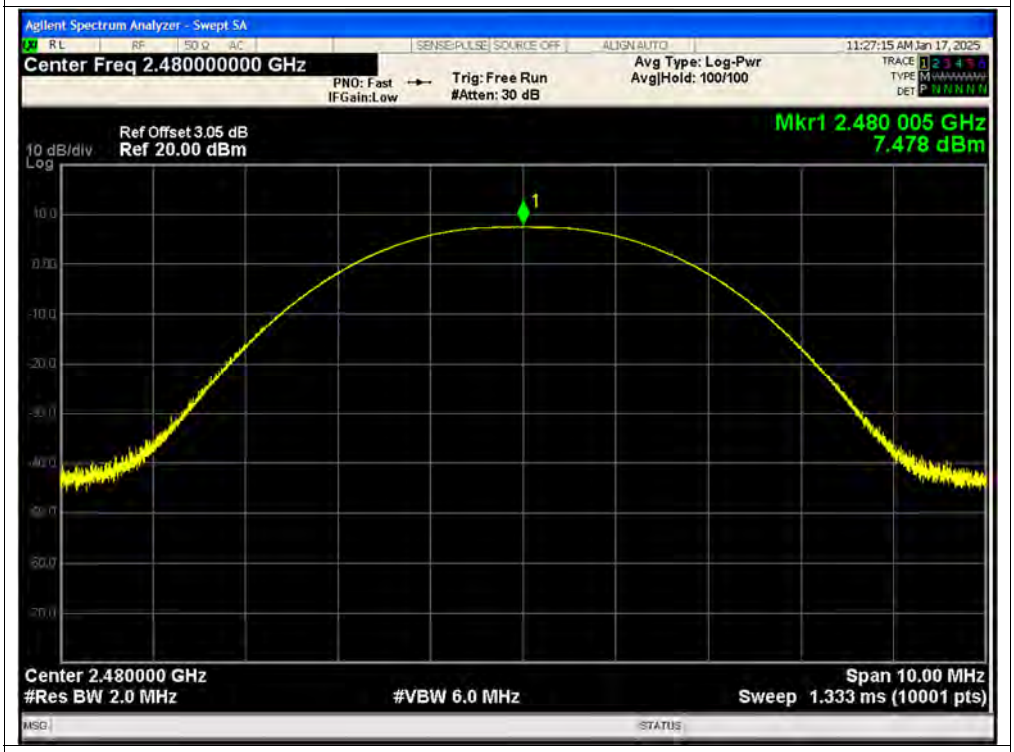
Left
Test Graphs
Peak Power NVNT BLE 1M 2402MHz Ant1



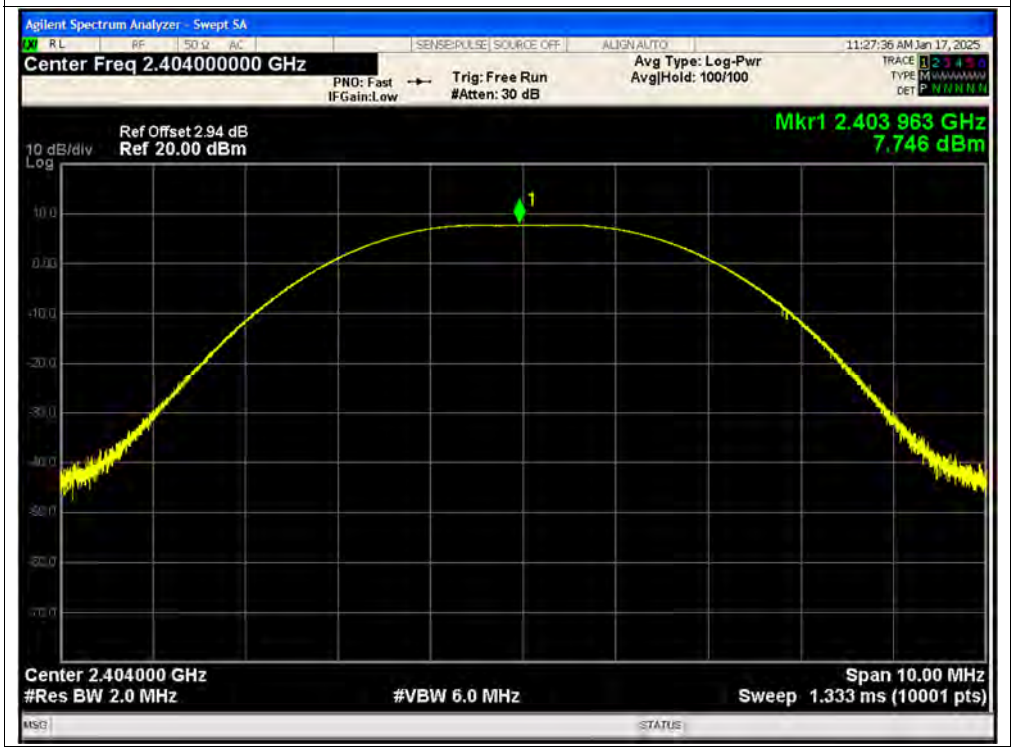
Peak Power NVNT BLE 1M 2440MHz Ant1



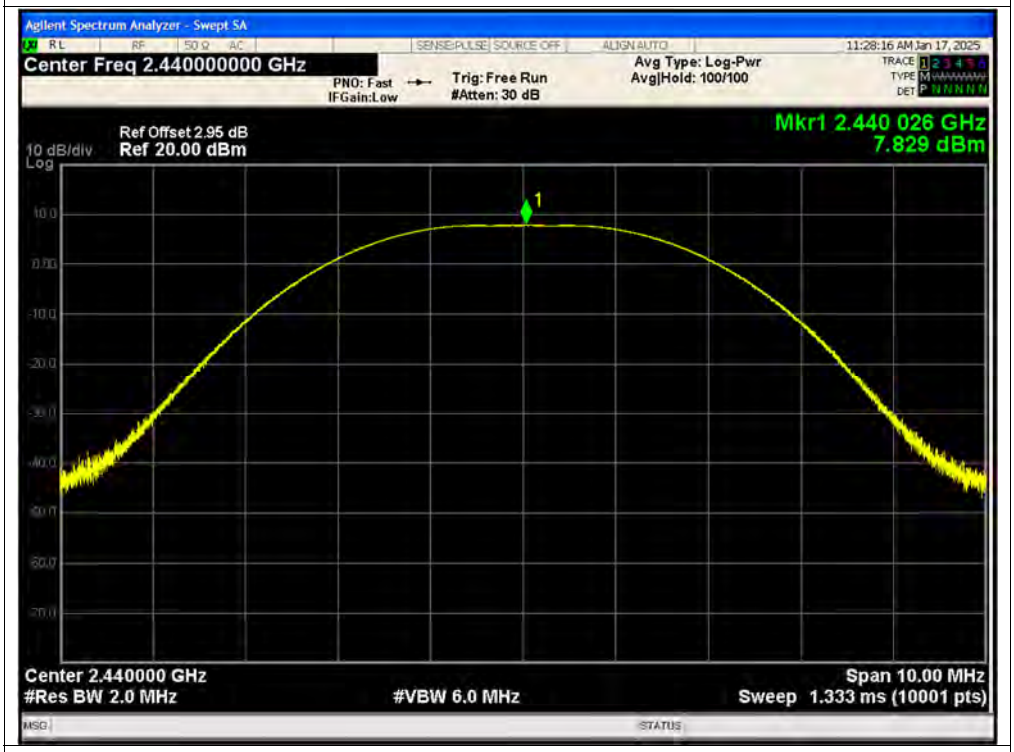
Peak Power NVNT BLE 1M 2480MHz Ant1



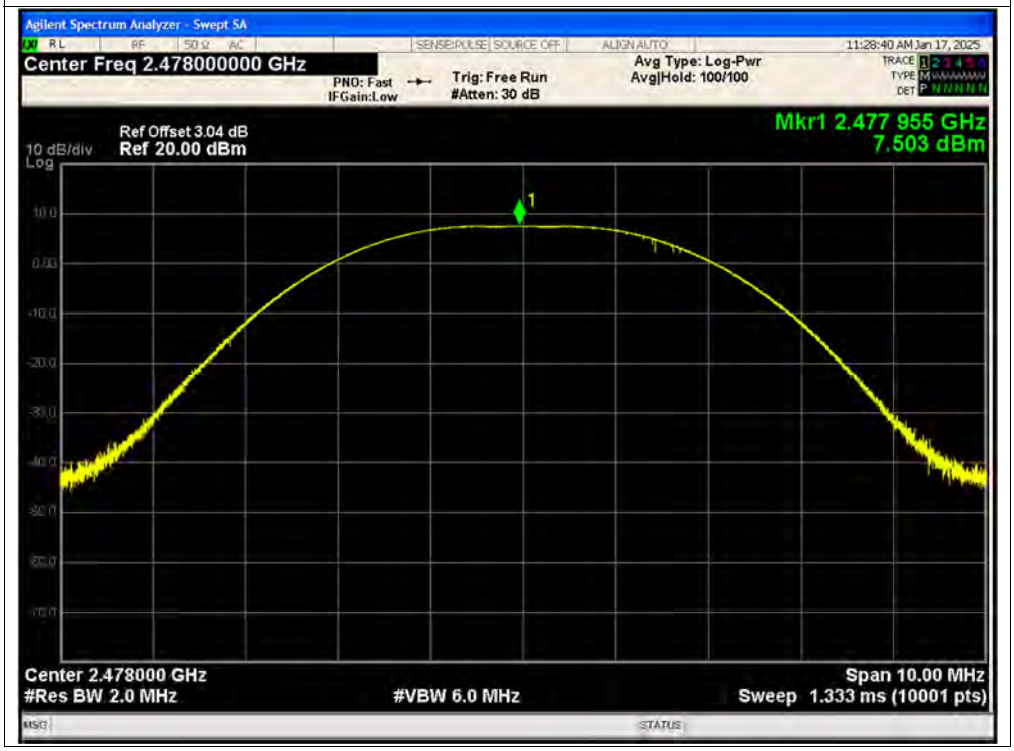
Peak Power NVNT BLE 2M 2404MHz Ant1



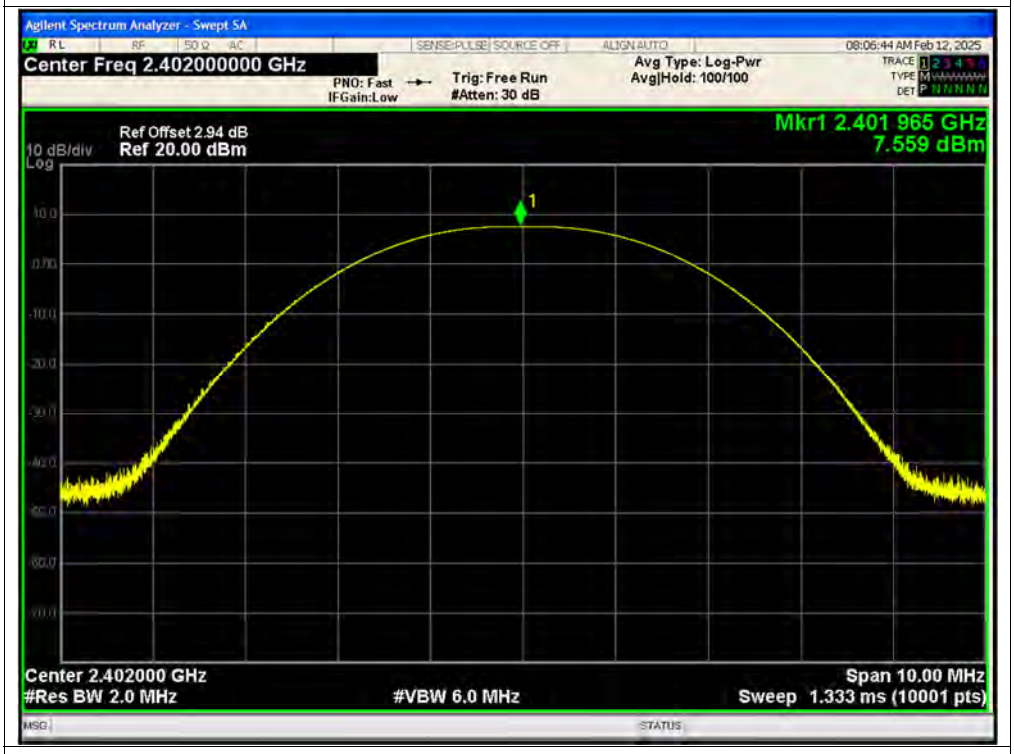
Peak Power NVNT BLE 2M 2440MHz Ant1



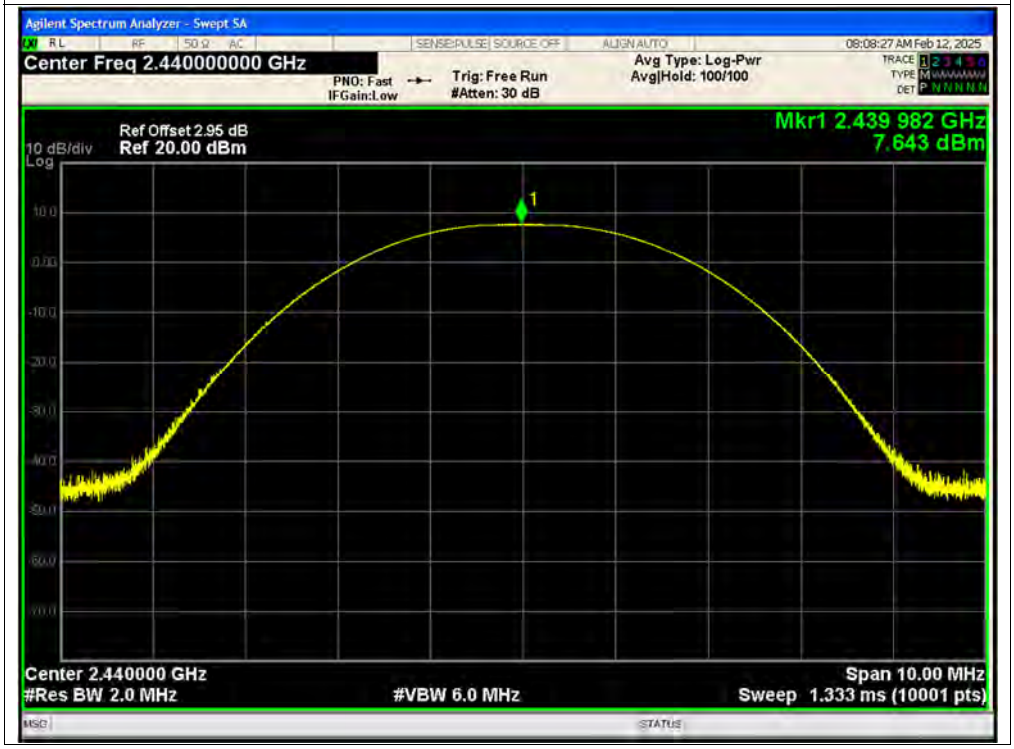
Peak Power NVNT BLE 2M 2478MHz Ant1



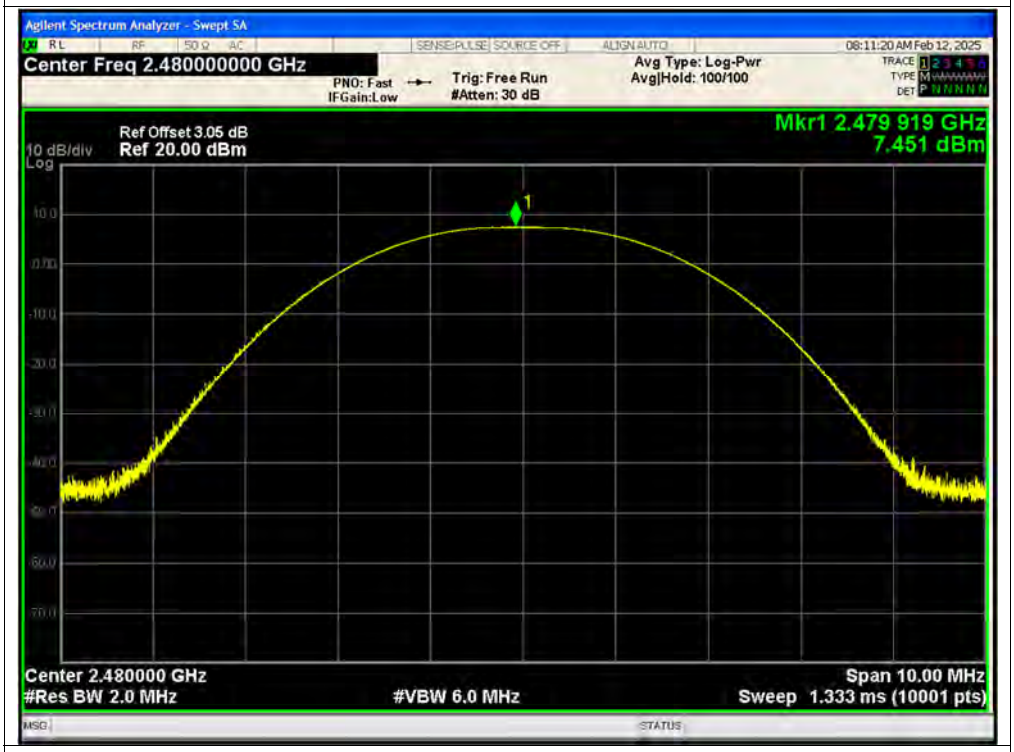
Right
Test Graphs
Peak Power NVNT BLE 1M 2402MHz Ant1



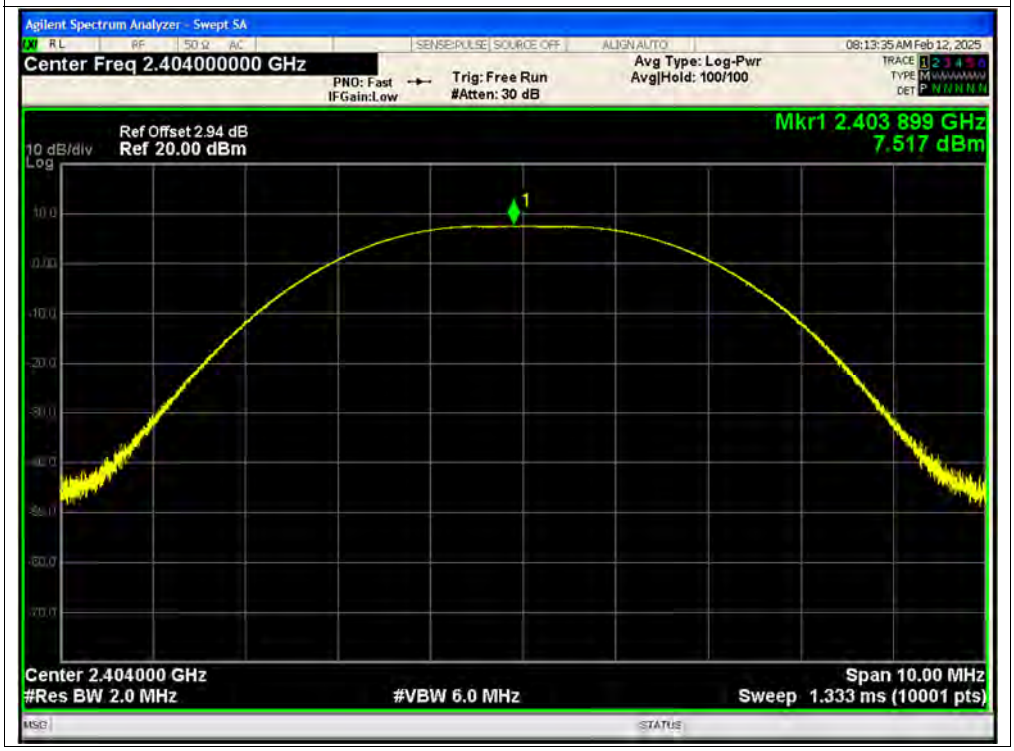
Peak Power NVNT BLE 1M 2440MHz Ant1



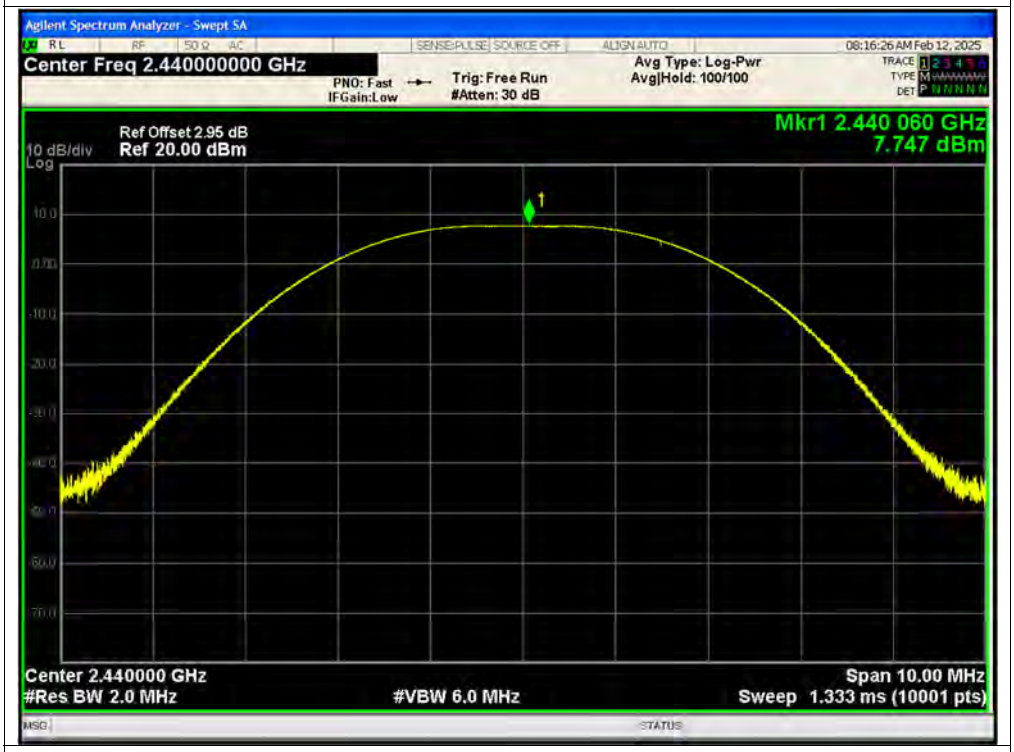
Peak Power NVNT BLE 1M 2480MHz Ant1



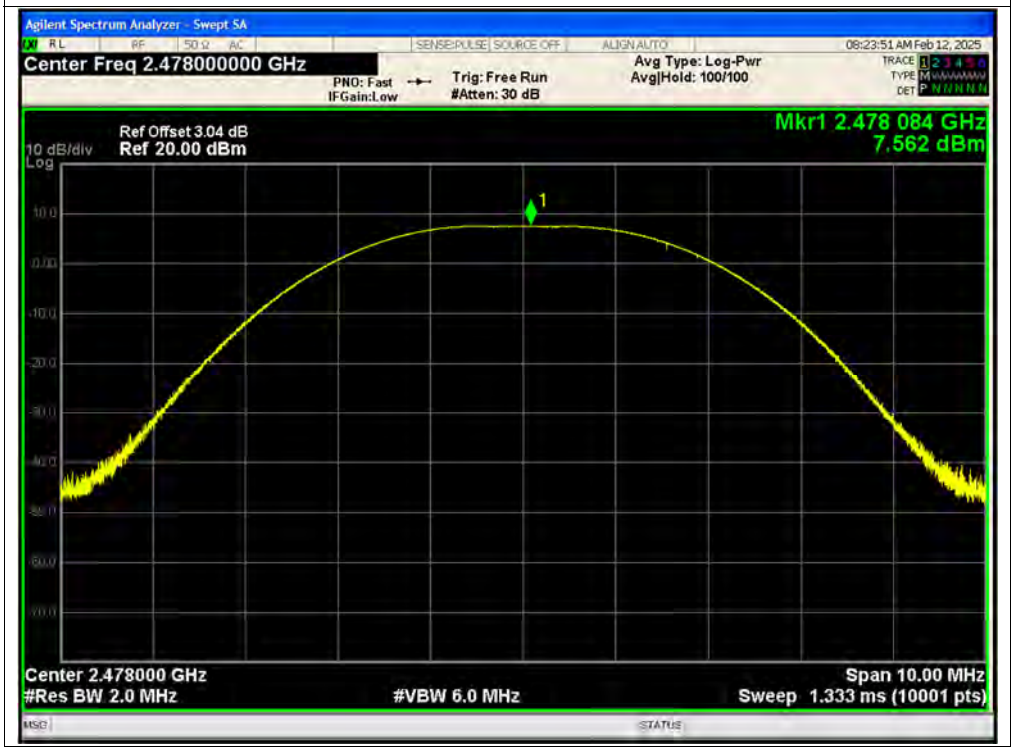
Peak Power NVNT BLE 2M 2404MHz Ant1



Peak Power NVNT BLE 2M 2440MHz Ant1



Peak Power NVNT BLE 2M 2478MHz Ant1



A.3. Maximum Average Conducted Output Power

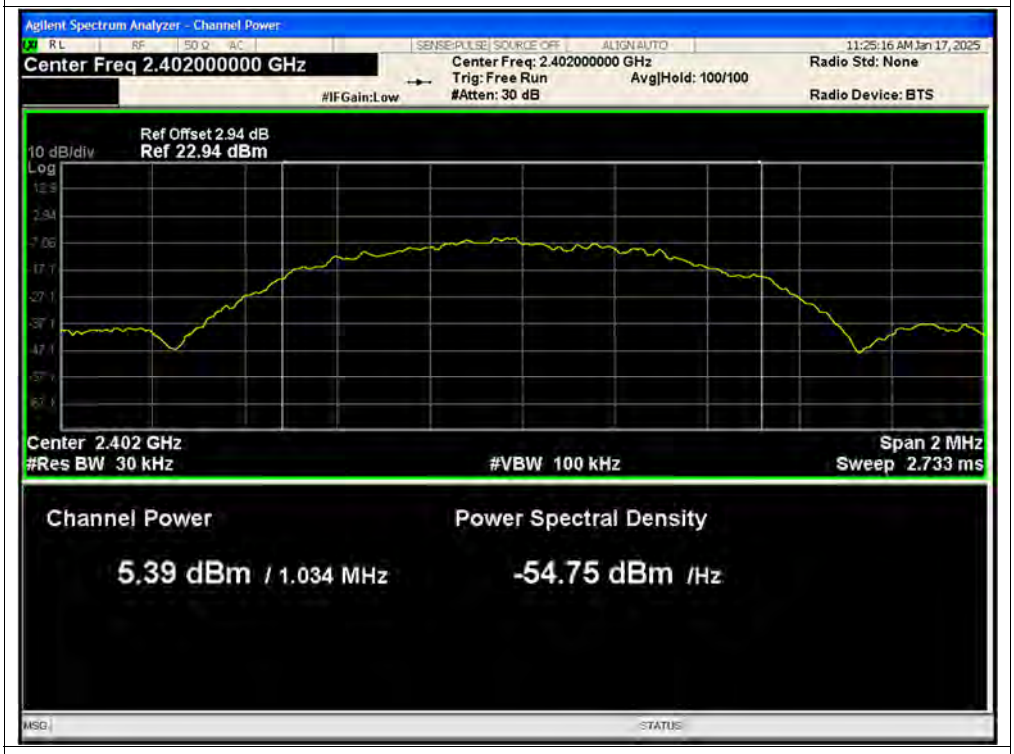
Left:

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit Conducted (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	5.39	2.06	7.45	0.00556	30	Pass
NVNT	BLE 1M	2440	Ant1	5.3	2.05	7.35	0.00543	30	Pass
NVNT	BLE 1M	2480	Ant1	5.13	2.06	7.19	0.00524	30	Pass
NVNT	BLE 2M	2404	Ant1	2.57	4.83	7.4	0.0055	30	Pass
NVNT	BLE 2M	2440	Ant1	2.67	4.83	7.5	0.00562	30	Pass
NVNT	BLE 2M	2478	Ant1	2.33	4.83	7.16	0.0052	30	Pass

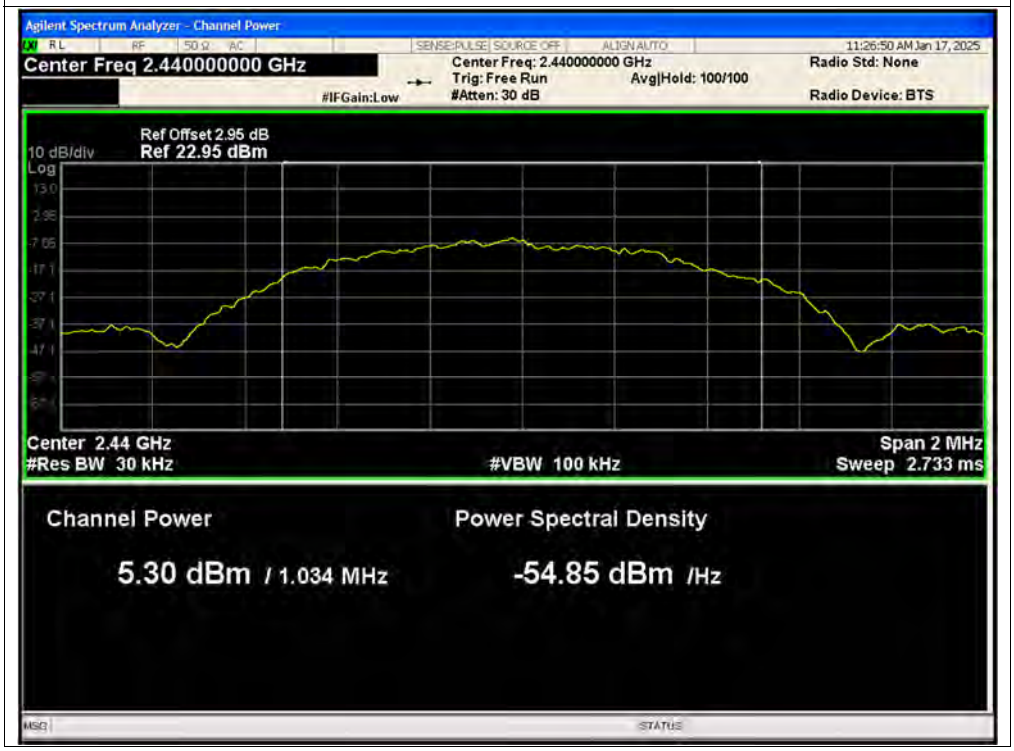
Right:

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit Conducted (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	5.26	2.05	7.31	0.00538	30	Pass
NVNT	BLE 1M	2440	Ant1	5.2	2.05	7.25	0.00531	30	Pass
NVNT	BLE 1M	2480	Ant1	5	2.05	7.05	0.00507	30	Pass
NVNT	BLE 2M	2404	Ant1	2.48	4.84	7.32	0.0054	30	Pass
NVNT	BLE 2M	2440	Ant1	2.73	4.83	7.56	0.0057	30	Pass
NVNT	BLE 2M	2478	Ant1	2.4	4.83	7.23	0.00528	30	Pass

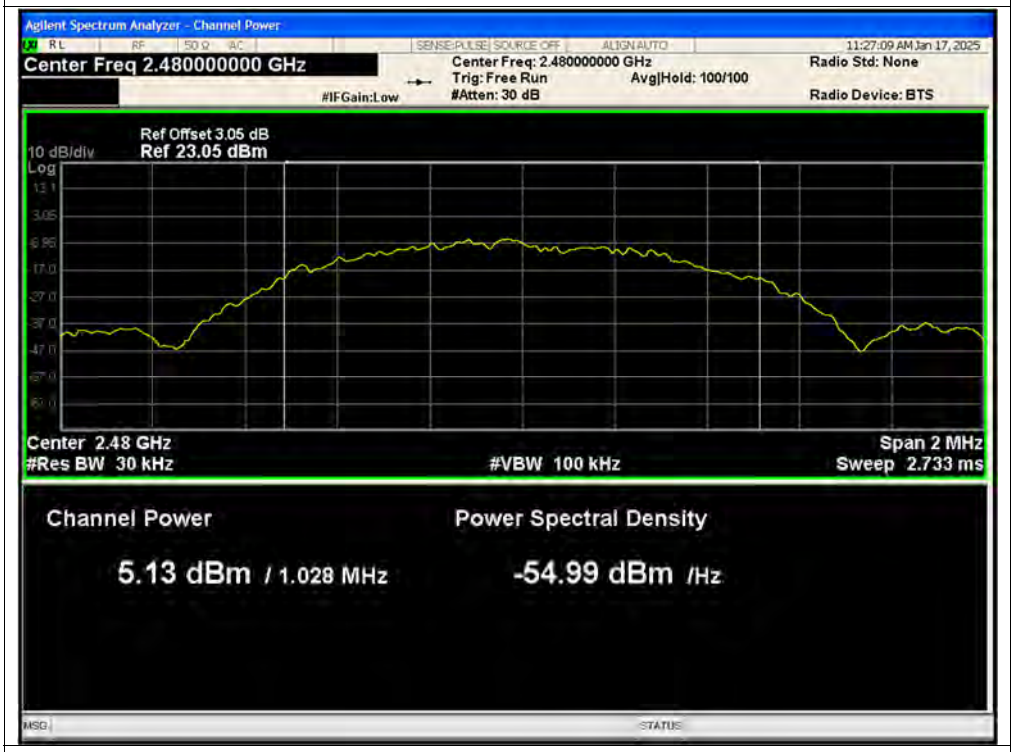
Left
Test Graphs
Average Power NVNT BLE 1M 2402MHz Ant1



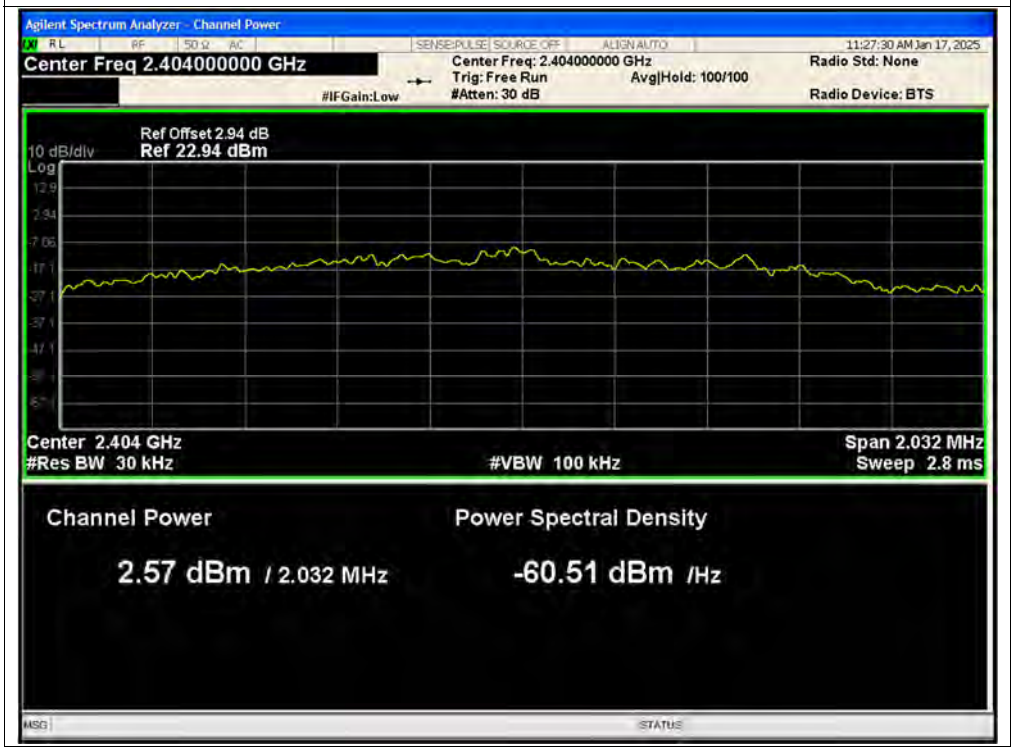
Average Power NVNT BLE 1M 2440MHz Ant1



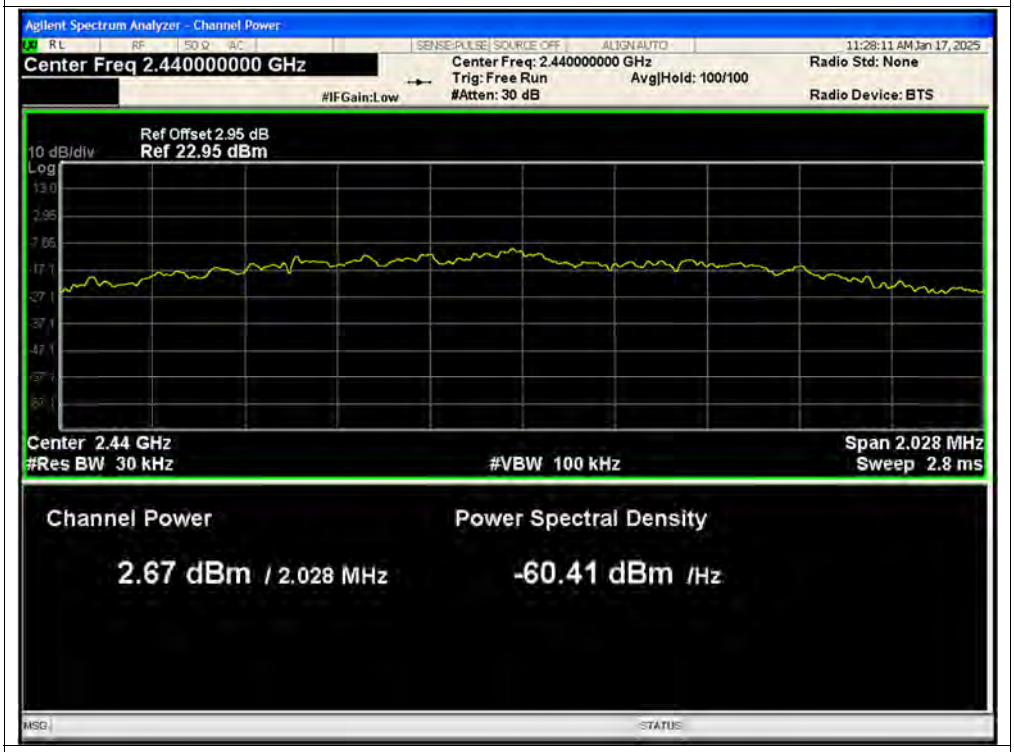
Average Power NVNT BLE 1M 2480MHz Ant1



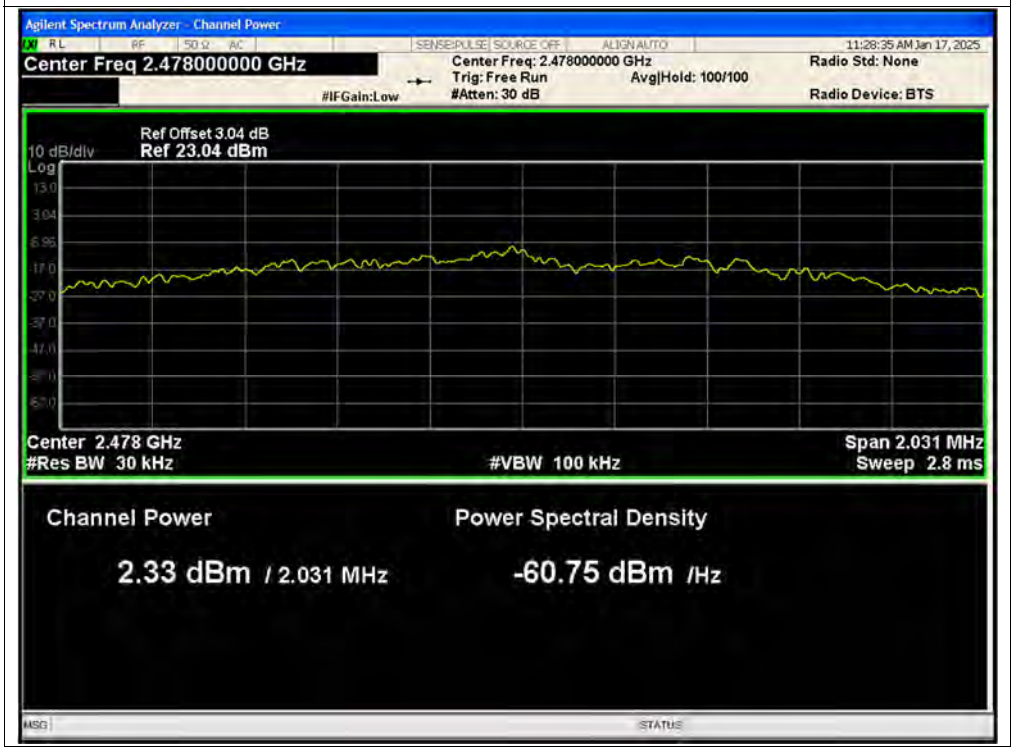
Average Power NVNT BLE 2M 2404MHz Ant1



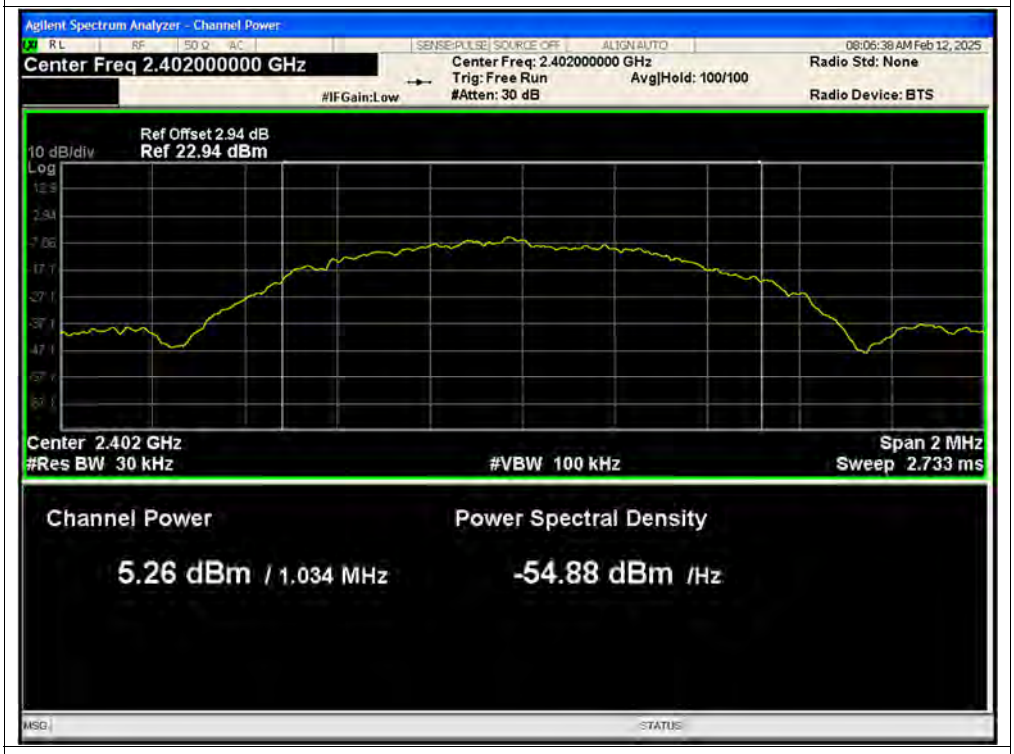
Average Power NVNT BLE 2M 2440MHz Ant1



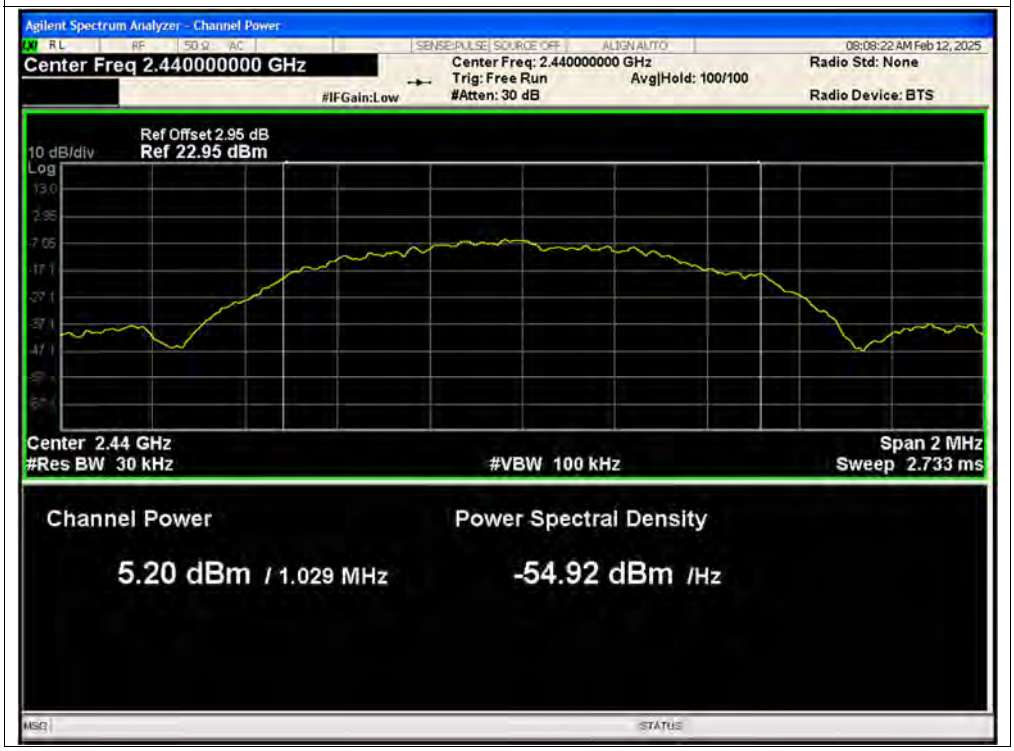
Average Power NVNT BLE 2M 2478MHz Ant1



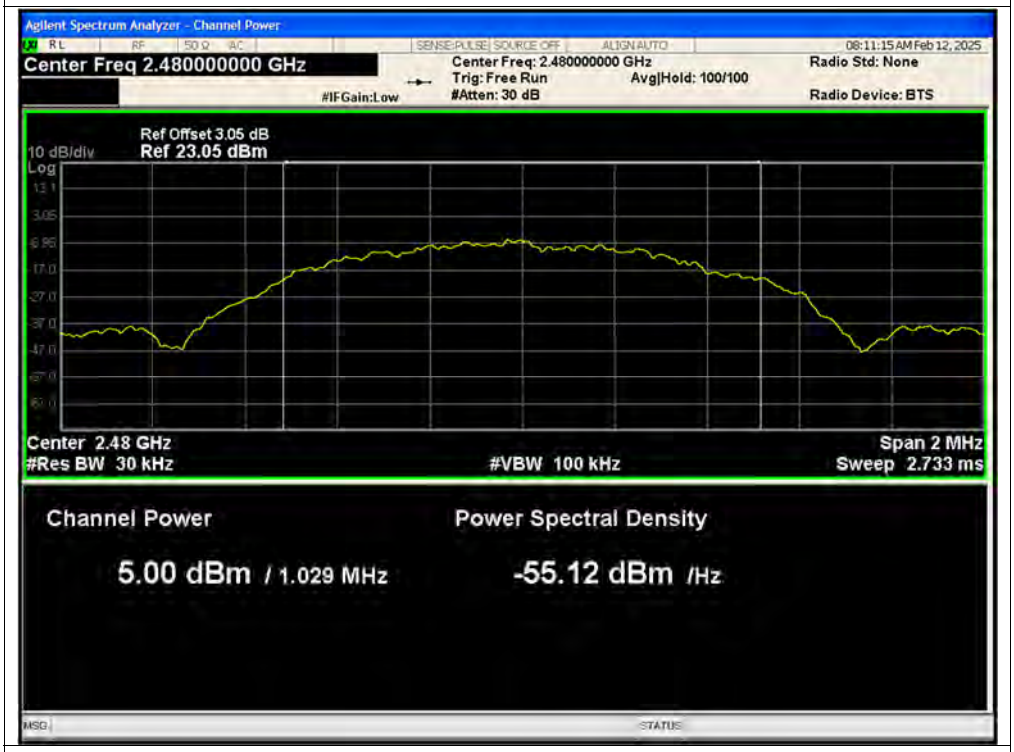
Right
Test Graphs
Average Power NVNT BLE 1M 2402MHz Ant1



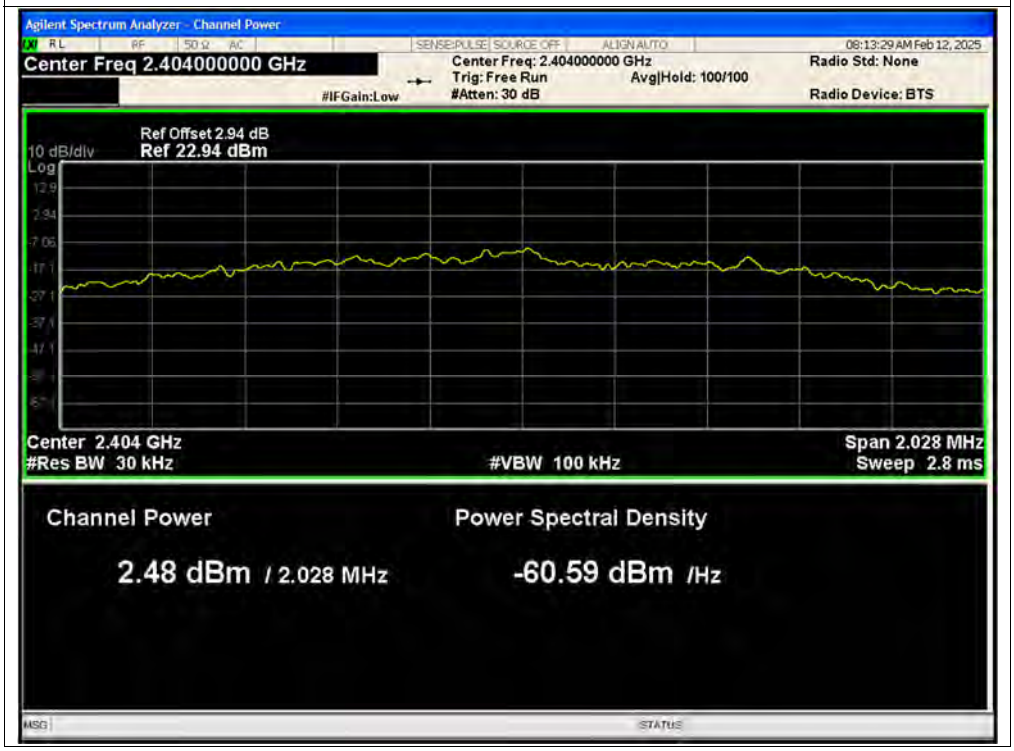
Average Power NVNT BLE 1M 2440MHz Ant1



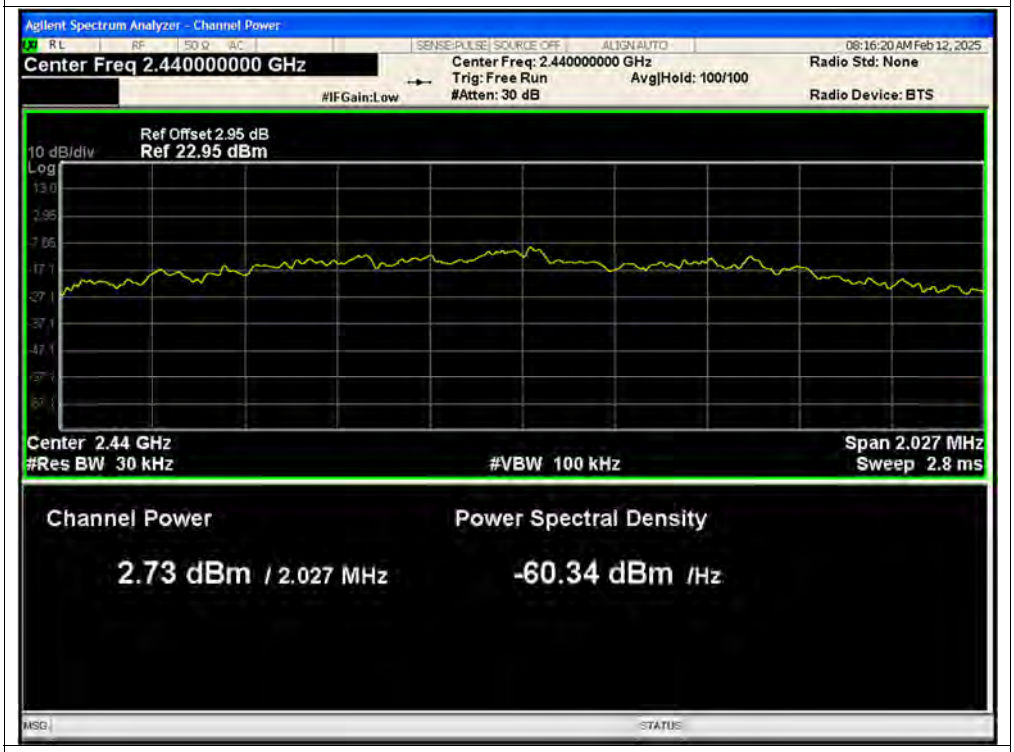
Average Power NVNT BLE 1M 2480MHz Ant1



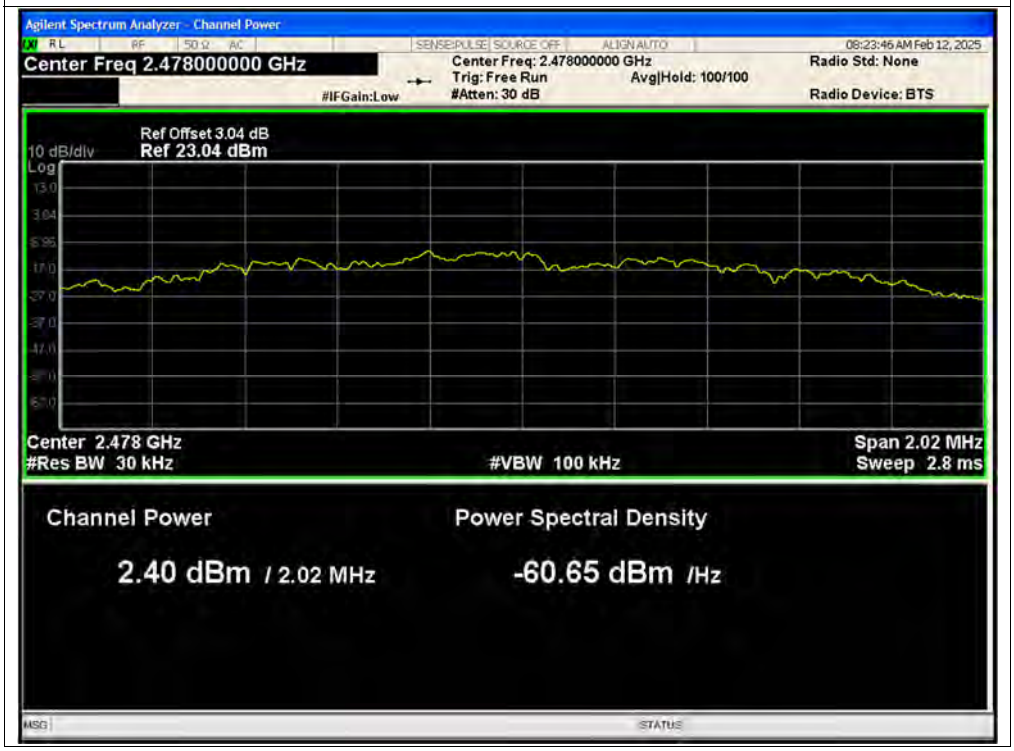
Average Power NVNT BLE 2M 2404MHz Ant1



Average Power NVNT BLE 2M 2440MHz Ant1



Average Power NVNT BLE 2M 2478MHz Ant1



A.4. 6 dB Bandwidth

Left:

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.6652	0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.6572	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.6504	0.5	Pass
NVNT	BLE 2M	2404	Ant1	1.108	0.5	Pass
NVNT	BLE 2M	2440	Ant1	1.103	0.5	Pass
NVNT	BLE 2M	2478	Ant1	1.106	0.5	Pass

Right:

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.6654	0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.6703	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.6606	0.5	Pass
NVNT	BLE 2M	2404	Ant1	1.141	0.5	Pass
NVNT	BLE 2M	2440	Ant1	1.153	0.5	Pass
NVNT	BLE 2M	2478	Ant1	1.142	0.5	Pass

Left
Test Graphs
-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1

-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1

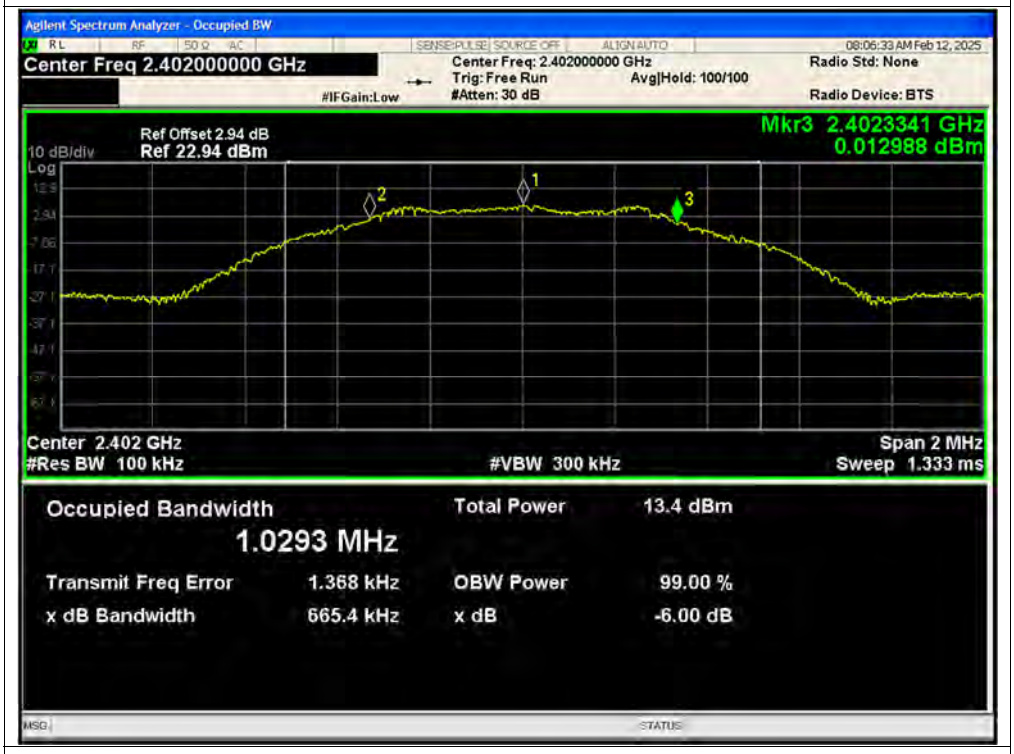
-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1

-6dB Bandwidth NVNT BLE 2M 2404MHz Ant1

-6dB Bandwidth NVNT BLE 2M 2440MHz Ant1

-6dB Bandwidth NVNT BLE 2M 2478MHz Ant1

Right
Test Graphs
-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1

-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1

-6dB Bandwidth NVNT BLE 2M 2404MHz Ant1

-6dB Bandwidth NVNT BLE 2M 2440MHz Ant1

-6dB Bandwidth NVNT BLE 2M 2478MHz Ant1

A.5. Conducted Spurious Emissions

Left:

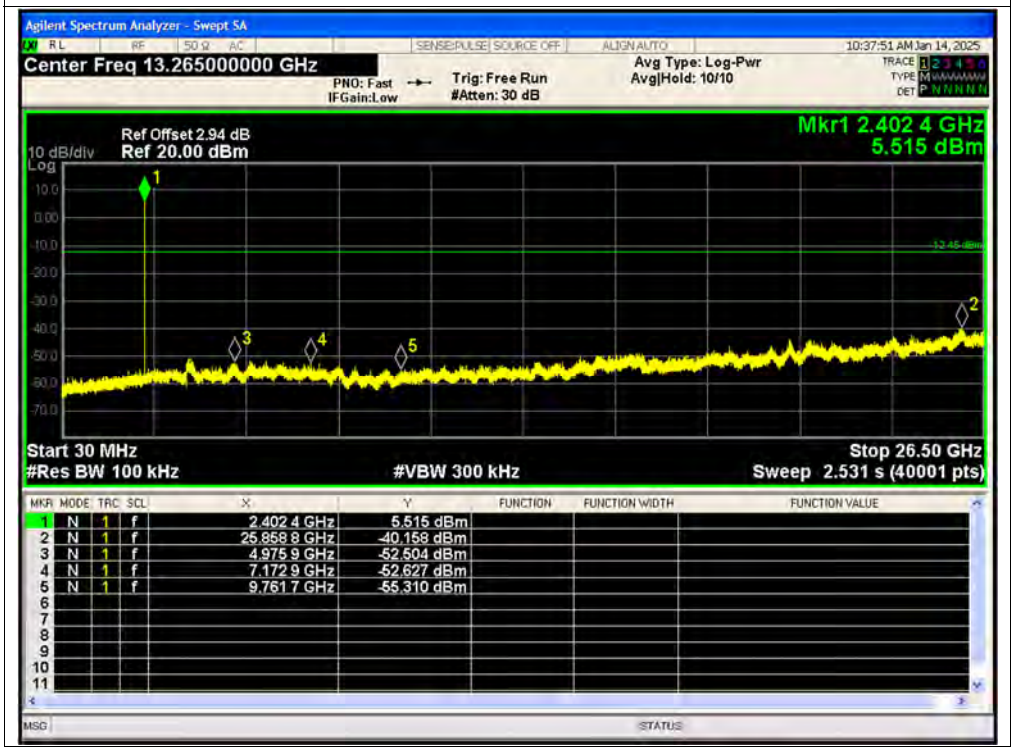
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-47.7	-20	Pass
NVNT	BLE 1M	2440	Ant1	-47.59	-20	Pass
NVNT	BLE 1M	2480	Ant1	-47.34	-20	Pass
NVNT	BLE 2M	2404	Ant1	-47.8	-20	Pass
NVNT	BLE 2M	2440	Ant1	-48.01	-20	Pass
NVNT	BLE 2M	2478	Ant1	-48.08	-20	Pass

Right:

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-46.36	-20	Pass
NVNT	BLE 1M	2440	Ant1	-46.37	-20	Pass
NVNT	BLE 1M	2480	Ant1	-47.08	-20	Pass
NVNT	BLE 2M	2404	Ant1	-46.95	-20	Pass
NVNT	BLE 2M	2440	Ant1	-47.26	-20	Pass
NVNT	BLE 2M	2478	Ant1	-45.65	-20	Pass

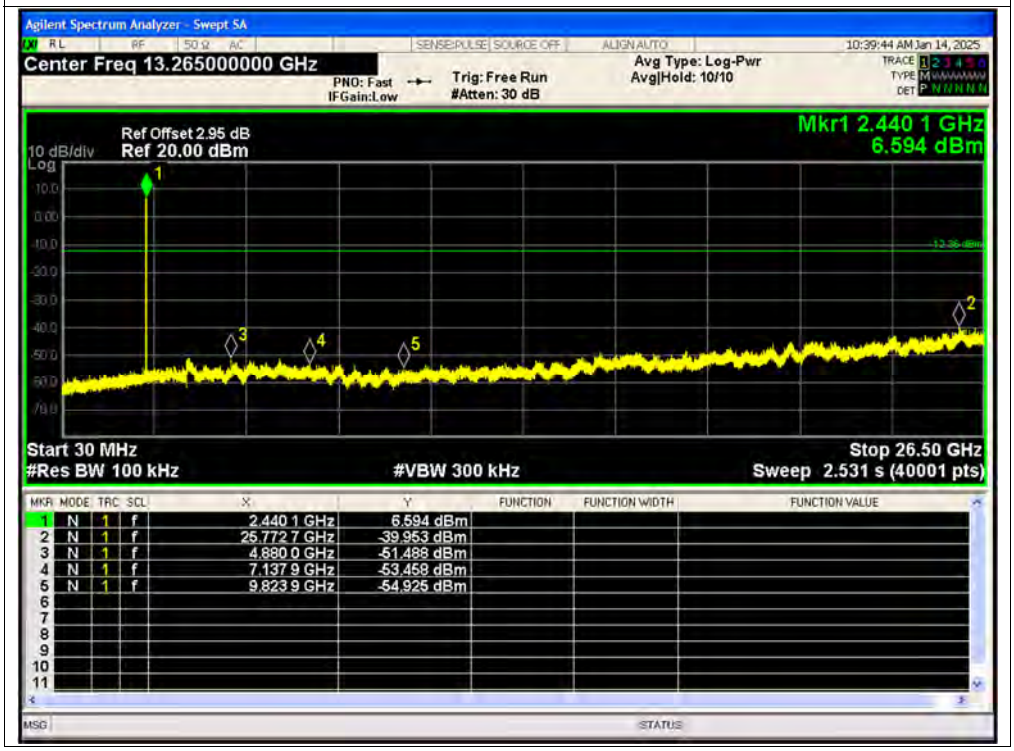
Left
Test Graphs
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref

Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



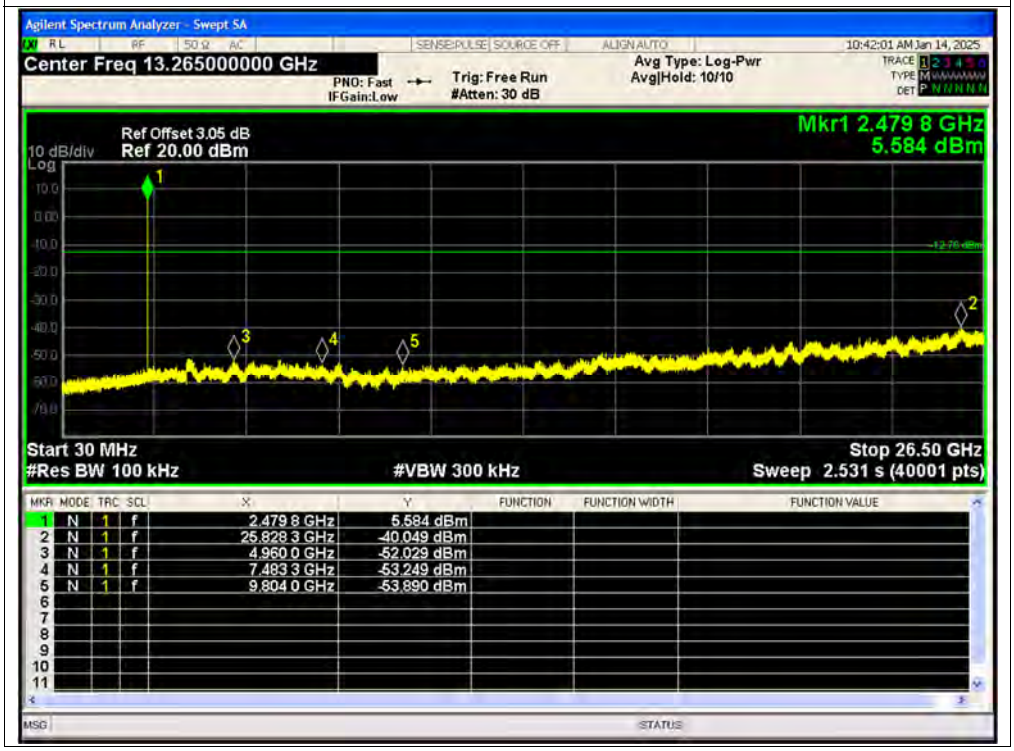
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref

Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



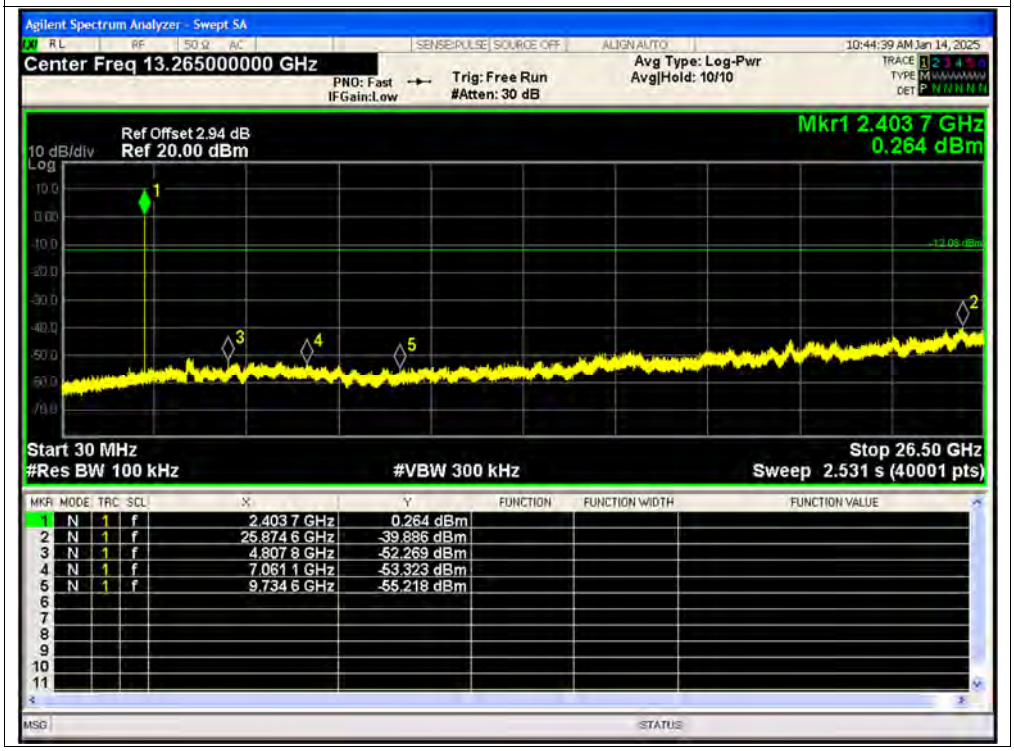
Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref

Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission



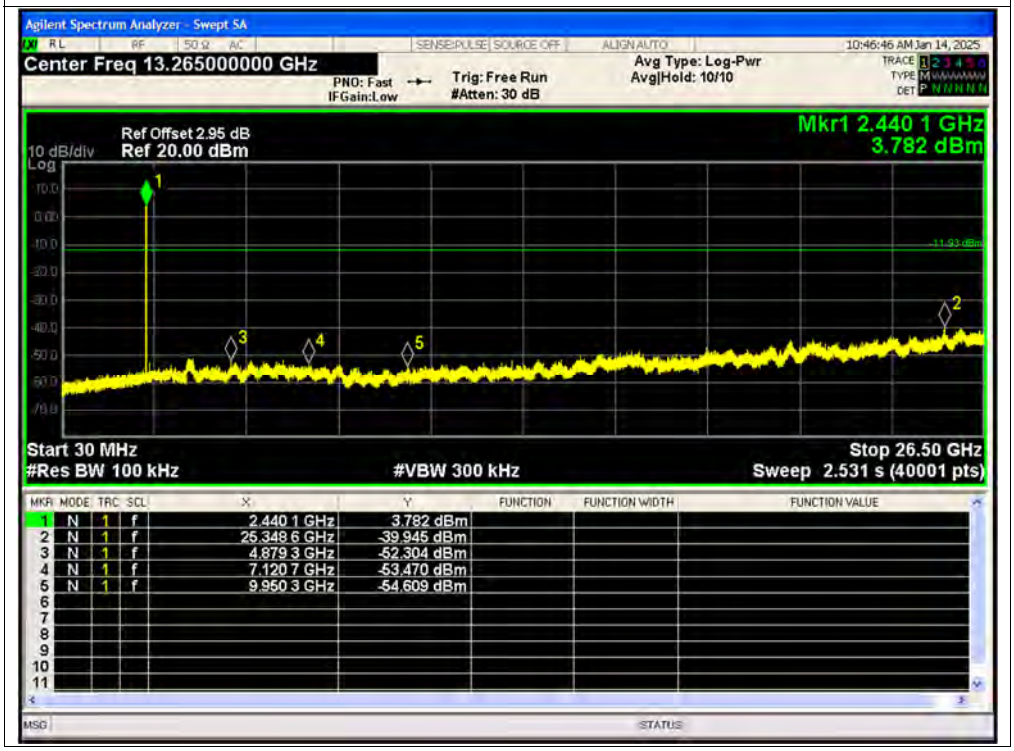
Tx. Spurious NVNT BLE 2M 2404MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2404MHz Ant1 Emission



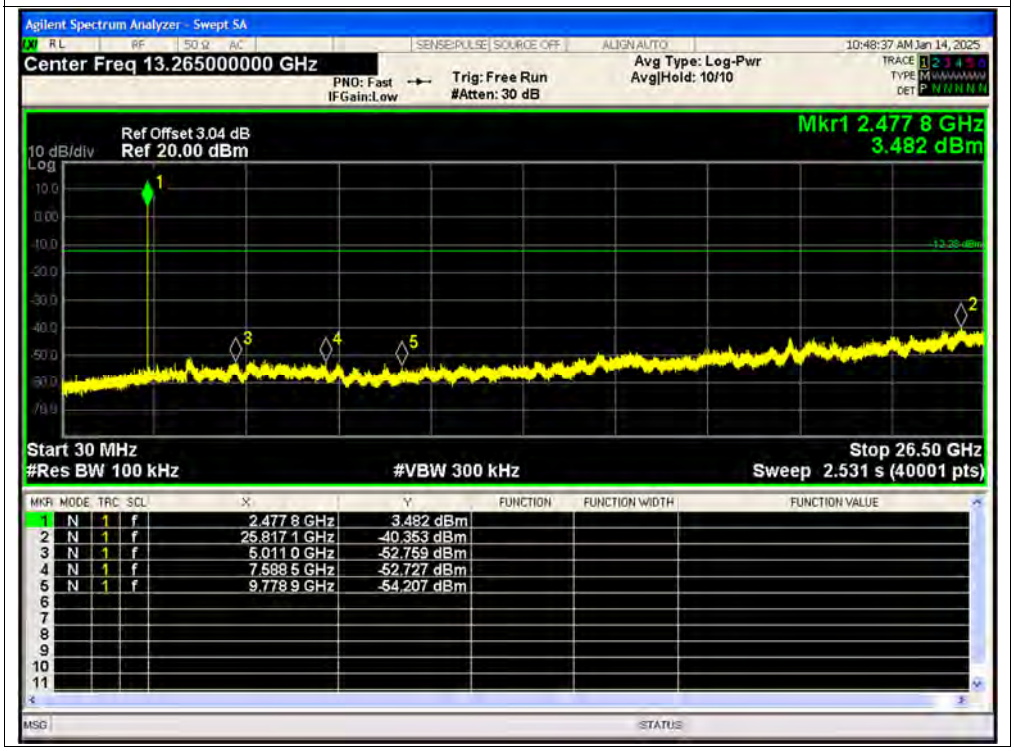
Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Emission



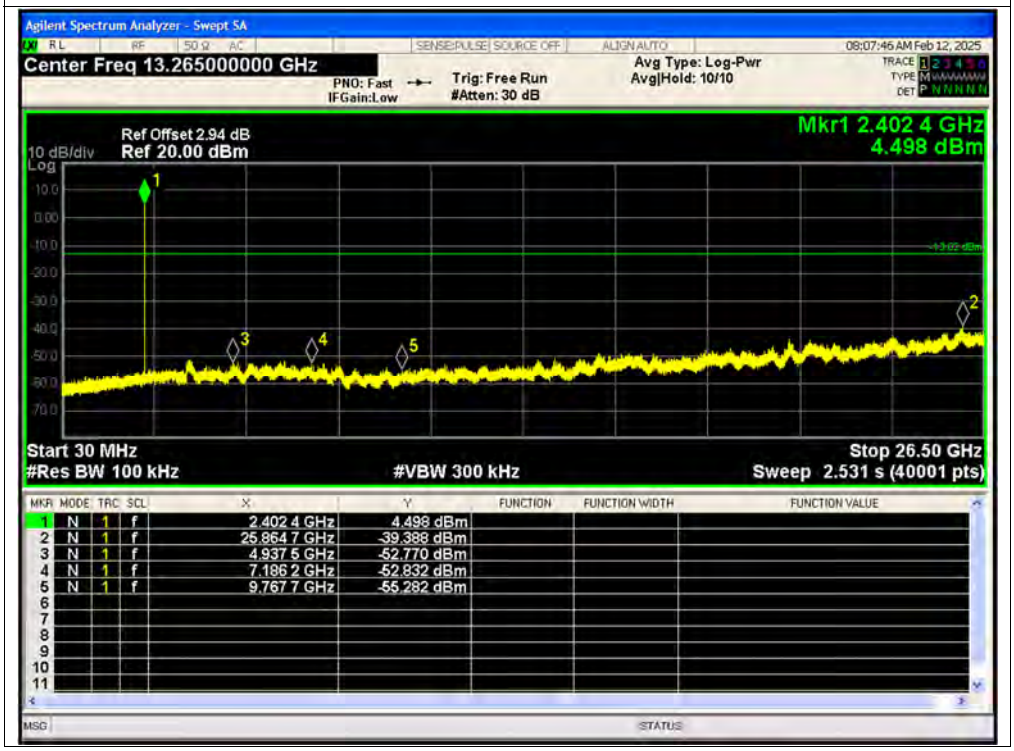
Tx. Spurious NVNT BLE 2M 2478MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2478MHz Ant1 Emission



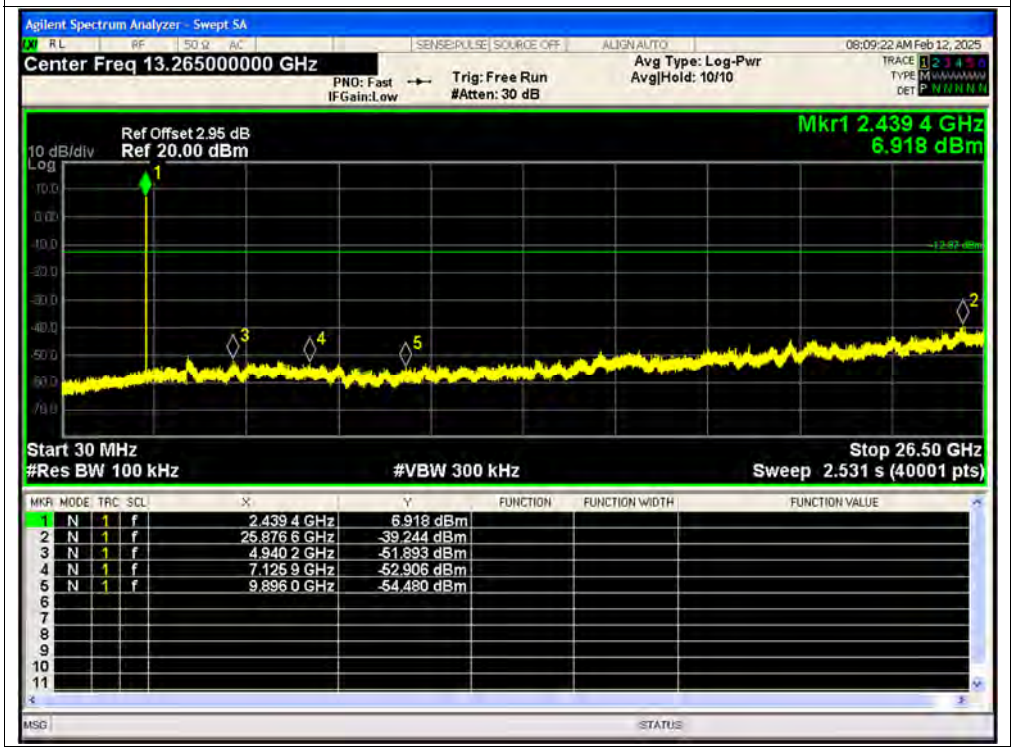
Right
Test Graphs
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref

Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



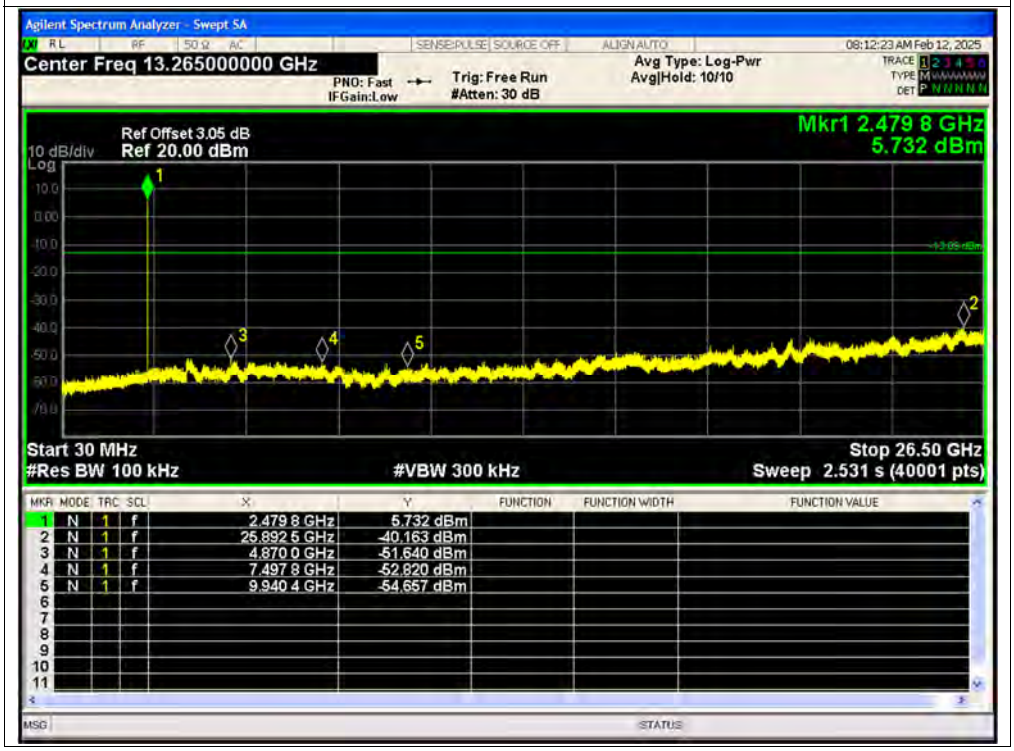
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref

Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



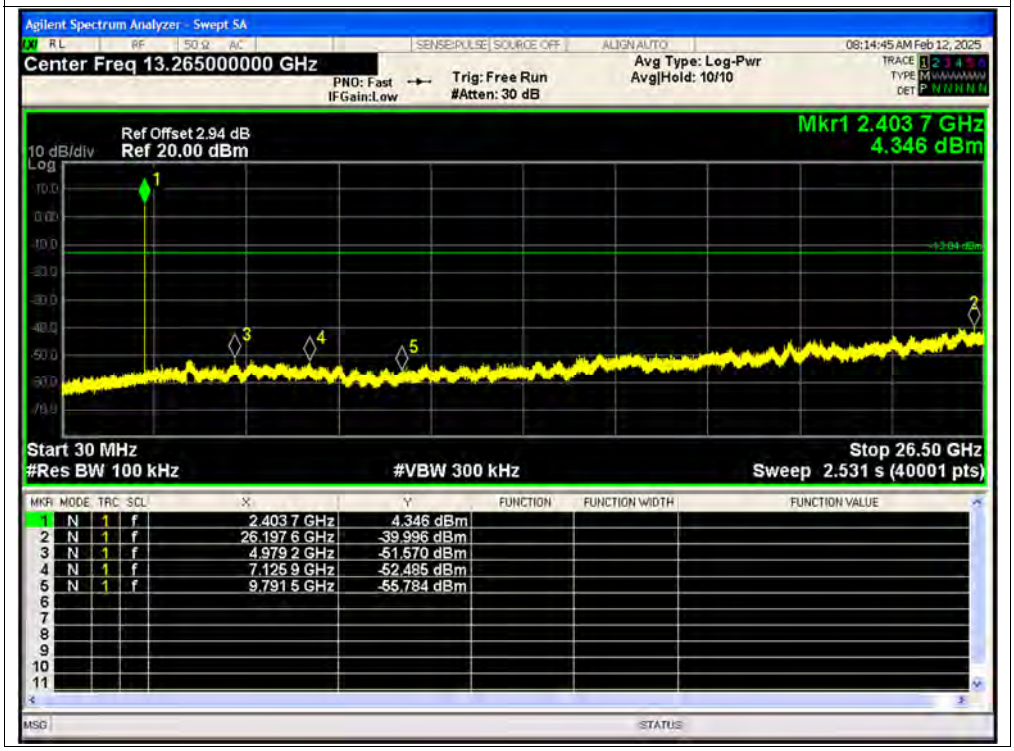
Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref

Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission



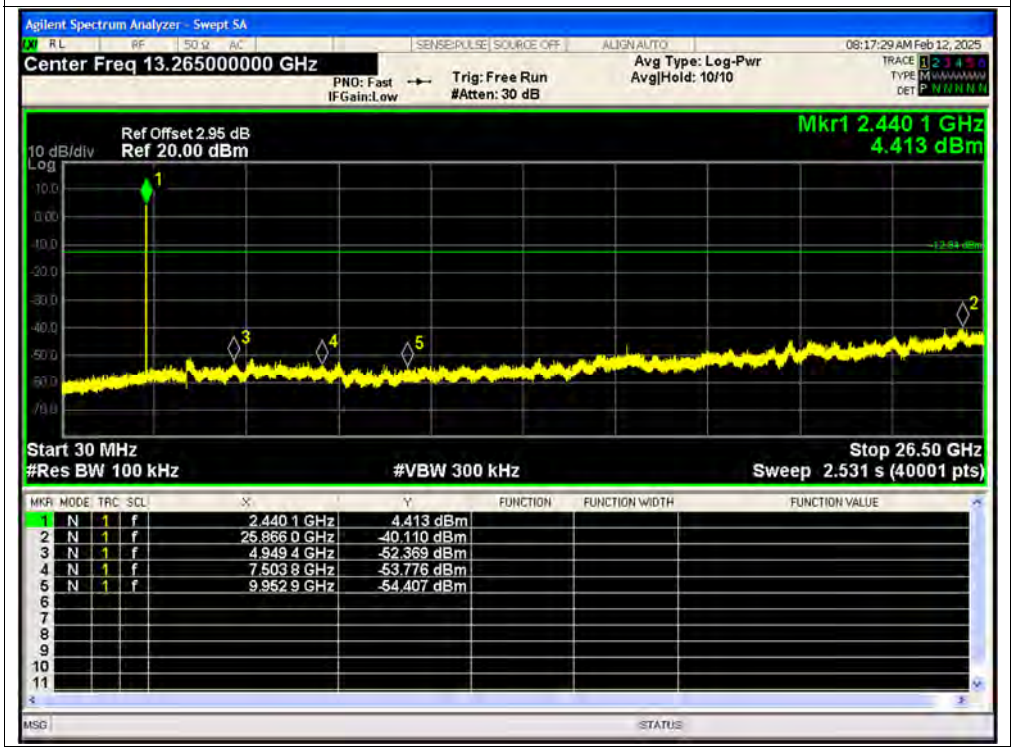
Tx. Spurious NVNT BLE 2M 2404MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2404MHz Ant1 Emission



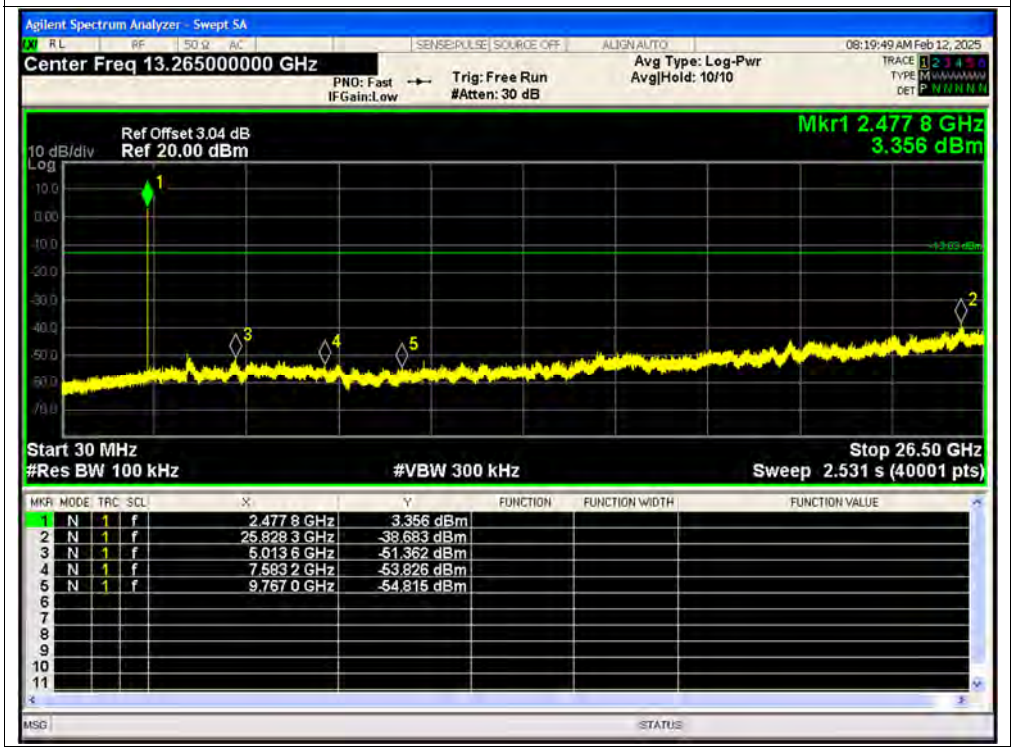
Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Emission



Tx. Spurious NVNT BLE 2M 2478MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2478MHz Ant1 Emission



A.6. Band Edge

Left:

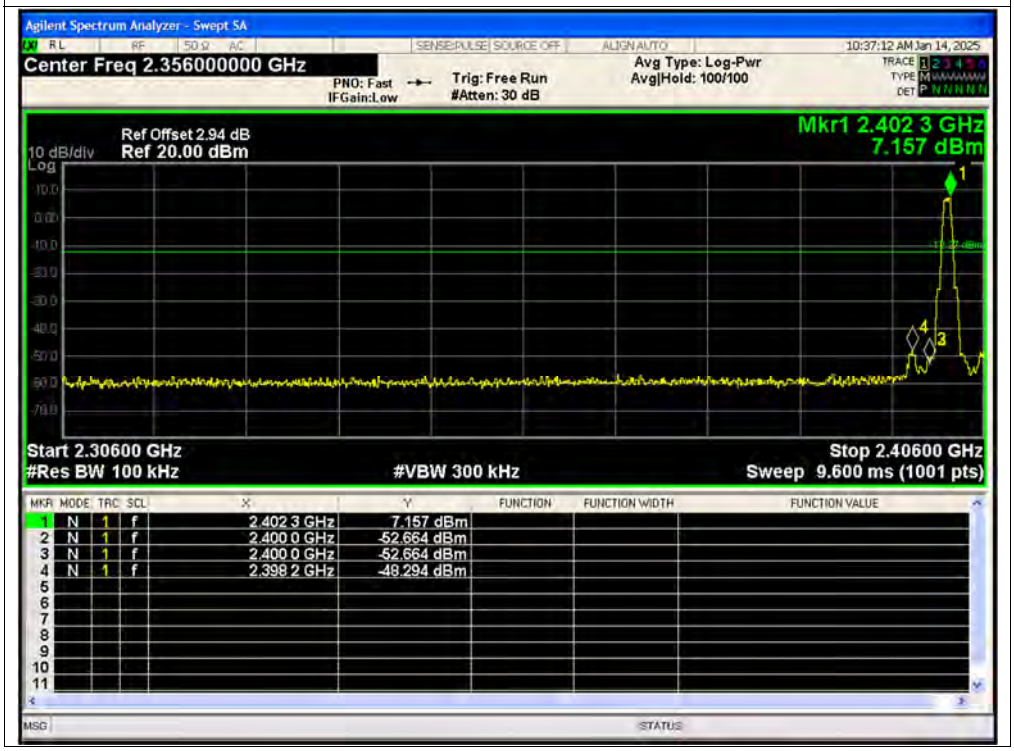
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-56.02	-20	Pass
NVNT	BLE 1M	2480	Ant1	-54.3	-20	Pass
NVNT	BLE 2M	2404	Ant1	-57.1	-20	Pass
NVNT	BLE 2M	2478	Ant1	-64.52	-20	Pass

Right:

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-57.48	-20	Pass
NVNT	BLE 1M	2480	Ant1	-61.14	-20	Pass
NVNT	BLE 2M	2404	Ant1	-62.63	-20	Pass
NVNT	BLE 2M	2478	Ant1	-61.63	-20	Pass

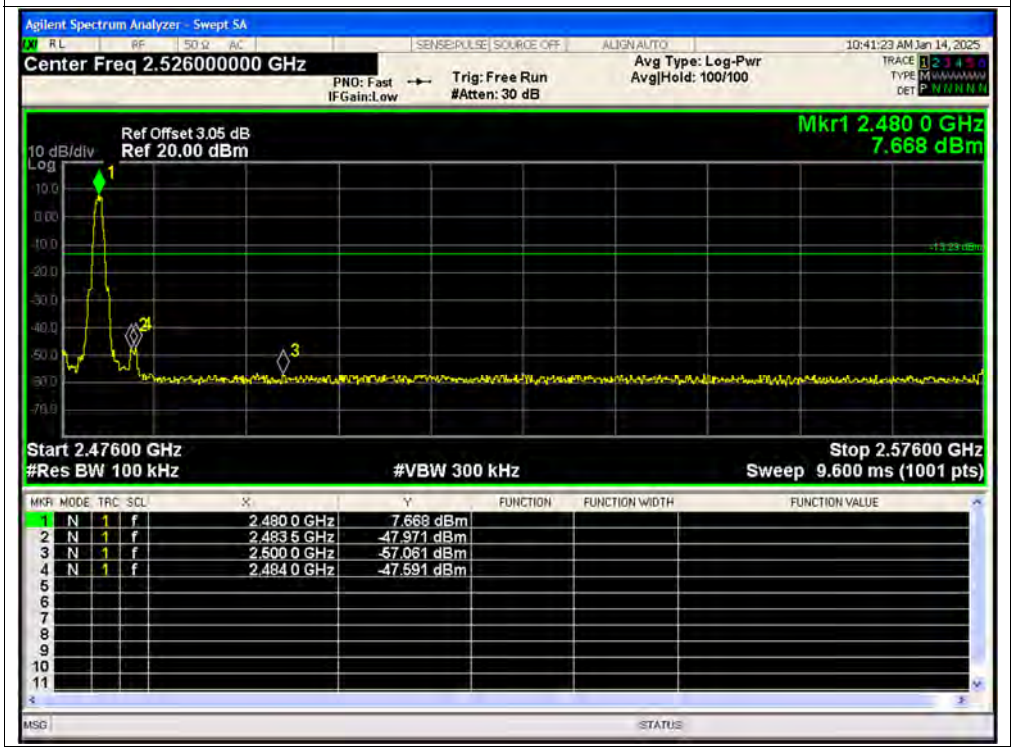
Left
Test Graphs
Band Edge NVNT BLE 1M 2402MHz Ant1 Ref

Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



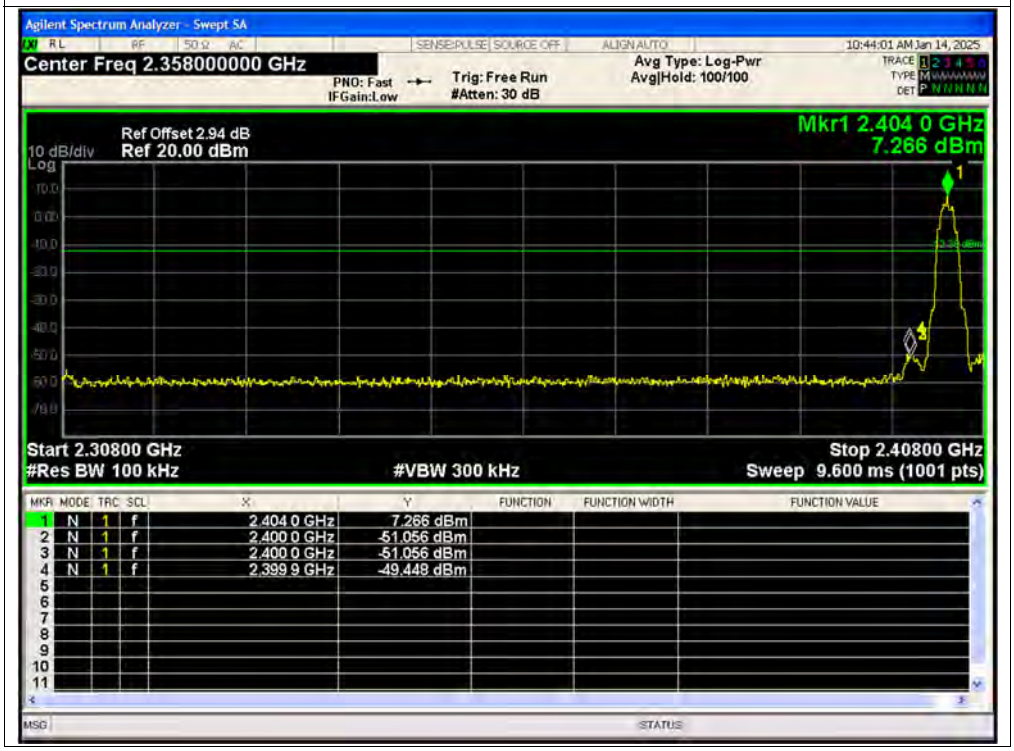
Band Edge NVNT BLE 1M 2480MHz Ant1 Ref

Band Edge NVNT BLE 1M 2480MHz Ant1 Emission



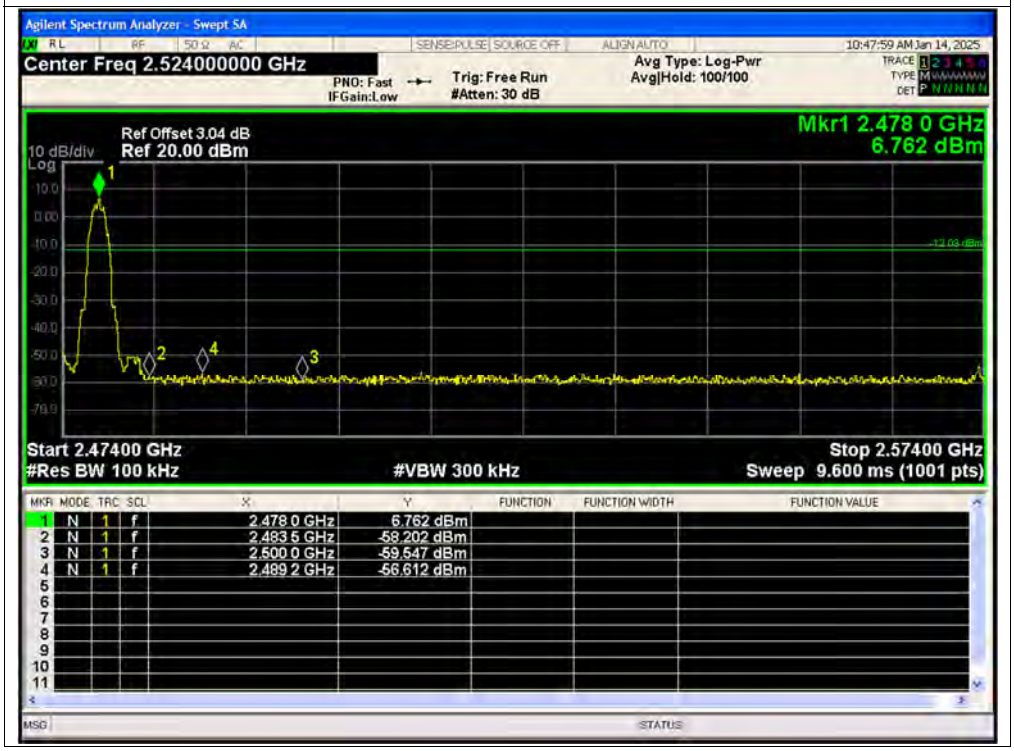
Band Edge NVNT BLE 2M 2404MHz Ant1 Ref

Band Edge NVNT BLE 2M 2404MHz Ant1 Emission



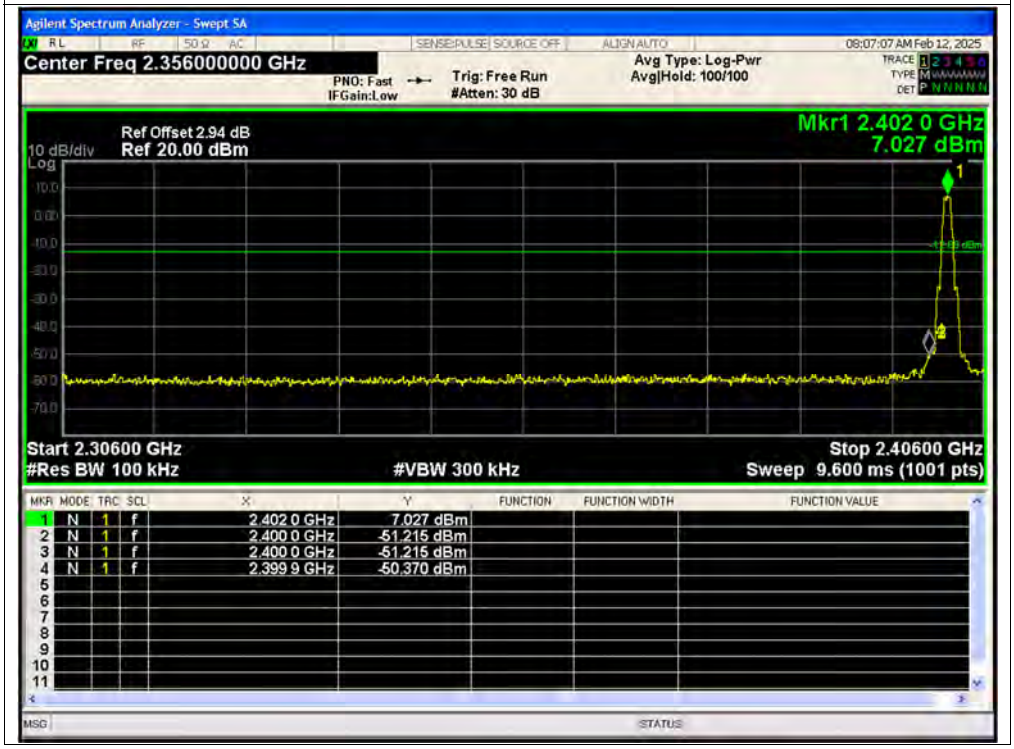
Band Edge NVNT BLE 2M 2478MHz Ant1 Ref

Band Edge NVNT BLE 2M 2478MHz Ant1 Emission



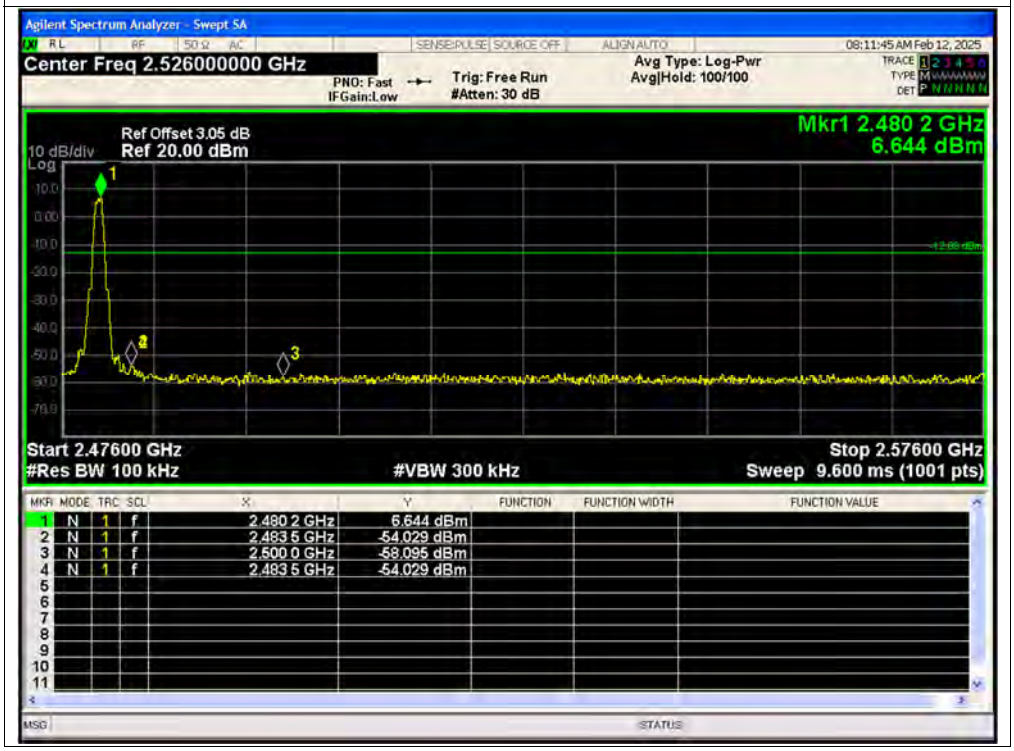
Right
Test Graphs
Band Edge NVNT BLE 1M 2402MHz Ant1 Ref

Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



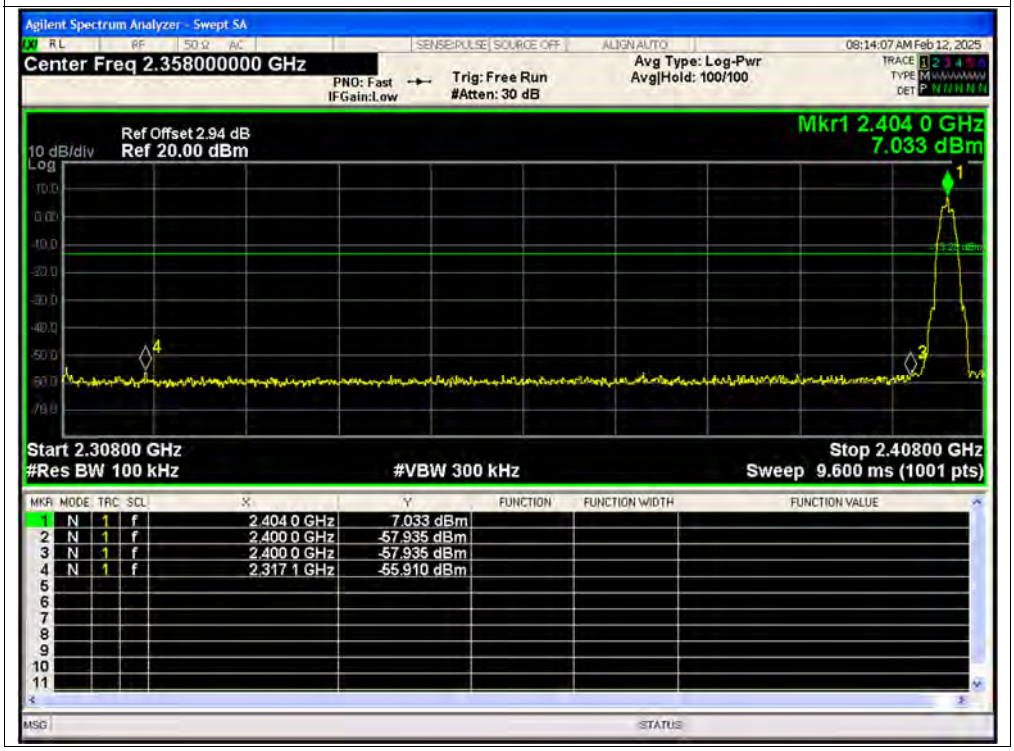
Band Edge NVNT BLE 1M 2480MHz Ant1 Ref

Band Edge NVNT BLE 1M 2480MHz Ant1 Emission



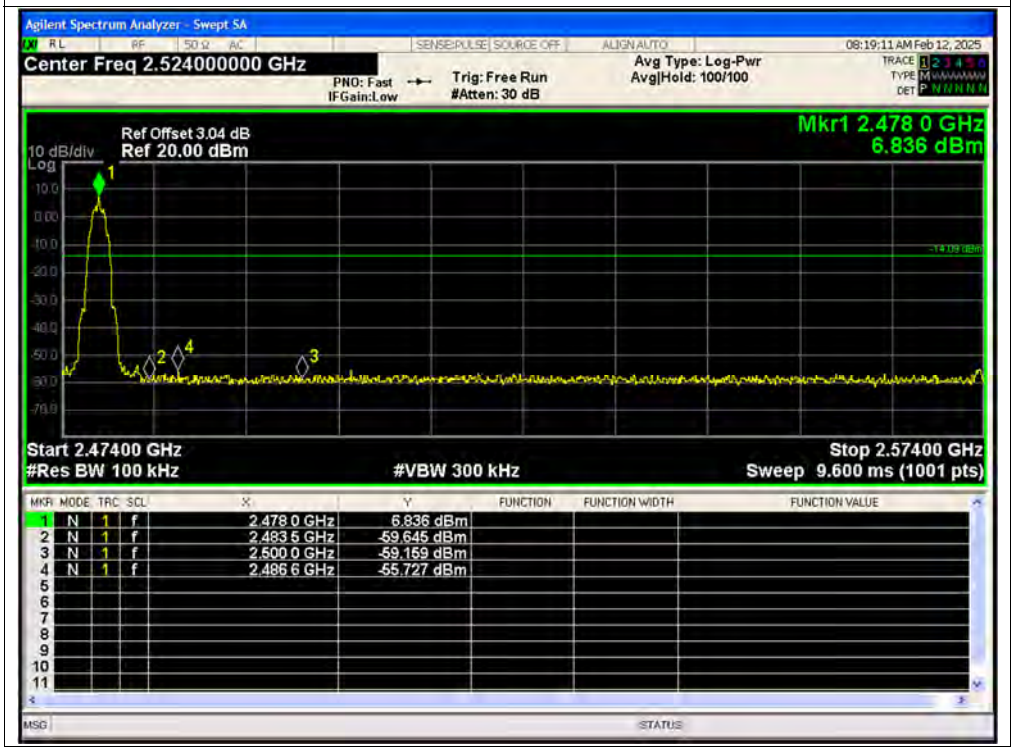
Band Edge NVNT BLE 2M 2404MHz Ant1 Ref

Band Edge NVNT BLE 2M 2404MHz Ant1 Emission



Band Edge NVNT BLE 2M 2478MHz Ant1 Ref

Band Edge NVNT BLE 2M 2478MHz Ant1 Emission



A.7. Power Spectral Density

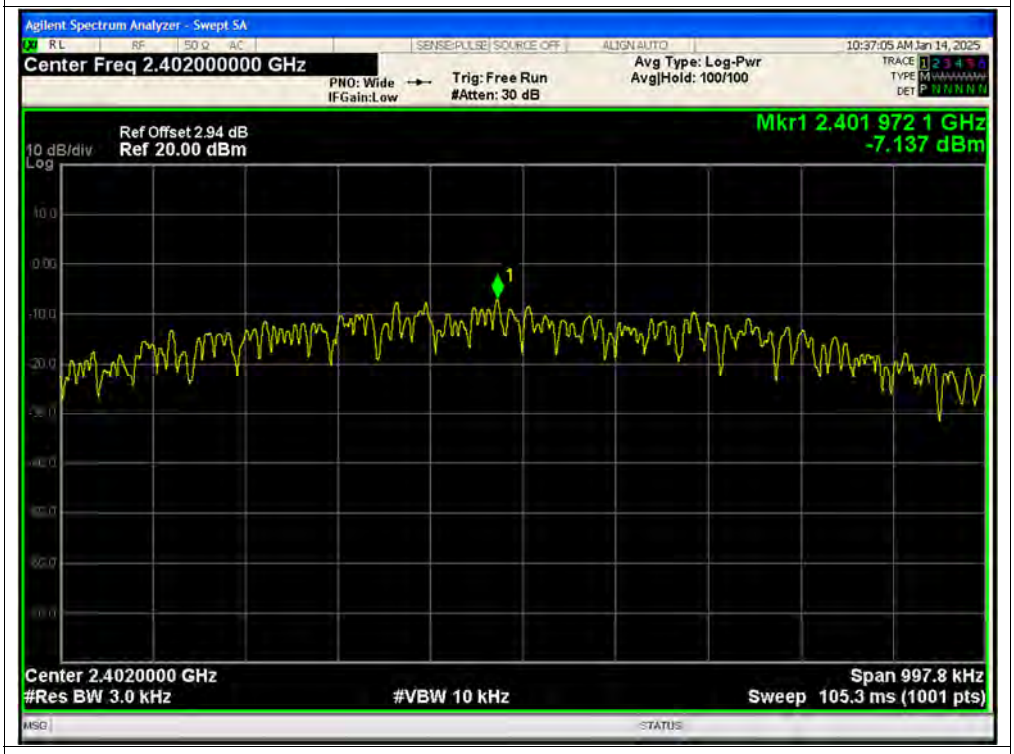
Left:

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-7.14	0	-7.14	8	Pass
NVNT	BLE 1M	2440	Ant1	-7.02	0	-7.02	8	Pass
NVNT	BLE 1M	2480	Ant1	-7.58	0	-7.58	8	Pass
NVNT	BLE 2M	2404	Ant1	-10.52	0	-10.52	8	Pass
NVNT	BLE 2M	2440	Ant1	-10.3	0	-10.3	8	Pass
NVNT	BLE 2M	2478	Ant1	-10.77	0	-10.77	8	Pass

Right:

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-7.61	0	-7.61	8	Pass
NVNT	BLE 1M	2440	Ant1	-7.49	0	-7.49	8	Pass
NVNT	BLE 1M	2480	Ant1	-7.63	0	-7.63	8	Pass
NVNT	BLE 2M	2404	Ant1	-10.91	0	-10.91	8	Pass
NVNT	BLE 2M	2440	Ant1	-10.82	0	-10.82	8	Pass
NVNT	BLE 2M	2478	Ant1	-10.97	0	-10.97	8	Pass

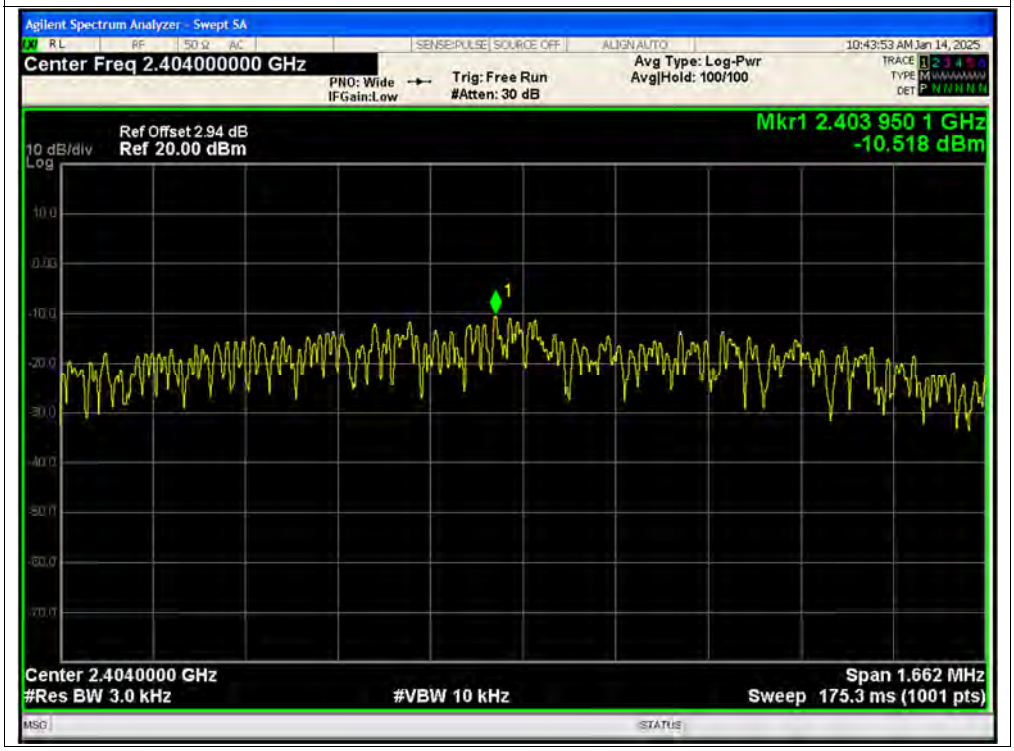
Left
Test Graphs
PSD NVNT BLE 1M 2402MHz Ant1



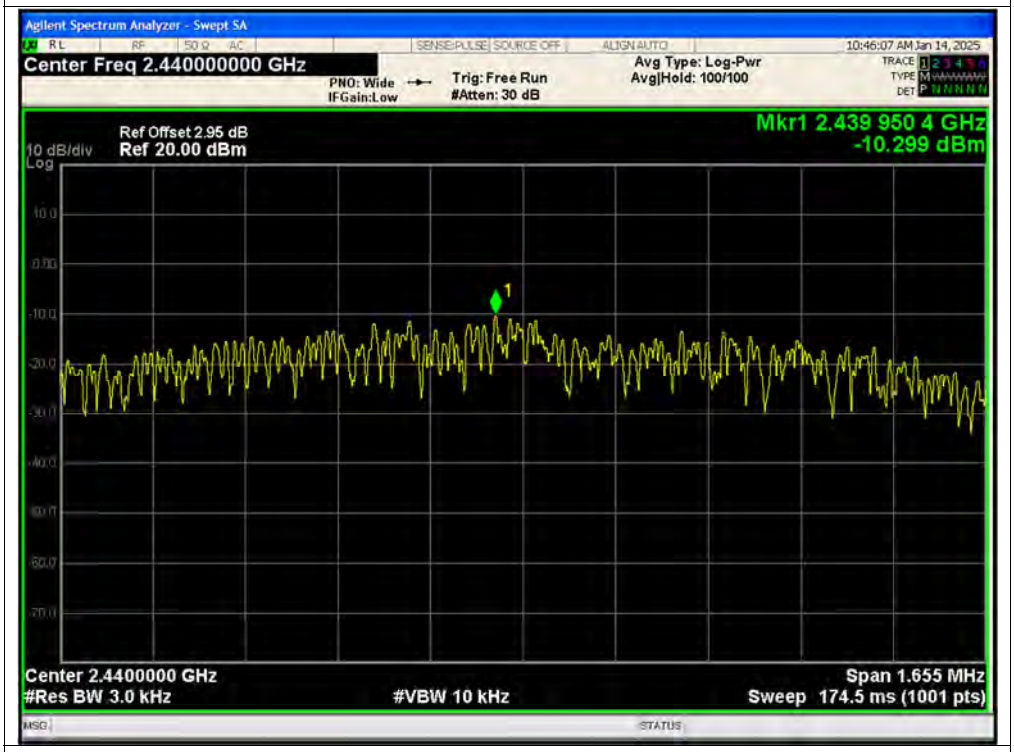
PSD NVNT BLE 1M 2440MHz Ant1

PSD NVNT BLE 1M 2480MHz Ant1

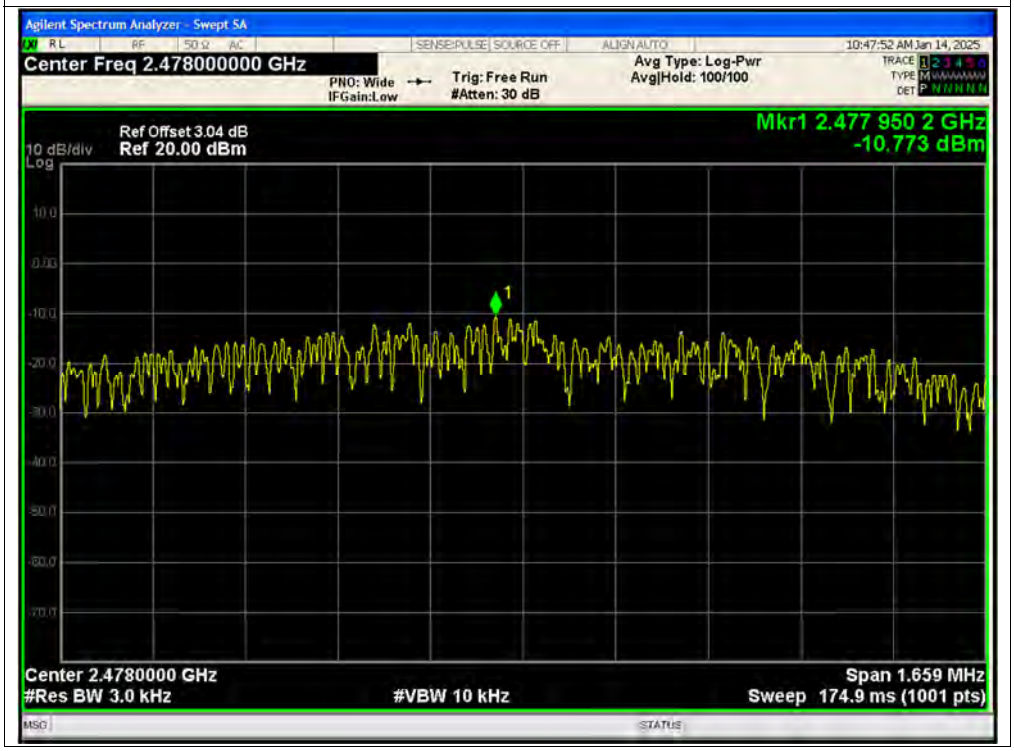
PSD NVNT BLE 2M 2404MHz Ant1



PSD NVNT BLE 2M 2440MHz Ant1



PSD NVNT BLE 2M 2478MHz Ant1

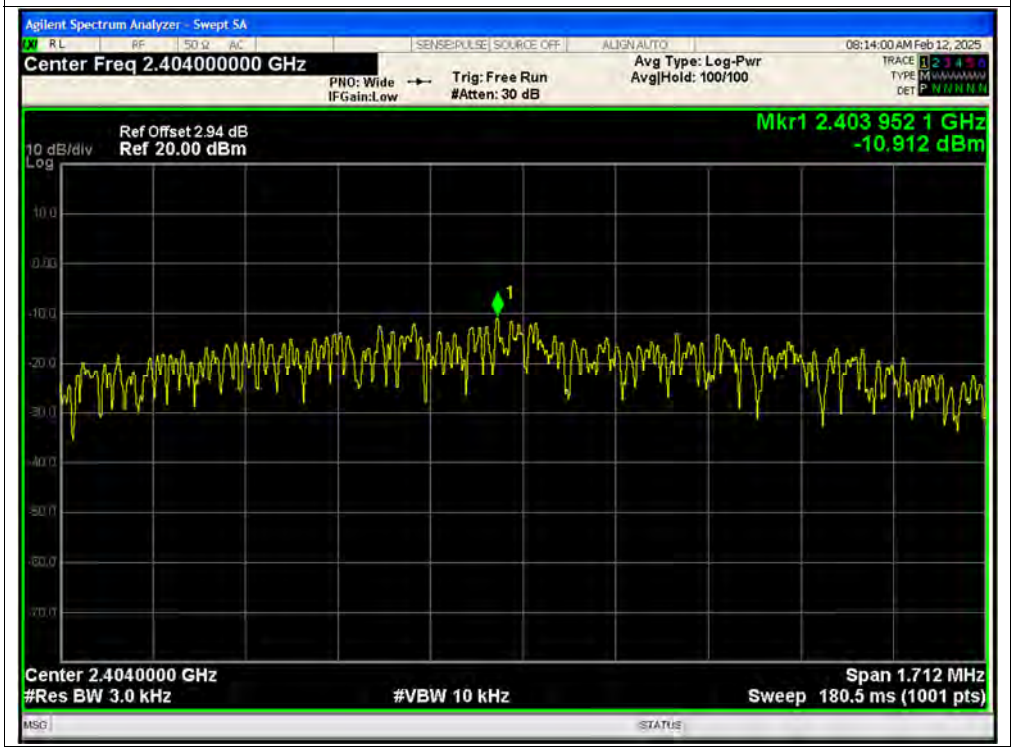


Right
Test Graphs
PSD NVNT BLE 1M 2402MHz Ant1

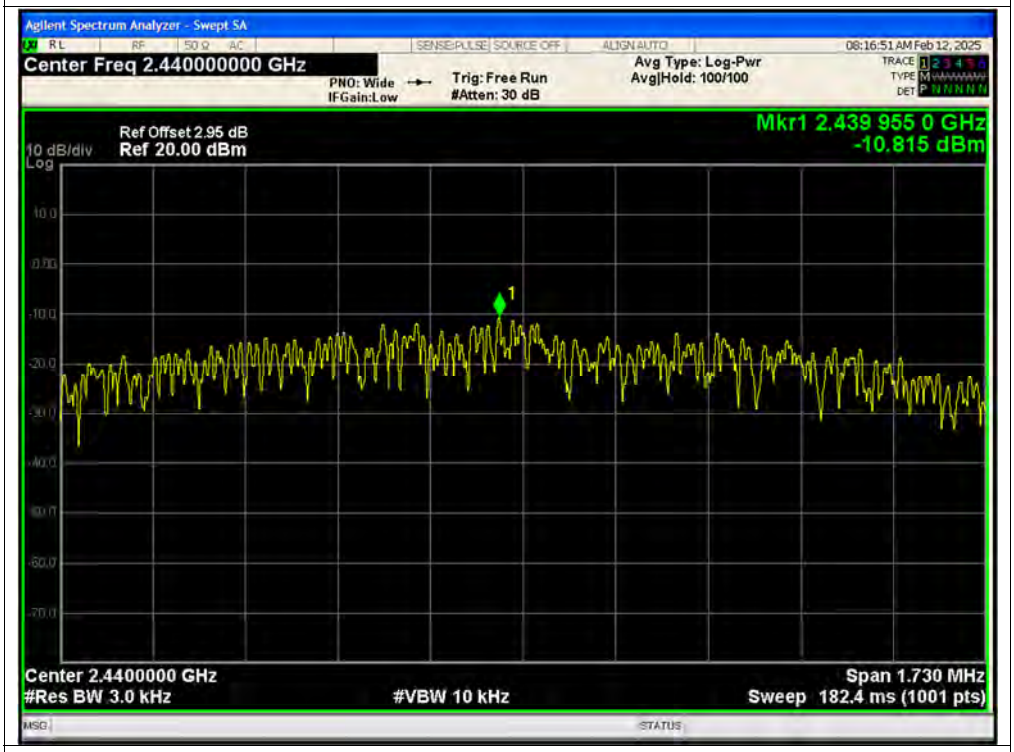
PSD NVNT BLE 1M 2440MHz Ant1

PSD NVNT BLE 1M 2480MHz Ant1

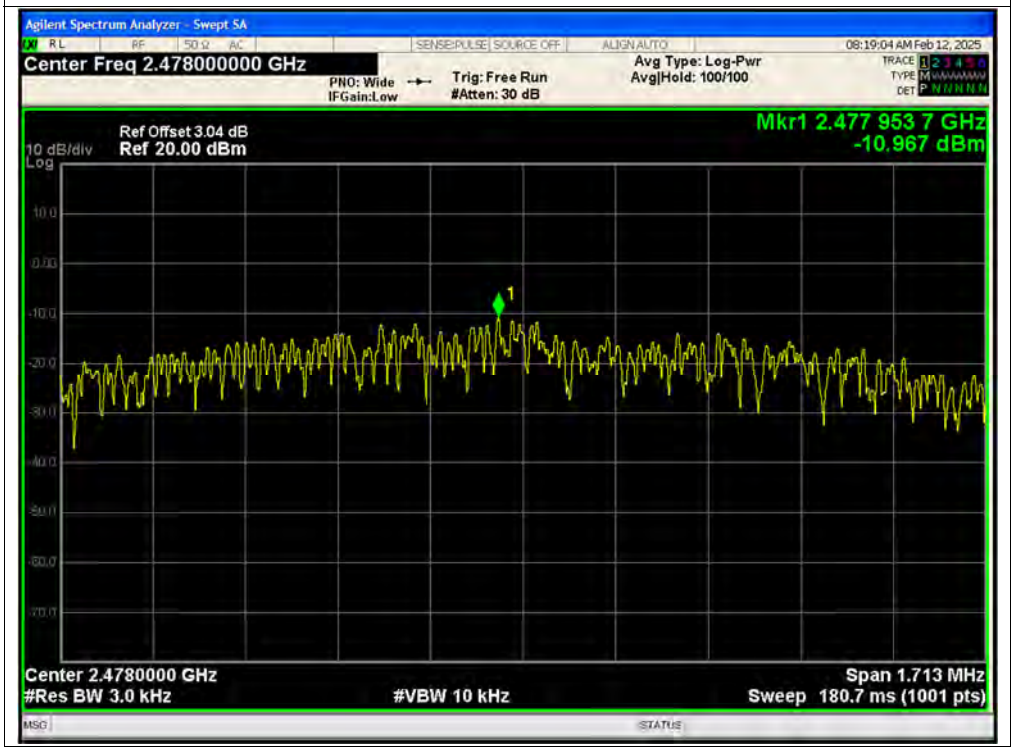
PSD NVNT BLE 2M 2404MHz Ant1



PSD NVNT BLE 2M 2440MHz Ant1



PSD NVNT BLE 2M 2478MHz Ant1



A.8. Conducted Emission

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT + PC + PC Adapter + Data Cable + BT TX

Test voltage: AC 120V/60Hz

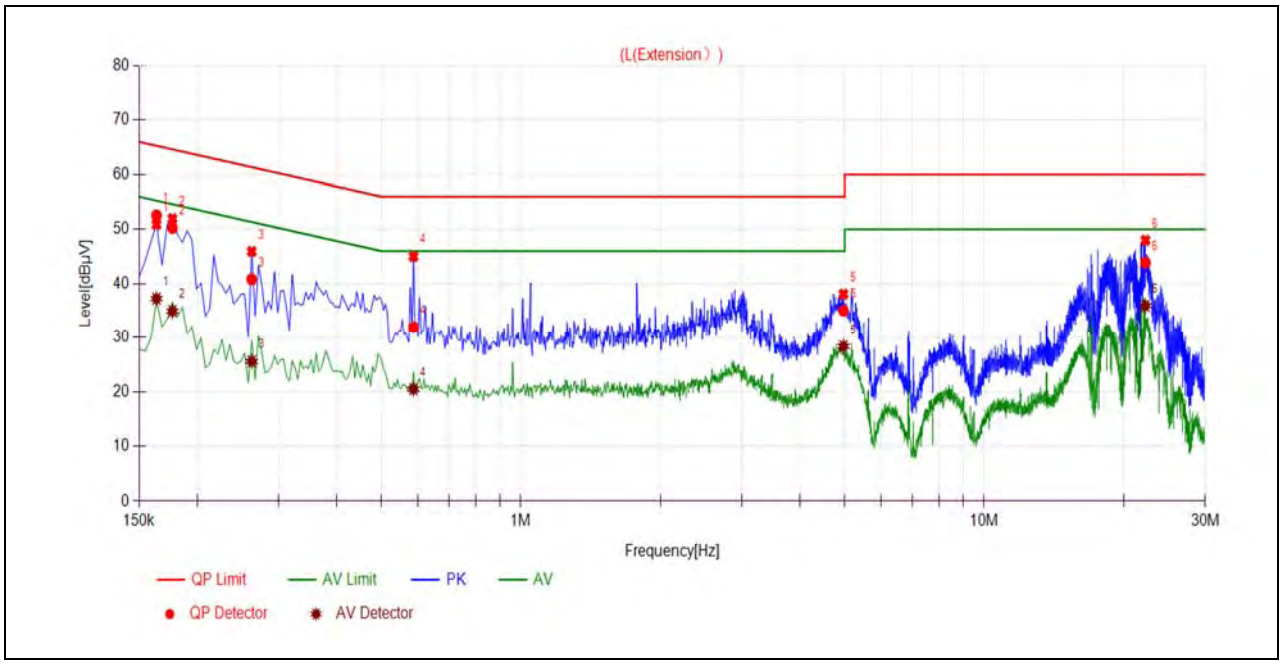
The measurement results are obtained as below:

$E\ [dB\mu V] = U_R + L_{Cable\ loss}\ [dB] + A_{Factor}$

U_R: Receiver Reading

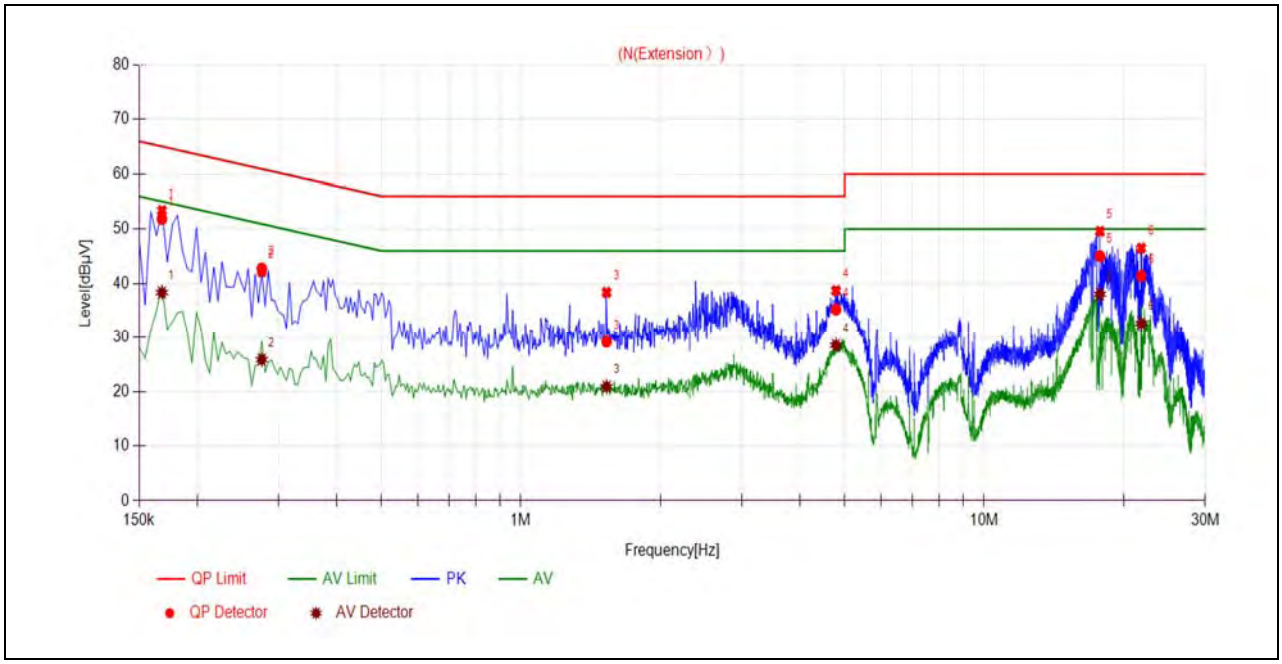
A_{Factor}: Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1635	52.56	37.25	65.28	55.28	Line	PASS
2	0.1770	50.28	34.94	64.63	54.63		PASS
3	0.2625	40.81	25.55	61.35	51.35		PASS
4	0.5865	31.91	20.44	56.00	46.00		PASS
5	4.9697	35.01	28.34	56.00	46.00		PASS
6	22.2966	43.87	35.94	60.00	50.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1680	51.87	38.36	65.06	55.06	Neutral	PASS
2	0.2760	42.77	25.85	60.94	50.94		PASS
3	1.5315	29.21	20.87	56.00	46.00		PASS
4	4.7900	35.24	28.54	56.00	46.00		PASS
5	17.7820	45.03	38.05	60.00	50.00		PASS
6	21.8358	41.41	32.68	60.00	50.00		PASS

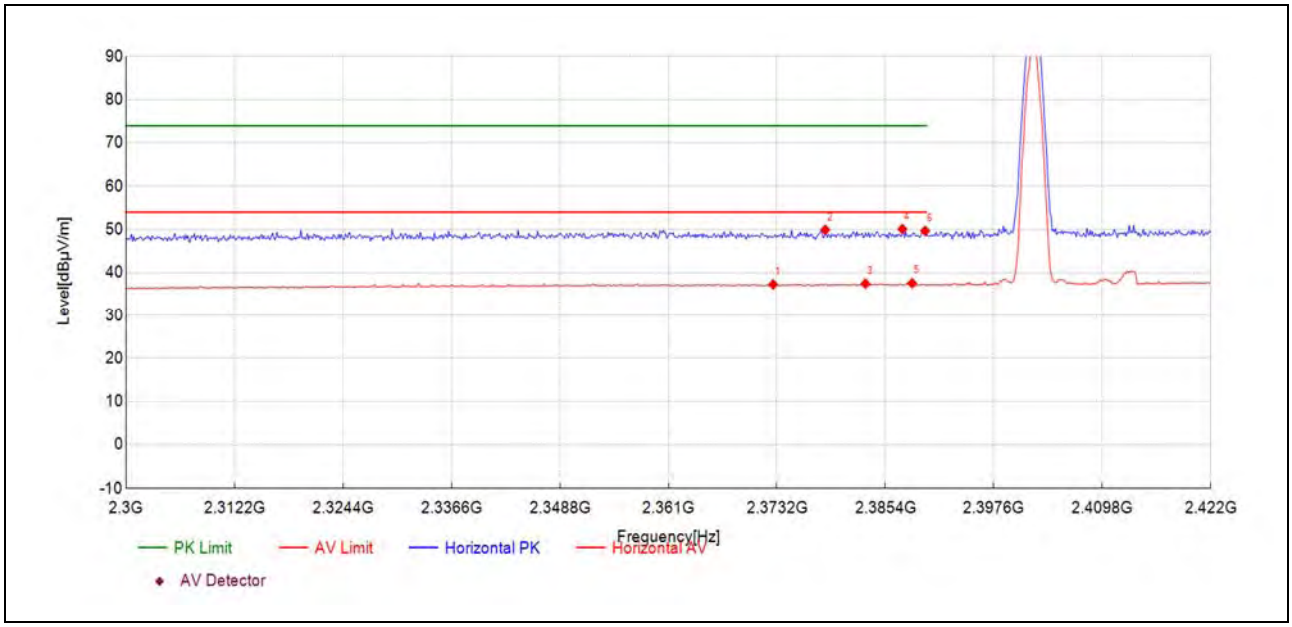
A.9. Restricted Frequency Bands

Note: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (Horizontal) was recorded in this test report.

Left:

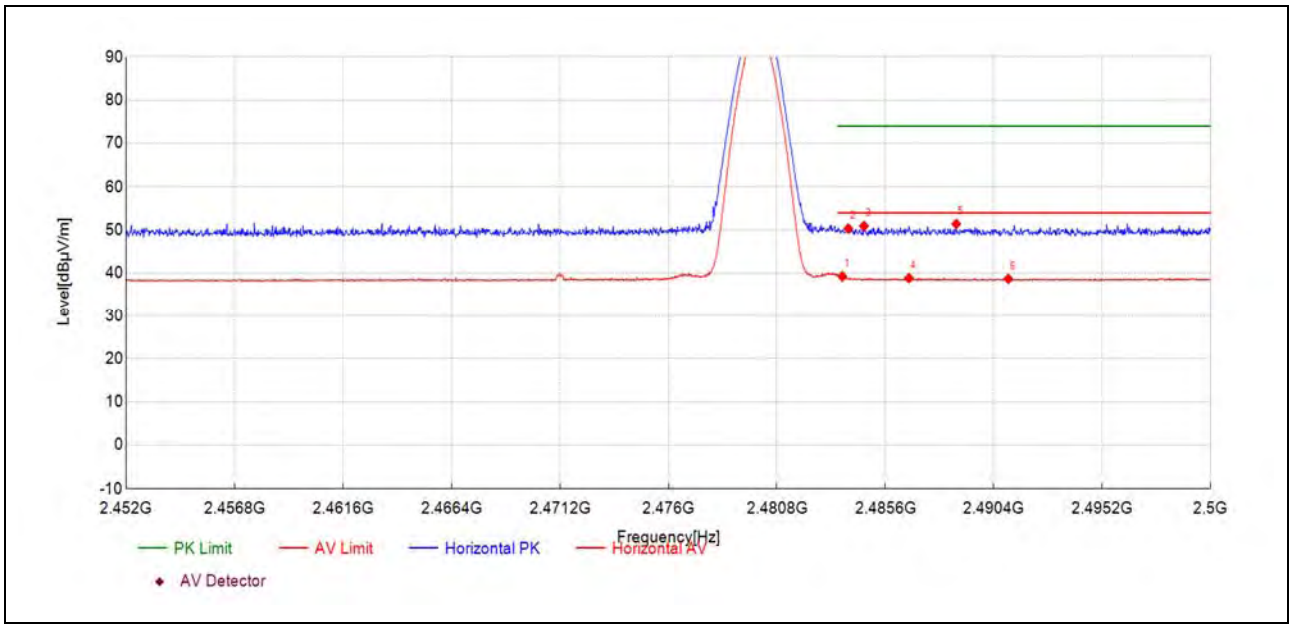
1Mbps

Plot for Channel 0



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2372.78	-0.2	37.28	37.480	54.00	16.72	150	313	AV	PASS
2378.65	12.4	49.90	37.480	74.00	24.10	150	250	PK	PASS
2383.17	0.0	37.47	37.480	54.00	16.53	150	177	AV	PASS
2387.32	12.6	50.10	37.490	74.00	23.90	150	177	PK	PASS
2388.42	0.1	37.56	37.490	54.00	16.44	150	89	AV	PASS
2389.88	12.2	49.67	37.490	74.00	24.33	150	275	PK	PASS

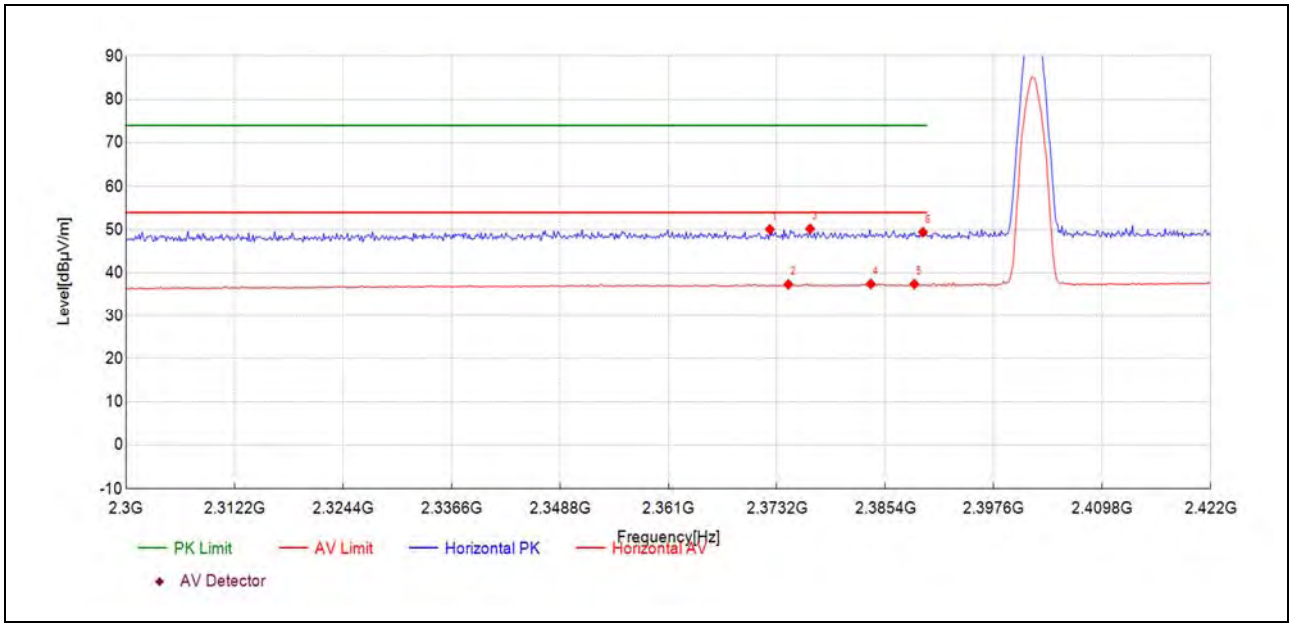
Plot for Channel 39



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2483.70	1.0	39.26	38.280	54.00	14.74	150	262	AV	PASS
2483.96	12.1	50.37	38.270	74.00	23.63	150	253	PK	PASS
2484.66	12.7	50.96	38.270	74.00	23.04	150	262	PK	PASS
2486.65	0.6	38.85	38.270	54.00	15.15	150	262	AV	PASS
2488.74	13.1	51.41	38.270	74.00	22.59	150	249	PK	PASS
2491.04	0.4	38.69	38.270	54.00	15.31	150	301	AV	PASS

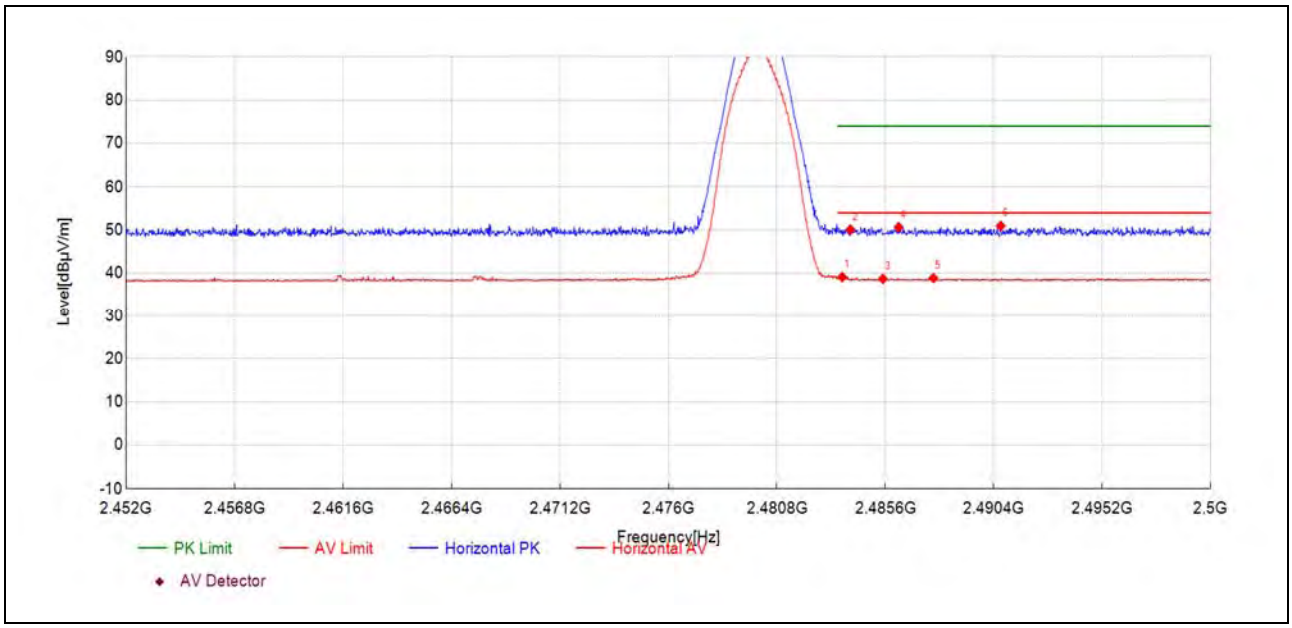
2Mbps

Plot for Channel 0



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2372.42	12.6	50.09	37.480	74.00	23.91	150	37	PK	PASS
2374.49	-0.1	37.37	37.480	54.00	16.63	150	54	AV	PASS
2376.94	12.8	50.23	37.480	74.00	23.77	150	114	PK	PASS
2383.78	0.0	37.47	37.490	54.00	16.53	150	312	AV	PASS
2388.66	-0.1	37.44	37.490	54.00	16.56	150	50	AV	PASS
2389.64	12.0	49.45	37.490	74.00	24.55	150	325	PK	PASS

Plot for Channel 39

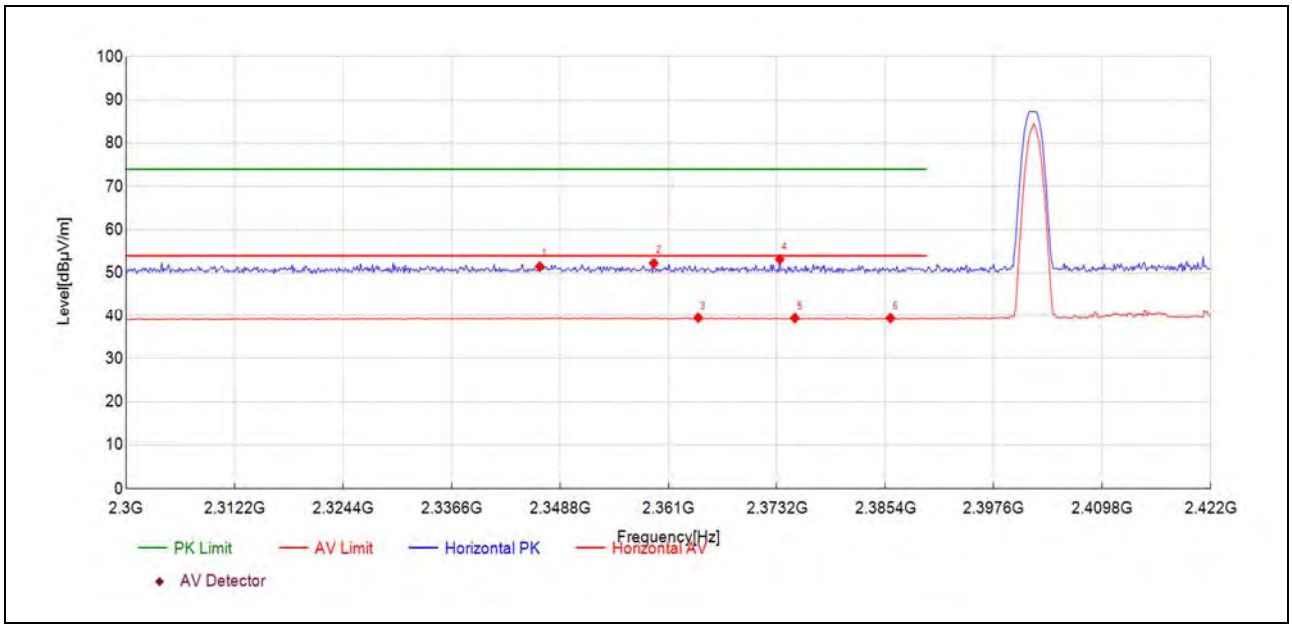


Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2483.70	0.8	39.10	38.280	54.00	14.90	150	214	AV	PASS
2484.06	11.9	50.13	38.270	74.00	23.87	150	292	PK	PASS
2485.50	0.4	38.70	38.270	54.00	15.30	150	200	AV	PASS
2486.19	12.4	50.68	38.280	74.00	23.32	150	358	PK	PASS
2487.73	0.6	38.87	38.270	54.00	15.13	150	187	AV	PASS
2490.71	12.7	50.97	38.270	74.00	23.03	150	74	PK	PASS

Right:

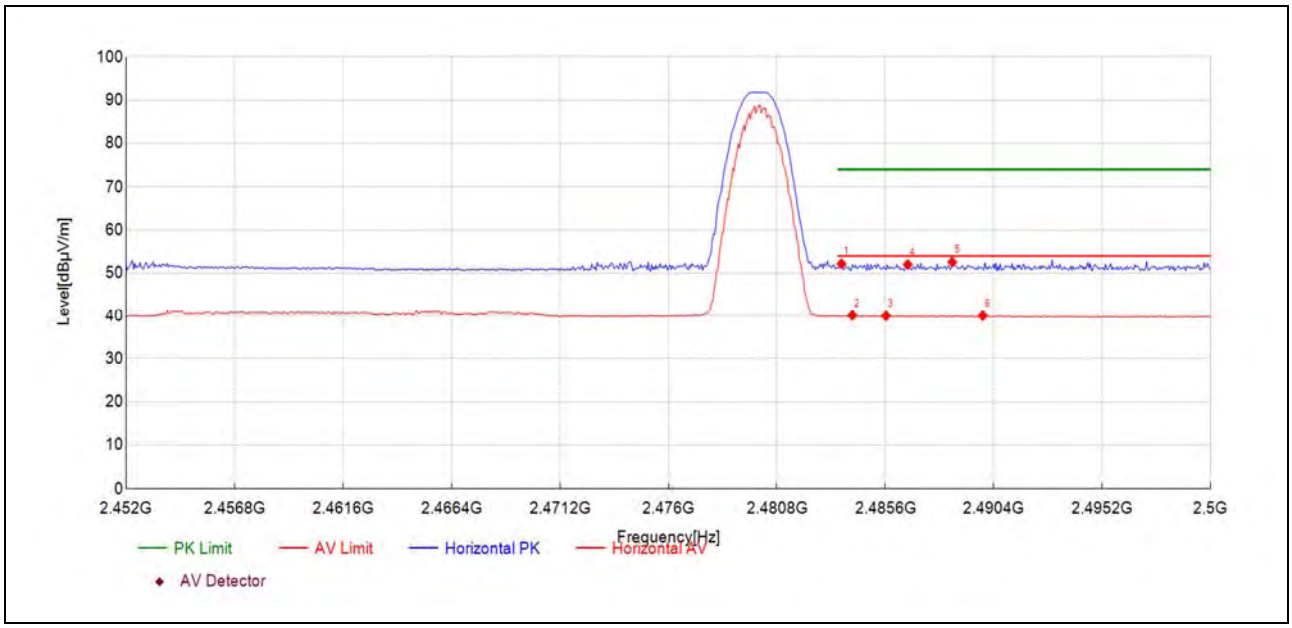
1Mbps

Plot for Channel 0



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2346.53	14.1	51.48	37.420	74.00	22.52	150	45	PK	PASS
2359.35	14.8	52.23	37.460	74.00	21.77	150	184	PK	PASS
2364.36	1.9	39.40	37.470	54.00	14.60	150	188	AV	PASS
2373.52	15.7	53.17	37.480	74.00	20.83	150	216	PK	PASS
2375.23	1.9	39.33	37.480	54.00	14.67	150	112	AV	PASS
2385.97	1.8	39.33	37.490	54.00	14.67	150	157	AV	PASS

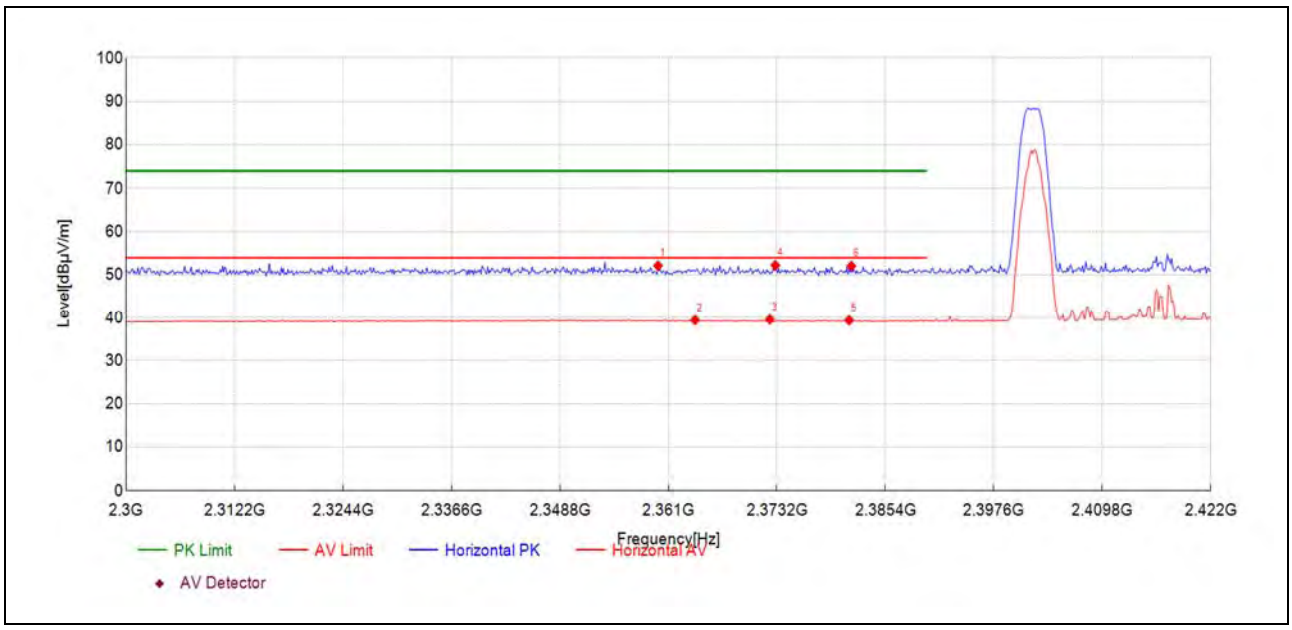
Plot for Channel 39



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2483.66	13.9	52.19	38.280	74.00	21.81	150	155	PK	PASS
2484.14	1.8	40.02	38.270	54.00	13.98	150	178	AV	PASS
2485.63	1.7	39.92	38.270	54.00	14.08	150	96	AV	PASS
2486.59	13.7	52.01	38.270	74.00	21.99	150	87	PK	PASS
2488.56	14.3	52.60	38.270	74.00	21.40	150	141	PK	PASS
2489.91	1.7	39.95	38.260	54.00	14.05	150	13	AV	PASS

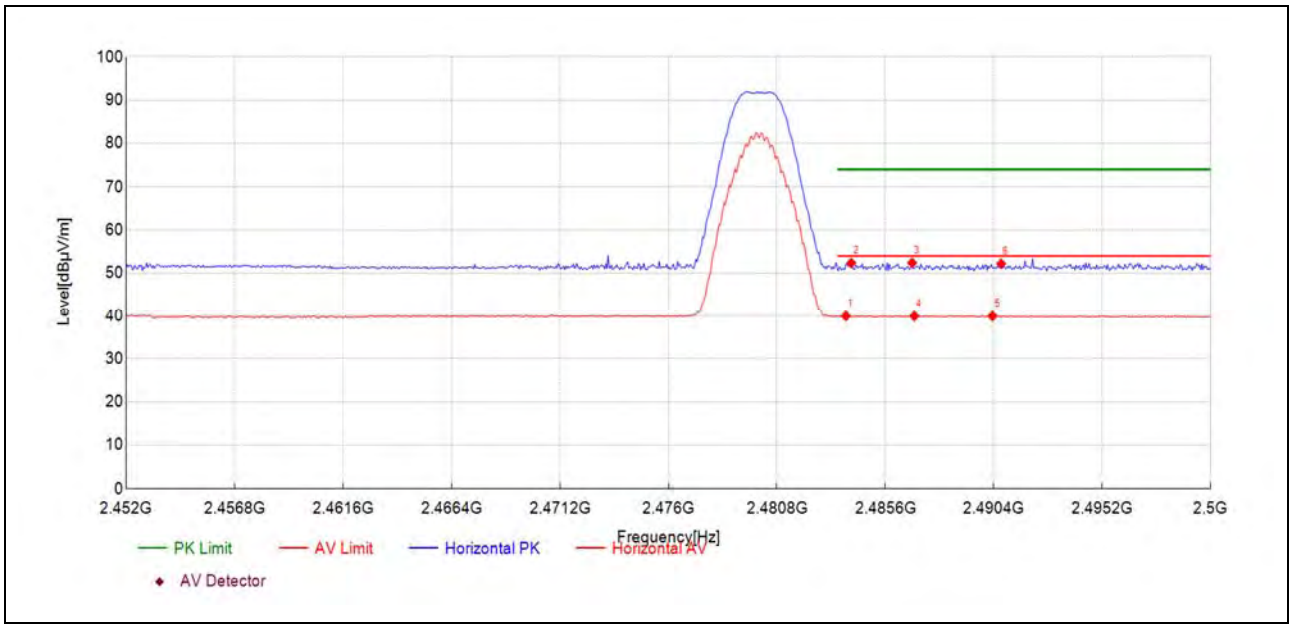
2Mbps

Plot for Channel 0



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2359.84	14.7	52.15	37.460	74.00	21.85	150	252	PK	PASS
2363.99	1.9	39.38	37.470	54.00	14.62	150	9	AV	PASS
2372.42	2.1	39.55	37.480	54.00	14.45	150	162	AV	PASS
2373.03	14.8	52.23	37.480	74.00	21.77	150	301	PK	PASS
2381.33	1.9	39.34	37.480	54.00	14.66	150	171	AV	PASS
2381.58	14.6	52.09	37.480	74.00	21.91	150	131	PK	PASS

Plot for Channel 39



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2483.86	1.6	39.89	38.270	54.00	14.11	150	163	AV	PASS
2484.10	14.1	52.35	38.270	74.00	21.65	150	316	PK	PASS
2486.79	14.1	52.40	38.270	74.00	21.60	150	352	PK	PASS
2486.88	1.6	39.86	38.270	54.00	14.14	150	38	AV	PASS
2490.34	1.6	39.88	38.270	54.00	14.12	150	105	AV	PASS
2490.73	13.9	52.20	38.270	74.00	21.80	150	82	PK	PASS

A.10. Radiated Emission

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

$E\ [dB\mu V/m] = U_R + A_T + A_{Factor}\ [dB]$; $A_T = L_{Cable\ loss}\ [dB] - G_{preamp}\ [dB]$

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note 1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note 2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

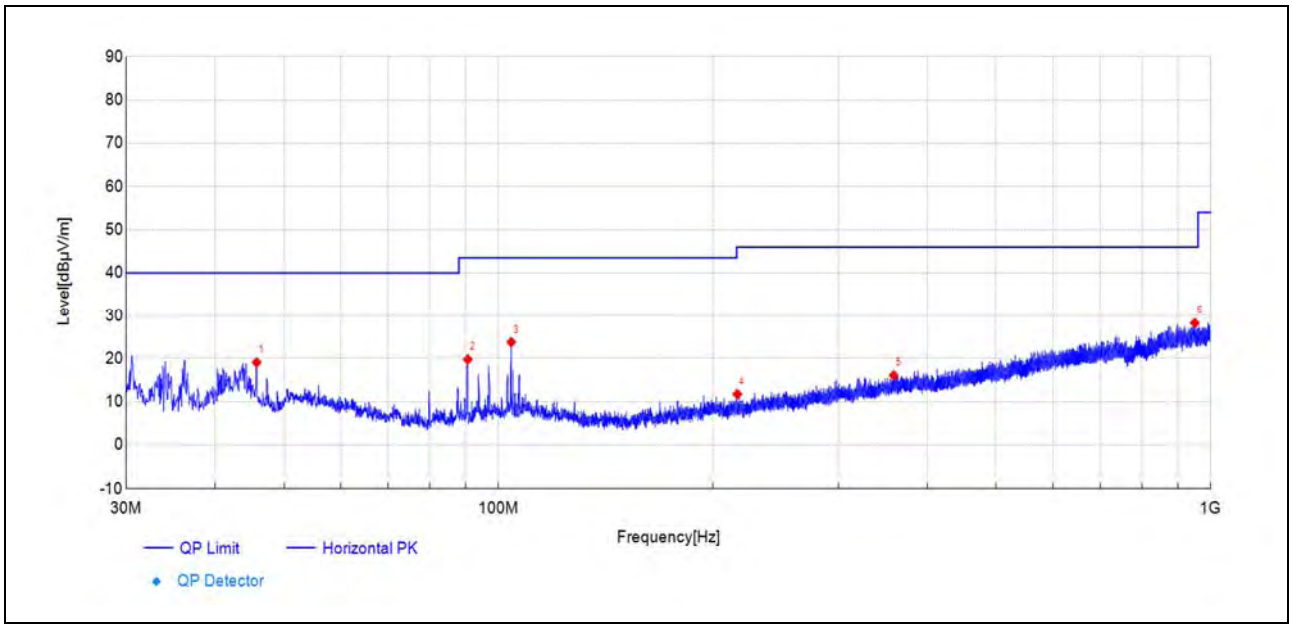
Note 3: For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 4: All test modes were considered and evaluated respectively by performing full test, only the worst data were recorded.

Left

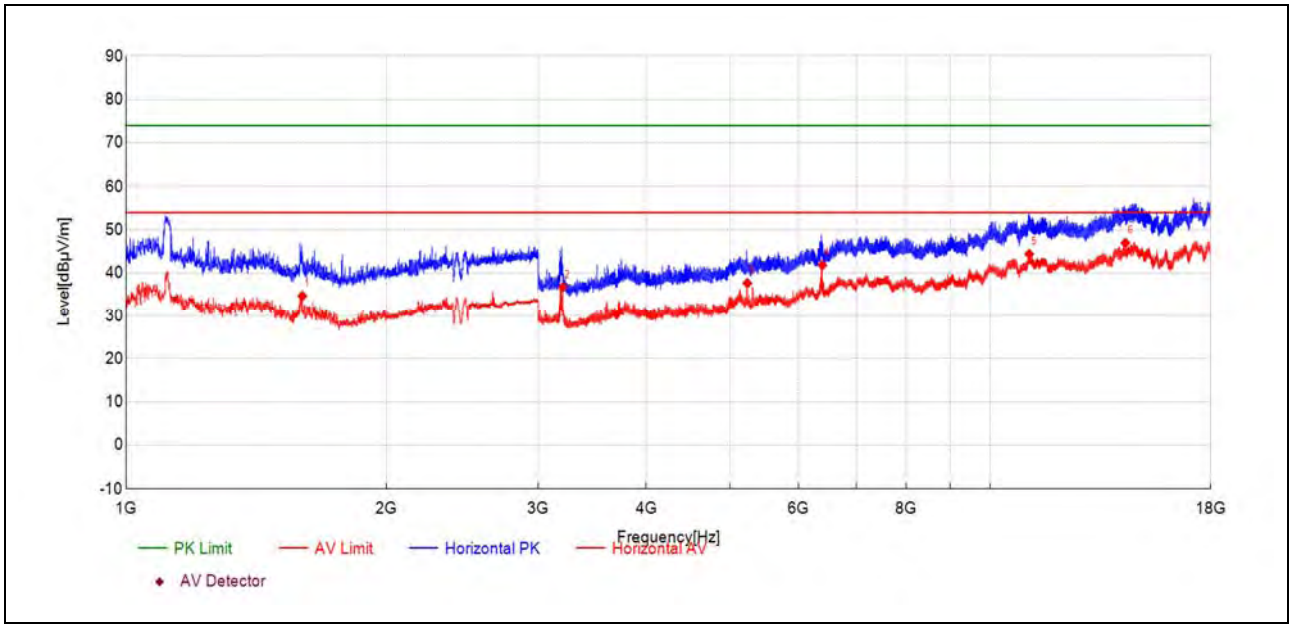
1Mbps

Plot for Channel 0



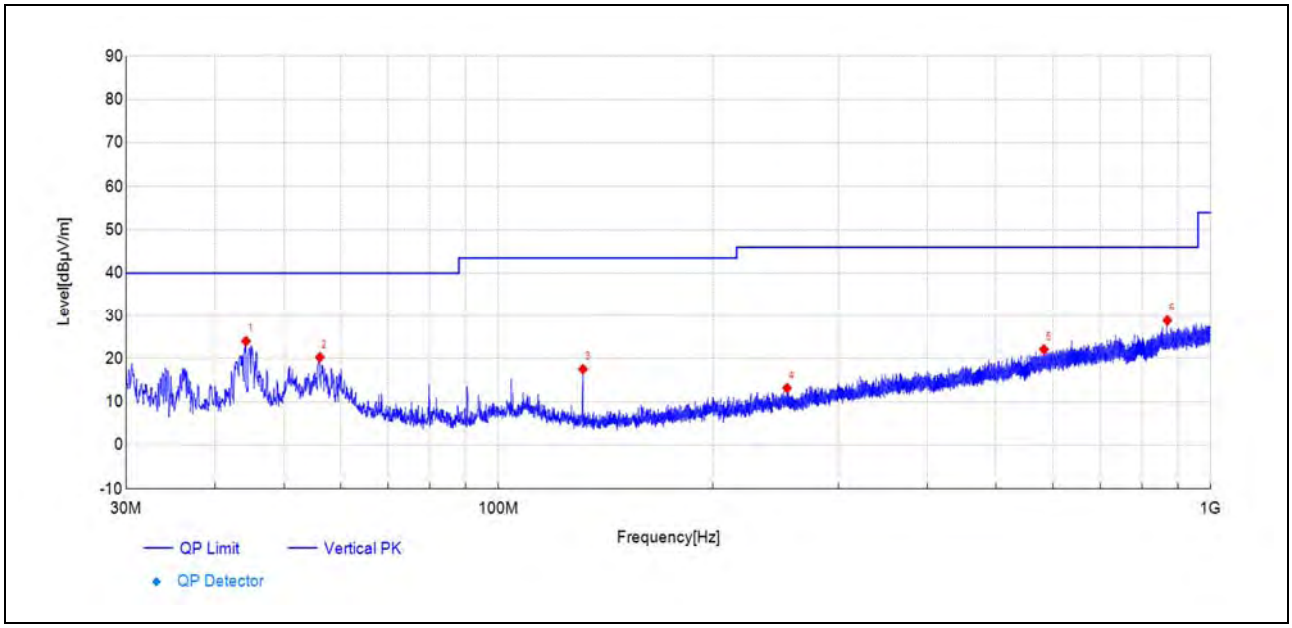
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
45.76	47.4	19.06	-28.380	40.00	20.94	150	52	PK	PASS
90.53	51.2	19.76	-31.450	43.50	23.74	150	139	PK	PASS
104.26	53.3	23.75	-29.540	43.50	19.75	150	186	PK	PASS
216.44	40.6	11.73	-28.860	46.00	34.27	150	15	PK	PASS
358.80	39.5	16.10	-23.440	46.00	29.90	150	191	PK	PASS
949.65	39.2	28.23	-10.920	46.00	17.77	150	325	PK	PASS



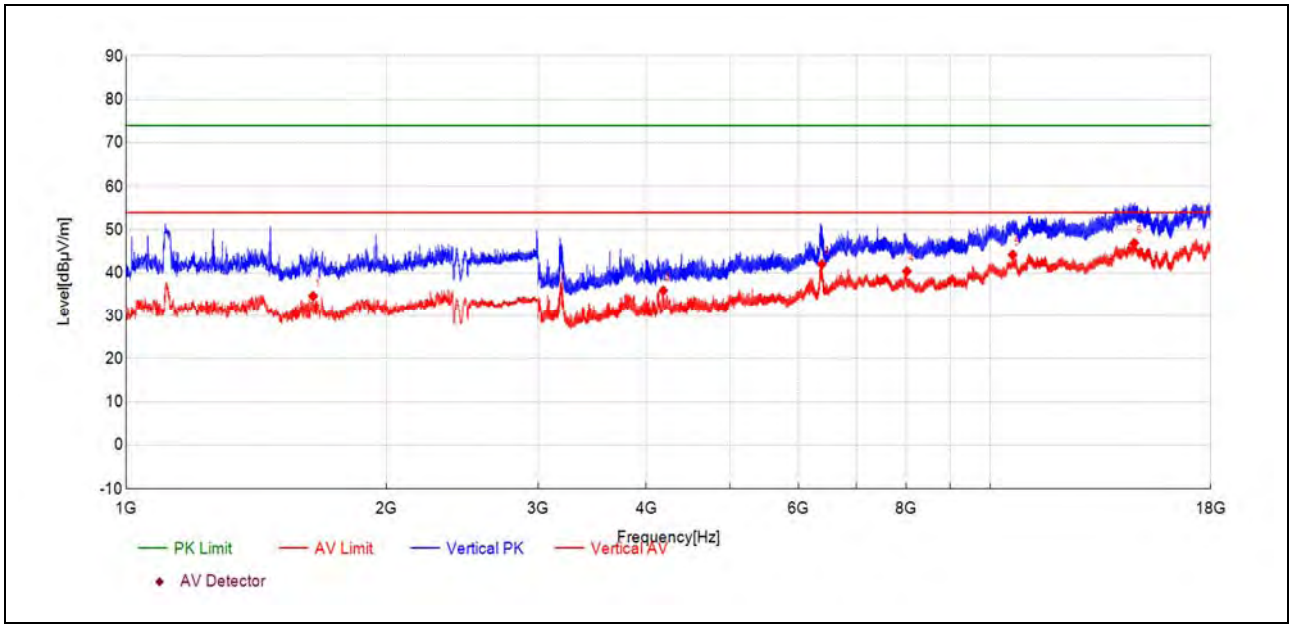
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1599.69	35.1	34.68	-0.390	54.00	19.32	150	167	AV	PASS
3201.86	47.6	36.73	-10.870	54.00	17.27	150	288	AV	PASS
5237.21	40.7	37.65	-3.050	54.00	16.35	150	9	AV	PASS
6393.95	40.8	41.86	1.030	54.00	12.14	150	9	AV	PASS
11098.95	30.3	44.40	14.060	54.00	9.60	150	9	AV	PASS
14339.90	27.7	46.97	19.250	54.00	7.03	150	360	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

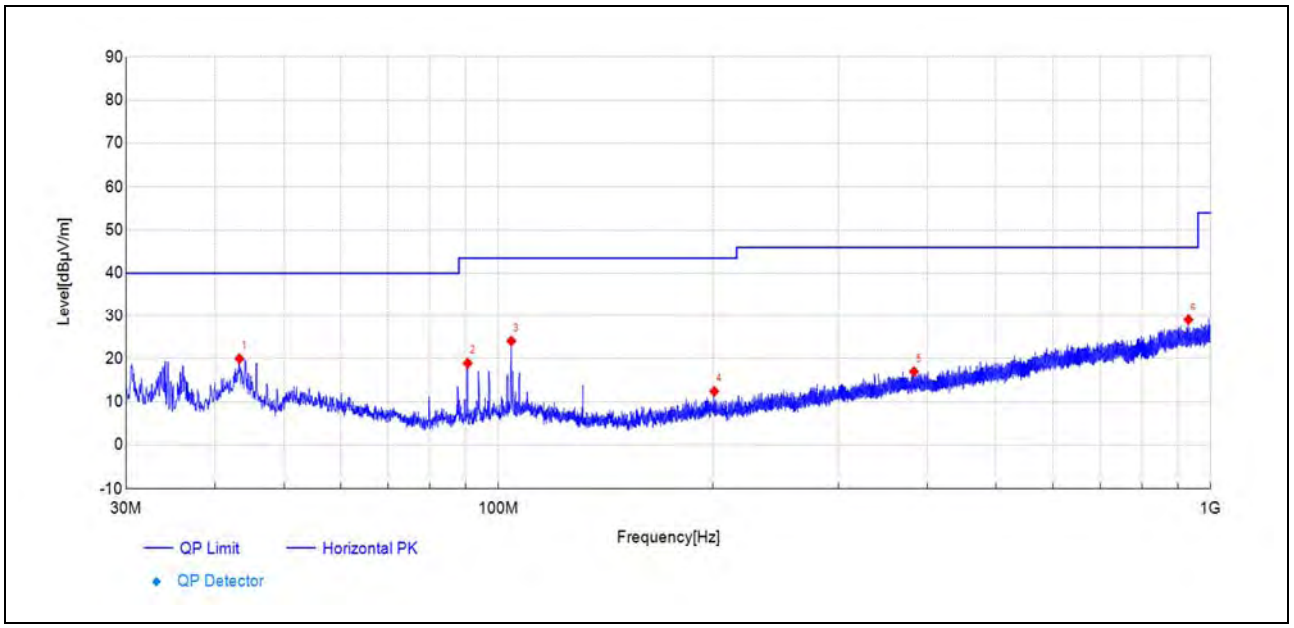
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
44.21	51.9	24.01	-27.870	40.00	15.99	150	77	PK	PASS
56.14	48.3	20.30	-28.040	40.00	19.70	150	337	PK	PASS
131.42	49.5	17.55	-31.980	43.50	25.95	150	139	PK	PASS
254.23	40.4	13.17	-27.250	46.00	32.83	150	237	PK	PASS
583.36	39.7	22.12	-17.620	46.00	23.88	150	45	PK	PASS
869.14	41.3	28.87	-12.420	46.00	17.13	150	359	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

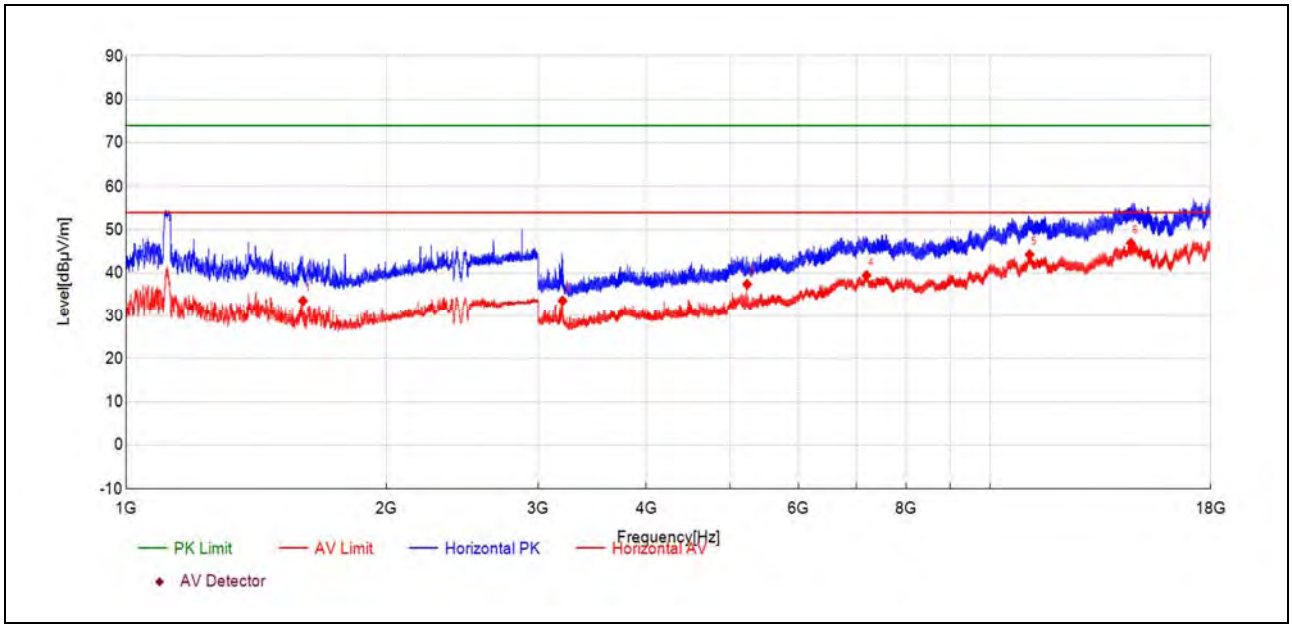
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1646.37	34.8	34.67	-0.090	54.00	19.33	150	137	AV	PASS
4185.46	43.6	35.95	-7.670	54.00	18.05	150	129	AV	PASS
6384.95	41.0	42.05	1.060	54.00	11.95	150	23	AV	PASS
8009.71	35.4	40.42	5.040	54.00	13.58	150	62	AV	PASS
10618.50	32.1	44.25	12.160	54.00	9.75	150	183	AV	PASS
14682.76	26.4	46.95	20.550	54.00	7.05	150	36	AV	PASS

Plot for Channel 19



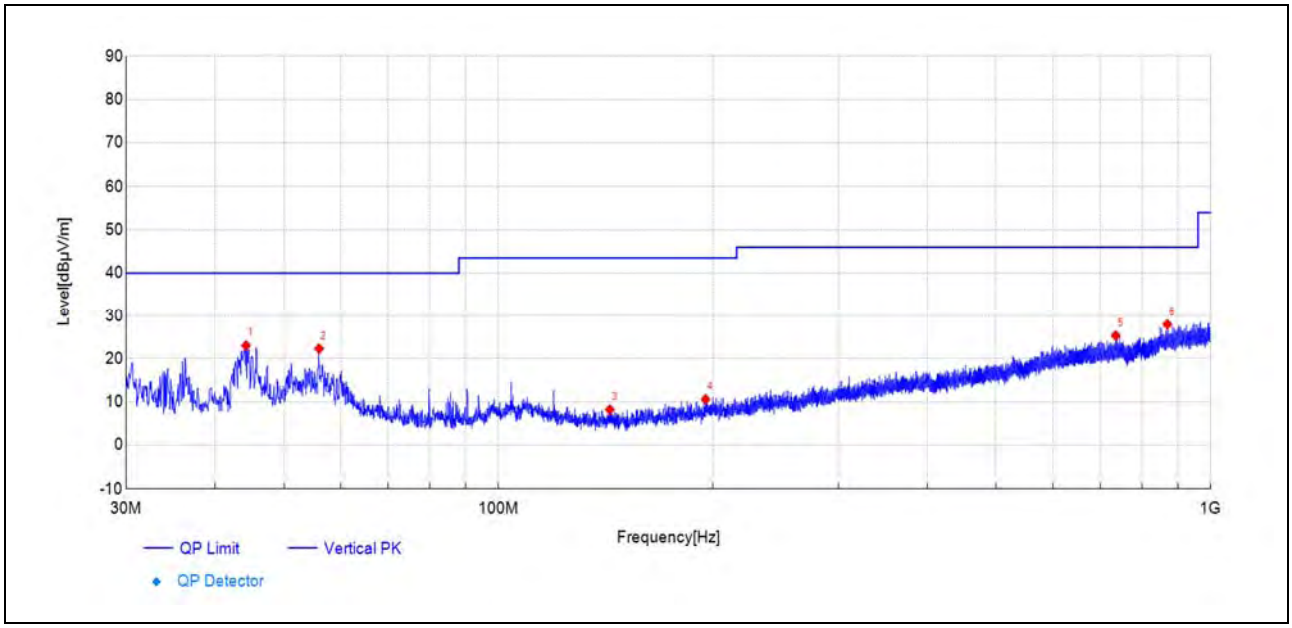
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
43.29	48.0	19.99	-27.970	40.00	20.01	150	308	PK	PASS
90.53	50.4	18.91	-31.450	43.50	24.59	150	97	PK	PASS
104.26	53.6	24.05	-29.540	43.50	19.45	150	25	PK	PASS
200.92	41.3	12.42	-28.890	43.50	31.08	150	114	PK	PASS
383.15	39.8	16.99	-22.850	46.00	29.01	150	97	PK	PASS
930.74	40.7	29.03	-11.690	46.00	16.97	150	35	PK	PASS



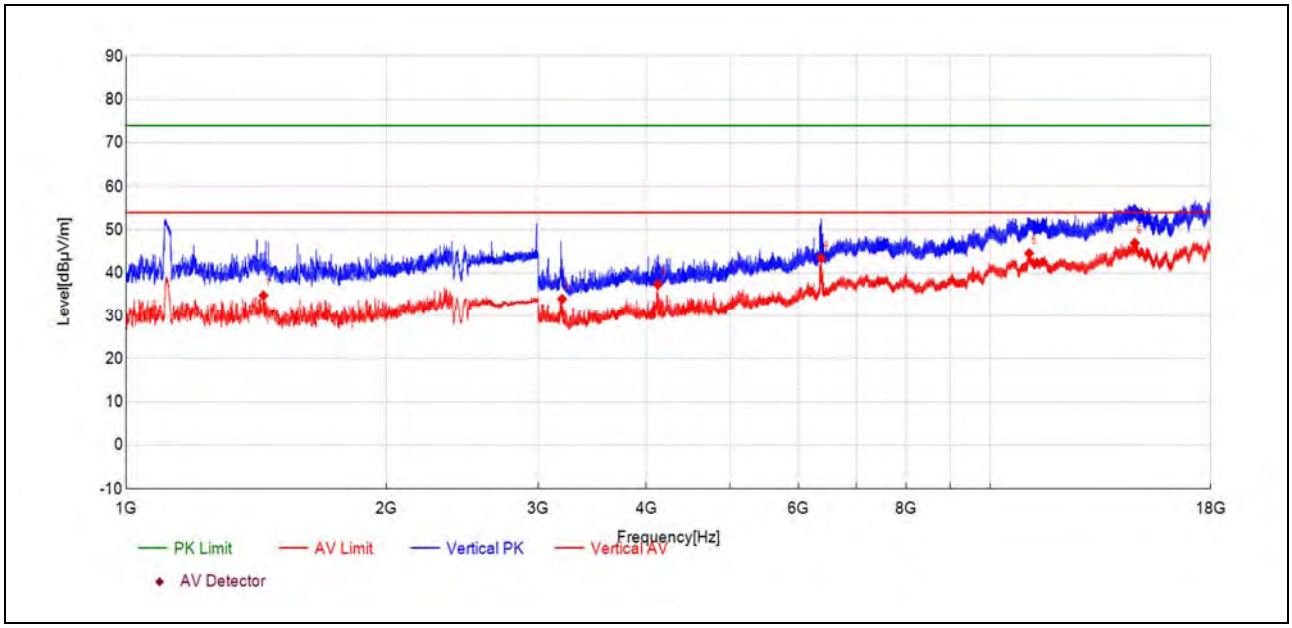
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1602.36	33.9	33.57	-0.370	54.00	20.43	150	170	AV	PASS
3200.15	44.4	33.58	-10.850	54.00	20.42	150	263	AV	PASS
5233.35	40.5	37.41	-3.110	54.00	16.59	150	316	AV	PASS
7192.41	34.4	39.48	5.040	54.00	14.52	150	116	AV	PASS
11108.80	30.3	44.29	14.030	54.00	9.71	150	360	AV	PASS
14552.04	26.8	46.93	20.090	54.00	7.07	150	316	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

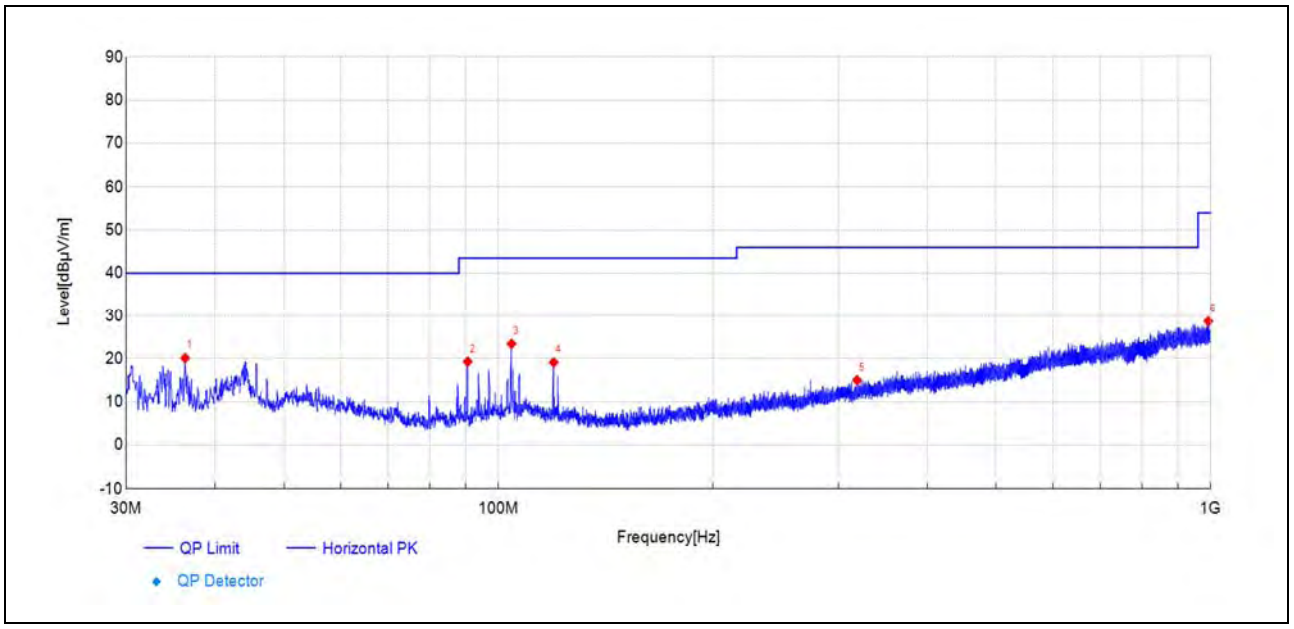
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
44.21	50.9	23.05	-27.870	40.00	16.95	150	8	PK	PASS
56.00	50.4	22.32	-28.050	40.00	17.68	150	346	PK	PASS
143.35	39.7	8.21	-31.460	43.50	35.29	150	107	PK	PASS
195.39	39.8	10.60	-29.180	43.50	32.90	150	278	PK	PASS
735.47	40.2	25.34	-14.900	46.00	20.66	150	290	PK	PASS
869.09	40.4	27.94	-12.430	46.00	18.06	150	133	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

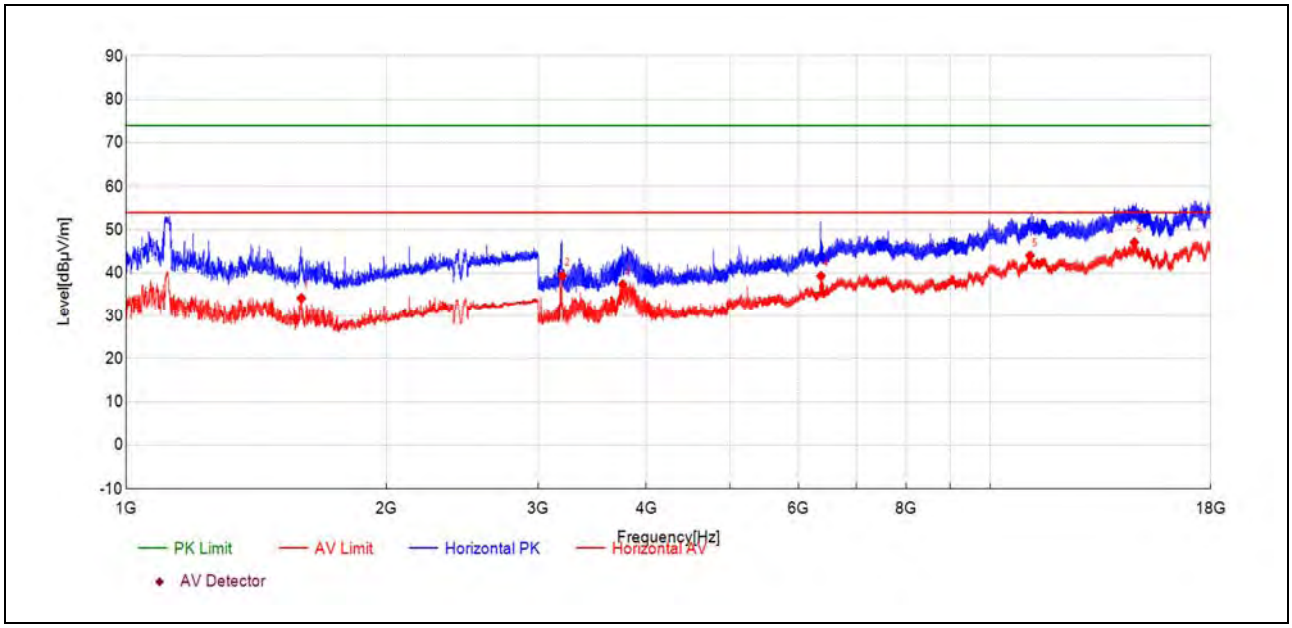
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1442.32	34.7	34.80	0.150	54.00	19.20	150	77	AV	PASS
3196.29	44.8	33.97	-10.810	54.00	20.03	150	36	AV	PASS
4125.46	45.4	37.31	-8.130	54.00	16.69	150	116	AV	PASS
6379.38	42.4	43.46	1.080	54.00	10.54	150	48	AV	PASS
11094.66	30.6	44.56	14.010	54.00	9.44	150	355	AV	PASS
14703.76	26.4	46.97	20.570	54.00	7.03	150	262	AV	PASS

Plot for Channel 39



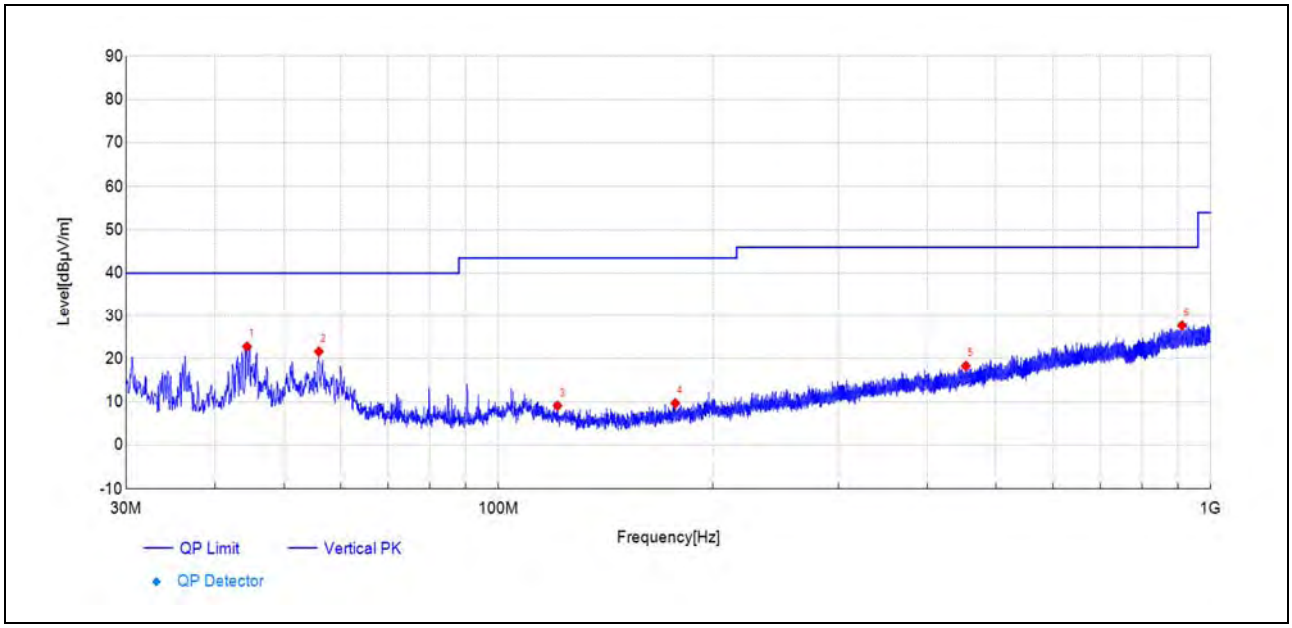
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	49.6	20.11	-29.500	40.00	19.89	150	344	PK	PASS
90.53	50.7	19.28	-31.450	43.50	24.22	150	255	PK	PASS
104.31	52.9	23.41	-29.520	43.50	20.09	150	49	PK	PASS
119.58	49.7	19.11	-30.580	43.50	24.39	150	260	PK	PASS
318.73	40.2	14.99	-25.180	46.00	31.01	150	113	PK	PASS
992.39	39.1	28.66	-10.480	54.00	25.34	150	270	PK	PASS



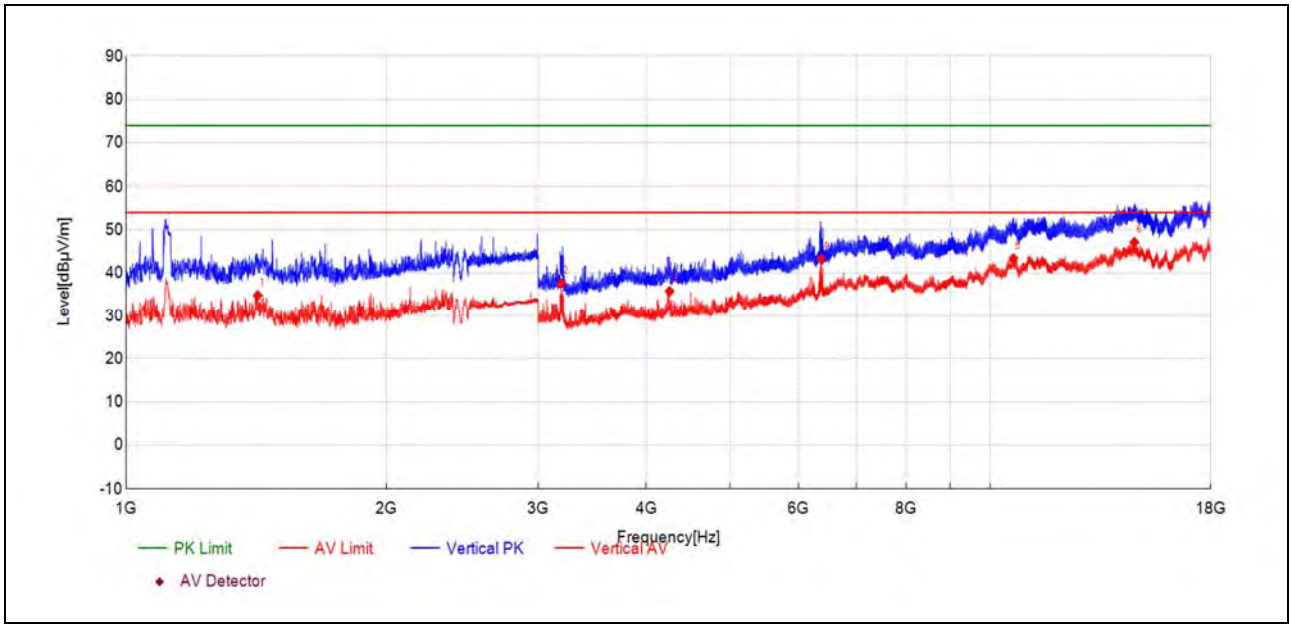
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1595.69	34.6	34.17	-0.420	54.00	19.83	150	170	AV	PASS
3198.43	50.2	39.39	-10.830	54.00	14.61	150	291	AV	PASS
3756.88	45.8	37.38	-8.460	54.00	16.62	150	169	AV	PASS
6370.81	38.2	39.33	1.120	54.00	14.67	150	104	AV	PASS
11121.66	30.1	44.03	13.950	54.00	9.97	150	9	AV	PASS
14689.62	26.6	47.12	20.570	54.00	6.88	150	279	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
44.36	50.7	22.78	-27.920	40.00	17.22	150	118	PK	PASS
55.95	49.7	21.63	-28.030	40.00	18.37	150	275	PK	PASS
121.09	39.7	9.09	-30.650	43.50	34.41	150	211	PK	PASS
177.16	40.1	9.64	-30.480	43.50	33.86	150	92	PK	PASS
453.23	39.9	18.32	-21.610	46.00	27.68	150	300	PK	PASS
911.24	39.7	27.68	-12.050	46.00	18.32	150	9	PK	PASS



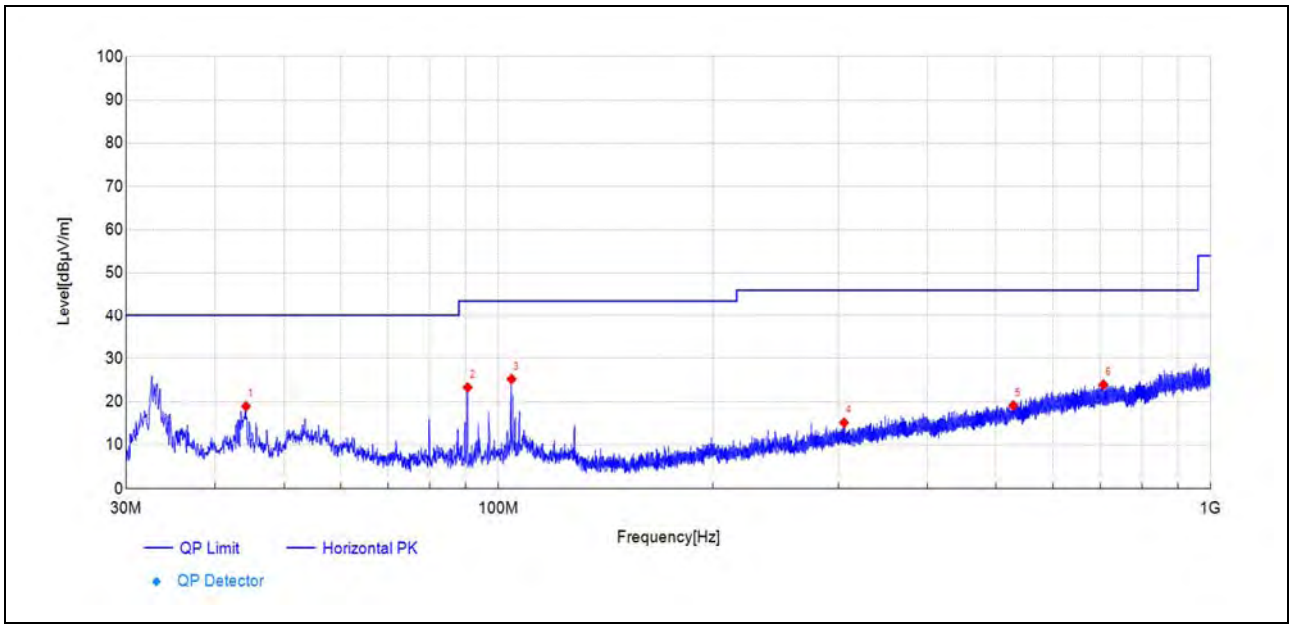
(Antenna Vertical, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1420.09	34.9	34.84	-0.040	54.00	19.16	150	79	AV	PASS
3187.72	48.3	37.56	-10.740	54.00	16.44	150	64	AV	PASS
4256.18	43.0	35.76	-7.190	54.00	18.24	150	116	AV	PASS
6377.67	42.2	43.27	1.090	54.00	10.73	150	77	AV	PASS
10640.79	31.1	43.36	12.250	54.00	10.64	150	249	AV	PASS
14687.48	26.6	47.15	20.570	54.00	6.85	150	77	AV	PASS

Right

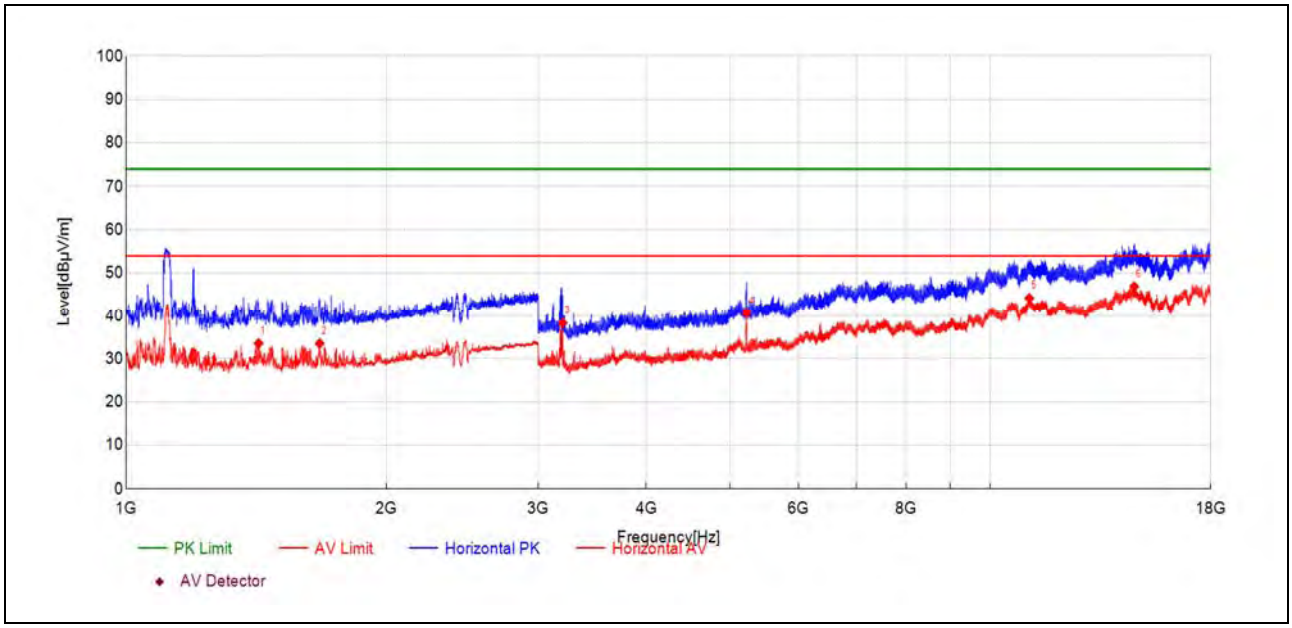
1Mbps

Plot for Channel 0



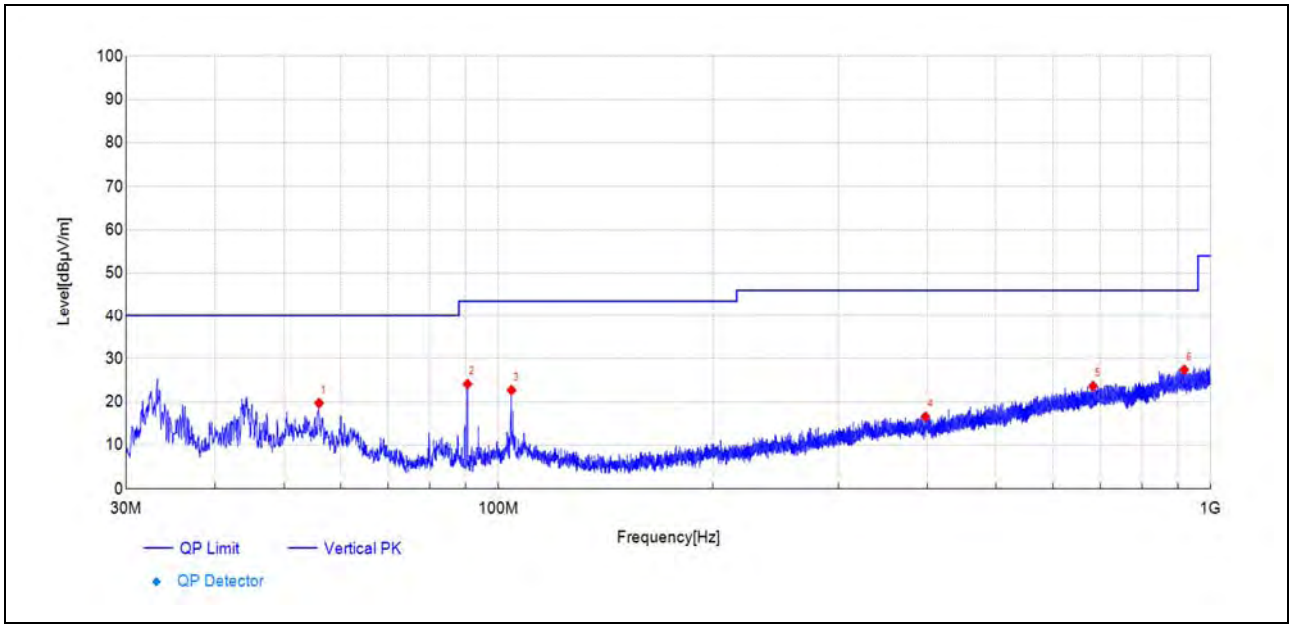
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
44.21	46.8	18.92	-27.870	40.00	21.08	150	335	PK	PASS
90.53	54.7	23.27	-31.450	43.50	20.23	150	228	PK	PASS
104.31	54.8	25.23	-29.520	43.50	18.27	150	111	PK	PASS
305.69	40.3	15.15	-25.140	46.00	30.85	150	233	PK	PASS
528.41	38.3	19.13	-19.200	46.00	26.87	150	152	PK	PASS
707.05	39.6	23.94	-15.690	46.00	22.06	150	70	PK	PASS



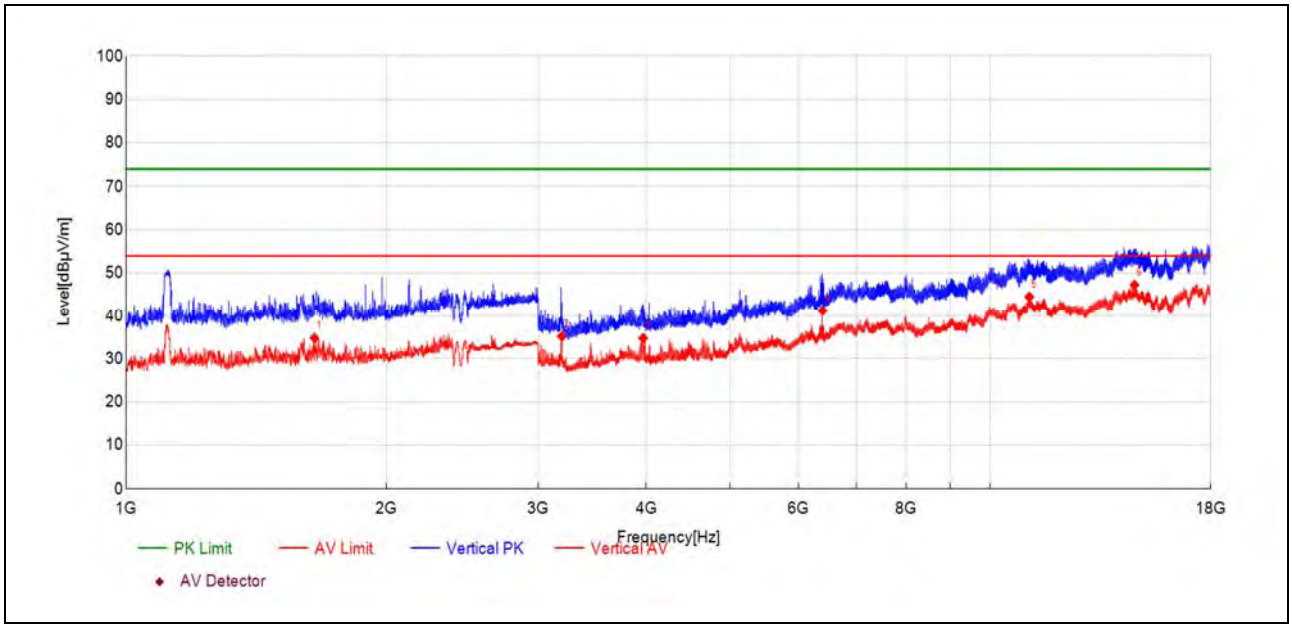
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1423.65	33.5	33.53	-0.010	54.00	20.47	150	135	AV	PASS
1675.26	33.4	33.51	0.090	54.00	20.49	150	184	AV	PASS
3200.58	49.2	38.29	-10.860	54.00	15.71	150	105	AV	PASS
5227.78	43.8	40.63	-3.210	54.00	13.37	150	200	AV	PASS
11100.66	30.1	44.16	14.080	54.00	9.84	150	188	AV	PASS
14678.91	26.3	46.87	20.540	54.00	7.13	150	78	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

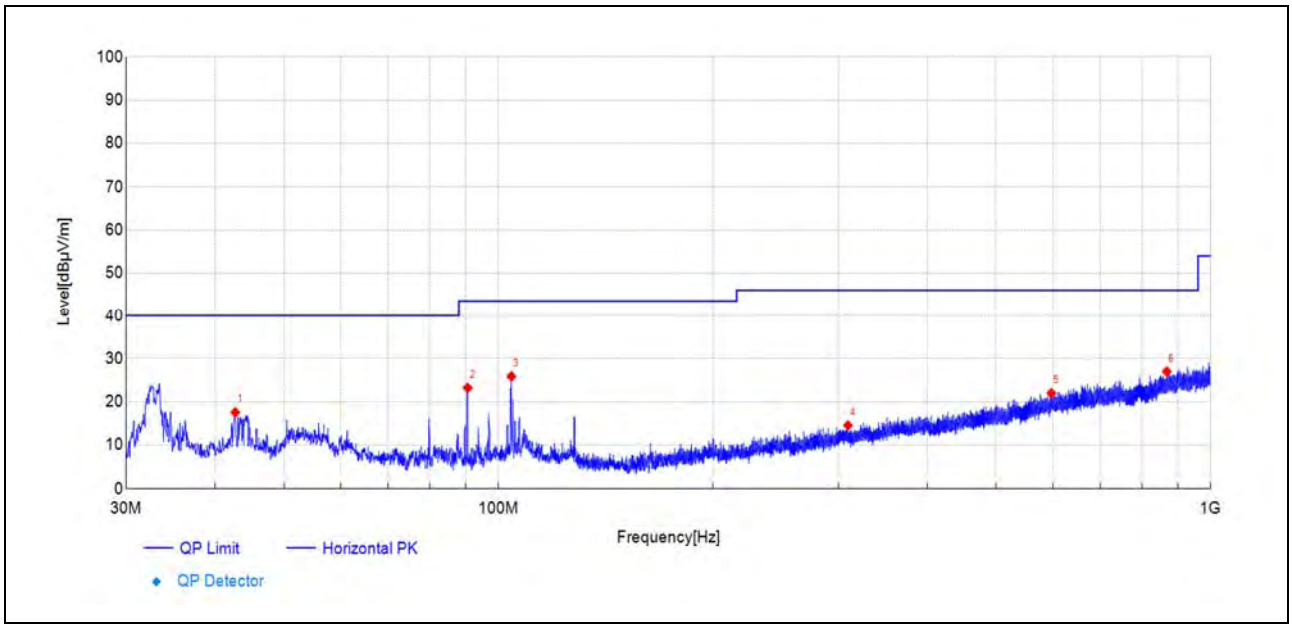
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
56.00	47.8	19.70	-28.050	40.00	20.30	150	181	PK	PASS
90.48	55.6	24.12	-31.470	43.50	19.38	150	354	PK	PASS
104.31	52.2	22.69	-29.520	43.50	20.81	150	90	PK	PASS
397.55	39.2	16.56	-22.650	46.00	29.44	150	247	PK	PASS
683.47	40.1	23.65	-16.410	46.00	22.35	150	125	PK	PASS
918.08	39.2	27.42	-11.740	46.00	18.58	150	85	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

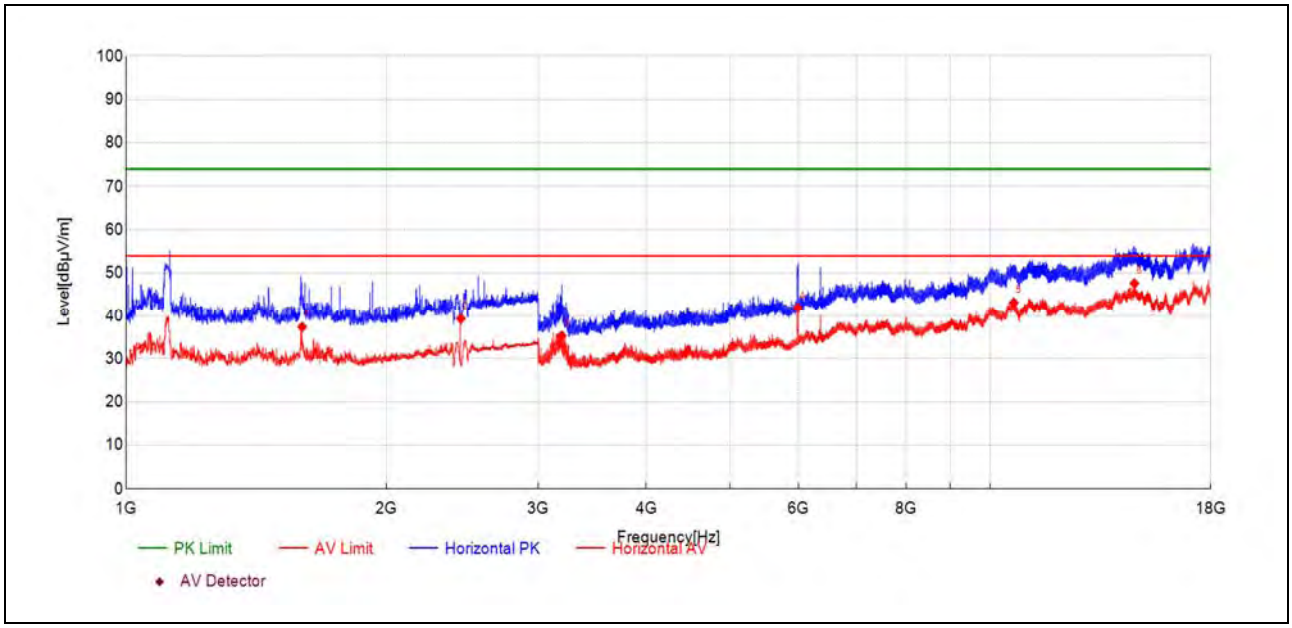
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1652.14	34.8	34.76	-0.060	54.00	19.24	150	150	AV	PASS
3194.58	46.0	35.17	-10.800	54.00	18.83	150	319	AV	PASS
3967.31	42.7	34.75	-7.900	54.00	19.25	150	118	AV	PASS
6399.95	40.2	41.20	1.000	54.00	12.80	150	210	AV	PASS
11102.37	30.4	44.47	14.070	54.00	9.53	150	105	AV	PASS
14690.91	26.7	47.26	20.570	54.00	6.74	150	332	AV	PASS

Plot for Channel 19



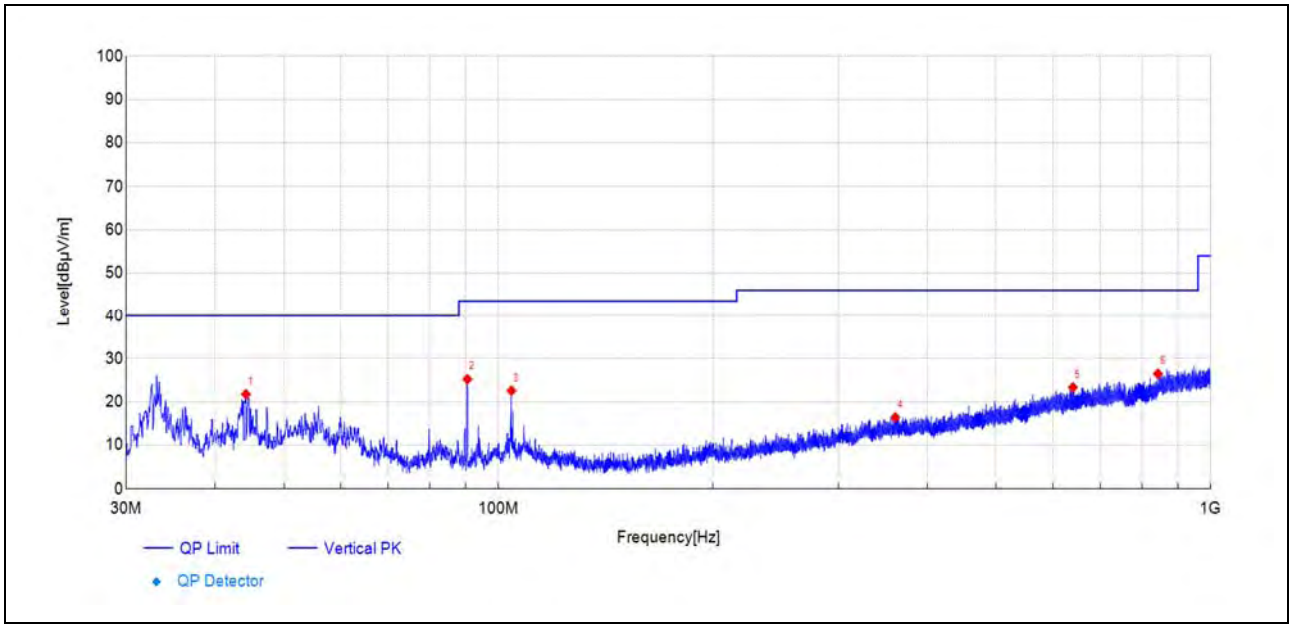
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
42.71	45.8	17.54	-28.220	40.00	22.46	150	274	PK	PASS
90.53	54.7	23.21	-31.450	43.50	20.29	150	64	PK	PASS
104.31	55.4	25.87	-29.520	43.50	17.63	150	340	PK	PASS
309.52	39.9	14.52	-25.400	46.00	31.48	150	264	PK	PASS
597.48	39.3	21.99	-17.300	46.00	24.01	150	314	PK	PASS
867.73	39.6	26.99	-12.630	46.00	19.01	150	155	PK	PASS



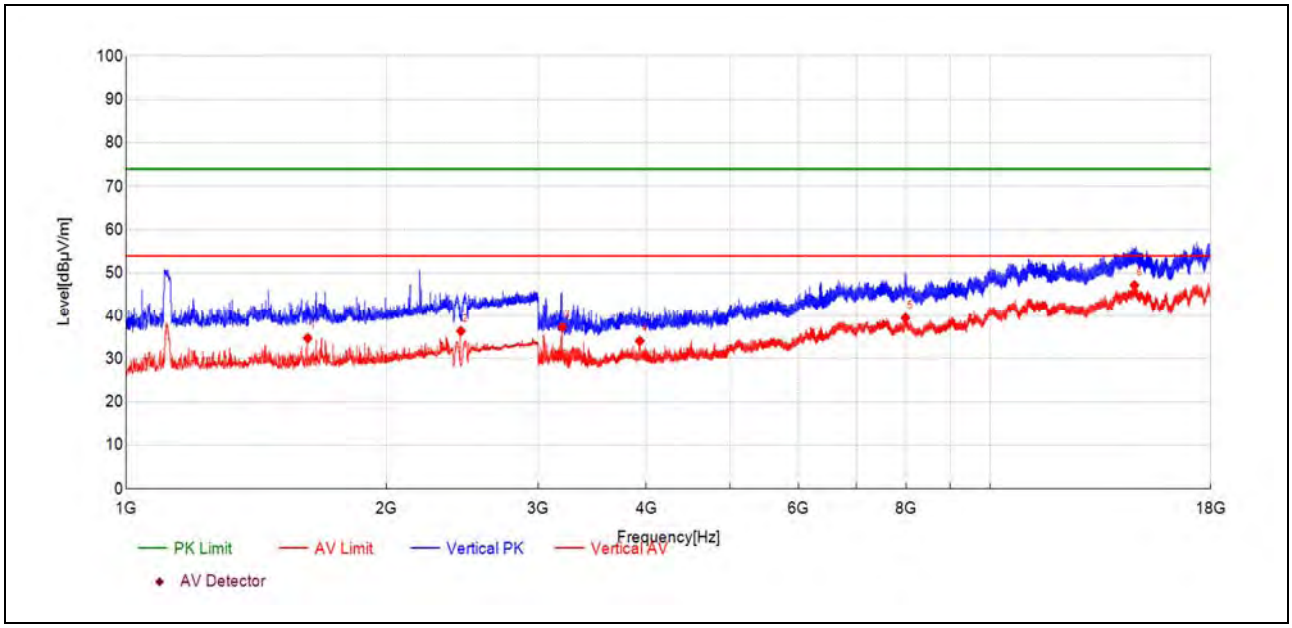
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1599.24	37.7	37.35	-0.390	54.00	16.65	150	173	AV	PASS
2440.32	33.5	39.28	5.820	-	-	150	184	AV	N/A
3192.86	46.1	35.34	-10.790	54.00	18.66	150	202	AV	PASS
5989.80	42.1	41.83	-0.260	54.00	12.17	150	230	AV	PASS
10649.36	30.8	43.11	12.280	54.00	10.89	150	53	AV	PASS
14688.76	27.0	47.61	20.570	54.00	6.39	150	53	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

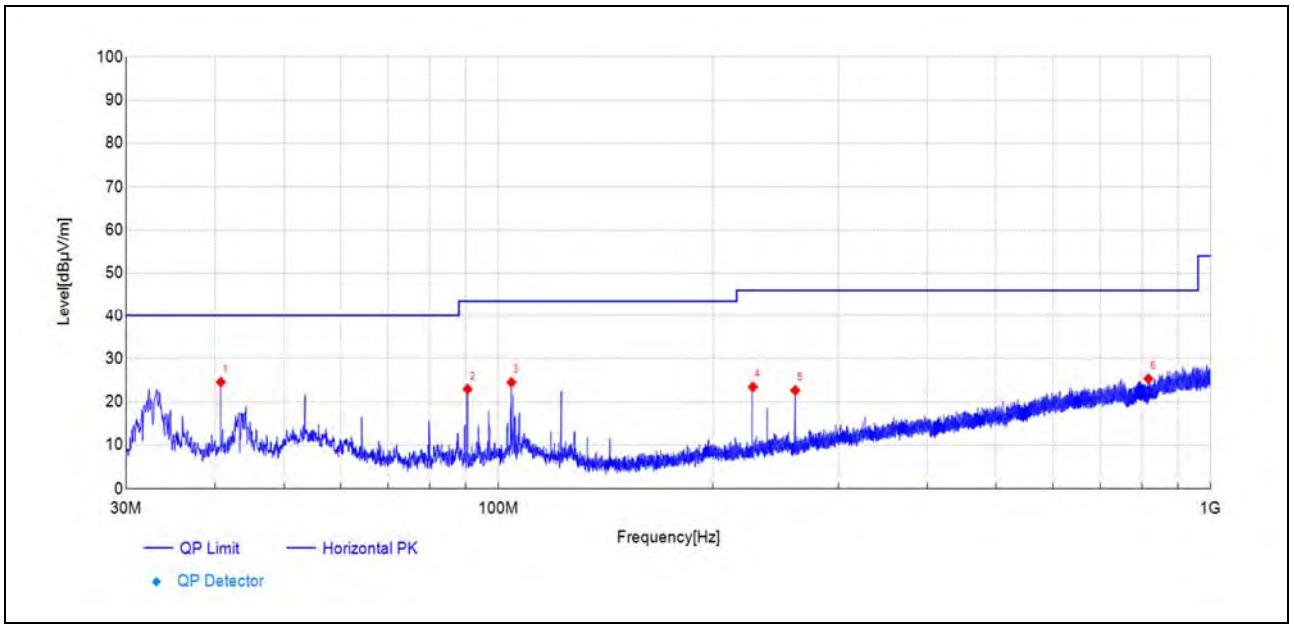
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
44.21	49.6	21.75	-27.870	40.00	18.25	150	4	PK	PASS
90.43	56.7	25.24	-31.480	43.50	18.26	150	321	PK	PASS
104.31	52.1	22.57	-29.520	43.50	20.93	150	107	PK	PASS
360.74	39.8	16.42	-23.380	46.00	29.58	150	208	PK	PASS
640.55	40.0	23.35	-16.650	46.00	22.65	150	346	PK	PASS
843.14	40.1	26.50	-13.640	46.00	19.50	150	24	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

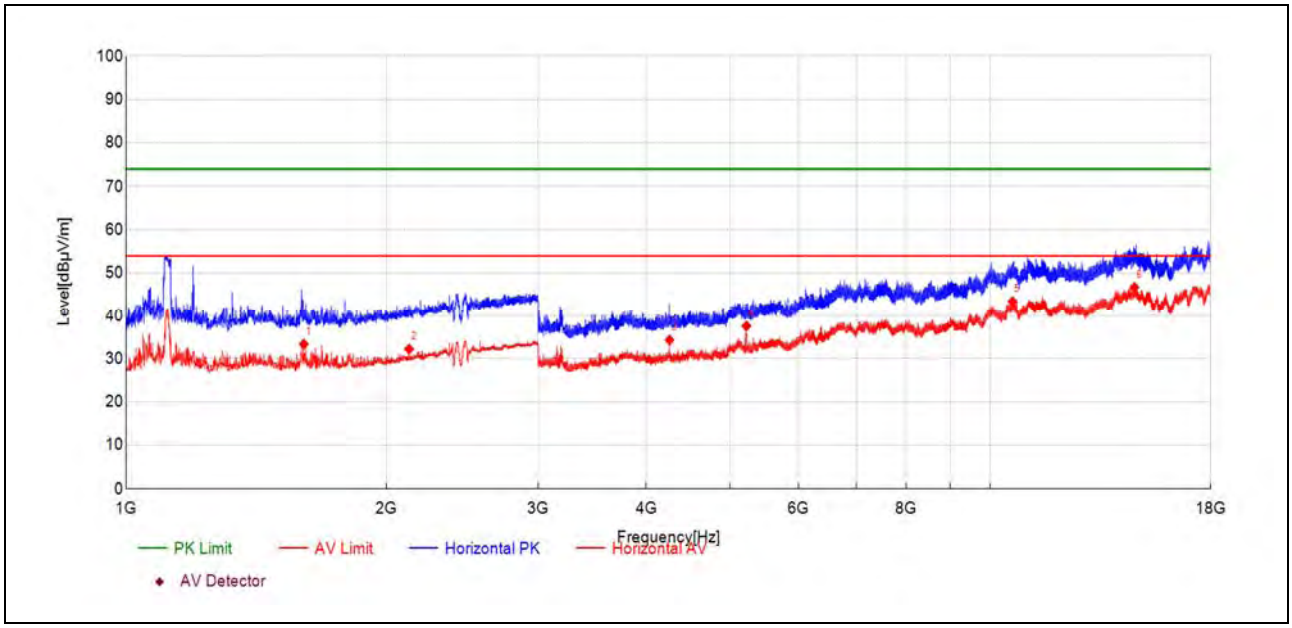
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1622.81	35.0	34.75	-0.240	54.00	19.25	150	162	AV	PASS
2440.32	30.6	36.38	5.820	-	-	150	221	AV	N/A
3199.29	48.1	37.28	-10.840	54.00	16.72	150	160	AV	PASS
3931.74	42.1	34.08	-7.990	54.00	19.92	150	116	AV	PASS
7980.14	34.6	39.47	4.850	54.00	14.53	150	351	AV	PASS
14688.33	26.6	47.21	20.570	54.00	6.79	150	91	AV	PASS

Plot for Channel 39



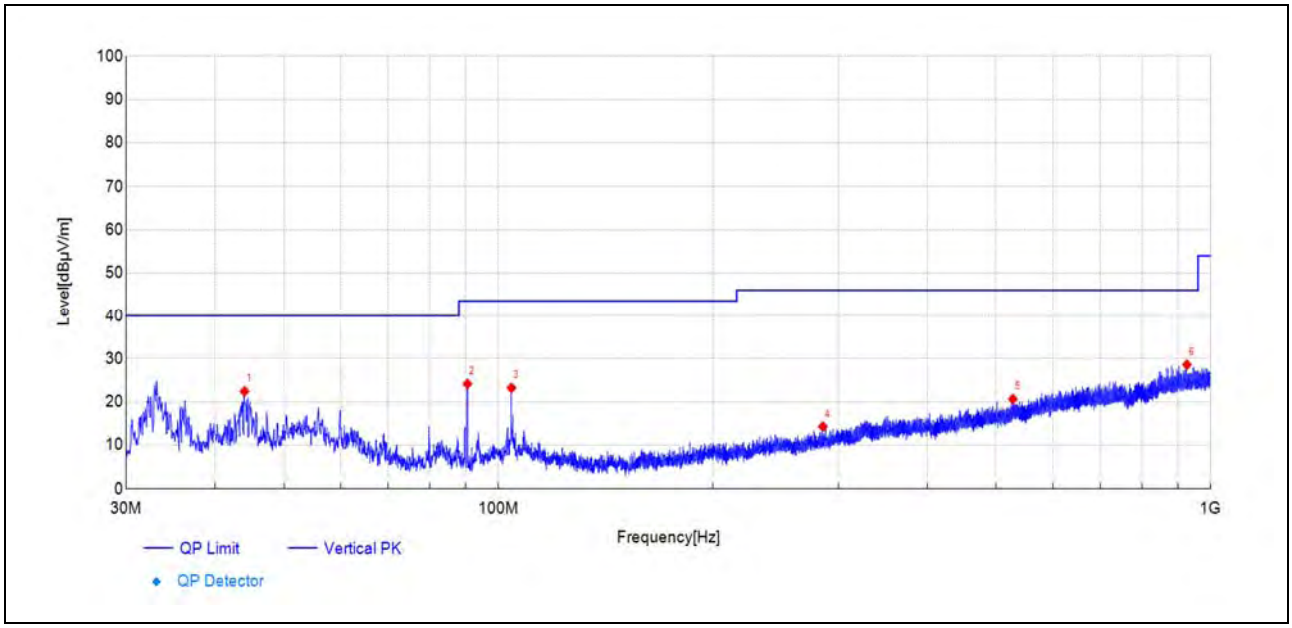
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
40.77	53.5	24.55	-28.900	40.00	15.45	150	215	PK	PASS
90.53	54.4	22.93	-31.450	43.50	20.57	150	199	PK	PASS
104.31	54.0	24.47	-29.520	43.50	19.03	150	256	PK	PASS
227.65	51.9	23.43	-28.500	46.00	22.57	150	82	PK	PASS
261.07	50.5	22.62	-27.890	46.00	23.38	150	82	PK	PASS
817.53	40.2	25.31	-14.850	46.00	20.69	150	230	PK	PASS



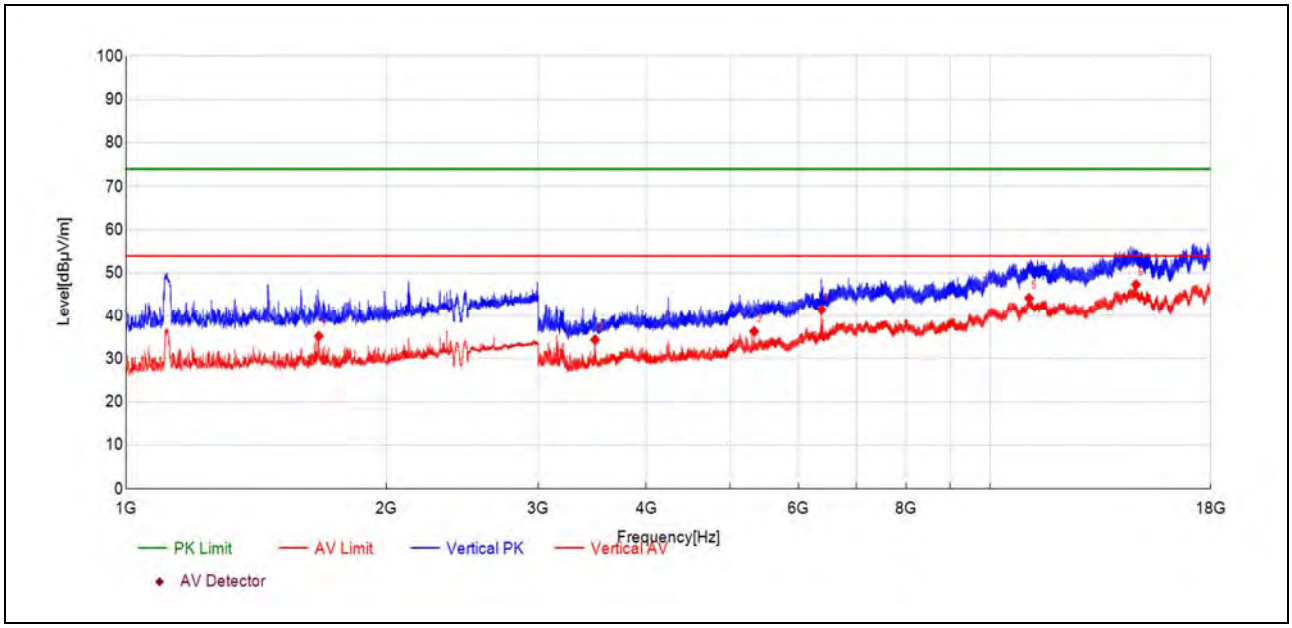
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1605.91	33.7	33.33	-0.350	54.00	20.67	150	173	AV	PASS
2126.47	28.7	32.19	3.490	54.00	21.81	150	282	AV	PASS
4256.61	41.5	34.30	-7.200	54.00	19.70	150	284	AV	PASS
5223.49	40.8	37.56	-3.270	54.00	16.44	150	12	AV	PASS
10615.07	31.3	43.40	12.150	54.00	10.60	150	148	AV	PASS
14687.48	26.2	46.73	20.570	54.00	7.27	150	52	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
44.02	50.2	22.41	-27.820	40.00	17.59	150	322	PK	PASS
90.48	55.6	24.16	-31.470	43.50	19.34	150	302	PK	PASS
104.31	52.8	23.23	-29.520	43.50	20.27	150	199	PK	PASS
285.37	40.5	14.26	-26.270	46.00	31.74	150	126	PK	PASS
527.54	40.0	20.62	-19.370	46.00	25.38	150	146	PK	PASS
925.89	40.6	28.60	-11.950	46.00	17.40	150	292	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1671.70	35.1	35.20	0.060	54.00	18.80	150	151	AV	PASS
3489.87	44.1	34.35	-9.740	54.00	19.65	150	65	AV	PASS
5333.21	38.7	36.30	-2.420	54.00	17.70	150	229	AV	PASS
6381.10	40.3	41.40	1.070	54.00	12.60	150	51	AV	PASS
11095.95	30.1	44.16	14.030	54.00	9.84	150	188	AV	PASS
14753.91	27.2	47.34	20.130	54.00	6.66	150	324	AV	PASS

END OF REPORT