TEST REPORT

APPLICANT	:	BLU Products, Inc.
PRODUCT NAME	:	Tablet
MODEL NAME	:	M10L PLUS
BRAND NAME	:	BLU
FCC ID	:	YHLBLUM10LPS
STANDARD(S)	:	47 CFR Part 15 Subpart E
RECEIPT DATE	:	2023-03-03
TEST DATE	:	2023-03-13 to 2023-03-28
ISSUE DATE	:	2023-04-17

Edited by: Peng Mi

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MORLAB

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DIRECTORY

Change History		
Version	**Date**	**Reason for change**
1.0	2023-04-17	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	ANSI C63.10	Duty Cycle of the Test Signal	Mar. 13, 2023	Zhong Yanshan	PASS	No deviation
3	15.407(a)	Maximum Conducted Output Power	Mar. 13, 2023	Zhong Yanshan	PASS	No deviation
4	15.407(a) (e)	Emission Bandwidth	Mar. 13, 2023	Zhong Yanshan	PASS	No deviation
5	15.407(a)	Peak Power Spectral Density	Mar. 13, 2023	Zhong Yanshan	PASS	No deviation
6	15.407(g)	Frequency Stability	Mar. 13, 2023	Zhong Yanshan	PASS	No deviation
7	15.207	Conducted Emission	Mar. 13, 2023	Fan Zehang	PASS	No deviation
8	15.407(b)	Restricted Frequency Bands	Mar. 28, 2023	Lin Hanbin	PASS	No deviation
9	15.407(b)	Radiated Emission	Mar. 28, 2023	Lin Hanbin	PASS	No deviation

Note 1: The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.102013.

Note 2: These RF tests were performed according to the method of measurements prescribed in KDB789033 D02 v02r01.

Note 3: These RF tests were performed according to the method of measurements prescribed in KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02.

Note 4: 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 5: 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 E Radio Frequency Devices

1.2. Test Equipment List

1.2.1 Conducted Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
EXA Signal Analzyer	MY53470836	N9010A	Agilent	2023.02.27	2024.02.26
USB Wideband Power Sensor	MY54180008	U2021XA	Agilent	2022.10.11	2023.10.10
Temperature Chamber	12108015	DTL-003S101	YOMA	2022.10.10	2023.10.09
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 Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2023.02.09	2024.02.08
LISN	8127449	NSLK 8127	Schwarzbeck	2023.02.21	2024.02.20
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2022.07.06	2023.07.05
RF Coaxial Cable (DC-100MHz)	BNC	MRE04	Qualwave	2022.07.08	2023.07.07
Notebook	N/A	A1370	APPLE	N/A	N/A
Notebook Adapter	N/A	A1374	APPLE	N/A	N/A

1.2.3 List of Software Used

Description	Manufacturer	Software Version
Test System	MaiWei	2.0.0.0
Morlab EMCR V1.2	Morlab	V1.0
TS+ -[JS32-CE]	Tonscend	V2.5.0.0

1.2.4 Radiated Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY54130016	N9038A	Agilent	2022.07.06	2023.07.05
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2022.05.25	2025.05.24
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2022.02.11	2025.02.10
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2022.07.13	2025.07.12
Test Antenna – Horn	BBHA9170 #773	BBHA9170	Schwarzbeck	2022.07.14	2025.07.13
Preamplifier (10MHz-6GHz)	46732	S10M100L3802	LUCIX CORP.	2022.07.08	2023.07.07
Preamplifier (2GHz-18GHz)	61171/61172	S020180L3203	LUCIX CORP.	2022.07.08	2023.07.07
Preamplifier (18GHz-40GHz)	DS77209	DCLNA0118-40C-S	Decentest	2022.07.23	2023.07.22
RF Coaxial Cable (DC-18GHz)	MRE001	PE330	Pasternack	2022.07.08	2023.07.07
RF Coaxial Cable (DC-18GHz)	MRE002	CLU18	Pasternack	2022.07.08	2023.07.07
RF Coaxial Cable (DC-18GHz)	MRE003	CLU18	Pasternack	2022.07.08	2023.07.07
RF Coaxial Cable (DC-40GHz)	22290045	QA360-40-KK-0.5	Qualwave	2022.07.08	2023.07.07
RF Coaxial Cable (DC-40GHz)	22290046	QA360-40-KKF-2	Qualwave	2022.07.08	2023.07.07
RF Coaxial Cable (DC-18GHz)	22120181	QA500-18-NN-5	Qualwave	2022.07.08	2023.07.07
Notch Filter	N/A	WRCG-5150-5350	Wainwright	2022.07.08	2023.07.07
Notch Filter	N/A	WRCG-5725-5850	Wainwright	2022.07.08	2023.07.07
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%
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	BLU Products, Inc.
Applicant Address	8600 NW 36th Street, Suite #200 Doral, FL 33166, USA
Manufacturer	BLU Products, Inc.
Manufacturer Address	8600 NW 36th Street, Suite #200 Doral, FL 33166, USA

2.2. Information of EUT

Product Name:	Tablet	
Sample No.:	4#	
Hardware Version:	S866T-T310-V2.0-221229-L1	
Software Version:	BLU_M0223_V12.0.04.01_GENERIC_25_02_2023	
Modulation Technology:	OFDM	
Modulation Mode:	802.11a, 802.11n (HT20), 802.11n (HT40) 802.11ac (VHT20), 802.11ac (VHT40), 802.11ac (VHT80)	
Operating Frequency Range:	5180MHz-5240MHz; 5745MHz-5825MHz	
Antenna Type:	PCB Antenna	
Antenna Gain:	1.01dBi	
Accessory Information:	Battery	
	Brand Name:	BLU
	Model No.:	C1279829500P
	Serial No.:	N/A
	Capacity:	5000mAh
	Rated Voltage:	3.8V
	Charge Limit:	4.35V
	Manufacturer:	Shenzhen Jiajinyuan Technology Co., LTD

Accessory Information:	AC Adapter	
	Brand Name:	BLU
	Model No.:	US-HY-2000
	Serial No.:	N/A
	Rated Output:	5V⎓2000mA
	Rated Input:	100-240V～50/60Hz, 0.3A
	Manufacturer:	Shenzhen Zhongfu Core Technology Co. LTD

Note 5: We use the dedicated software to control the EUT continuous transmission.

Note 6: 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

(U-NII-1) 5180MHz-5240MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**36**	**5180**	40	5200
	44	**5220**	**48**	**5240**
40MHz	**38**	**5190**	**46**	**5230**
80MHz	**42**	**5210**		
(U-NII-3) 5745MHz-5825MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**149**	**5745**	153	5765
	157	**5785**	161	5805
	165	**5825**		
40MHz	**151**	**5775**	**159**	**5795**
80MHz	**155**	**5775**		

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	RU Size
802.11a	20	OFDM	**DBPSK**	**1**/2/5.5/11Mbps	N/A
			DQPSK		
			CCK		
802.11n	20/40 (HT20/40)	OFDM	**BPSK**	**MCS0**~MCS7	N/A
			QPSK		
			16QAM		
			64QAM		
802.11ac	20/40/80 (VHT20/40/80)	OFDM	**BPSK**	**MSC0**~MCS9	N/A
			QPSK		
			16QAM		
			64QAM		
			256QAM		

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.

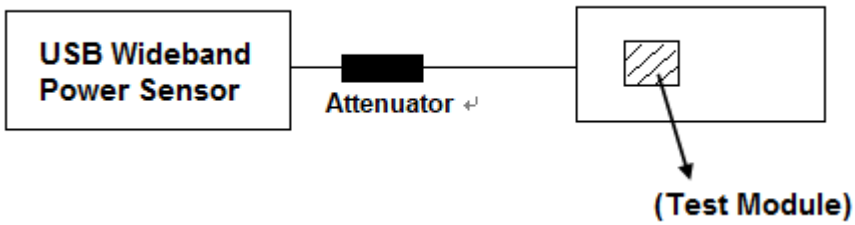
2.5. Test Conditions

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

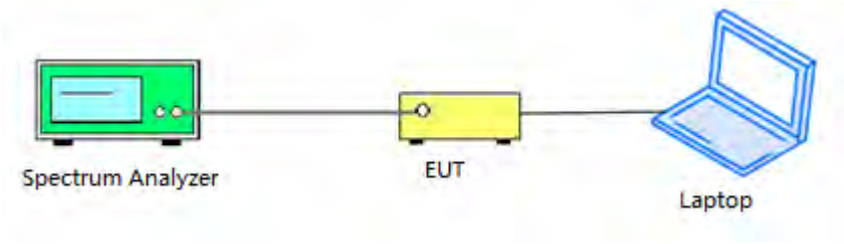
2.6. Test Setup Layout Diagram

2.6.1.Conducted Measurement

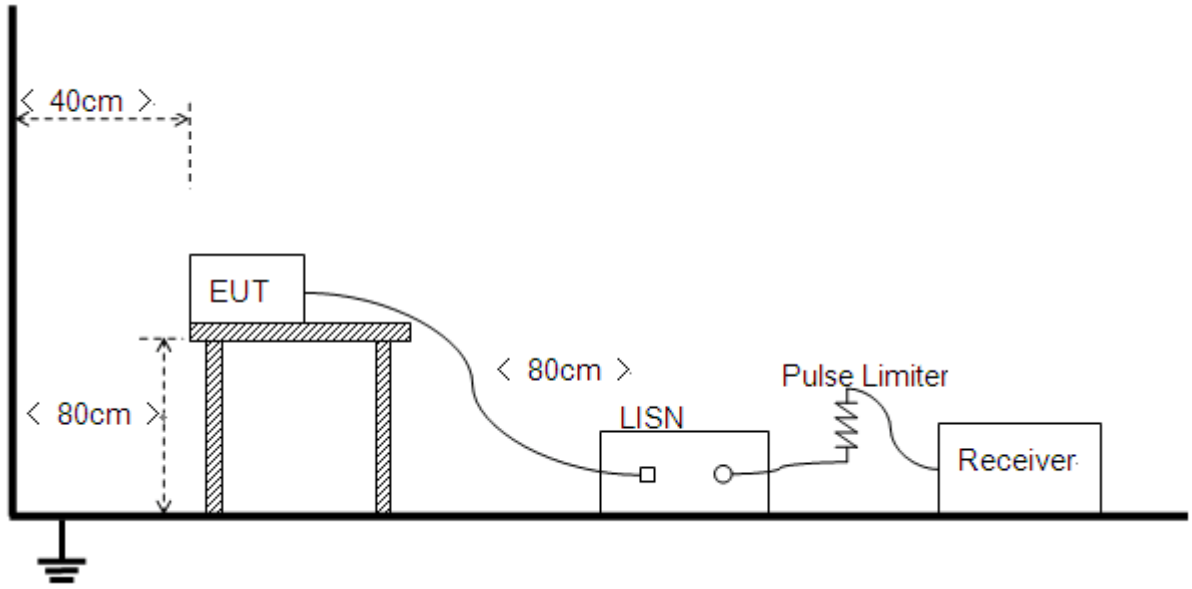
For power item that BW below 80MHz system:



For power item that BW equal or above 80MHz and other items:

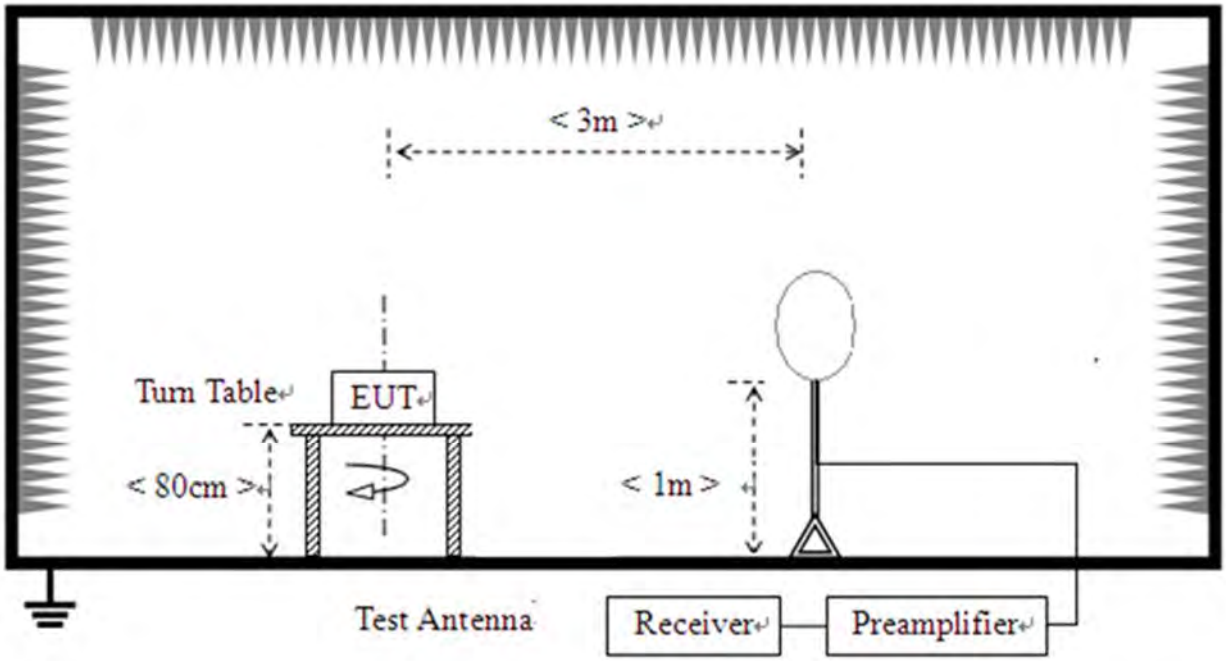


2.6.2.Conducted Emission Measurement

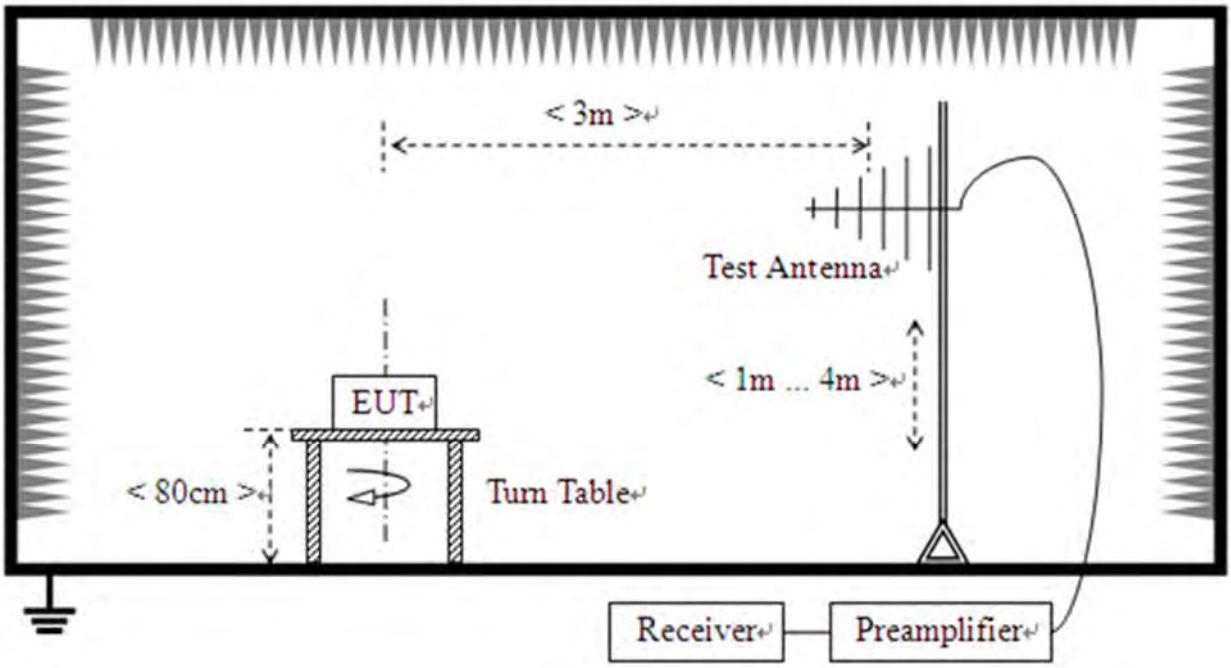


2.6.3.Radiation Measurement

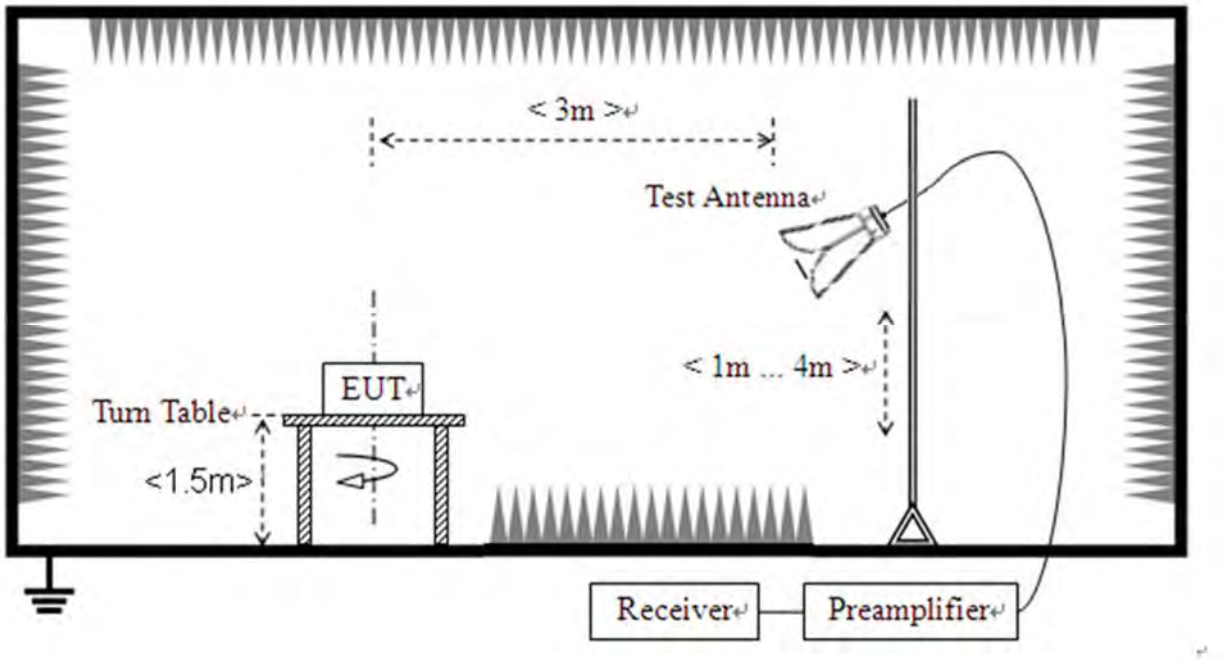
1) For radiated emissions from 9kHz to 30MHz



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

Inside of the EUT has a PIFA antenna coupled with the metal shrapnel. Please refer to the EUT photos.

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 Conducted Output Power

3.3.1.Requirement

(1) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6dBi.
(2)For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or 11dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.
(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.
If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.
(4) According to KDB662911D01Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.
(5) According to KDB 662911 D01, the directional gain = G_{ANT} +10log(N_{ANT})dBi, where G_{ANT} is the antenna gain in dBi, N_{ANT} is the number of outputs.

3.3.2.Test Procedures

Section E) 3) b) of KDB 789033.

3.3.3.Test Result

Refer to Annex A.2 in this report.

3.4. Emission Bandwidth

3.4.1.Requirement

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement. Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

3.4.1.Test Procedures

1. KDB 789033 Section C) 1) Emission Bandwidth was used in order to prove compliance
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
2. KDB 789033 Section C) 2) minimum emission bandwidth for the band 5.725-5.85GHz was used in order to prove compliance.
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for theband5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.4.2.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.4.3.Test Result

Refer to Annex A.3 in this report.

3.5. Peak Power Spectral Density

3.5.1.Requirement

(1)For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.
(2)For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.
(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30dBm in any 500kHz band.
If transmitting antennas of directional gain greater than 6dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.
(4) According to KDB662911D01Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.
(5) According to KDB 662911 D01, the directional gain = G_{ANT} +10log(N_{ANT}) dBi, where G_{ANT} is the antenna gain in dBi, N_{ANT} is the number of outputs.

3.5.2.Test Procedures

KDB 789033 Section F) Maximum Power Spectral Density (PSD) Method SA-3 was used in order to prove compliance
1) Set span to encompass the entire 26-dB emission bandwidth
2) Set RBW = 1MHz. Set VBW ≥ 3MHz
3) Number of points in sweep ≥ 2 Span / RBW. Sweep time = auto
4) Detector = Average
5) Trace mode=Max hold
Record the max value

3.5.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.5.4.Test Result

Refer to Annex A.4 in this report.

3.6. Frequency Stability

3.6.1.Requirement

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

3.6.2.Test Procedures

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between 5°Cto 40°C. The temperature was incremented by 10º intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

3.6.3.Test Result

Refer to Annex A.5 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: 2013.

3.7.3.Test Setup Layout

Refer to chapter 2.6.2 in this report.

3.7.4.Test Result

Refer to Annex A.7 in this report.

3.8. Restricted Frequency Bands

3.8.1.Requirement

The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
(2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
(3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
The following formula is used to convert the equipment isotropic radiated power(e.i.r.p.) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \ \mu V/m$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. 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

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.
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).

3.8.2.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.
KDB 789033 Section H) 3)5)6(d)) was used in order to prove compliance
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.

3.8.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.8.4.Test Result

Refer to Annex A.8 in this report.

3.9. Radiated Emission

3.9.1.Requirement

The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
(2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
(3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.
The following formula is used to convert the equipment isotropic radiated power(e.i.r.p.) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \ \mu V/m$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. 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

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.
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

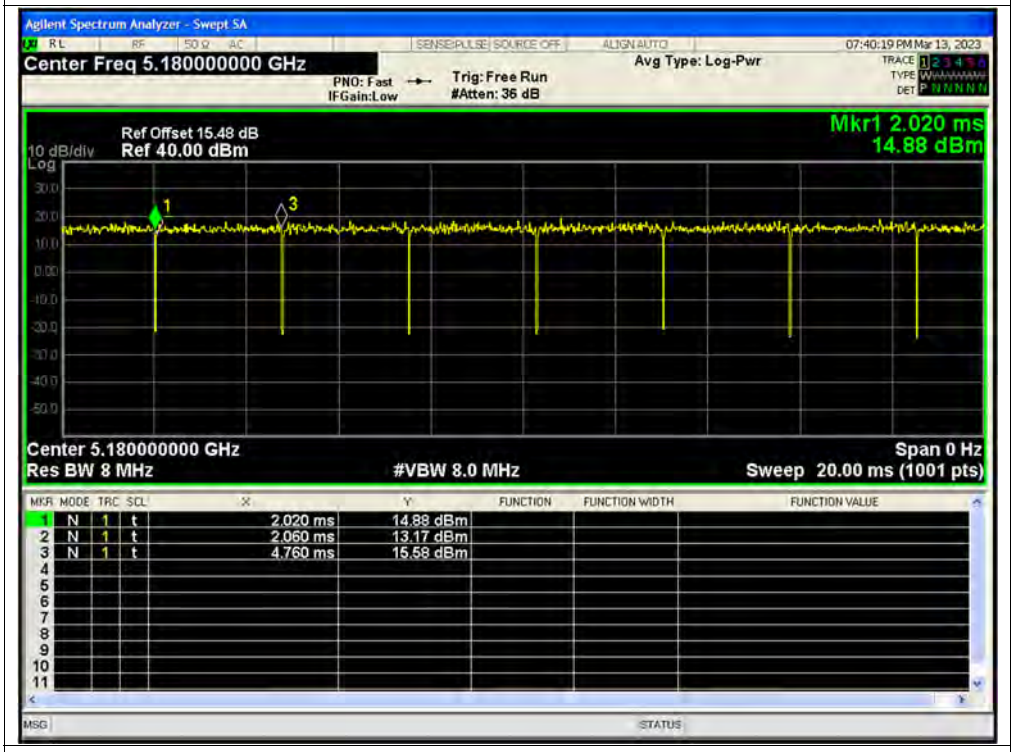
Refer to Annex A.9 in this report.

Annex A Test Data and Result

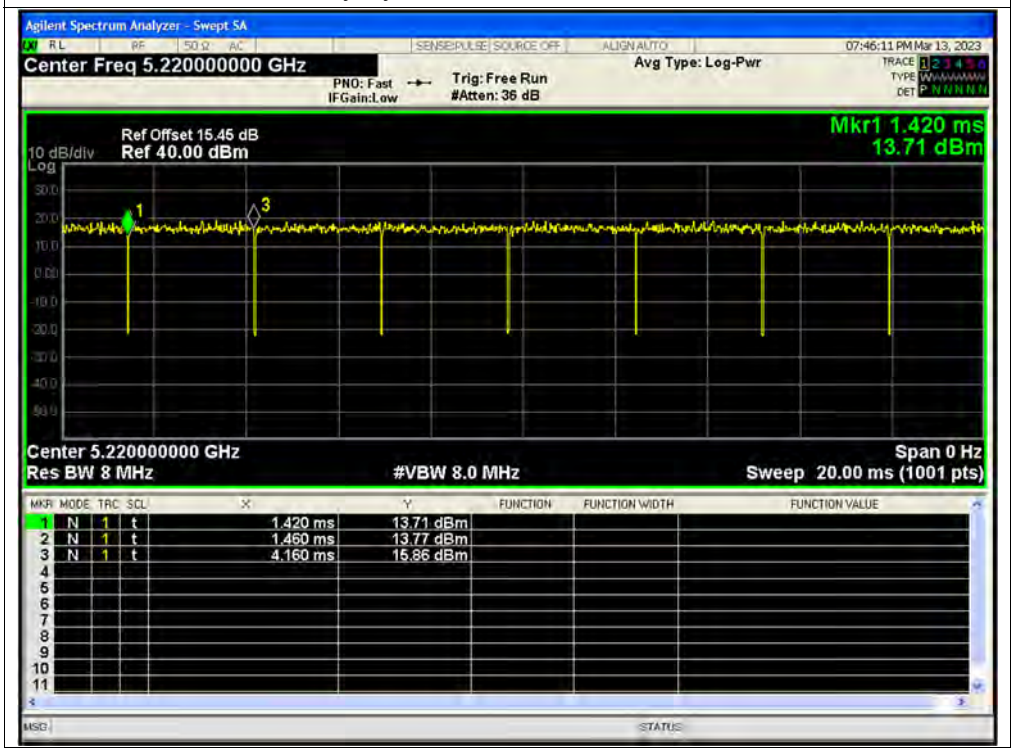
A.1. Duty Cycle of Test Signal

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	Ant1	98.54	0.06	a
NVNT	a	5220	Ant1	98.54	0.06	a
NVNT	a	5240	Ant1	98.54	0.06	a
NVNT	a	5745	Ant1	97.83	0.1	a
NVNT	a	5785	Ant1	97.83	0.1	a
NVNT	a	5825	Ant1	97.83	0.1	a
NVNT	n20	5180	Ant1	98.26	0.08	n20
NVNT	n20	5220	Ant1	97.41	0.11	n20
NVNT	n20	5240	Ant1	97.41	0.11	n20
NVNT	n20	5745	Ant1	97.41	0.11	n20
NVNT	n20	5785	Ant1	97.41	0.11	n20
NVNT	n20	5825	Ant1	97.41	0.11	n20
NVNT	n40	5190	Ant1	94.87	0.23	n40
NVNT	n40	5230	Ant1	96.55	0.15	n40
NVNT	n40	5755	Ant1	94.83	0.23	n40
NVNT	n40	5795	Ant1	96.55	0.15	n40
NVNT	ac20	5180	Ant1	97.44	0.11	ac20
NVNT	ac20	5220	Ant1	98.28	0.08	ac20
NVNT	ac20	5240	Ant1	98.28	0.08	ac20
NVNT	ac20	5745	Ant1	97.41	0.11	ac20
NVNT	ac20	5785	Ant1	98.28	0.08	ac20
NVNT	ac20	5825	Ant1	97.44	0.11	ac20
NVNT	ac40	5190	Ant1	96.55	0.15	ac40
NVNT	ac40	5230	Ant1	94.92	0.23	ac40
NVNT	ac40	5755	Ant1	94.92	0.23	ac40
NVNT	ac40	5795	Ant1	94.92	0.23	ac40
NVNT	ac80	5210	Ant1	91.53	0.38	ac80
NVNT	ac80	5775	Ant1	90	0.46	ac80

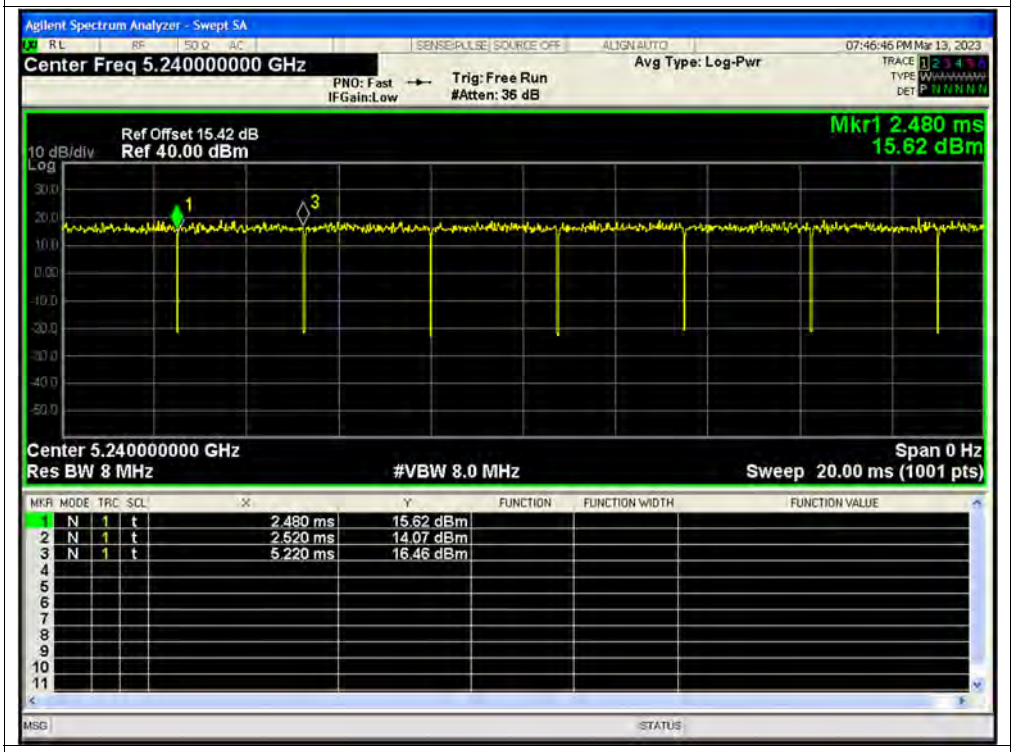
Test Graphs
Duty Cycle NVNT a 5180MHz Ant1



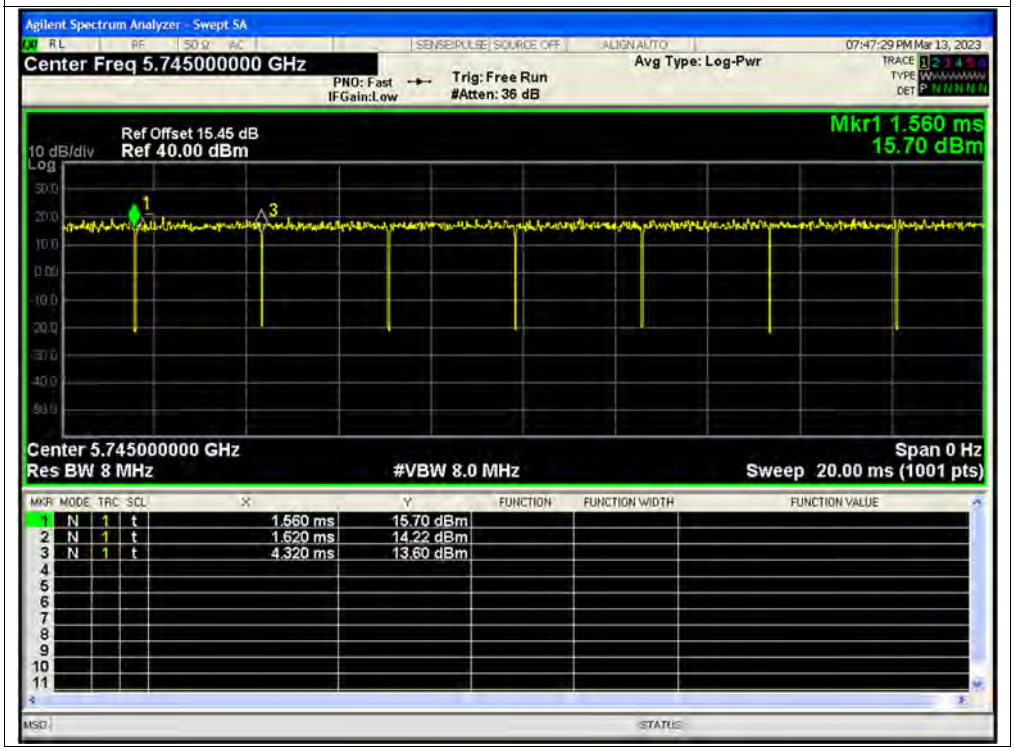
Duty Cycle NVNT a 5220MHz Ant1



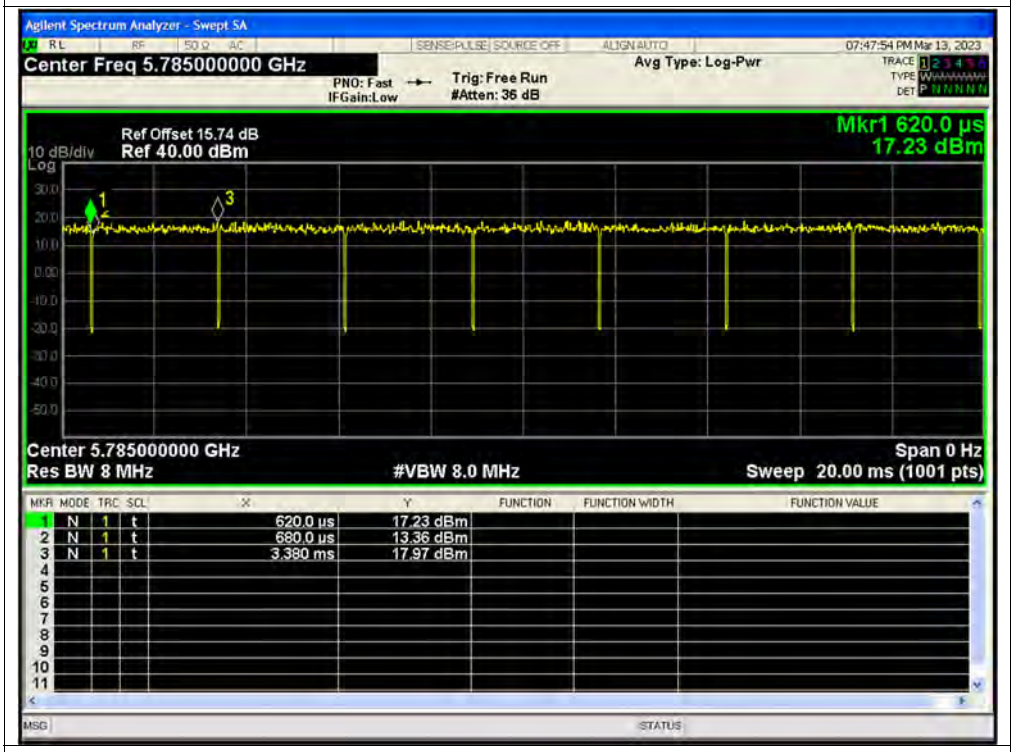
Duty Cycle NVNT a 5240MHz Ant1



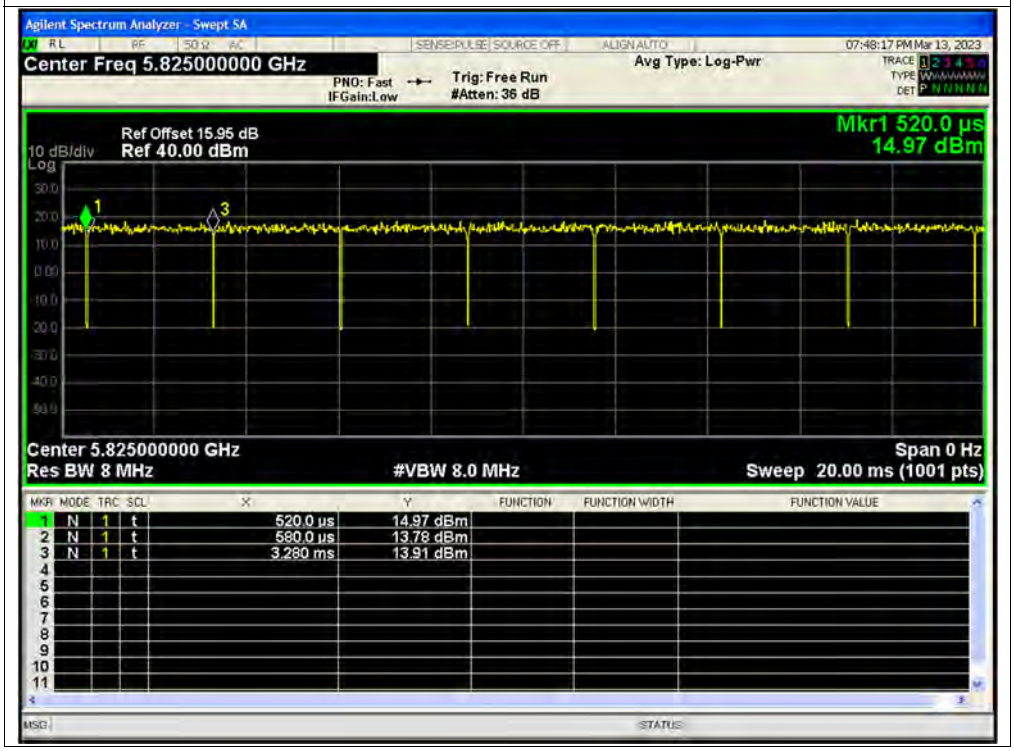
Duty Cycle NVNT a 5745MHz Ant1



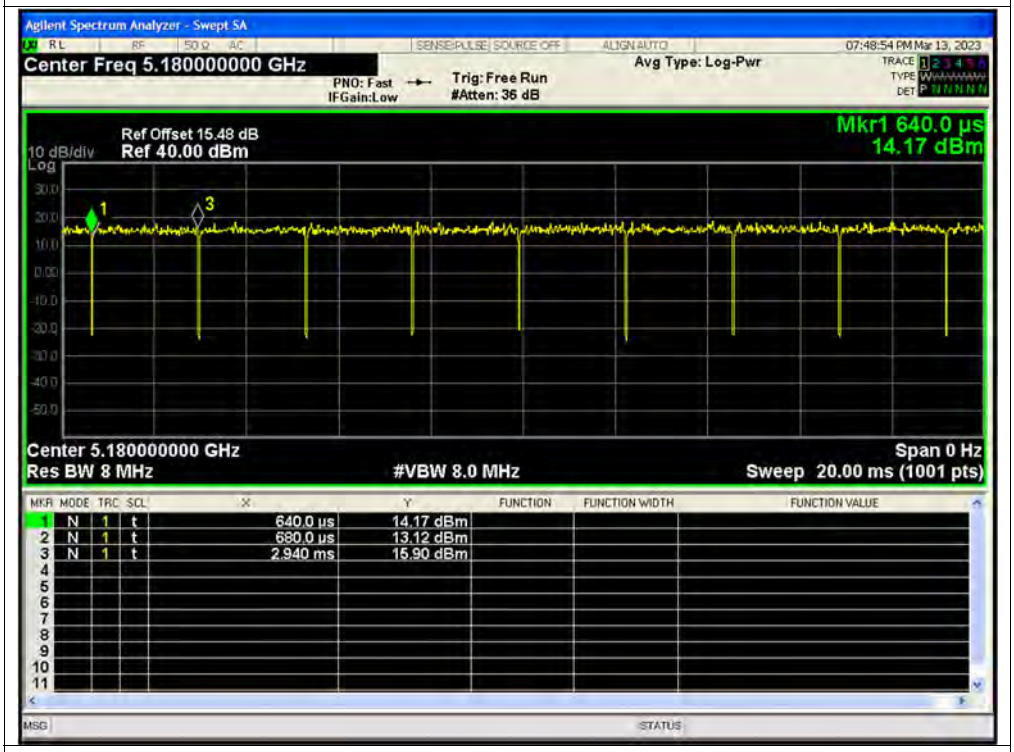
Duty Cycle NVNT a 5785MHz Ant1



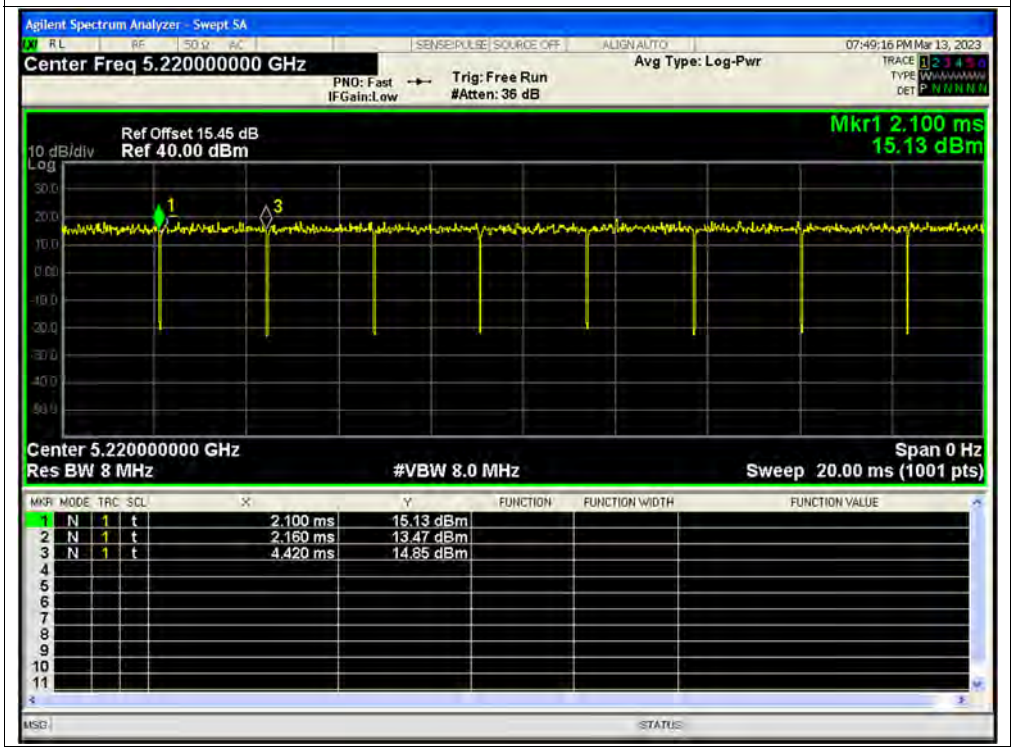
Duty Cycle NVNT a 5825MHz Ant1



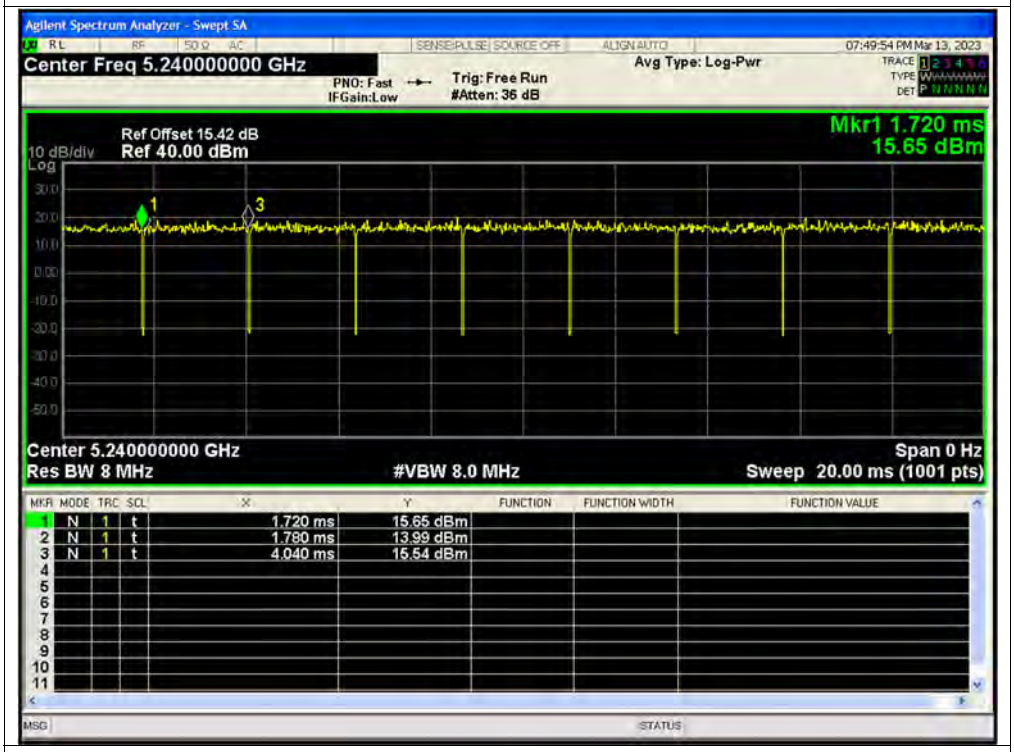
Duty Cycle NVNT n20 5180MHz Ant1



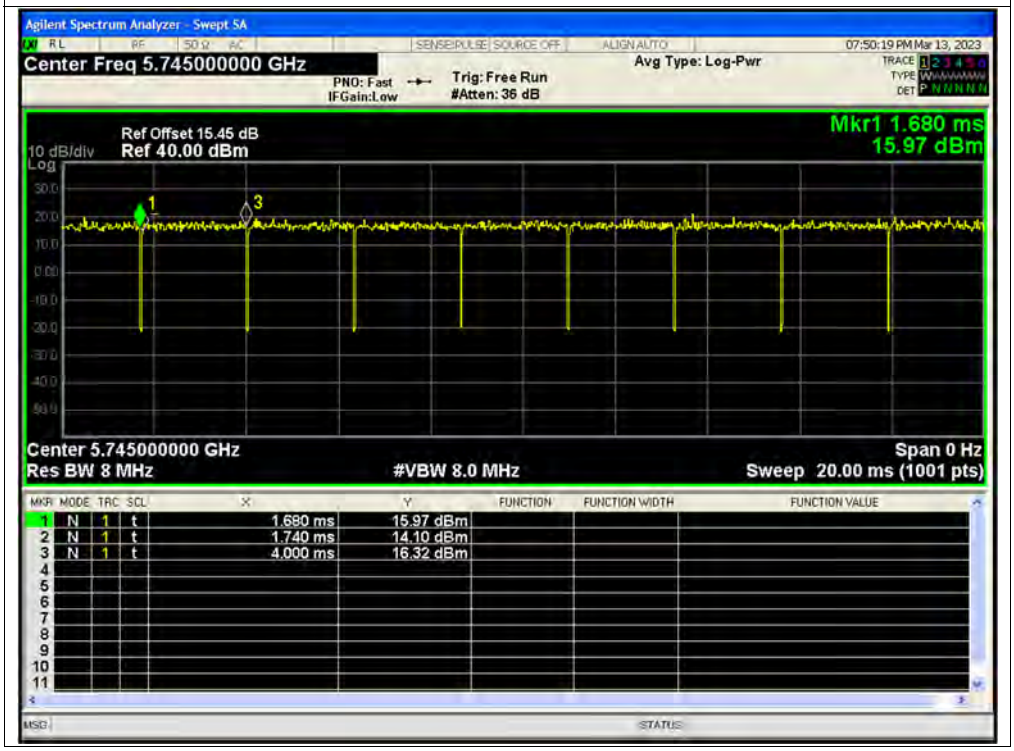
Duty Cycle NVNT n20 5220MHz Ant1



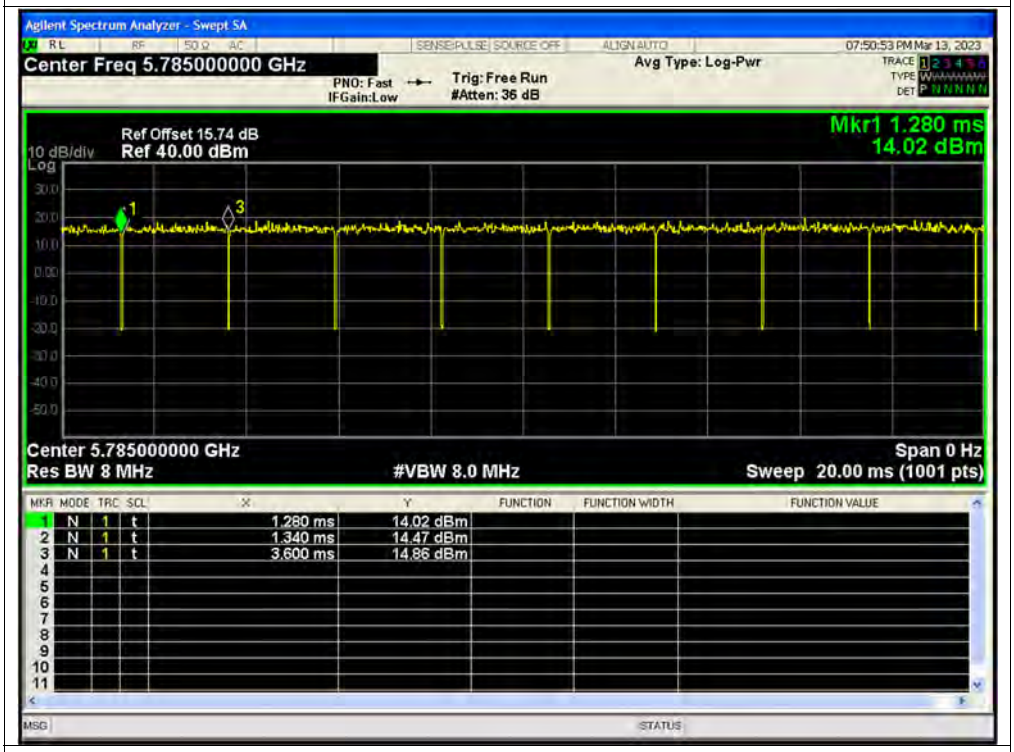
Duty Cycle NVNT n20 5240MHz Ant1



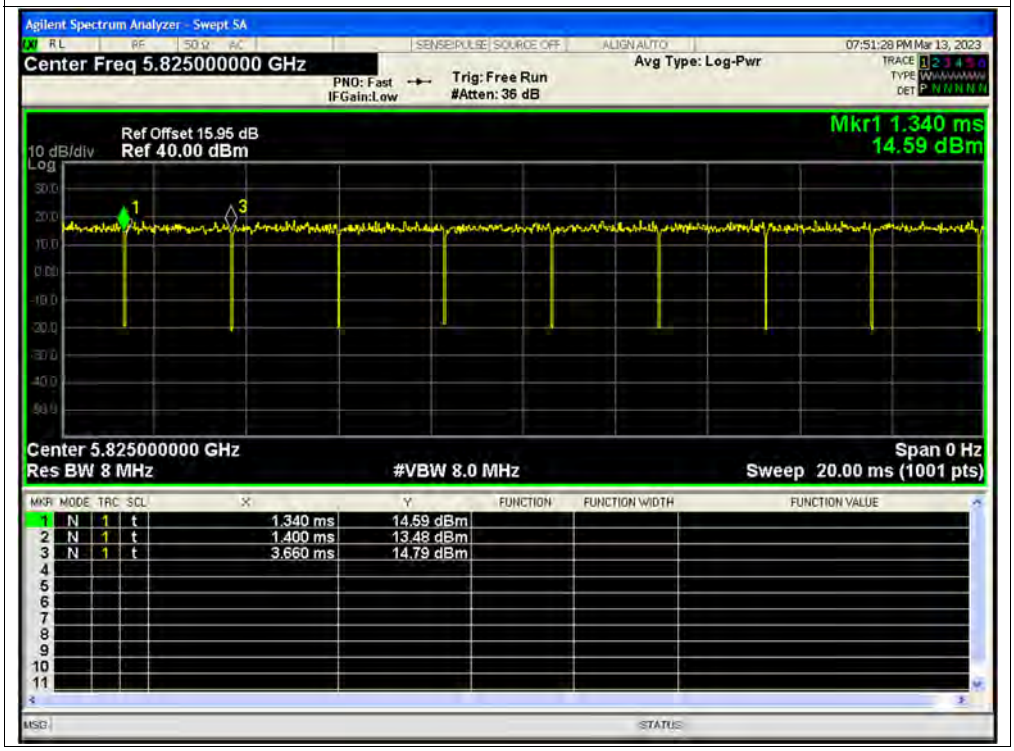
Duty Cycle NVNT n20 5745MHz Ant1



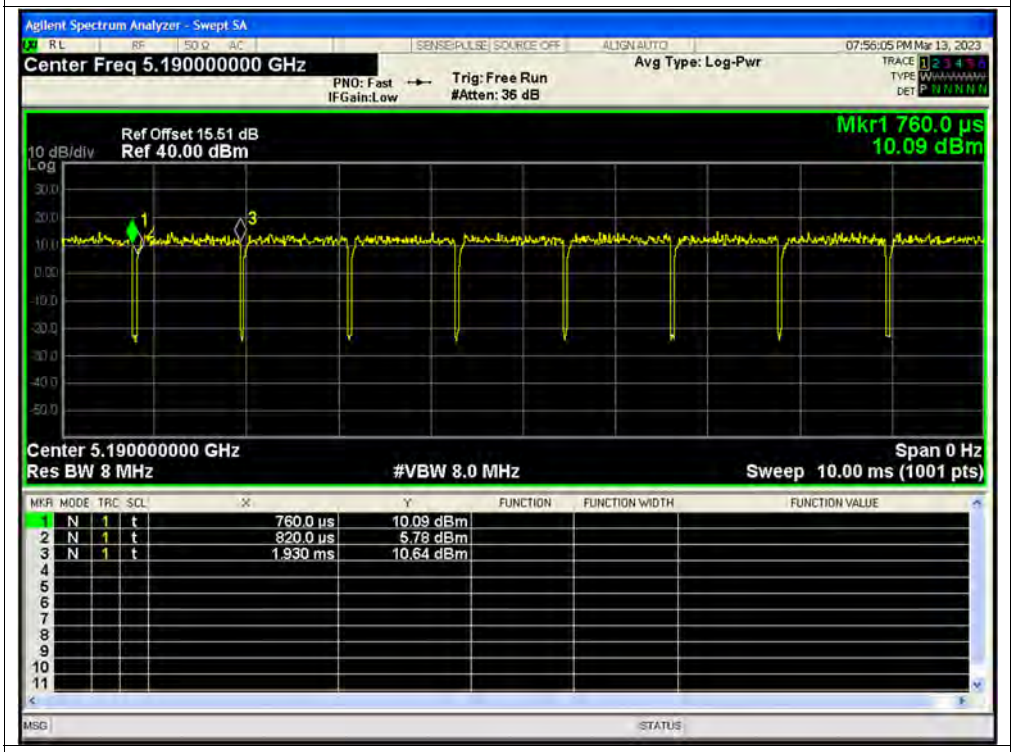
Duty Cycle NVNT n20 5785MHz Ant1



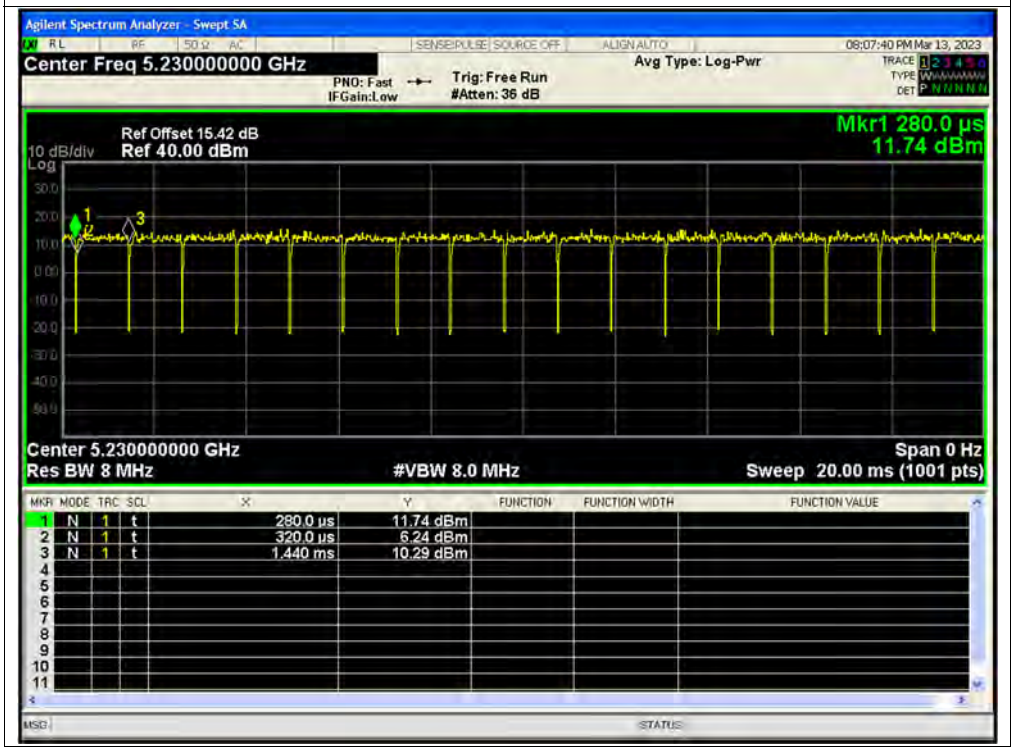
Duty Cycle NVNT n20 5825MHz Ant1



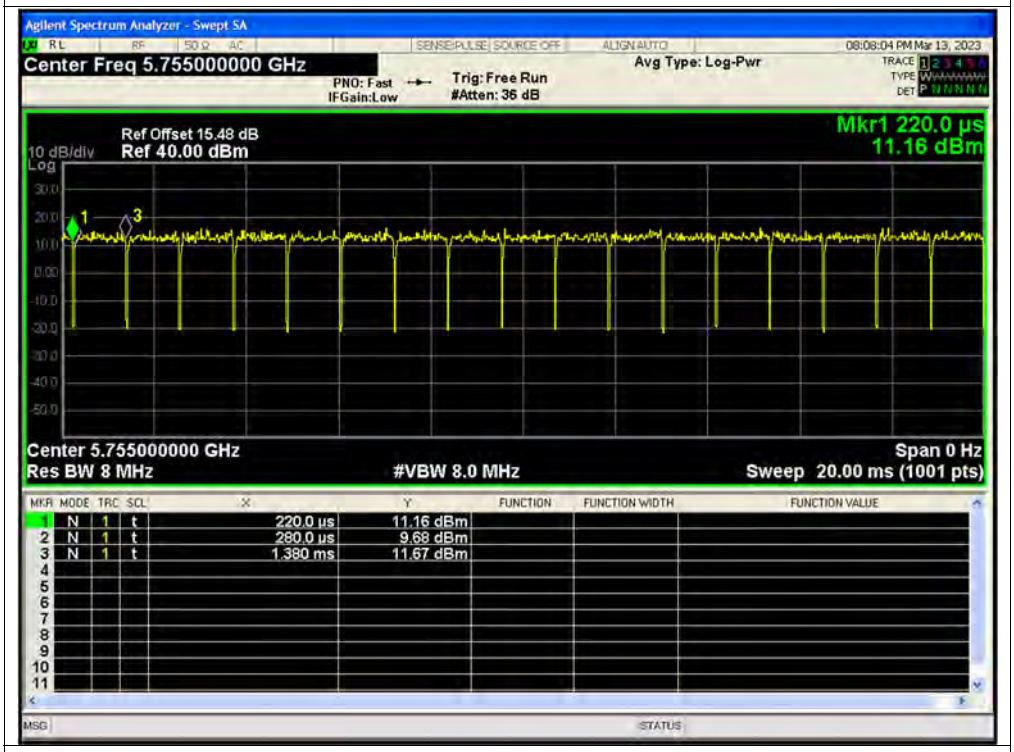
Duty Cycle NVNT n40 5190MHz Ant1



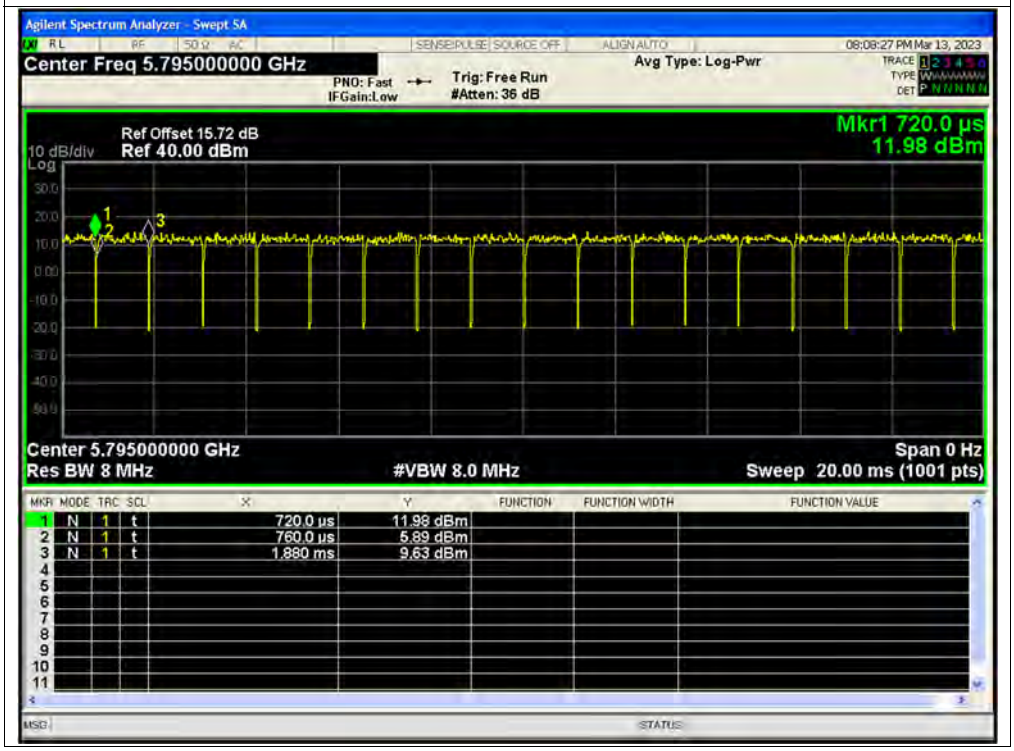
Duty Cycle NVNT n40 5230MHz Ant1



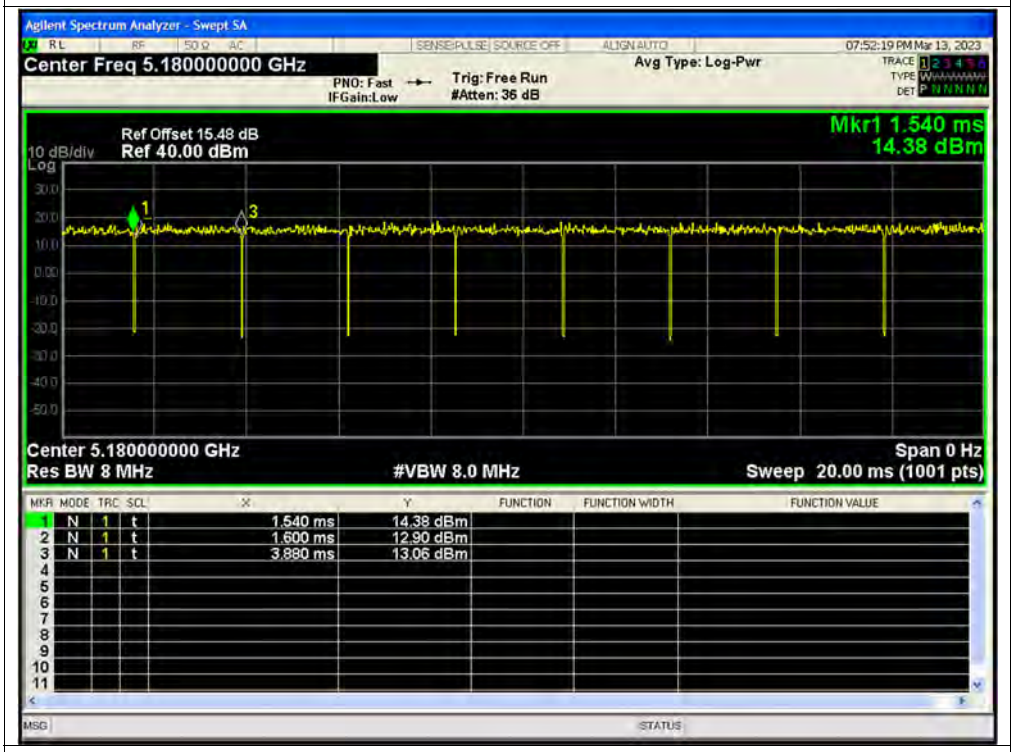
Duty Cycle NVNT n40 5755MHz Ant1



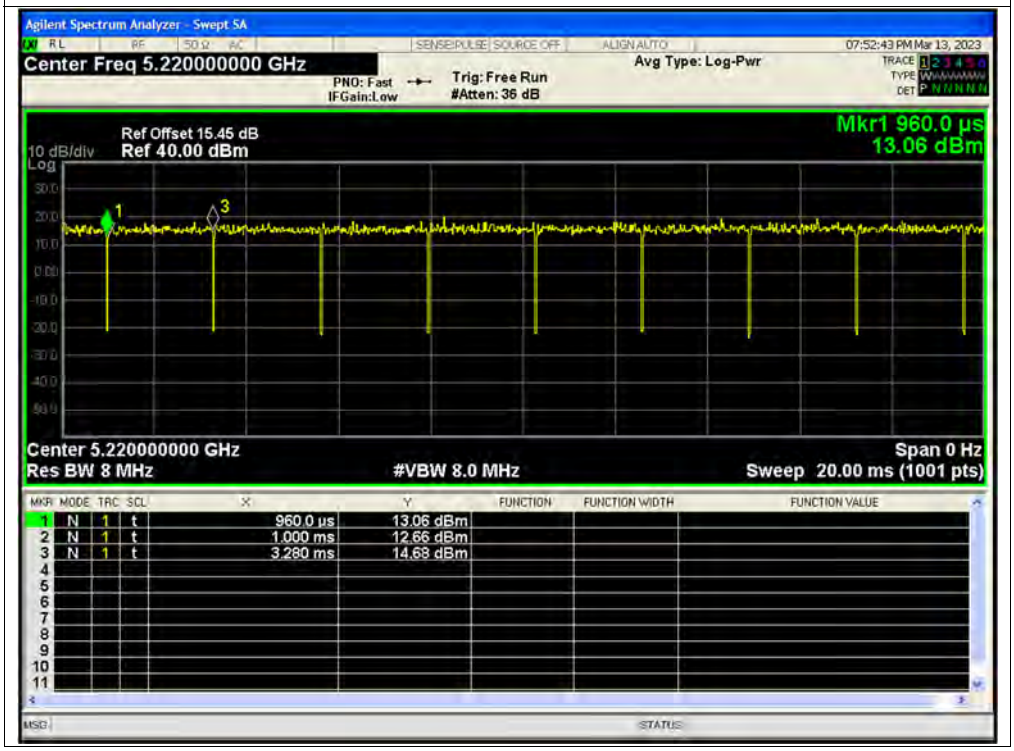
Duty Cycle NVNT n40 5795MHz Ant1



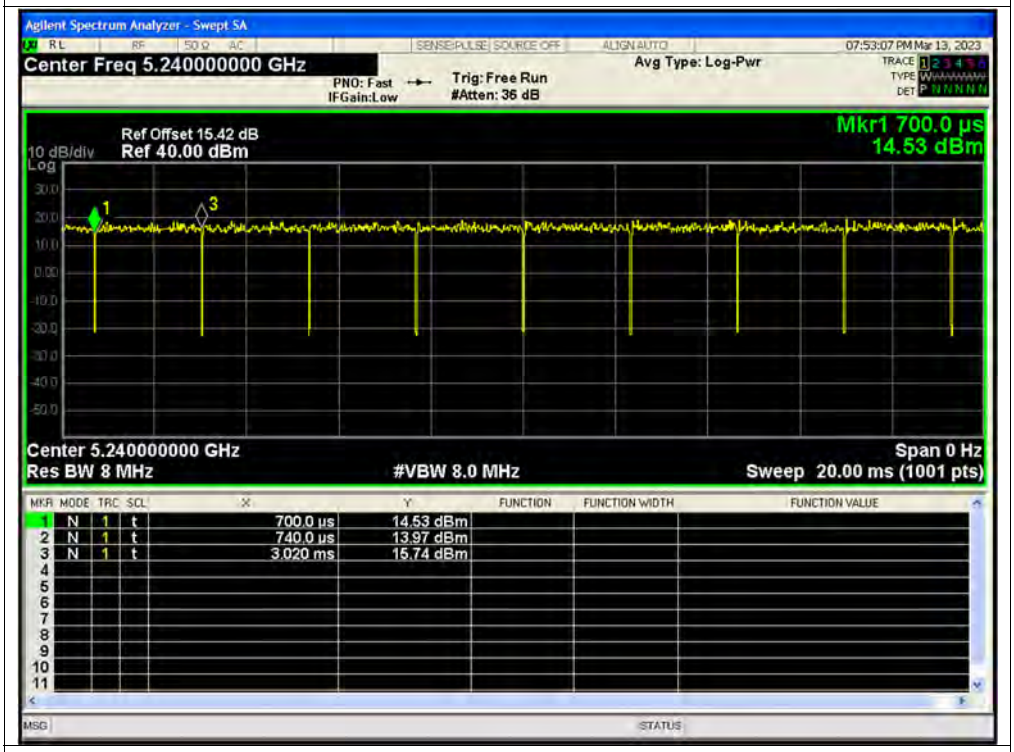
Duty Cycle NVNT ac20 5180MHz Ant1



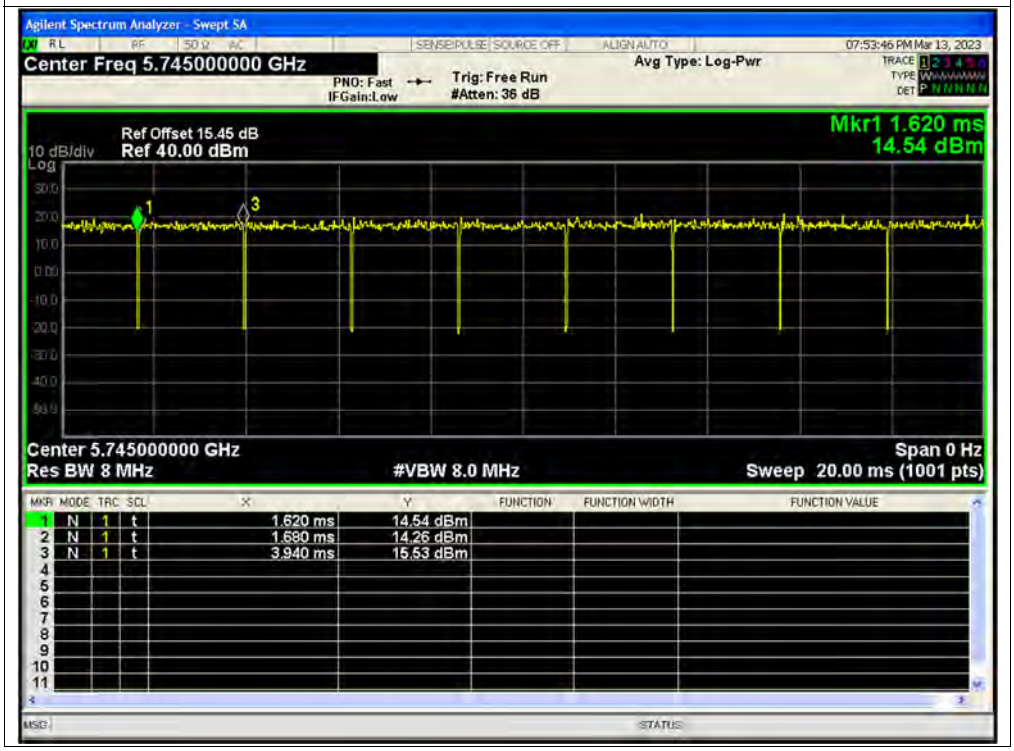
Duty Cycle NVNT ac20 5220MHz Ant1



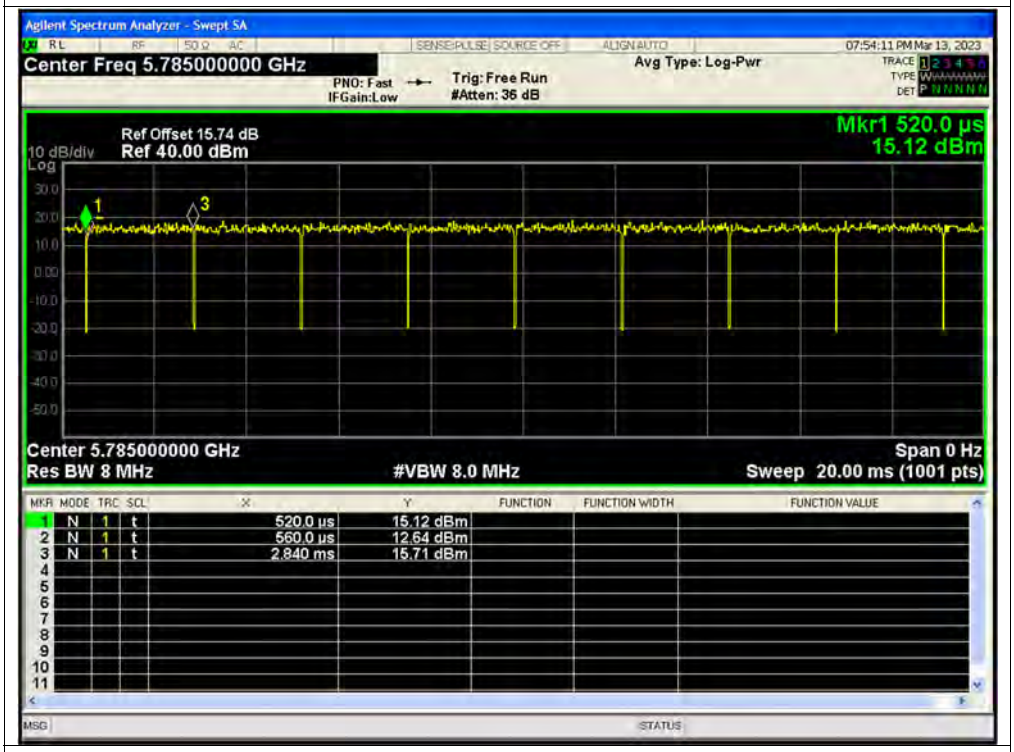
Duty Cycle NVNT ac20 5240MHz Ant1



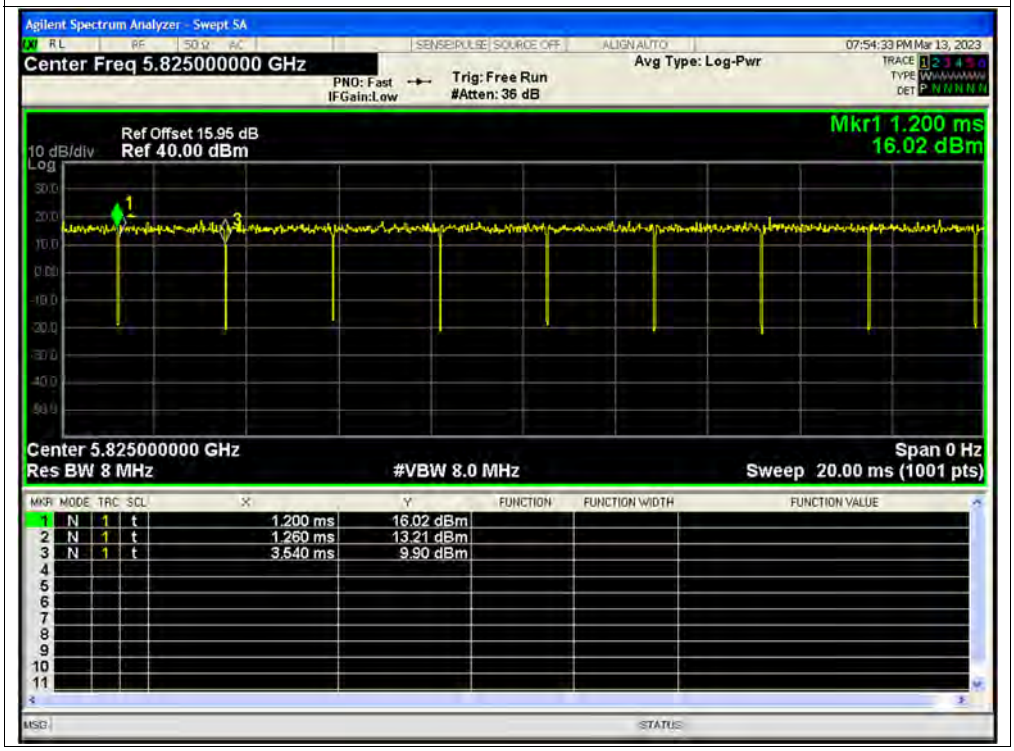
Duty Cycle NVNT ac20 5745MHz Ant1



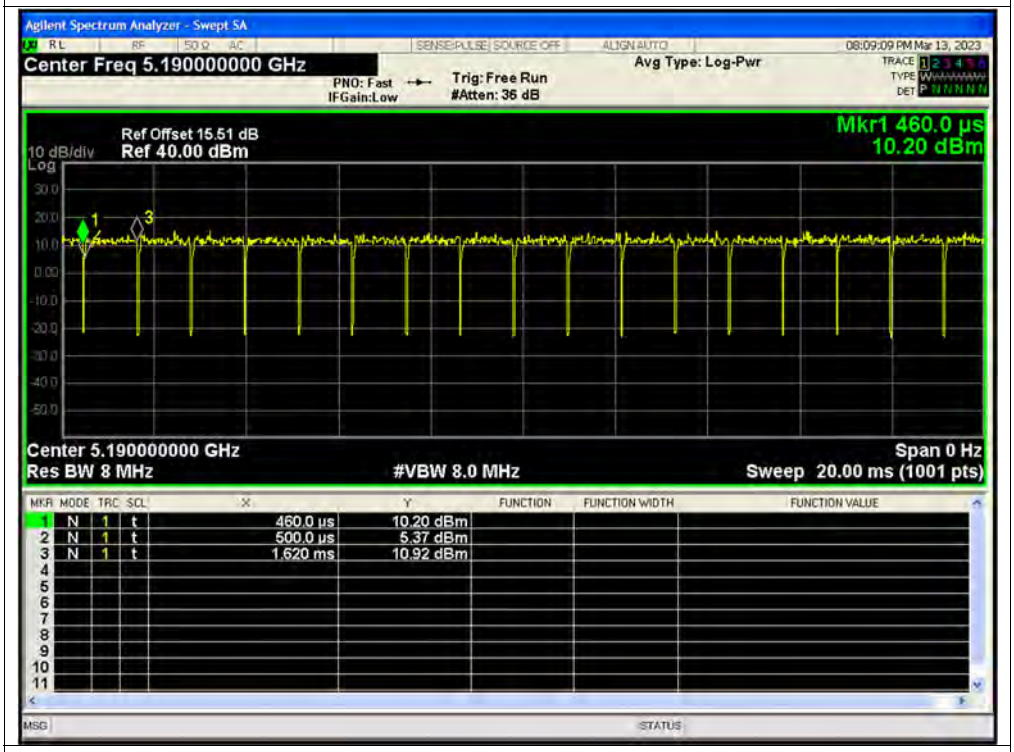
Duty Cycle NVNT ac20 5785MHz Ant1



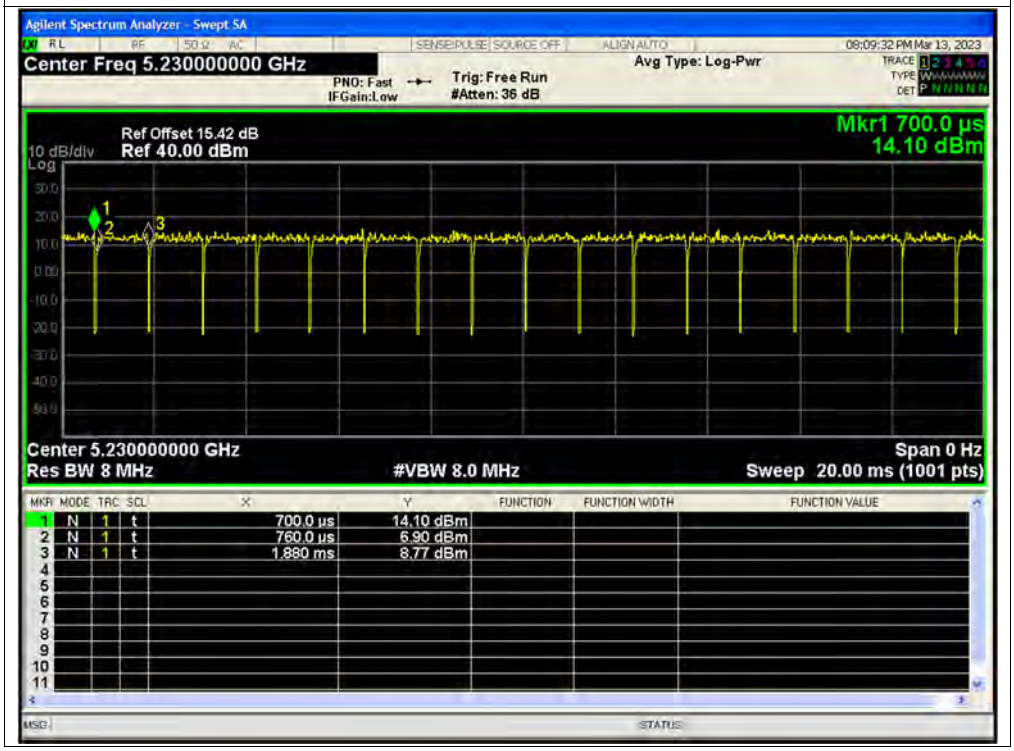
Duty Cycle NVNT ac20 5825MHz Ant1



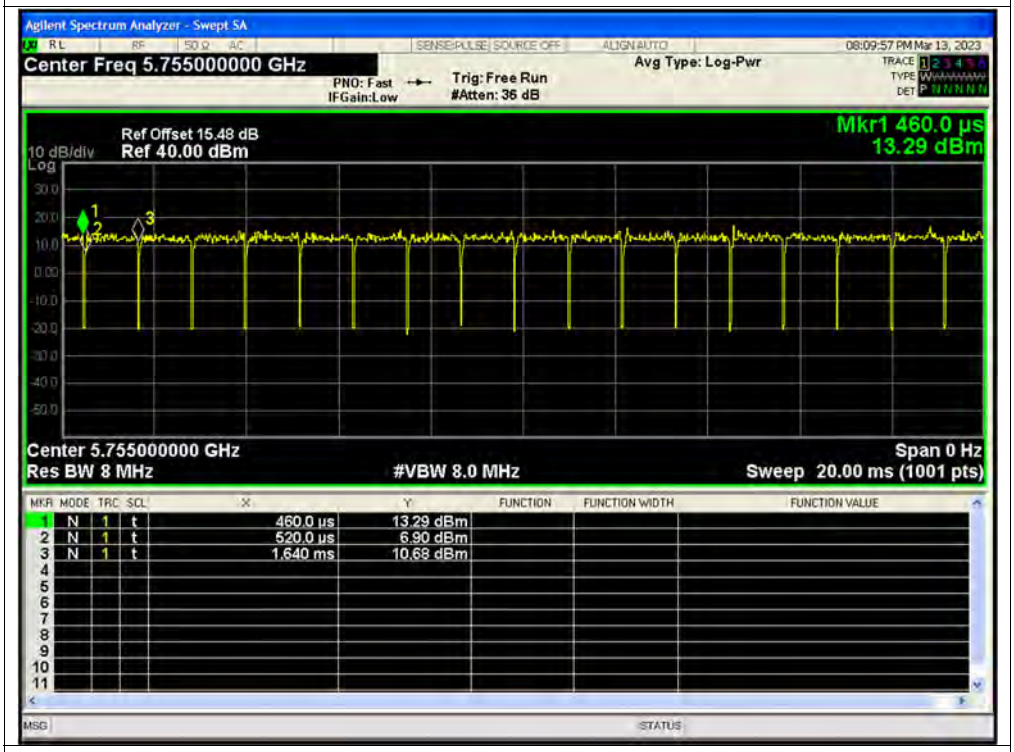
Duty Cycle NVNT ac40 5190MHz Ant1



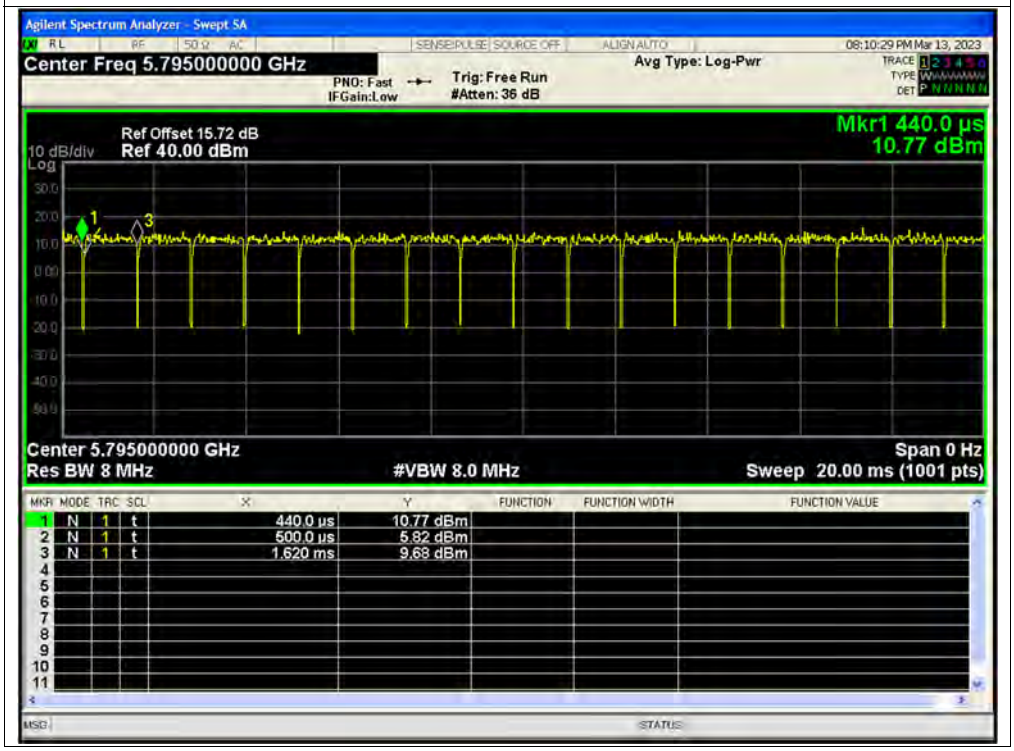
Duty Cycle NVNT ac40 5230MHz Ant1



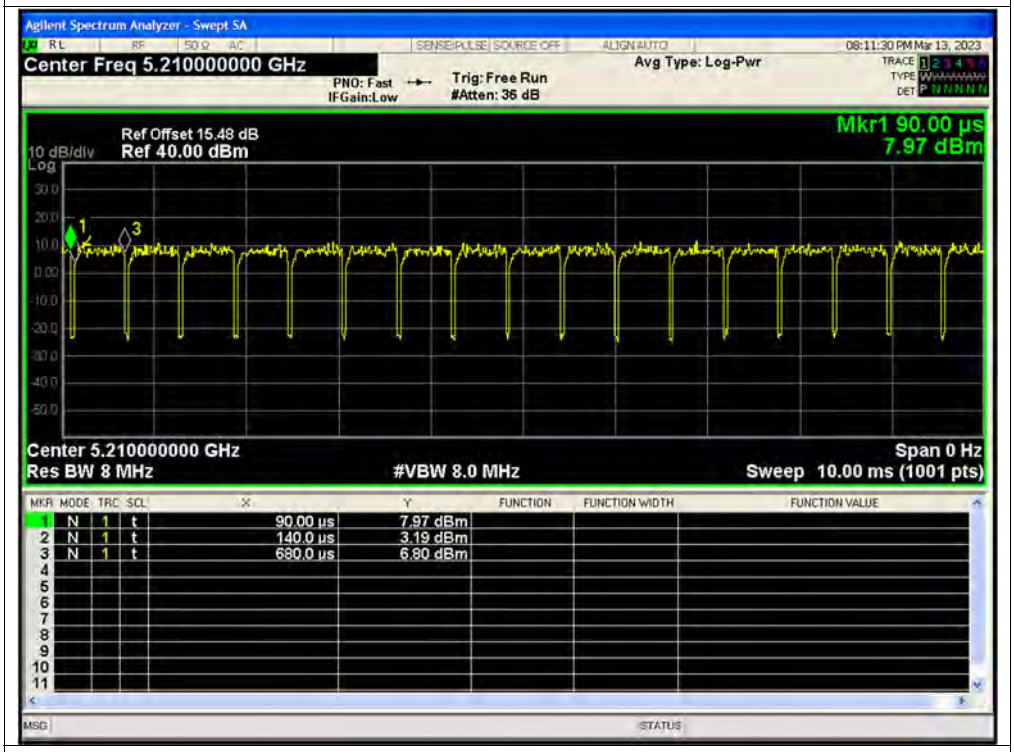
Duty Cycle NVNT ac40 5755MHz Ant1



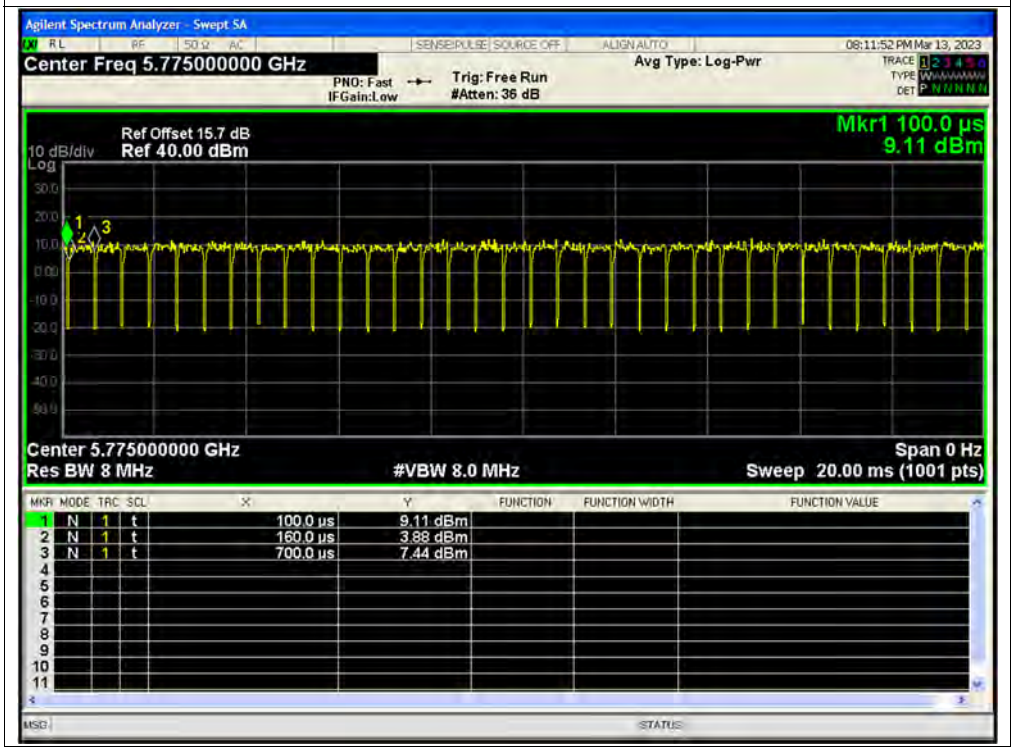
Duty Cycle NVNT ac40 5795MHz Ant1



Duty Cycle NVNT ac80 5210MHz Ant1



Duty Cycle NVNT ac80 5775MHz Ant1



A.2. Maximum Conducted Output Power

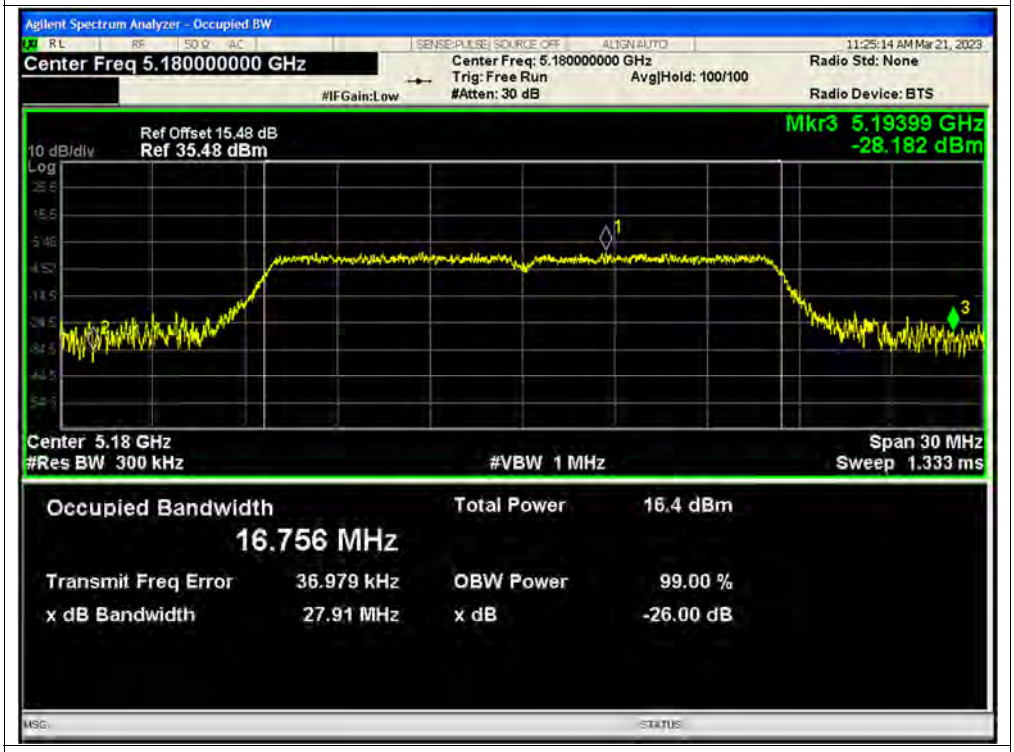
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	12.13	0	12.13	24	Pass
NVNT	a	5220	Ant1	12.57	0	12.57	24	Pass
NVNT	a	5240	Ant1	12.83	0	12.83	24	Pass
NVNT	a	5745	Ant1	12.47	0	13.47	30	Pass
NVNT	a	5785	Ant1	11.29	0	12.29	30	Pass
NVNT	a	5825	Ant1	10.83	0	11.83	30	Pass
NVNT	n20	5180	Ant1	13.1	0	13.1	24	Pass
NVNT	n20	5220	Ant1	12.42	0	12.42	24	Pass
NVNT	n20	5240	Ant1	12.6	0	12.6	24	Pass
NVNT	n20	5745	Ant1	12.78	0	13.78	30	Pass
NVNT	n20	5785	Ant1	11.61	0	12.61	30	Pass
NVNT	n20	5825	Ant1	11.35	0	12.35	30	Pass
NVNT	n40	5190	Ant1	12.86	0	12.86	24	Pass
NVNT	n40	5230	Ant1	12.51	0	12.51	24	Pass
NVNT	n40	5755	Ant1	12.58	0	13.6	30	Pass
NVNT	n40	5795	Ant1	11.59	0	12.21	30	Pass
NVNT	ac20	5180	Ant1	13.08	0	13.08	24	Pass
NVNT	ac20	5220	Ant1	12.9	0	12.9	24	Pass
NVNT	ac20	5240	Ant1	13.11	0	13.11	24	Pass
NVNT	ac20	5745	Ant1	12.81	0	13.81	30	Pass
NVNT	ac20	5785	Ant1	11.60	0	12.6	30	Pass
NVNT	ac20	5825	Ant1	11.12	0	12.12	30	Pass
NVNT	ac40	5190	Ant1	12.77	0	12.77	24	Pass
NVNT	ac40	5230	Ant1	12.48	0	12.48	24	Pass
NVNT	ac40	5755	Ant1	12.58	0	13.58	30	Pass
NVNT	ac40	5795	Ant1	11.59	0	12.59	30	Pass
NVNT	ac80	5210	Ant1	12.18	0	12.18	24	Pass
NVNT	ac80	5775	Ant1	1214	0	13.14	30	Pass

A.3. Emission Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)
NVNT	a	5180	Ant1	27.907
NVNT	a	5220	Ant1	27.848
NVNT	a	5240	Ant1	28.506
NVNT	n20	5180	Ant1	27.058
NVNT	n20	5220	Ant1	27.958
NVNT	n20	5240	Ant1	29.129
NVNT	n40	5190	Ant1	46.879
NVNT	n40	5230	Ant1	42.586
NVNT	ac20	5180	Ant1	28.794
NVNT	ac20	5220	Ant1	27.837
NVNT	ac20	5240	Ant1	26.045
NVNT	ac40	5190	Ant1	50.037
NVNT	ac40	5230	Ant1	45.414
NVNT	ac80	5210	Ant1	85.093

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	a	5745	Ant1	16.377	0.5	Pass
NVNT	a	5785	Ant1	16.336	0.5	Pass
NVNT	a	5825	Ant1	16.362	0.5	Pass
NVNT	n20	5745	Ant1	17.386	0.5	Pass
NVNT	n20	5785	Ant1	17.245	0.5	Pass
NVNT	n20	5825	Ant1	17.415	0.5	Pass
NVNT	n40	5755	Ant1	36.3	0.5	Pass
NVNT	n40	5795	Ant1	36.225	0.5	Pass
NVNT	ac20	5745	Ant1	17.542	0.5	Pass
NVNT	ac20	5785	Ant1	17.148	0.5	Pass
NVNT	ac20	5825	Ant1	17.419	0.5	Pass
NVNT	ac40	5755	Ant1	36.444	0.5	Pass
NVNT	ac40	5795	Ant1	36.374	0.5	Pass
NVNT	ac80	5775	Ant1	76.094	0.5	Pass

Test Graphs
-26dB Bandwidth NVNT a 5180MHz Ant1

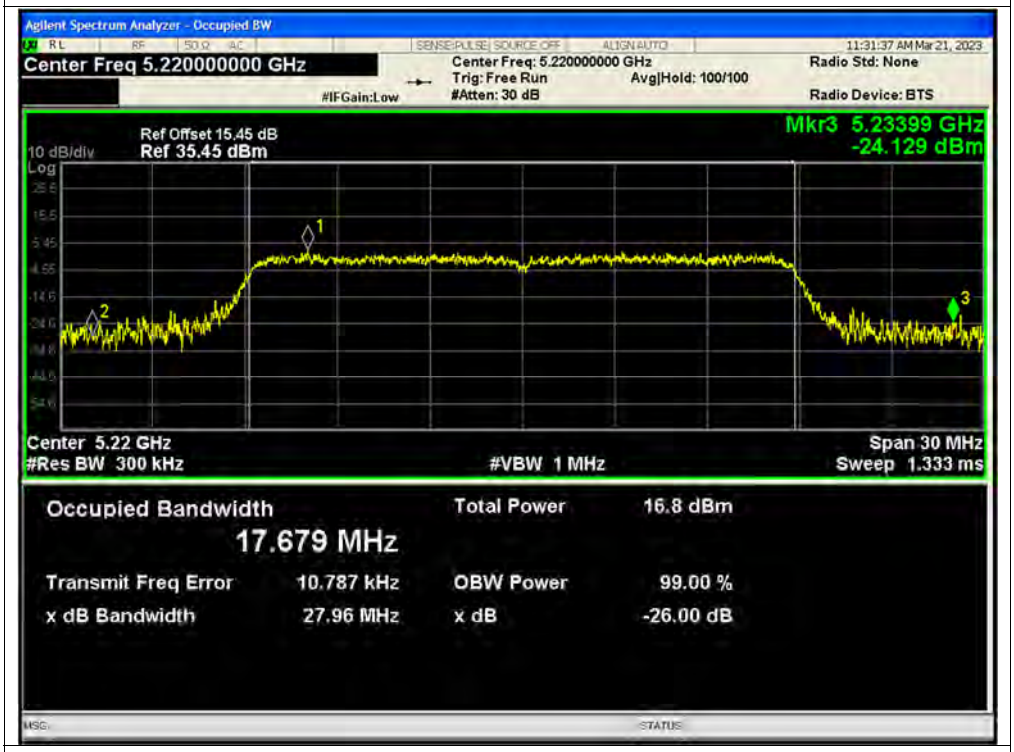


-26dB Bandwidth NVNT a 5220MHz Ant1

-26dB Bandwidth NVNT a 5240MHz Ant1

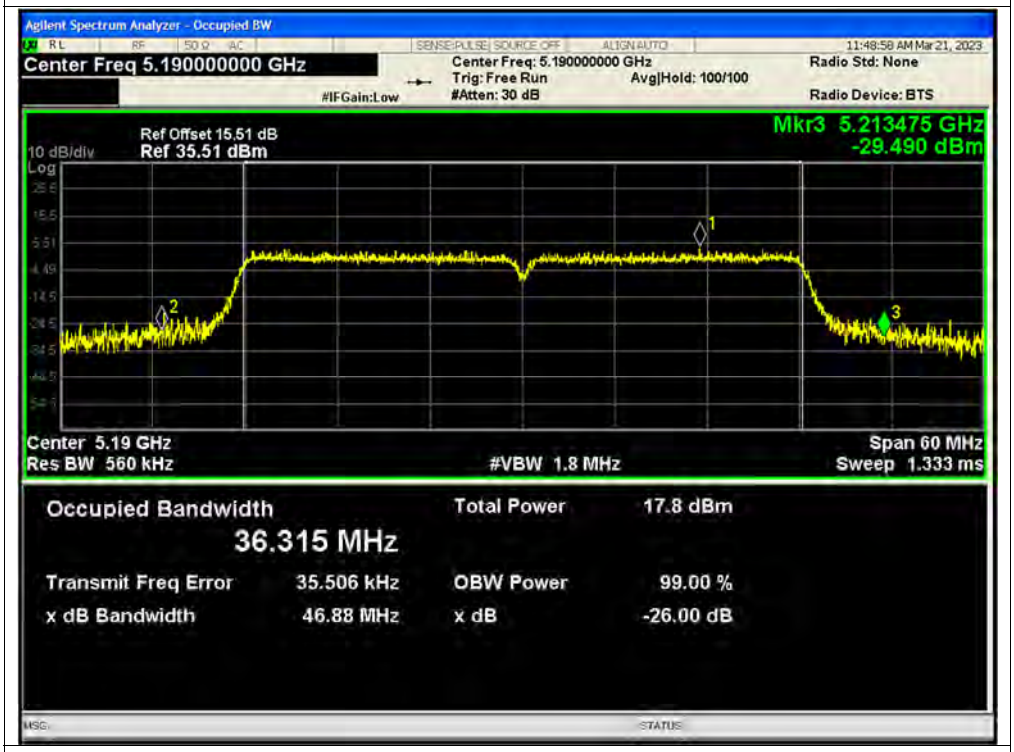
-26dB Bandwidth NVNT n20 5180MHz Ant1

-26dB Bandwidth NVNT n20 5220MHz Ant1



-26dB Bandwidth NVNT n20 5240MHz Ant1

-26dB Bandwidth NVNT n40 5190MHz Ant1

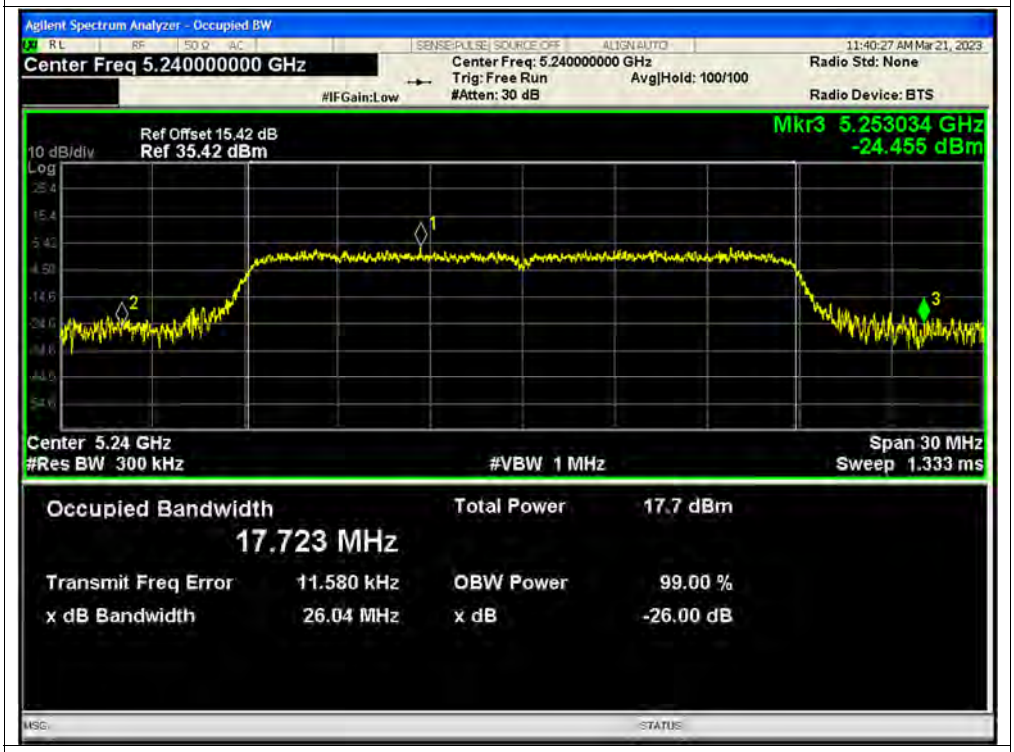


-26dB Bandwidth NVNT n40 5230MHz Ant1

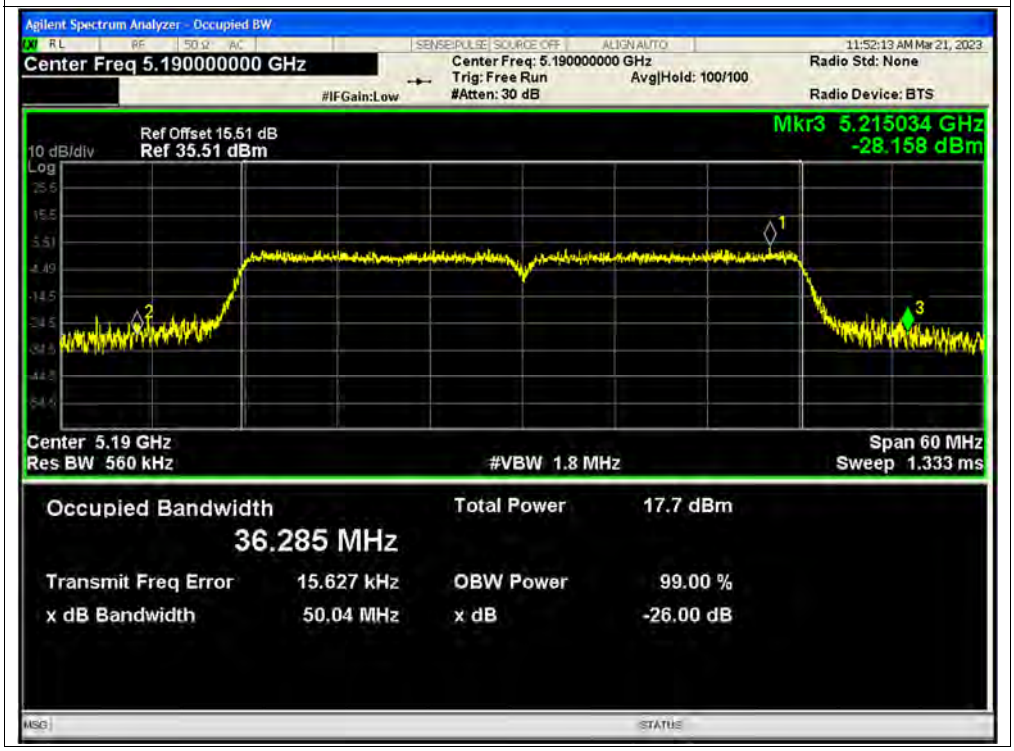
-26dB Bandwidth NVNT ac20 5180MHz Ant1

-26dB Bandwidth NVNT ac20 5220MHz Ant1

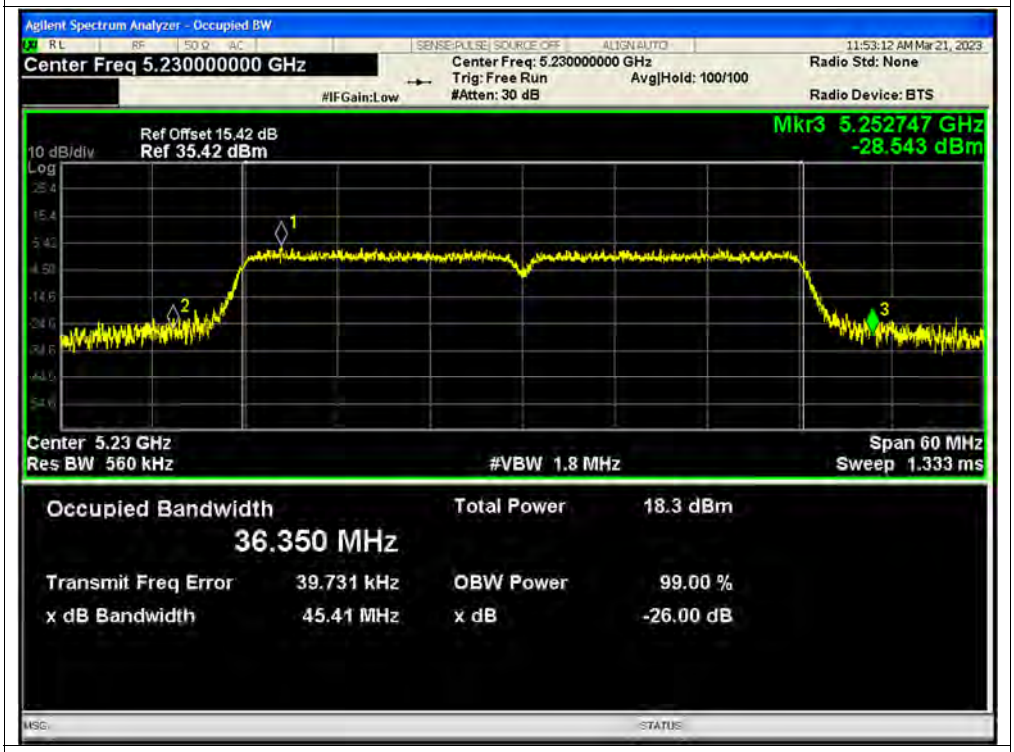
-26dB Bandwidth NVNT ac20 5240MHz Ant1



-26dB Bandwidth NVNT ac40 5190MHz Ant1

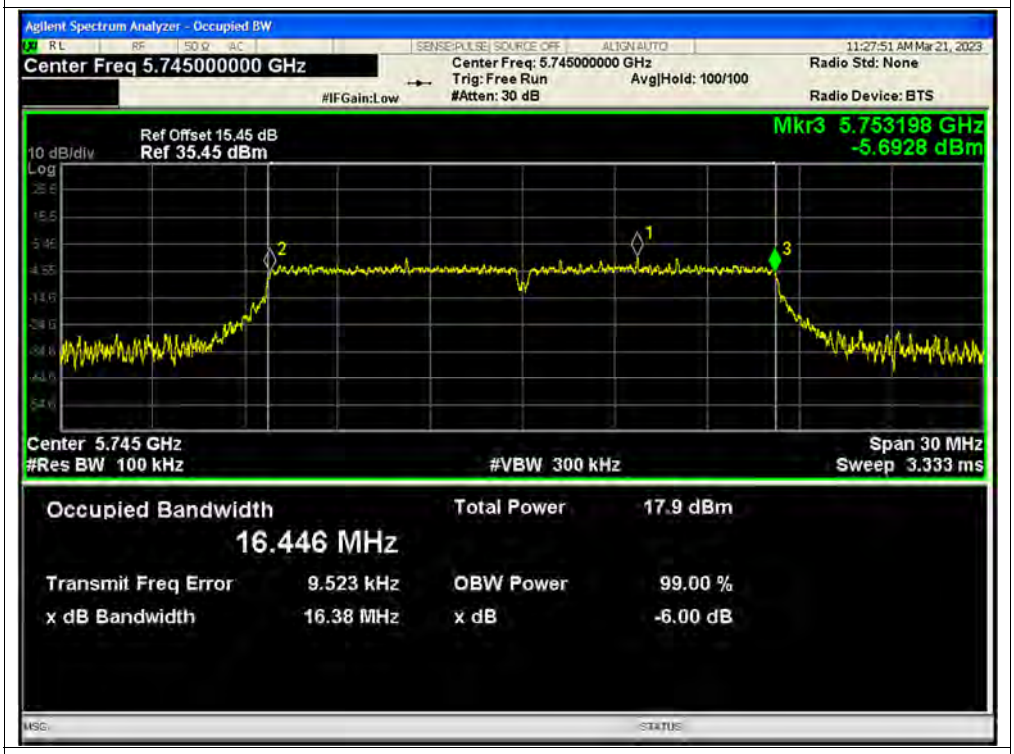


-26dB Bandwidth NVNT ac40 5230MHz Ant1



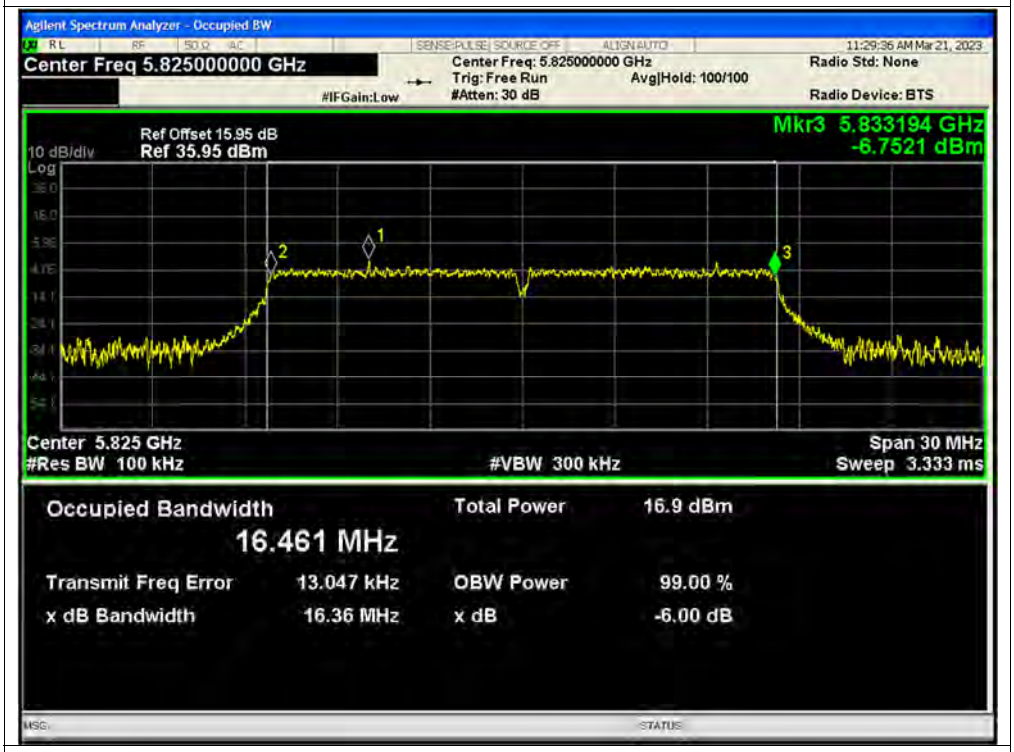
-26dB Bandwidth NVNT ac80 5210MHz Ant1

Test Graphs
-6dB Bandwidth NVNT a 5745MHz Ant1



-6dB Bandwidth NVNT a 5785MHz Ant1

-6dB Bandwidth NVNT a 5825MHz Ant1

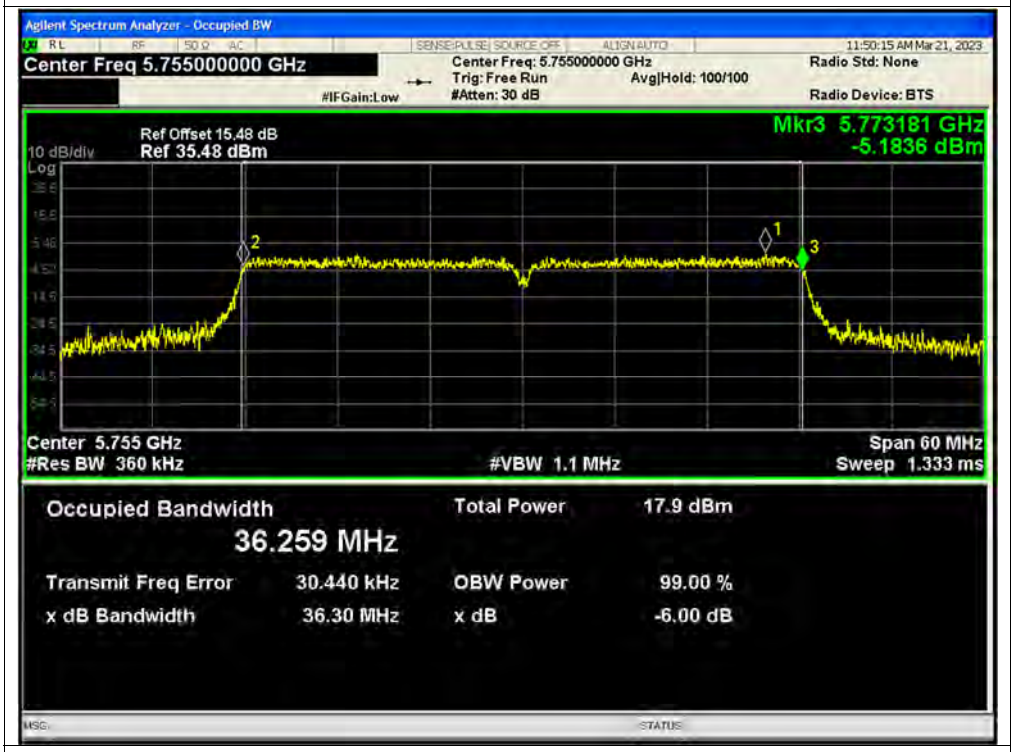


-6dB Bandwidth NVNT n20 5745MHz Ant1

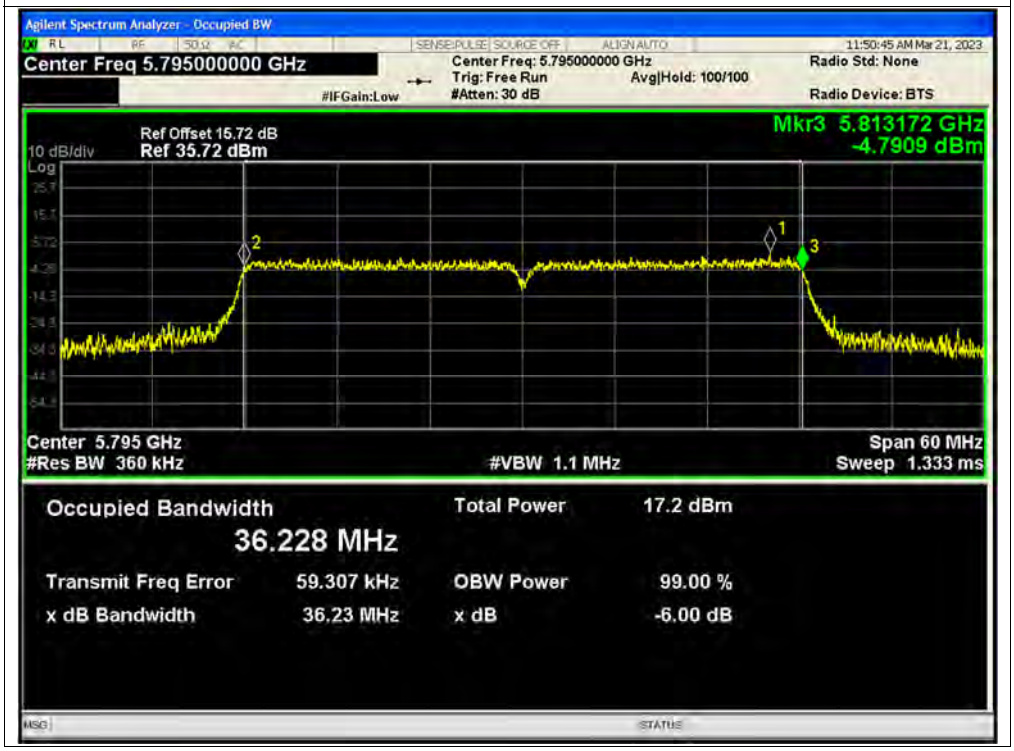
-6dB Bandwidth NVNT n20 5785MHz Ant1

-6dB Bandwidth NVNT n20 5825MHz Ant1

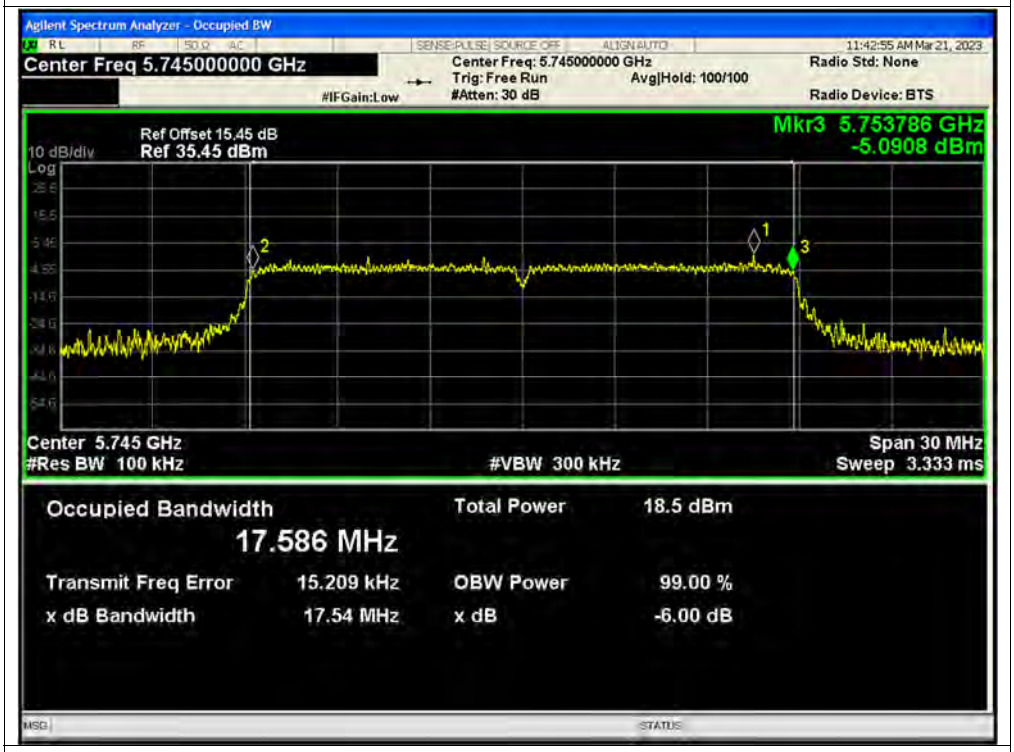
-6dB Bandwidth NVNT n40 5755MHz Ant1



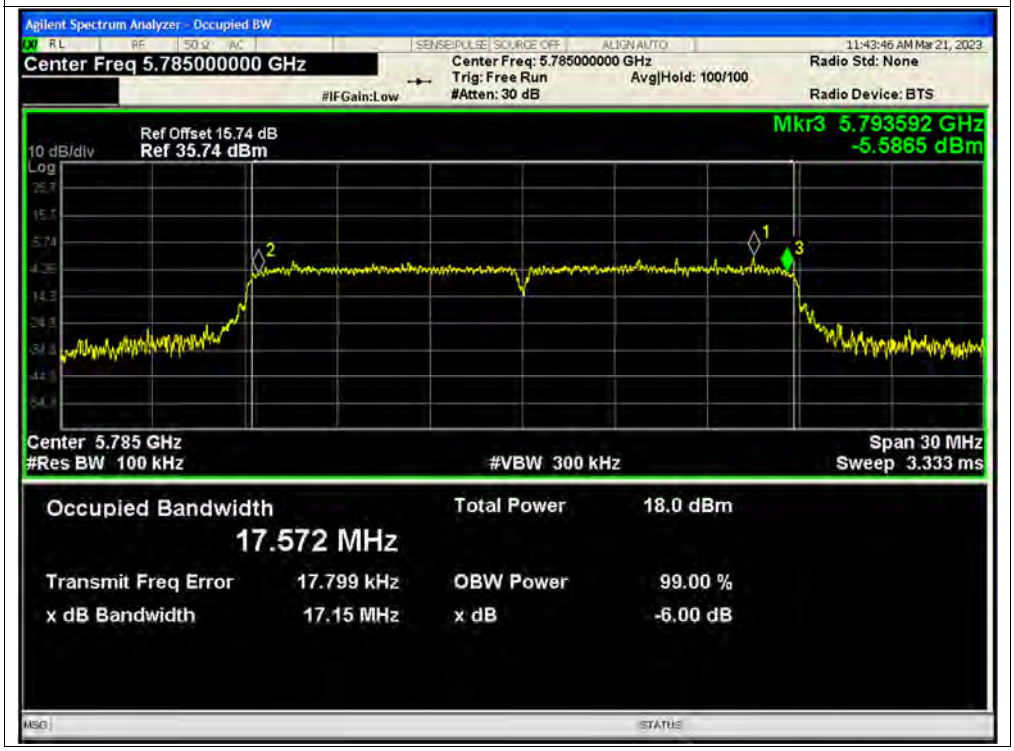
-6dB Bandwidth NVNT n40 5795MHz Ant1



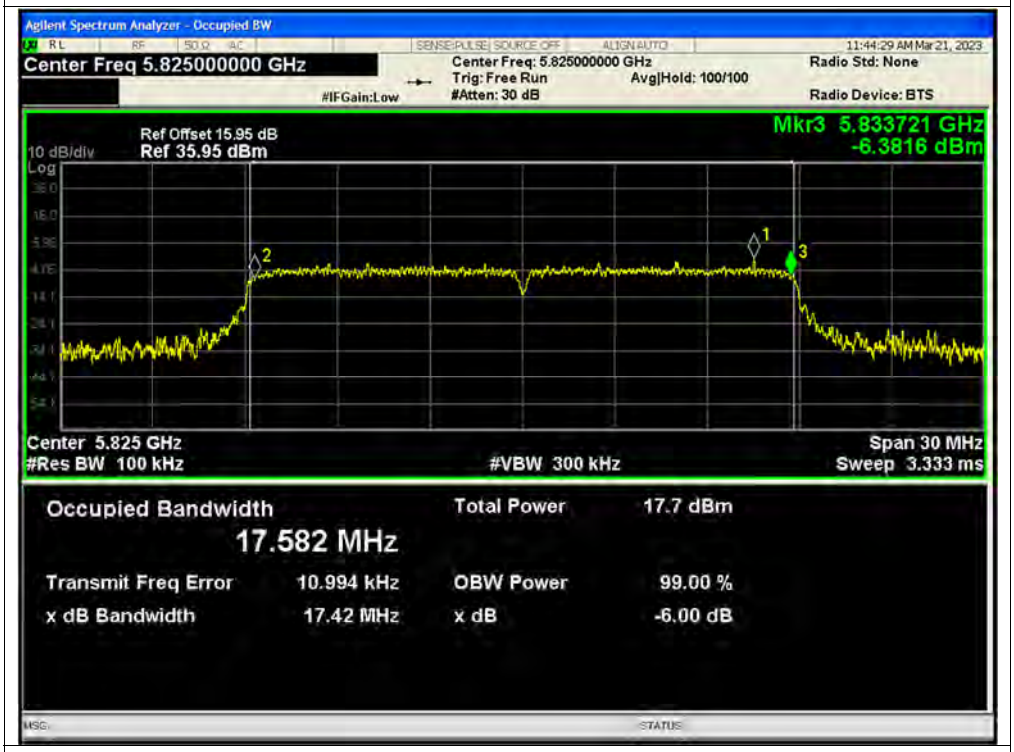
-6dB Bandwidth NVNT ac20 5745MHz Ant1



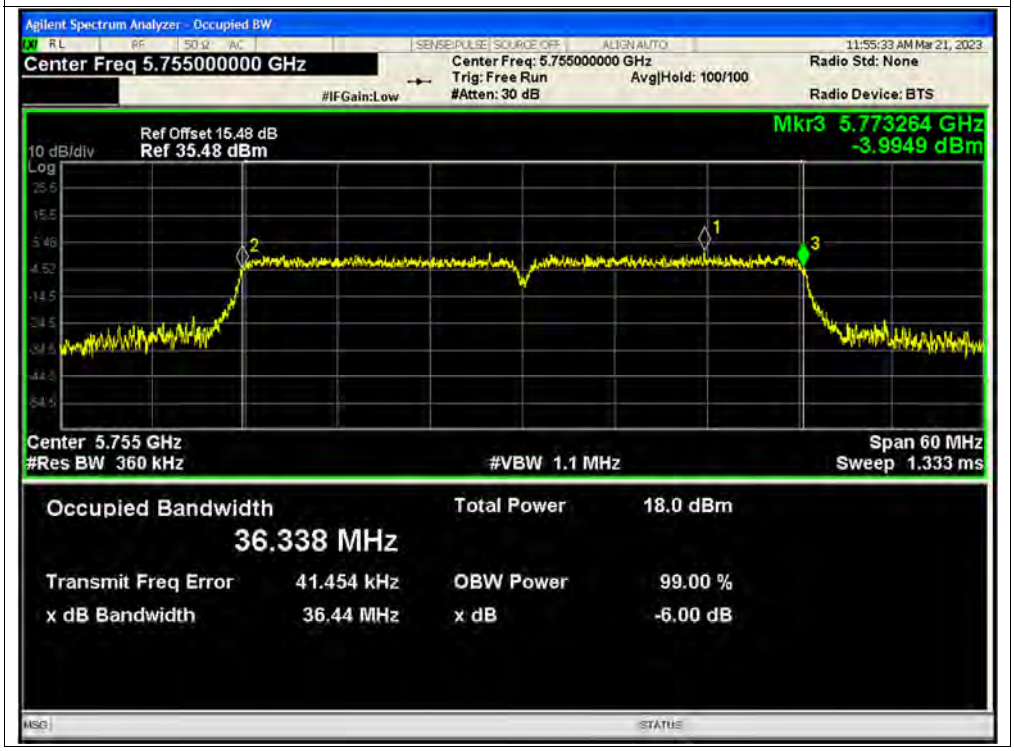
-6dB Bandwidth NVNT ac20 5785MHz Ant1



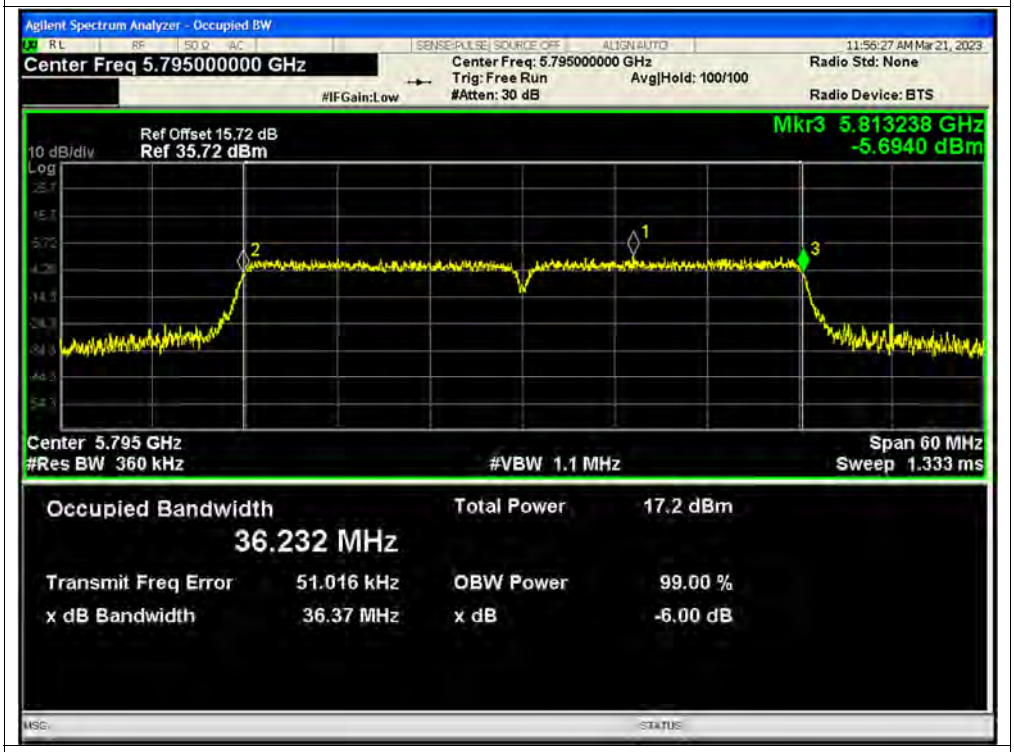
-6dB Bandwidth NVNT ac20 5825MHz Ant1



-6dB Bandwidth NVNT ac40 5755MHz Ant1



-6dB Bandwidth NVNT ac40 5795MHz Ant1



-6dB Bandwidth NVNT ac80 5775MHz Ant1

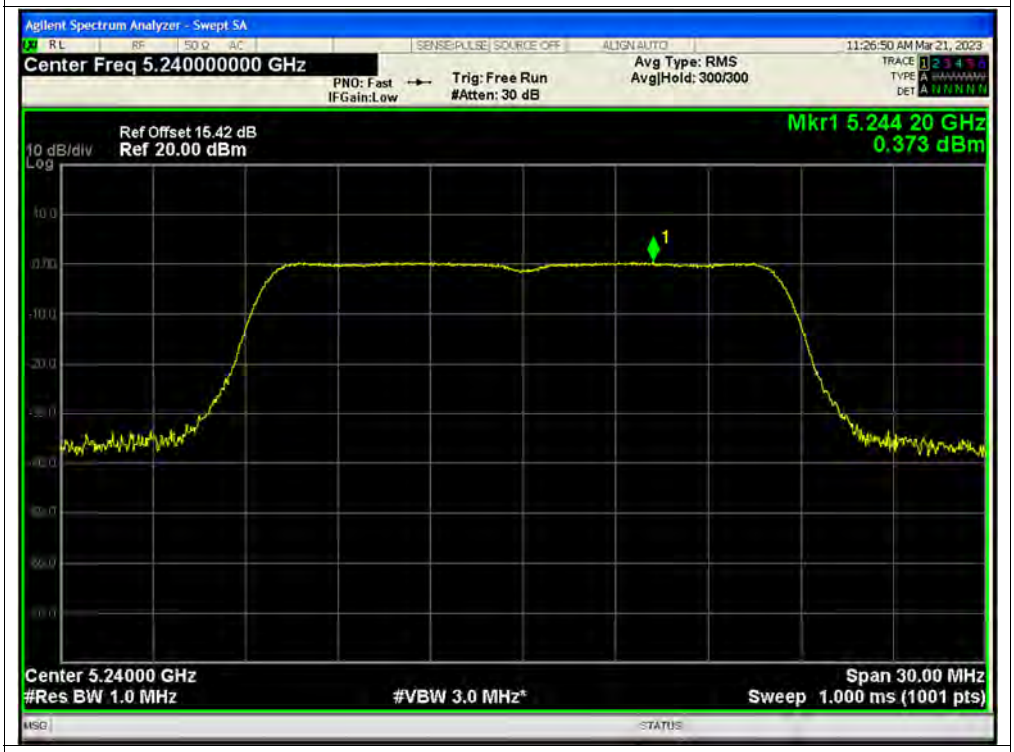
A.4. Peak Power Spectral Density

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	-0.13	0.06	-0.07	11	Pass
NVNT	a	5220	Ant1	-0.1	0.06	-0.04	11	Pass
NVNT	a	5240	Ant1	0.37	0.06	0.43	11	Pass
NVNT	a	5745	Ant1	-1.88	0.1	-1.78	30	Pass
NVNT	a	5785	Ant1	-2.67	0.1	-2.57	30	Pass
NVNT	a	5825	Ant1	-2.96	0.1	-2.86	30	Pass
NVNT	n20	5180	Ant1	-0.21	0.08	-0.13	11	Pass
NVNT	n20	5220	Ant1	0.01	0.11	0.12	11	Pass
NVNT	n20	5240	Ant1	0.75	0.11	0.86	11	Pass
NVNT	n20	5745	Ant1	-1.75	0.11	-1.64	30	Pass
NVNT	n20	5785	Ant1	-2.36	0.11	-2.25	30	Pass
NVNT	n20	5825	Ant1	-2.4	0.11	-2.29	30	Pass
NVNT	n40	5190	Ant1	-2.76	0.23	-2.53	11	Pass
NVNT	n40	5230	Ant1	-2.23	0.15	-2.08	11	Pass
NVNT	n40	5755	Ant1	-4.62	0.23	-4.39	30	Pass
NVNT	n40	5795	Ant1	-5.42	0.15	-5.27	30	Pass
NVNT	ac20	5180	Ant1	0.2	0.11	0.31	11	Pass
NVNT	ac20	5220	Ant1	0.42	0.08	0.5	11	Pass
NVNT	ac20	5240	Ant1	0.86	0.08	0.94	11	Pass
NVNT	ac20	5745	Ant1	-2.07	0.11	-1.96	30	Pass
NVNT	ac20	5785	Ant1	-2.68	0.08	-2.6	30	Pass
NVNT	ac20	5825	Ant1	-2.86	0.11	-2.75	30	Pass
NVNT	ac40	5190	Ant1	-2.78	0.15	-2.63	11	Pass
NVNT	ac40	5230	Ant1	-2.2	0.23	-1.97	11	Pass
NVNT	ac40	5755	Ant1	-5.18	0.23	-4.95	30	Pass
NVNT	ac40	5795	Ant1	-5.8	0.23	-5.57	30	Pass
NVNT	ac80	5210	Ant1	-6.33	0.38	-5.95	11	Pass
NVNT	ac80	5775	Ant1	-7.73	0.46	-7.27	30	Pass

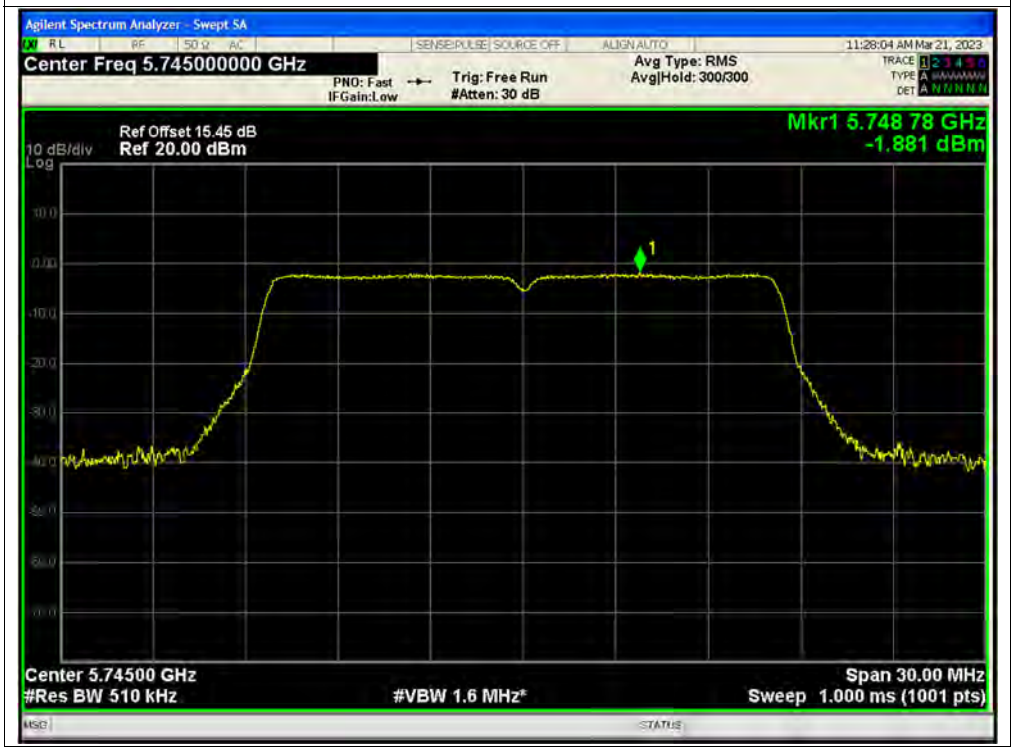
Test Graphs
PSD NVNT a 5180MHz Ant1

PSD NVNT a 5220MHz Ant1

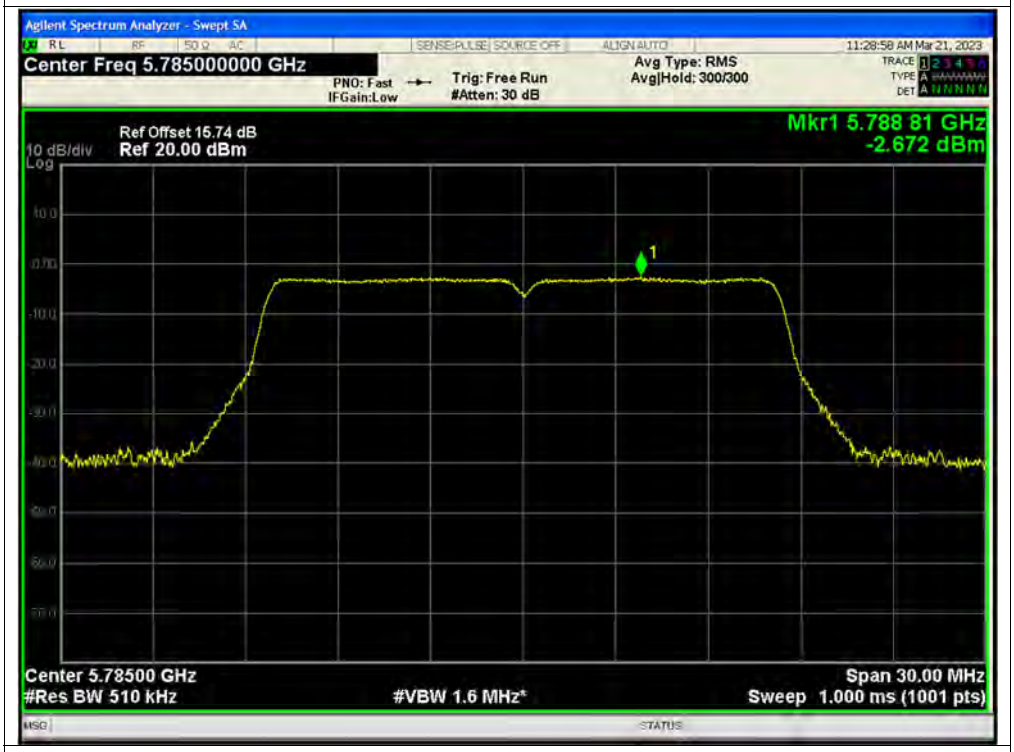
PSD NVNT a 5240MHz Ant1



PSD NVNT a 5745MHz Ant1



PSD NVNT a 5785MHz Ant1

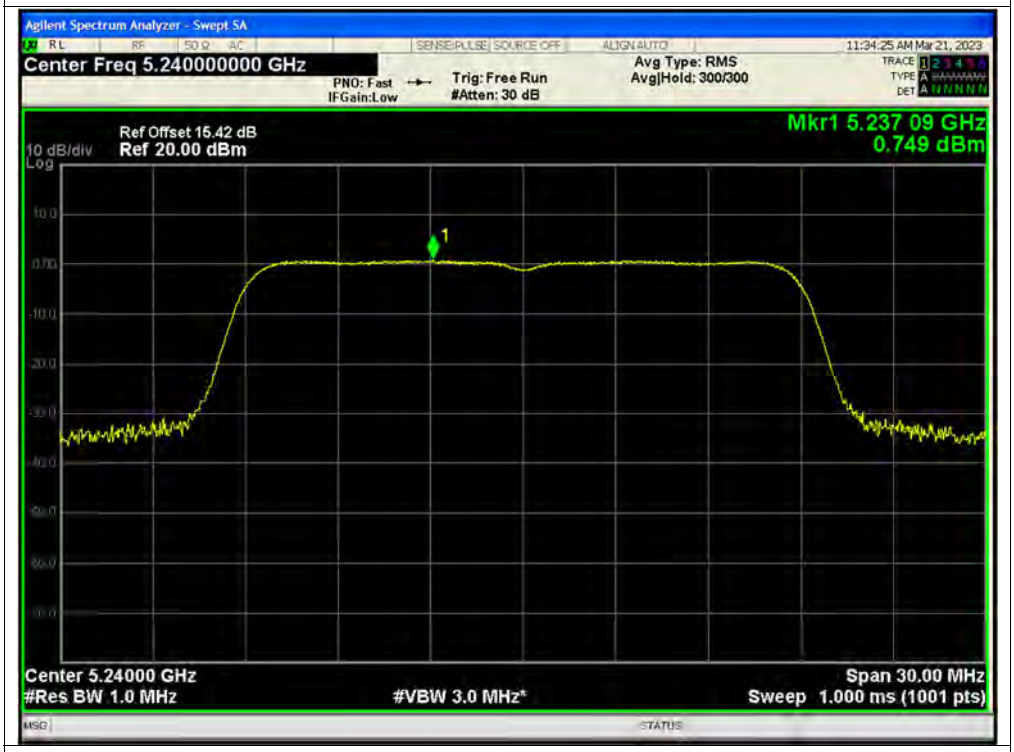


PSD NVNT a 5825MHz Ant1

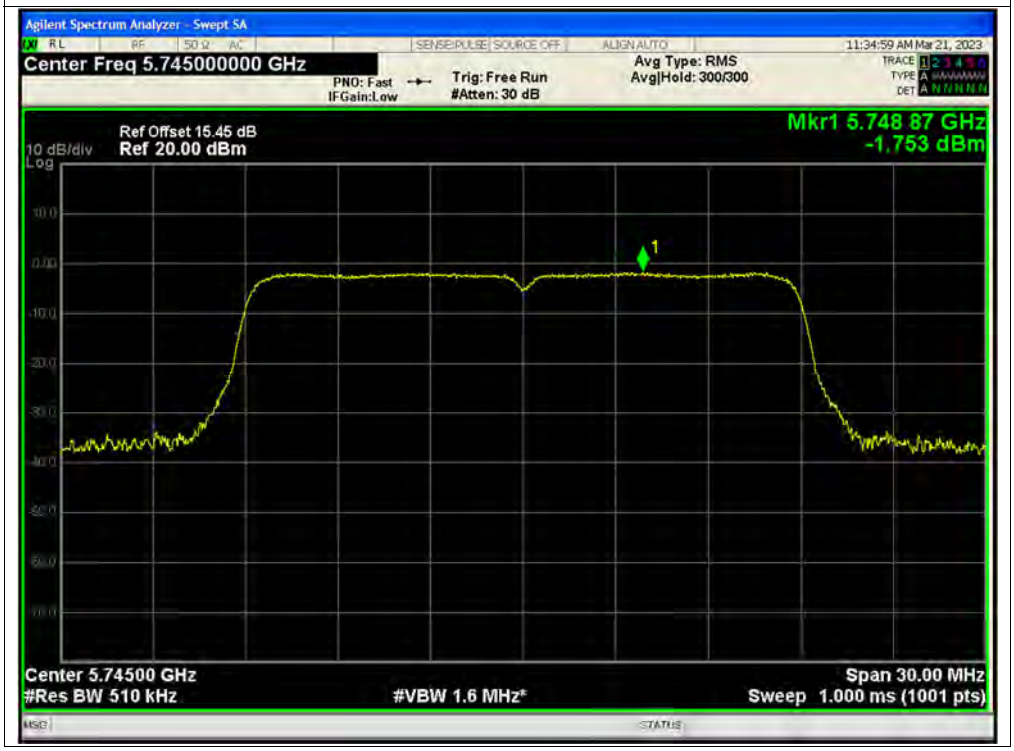
PSD NVNT n20 5180MHz Ant1

PSD NVNT n20 5220MHz Ant1

PSD NVNT n20 5240MHz Ant1

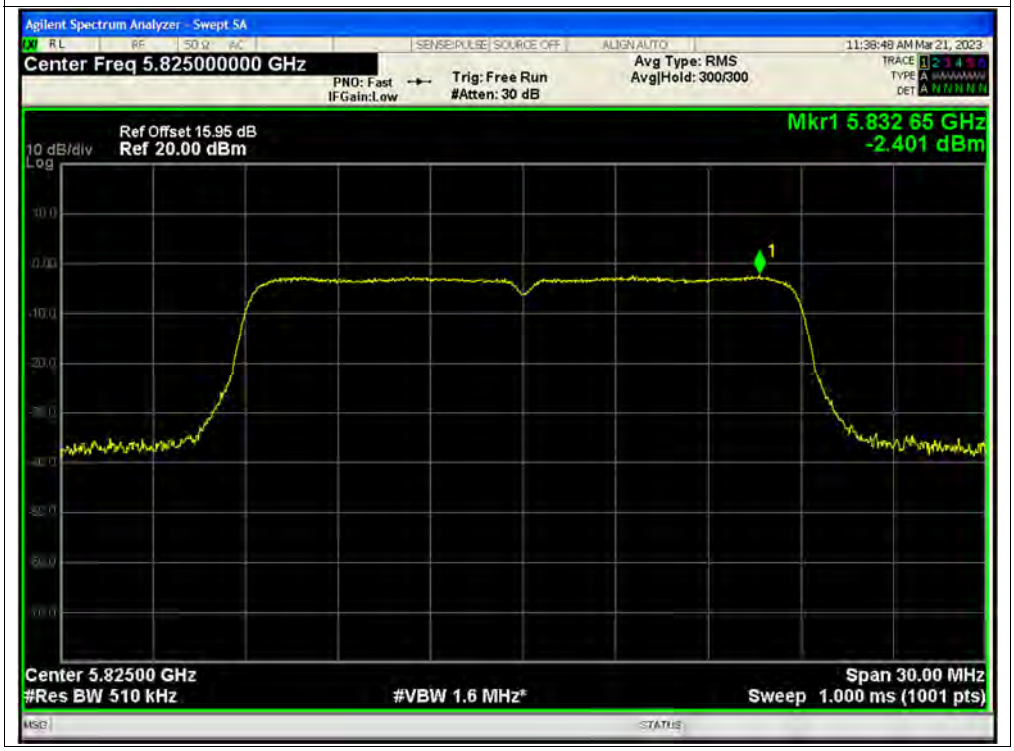


PSD NVNT n20 5745MHz Ant1

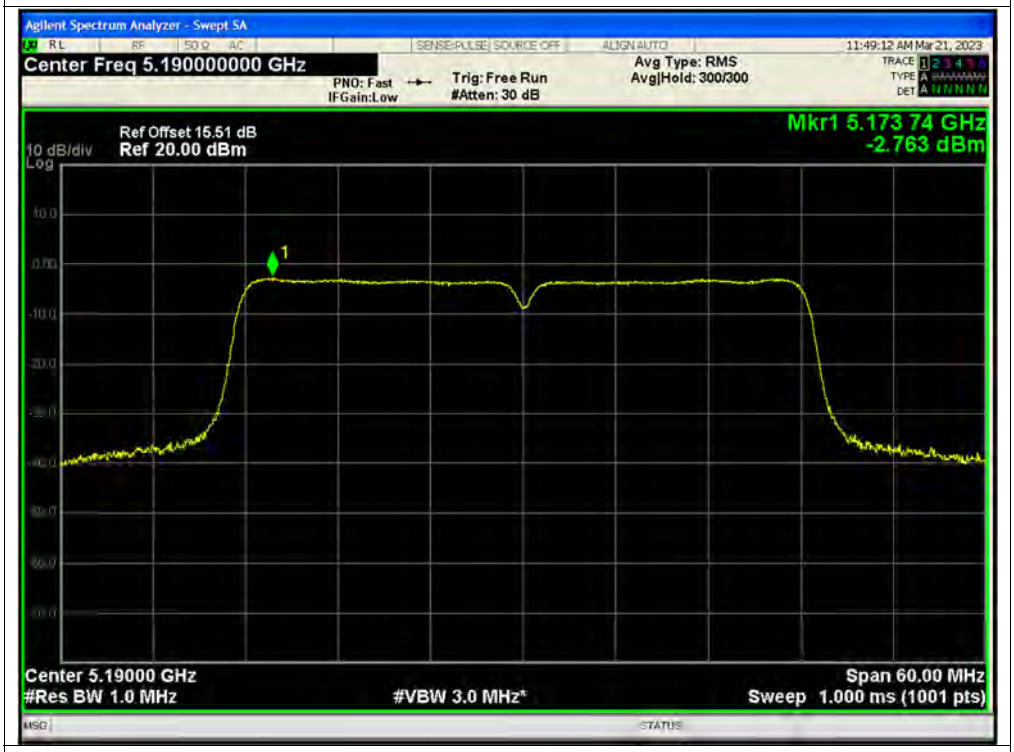


PSD NVNT n20 5785MHz Ant1

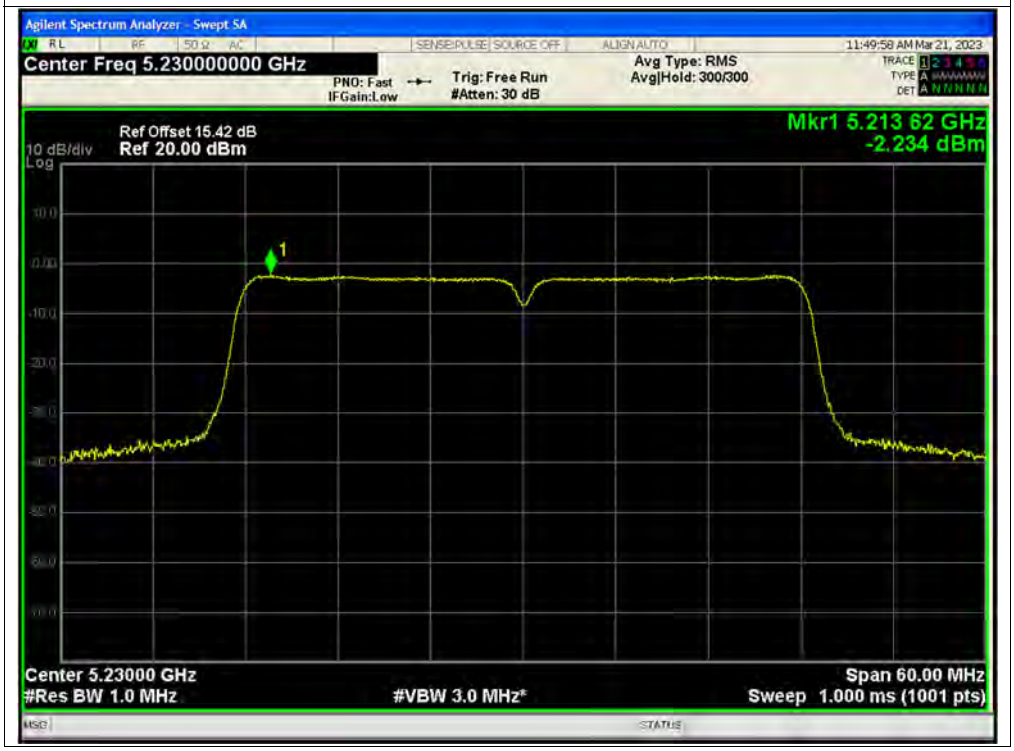
PSD NVNT n20 5825MHz Ant1



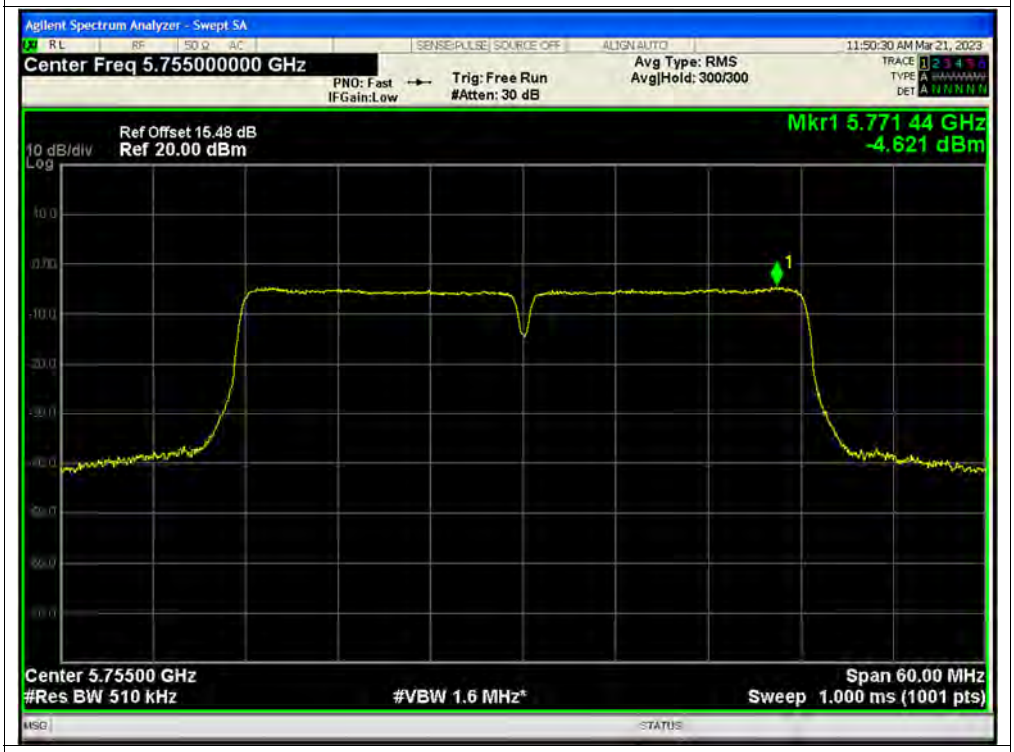
PSD NVNT n40 5190MHz Ant1



PSD NVNT n40 5230MHz Ant1



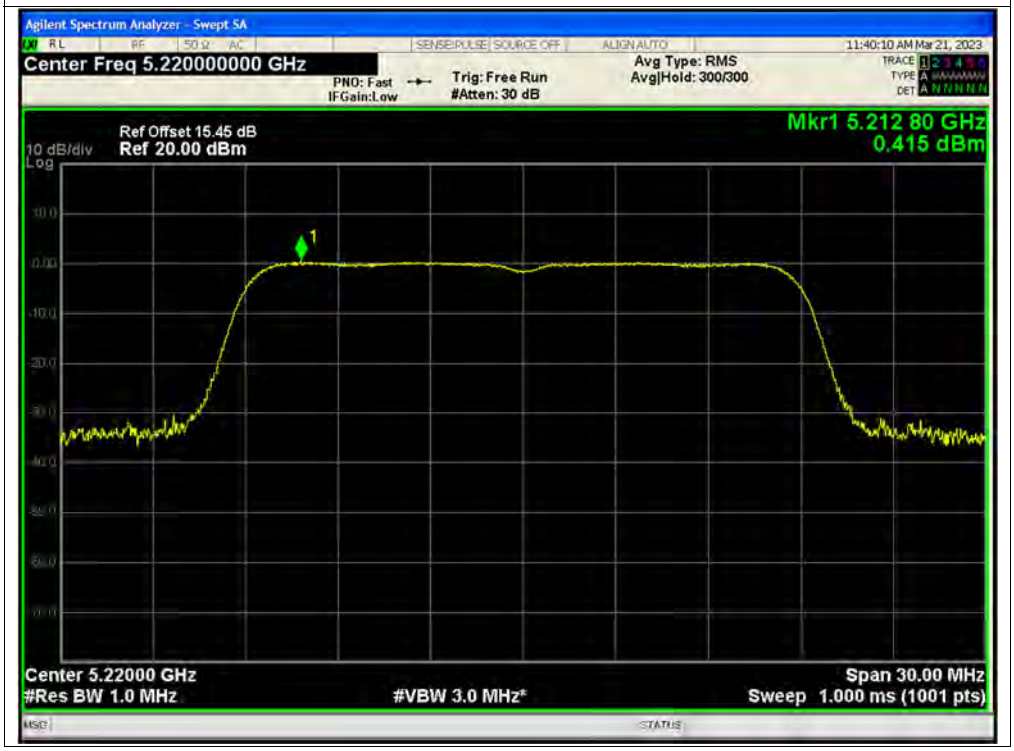
PSD NVNT n40 5755MHz Ant1



PSD NVNT n40 5795MHz Ant1

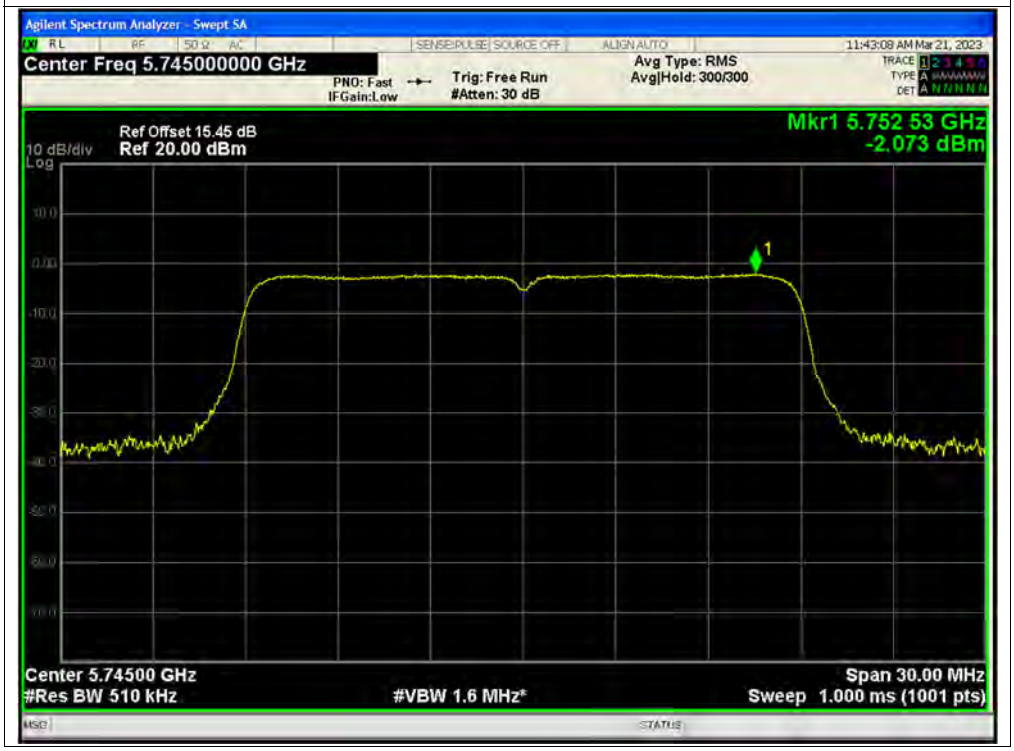
PSD NVNT ac20 5180MHz Ant1

PSD NVNT ac20 5220MHz Ant1

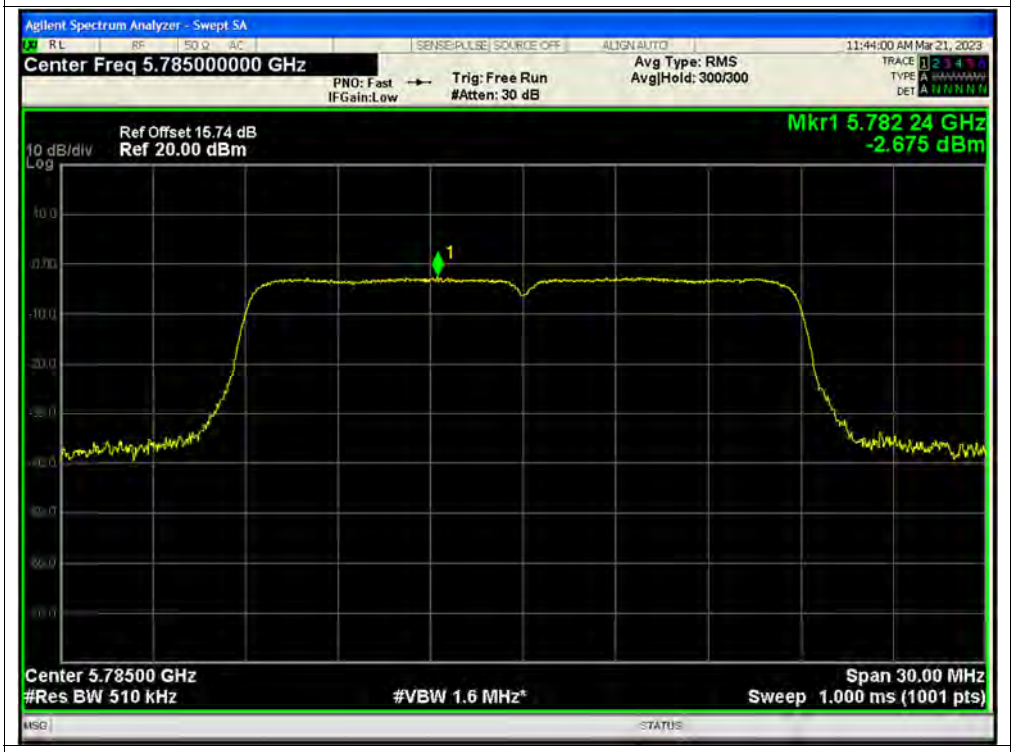


PSD NVNT ac20 5240MHz Ant1

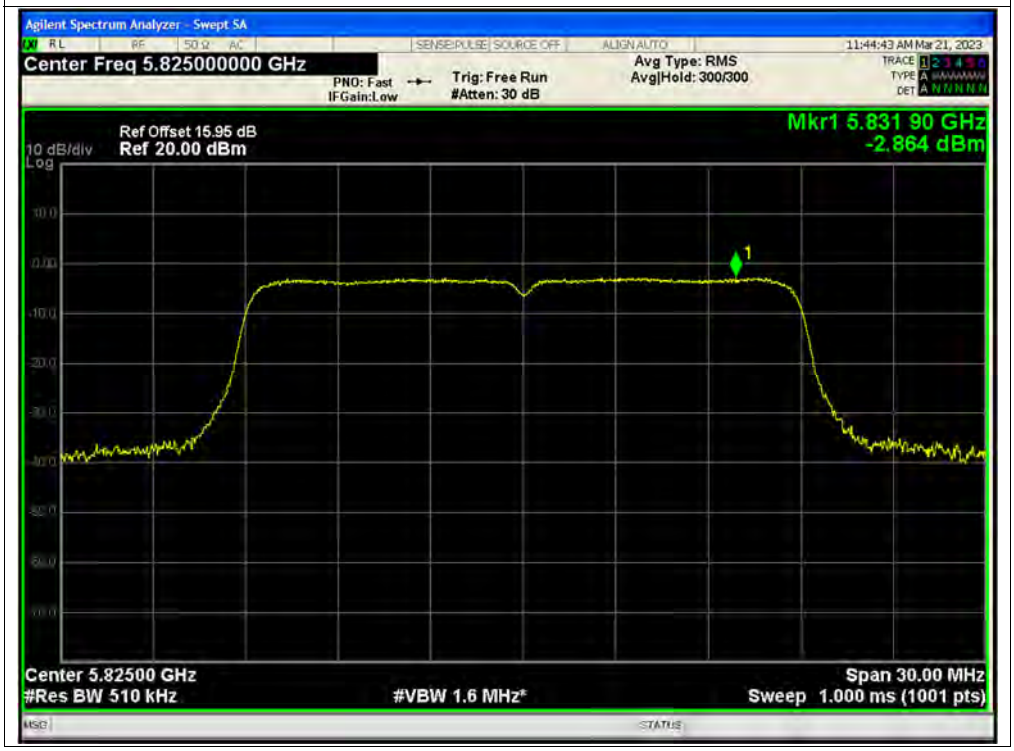
PSD NVNT ac20 5745MHz Ant1



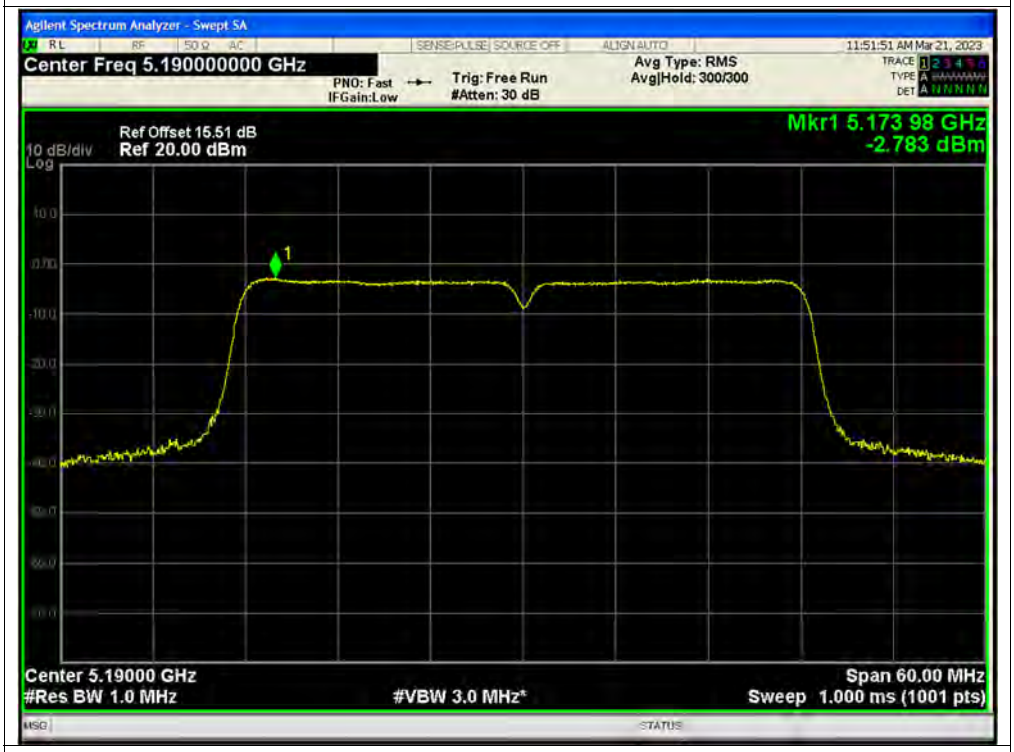
PSD NVNT ac20 5785MHz Ant1



PSD NVNT ac20 5825MHz Ant1



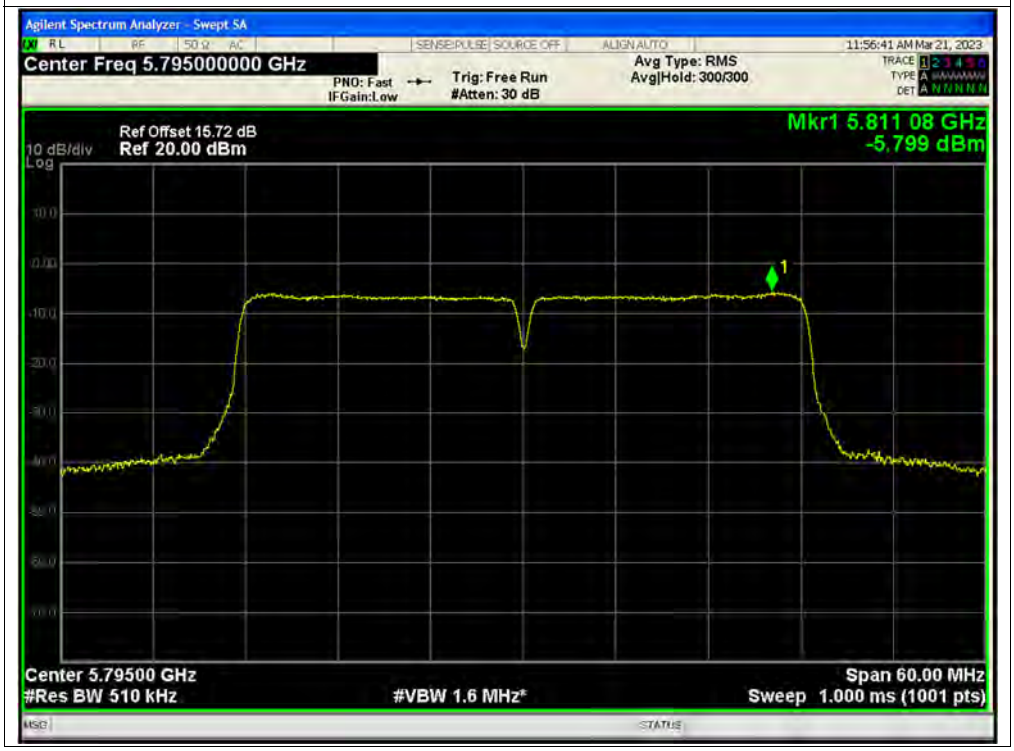
PSD NVNT ac40 5190MHz Ant1



PSD NVNT ac40 5230MHz Ant1

PSD NVNT ac40 5755MHz Ant1

PSD NVNT ac40 5795MHz Ant1



PSD NVNT ac80 5210MHz Ant1

PSD NVNT ac80 5775MHz Ant1

A.5. Frequency Stability

Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
20C 4.35V	Carrier	5180	Ant1	5179.998	-2000	-0.39	25	Pass
20C 3.4V	Carrier	5180	Ant1	5179.998	-2000	-0.39	25	Pass
-10C 3.8V	Carrier	5180	Ant1	5179.998	-2000	-0.39	25	Pass
0C 3.8V	Carrier	5180	Ant1	5179.998	-2000	-0.39	25	Pass
10C 3.8V	Carrier	5180	Ant1	5179.998	-2000	-0.39	25	Pass
20C 3.8V	Carrier	5180	Ant1	5179.998	-2000	-0.39	25	Pass
30C 3.8V	Carrier	5180	Ant1	5179.998	-2000	-0.39	25	Pass
40C 3.8V	Carrier	5180	Ant1	5179.998	-2000	-0.39	25	Pass
50C 3.8V	Carrier	5180	Ant1	5179.998	-2000	-0.39	25	Pass
20C 4.35V	Carrier	5745	Ant1	5744.996	-4000	-0.7	25	Pass
20C 3.4V	Carrier	5745	Ant1	5744.996	-4000	-0.7	25	Pass
-10C 3.8V	Carrier	5745	Ant1	5744.996	-4000	-0.7	25	Pass
0C 3.8V	Carrier	5745	Ant1	5744.996	-4000	-0.7	25	Pass
10C 3.8V	Carrier	5745	Ant1	5744.996	-4000	-0.7	25	Pass
20C 3.8V	Carrier	5745	Ant1	5744.996	-4000	-0.7	25	Pass
30C 3.8V	Carrier	5745	Ant1	5744.996	-4000	-0.7	25	Pass
40C 3.8V	Carrier	5745	Ant1	5744.996	-4000	-0.7	25	Pass
50C 3.8V	Carrier	5745	Ant1	5744.996	-4000	-0.7	25	Pass

A.6. 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 + USB Cable + Earphone + WIFI TX

Test voltage: AC 120V/60Hz

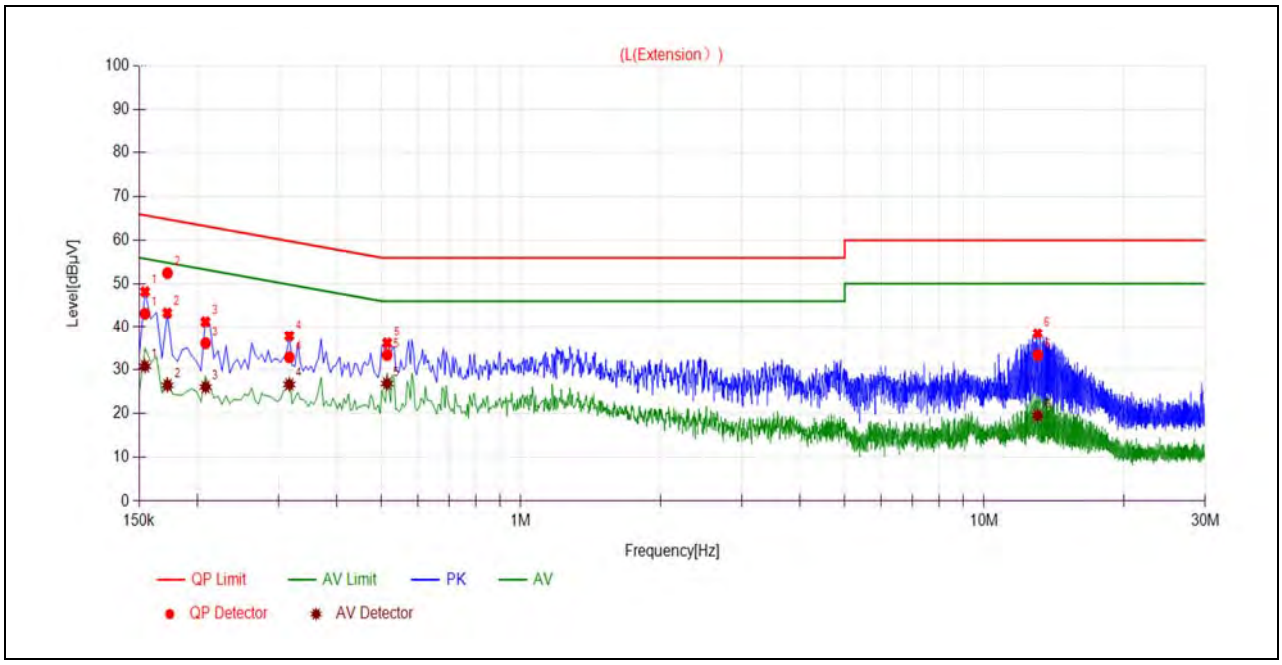
The measurement results are obtained as below:

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

U_R: Receiver Reading

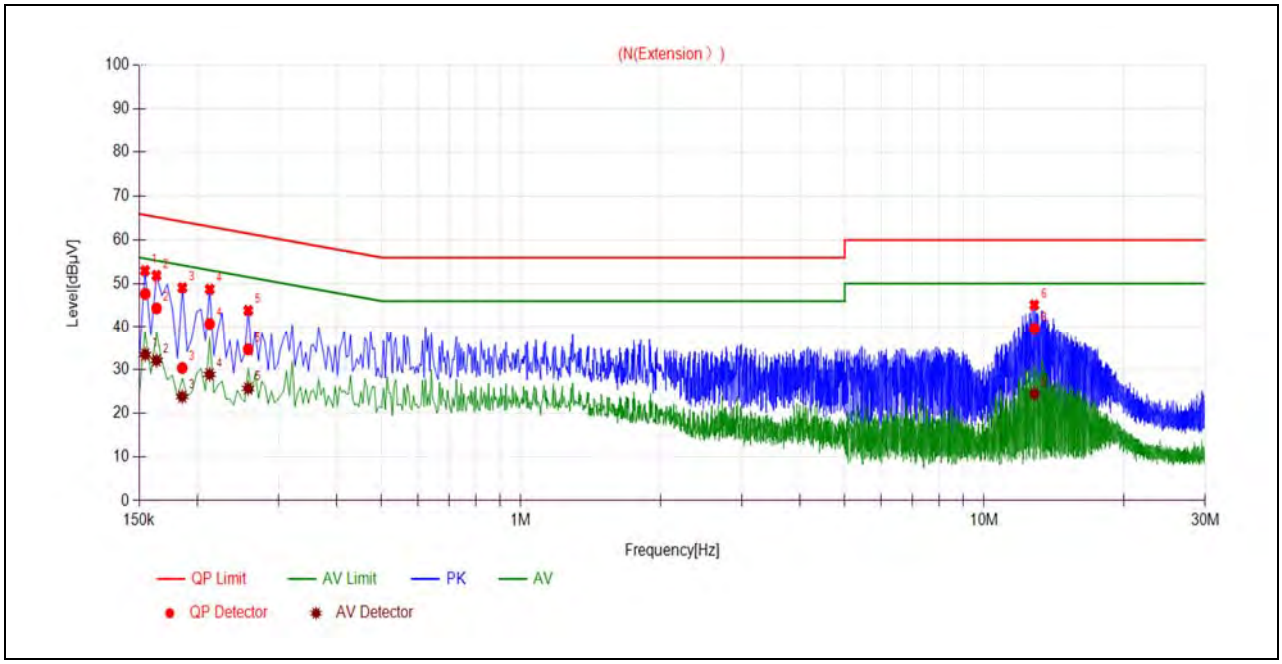
A_{Factor}: Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1544	43.08	30.84	65.76	55.76	Line	PASS
2	0.1727	52.45	26.45	64.83	54.83		PASS
3	0.2087	36.11	26.03	63.26	53.26		PASS
4	0.3164	32.87	26.65	59.80	49.80		PASS
5	0.5141	33.39	26.85	56.00	46.00		PASS
6	13.0518	33.40	19.53	60.00	50.00		PASS



(N Phase)

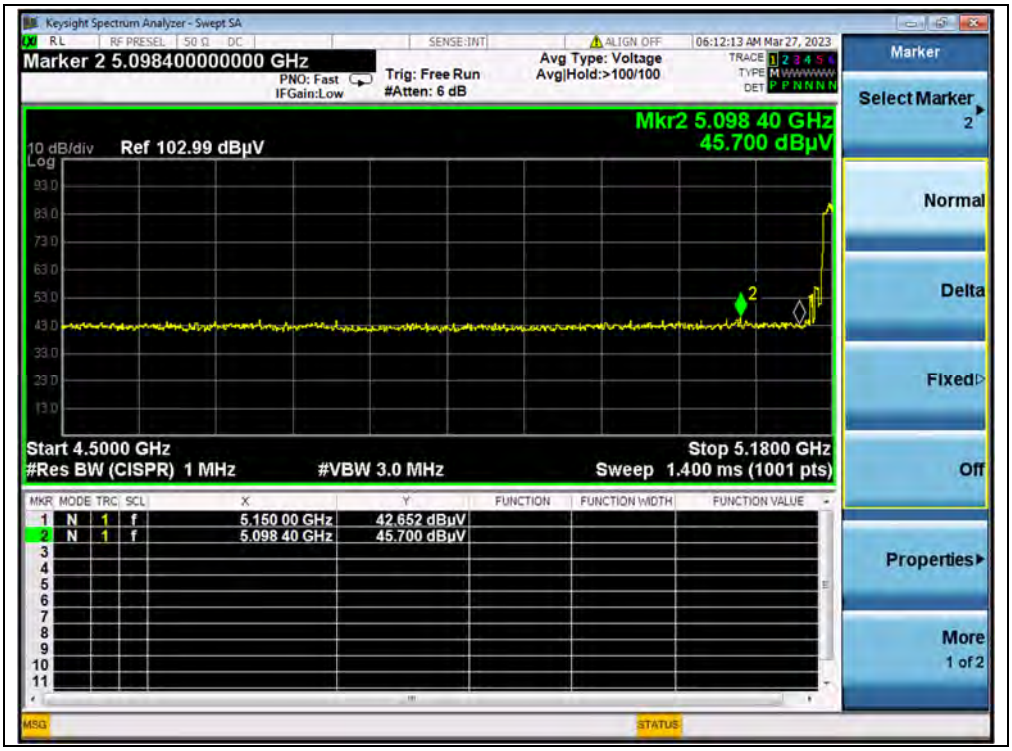
No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1546	47.64	33.50	65.75	55.75	Neutral	PASS
2	0.1635	44.33	32.14	65.29	55.29		PASS
3	0.1858	30.40	23.82	64.22	54.22		PASS
4	0.2129	40.75	28.91	63.09	53.09		PASS
5	0.2578	34.70	25.70	61.50	51.50		PASS
6	12.8376	39.60	24.45	60.00	50.00		PASS

A.7. Restricted Frequency Bands

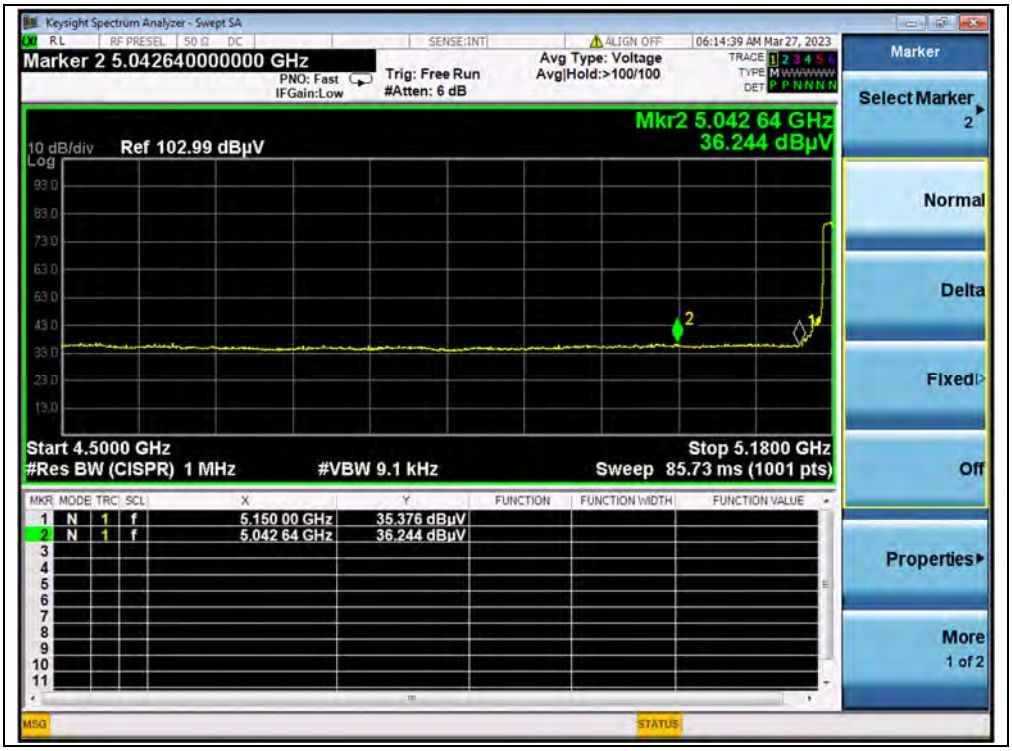
The lowest and highest channels are tested to verify the Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] =U_R + A_T + A_{Factor} [dB]; A_T =$L_{Cable\ loss}$ [dB]-G_{preamp} [dB]
A_T: Total correction Factor except Antenna
U_R: Receiver Reading
G_{preamp}: Preamplifier Gain
A_{Factor}: Antenna Factor at 3m
Note 1: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) 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.

802.11a Mode

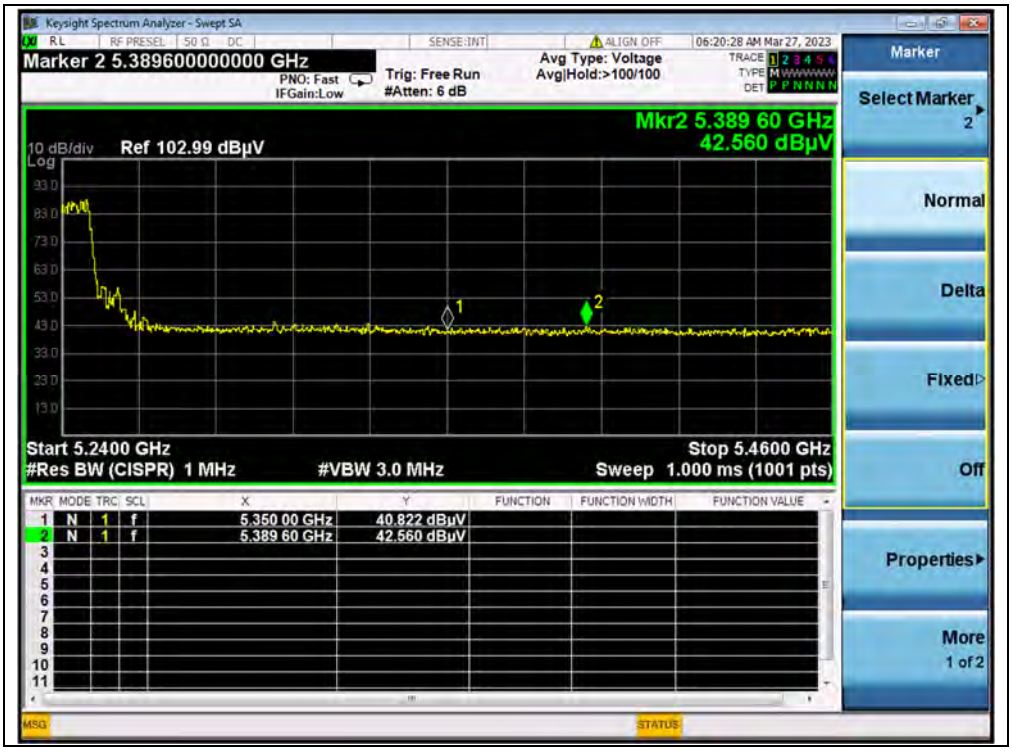
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@ 3m)	Max. Emission E (dBμV/m)	Limit (dBμV/ m)	Verdict
		PK/ AV						
36	5098.40	PK	45.70	-19.54	32.20	58.36	74	PASS
36	5042.64	AV	36.24	-19.54	32.20	48.90	54	PASS
48	5389.60	PK	42.56	-19.54	32.20	55.22	74	PASS
48	5419.08	AV	34.72	-19.54	32.20	47.38	54	PASS
149	5725.00	PK	54.75	-19.01	32.20	67.94	122.23	PASS
165	5850.00	PK	46.66	-19.01	32.20	59.85	122.23	PASS



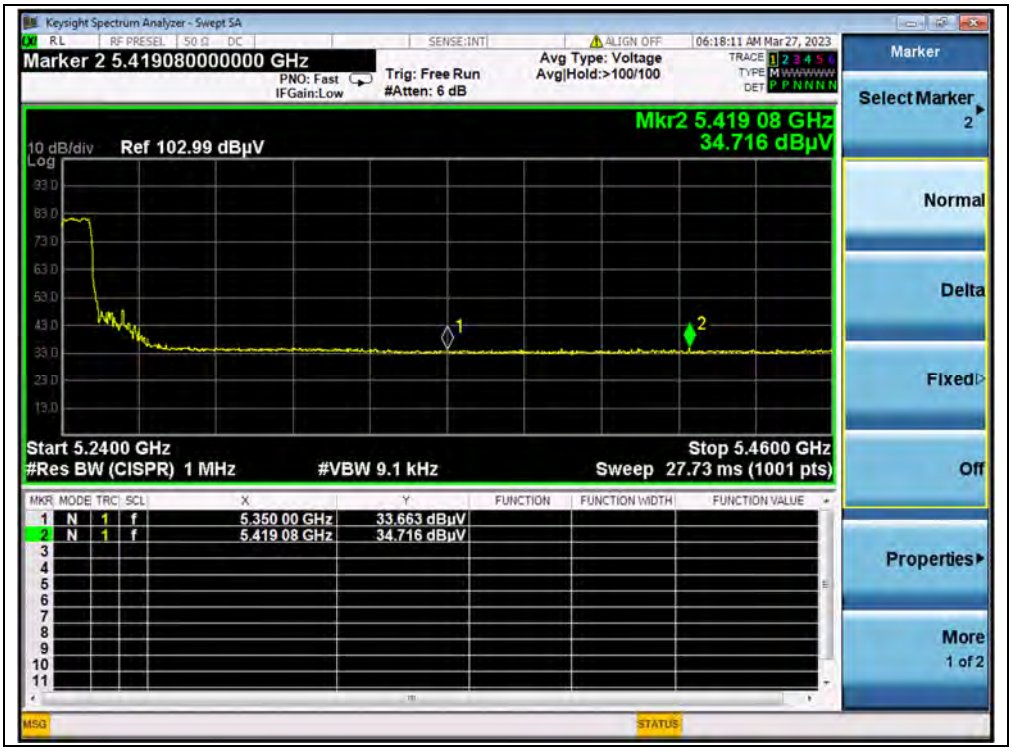
(PEAK, Channel 36, 802.11a)



(AVERAGE, Channel 36, 802.11a)



(PEAK, Channel 48, 802.11a)



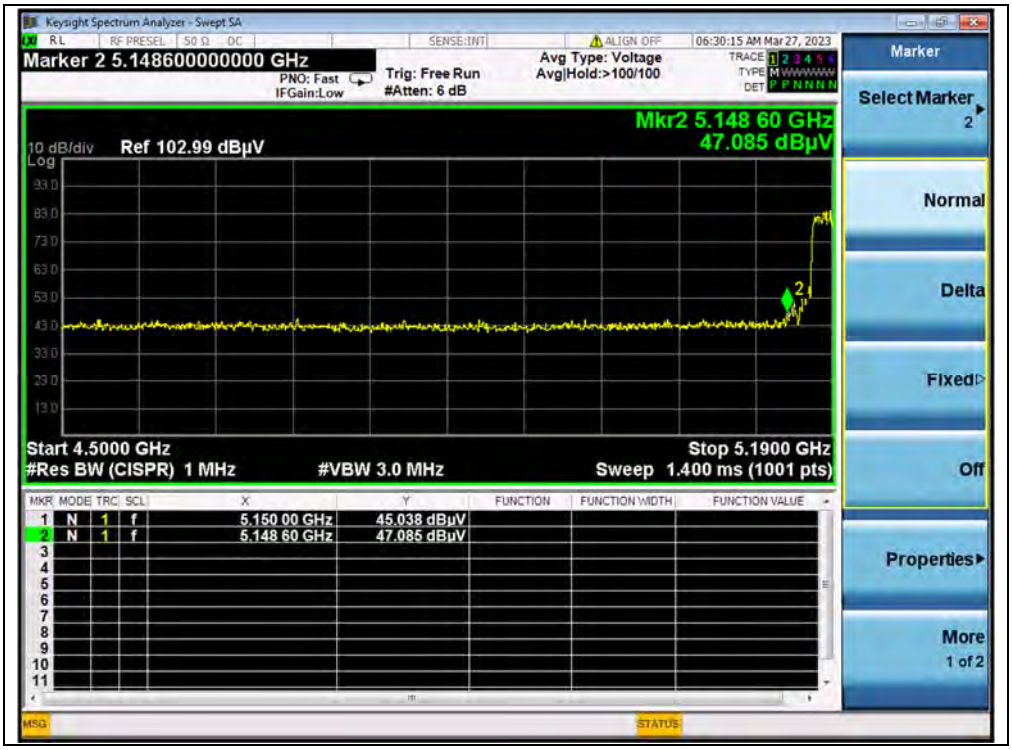
(AVERAGE, Channel 48, 802.11a)

(PEAK, Channel 149, 802.11a)

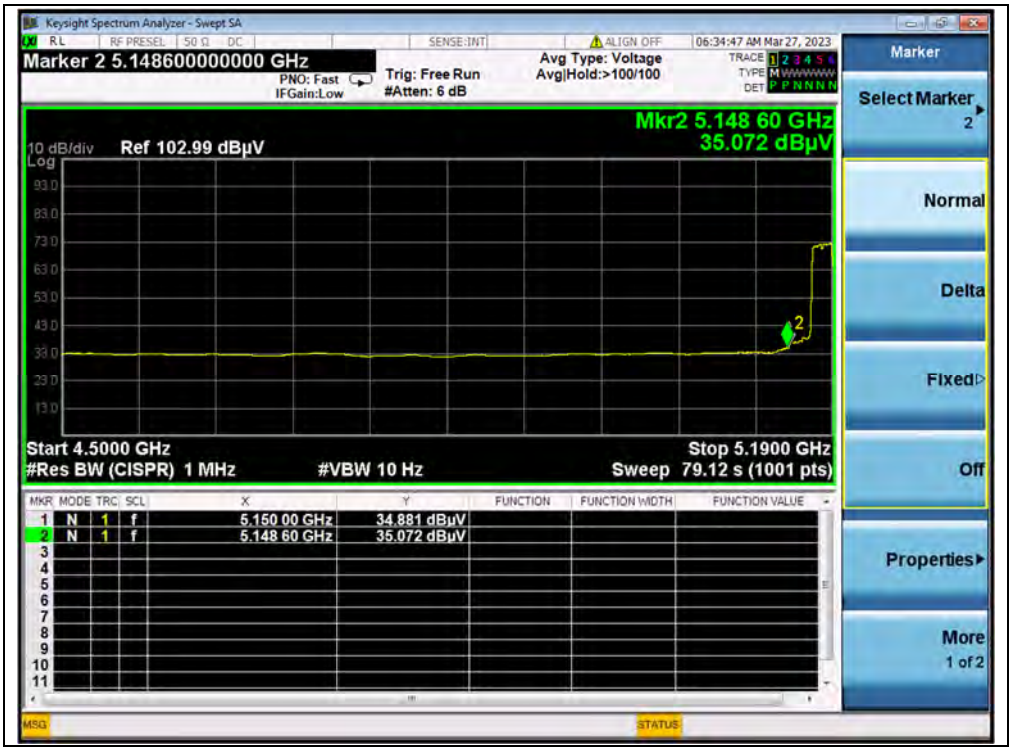
(PEAK, Channel 165, 802.11a)

802.11n (HT40) Mode

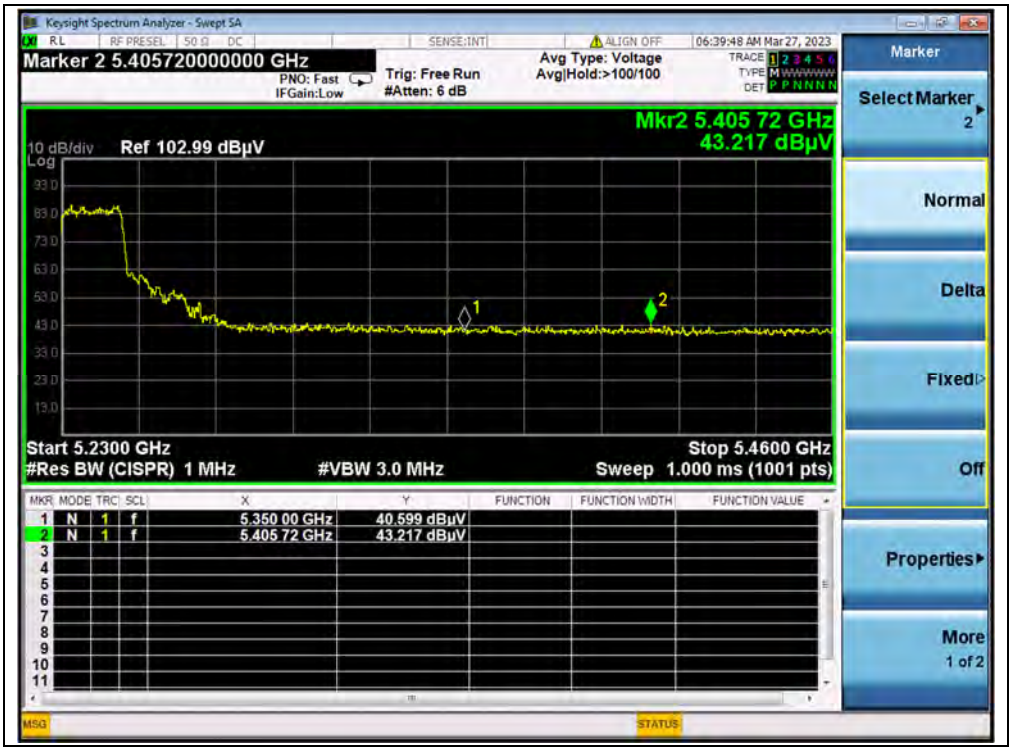
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
38	5148.60	PK	47.09	-19.54	32.20	59.75	74	PASS
38	5148.60	AV	35.07	-19.54	32.20	47.73	54	PASS
46	5405.72	PK	43.22	-19.54	32.20	55.88	74	PASS
46	5353.74	AV	31.34	-19.54	32.20	44.00	54	PASS
151	5725.00	PK	54.75	-19.01	32.20	67.94	122.23	PASS
159	5855.00	PK	41.86	-19.01	32.20	55.05	110.83	PASS



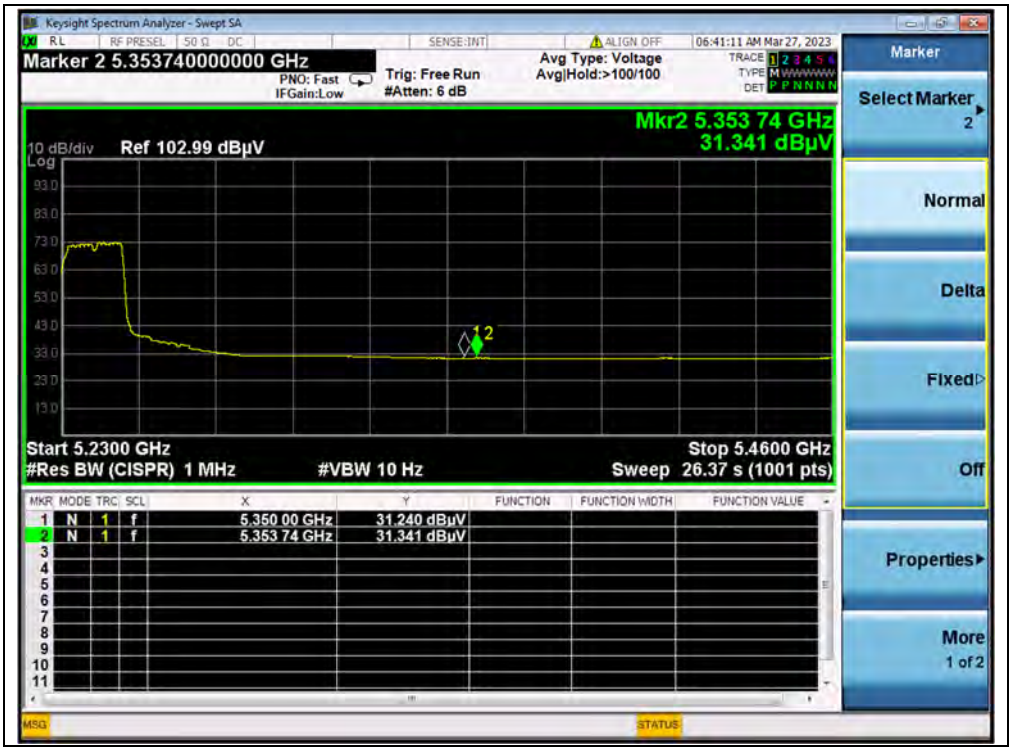
(PEAK, Channel 38, 802.11n (HT40))



(AVERAGE, Channel 38, 802.11n (HT40))



(PEAK, Channel 48, 802.11n (HT40))



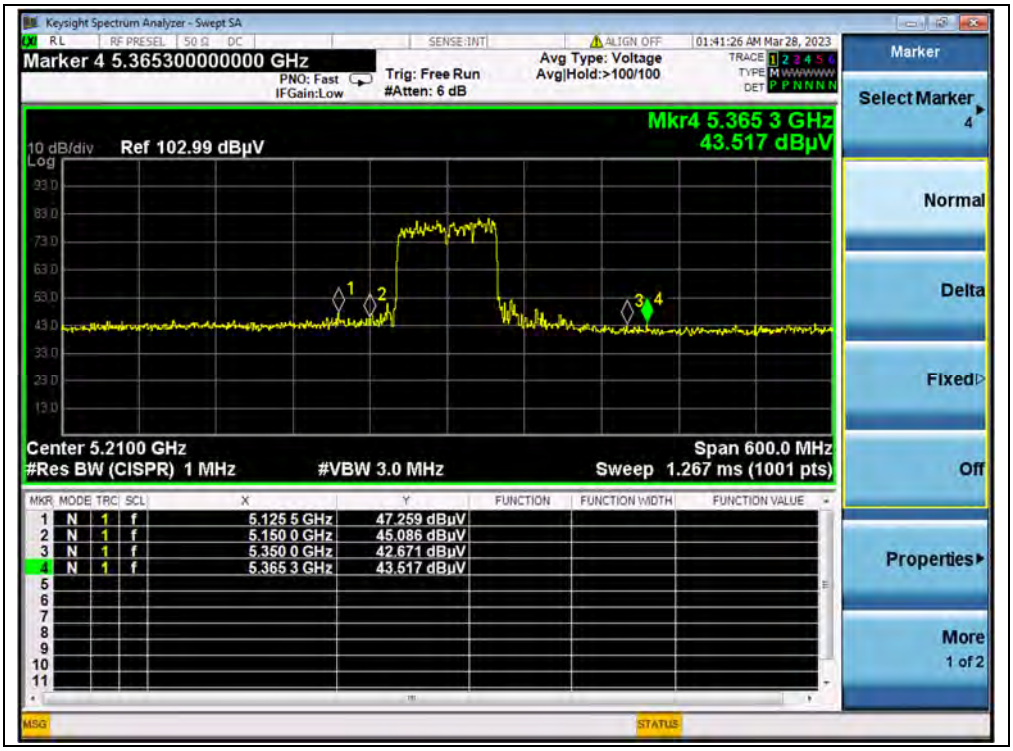
(AVERAGE, Channel 48, 802.11n (HT40))

(PEAK, Channel 151, 802.11n (HT40))

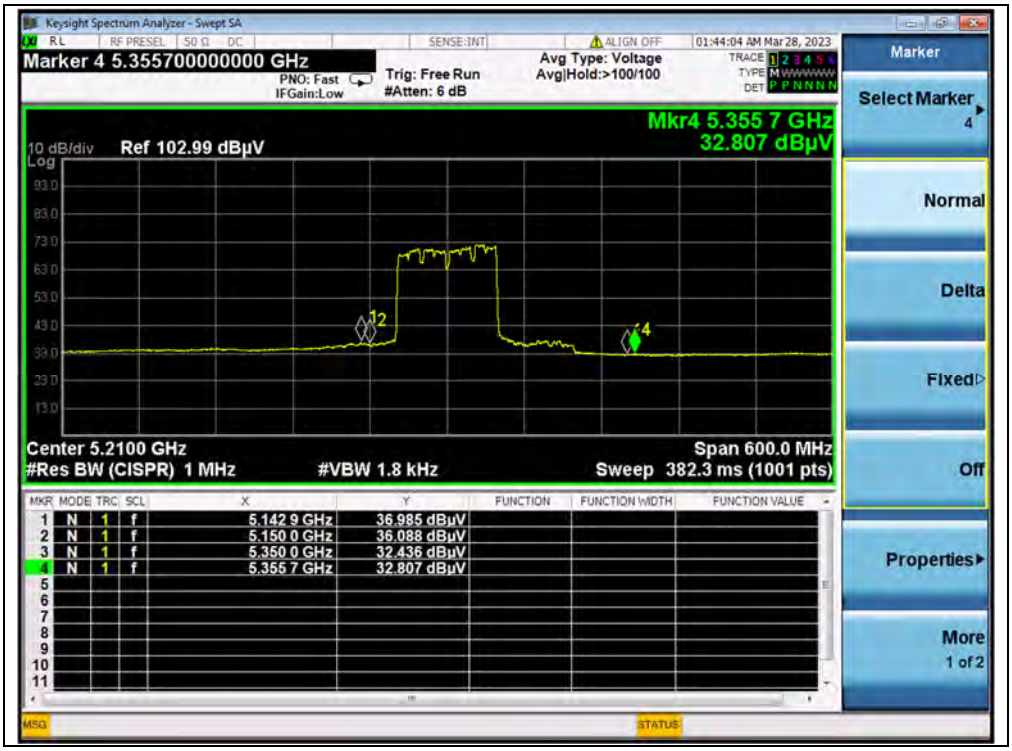
(PEAK, Channel 159, 802.11n (HT40))

802.11ac (VHT80) Mode

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@ 3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
42	5125.50	PK	47.26	-19.54	32.20	59.92	74	PASS
42	5142.90	AV	36.99	-19.54	32.20	49.65	54	PASS
42	5365.30	PK	43.52	-19.54	32.20	56.18	74	PASS
42	5355.70	AV	32.81	-19.54	32.20	45.47	54	PASS
155	5720.00	PK	47.87	-19.01	32.20	61.06	110.83	PASS
155	5855.00	PK	43.46	-19.01	32.20	56.65	110.83	PASS



(Channel 42, PEAK, 802.11ac (VHT80))



(Channel 42, AVG, 802.11ac (VHT80))

(Channel 155, PEAK, 802.11ac (VHT80))

A.8. 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.

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.

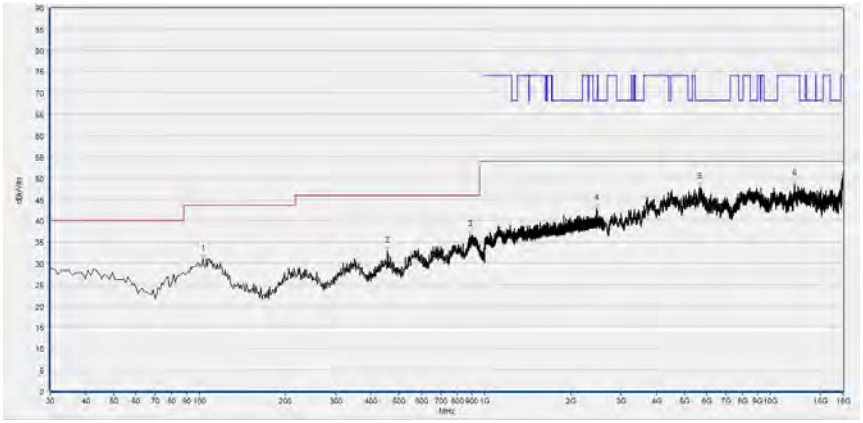
Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note3: 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 and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

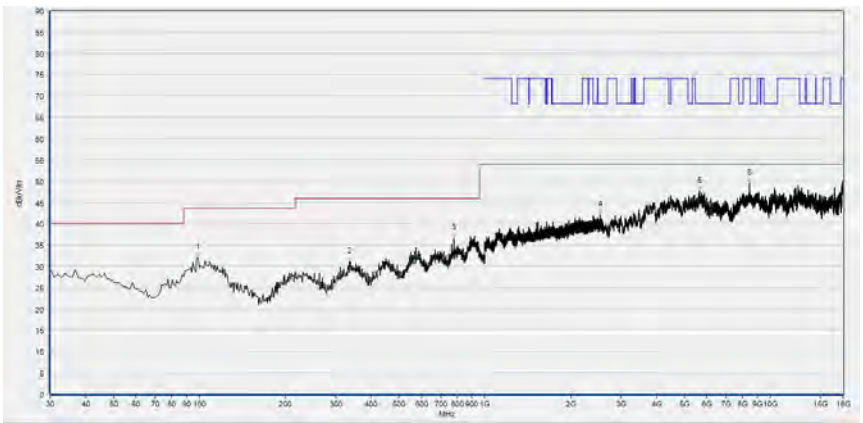
802.11a Mode

Plot for Channel 36



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
102.823	31.01	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
455.285	32.89	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
890.280	36.74	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2461.287	42.89	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5643.649	47.85	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12165.313	48.62	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

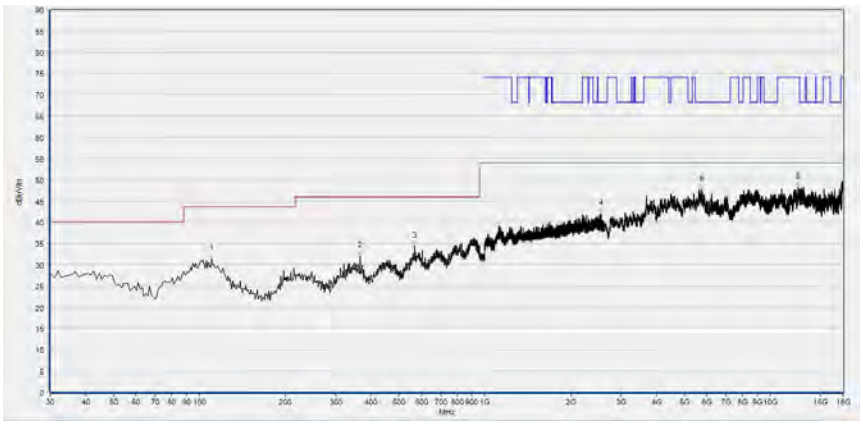
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
98.939	32.06	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
335.856	30.96	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
780.561	36.56	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2541.314	42.14	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5643.649	47.59	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8450.090	49.40	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

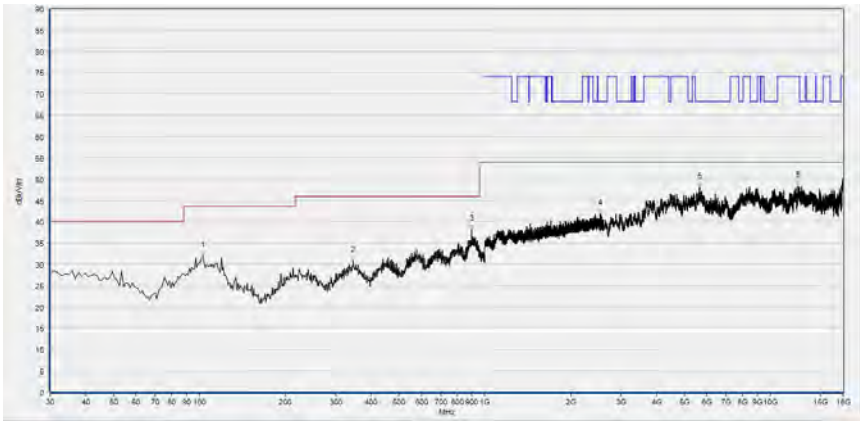
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 44



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
110.591	31.26	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
365.956	31.97	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
567.918	34.35	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2546.649	42.03	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5763.793	47.79	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12541.148	48.31	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

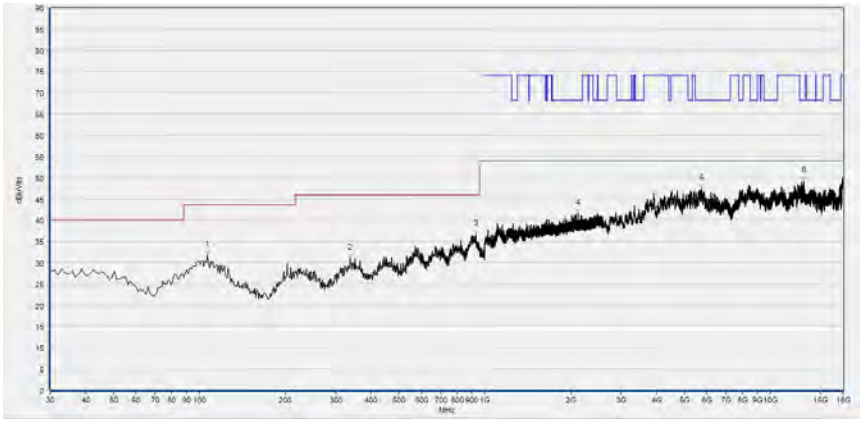
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
102.823	32.09	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
345.566	30.90	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
899.990	38.17	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2543.448	41.90	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5649.810	48.09	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12513.423	48.45	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

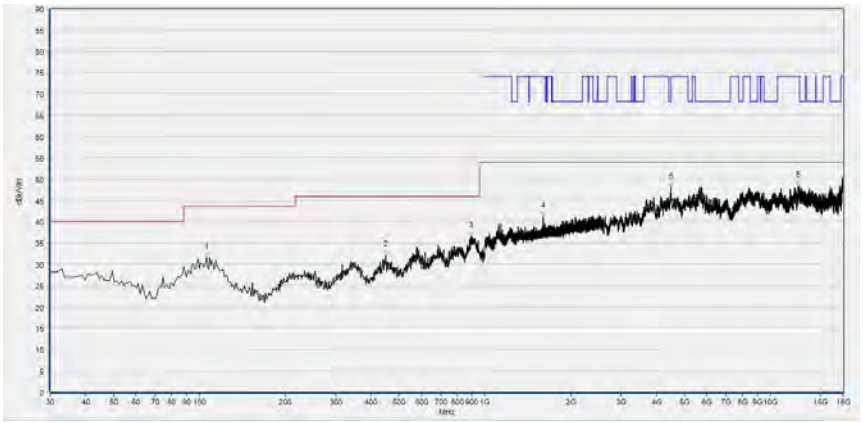
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 48



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
106.707	31.76	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
336.827	30.99	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
931.061	36.64	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2124.642	41.53	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5757.632	47.41	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13077.175	49.28	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

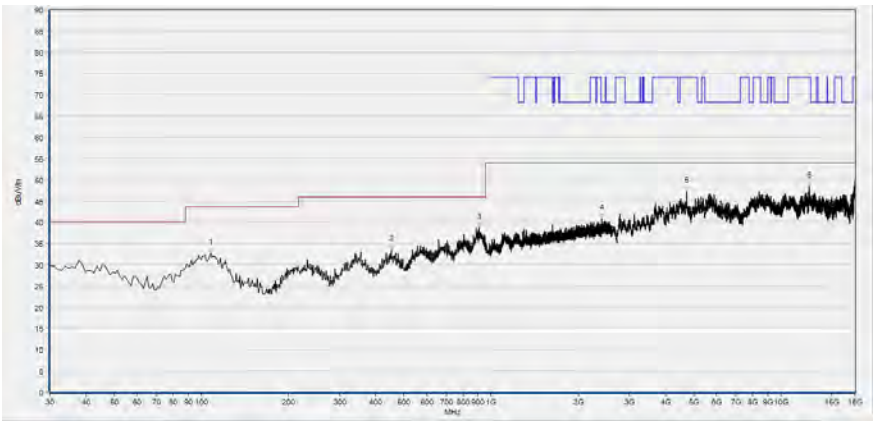
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
105.736	31.74	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
449.459	32.21	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
895.135	36.60	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1600.200	41.24	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4491.498	48.18	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12541.148	48.42	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

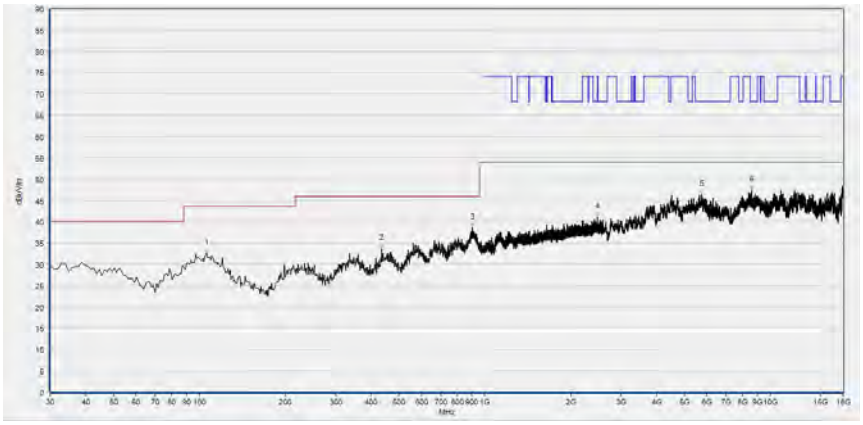
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 149



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
107.678	32.65	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
452.372	33.53	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
910.671	38.66	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2404.735	40.97	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
4731.786	47.20	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12494.939	48.50	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

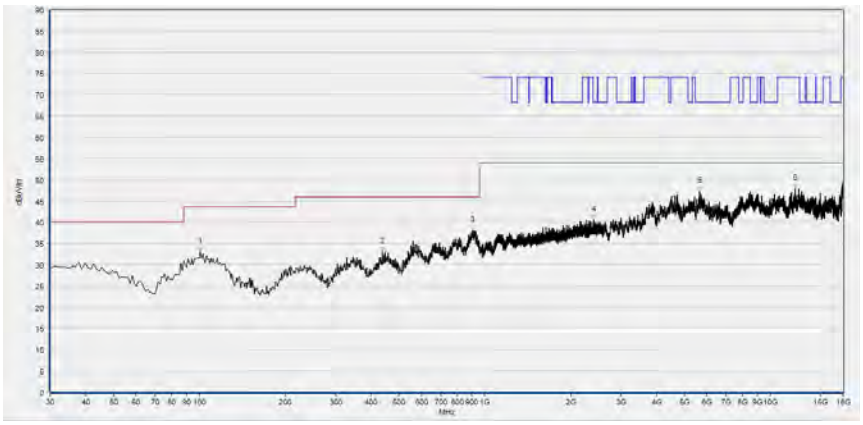
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
105.736	32.57	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
434.895	33.65	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
904.845	38.52	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2479.426	41.04	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5757.632	46.38	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8585.637	47.41	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

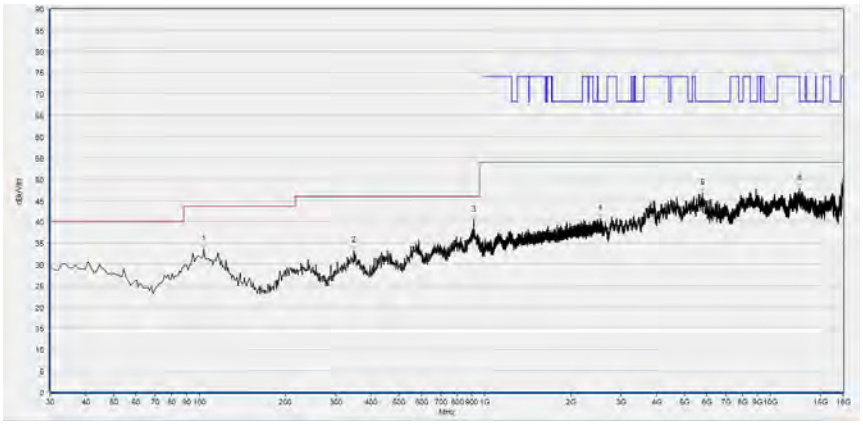
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 157



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.881	33.09	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
437.808	32.99	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
902.903	38.10	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2411.137	40.50	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5640.568	47.22	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12199.200	47.88	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

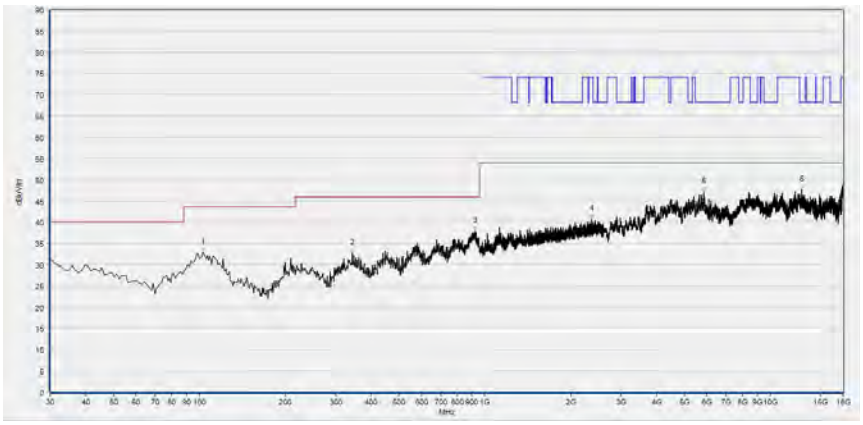
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
103.794	33.45	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
347.508	33.12	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
913.584	40.38	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2543.981	40.75	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5773.035	46.82	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12701.340	47.79	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

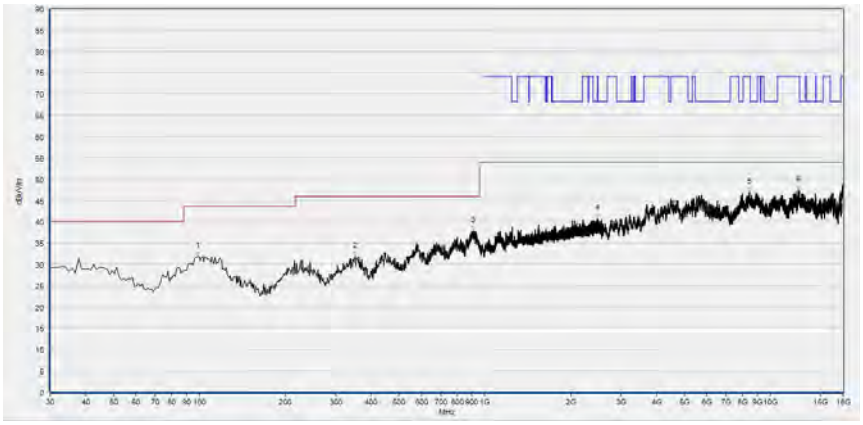
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 165



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
102.823	32.82	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
342.653	32.65	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
924.264	37.95	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2368.456	40.81	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5862.372	47.13	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12895.419	47.65	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

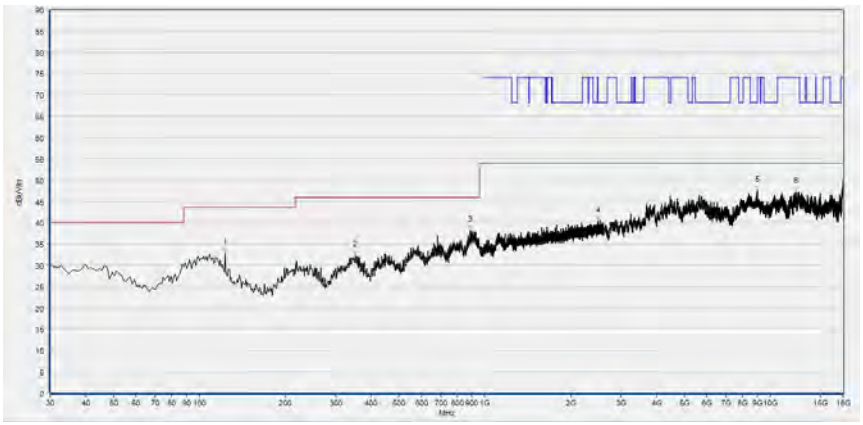


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
98.939	31.79	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
350.420	31.83	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
910.671	37.83	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2483.695	40.65	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8440.848	47.00	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12541.148	47.45	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

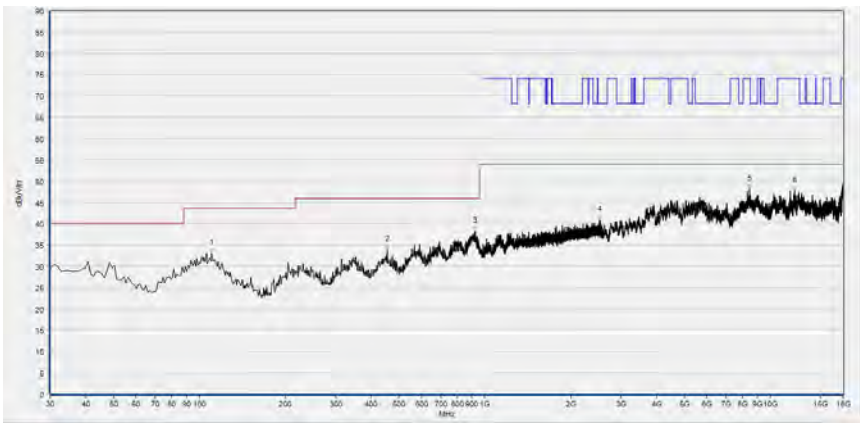
802.11n (HT40) mode

Plot for Channel 38



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
123.213	32.80	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
351.391	32.28	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
888.338	38.20	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2499.700	40.31	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8992.278	47.63	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12288.538	47.21	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

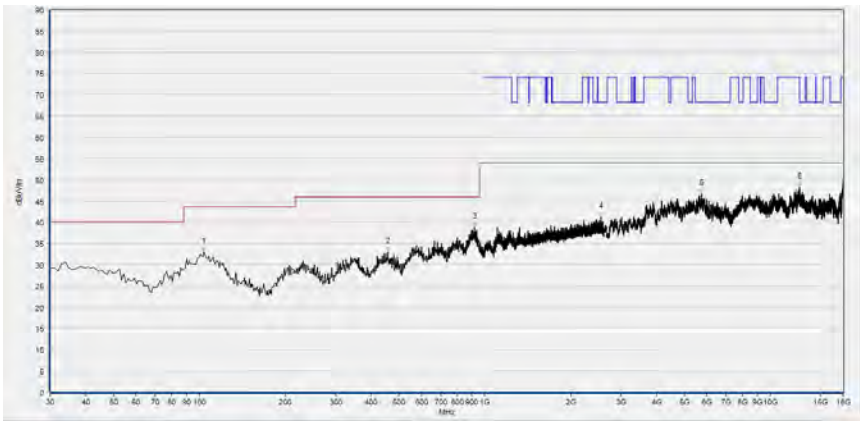
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
110.591	33.10	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
455.285	33.81	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
927.177	38.27	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2519.973	40.85	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8465.493	48.06	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12143.749	47.69	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

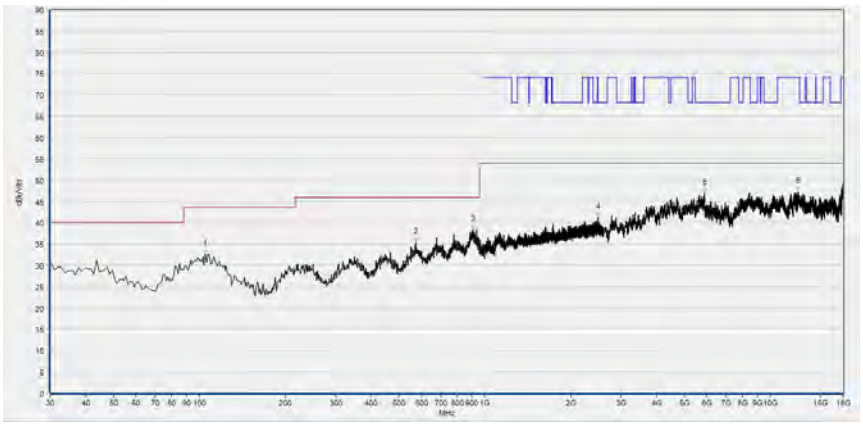
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 46



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
103.794	32.94	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
458.198	32.99	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
921.351	38.86	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2554.118	41.18	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5739.148	46.76	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12676.695	48.27	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

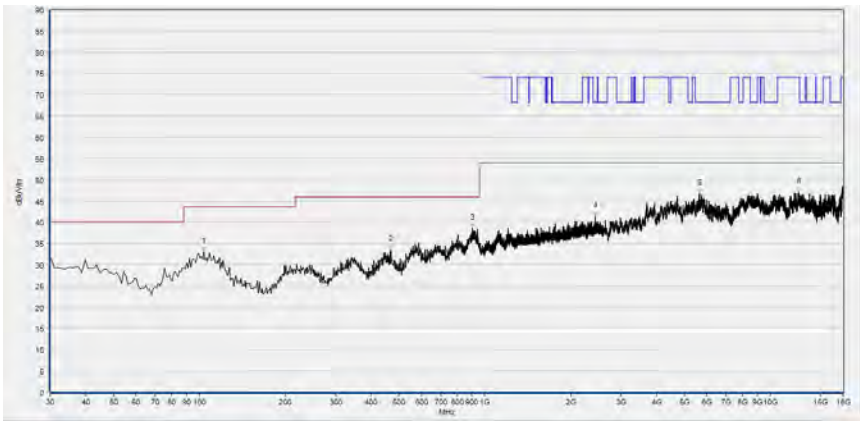
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
104.765	32.57	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
573.744	35.29	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
907.758	38.32	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2496.499	41.17	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5880.856	46.87	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12525.745	47.23	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

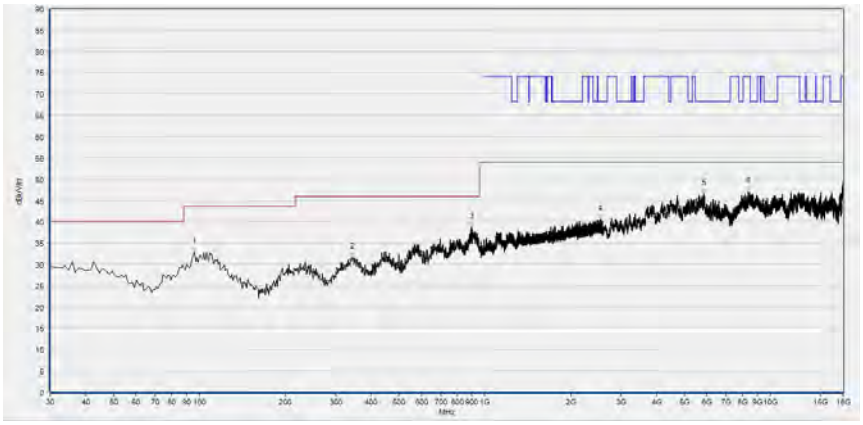
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 151



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
103.794	32.94	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
469.850	33.55	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
904.845	38.61	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2433.011	41.35	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5649.810	46.78	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12571.954	47.13	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

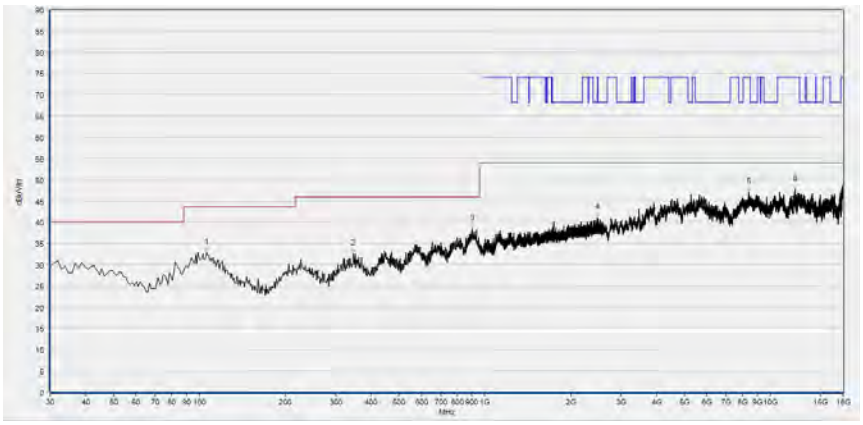
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
96.026	32.89	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
342.653	31.75	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
899.990	38.79	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2541.314	40.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5850.050	46.61	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8382.316	47.16	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

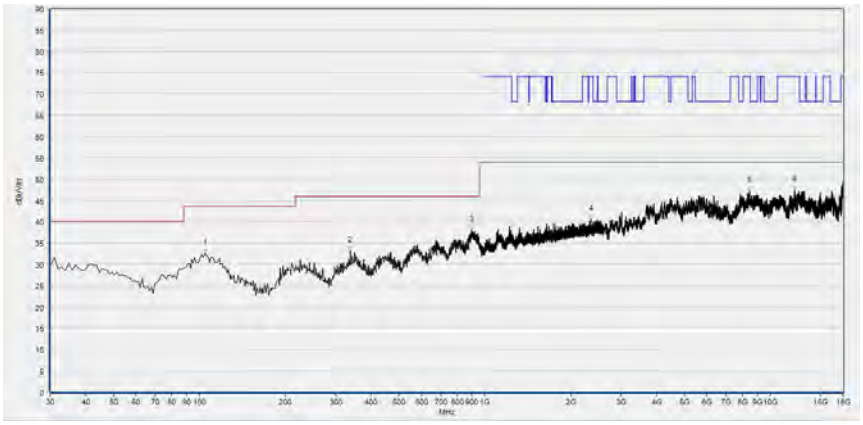
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 159



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
105.736	32.83	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
345.566	32.46	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
904.845	38.36	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2481.027	41.04	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8422.364	47.08	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12202.280	47.70	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

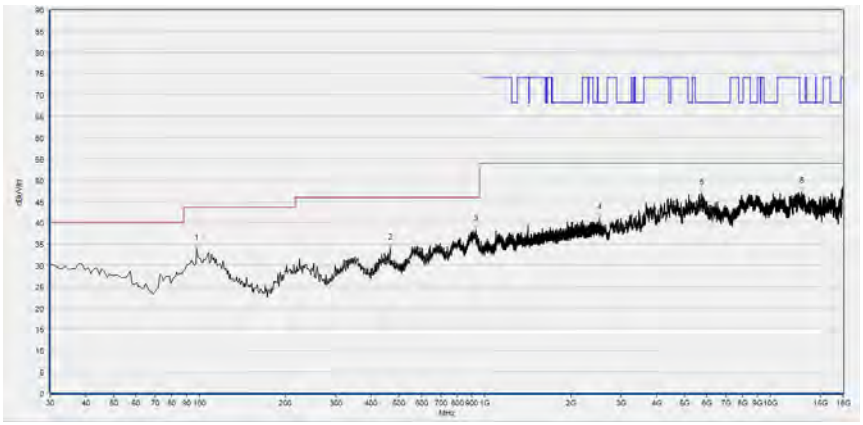


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
104.765	32.52	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
337.798	33.11	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
897.077	38.01	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2355.118	40.51	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8447.009	47.14	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12186.877	47.46	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

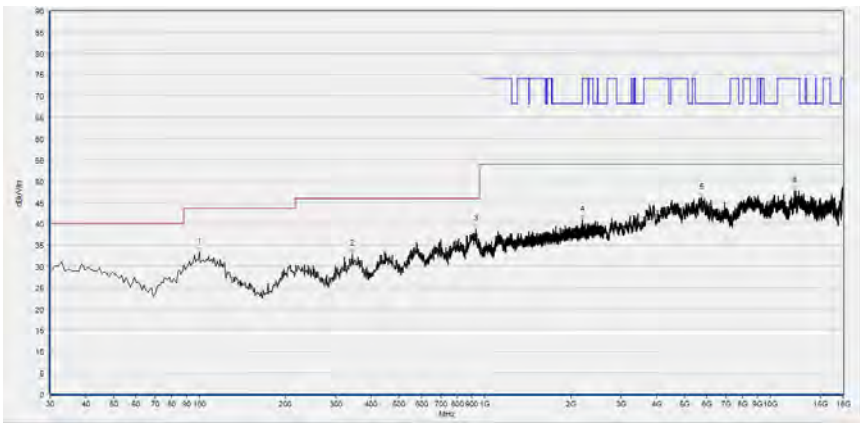
802.11ac (VHT80) Mode

Plot for Channel 42



Fre. (MHz)	PK (dBµV/m)	QP (dBµV/m)	AV (dBµV/m)	Limit-PK (dBµV/m)	Limit-QP (dBµV/m)	Limit-AV (dBµV/m)	Antenna	Verdict
97.968	33.81	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
465.966	34.07	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
932.032	38.37	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2517.839	41.08	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5748.390	46.92	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12907.742	47.30	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

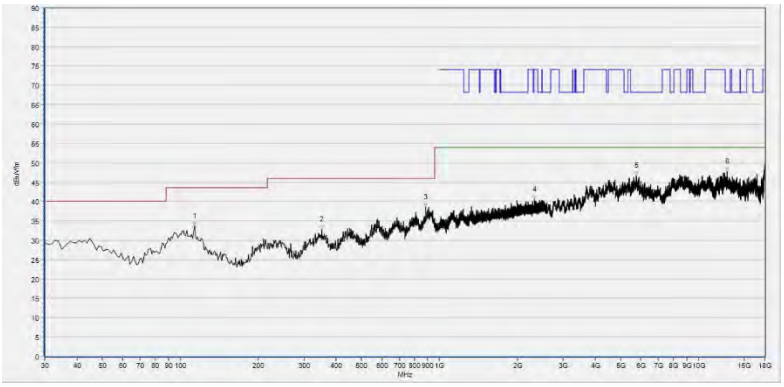
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBµV/m)	QP (dBµV/m)	AV (dBµV/m)	Limit-PK (dBµV/m)	Limit-QP (dBµV/m)	Limit-AV (dBµV/m)	Antenna	Verdict
99.910	33.37	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
343.624	32.80	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
930.090	38.66	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2191.864	40.92	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5766.873	46.10	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12159.152	47.73	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

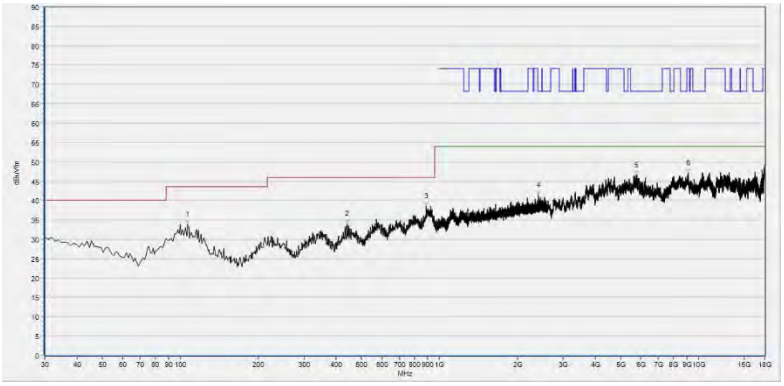
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 155



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
113.504	33.66	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
350.420	32.77	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
884.454	38.48	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2332.177	40.58	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5757.632	46.77	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12910.822	47.78	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
106.707	33.89	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
440.721	34.09	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
890.280	38.56	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2402.601	41.34	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5751.470	46.54	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
9100.100	47.14	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

END OF REPORT