TEST REPORT

APPLICANT	:	Power Idea Technology (Shenzhen) Co., Ltd.
PRODUCT NAME	:	Smartphone
MODEL NAME	:	PSM06G
BRAND NAME	:	RugGear
FCC ID	:	ZLE-PSM06G
STANDARD(S)	:	47 CFR Part 15 Subpart C
RECEIPT DATE	:	2025-07-04
TEST DATE	:	2025-08-01 to 2025-09-16
ISSUE DATE	:	2025-10-24

Edited by: Peng Mi (Rapporteur)

Approved by: Shen Junsheng (Supervisor)

NOTE: This document is issued by Shenzhen Morlab Communications Technology Co., Ltd., the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.

MORLAB
Shenzhen Morlab Communications Technology Co., Ltd.
FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Tel: 86-755-36698555 Fax: 86-755-36698525
Http://www.morlab.cn E-mail: service@morlab.cn

DIRECTORY

1. Summary of Test Result ····· 4
1.1. Testing Applied Standards ····· 4
1.2. Test Equipment List ····· 5
1.3. Measurement Uncertainty ····· 7
1.4. Testing Laboratory ····· 7
2. General Description ····· 8
2.1. Information of Applicant and Manufacturer ····· 8
2.2. Information of EUT ····· 8
2.3. Channel List of EUT ····· 10
2.4. Test Configuration of EUT ····· 10
2.5. Test Conditions ····· 11
2.6. Test Setup Layout Diagram ····· 12
3. Test Results ····· 15
3.1. Antenna Requirement ····· 15
3.2. Duty Cycle of Test Signal ····· 16
3.3. Maximum Peak and Average Conducted Output Power ····· 17
3.4. 6 dB Bandwidth ····· 18
3.5. Conducted Spurious Emissions and Band Edge ····· 19
3.6. Power Spectral Density ····· 20
3.7. Conducted Emission ····· 21
3.8. Restricted Frequency Bands ····· 22
3.9. Radiated Emission ····· 23
Annex A Test Data and Result ····· 25

Change History		
Version	**Date**	**Reason for change**
1.0	2025-10-24	First edition

1. Summary of Test Result

No.	Section	Description	Test Date	Test Engineer	Result	Remark
1	15.203	Antenna Requirement	N/A	N/A	PASS	/
2	N/A	Duty Cycle of Test Signal	Aug. 06, 2025	Li Yue	PASS	/
3	15.247(b)	Maximum Peak Conducted Output Power	Aug. 06, 2025	Li Yue	PASS	/
4	15.247(b)	Maximum Average Conducted Output Power	Aug. 06, 2025	Li Yue	PASS	/
5	15.247(a)	Bandwidth	Aug. 06, 2025	Li Yue	PASS	/
6	15.247(d)	Conducted Spurious Emission and Band Edge	Aug. 14, 2025	Li Yue	PASS	/
7	15.247(e)	Power Spectral Density	Aug. 06, 2025	Li Yue	PASS	/
8	15.207	Conducted Emission	Aug. 04, 2025	Fan Zehang Wang Yapeng	PASS	/
9	15.247(d)	Restricted Frequency Bands	Aug. 12, 2025	Tian Xin	PASS	/
10	15.209, 15.247(d)	Radiated Emission	Aug. 10 to 16, 2025	Tian Xin	PASS	/

Note 1: The tests were performed according to the method of measurements prescribed in ANSI C63.10-2020 and KDB 558074 D01 v05r02.

Note 2: Any additions, deviation, or exclusions from the method shall be noted in the “Remark”.

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	2025.01.15	2026.01.14
Power Sensor	MY54180008	U2021XA	Agilent	2024.09.11	2025.09.10
				2025.09.03	2026.09.02
RF Cable (30MHz-26GHz)	CB01	RF01	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	101052	ESPI	R&S	2025.05.15	2026.05.14
LISN	103131	ENV 216	R&S	2025.03.20	2026.03.19
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	R&S	2025.05.13	2026.05.12
RF Coaxial Cable (DC-100MHz)	EMC-CE-00514	N/A	N/A	2025.05.06	2026.05.05

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	2025.05.13	2026.05.12
Test Antenna - Bi-Log	9163-274	VULB 9163	Schwarzbeck	2025.06.28	2026.06.27
Test Antenna - Loop	00131	FMZB1519B	Schwarzbeck	2024.09.19	2025.09.18
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2025.06.20	2026.06.19
Test Antenna – Horn	BBHA9170 #773	BBHA9170	Schwarzbeck	2025.06.20	2026.06.19
Preamplifier (10MHz-6GHz)	46732	S10M100L3802	LUCIX CORP.	2025.05.13	2026.05.12
Preamplifier (2GHz-18GHz)	61171/61172	S020180L3203	LUCIX CORP.	2025.05.13	2026.05.12
Preamplifier (18GHz-40GHz)	DS77209	DCLNA0118-40C-S	Decentest	2025.05.13	2026.05.12
RF Coaxial Cable (DC-18GHz)	MRE001	PE330	Pasternack	2025.05.13	2026.05.12
RF Coaxial Cable (DC-18GHz)	MRE002	CLU18	Pasternack	2025.05.13	2026.05.12
RF Coaxial Cable (DC-18GHz)	MRE003	CLU18	Pasternack	2025.05.13	2026.05.12
RF Coaxial Cable (DC-40GHz)	22290045	QA360-40-KK-0.5	Qualwave	2024.09.11	2025.09.10
				2025.09.03	2026.09.02
RF Coaxial Cable (DC-40GHz)	22290046	QA360-40-KKF-2	Qualwave	2024.09.11	2025.09.10
				2025.09.03	2026.09.02
RF Coaxial Cable (DC-18GHz)	22120181	QA500-18-NN-5	Qualwave	2024.09.11	2025.09.10
				2025.09.03	2026.09.02
Notch Filter	N/A	WRCG-2400-2483.5-60SS	Wainwright	N/A	N/A
Anechoic Chamber	N/A	9m*6m*6m	CRT	2025.04.19	2028.04.18
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.11.30	2025.11.29

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:	Power Idea Technology (Shenzhen) Co., Ltd.
Applicant Address:	4th Floor, A Section, Languang Science&technology, Xinxi RD, Hi-Tech Industrial Park North, Nanshan, ShenZhen, China
Manufacturer:	Power Idea Technology (Shenzhen) Co., Ltd.
Manufacturer Address:	B1504, 1505, 1506, 1507, Building 9, Zone 2, Shenzhen Bay Science and Technology Ecological Park, No. 3609 Baishi Road, High tech Zone Community, Yuehai Street, Nanshan District, Shenzhen, Guangdong, China

2.2. Information of EUT

Product Name:	Smartphone	
Sample No.:	1#, 2#, 4#	
Hardware Version:	V1	
Software Version:	RG725Plus_ ROW_00.00_1_20250611	
Modulation Technology:	DSSS, OFDM	
Modulation Type:	Refer to section 2.4.1	
Wireless Technology:	802.11b, 802.11g, 802.11n (HT20)	
Operating Frequency Range:	2412MHz–2462MHz	
Antenna Type:	PIFA Antenna	
Antenna Gain:	-2.20dBi	
Accessory Information:	Battery	
	Brand Name:	N/A
	Model No.:	BL500IP
	Serial No.:	N/A
	Capacity:	5000mAh
	Rated Voltage:	3.8V
	Charge Limit:	4.35V
	Manufacturer:	JiangxiGuihang New Energy Technology Co., Ltd.

Accessory Information:	AC Adapter	
	Brand Name:	N/A
	Model No.:	UC13US
	Serial No.:	N/A
	Rated Output:	5V⎓2A
	Rated Input:	100-240V~50/60Hz, 0.5A
	Manufacturer:	Huizhou Juwei Electronics Co., Ltd

Note 1: The EUT description presented in the report are provided by applicant and/or manufacturer, and the test laboratory is not responsible for the accuracy of the information. 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

Nominal Channel Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**1**	**2412**	8	2447
	2	2417	9	2452
	3	2422	10	2457
	4	2427	**11**	**2462**
	5	2432		
	6	**2437**		
	7	2442		

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

2.4. Test Configuration of EUT

2.4.1. Modulation Type and Data Rate of EUT

Mode	Bandwidth (MHz)	Modulation Technology	Modulation Type	Data Rate
802.11b	20	DSSS	**DBPSK**	**1**/2/5.5/11Mbps
			DQPSK	
			CCK	
802.11g	20	OFDM	**BPSK**	**6**/9/12/18/24/36/48/54Mbps
			QPSK	
			16QAM	
			64QAM	
802.11n	20 (HT20)	OFDM	**BPSK**	**MCS0**~MCS7
			QPSK	
			16QAM	
			64QAM	

Note1: The worst-case mode (bold face) in all data rates has been determined during the pre-scan, only the test data of the worst-case were recorded in this report.

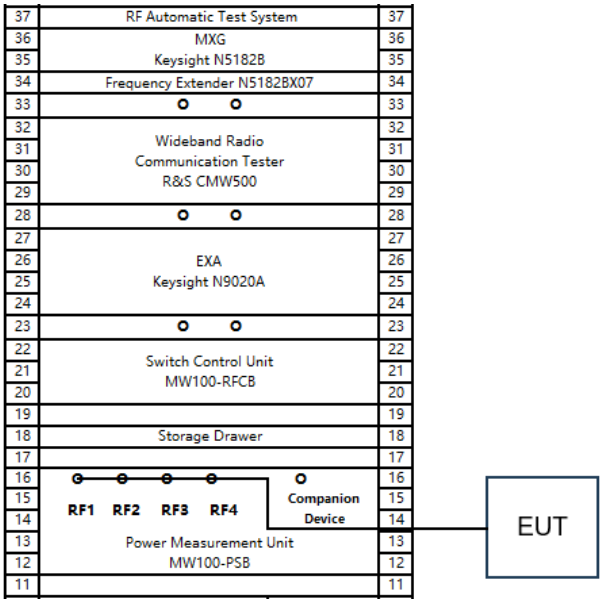
Note2: The RF signal transmission of EUT is controlled by the build-in engineering mode which is provided by the manufacturer. The recorded power setting value is the maximum that the engineering mode has configuration during testing.

2.5. Test Conditions

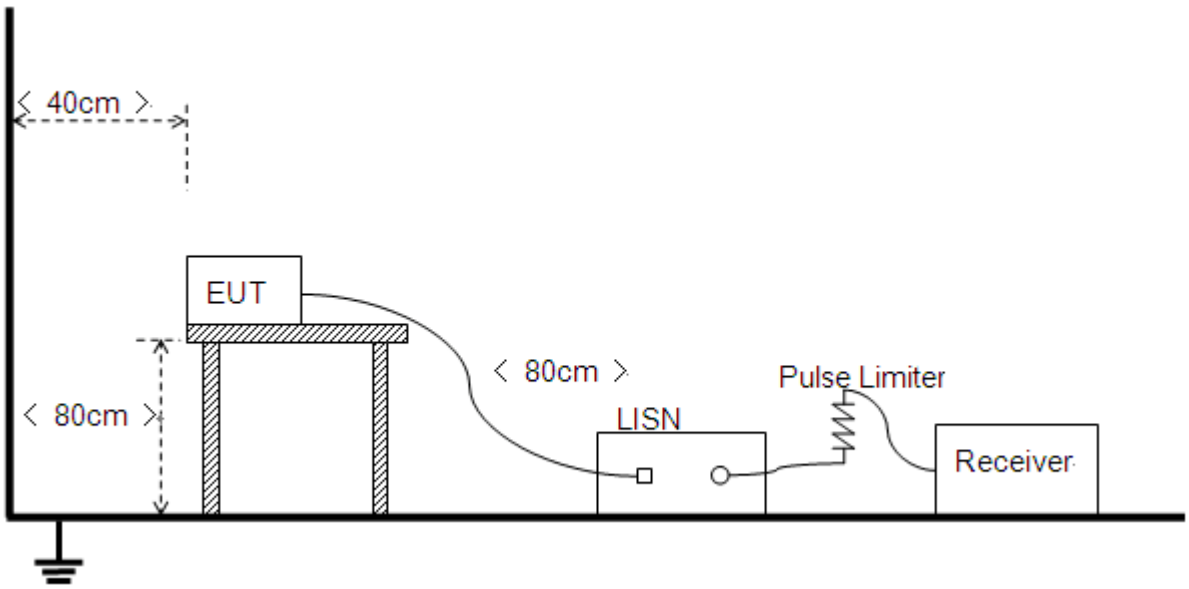
Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106

2.6. Test Setup Layout Diagram

2.6.1.Conducted Measurement

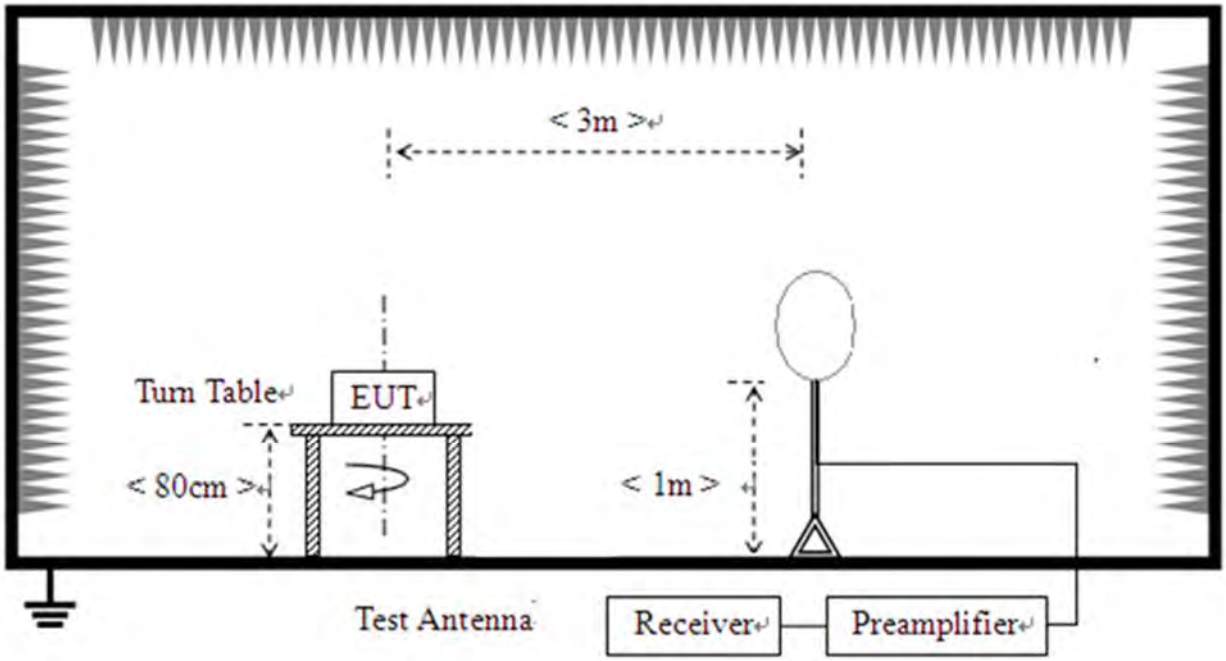


2.6.2.Conducted Emission Measurement

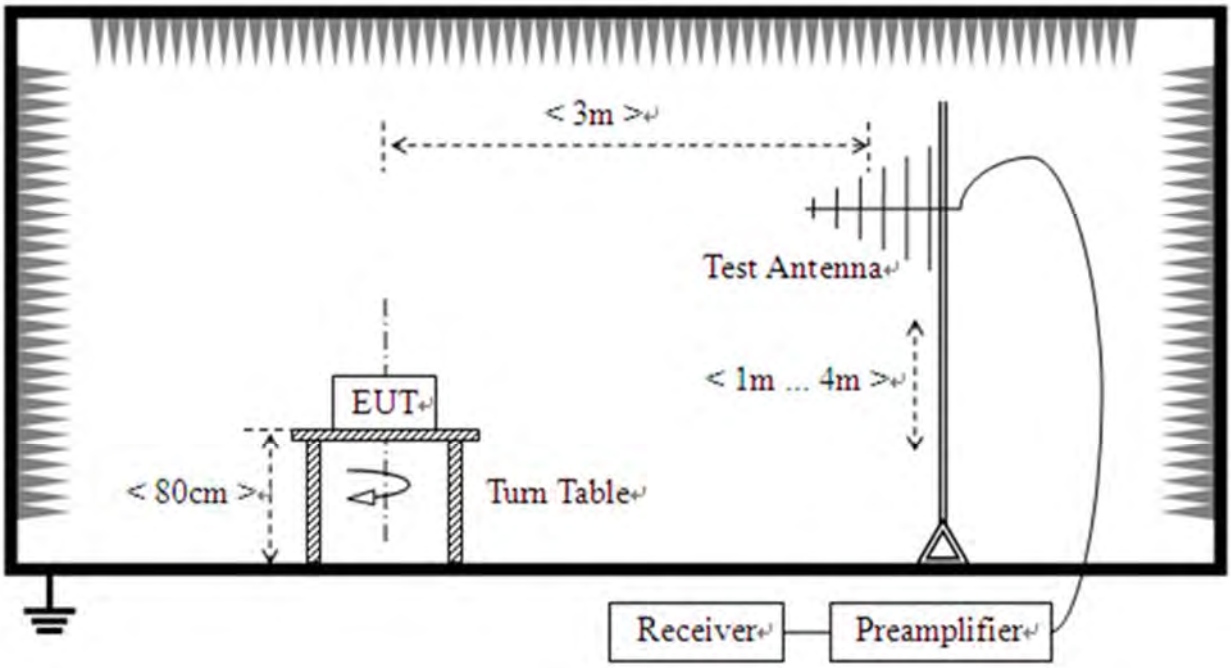


2.6.3.Radiation Measurement

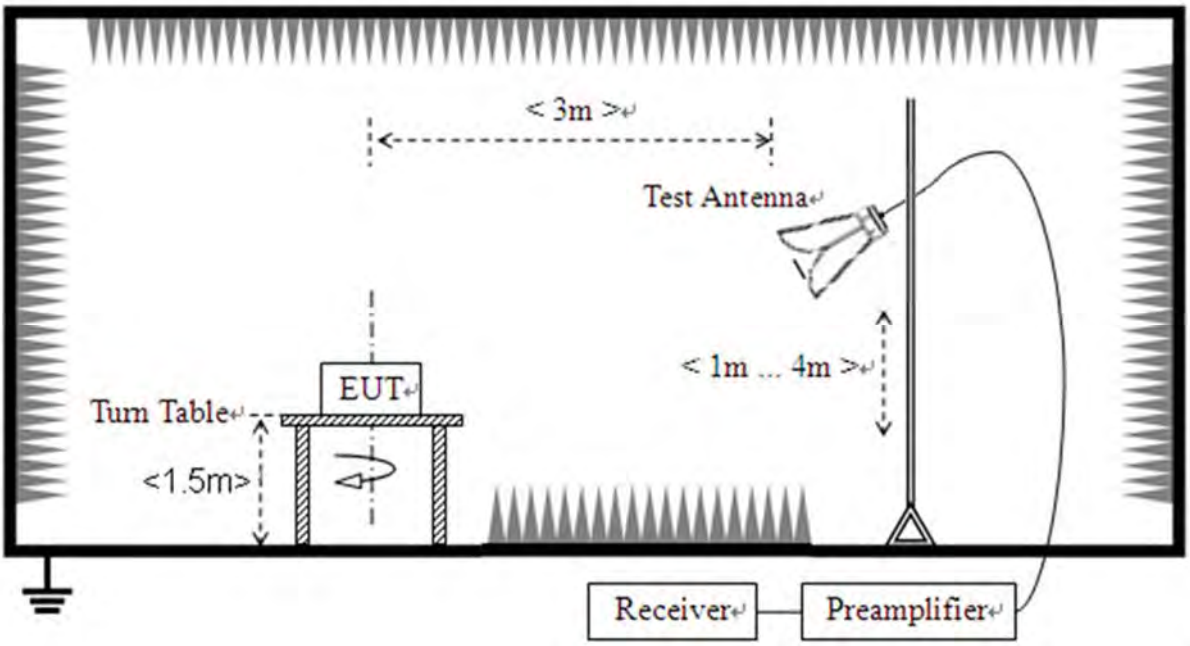
1) For radiated emissions from 9kHz to 30MHz



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 ☐Inverted F 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 and Average 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 conducted output power of the intentional radiator shall not exceed 1 Watt.

3.3.2. Test Procedures

The EUT (Equipment under the test) which is coupled to the USB Wideband Power Sensor; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

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 and A.3 in this report.

3.4.6 dB Bandwidth

3.4.1.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.

3.4.1.Test Procedures

KDB 558074 Section 8.2 was used in order to prove compliance.

3.4.2.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.4.3.Test Result

Refer to Annex A.4 in this report.

3.5. Conducted Spurious Emissions and Band Edge

3.5.1. 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.

3.5.2. Test Procedures

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

3.5.3. Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.5.4. Test Result

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

3.6. Power Spectral Density

3.6.1.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.

3.6.2.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 30kHz
d) Set VBW to 100kHz
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 and recorded as PD
j) Use below formula to calculate the Conducted PSD value that at specified RBW:
Conducted PSD=PD-10lg(30k/3k)

3.6.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.6.4.Test Result

Refer to Annex A.7 in this report.

3.7. Conducted Emission

3.7.1.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.

3.7.2.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.

3.7.3.Test Setup Layout

Refer to chapter 2.6.2 in this report.

3.7.4.Test Result

Refer to Annex A.8 in this report.

3.8. Restricted Frequency Bands

3.8.1.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).

3.8.2.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

3.8.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.8.4.Test Result

Refer to Annex A.9 in this report.

3.9. Radiated Emission

3.9.1.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).

3.9.2.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.

3.9.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.9.4.Test Result

Refer to Annex A.10 in this report.

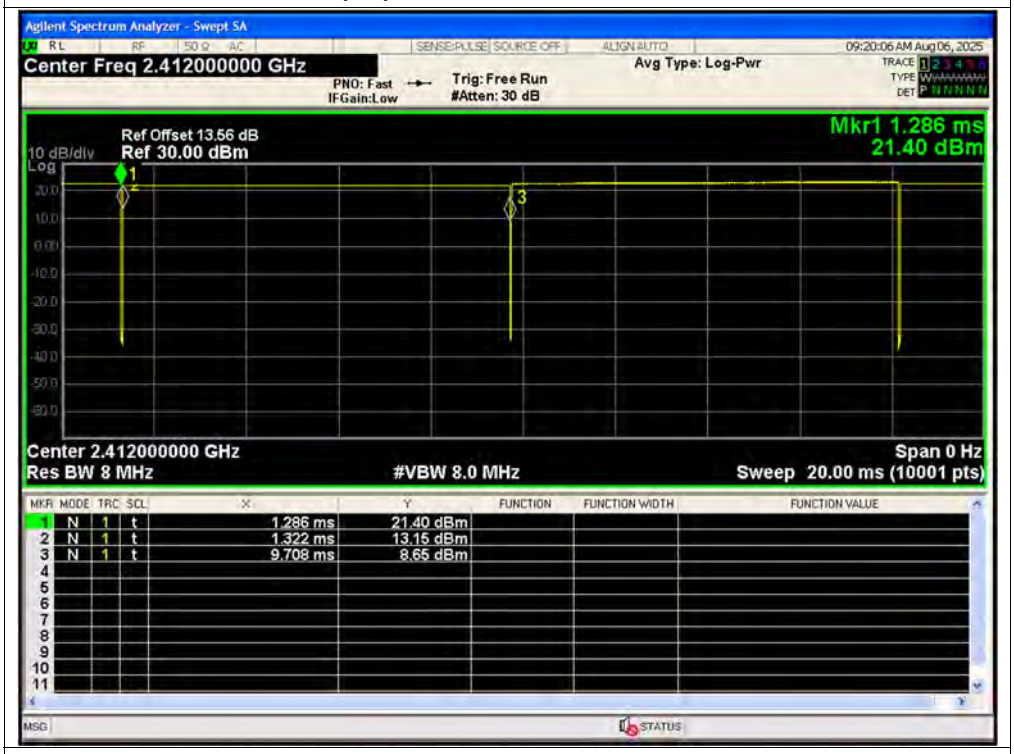
Annex A Test Data and Result

A.1. Duty Cycle of Test Signal

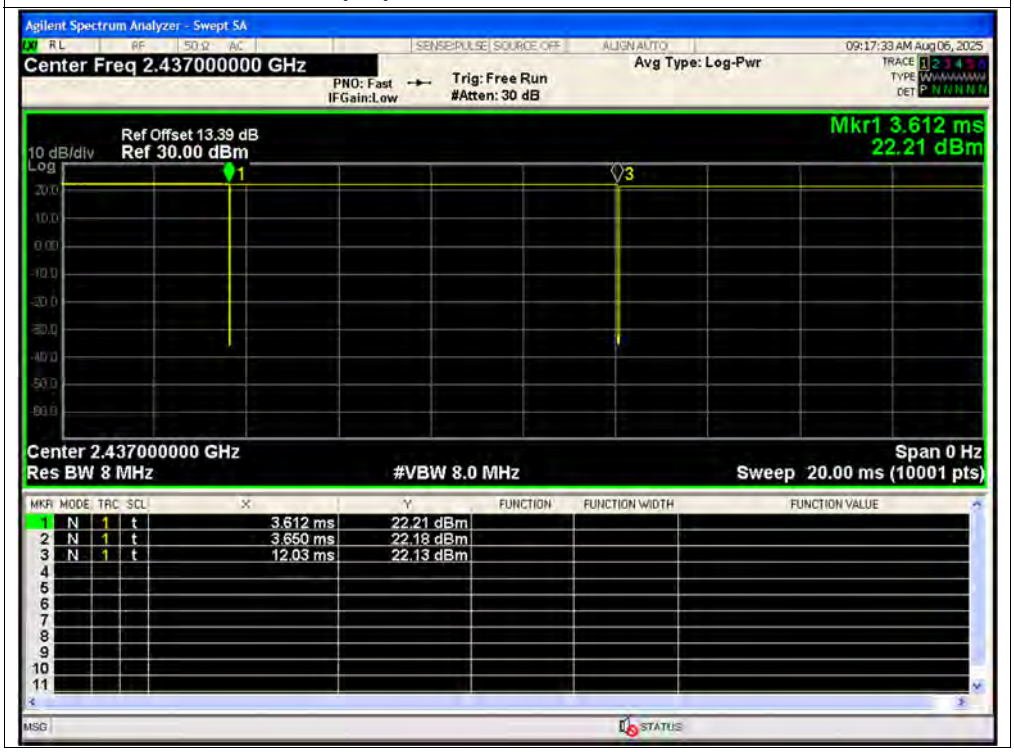
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant1	99.57	0.02	0.12
NVNT	b	2437	Ant1	99.55	0.02	0.12
NVNT	b	2462	Ant1	99.57	0.02	0.12
NVNT	g	2412	Ant1	97.08	0.13	0.72
NVNT	g	2437	Ant1	96.94	0.13	0.72
NVNT	g	2462	Ant1	96.94	0.13	0.72
NVNT	n20	2412	Ant1	96.73	0.14	0.77
NVNT	n20	2437	Ant1	96.73	0.14	0.77
NVNT	n20	2462	Ant1	96.73	0.14	0.77

Test Graphs

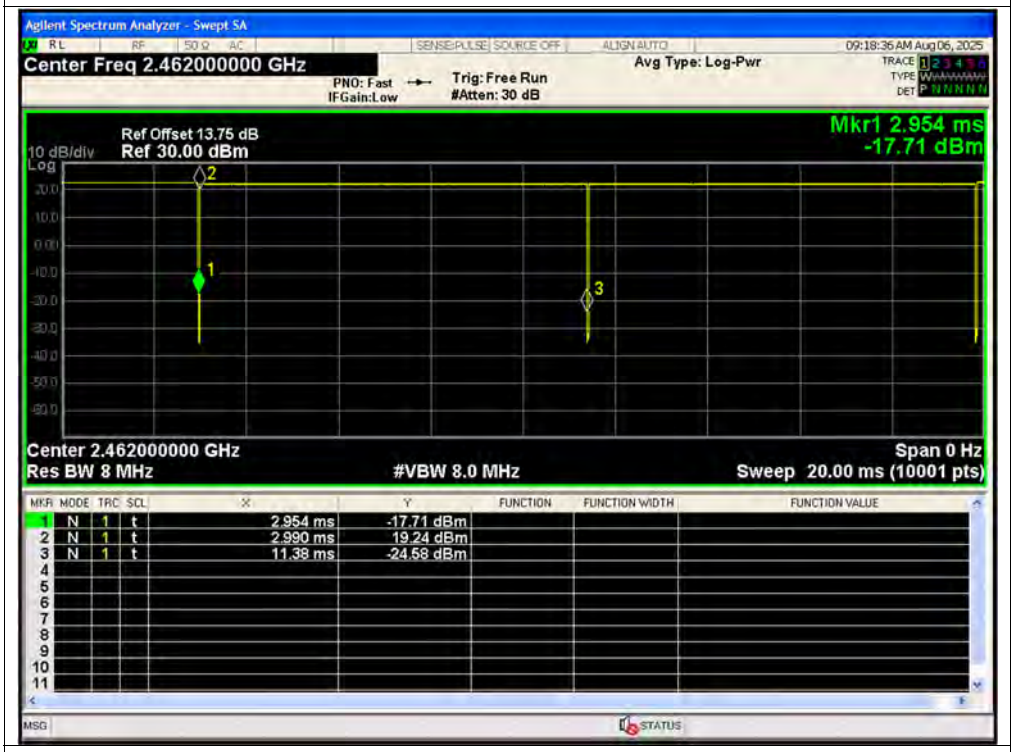
Duty Cycle NVNT b 2412MHz Ant1



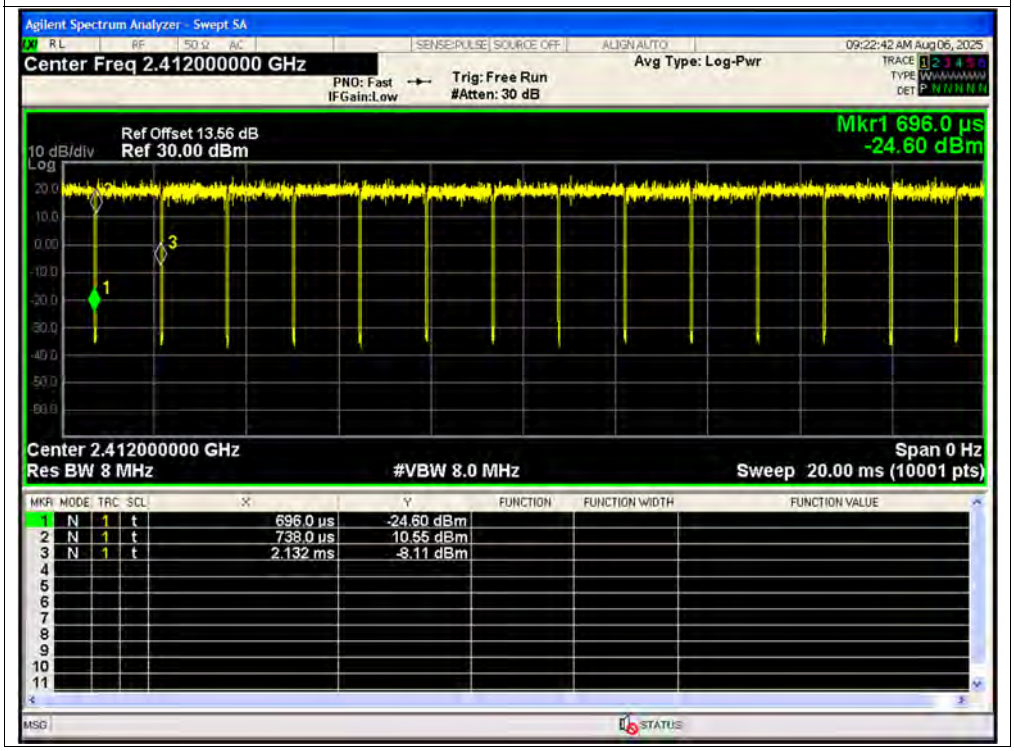
Duty Cycle NVNT b 2437MHz Ant1



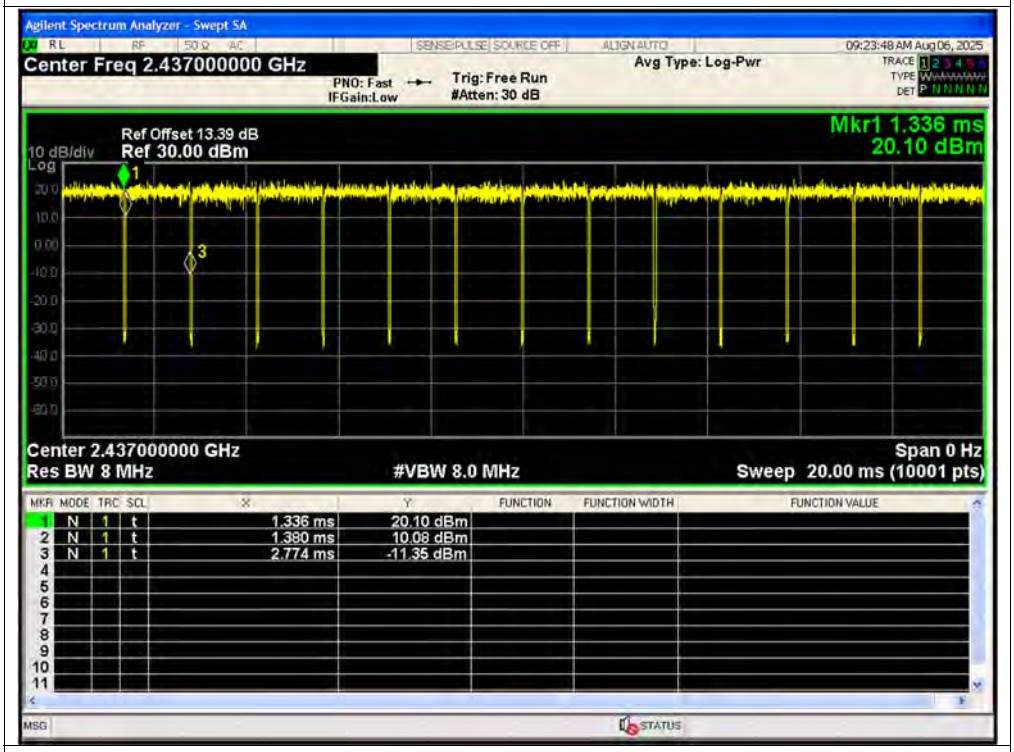
Duty Cycle NVNT b 2462MHz Ant1



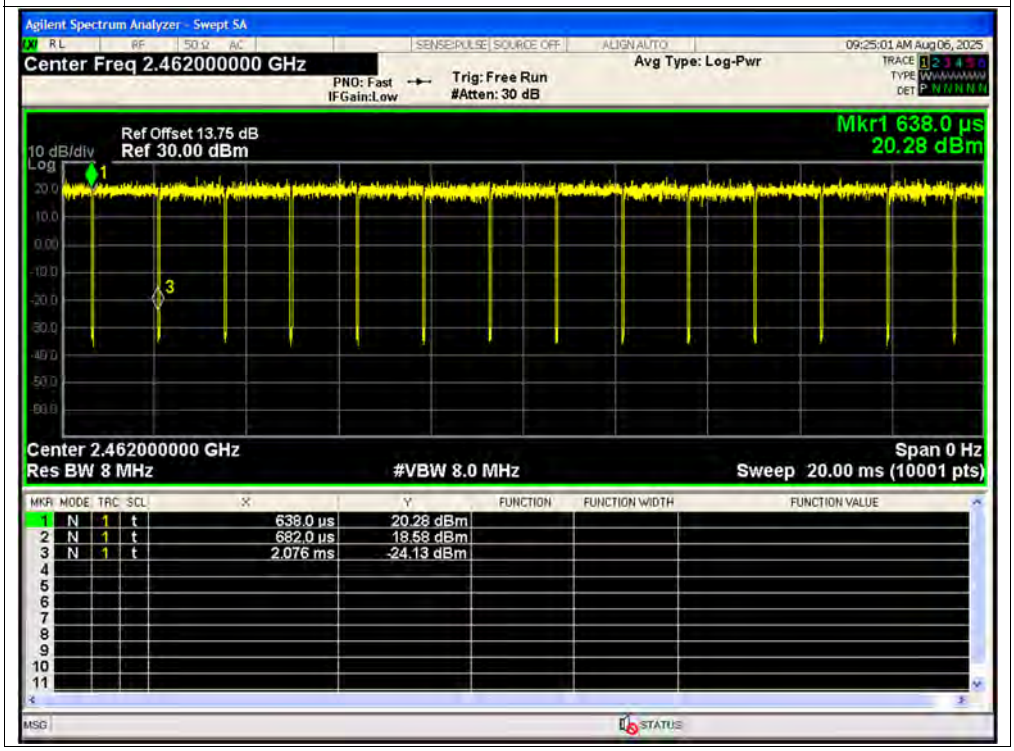
Duty Cycle NVNT g 2412MHz Ant1



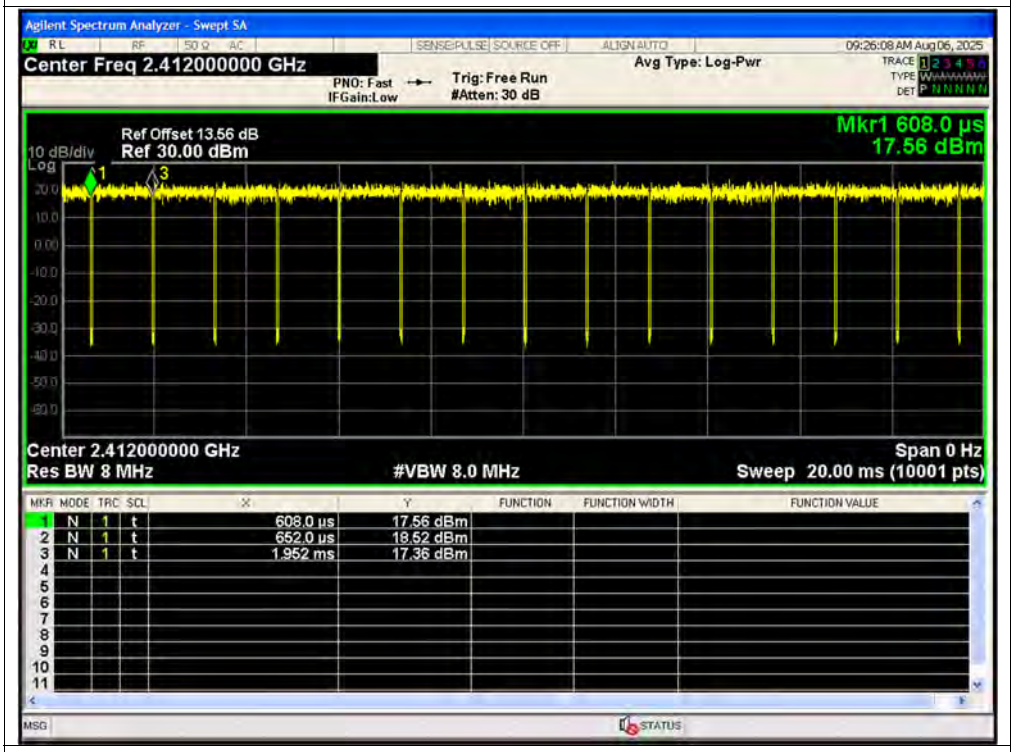
Duty Cycle NVNT g 2437MHz Ant1



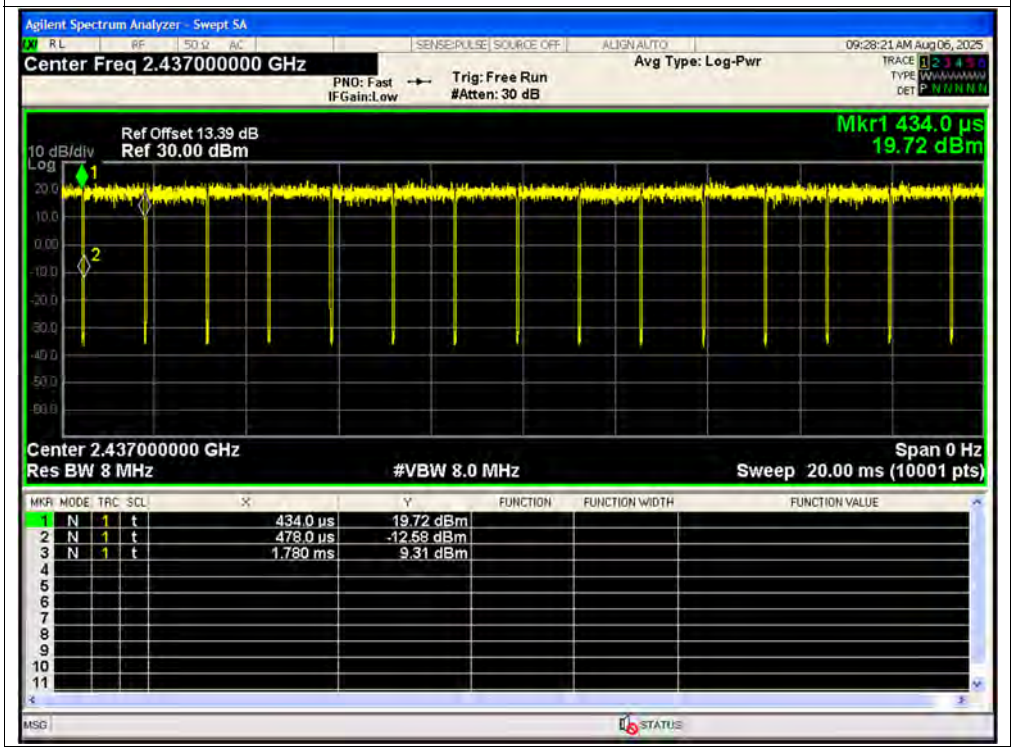
Duty Cycle NVNT g 2462MHz Ant1



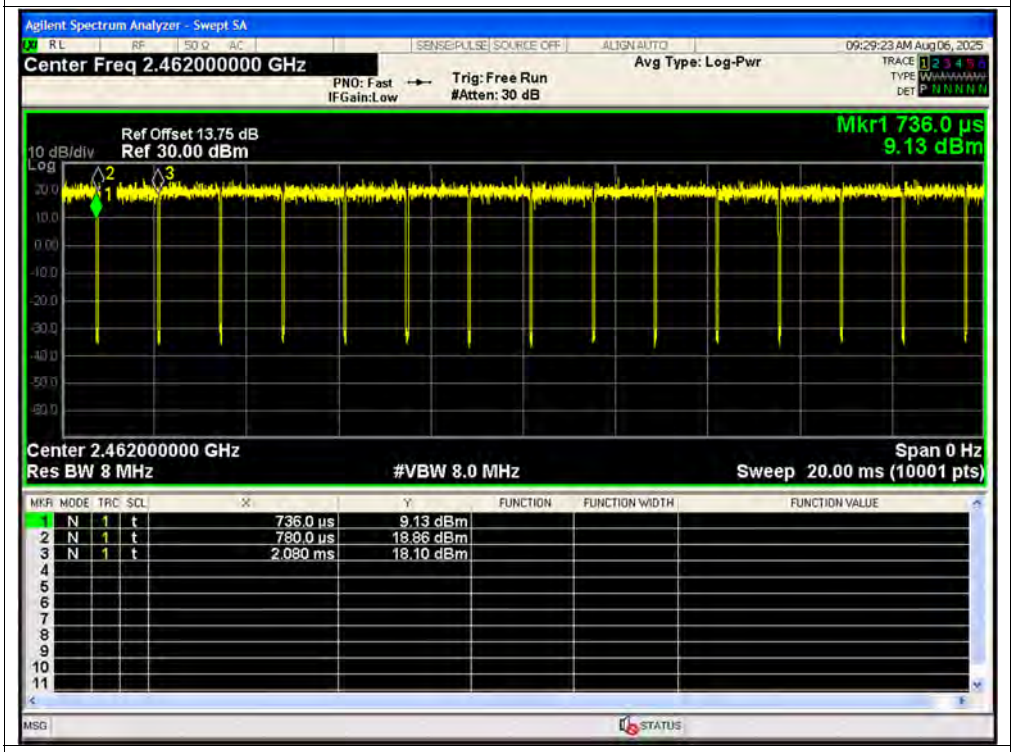
Duty Cycle NVNT n20 2412MHz Ant1



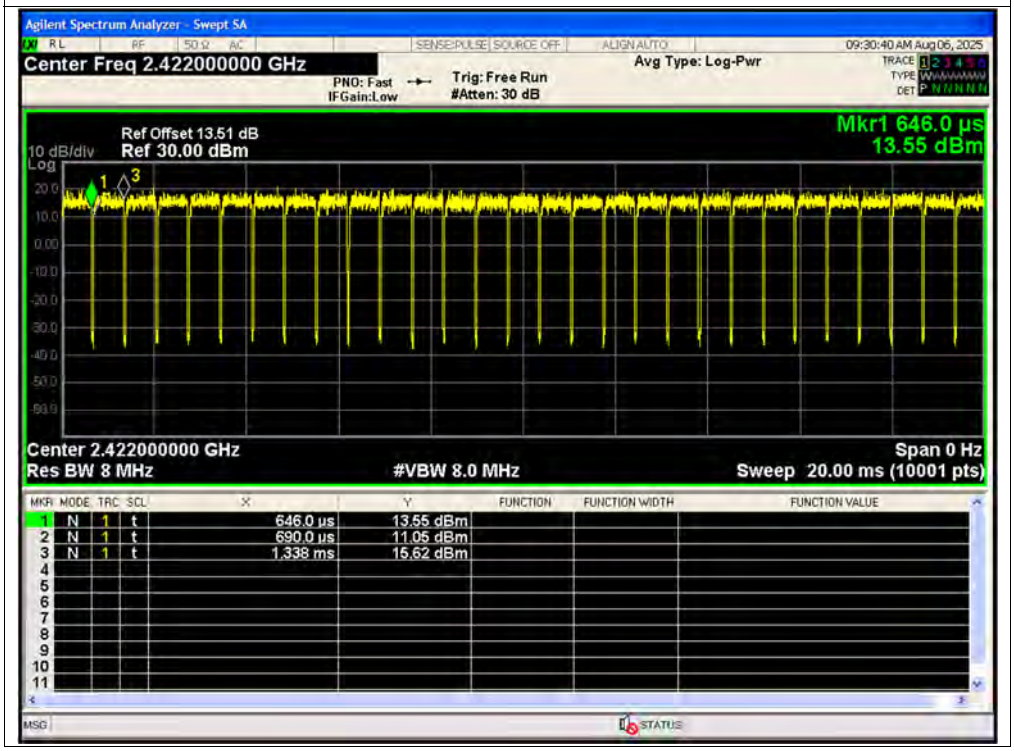
Duty Cycle NVNT n20 2437MHz Ant1



Duty Cycle NVNT n20 2462MHz Ant1



Duty Cycle NVNT n40 2422MHz Ant1

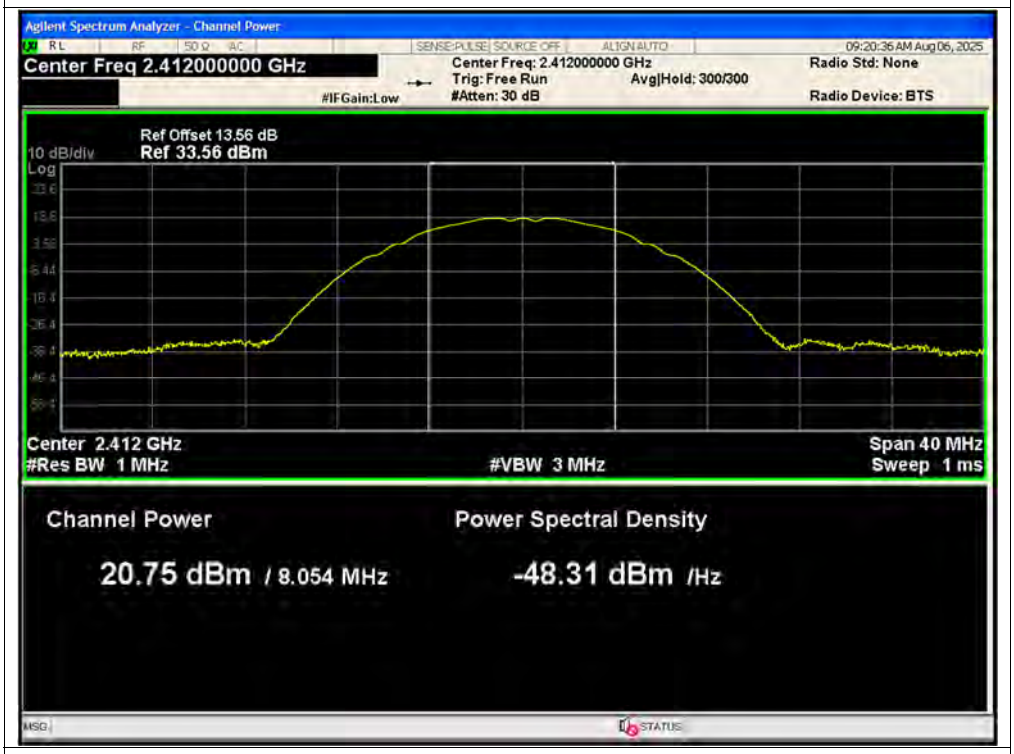


A.2. Maximum Peak Conducted Output Power

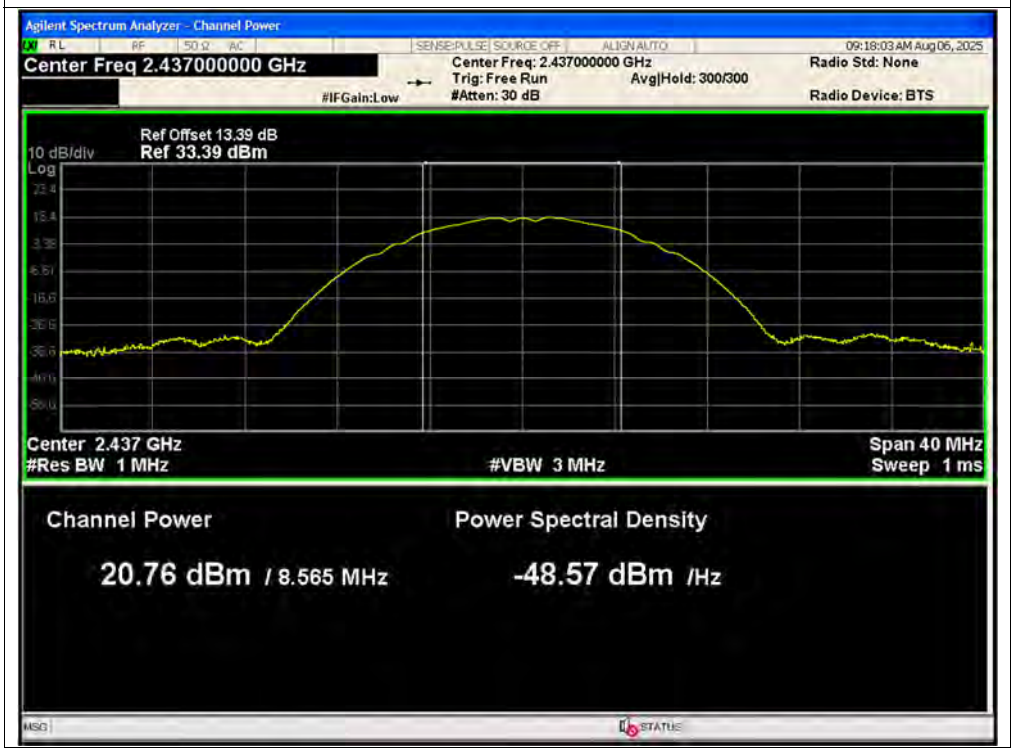
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit Conducted (dBm)	Verdict
NVNT	b	2412	Ant1	20.75	0	20.75	0.11885	30	Pass
NVNT	b	2437	Ant1	20.76	0	20.76	0.11912	30	Pass
NVNT	b	2462	Ant1	20.88	0	20.88	0.12246	30	Pass
NVNT	g	2412	Ant1	23.63	0	23.63	0.23067	30	Pass
NVNT	g	2437	Ant1	23.55	0	23.55	0.22646	30	Pass
NVNT	g	2462	Ant1	23.82	0	23.82	0.24099	30	Pass
NVNT	n20	2412	Ant1	23.37	0	23.37	0.21727	30	Pass
NVNT	n20	2437	Ant1	23.4	0	23.4	0.21878	30	Pass
NVNT	n20	2462	Ant1	23.58	0	23.58	0.22803	30	Pass

Test Graphs

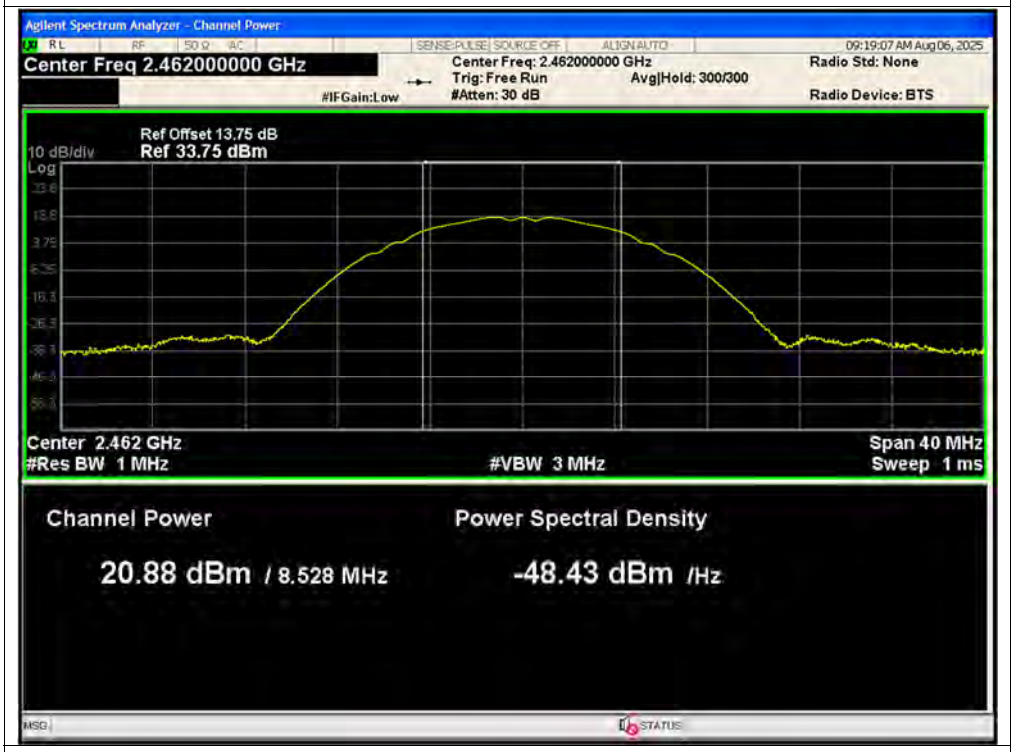
Peak Power NVNT b 2412MHz Ant1



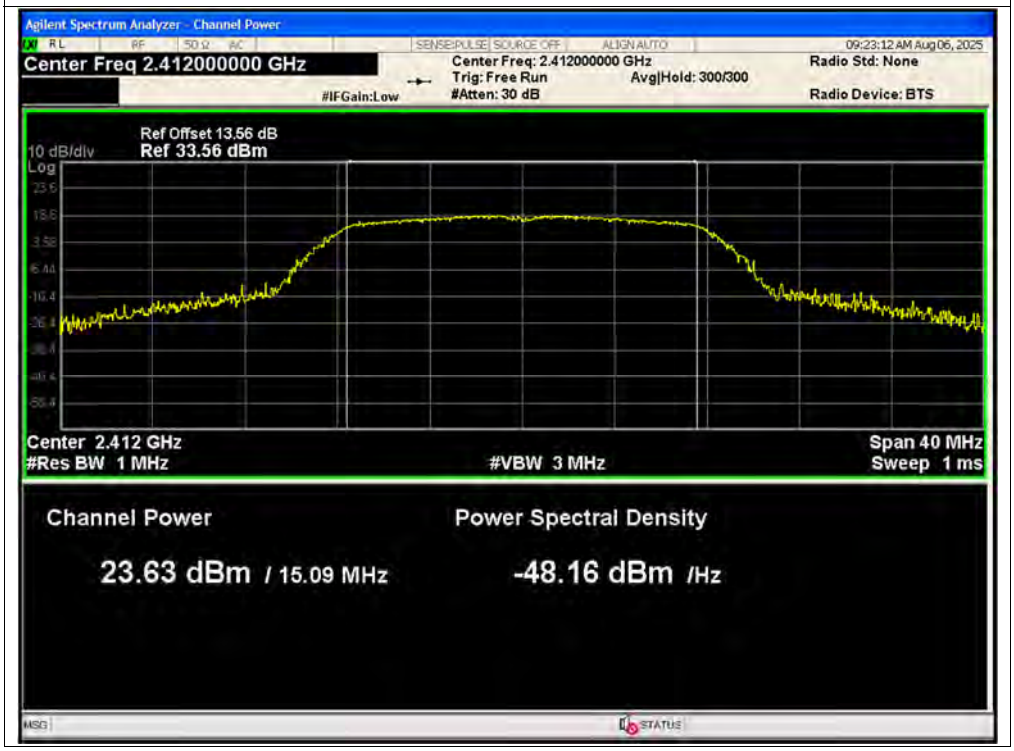
Peak Power NVNT b 2437MHz Ant1



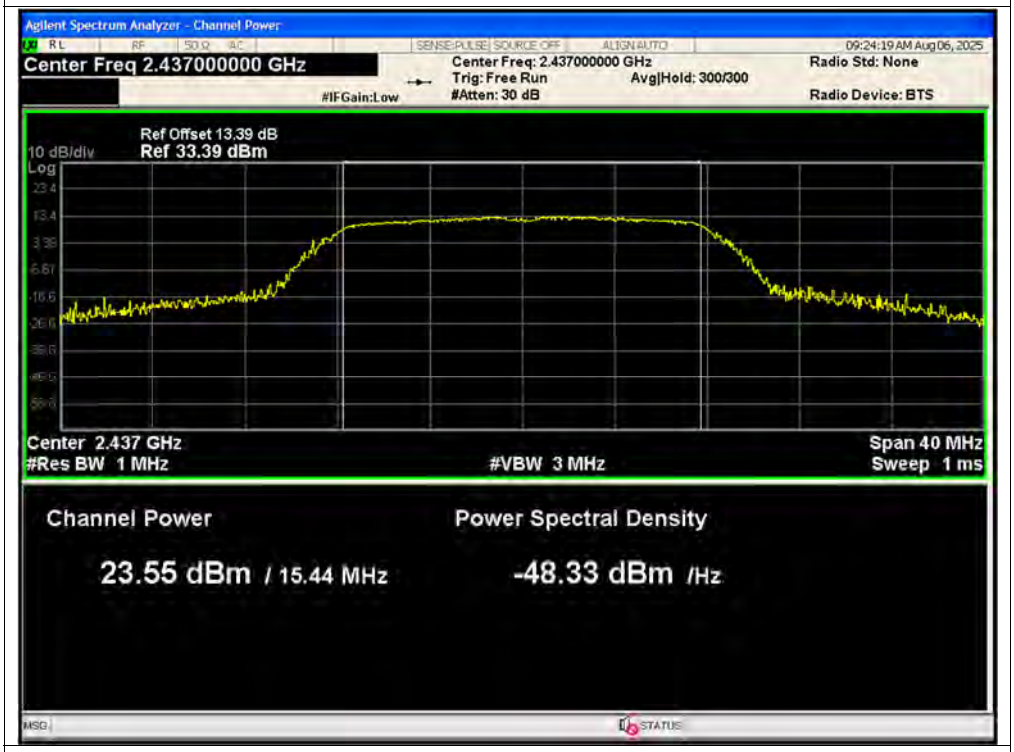
Peak Power NVNT b 2462MHz Ant1



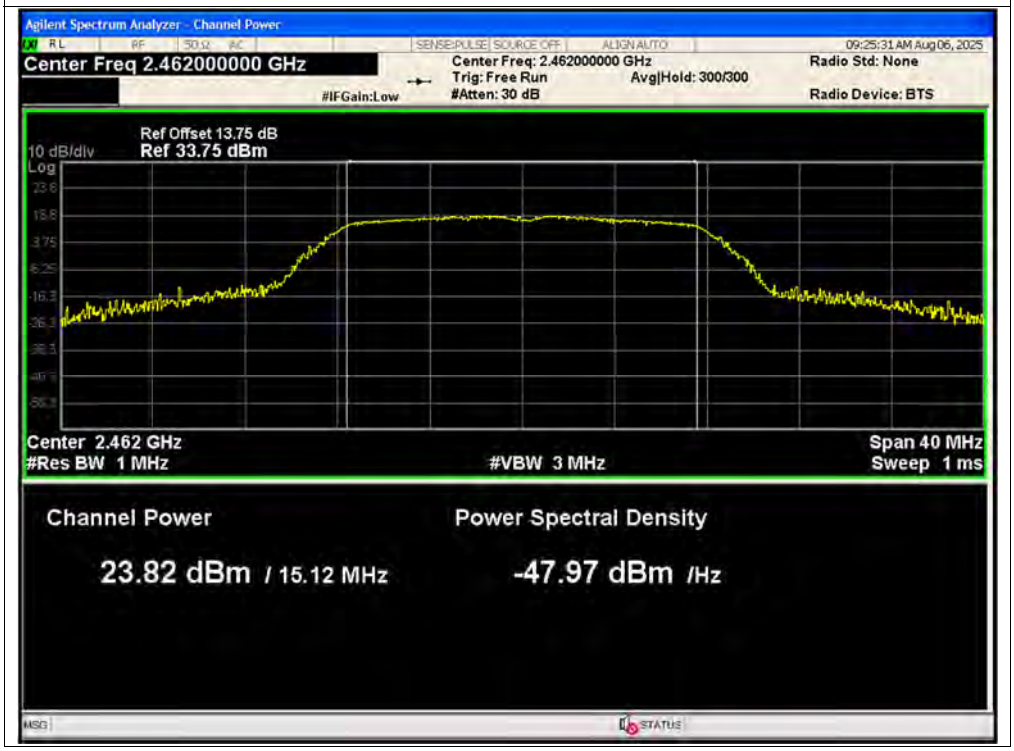
Peak Power NVNT g 2412MHz Ant1



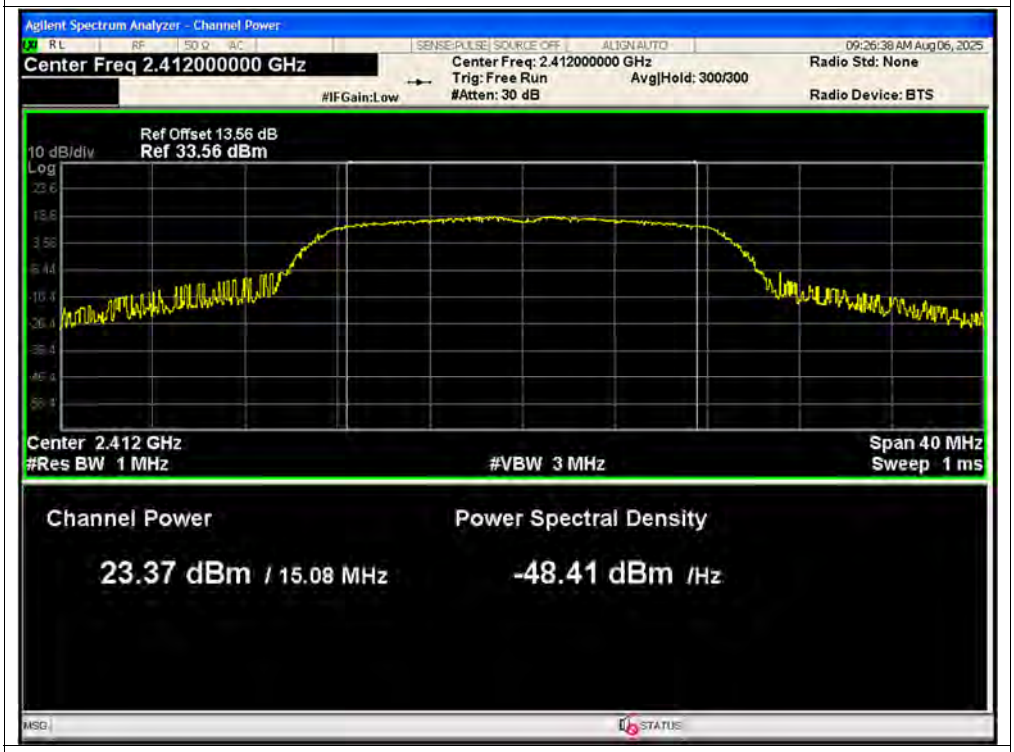
Peak Power NVNT g 2437MHz Ant1



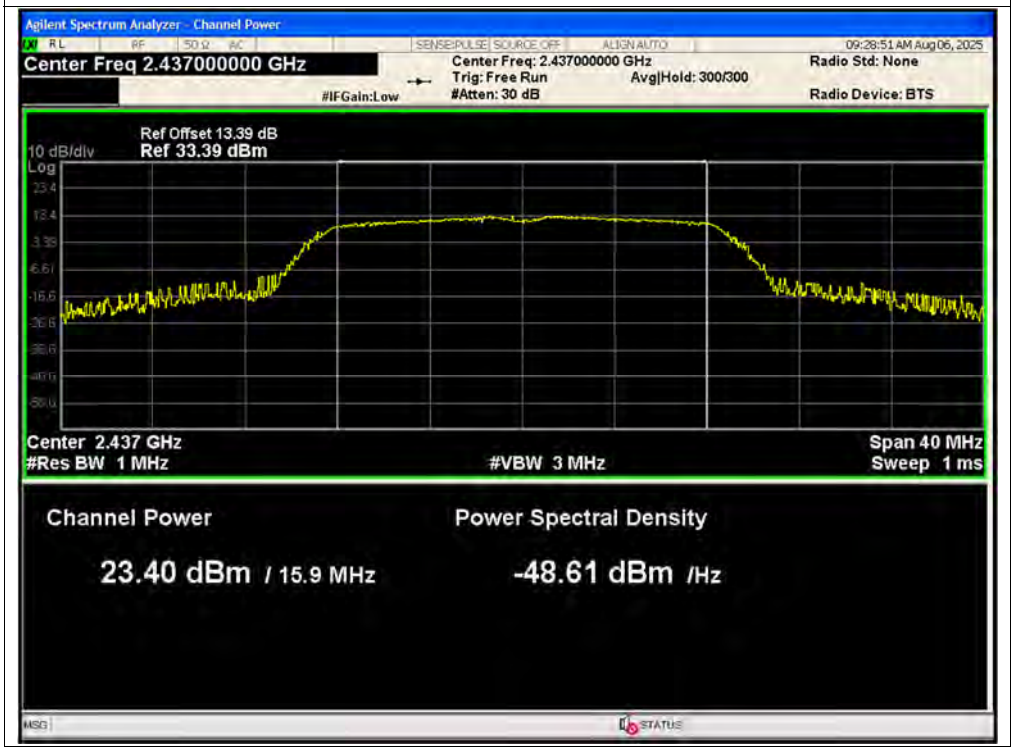
Peak Power NVNT g 2462MHz Ant1



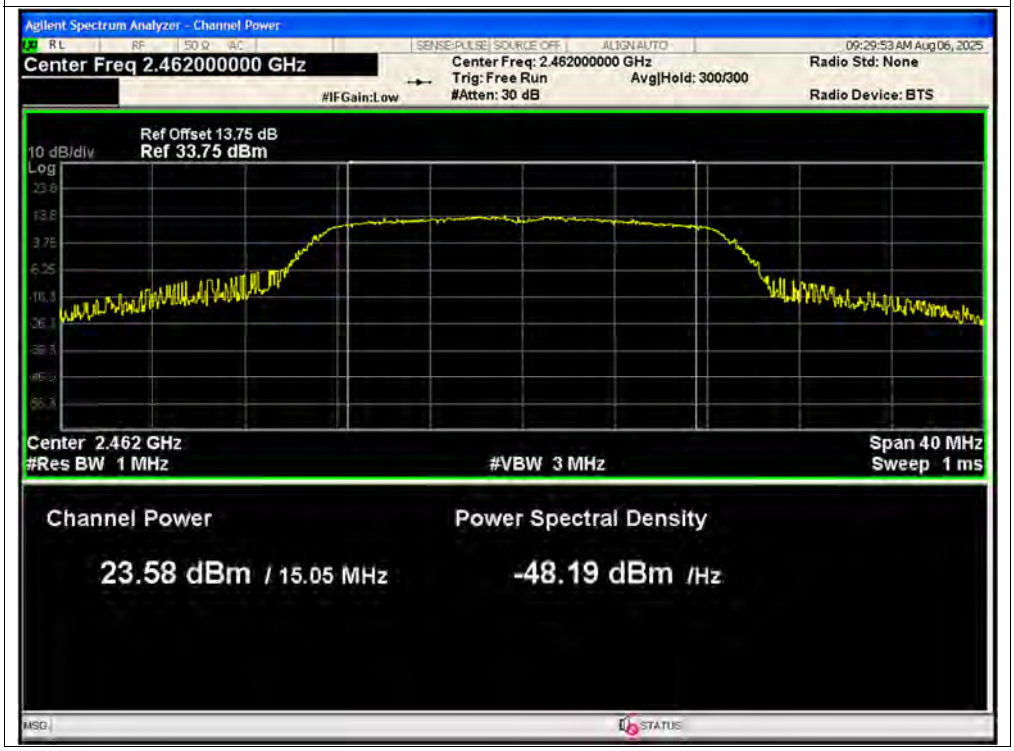
Peak Power NVNT n20 2412MHz Ant1



Peak Power NVNT n20 2437MHz Ant1



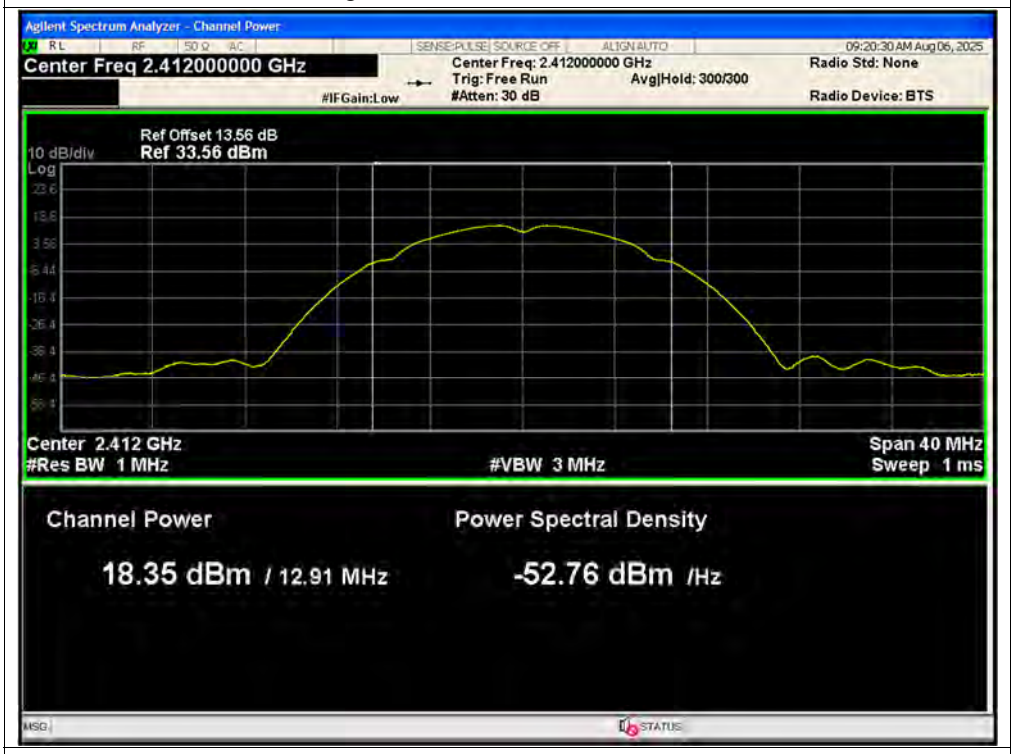
Peak Power NVNT n20 2462MHz Ant1



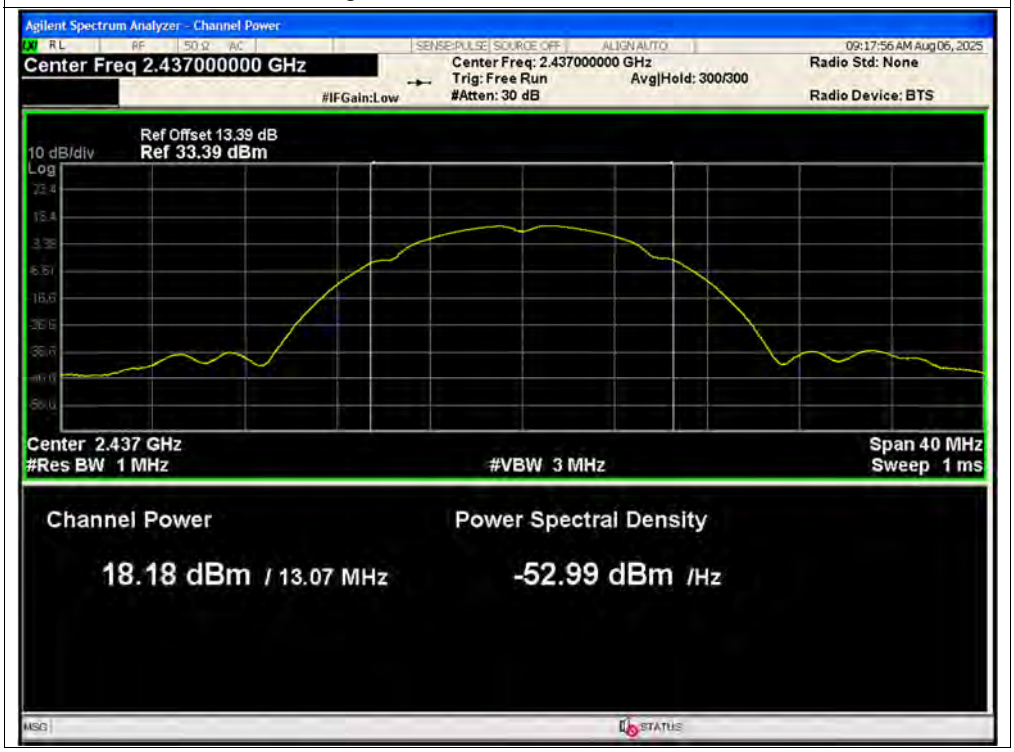
A.3. Maximum Average Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit Conducted (dBm)	Verdict
NVNT	b	2412	Ant1	18.35	0.02	18.37	0.06871	30	Pass
NVNT	b	2437	Ant1	18.18	0.02	18.2	0.06607	30	Pass
NVNT	b	2462	Ant1	18.36	0.02	18.38	0.06887	30	Pass
NVNT	g	2412	Ant1	16.1	0.13	16.23	0.04198	30	Pass
NVNT	g	2437	Ant1	15.99	0.13	16.12	0.04093	30	Pass
NVNT	g	2462	Ant1	16.28	0.13	16.41	0.04375	30	Pass
NVNT	n20	2412	Ant1	16.01	0.14	16.15	0.04121	30	Pass
NVNT	n20	2437	Ant1	15.88	0.14	16.02	0.03999	30	Pass
NVNT	n20	2462	Ant1	16.18	0.14	16.32	0.04285	30	Pass

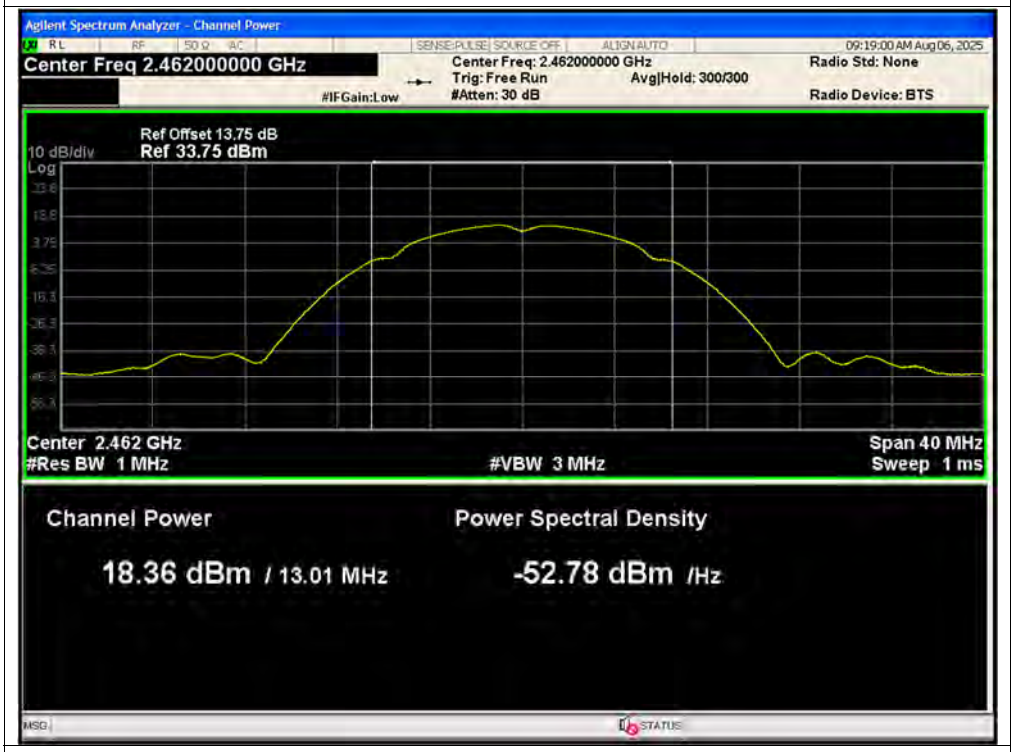
Test Graphs
Average Power NVNT b 2412MHz Ant1



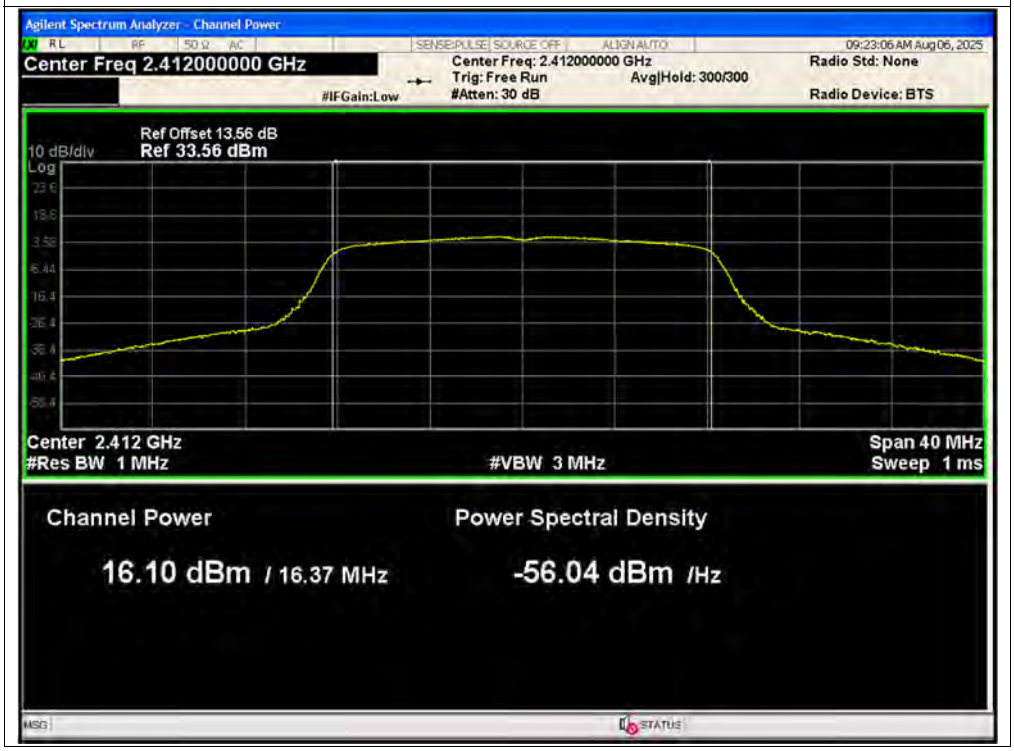
Average Power NVNT b 2437MHz Ant1



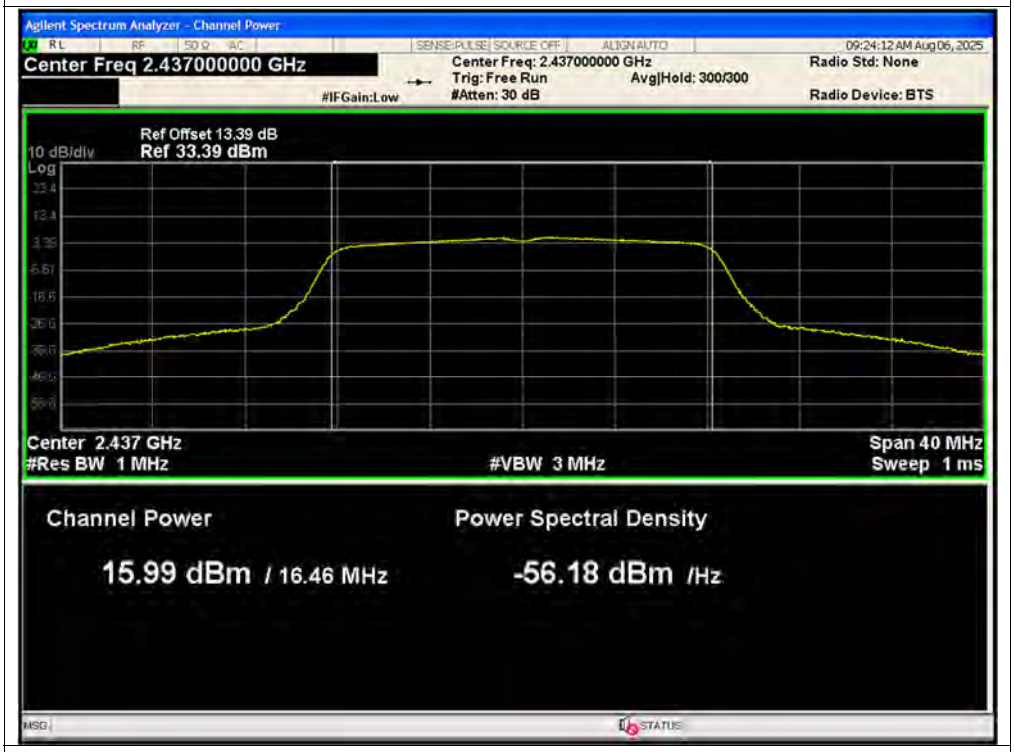
Average Power NVNT b 2462MHz Ant1



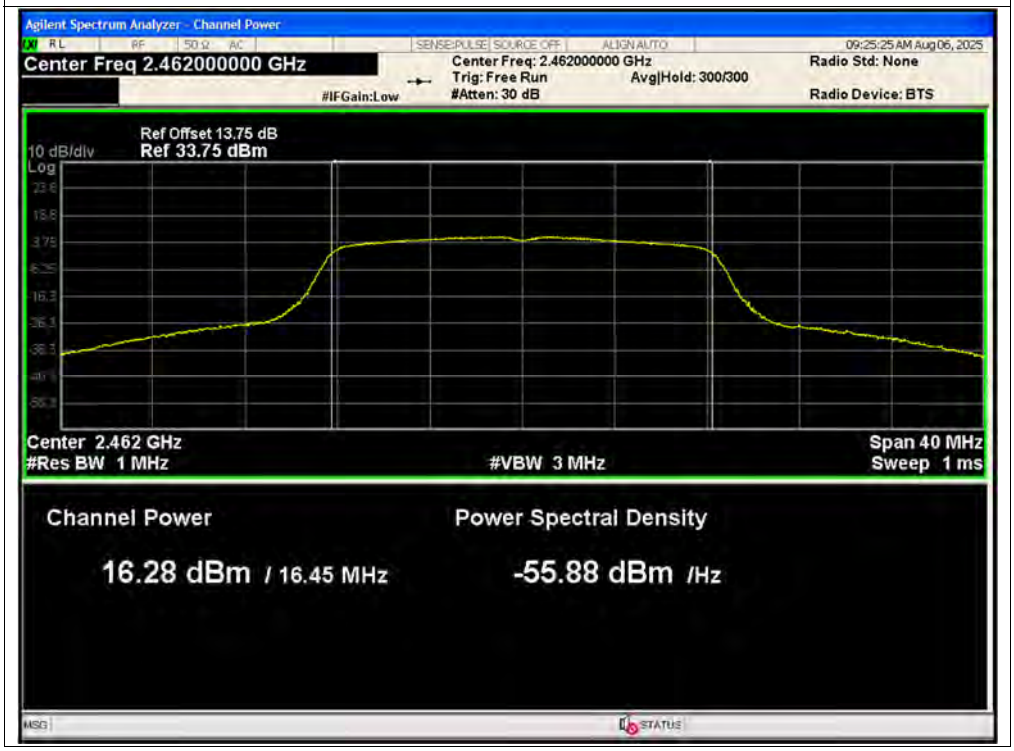
Average Power NVNT g 2412MHz Ant1



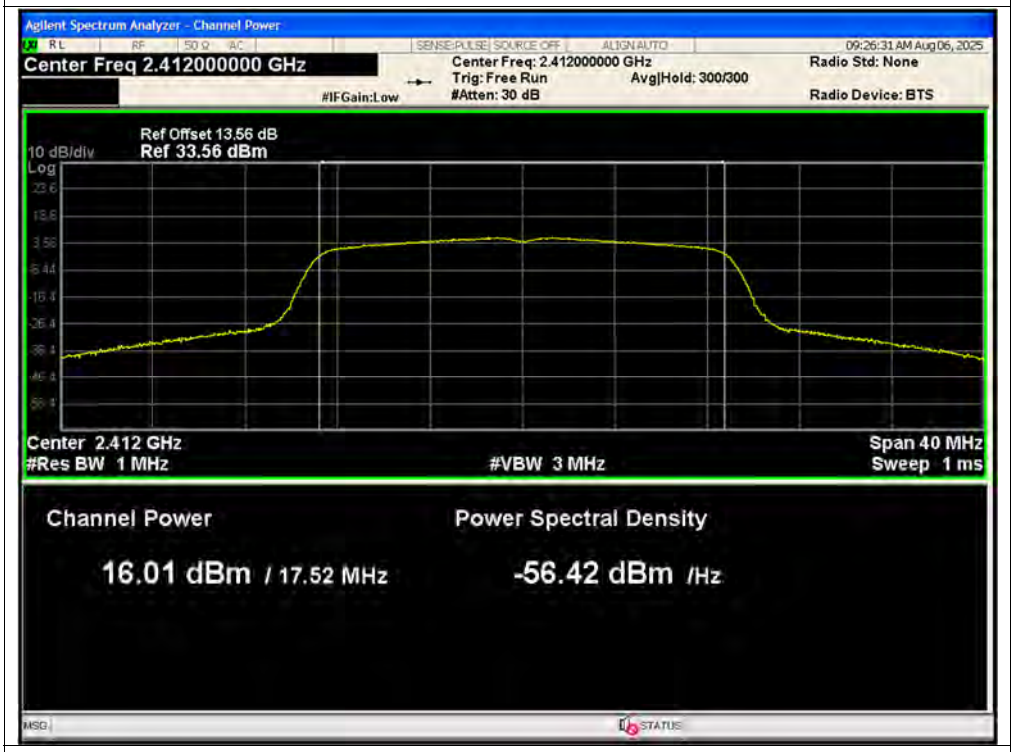
Average Power NVNT g 2437MHz Ant1



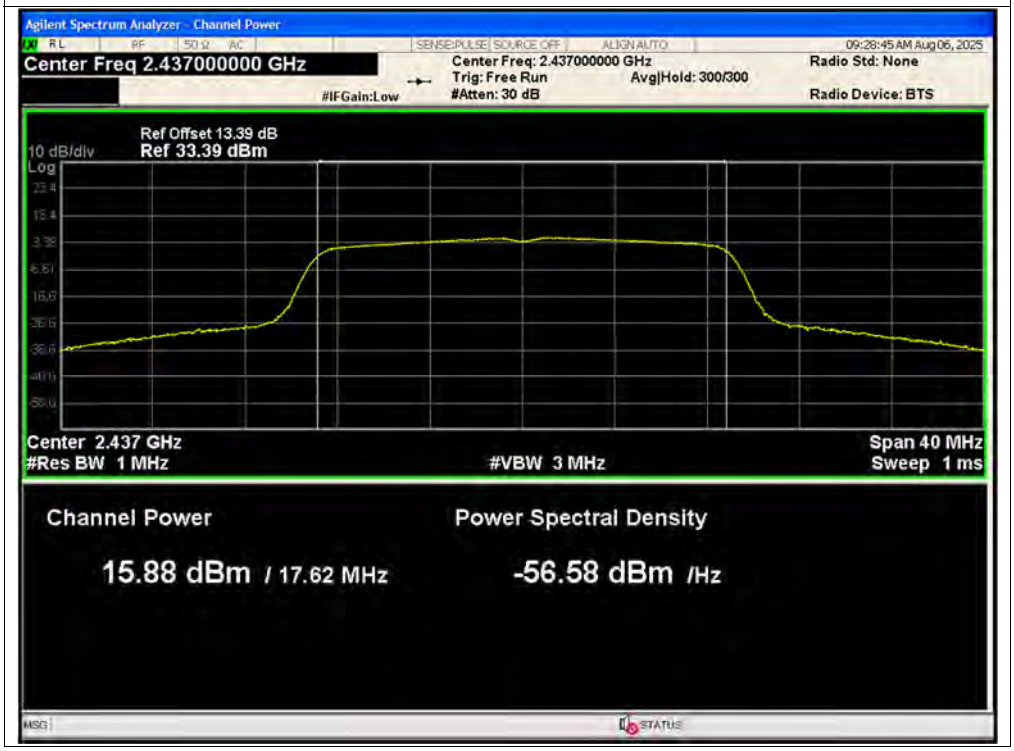
Average Power NVNT g 2462MHz Ant1



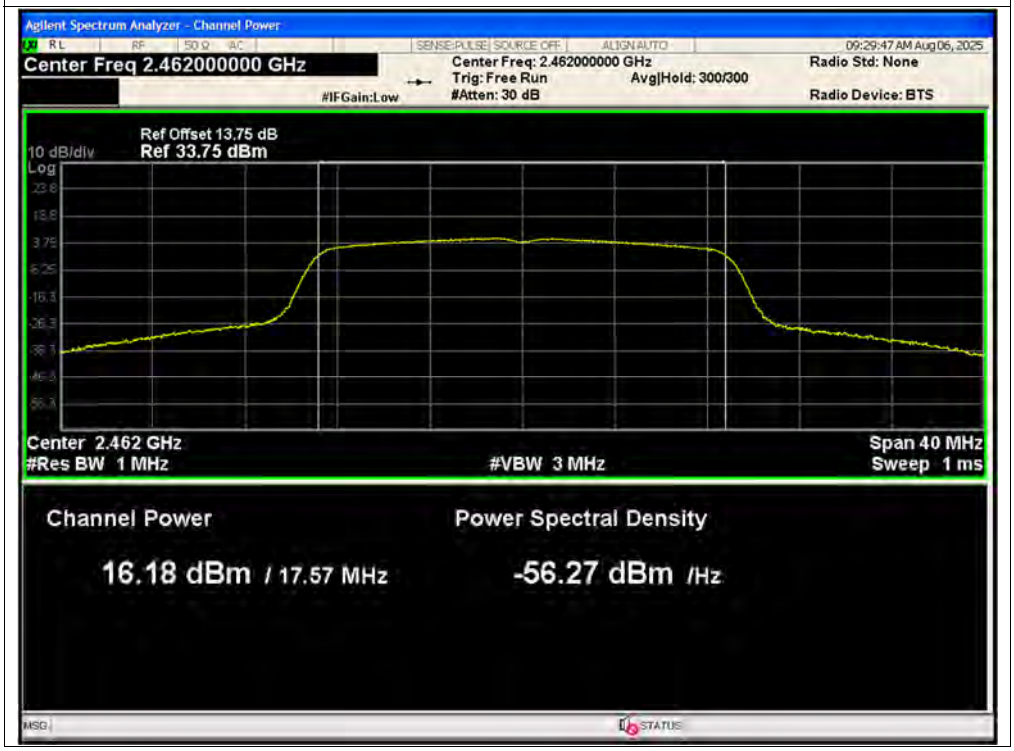
Average Power NVNT n20 2412MHz Ant1



Average Power NVNT n20 2437MHz Ant1



Average Power NVNT n20 2462MHz Ant1



A.4. 6 dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	8.054	0.5	Pass
NVNT	b	2437	Ant1	8.565	0.5	Pass
NVNT	b	2462	Ant1	8.528	0.5	Pass
NVNT	g	2412	Ant1	15.09	0.5	Pass
NVNT	g	2437	Ant1	15.44	0.5	Pass
NVNT	g	2462	Ant1	15.12	0.5	Pass
NVNT	n20	2412	Ant1	15.08	0.5	Pass
NVNT	n20	2437	Ant1	15.9	0.5	Pass
NVNT	n20	2462	Ant1	15.05	0.5	Pass

Test Graphs

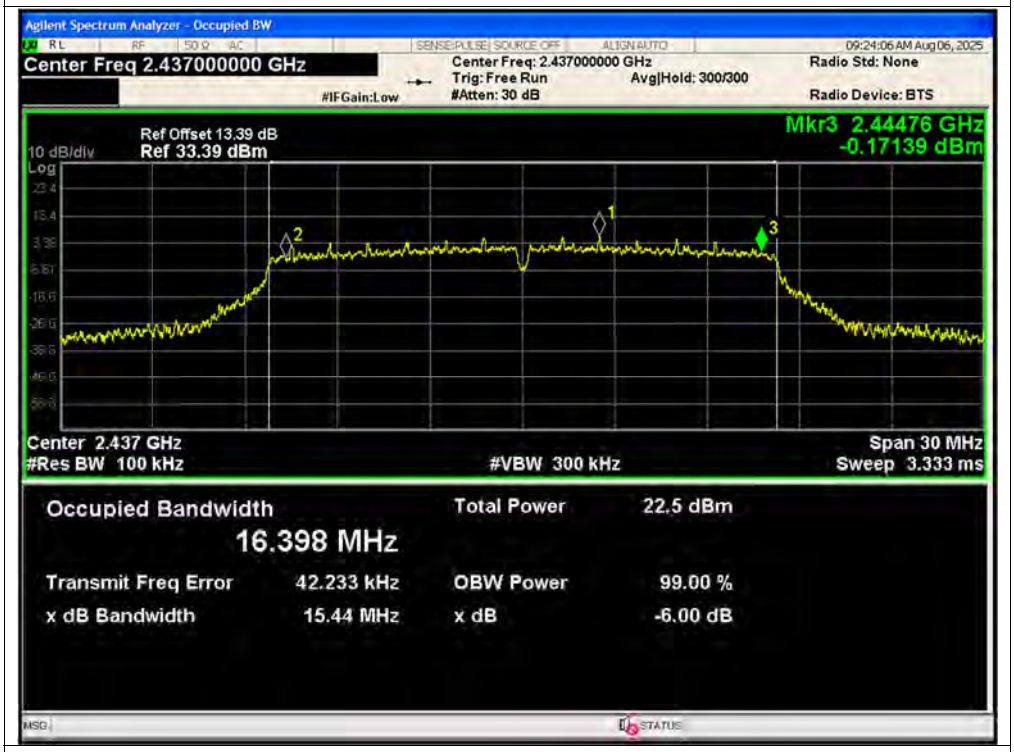
-6dB Bandwidth NVNT b 2412MHz Ant1

-6dB Bandwidth NVNT b 2437MHz Ant1

-6dB Bandwidth NVNT b 2462MHz Ant1

-6dB Bandwidth NVNT g 2412MHz Ant1

-6dB Bandwidth NVNT g 2437MHz Ant1



-6dB Bandwidth NVNT g 2462MHz Ant1

-6dB Bandwidth NVNT n20 2412MHz Ant1

-6dB Bandwidth NVNT n20 2437MHz Ant1

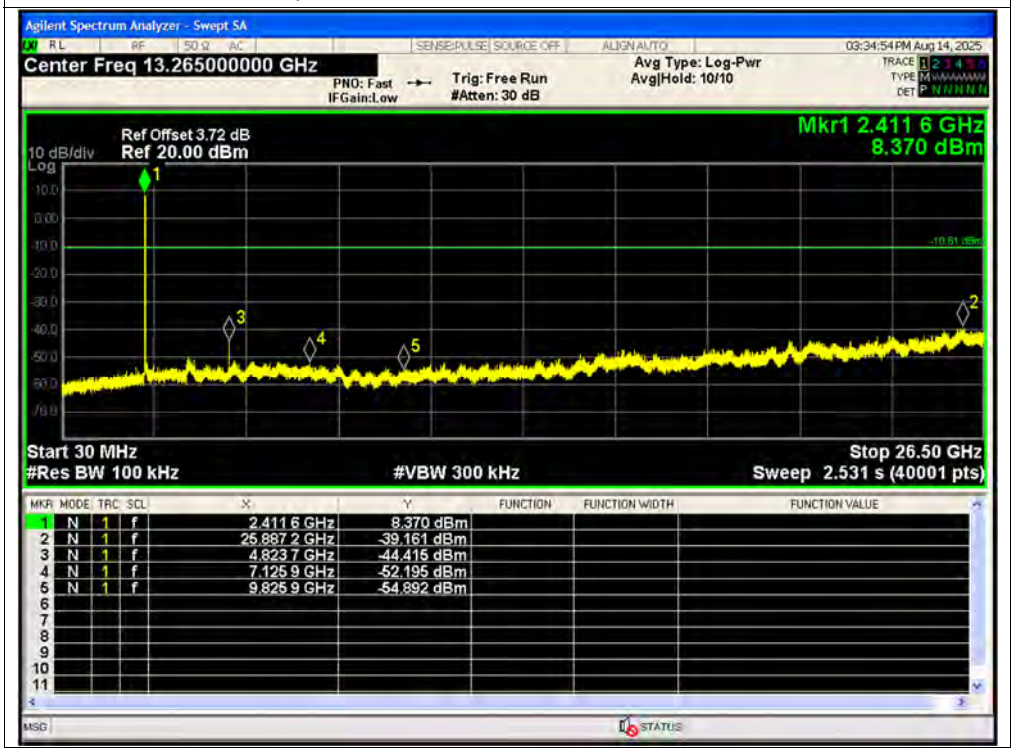
-6dB Bandwidth NVNT n20 2462MHz Ant1

A.5. Conducted Spurious Emissions

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-48.35	-20	Pass
NVNT	b	2437	Ant1	-49.12	-20	Pass
NVNT	b	2462	Ant1	-48.74	-20	Pass
NVNT	g	2412	Ant1	-41.59	-20	Pass
NVNT	g	2437	Ant1	-41.93	-20	Pass
NVNT	g	2462	Ant1	-40.94	-20	Pass
NVNT	n20	2412	Ant1	-41.22	-20	Pass
NVNT	n20	2437	Ant1	-40.98	-20	Pass
NVNT	n20	2462	Ant1	-40.61	-20	Pass

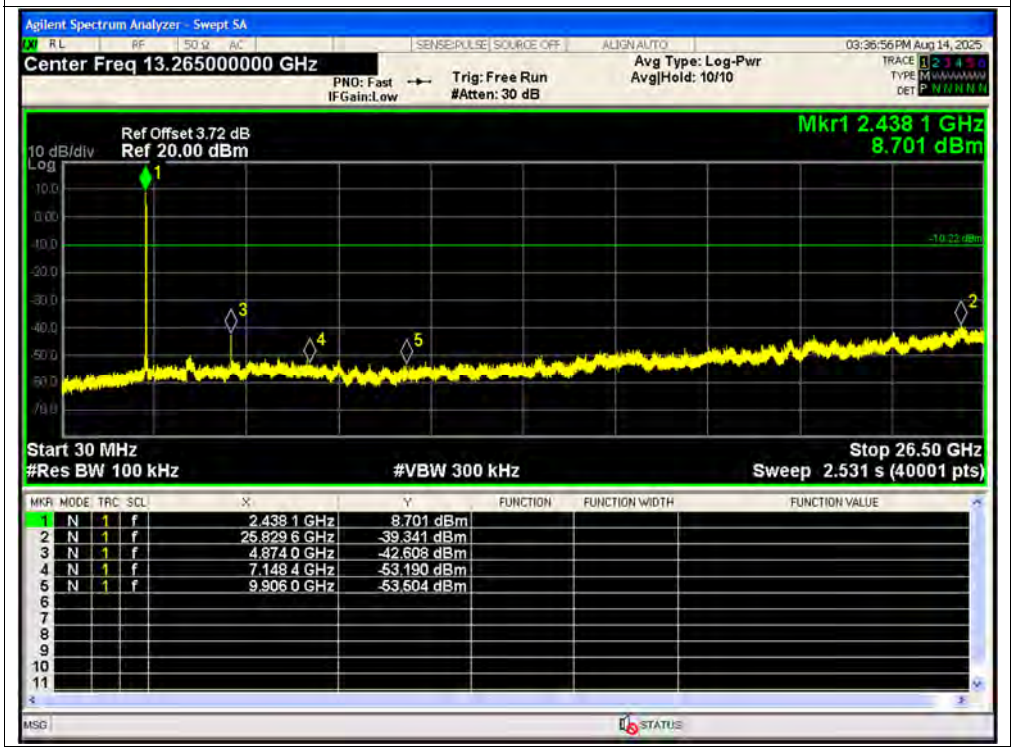
Test Graphs
Tx. Spurious NVNT b 2412MHz Ant1 Ref

Tx. Spurious NVNT b 2412MHz Ant1 Emission



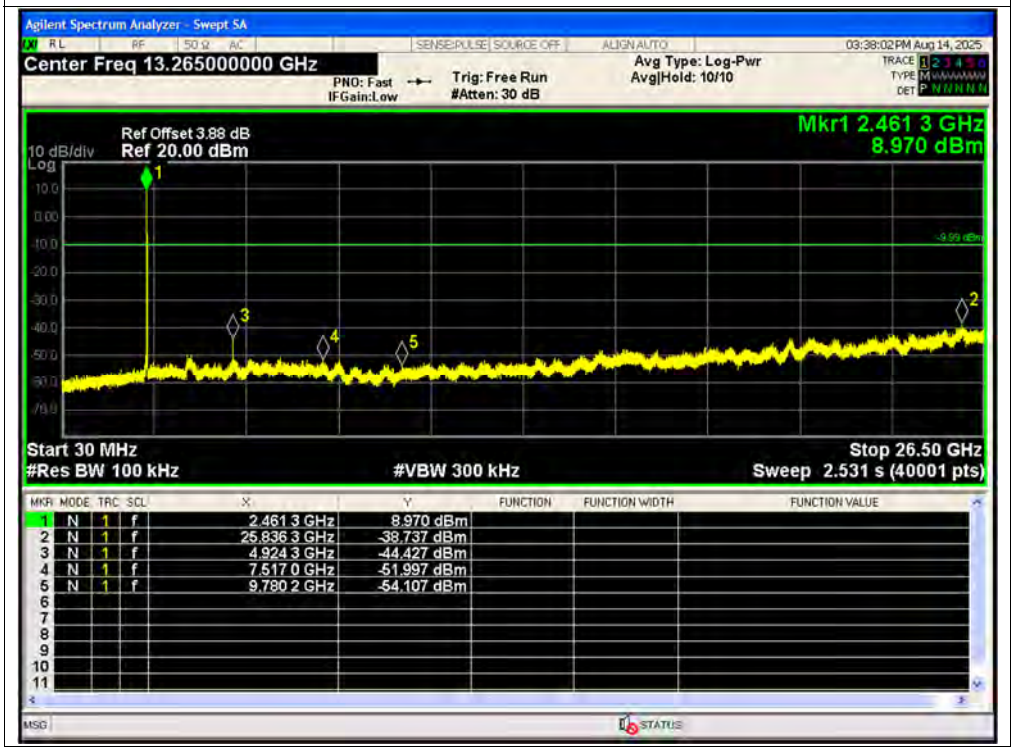
Tx. Spurious NVNT b 2437MHz Ant1 Ref

Tx. Spurious NVNT b 2437MHz Ant1 Emission



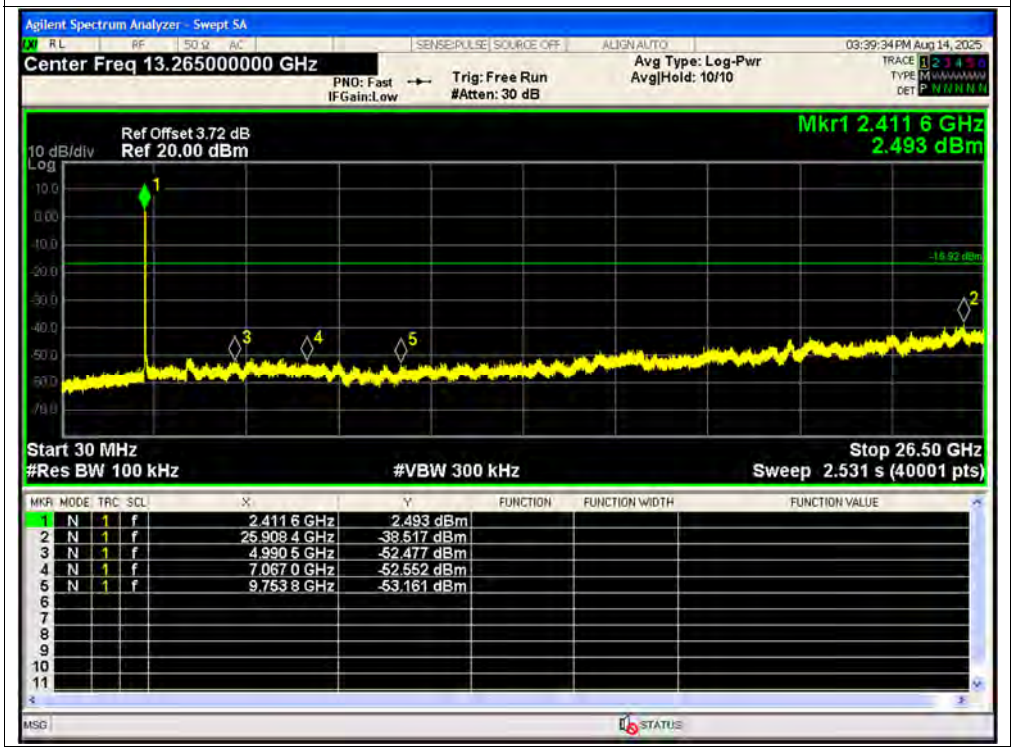
Tx. Spurious NVNT b 2462MHz Ant1 Ref

Tx. Spurious NVNT b 2462MHz Ant1 Emission



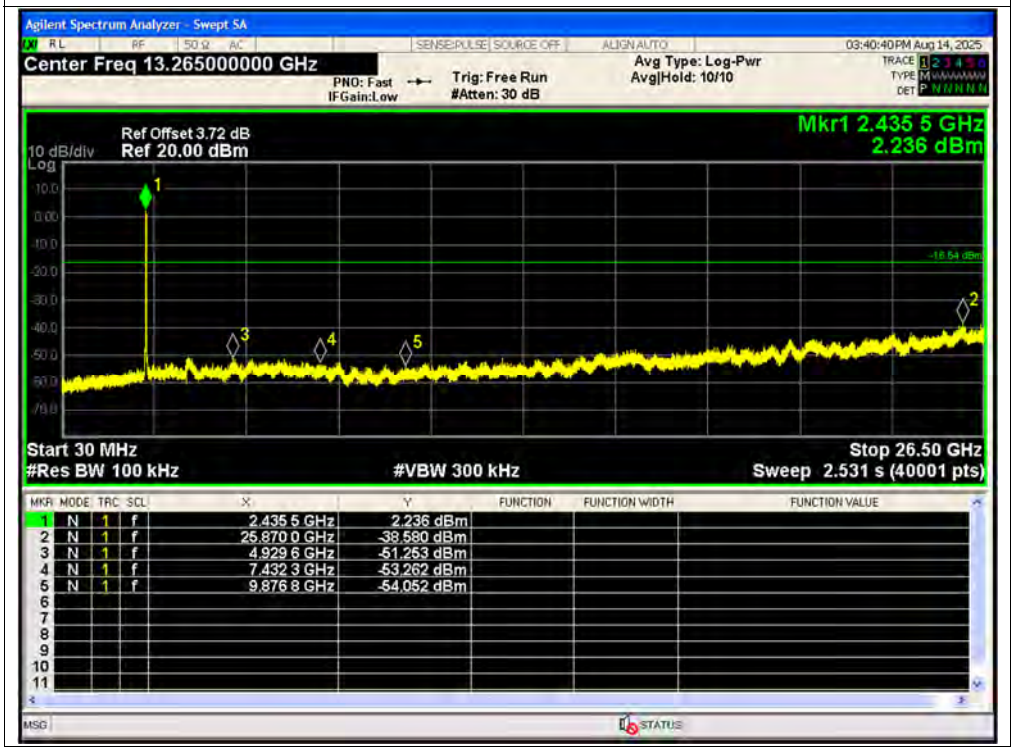
Tx. Spurious NVNT g 2412MHz Ant1 Ref

Tx. Spurious NVNT g 2412MHz Ant1 Emission



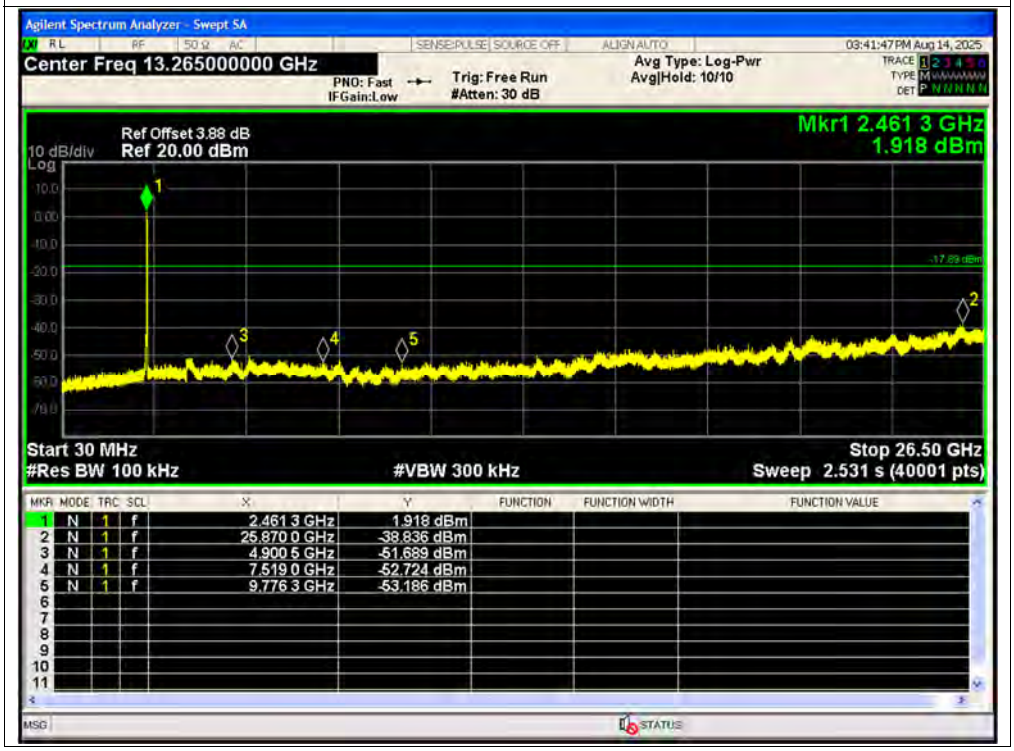
Tx. Spurious NVNT g 2437MHz Ant1 Ref

Tx. Spurious NVNT g 2437MHz Ant1 Emission



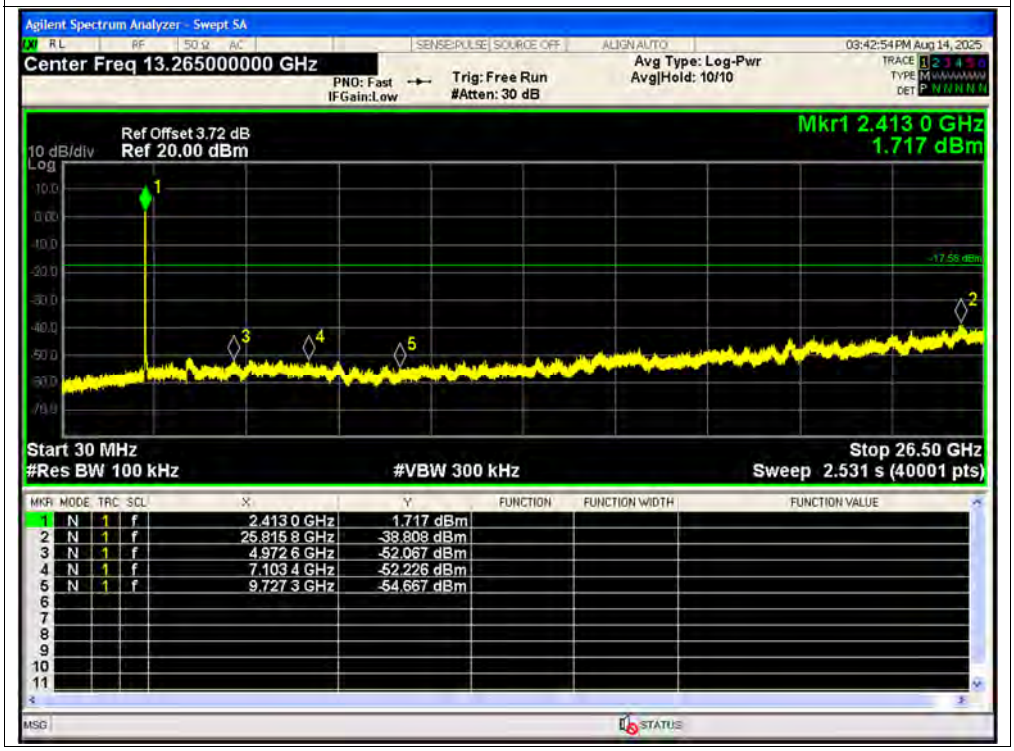
Tx. Spurious NVNT g 2462MHz Ant1 Ref

Tx. Spurious NVNT g 2462MHz Ant1 Emission



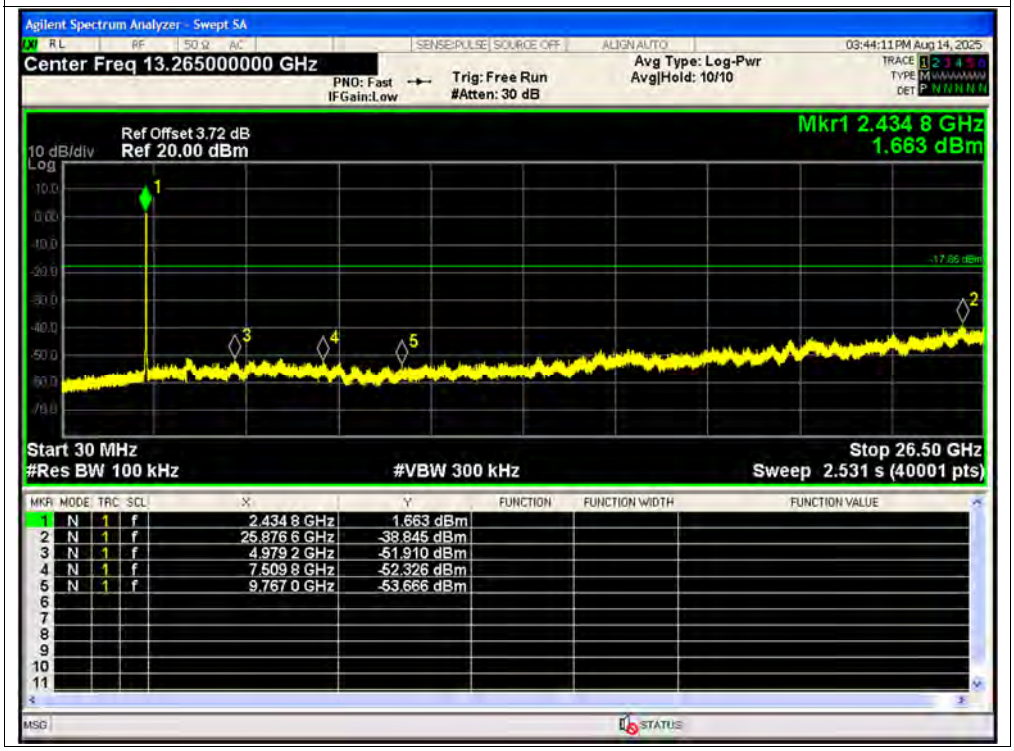
Tx. Spurious NVNT n20 2412MHz Ant1 Ref

Tx. Spurious NVNT n20 2412MHz Ant1 Emission



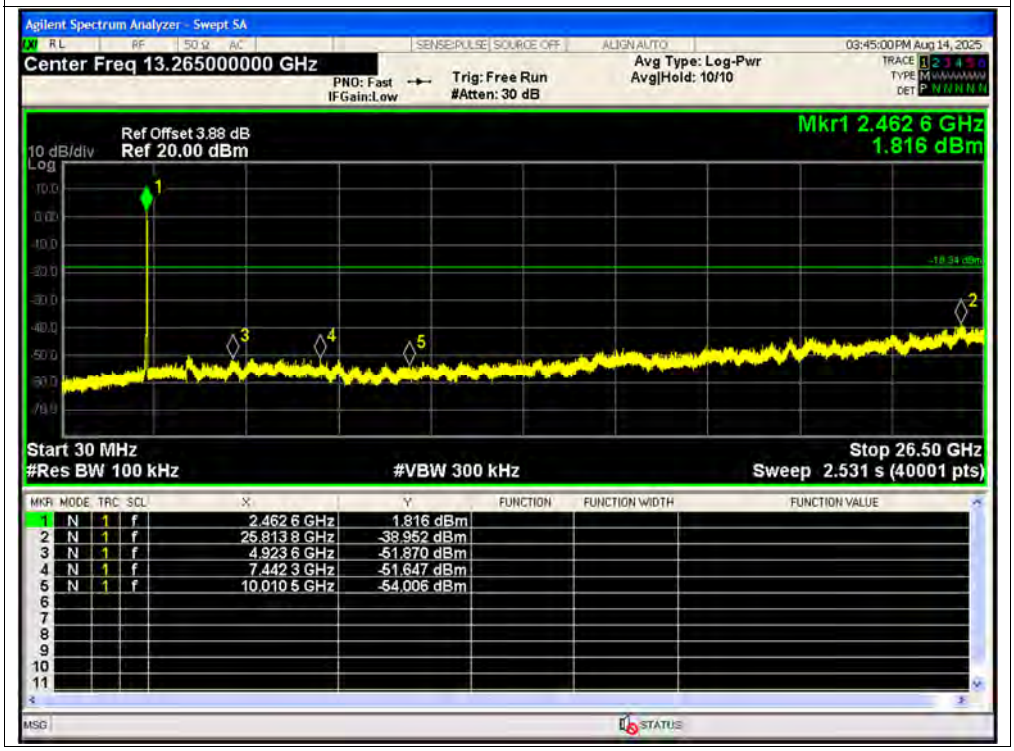
Tx. Spurious NVNT n20 2437MHz Ant1 Ref

Tx. Spurious NVNT n20 2437MHz Ant1 Emission



Tx. Spurious NVNT n20 2462MHz Ant1 Ref

Tx. Spurious NVNT n20 2462MHz Ant1 Emission



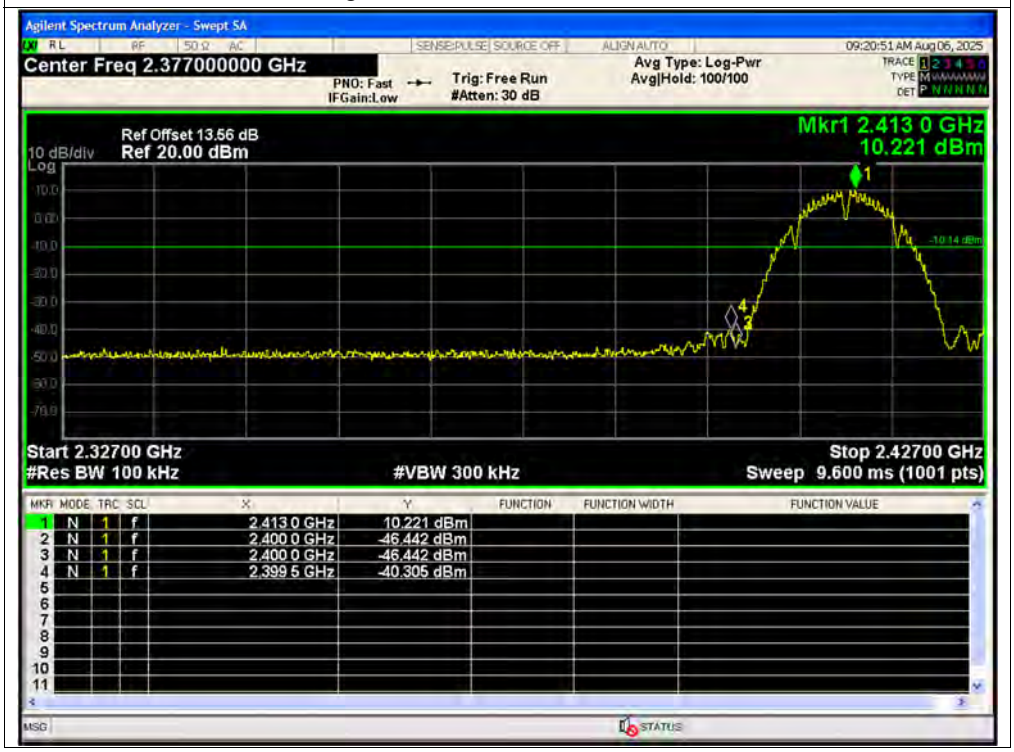
A.6. Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-50.16	-20	Pass
NVNT	b	2462	Ant1	-54.43	-20	Pass
NVNT	g	2412	Ant1	-34.42	-20	Pass
NVNT	g	2462	Ant1	-46.09	-20	Pass
NVNT	n20	2412	Ant1	-33.23	-20	Pass
NVNT	n20	2462	Ant1	-45.87	-20	Pass

Test Graphs

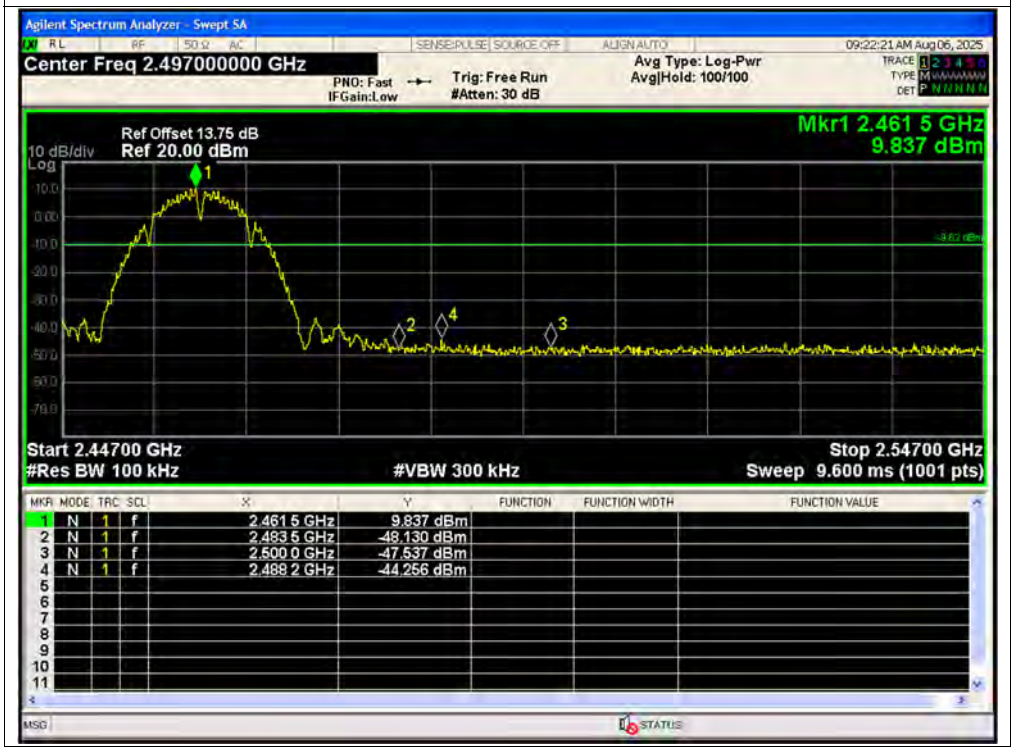
Band Edge NVNT b 2412MHz Ant1 Ref

Band Edge NVNT b 2412MHz Ant1 Emission



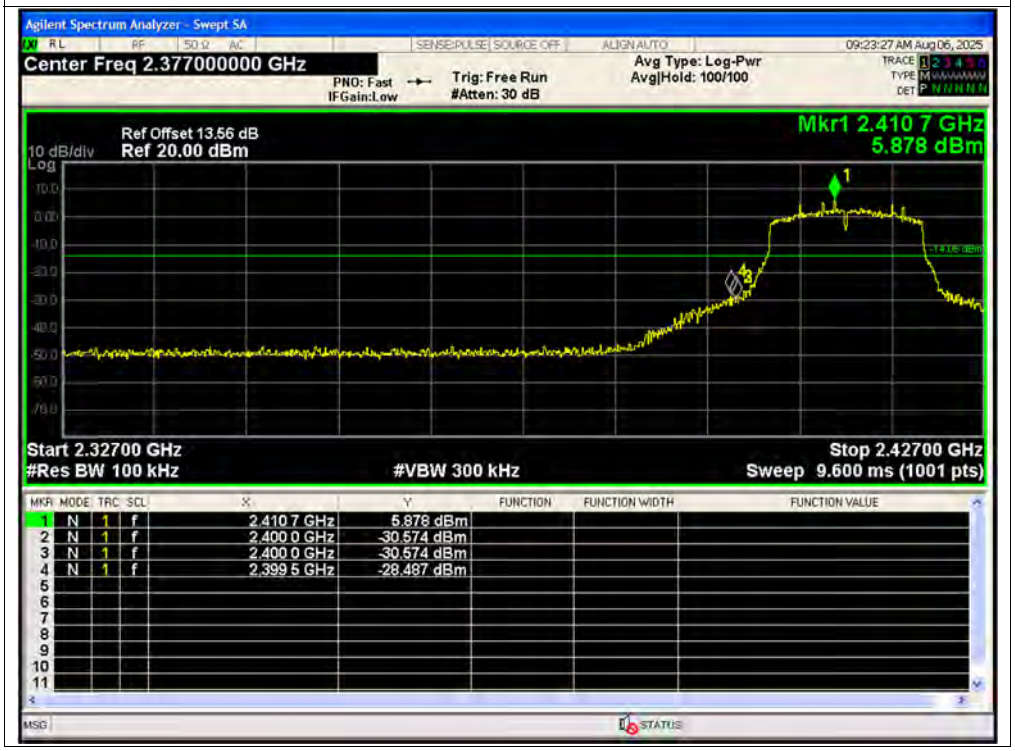
Band Edge NVNT b 2462MHz Ant1 Ref

Band Edge NVNT b 2462MHz Ant1 Emission



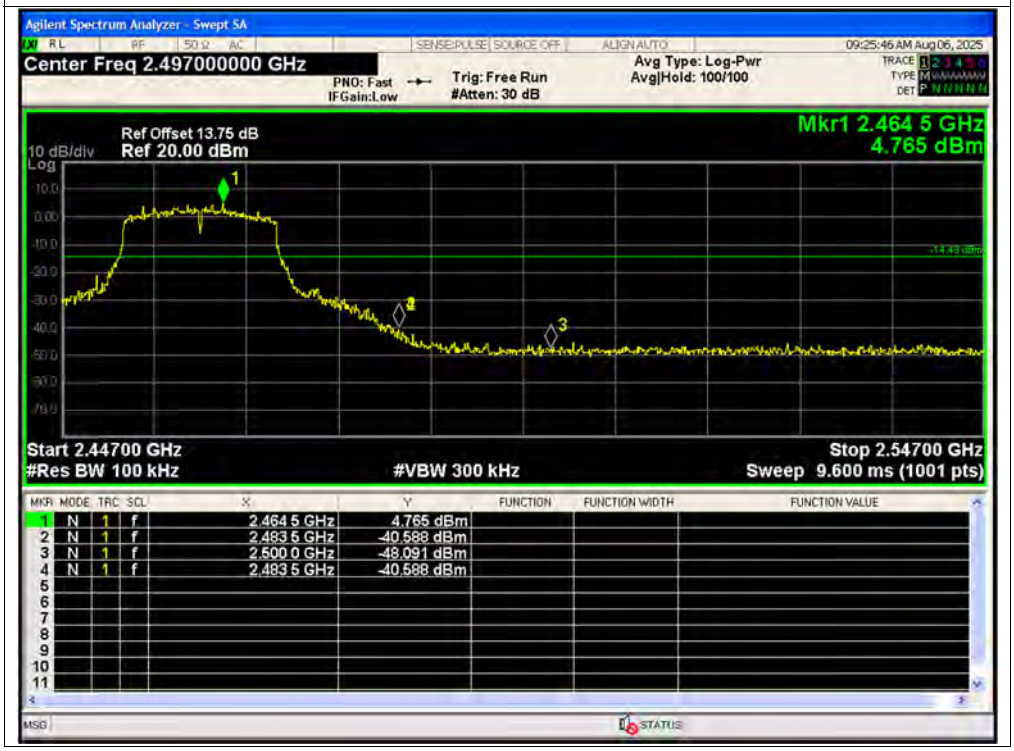
Band Edge NVNT g 2412MHz Ant1 Ref

Band Edge NVNT g 2412MHz Ant1 Emission



Band Edge NVNT g 2462MHz Ant1 Ref

Band Edge NVNT g 2462MHz Ant1 Emission

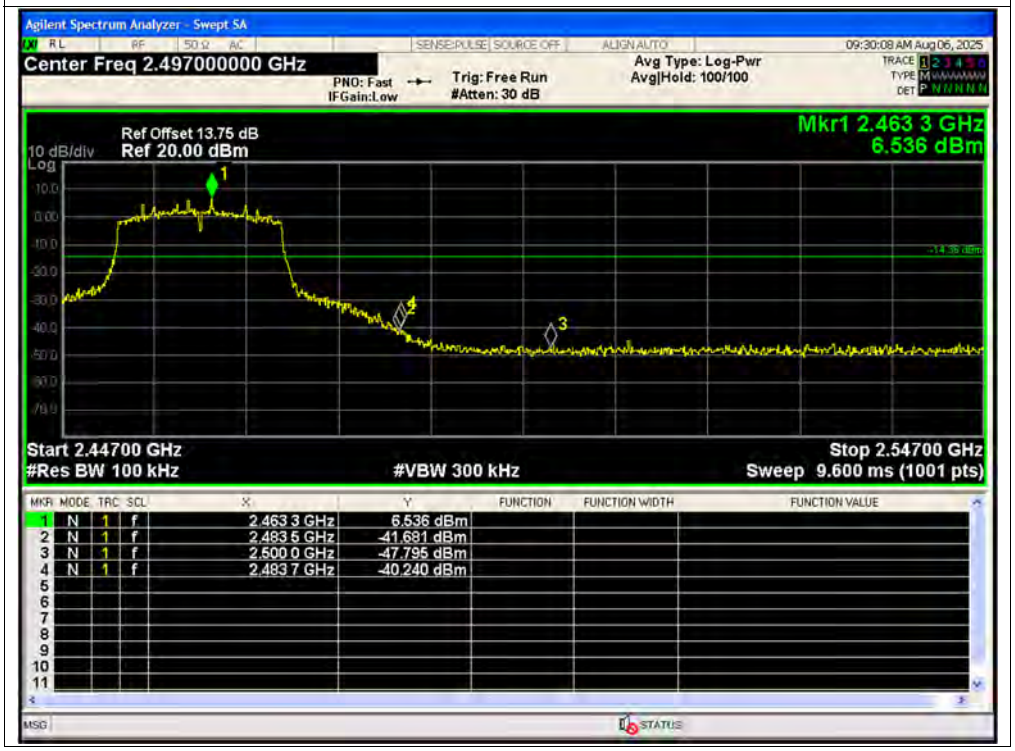


Band Edge NVNT n20 2412MHz Ant1 Ref

Band Edge NVNT n20 2412MHz Ant1 Emission

Band Edge NVNT n20 2462MHz Ant1 Ref

Band Edge NVNT n20 2462MHz Ant1 Emission



A.7. Power Spectral Density

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant1	-3.03	0	-3.03	8	Pass
NVNT	b	2437	Ant1	-4.27	0	-4.27	8	Pass
NVNT	b	2462	Ant1	-4.29	0	-4.29	8	Pass
NVNT	g	2412	Ant1	-9.23	0	-9.23	8	Pass
NVNT	g	2437	Ant1	-8.56	0	-8.56	8	Pass
NVNT	g	2462	Ant1	-9.01	0	-9.01	8	Pass
NVNT	n20	2412	Ant1	-7.98	0	-7.98	8	Pass
NVNT	n20	2437	Ant1	-8.98	0	-8.98	8	Pass
NVNT	n20	2462	Ant1	-7.99	0	-7.99	8	Pass

Test Graphs

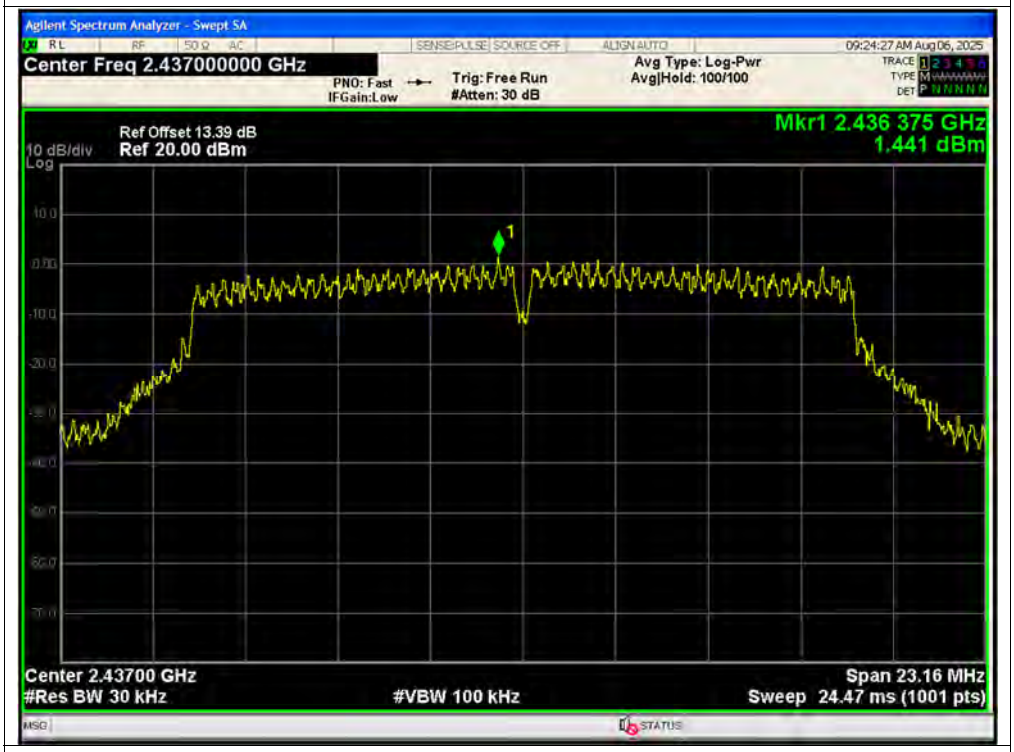
PSD NVNT b 2412MHz Ant1

PSD NVNT b 2437MHz Ant1

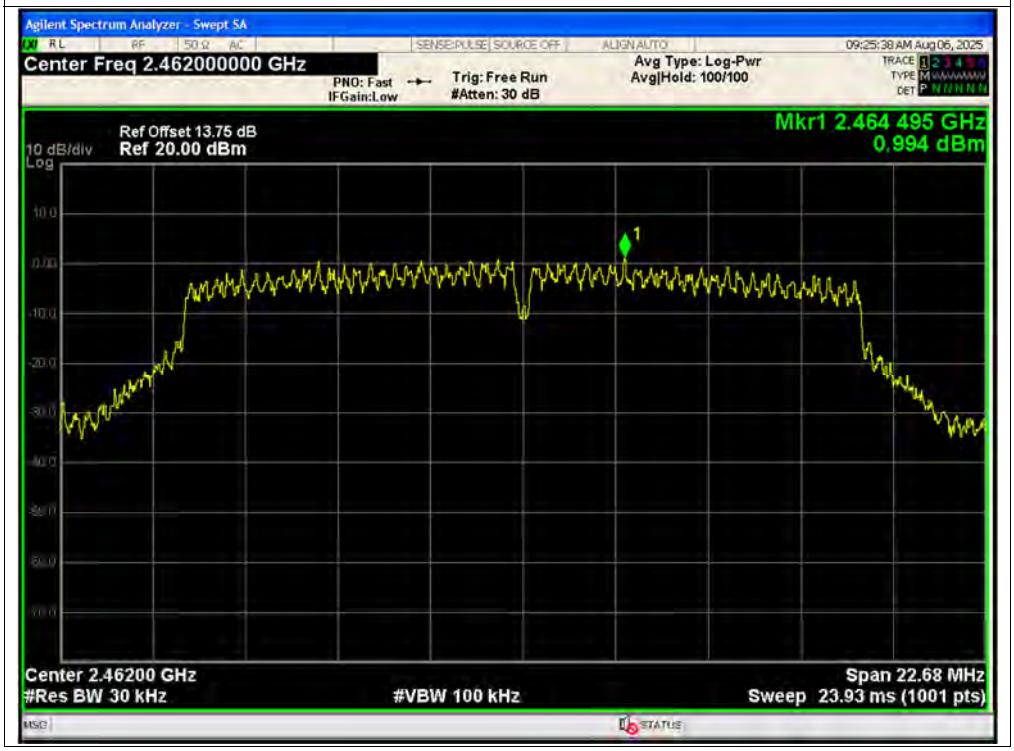
PSD NVNT b 2462MHz Ant1

PSD NVNT g 2412MHz Ant1

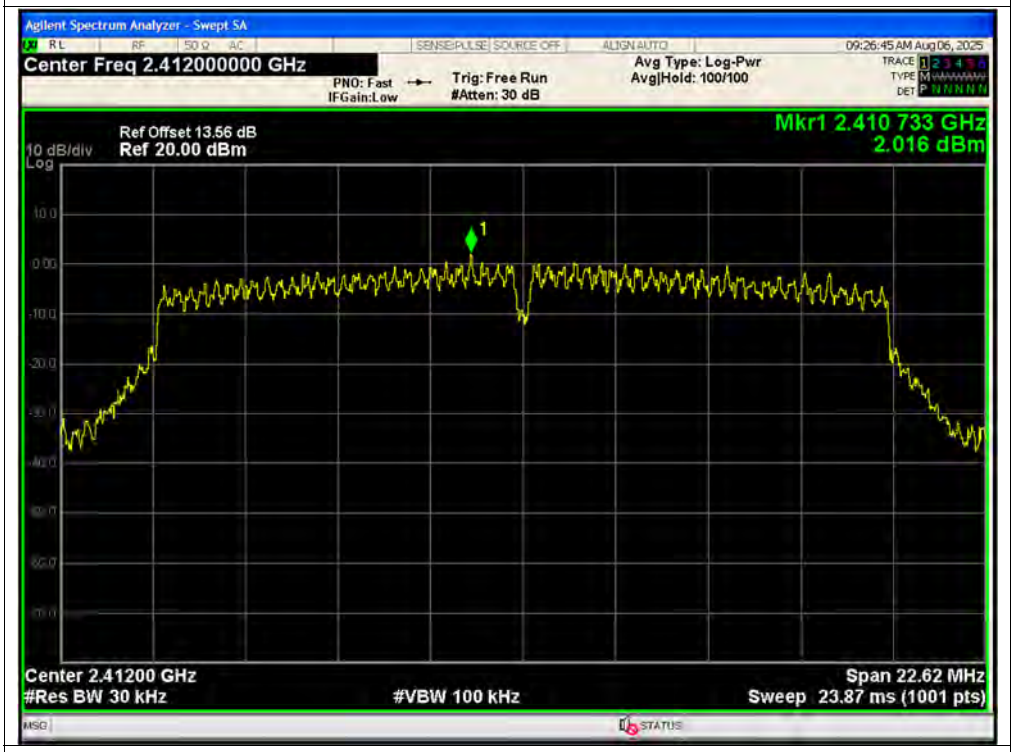
PSD NVNT g 2437MHz Ant1



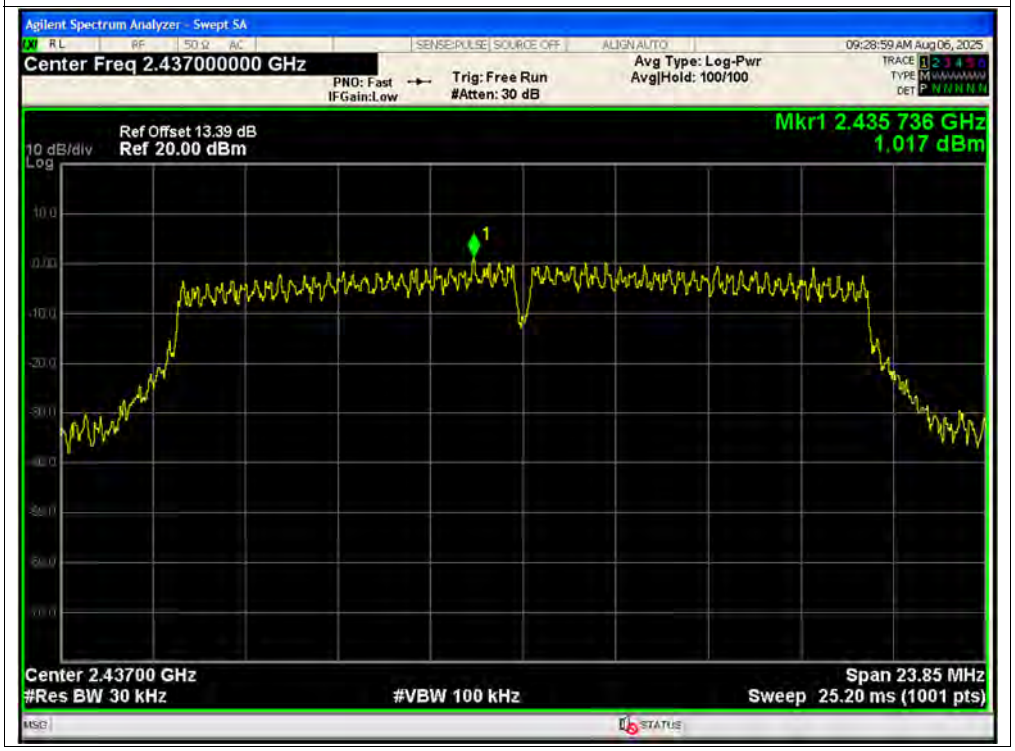
PSD NVNT g 2462MHz Ant1



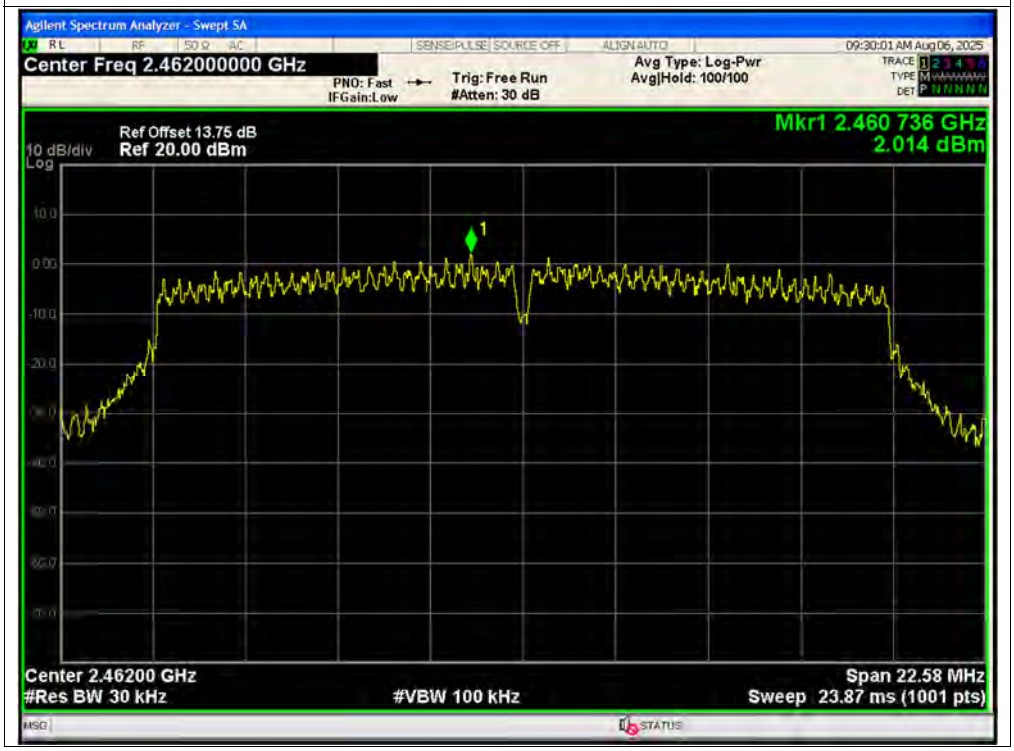
PSD NVNT n20 2412MHz Ant1



PSD NVNT n20 2437MHz Ant1



PSD NVNT n20 2462MHz 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+Adapter+DATA Cable +WIFI TX

Test voltage: AC 120V/60Hz

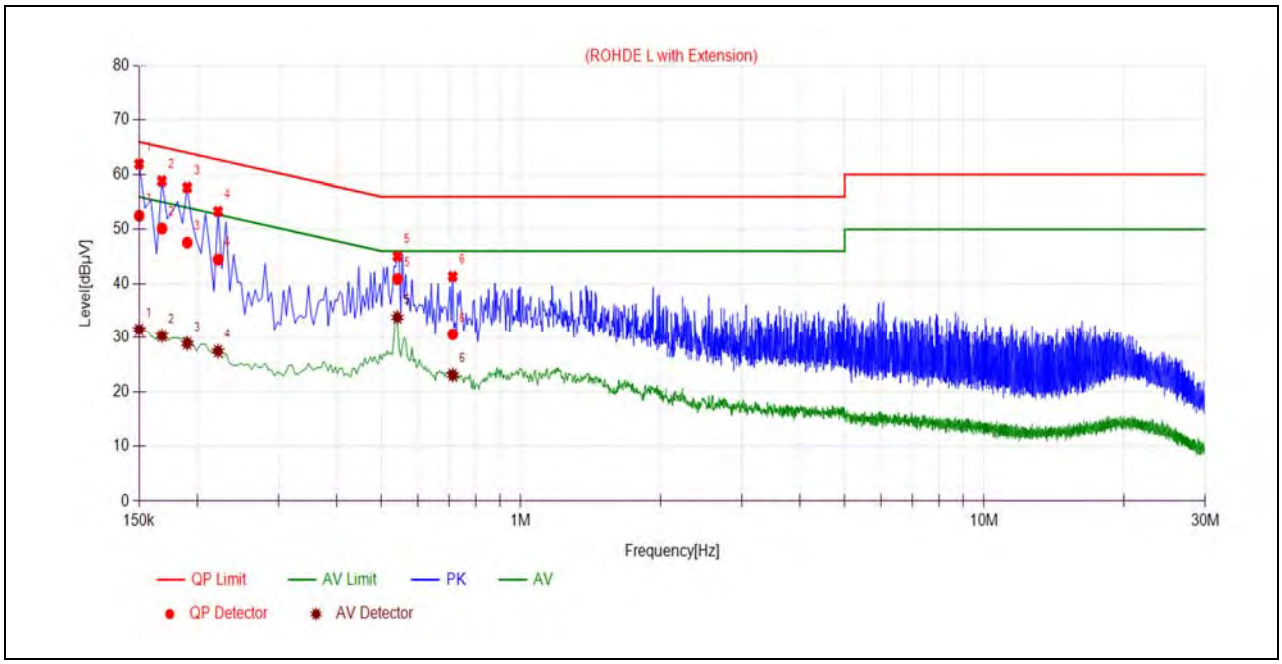
The measurement results are obtained as below:

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

U_R: Receiver Reading

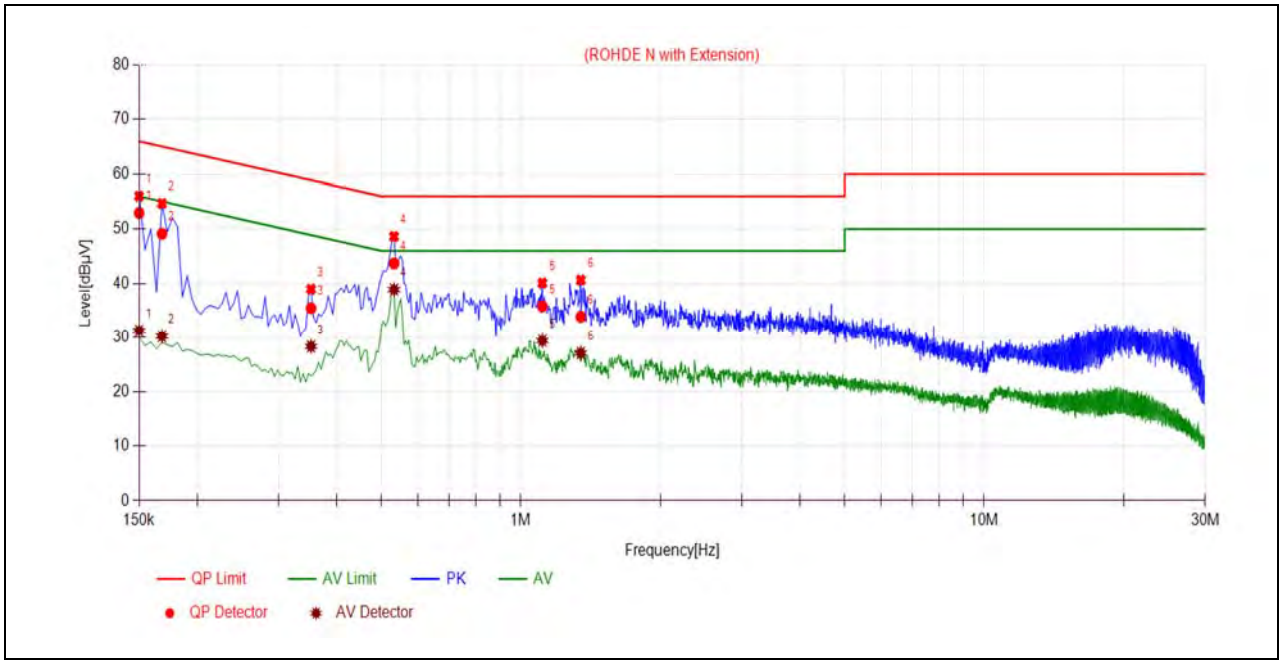
A_{Factor}: Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1500	52.52	31.48	66.00	56.00	Line	PASS
2	0.1680	50.16	30.30	65.06	55.06		PASS
3	0.1905	47.55	28.86	64.02	54.02		PASS
4	0.2220	44.46	27.44	62.74	52.74		PASS
5	0.5415	40.88	33.80	56.00	46.00		PASS
6	0.7125	30.59	23.05	56.00	46.00		PASS



(N Phase)

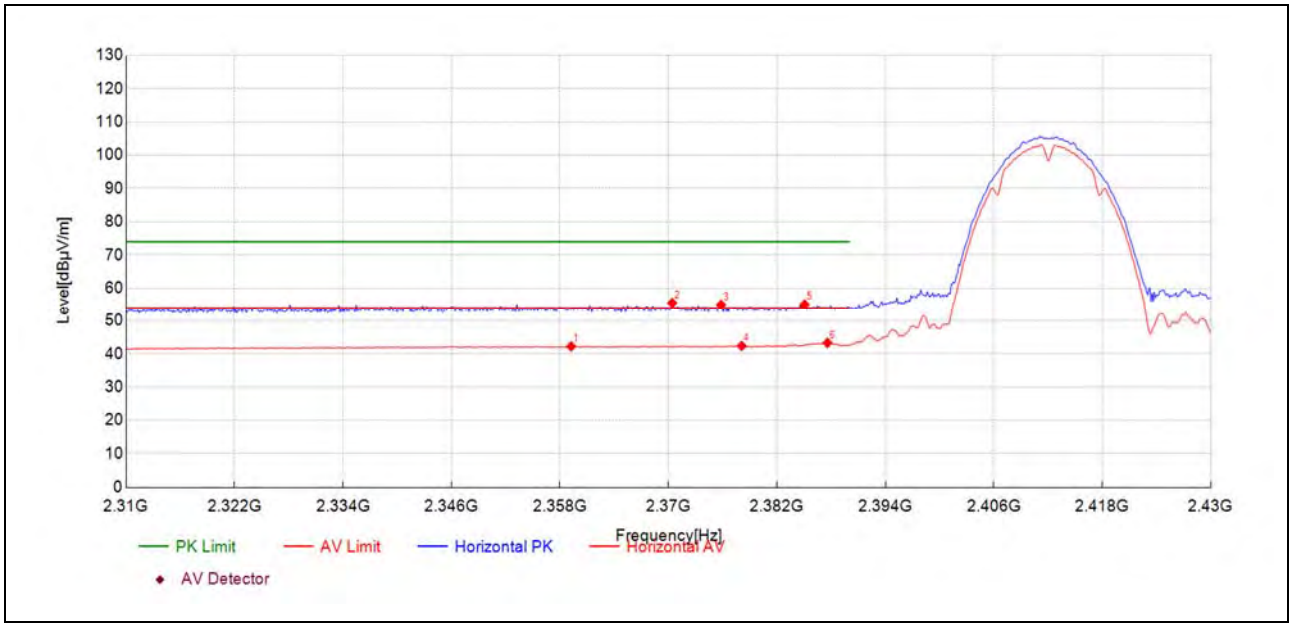
No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1500	52.96	31.29	66.00	56.00	Neutral	PASS
2	0.1680	49.15	30.22	65.06	55.06		PASS
3	0.3525	35.47	28.32	58.90	48.90		PASS
4	0.5326	43.70	38.90	56.00	46.00		PASS
5	1.1130	35.82	29.39	56.00	46.00		PASS
6	1.3469	33.89	27.10	56.00	46.00		PASS

A.9. Restricted Frequency Bands

Note 1: 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.
Note 2 All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

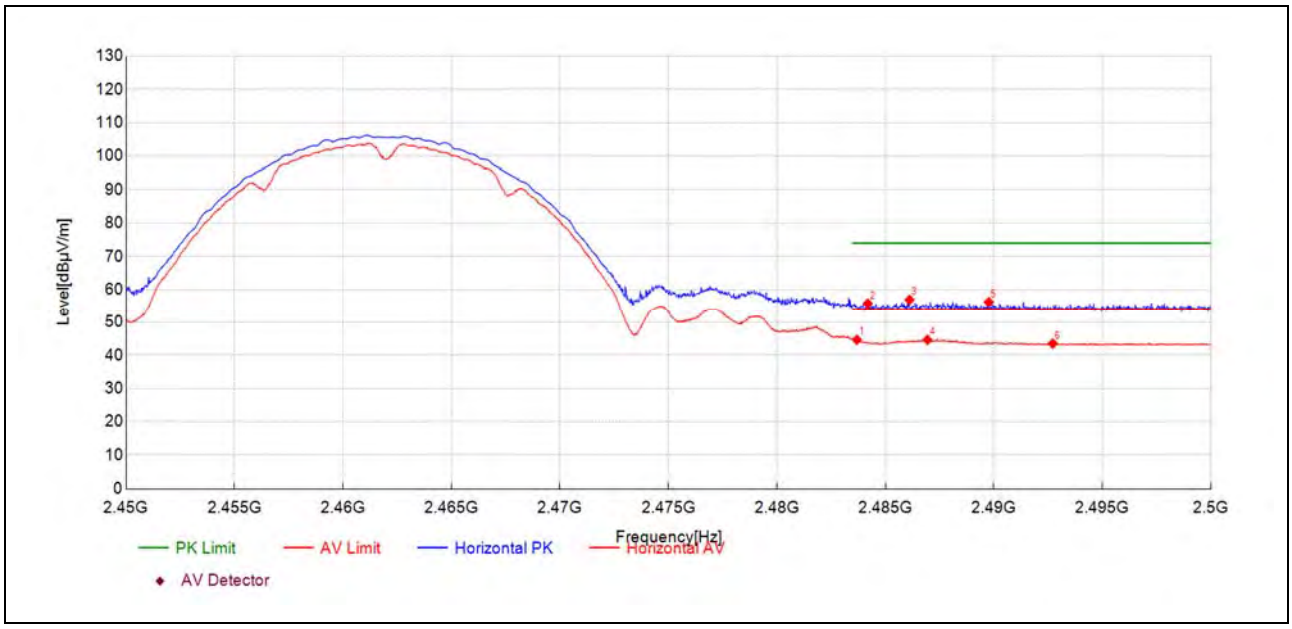
802.11b Mode

Plot for Channel 1



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2359.25	9.8	42.23	32.430	54.00	11.77	150	350	AV	PASS
2370.42	23.1	55.53	32.470	74.00	18.47	150	10	PK	PASS
2375.83	22.5	54.97	32.490	74.00	19.03	150	357	PK	PASS
2378.11	9.9	42.36	32.500	54.00	11.64	150	213	AV	PASS
2385.08	22.5	55.07	32.530	74.00	18.93	150	328	PK	PASS
2387.60	10.7	43.28	32.540	54.00	10.72	150	154	AV	PASS

Plot for Channel 11



Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2483.69	11.6	44.66	33.030	54.00	9.34	150	154	AV	PASS
2484.19	22.8	55.80	33.030	74.00	18.20	150	246	PK	PASS
2486.12	23.9	56.93	33.030	74.00	17.07	150	145	PK	PASS
2486.94	11.6	44.65	33.030	54.00	9.35	150	145	AV	PASS
2489.77	23.2	56.23	33.020	74.00	17.77	150	257	PK	PASS
2492.72	10.5	43.51	33.010	54.00	10.49	150	349	AV	PASS

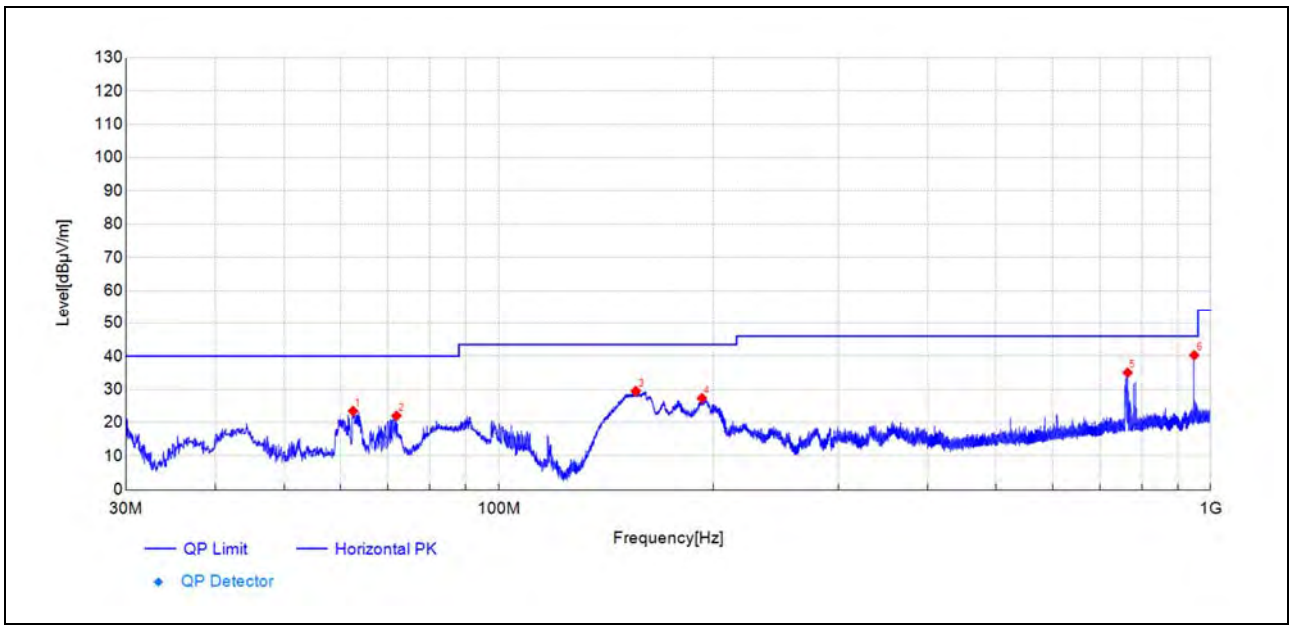
A.10. Radiated Emission

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 [dBμV/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.
Note1: 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.
Note2: All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.
Note3: 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.
Note4: 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.

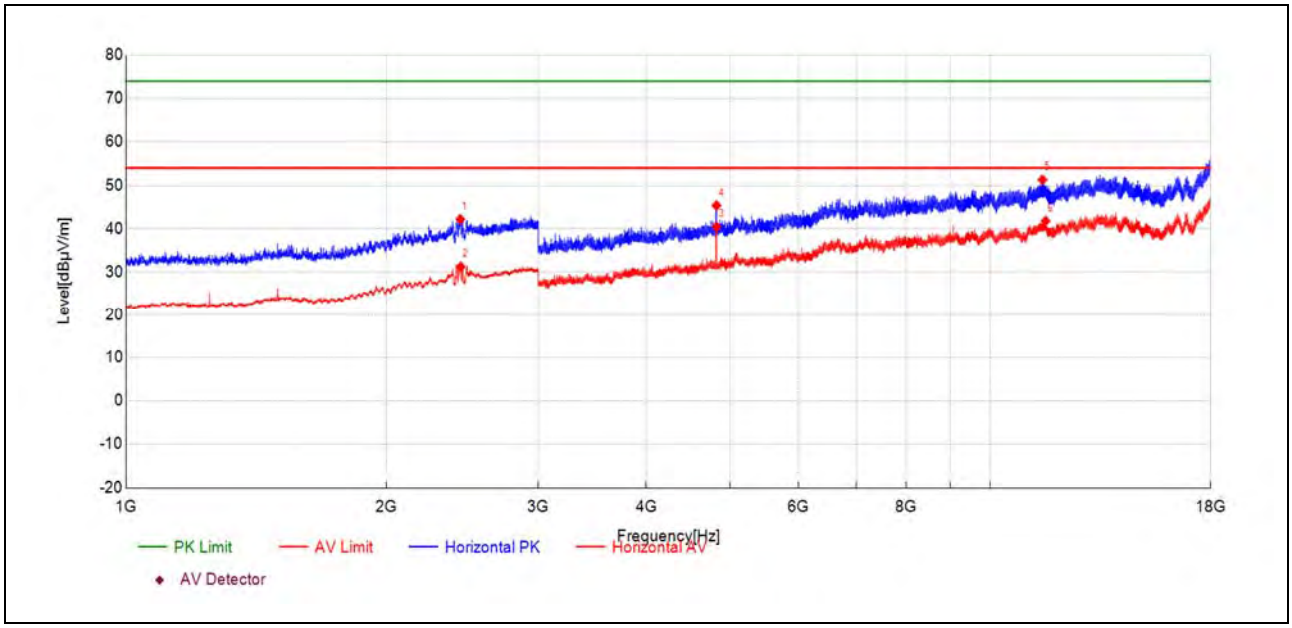
802.11b Mode

Plot for Channel 1



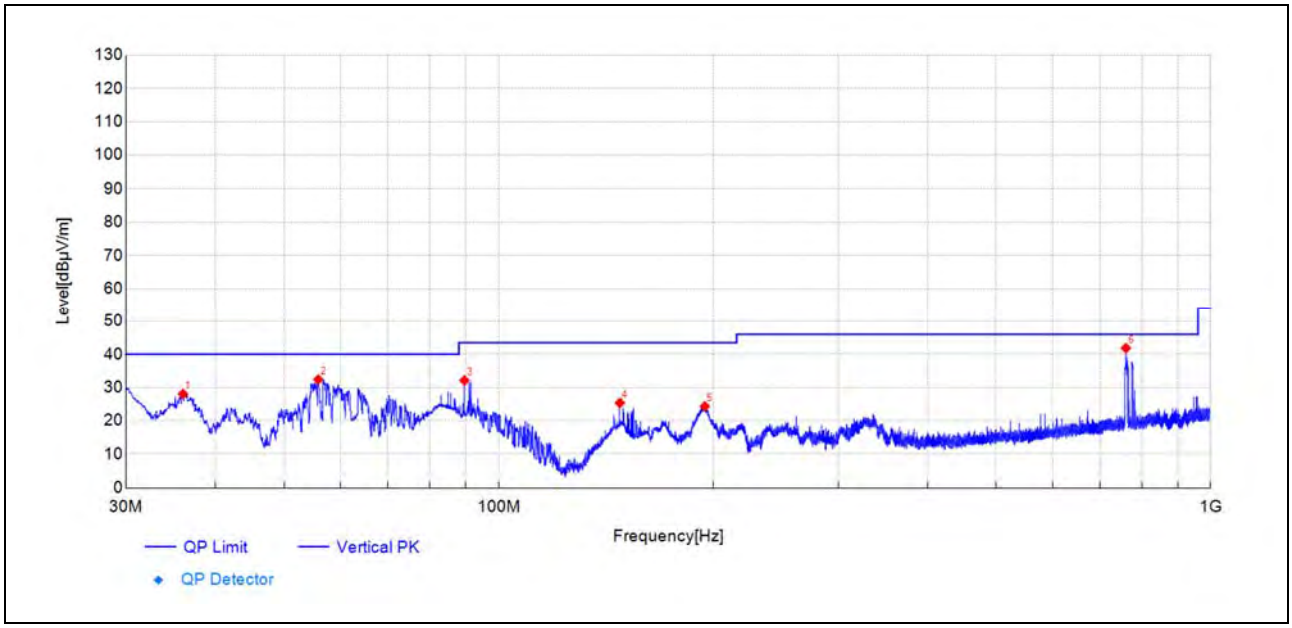
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
62.50	55.0	23.49	-31.490	40.00	16.51	100	350	PK	PASS
71.91	56.5	22.04	-34.490	40.00	17.96	100	0	PK	PASS
155.91	62.3	29.51	-32.770	43.50	13.99	100	201	PK	PASS
193.07	56.5	27.34	-29.200	43.50	16.16	100	214	PK	PASS
764.47	51.6	35.03	-16.600	46.00	10.97	100	160	PK	PASS
948.39	54.3	40.26	-14.060	46.00	5.74	100	214	PK	PASS



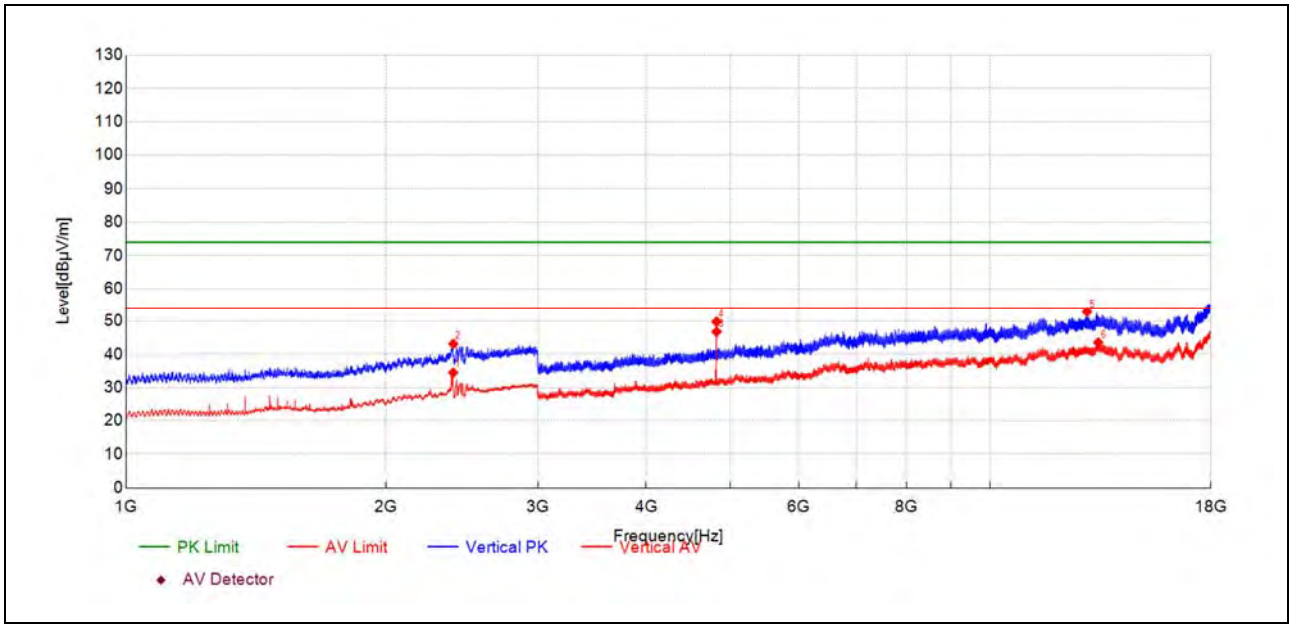
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2436.76	41.2	42.23	0.990	74.00	31.77	150	24	PK	PASS
2440.32	30.2	31.25	1.010	54.00	22.75	150	350	AV	PASS
4824.06	51.0	40.48	-10.550	54.00	13.52	150	127	AV	PASS
4824.06	56.0	45.40	-10.550	74.00	28.60	150	127	PK	PASS
11496.28	48.7	51.36	2.650	74.00	22.64	150	220	PK	PASS
11593.79	39.0	41.83	2.860	54.00	12.17	150	352	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

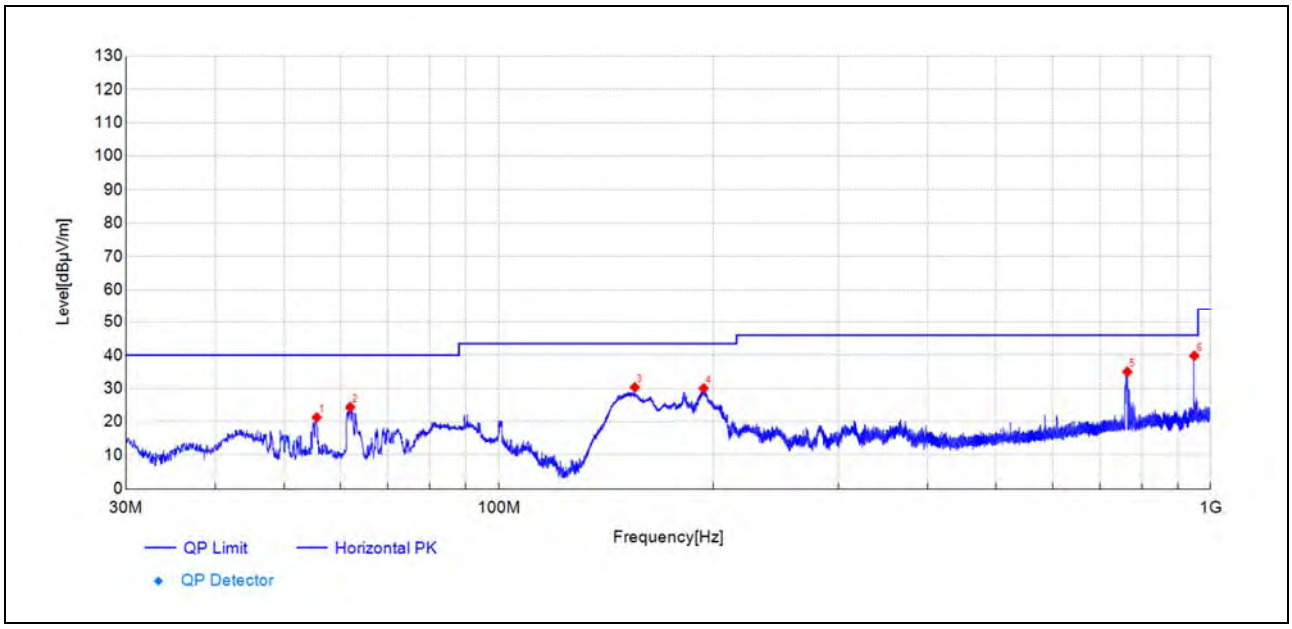
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.06	58.4	28.06	-30.300	40.00	11.94	100	129	PK	PASS
55.85	61.8	32.41	-29.400	40.00	7.59	100	90	PK	PASS
89.61	63.9	32.15	-31.760	43.50	11.35	100	307	PK	PASS
148.10	58.5	25.37	-33.150	43.50	18.13	100	277	PK	PASS
194.91	53.6	24.36	-29.190	43.50	19.14	100	307	PK	PASS
760.40	58.5	41.85	-16.670	46.00	4.15	100	9	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

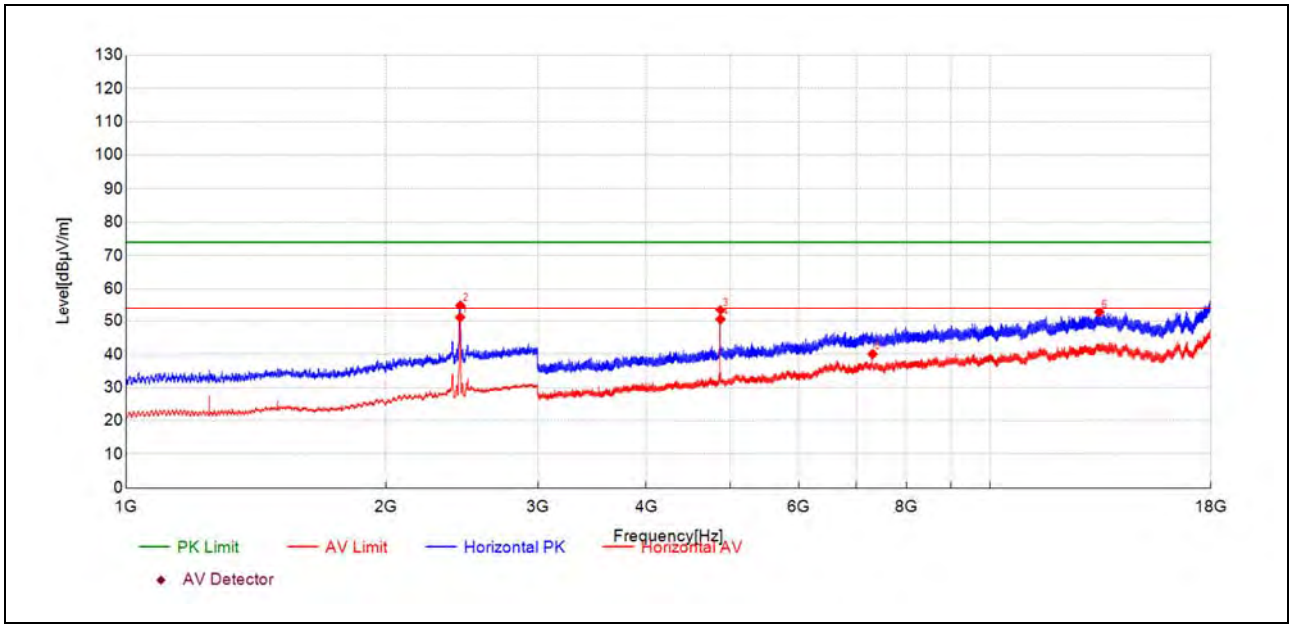
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2390.98	33.7	34.48	0.750	54.00	19.52	150	96	AV	PASS
2392.31	42.4	43.15	0.740	74.00	30.85	150	96	PK	PASS
4824.06	57.4	46.81	-10.550	54.00	7.19	150	358	AV	PASS
4824.06	60.4	49.80	-10.550	74.00	24.20	150	358	PK	PASS
12949.83	48.8	52.86	4.060	74.00	21.14	150	360	PK	PASS
13340.34	38.4	43.54	5.180	54.00	10.46	150	332	AV	PASS

Plot for Channel 6



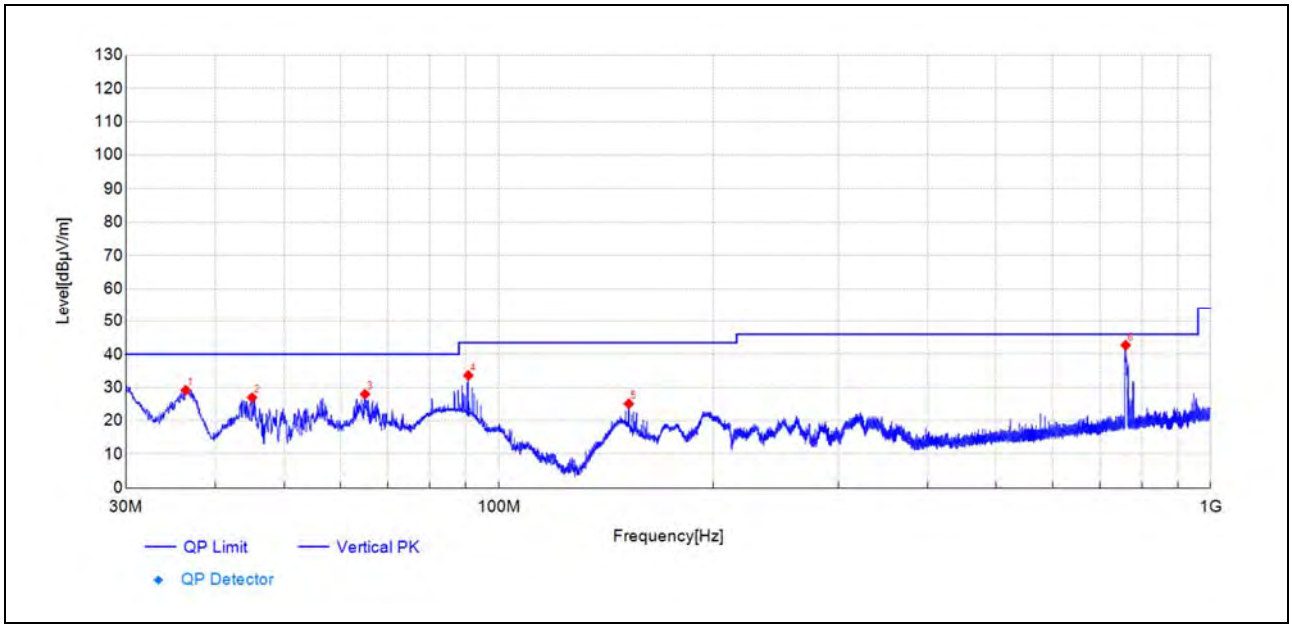
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
55.56	50.6	21.30	-29.310	40.00	18.70	100	10	PK	PASS
61.91	55.7	24.39	-31.260	40.00	15.61	100	359	PK	PASS
155.38	63.2	30.34	-32.830	43.50	13.16	100	226	PK	PASS
194.18	59.2	30.05	-29.120	43.50	13.45	100	226	PK	PASS
763.74	51.6	35.00	-16.610	46.00	11.00	100	50	PK	PASS
948.49	53.9	39.84	-14.060	46.00	6.16	100	322	PK	PASS



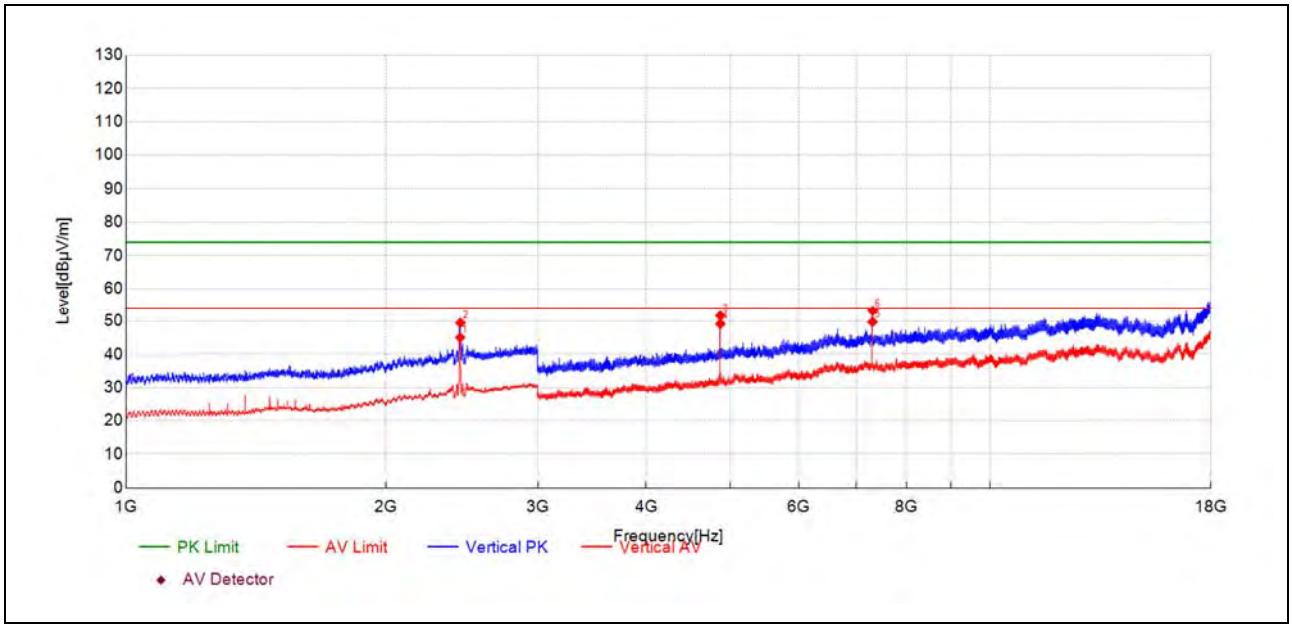
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2436.32	50.1	51.10	0.980	54.00	2.90	150	165	AV	PASS
2437.65	53.9	54.92	1.000	74.00	19.08	150	165	PK	PASS
4874.06	63.6	53.48	-10.070	74.00	20.52	150	220	PK	PASS
4874.06	60.6	50.54	-10.070	54.00	3.46	150	196	AV	PASS
7311.64	43.7	40.07	-3.610	54.00	13.93	150	268	AV	PASS
13380.35	47.9	52.73	4.880	74.00	21.27	150	352	PK	PASS



(Antenna Vertical, 30MHz to 1GHz)

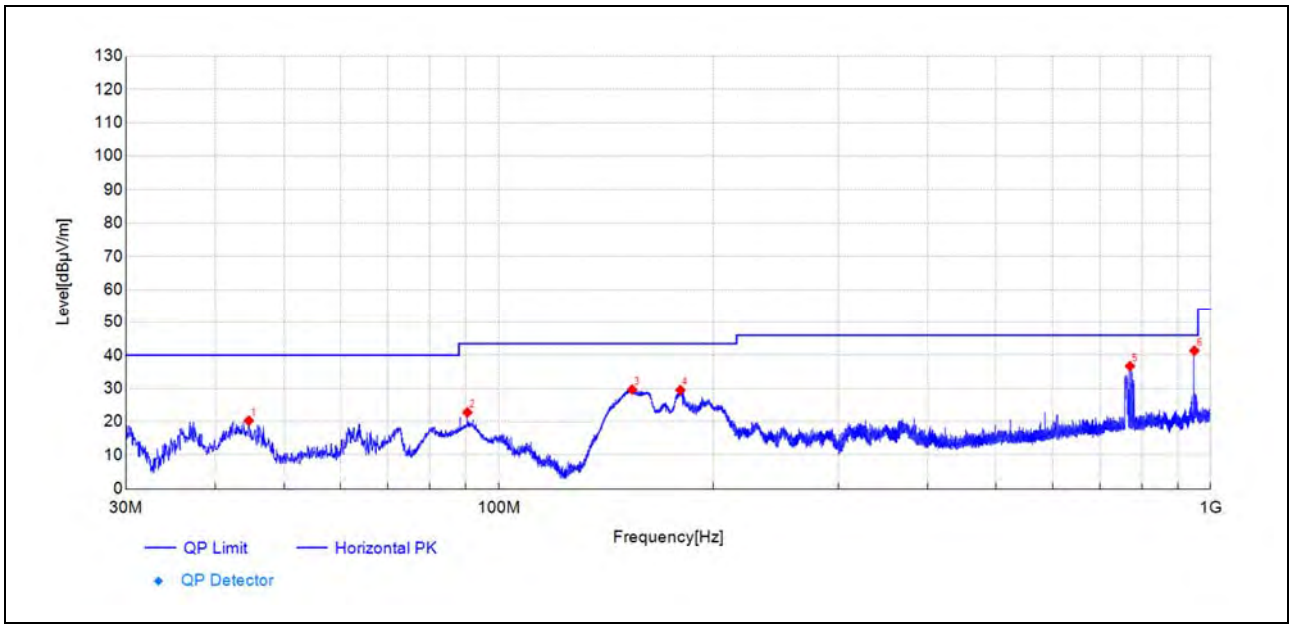
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.40	59.3	29.19	-30.120	40.00	10.81	100	242	PK	PASS
45.08	55.0	26.96	-28.070	40.00	13.04	100	92	PK	PASS
64.97	60.4	27.99	-32.360	40.00	12.01	100	0	PK	PASS
90.73	65.1	33.65	-31.430	43.50	9.85	100	350	PK	PASS
152.37	58.1	25.12	-32.970	43.50	18.38	100	162	PK	PASS
759.82	59.4	42.73	-16.680	46.00	3.27	100	67	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

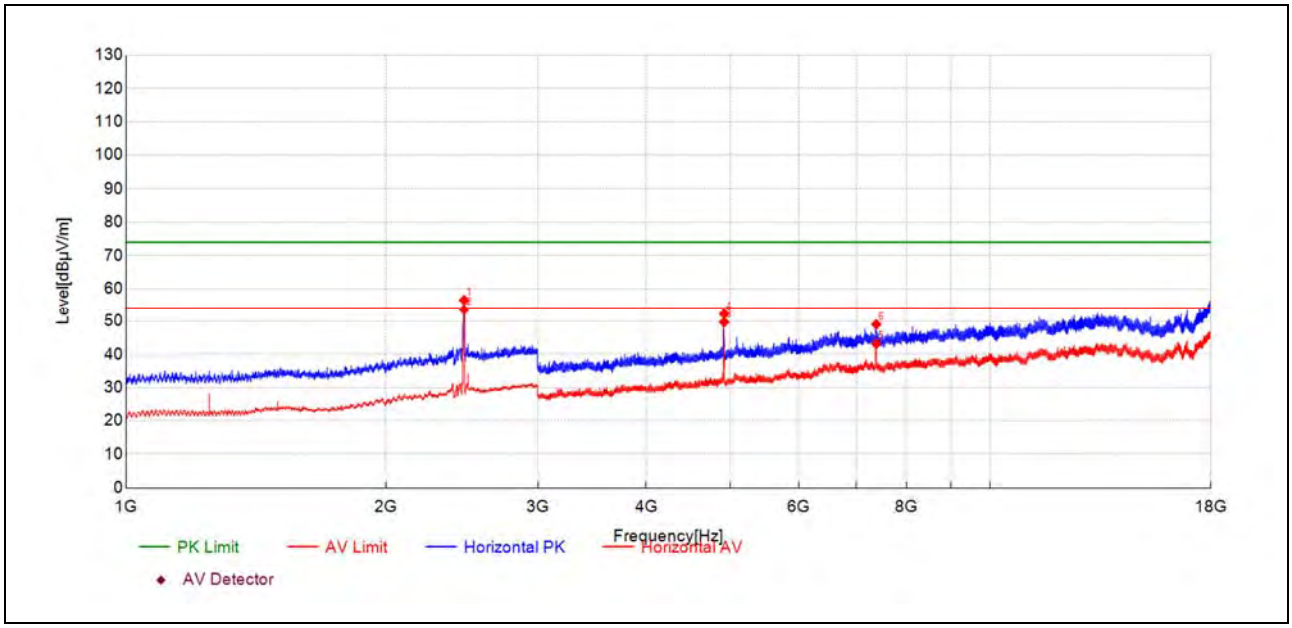
Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2436.32	44.1	45.07	0.980	54.00	8.93	150	130	AV	PASS
2437.65	48.5	49.47	1.000	74.00	24.53	150	109	PK	PASS
4873.56	61.7	51.67	-10.070	74.00	22.33	150	353	PK	PASS
4874.06	59.2	49.16	-10.070	54.00	4.84	150	353	AV	PASS
7310.14	53.4	49.78	-3.600	54.00	4.22	150	104	AV	PASS
7311.64	56.8	53.20	-3.610	74.00	20.80	150	104	PK	PASS

Plot for Channel 11



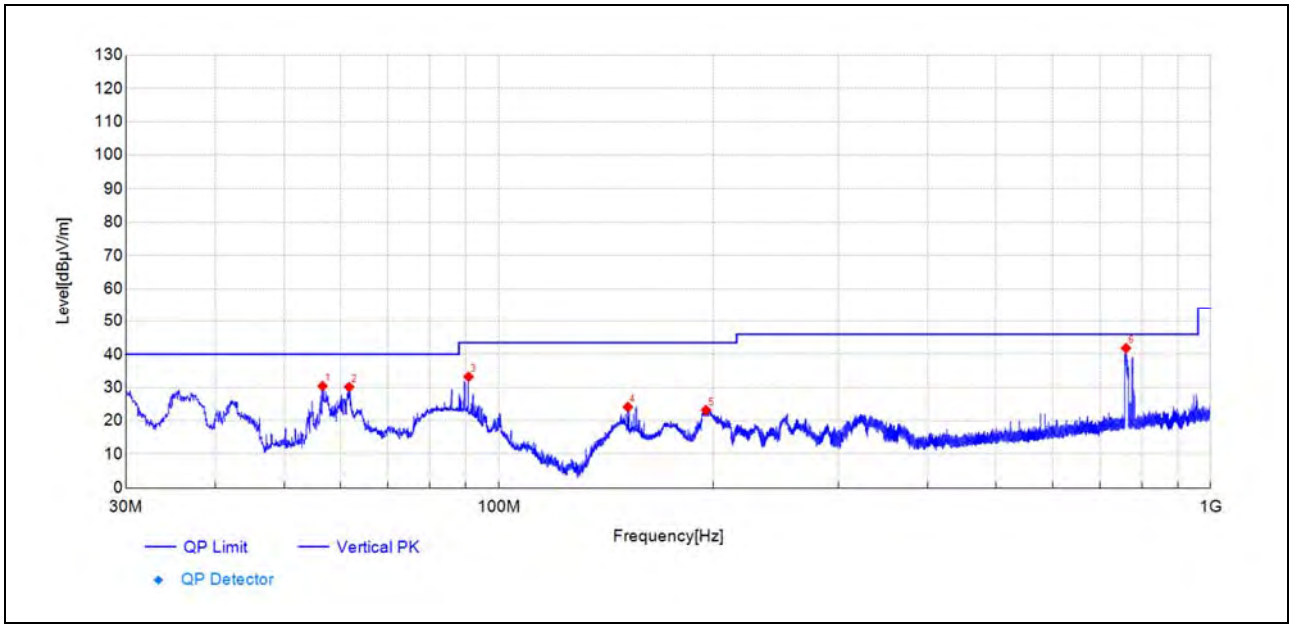
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
44.60	48.4	20.34	-28.080	40.00	19.66	100	200	PK	PASS
90.43	54.3	22.82	-31.500	43.50	20.68	100	0	PK	PASS
154.07	62.6	29.67	-32.880	43.50	13.83	100	213	PK	PASS
180.07	60.8	29.54	-31.260	43.50	13.96	100	228	PK	PASS
770.44	53.2	36.71	-16.500	46.00	9.29	100	15	PK	PASS
948.44	55.4	41.37	-14.060	46.00	4.63	100	336	PK	PASS



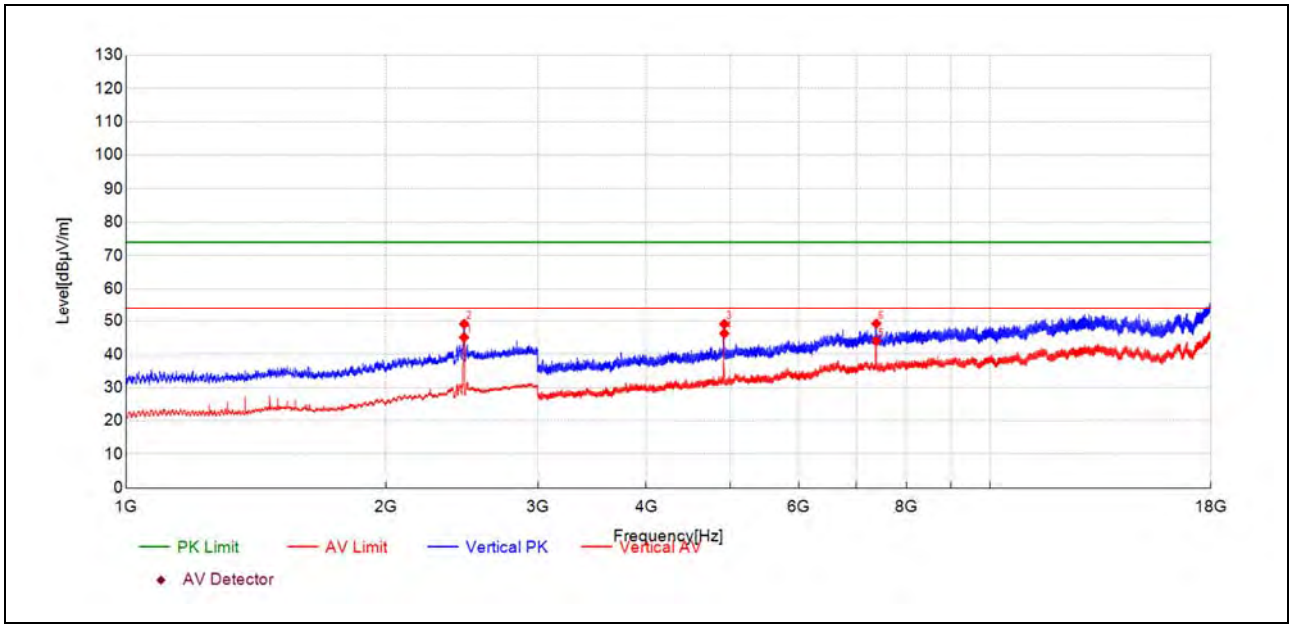
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2461.21	55.5	56.52	1.020	74.00	17.48	150	160	PK	PASS
2461.21	52.6	53.57	1.020	54.00	0.43	150	160	AV	PASS
4923.56	59.7	49.72	-9.970	54.00	4.28	150	140	AV	PASS
4923.56	62.2	52.21	-9.970	74.00	21.79	150	140	PK	PASS
7384.65	47.0	43.17	-3.830	54.00	10.83	150	212	AV	PASS
7385.15	52.9	49.04	-3.830	74.00	24.96	150	186	PK	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
56.63	60.0	30.45	-29.560	40.00	9.55	100	11	PK	PASS
61.72	61.3	30.15	-31.180	40.00	9.85	100	120	PK	PASS
90.77	64.7	33.24	-31.430	43.50	10.26	100	147	PK	PASS
151.94	57.2	24.15	-33.010	43.50	19.35	100	120	PK	PASS
195.64	52.4	23.22	-29.190	43.50	20.28	100	295	PK	PASS
760.54	58.5	41.84	-16.670	46.00	4.16	100	37	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
2461.21	44.1	45.08	1.020	54.00	8.92	150	114	AV	PASS
2462.10	48.1	49.12	1.020	74.00	24.88	150	114	PK	PASS
4924.06	59.1	49.08	-9.970	74.00	24.92	150	94	PK	PASS
4924.06	56.2	46.25	-9.970	54.00	7.75	150	117	AV	PASS
7384.15	47.9	44.03	-3.830	54.00	9.97	150	305	AV	PASS
7385.65	53.1	49.22	-3.830	74.00	24.78	150	305	PK	PASS

END OF REPORT