REPORT No.: SZ24040389W06

TEST REPORT

APPLICANT	:	BLU Products, Inc.
PRODUCT NAME	:	Smart Phone
MODEL NAME	:	G64L
BRAND NAME	:	BLU
FCC ID	:	YHLBLU64H
STANDARD(S)	:	47 CFR Part 15 Subpart E
RECEIPT DATE	:	2024-05-29
TEST DATE	:	2024-05-30 to 2024-07-04
ISSUE DATE	:	2024-07-22

Edited by: Peng Mi (Rapporteur)

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MORLAB

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DIRECTORY

Change History		
Version	**Date**	**Reason for change**
1.0	2024-07-22	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	Jun. 11, 2024	Lin Haoyang	PASS	No deviation
3	15.407(a)	Maximum Conducted Output Power	Jun. 11, 2024	Lin Haoyang	PASS	No deviation
4	15.407(a) (e)	Emission Bandwidth	Jun. 11, 2024	Lin Haoyang	PASS	No deviation
5	15.407(a)	Peak Power Spectral Density	Jun. 11, 2024	Lin Haoyang	PASS	No deviation
6	15.407(g)	Frequency Stability	Jun. 11, 2024	Lin Haoyang	PASS	No deviation
7	15.407(h)	DFS	Jun. 11, 2024	Lin Haoyang	PASS	No deviation
8	15.207	Conducted Emission	May 31, 2024	Wang Deyong	PASS	No deviation
9	15.407(b)	Restricted Frequency Bands	Jun. 21 to 28, 2024	Gao Jianrou	PASS	No deviation
10	15.407(b)	Radiated Emission	Jun. 03, 2024 to Jul. 04, 2024	Gao Jianrou	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 KDB 789033 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 Equipment

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
EXA Signal Analyzer	MY53470836	N9010A	Agilent	2024.02.19	2025.02.18
USB Wideband Power Sensor	MY54180008	U2021XA	Agilent	2023.10.17	2024.10.16
Temperature Chamber	12108015	DTL-003S 101	YOMA	2023.09.19	2024.09.18
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial Cable	CB02	RF02	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A
Attenuator	MTJ6004-10	10dB	MTJ cooperation	N/A	N/A

1.2.2 Conducted Emission Test Equipment

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2024.01.25	2025.01.24
LISN	8127449	NSLK 8127	Schwarzbeck	2024.02.02	2025.02.01
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2024.05.30	2025.05.29
RF Coaxial Cable (DC-100MHz)	BNC	MRE04	Qualwave	N/A	N/A

1.2.3 List of Software Used

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

1.2.4 Radiated Test Equipment

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY54130016	N9038A	Agilent	2024.05.30	2025.05.29
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2023.07.01	2024.06.30
				2024.06.22	2025.06.21
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2023.06.26	2024.06.25
				2024.06.03	2025.06.02
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2023.07.01	2024.06.30
				2024.06.22	2025.06.21
Test Antenna – Horn	BBHA9170 #773	BBHA9170	Schwarzbeck	2023.07.01	2024.06.30
				2024.06.22	2025.06.21
Preamplifier (10MHz-6GHz)	46732	S10M100L3802	LUCIX CORP.	2024.05.30	2025.05.29
Preamplifier (2GHz-18GHz)	61171/61172	S020180L3203	LUCIX CORP.	2024.05.30	2025.05.29
Preamplifier (18GHz-40GHz)	DS77209	DCLNA0118-40C-S	Decentest	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE001	PE330	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE002	CLU18	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE003	CLU18	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-40GHz)	22290045	QA360-40-KK-0.5	Qualwave	N/A	N/A
RF Coaxial Cable (DC-40GHz)	22290046	QA360-40-KKF-2	Qualwave	N/A	N/A
RF Coaxial Cable (DC-18GHz)	22120181	QA500-18-NN-5	Qualwave	N/A	N/A
Notch Filter	N/A	WRCG-5150-5350	Wainwright	N/A	N/A
Notch Filter	N/A	WRCG-5470-5725	Wainwright	N/A	N/A
Notch Filter	N/A	WRCG-5725-5850	Wainwright	N/A	N/A
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.05.10	2025.05.09

1.3. Measurement Uncertainty

Test Items	Uncertainty	Remark
Peak Output Power	±2.22dB	Confidence levels of 95%
Power Spectral Density	±2.22dB	Confidence levels of 95%
Bandwidth	±5%	Confidence levels of 95%
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 #300 Miami, FL 33166, USA
Manufacturer	BLU Products, Inc.
Manufacturer Address	8600 NW 36th Street, Suite #300 Miami, FL 33166, USA

2.2. Information of EUT

Product Name:	Smart Phone	
Sample No.:	1#	
Hardware Version:	SC6002LU-A	
Software Version:	BLU_G0990_V14.0.03.01_GENERIC 26-06-2024	
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; 5260MHz-5320MHz; 5745MHz-5825MHz	
Antenna Type:	PIFA Antenna	
Antenna Gain:	1.91dBi	
Accessory Information:	Battery	
	Brand Name:	BLU
	Model No.:	C806051500P
	Serial No.:	N/A
	Capacity:	5000mAh
	Rated Voltage:	3.87V
	Charge Limit:	4.45V
	Manufacturer:	Shenzhen jiuliyuan electronic 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 1: We use the dedicated software to control the EUT continuous transmission.

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

2.3. Channel List of EUT

(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-2A) 5260MHz-5320MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**52**	**5260**	56	5280
	60	**5300**	**64**	**5320**
40MHz	**54**	**5270**	**62**	**5310**
80MHz	**58**	**5290**		
(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**	**5755**	**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	**BPSK**	**6**/9/12/18/24/36/48/54Mbps	N/A
			QPSK		
			16QAM		
			64QAM		
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.

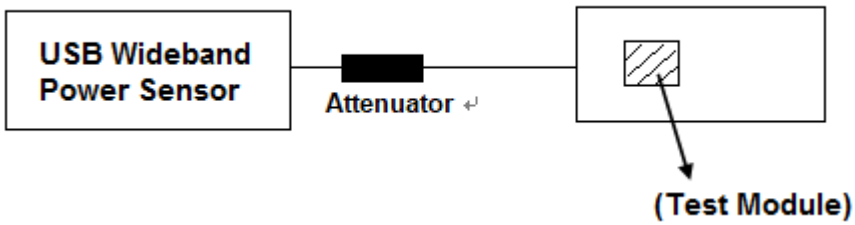
2.5. Test Conditions

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

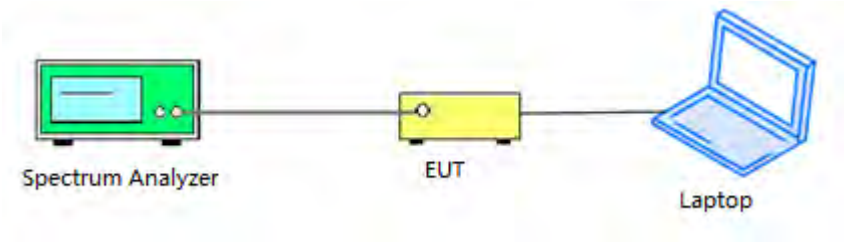
2.6. Test Setup Layout Diagram

2.6.1.Conducted Measurement

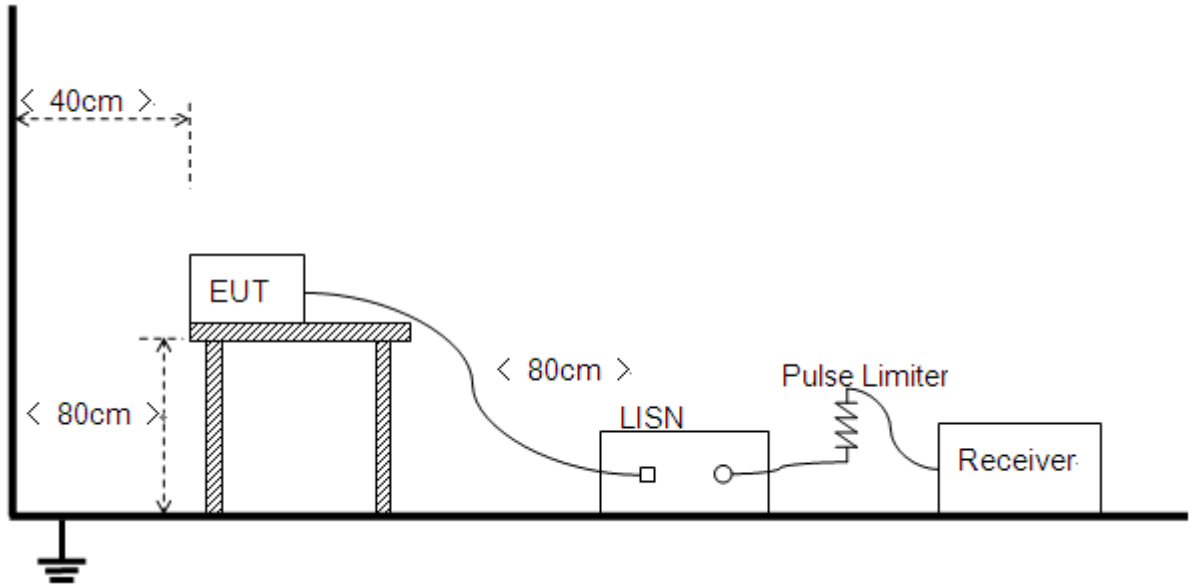
For power item that BW below 80MHz system:



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

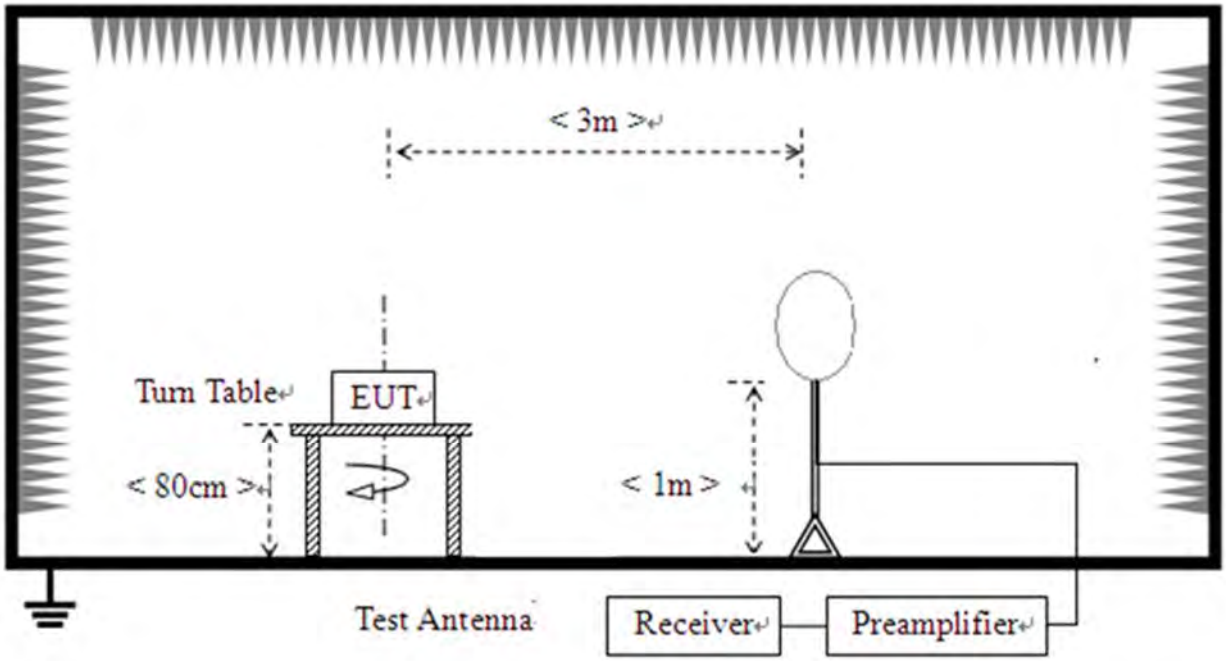


2.6.2.Conducted Emission Measurement

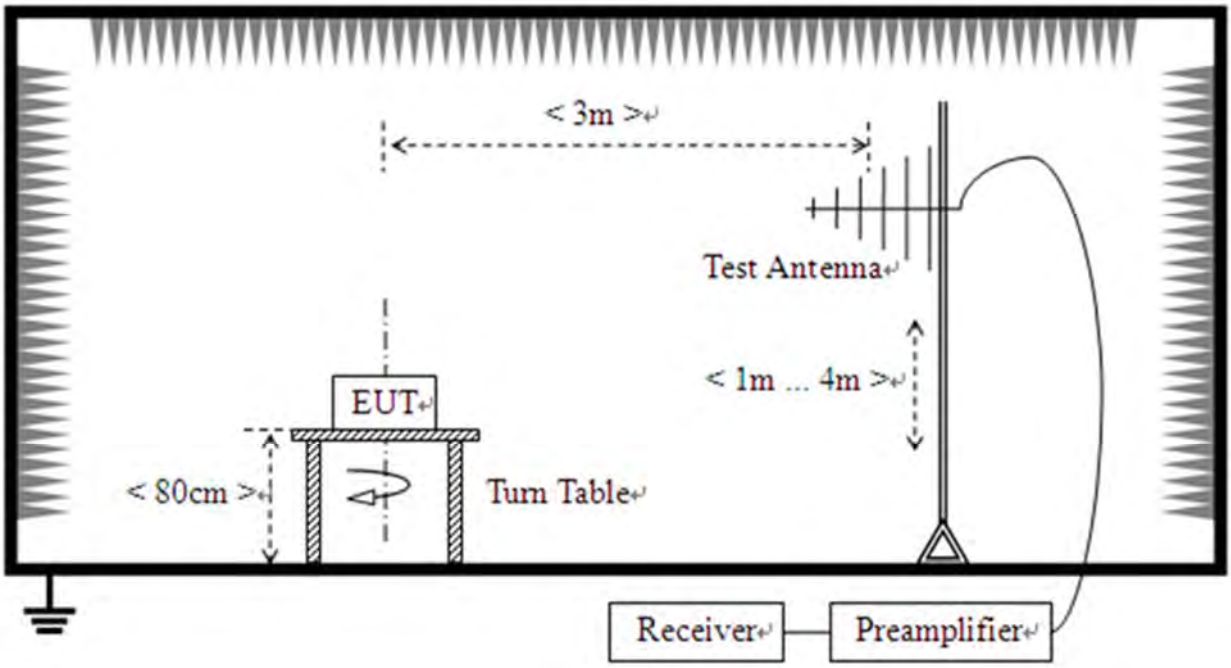


2.6.3.Radiation Measurement

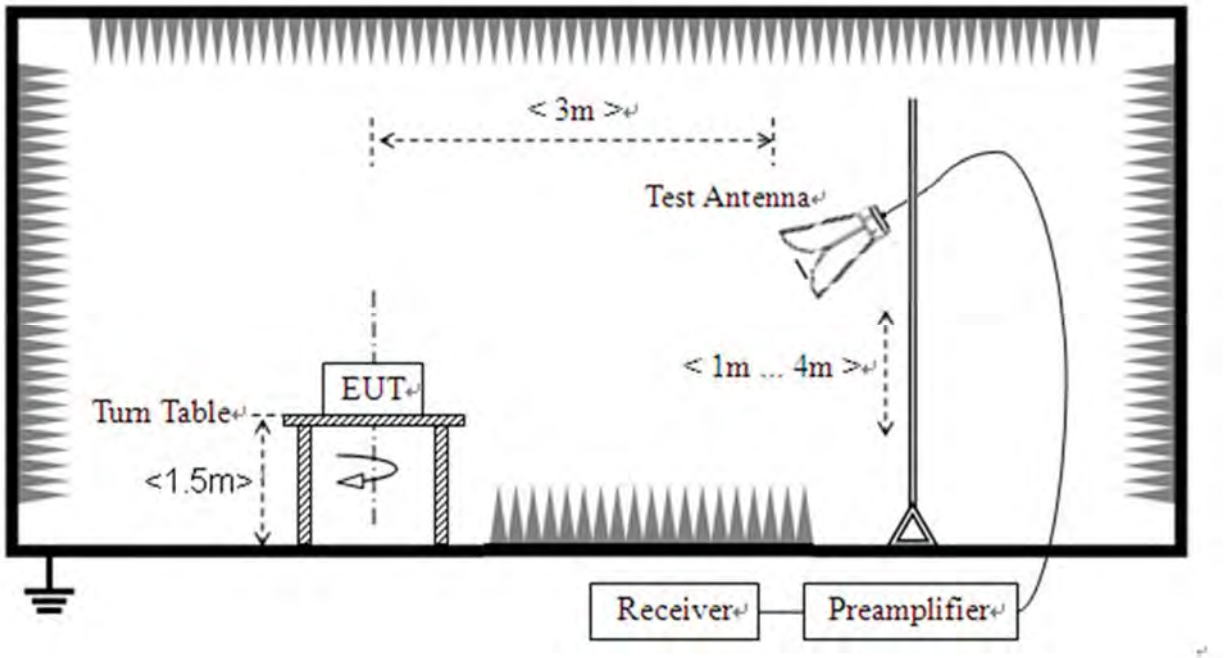
1) For radiated emissions from 9kHz to 30MHz



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

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, all test result in USB Wideband Power Sensor.

For ac (VHT80) mode power
The EUT (Equipment under the test) is coupled to the Spectrum analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in Spectrum analyzer.

3.3.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.3.4.Test Result

Refer to Annex A.2 in this report.

3.4. 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. Dynamic Frequency Selection

3.7.1.Requirement

According to FCC section 15.407(h), (1) Transmit power control (TPC). U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW. (2) Radar Detection Function of Dynamic Frequency Selection (DFS). U-NII devices operating with any part of its 26 dB emission bandwidth in the 5.25-5.35 GHz and 5.47-5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems. Operators shall only use equipment with a DFS mechanism that is turned on when operating in these bands. The device must sense for radar signals at 100 percent of its emission bandwidth. The minimum DFS detection threshold for devices with a maximum e.i.r.p. of 200 mW to 1 W is −64 dBm. For devices that operate with less than 200 mW e.i.r.p. and a power spectral density of less than 10 dBm in a 1 MHz band, the minimum detection threshold is −62 dBm. The detection threshold is the received power averaged over 1 microsecond referenced to a 0 dBi antenna. For the initial channel setting, the manufacturers shall be permitted to provide for either random channel selection or manual channel selection.

A U-NII network will employ a DFS function to detect signals from radar systems and to avoid co-channel operation with these systems. This applies to the 5250-5350 MHz and/or 5470-5725 MHz bands.1

Within the context of the operation of the DFS function, a U-NII device will operate in either Master Mode or Client Mode. U-NII devices operating in Client Mode can only operate in a network controlled by a U-NII device operating in Master Mode.2

Tables 1 and 2 shown below summarize the information contained in sections 5.1.1 and 5.1.2.

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master	Client Without Radar Detection

DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	**Master Device or Client with Radar Detection**	**Client Without Radar Detection**
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

The operational behavior and individual DFS requirements that are associated with these modes are as follows:

Master Devices

a) The Master Device will use DFS in order to detect Radar Waveforms with received signal strength above the DFS Detection Threshold in the 5250 − 5350 MHz and 5470 − 5725 MHz bands. DFS is not required in the 5150 − 5250 MHz or 5725 − 5825 MHz bands.

b) Before initiating a network on a Channel, the Master Device will perform a Channel Availability Check for specified time duration (Channel Availability Check Time) to ensure that there is no radar system operating on the Channel, using DFS described under subsection a) above.

c) The Master Device initiates a U-NII network by transmitting control signals that will enable other U-NII devices to Associate with the Master Device.

d) During normal operation, the Master Device will monitor the Channel (In-Service Monitoring) to ensure that there is no radar system operating on the Channel, using DFS described under a).

e) If the Master Device has detected a Radar Waveform during In-Service Monitoring as described under d), the Operating Channel of the U-NII network is no longer an Available Channel. The Master Device will instruct all associated Client Device(s) to stop transmitting on this Channel within the Channel Move Time. The transmissions during the Channel Move Time will be limited to the Channel Closing Transmission Time.

f) Once the Master Device has detected a Radar Waveform it will not utilize the Channel for the duration of the Non-Occupancy Period. 3.

g) If the Master Device delegates the In-Service Monitoring to a Client Device, then the

combination will be tested to the requirements described under d) through f) above.

Client Devices

a) A Client Device will not transmit before having received appropriate control signals from a Master Device.

b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.

c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.

d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.

e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear.

DFS Detection Thresholds

Table 3 below provides the DFS Detection Thresholds for Master Devices as well as Client Devices incorporating In-Service Monitoring.

Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 mill watt	-64 dBm
EIRP < 200 mill watt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 mill watt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. Note3: EIRP is based on the highest antenna gain.	

Response Requirements

Table 4 provides the response requirements for Master and Client Devices incorporating DFS.

Table 4: DFS Response Requirement Values

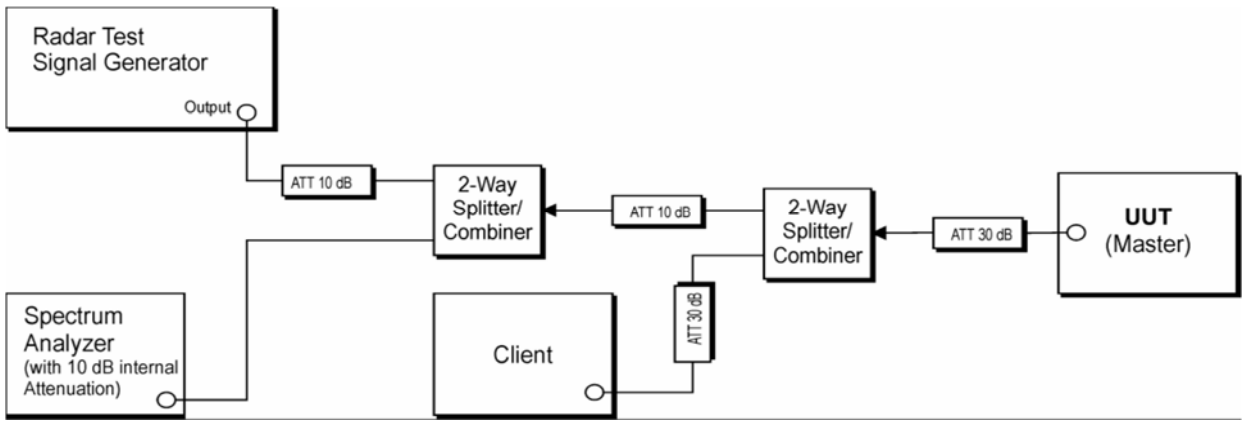
Parameter	Value
Non-occupancy period	Minimum 30 minutes

Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. **Note 3:** During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

3.7.2.Test Description

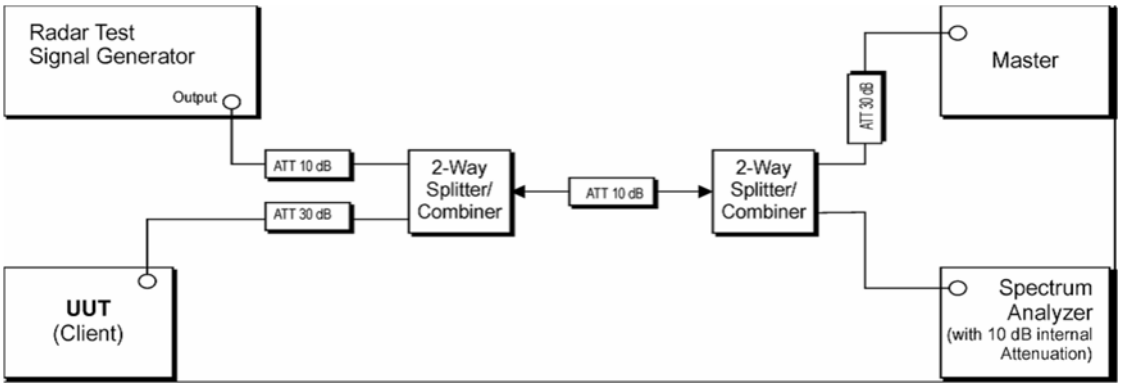
According to Section 7.2 of KDB 905462 D02 V01R01

1. Setup for Master with injection at the Master



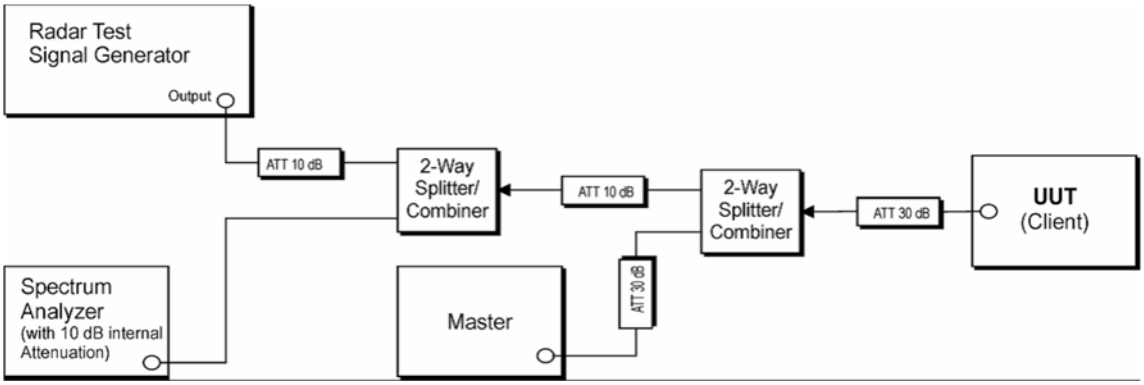
(Example Conducted Setup where UUT is a Master and Radar Test Waveforms are injected into the Master)

2. Setup for Client with injection at the Master



(Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Master)

3. Setup for Client with injection at the Client



(Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Client)

3.7.3.Information of Companion Device

Product Name:	Router
Manufacturer:	ASUS
FCC ID:	MSQ-RTAXJF00
Device Type:	Master Device
Operating Mode:	Master Mode
Serial No:	M3IAJF201046
Antenna Gain:	2.0dBi

3.7.4.Test Result

Refer to Annex A.6 in this report.

3.8. Conducted Emission

3.8.1.Requirement

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

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

Note:

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

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

3.8.2.Test Procedures

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

3.8.3.Test Setup Layout

Refer to chapter 2.6.2 in this report.

3.8.4.Test Result

Refer to Annex A.7 in this report.

3.9. Restricted Frequency Bands

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:
(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).

3.9.2.Test Procedures

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.
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.

3.9.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.9.4.Test Result

Refer to Annex A.8 in this report.

3.10. Radiated Emission

3.10.1.Requirement

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).

3.10.2.Test Procedures

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

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

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

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

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

3.10.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.10.4.Test Result

Refer to Annex A.9 in this report.

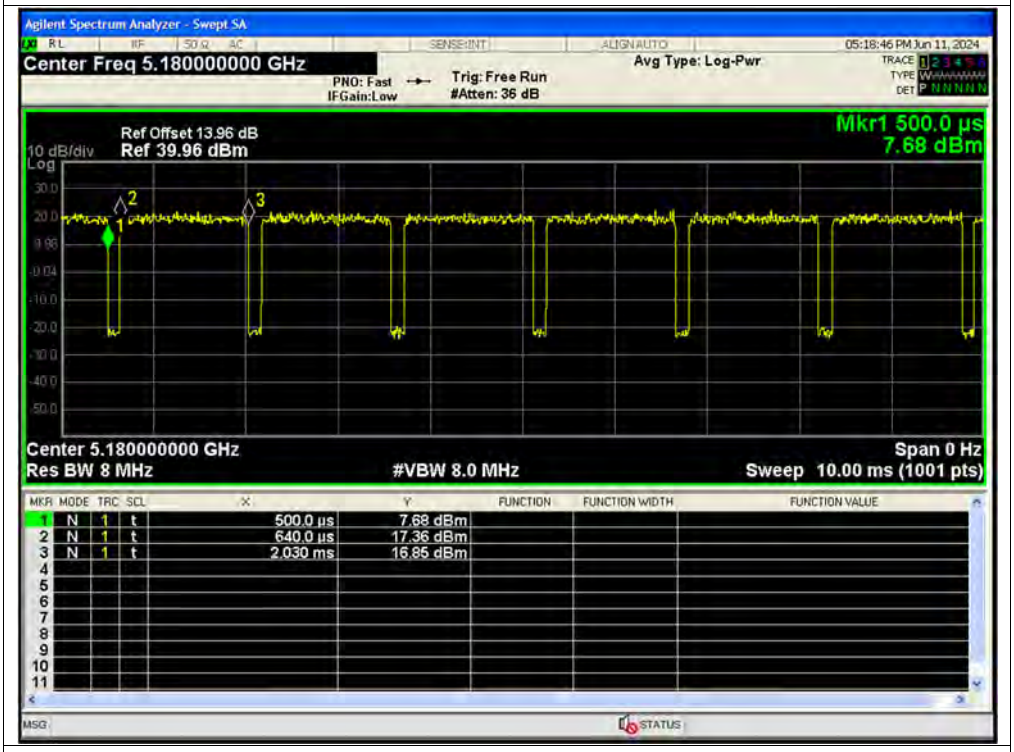
Annex A Test Data and Result

A.1. Duty Cycle of Test Signal

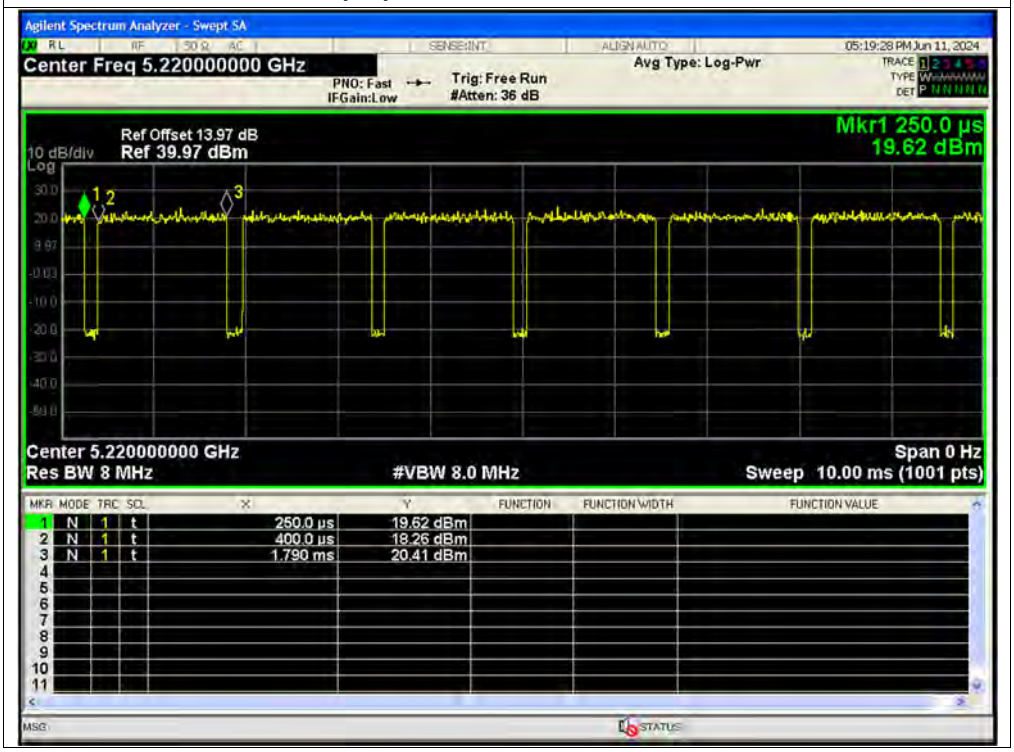
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	Ant1	90.85	0.42	0.72
NVNT	a	5220	Ant1	90.26	0.45	0.72
NVNT	a	5240	Ant1	90.26	0.45	0.72
NVNT	a	5260	Ant1	90.26	0.45	0.72
NVNT	a	5300	Ant1	90.26	0.45	0.72
NVNT	a	5320	Ant1	90.91	0.41	0.71
NVNT	a	5745	Ant1	90.91	0.41	0.71
NVNT	a	5785	Ant1	90.91	0.41	0.71
NVNT	a	5825	Ant1	90.26	0.45	0.72
NVNT	n20	5180	Ant1	88.64	0.52	0.85
NVNT	n20	5220	Ant1	88.64	0.52	0.85
NVNT	n20	5240	Ant1	89.39	0.49	0.85
NVNT	n20	5260	Ant1	88.64	0.52	0.85
NVNT	n20	5300	Ant1	88.72	0.52	0.85
NVNT	n20	5320	Ant1	88.72	0.52	0.85
NVNT	n20	5745	Ant1	87.31	0.59	0.85
NVNT	n20	5785	Ant1	88.72	0.52	0.85
NVNT	n20	5825	Ant1	89.31	0.49	0.85
NVNT	n40	5190	Ant1	80.82	0.92	1.69
NVNT	n40	5230	Ant1	80.82	0.92	1.69
NVNT	n40	5270	Ant1	77.63	1.1	1.69
NVNT	n40	5310	Ant1	79.73	0.98	1.69
NVNT	n40	5755	Ant1	77.63	1.1	1.69
NVNT	n40	5795	Ant1	80.82	0.92	1.69
NVNT	ac20	5180	Ant1	88.81	0.52	0.84
NVNT	ac20	5220	Ant1	88.72	0.52	0.85
NVNT	ac20	5240	Ant1	88.81	0.52	0.84
NVNT	ac20	5260	Ant1	88.72	0.52	0.85
NVNT	ac20	5300	Ant1	88.15	0.55	0.84
NVNT	ac20	5320	Ant1	88.81	0.52	0.84
NVNT	ac20	5745	Ant1	88.81	0.52	0.84
NVNT	ac20	5785	Ant1	88.72	0.52	0.85
NVNT	ac20	5825	Ant1	88.81	0.52	0.84

NVNT	ac40	5190	Ant1	80	0.97	1.67
NVNT	ac40	5230	Ant1	77.63	1.1	1.69
NVNT	ac40	5270	Ant1	77.92	1.08	1.67
NVNT	ac40	5310	Ant1	78.67	1.04	1.69
NVNT	ac40	5755	Ant1	77.63	1.1	1.69
NVNT	ac40	5795	Ant1	77.63	1.1	1.69
NVNT	ac80	5210	Ant1	68.18	1.66	3.33
NVNT	ac80	5290	Ant1	65.91	1.81	3.45
NVNT	ac80	5775	Ant1	66.67	1.76	3.33

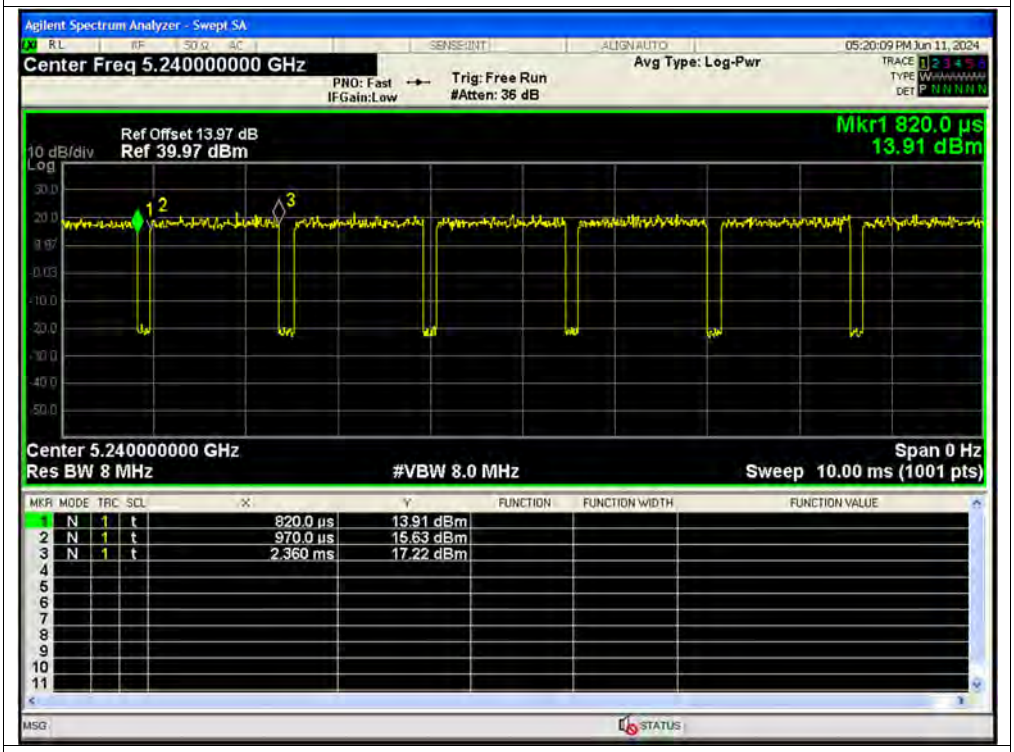
Test Graphs
Duty Cycle NVNT a 5180MHz Ant1



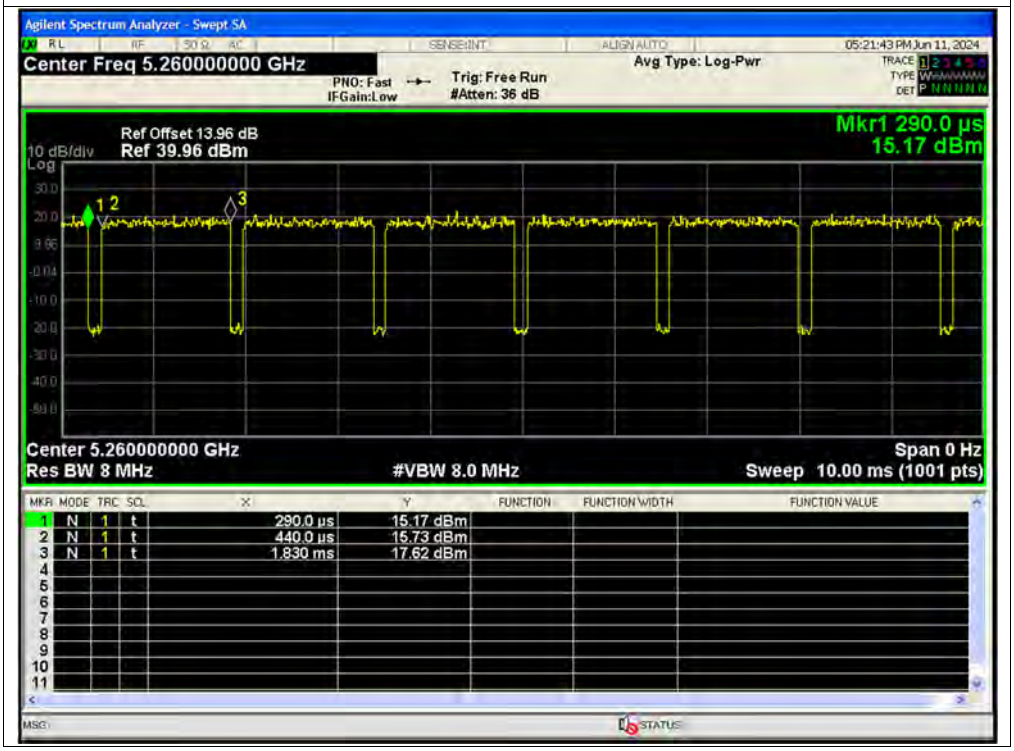
Duty Cycle NVNT a 5220MHz Ant1



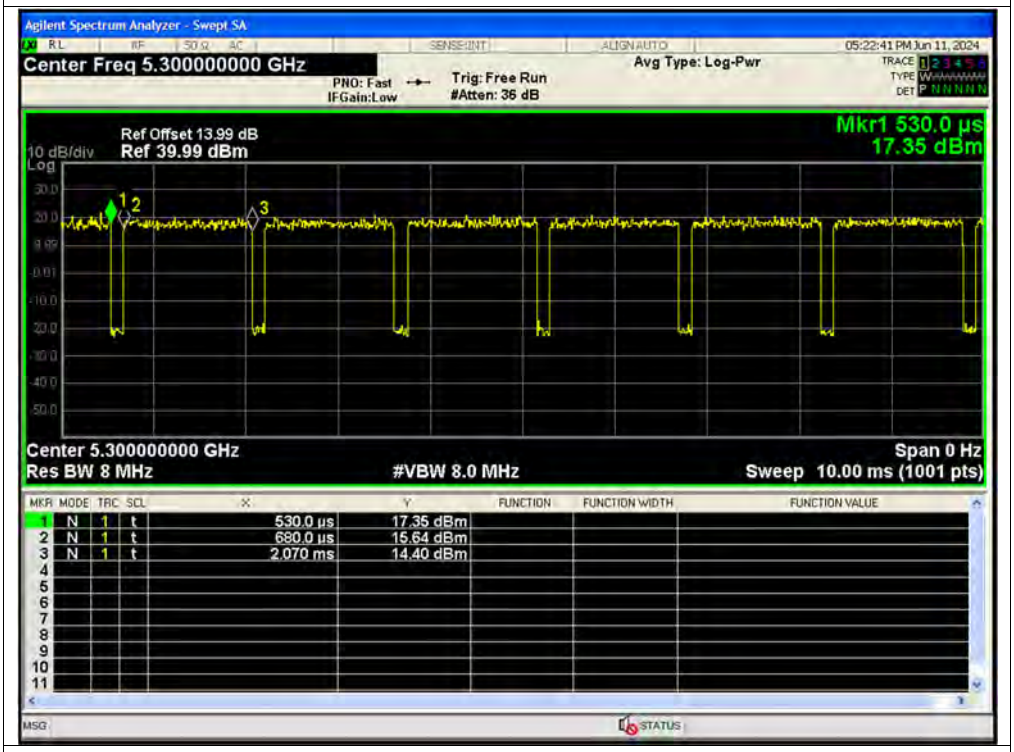
Duty Cycle NVNT a 5240MHz Ant1



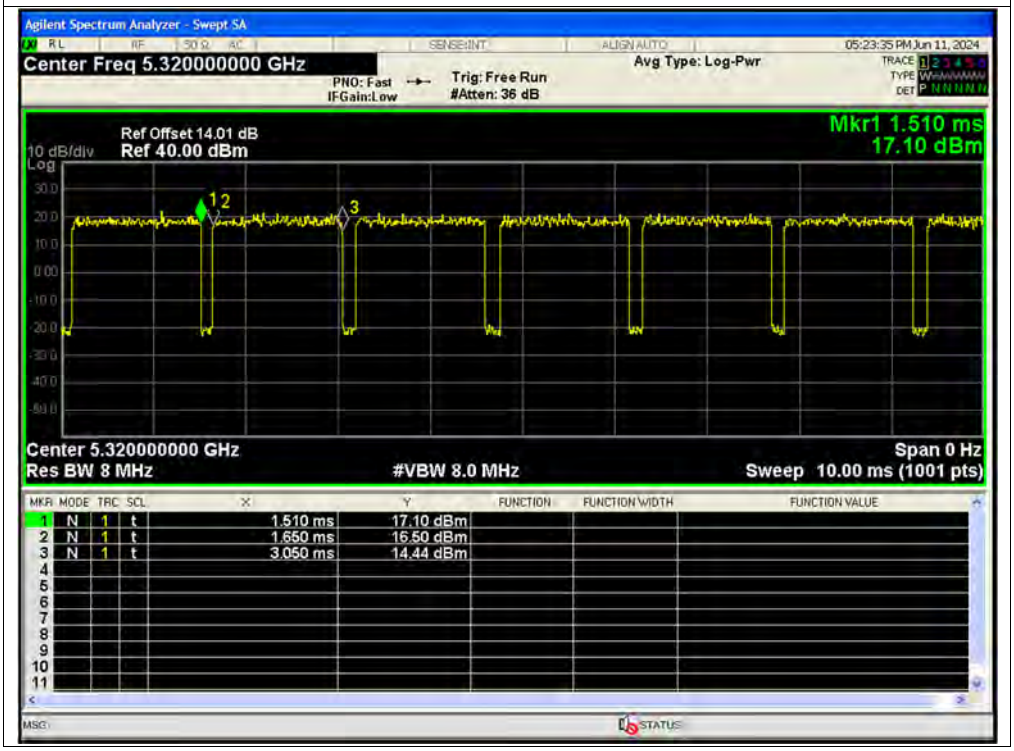
Duty Cycle NVNT a 5260MHz Ant1



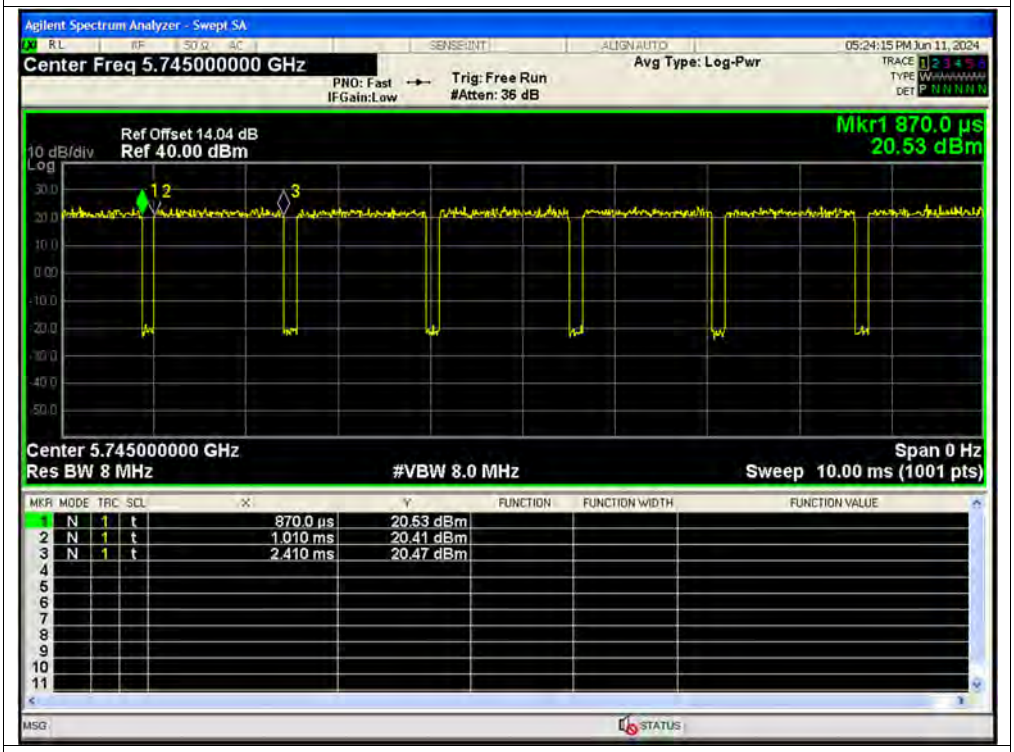
Duty Cycle NVNT a 5300MHz Ant1



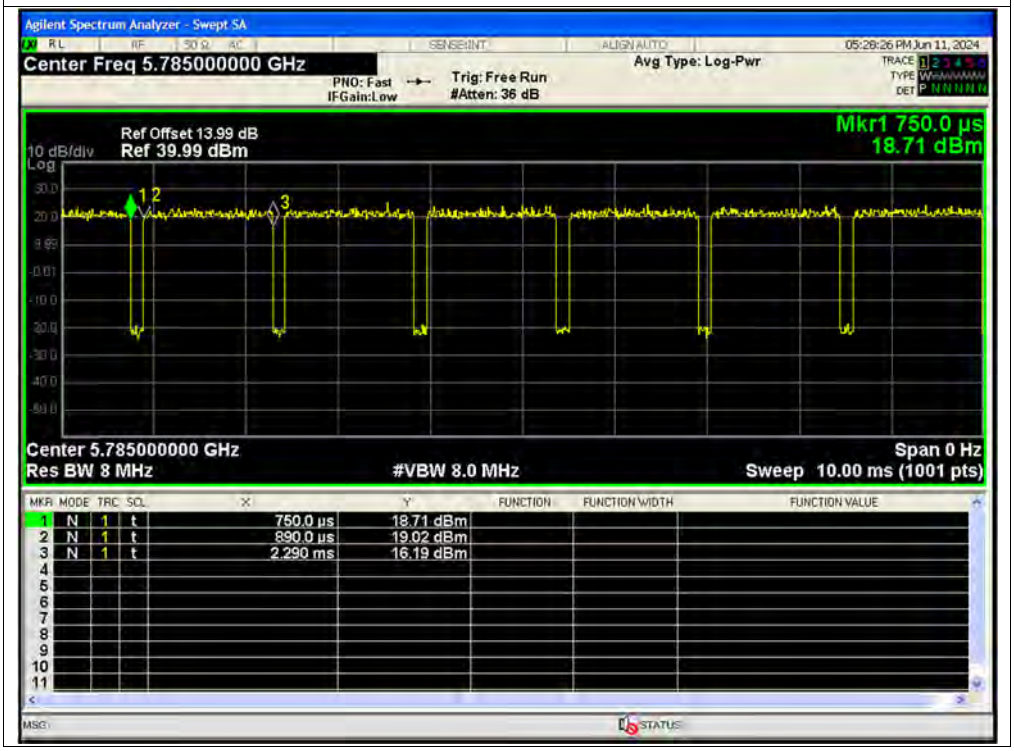
Duty Cycle NVNT a 5320MHz Ant1



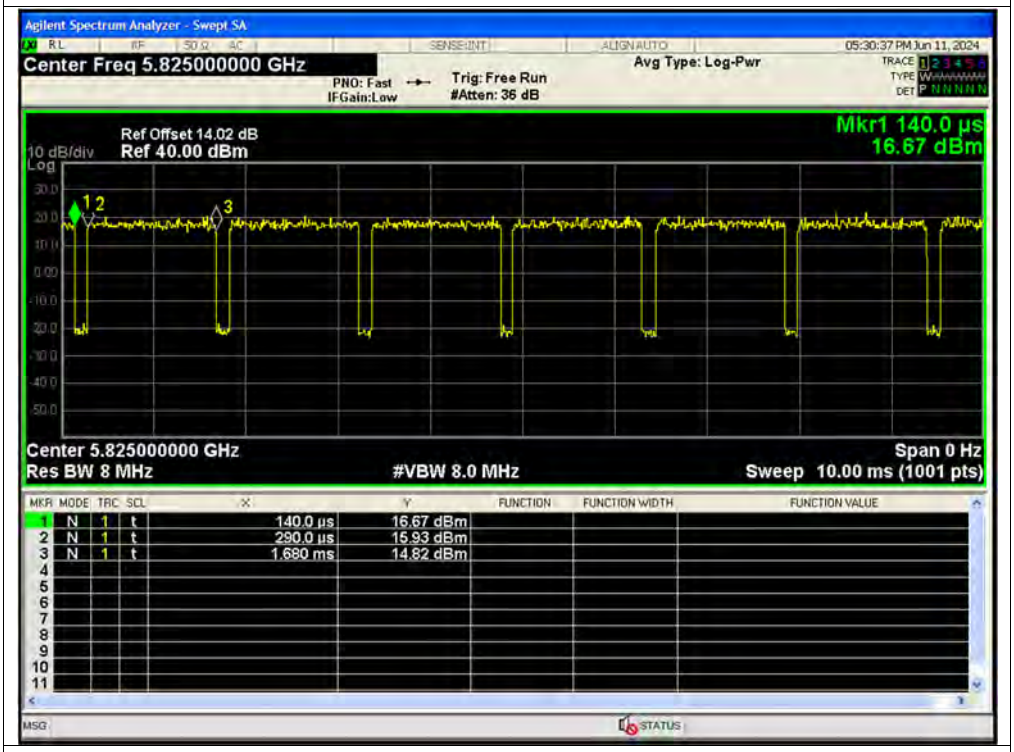
Duty Cycle NVNT a 5745MHz Ant1



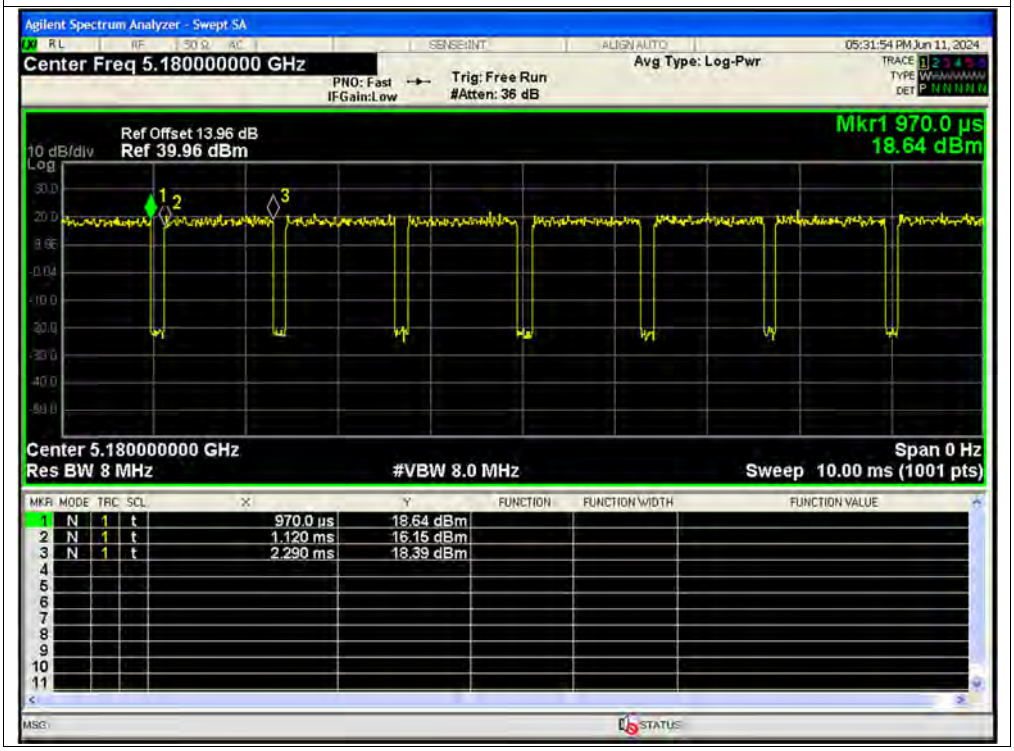
Duty Cycle NVNT a 5785MHz Ant1



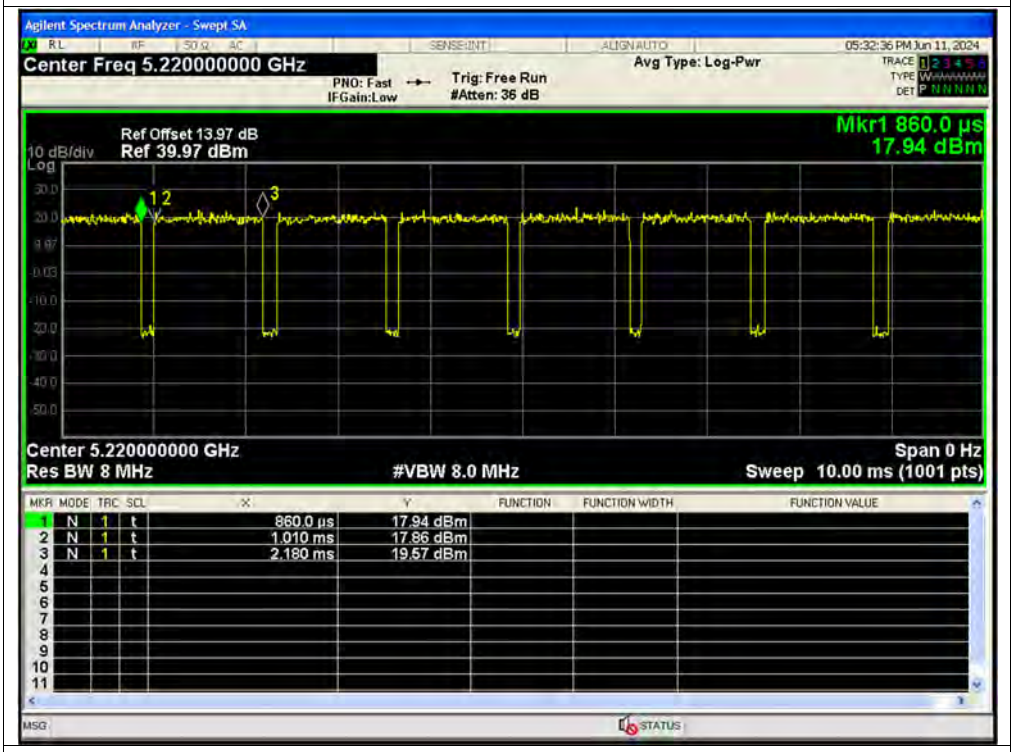
Duty Cycle NVNT a 5825MHz Ant1



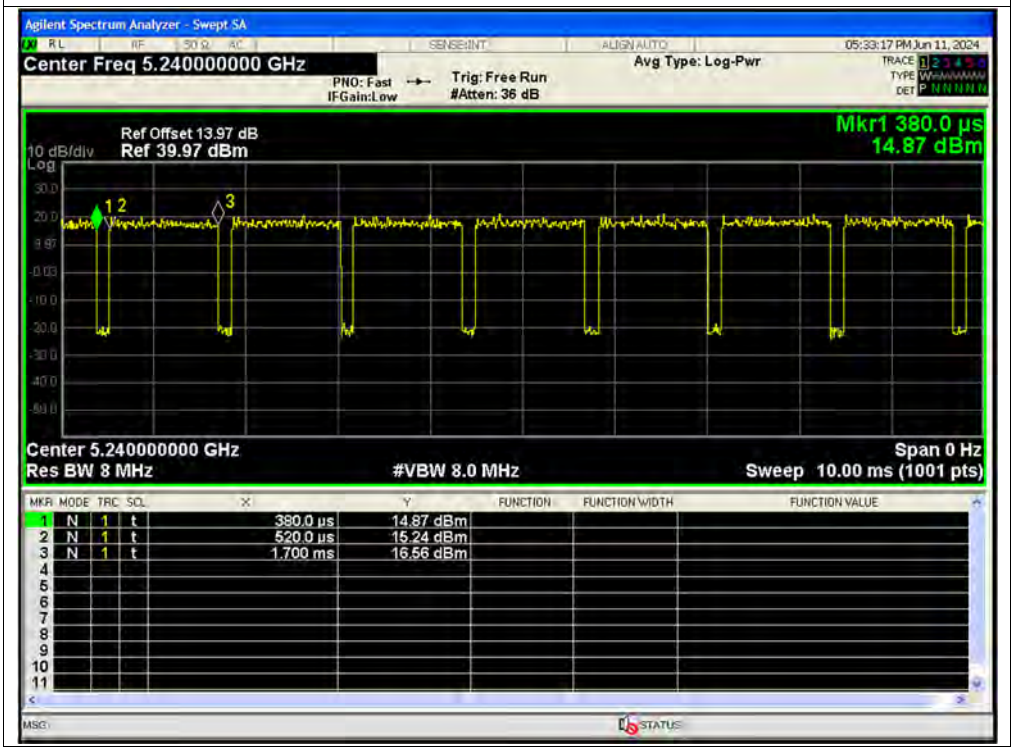
Duty Cycle NVNT n20 5180MHz Ant1



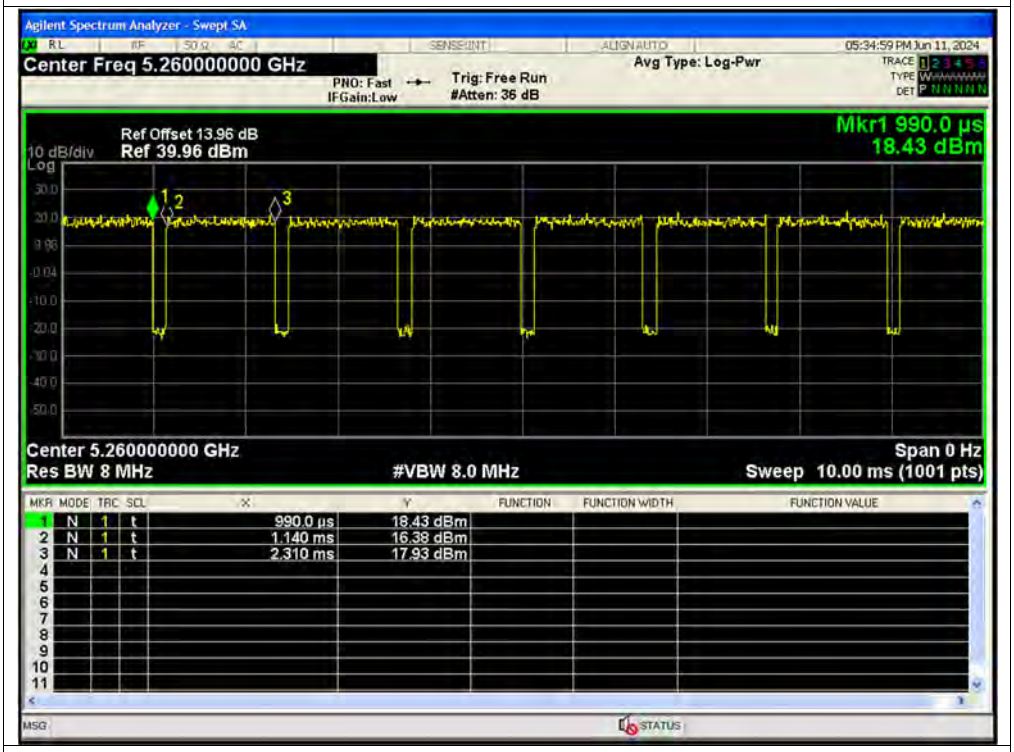
Duty Cycle NVNT n20 5220MHz Ant1



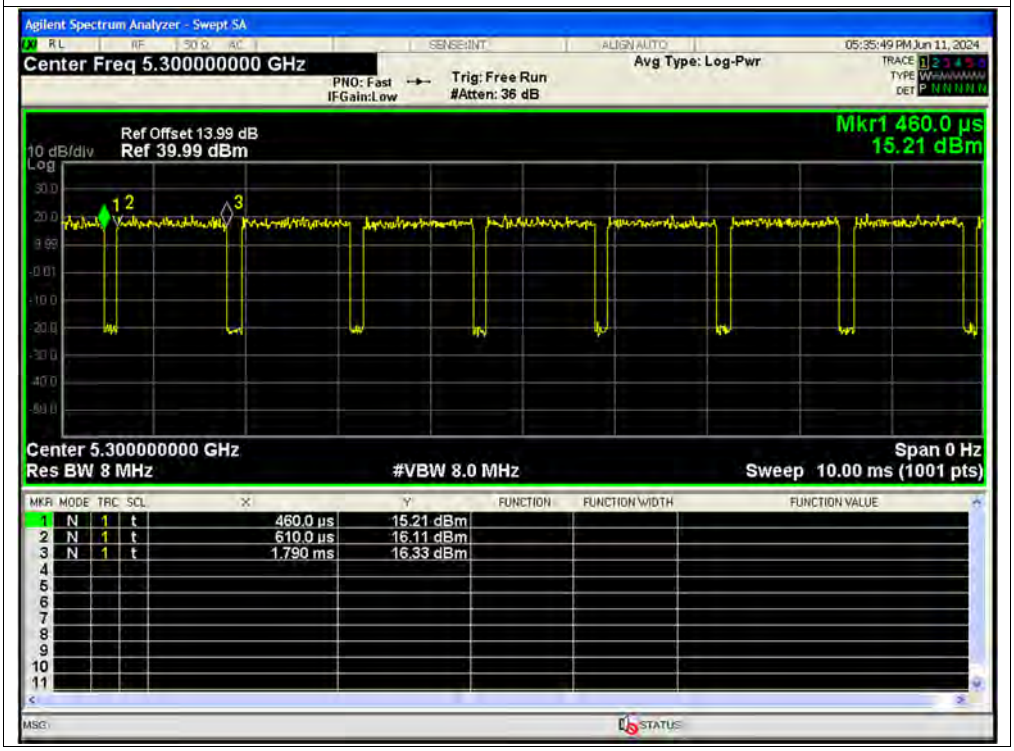
Duty Cycle NVNT n20 5240MHz Ant1



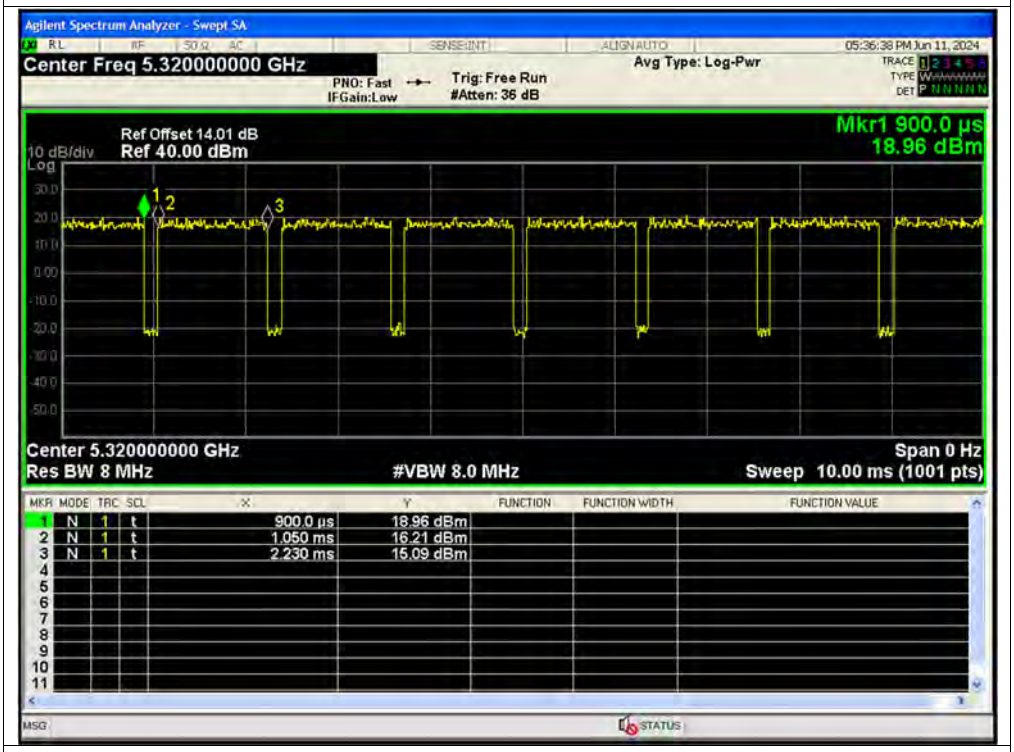
Duty Cycle NVNT n20 5260MHz Ant1



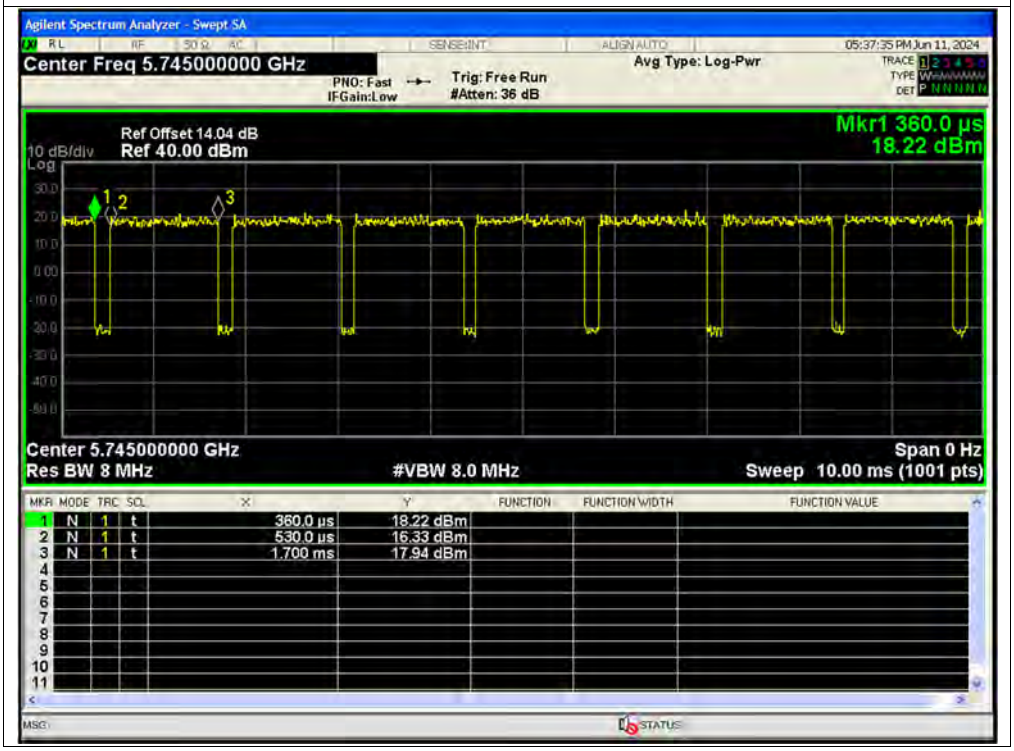
Duty Cycle NVNT n20 5300MHz Ant1



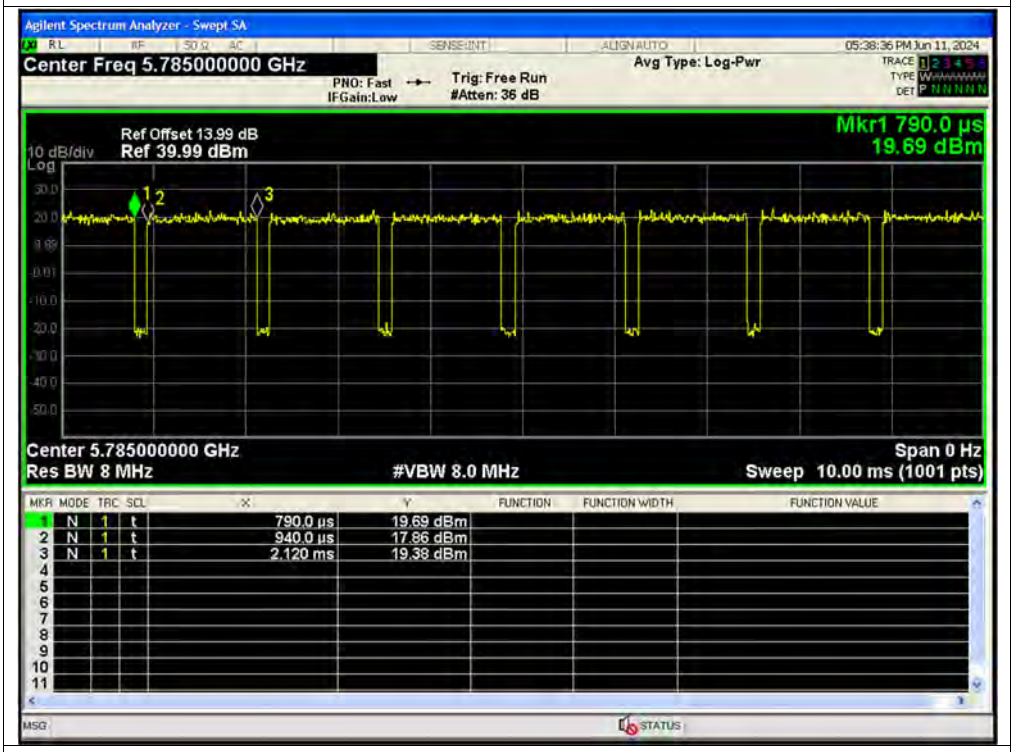
Duty Cycle NVNT n20 5320MHz Ant1



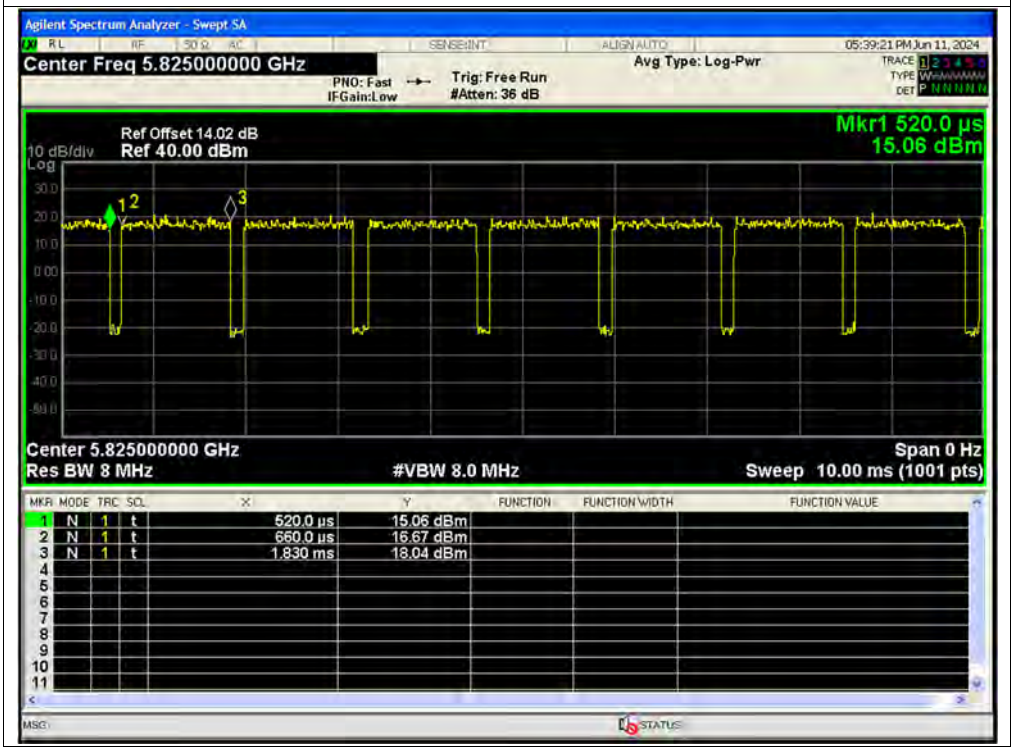
Duty Cycle NVNT n20 5745MHz Ant1



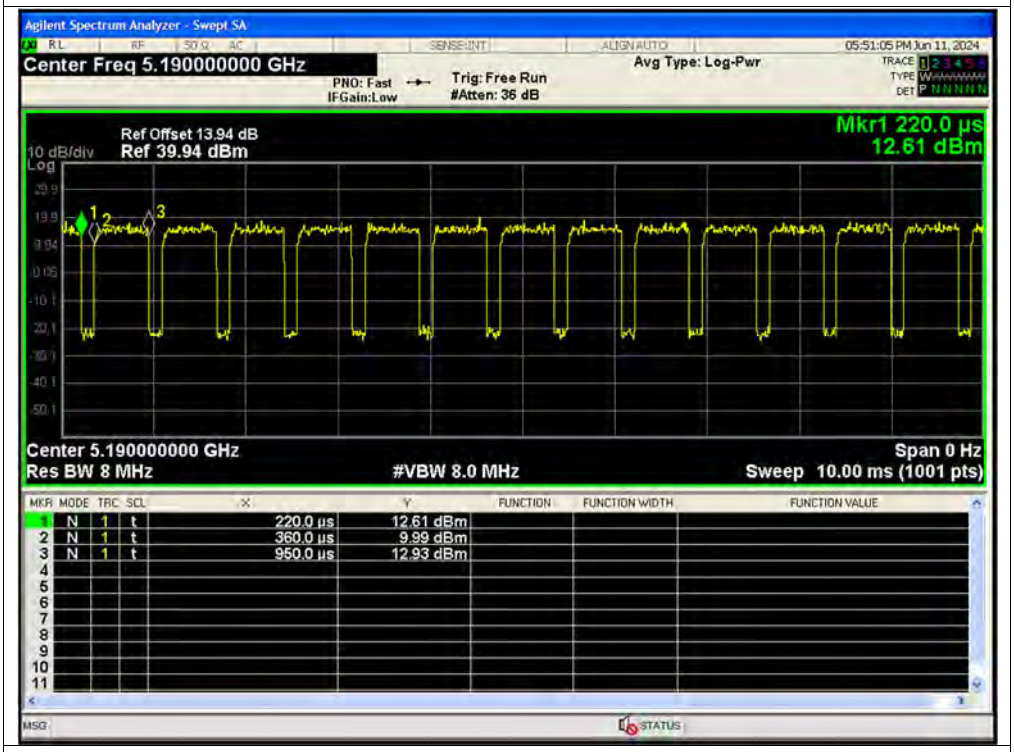
Duty Cycle NVNT n20 5785MHz Ant1



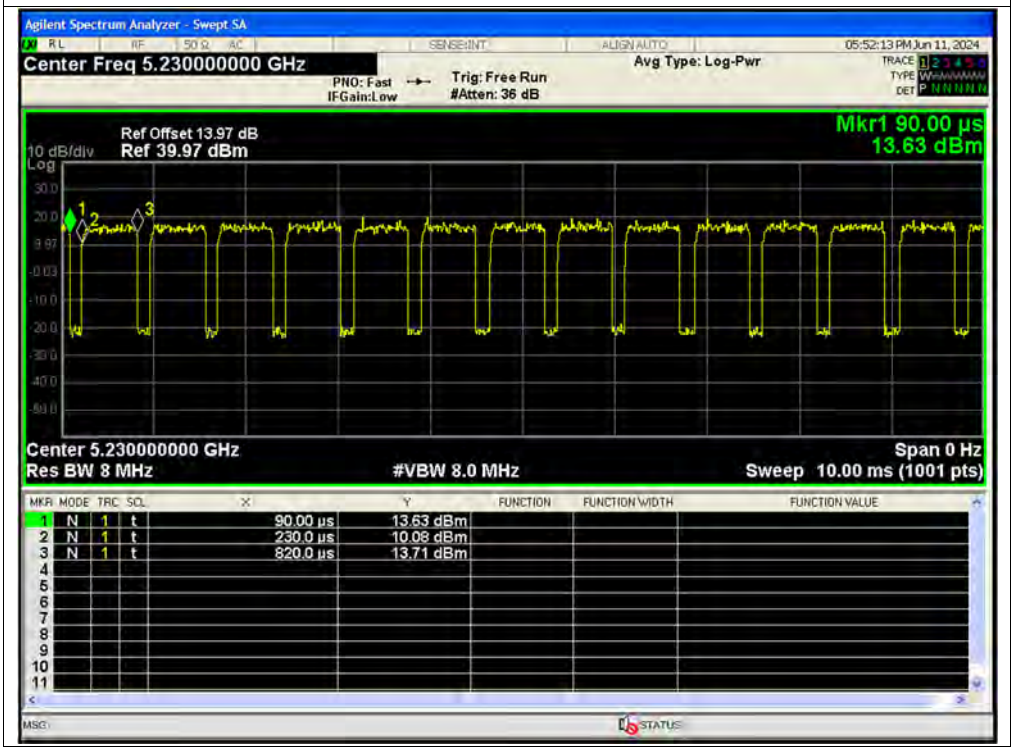
Duty Cycle NVNT n20 5825MHz Ant1



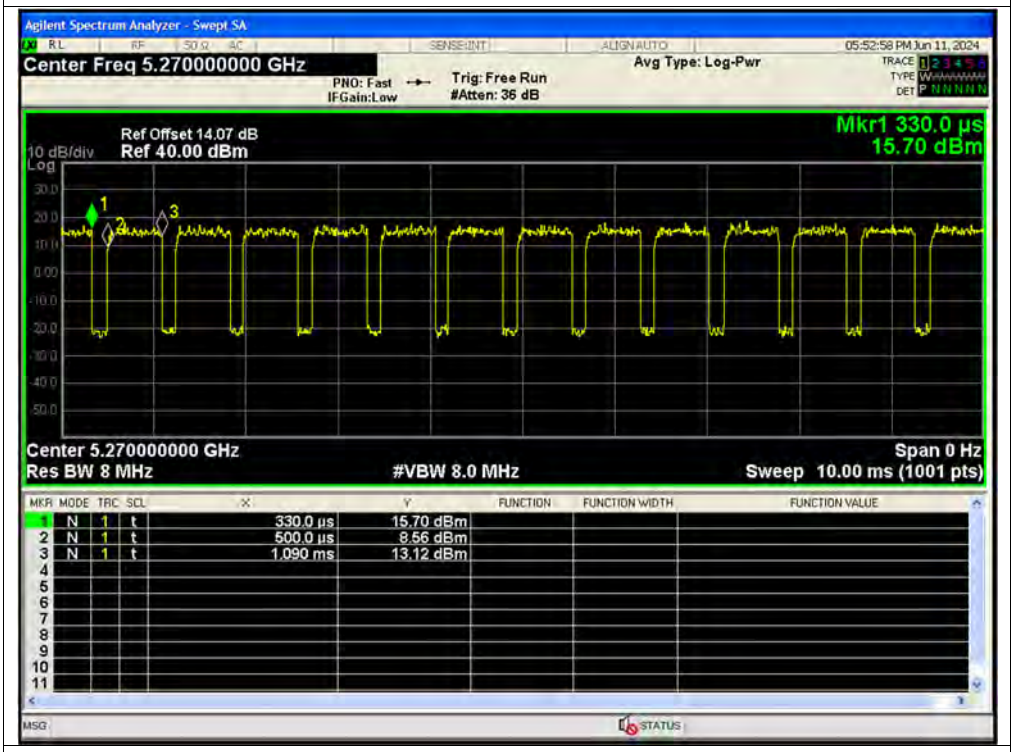
Duty Cycle NVNT n40 5190MHz Ant1



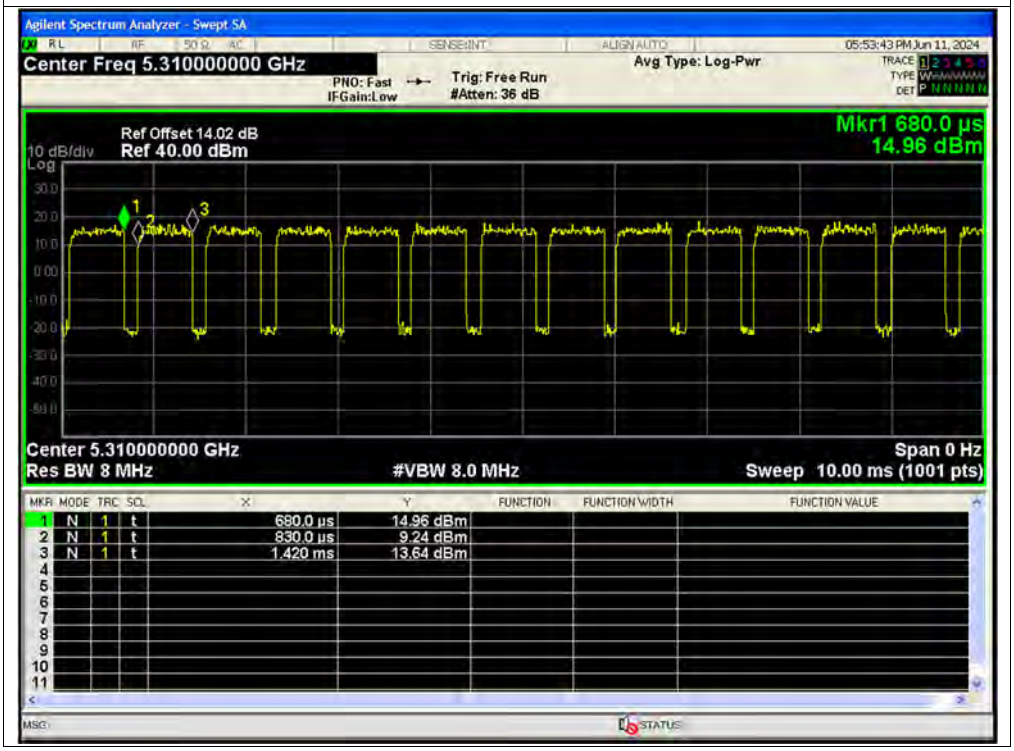
Duty Cycle NVNT n40 5230MHz Ant1



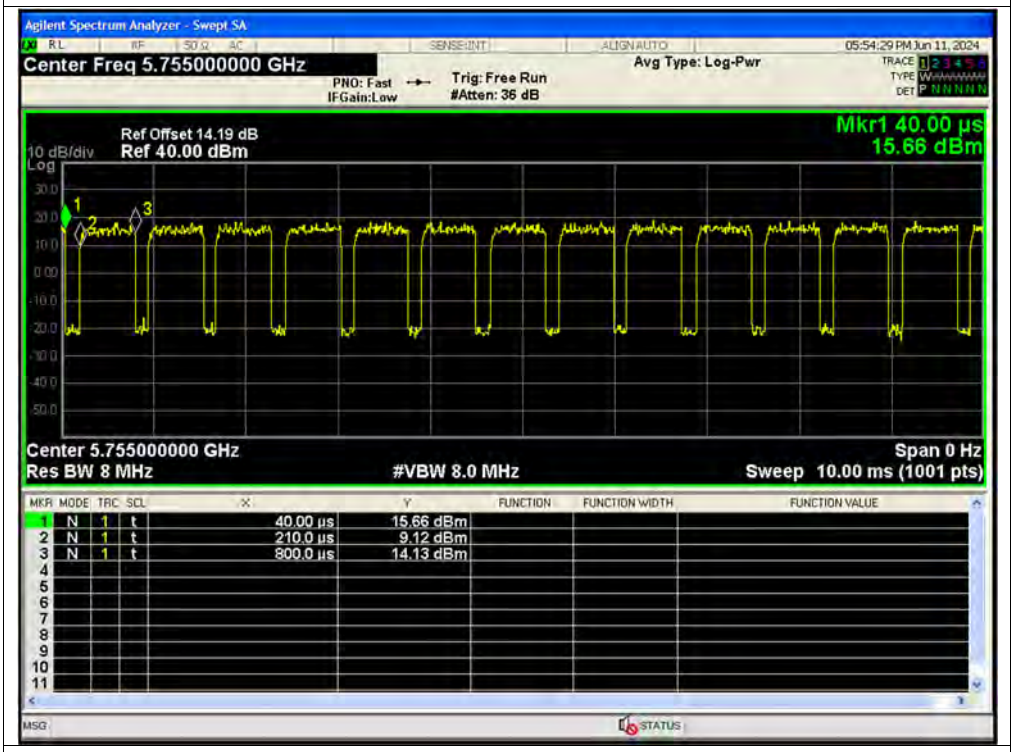
Duty Cycle NVNT n40 5270MHz Ant1



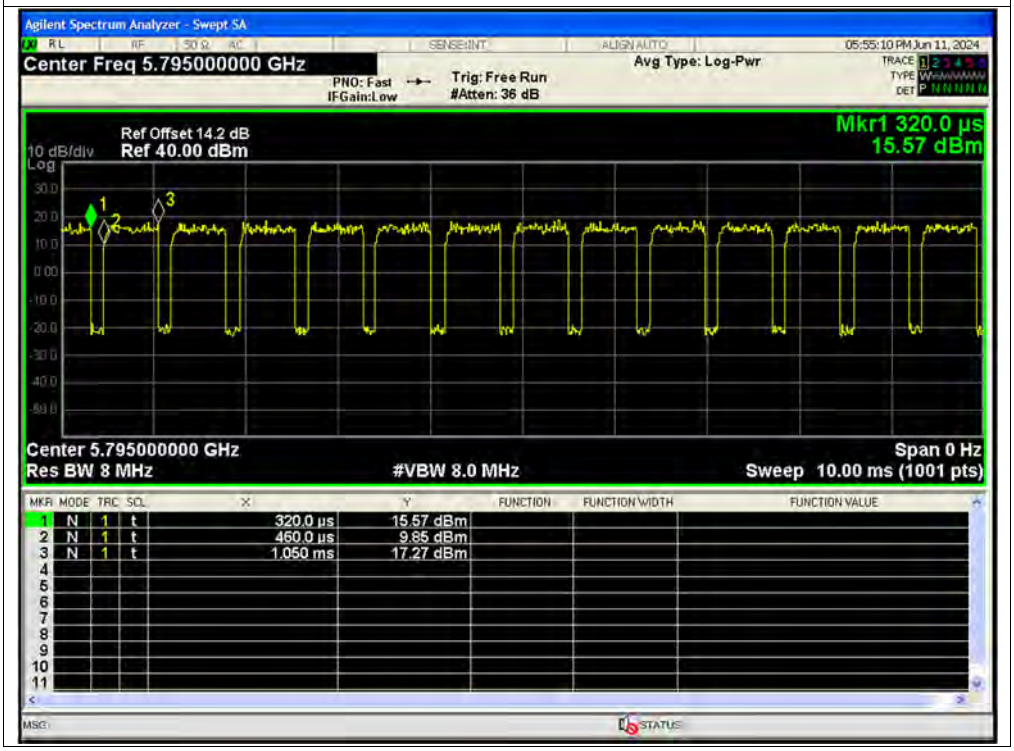
Duty Cycle NVNT n40 5310MHz Ant1



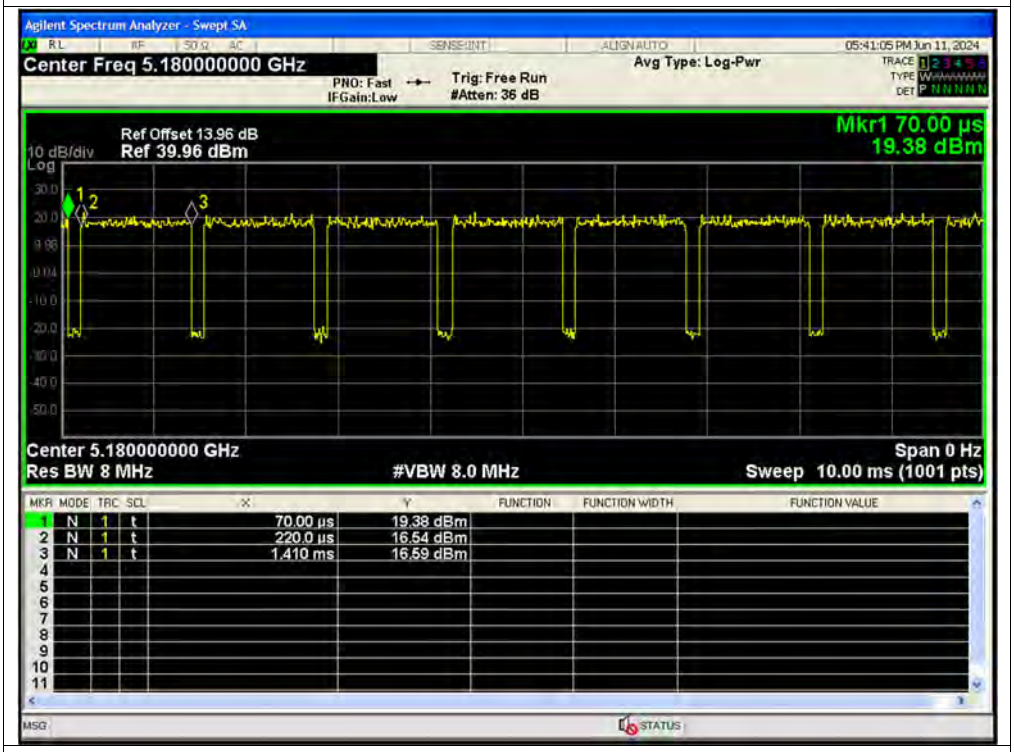
Duty Cycle NVNT n40 5755MHz Ant1



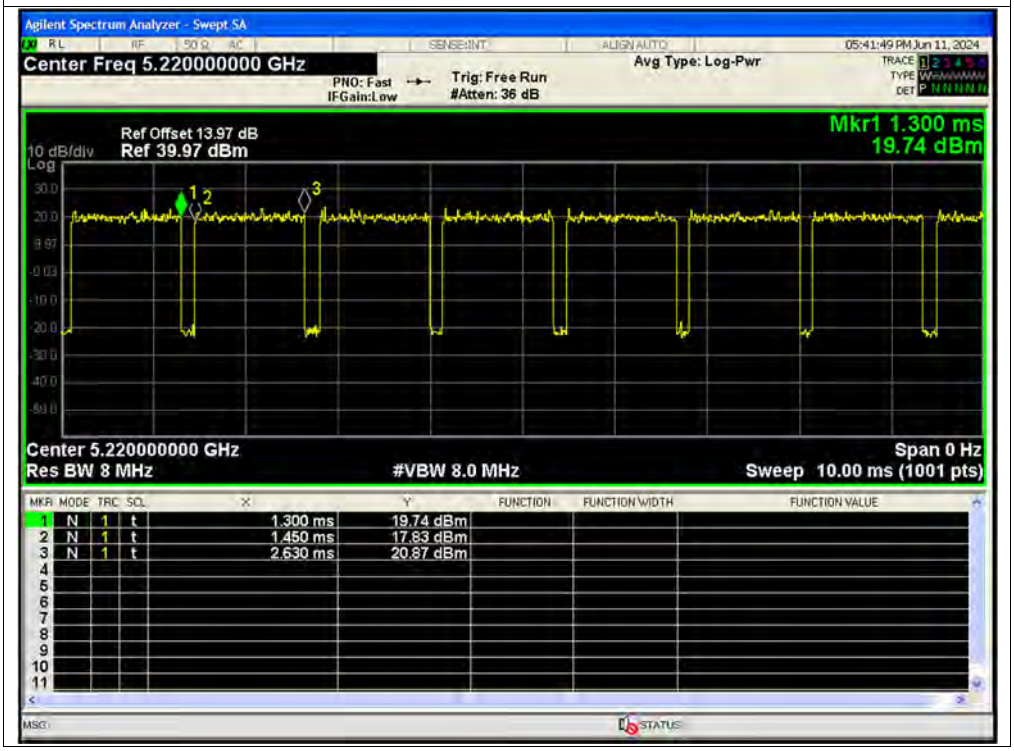
Duty Cycle NVNT n40 5795MHz Ant1



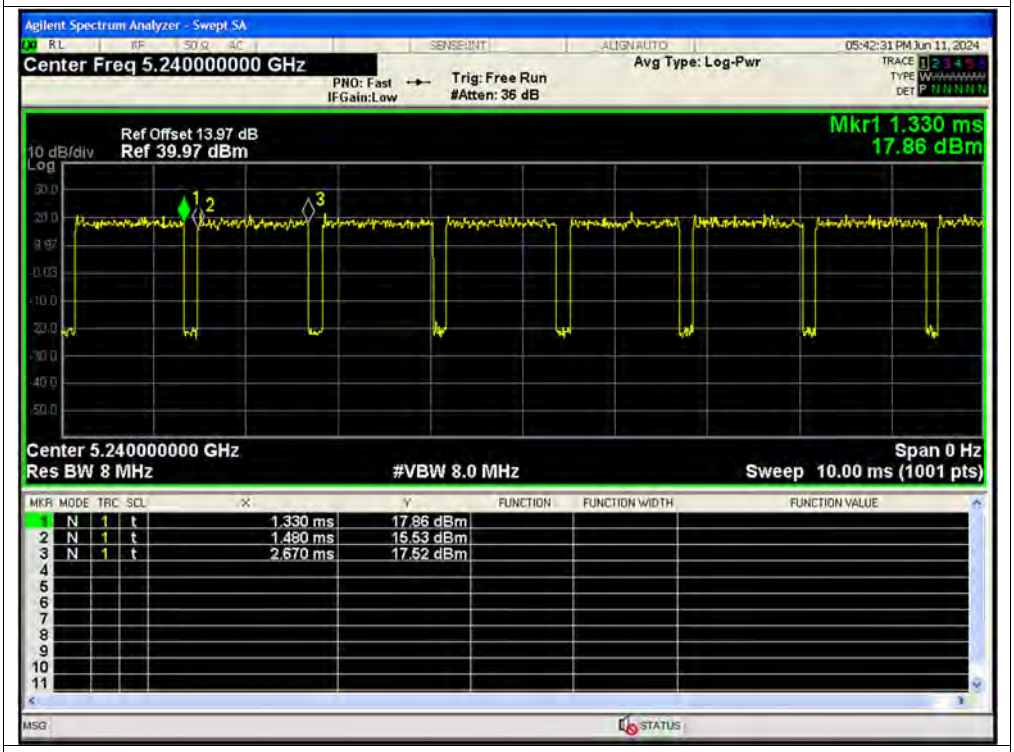
Duty Cycle NVNT ac20 5180MHz Ant1



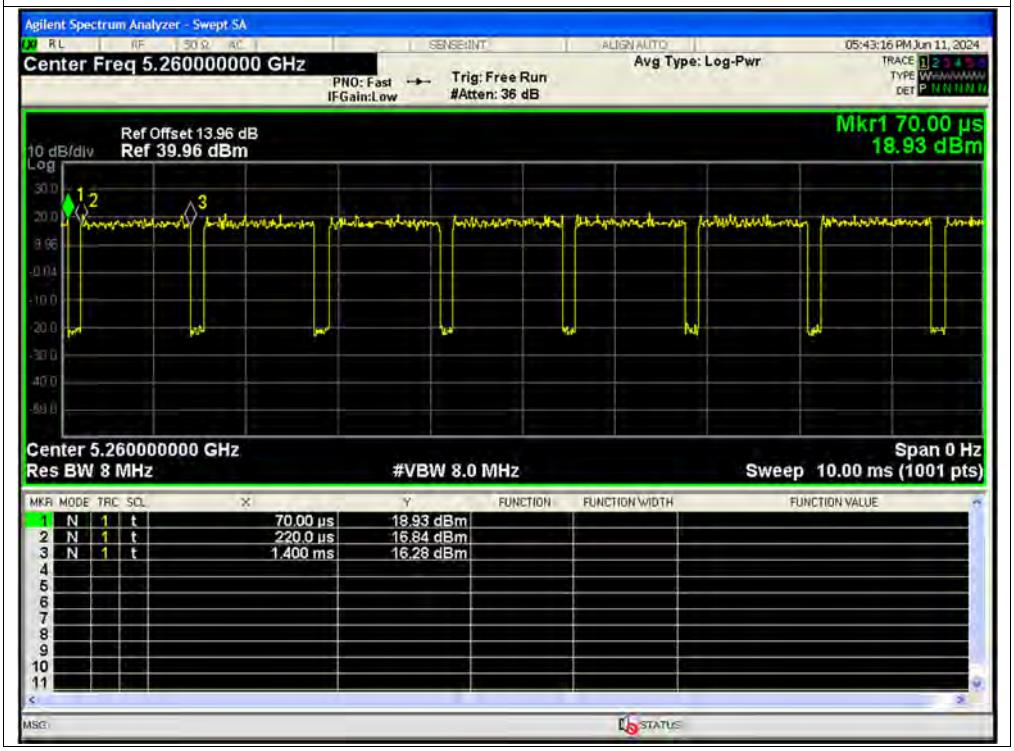
Duty Cycle NVNT ac20 5220MHz Ant1



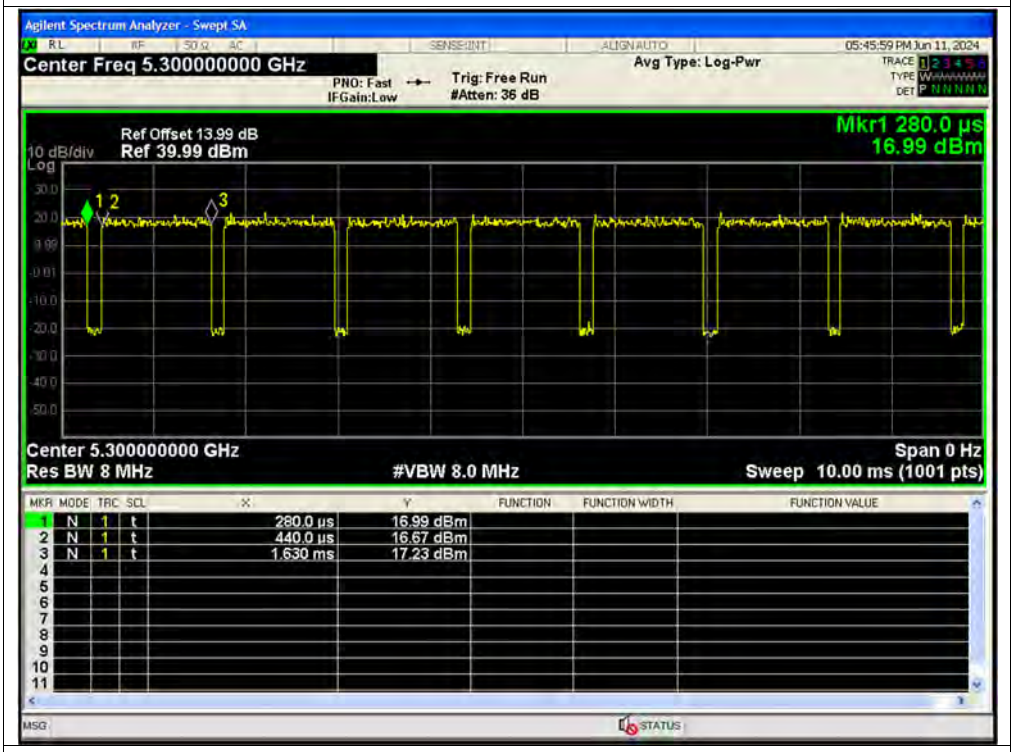
Duty Cycle NVNT ac20 5240MHz Ant1



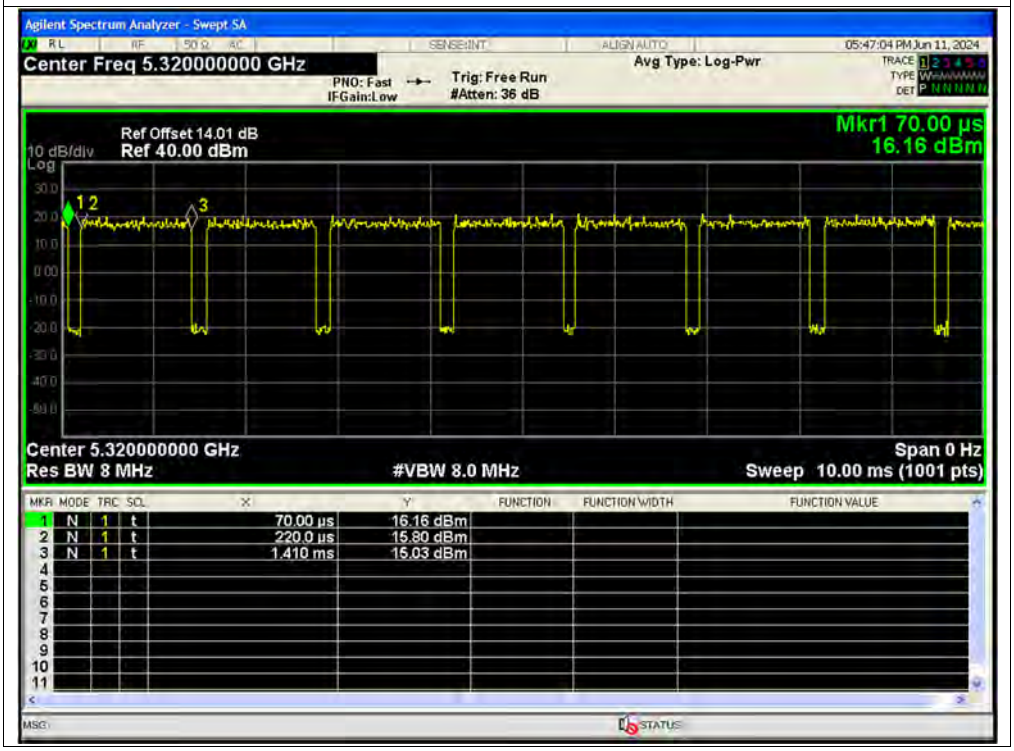
Duty Cycle NVNT ac20 5260MHz Ant1



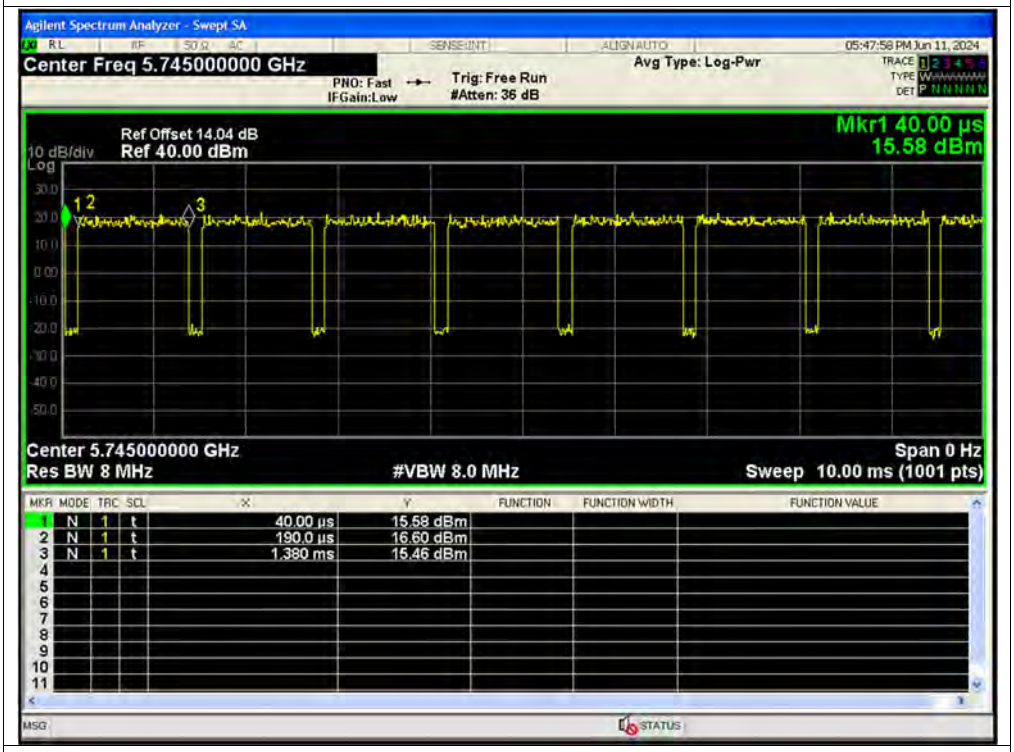
Duty Cycle NVNT ac20 5300MHz Ant1



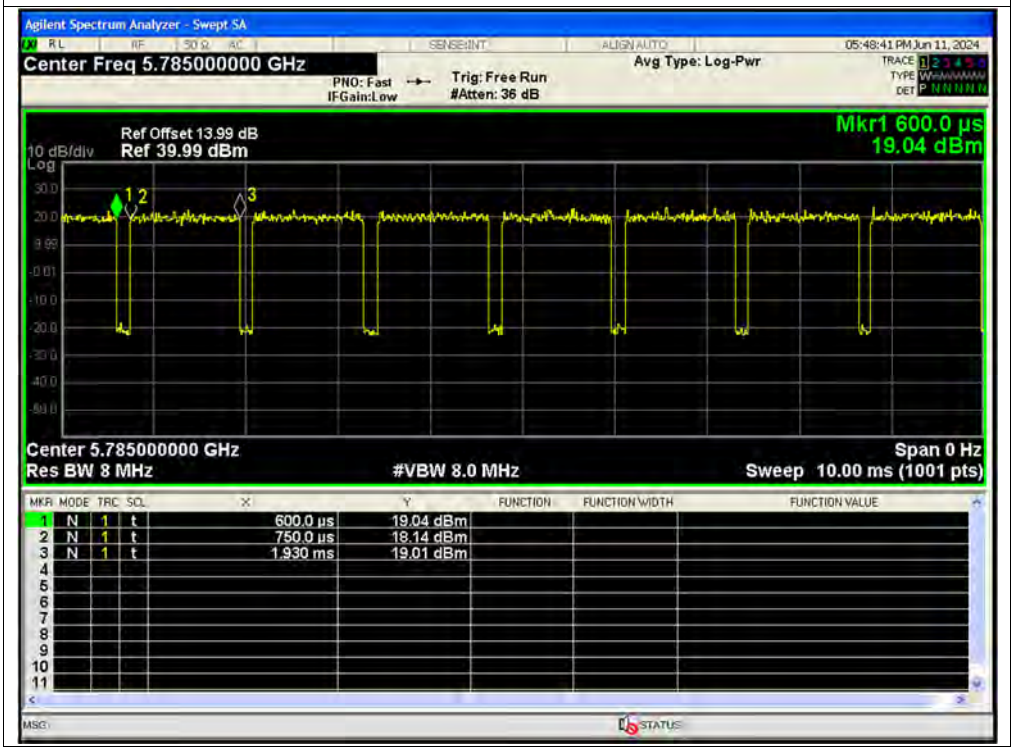
Duty Cycle NVNT ac20 5320MHz Ant1



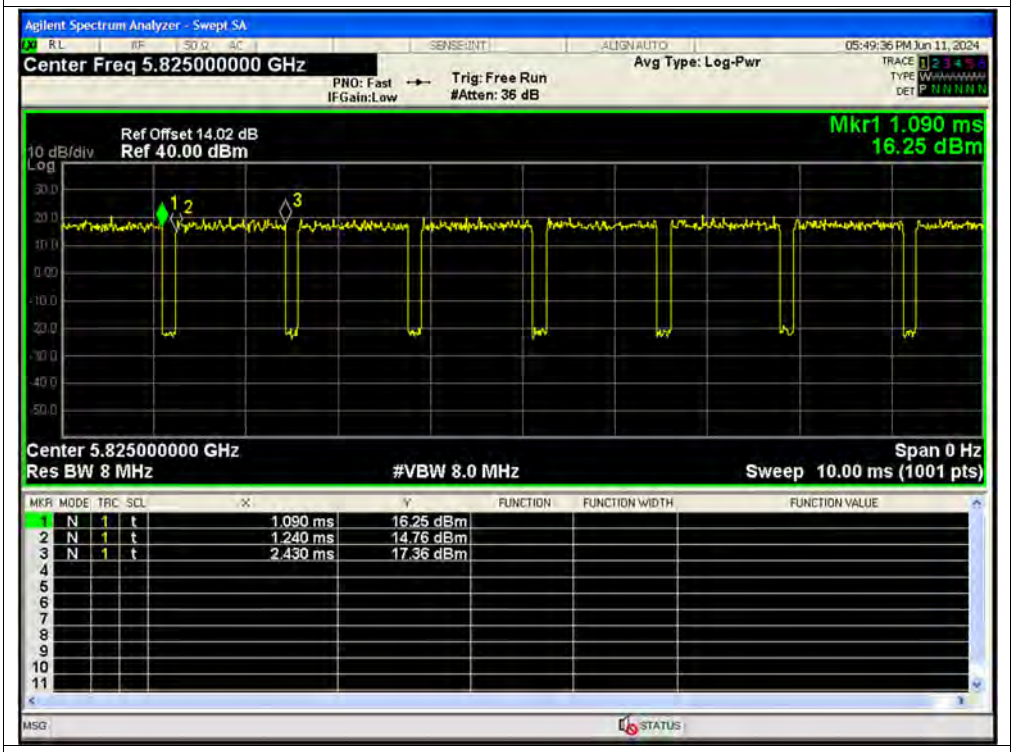
Duty Cycle NVNT ac20 5745MHz Ant1



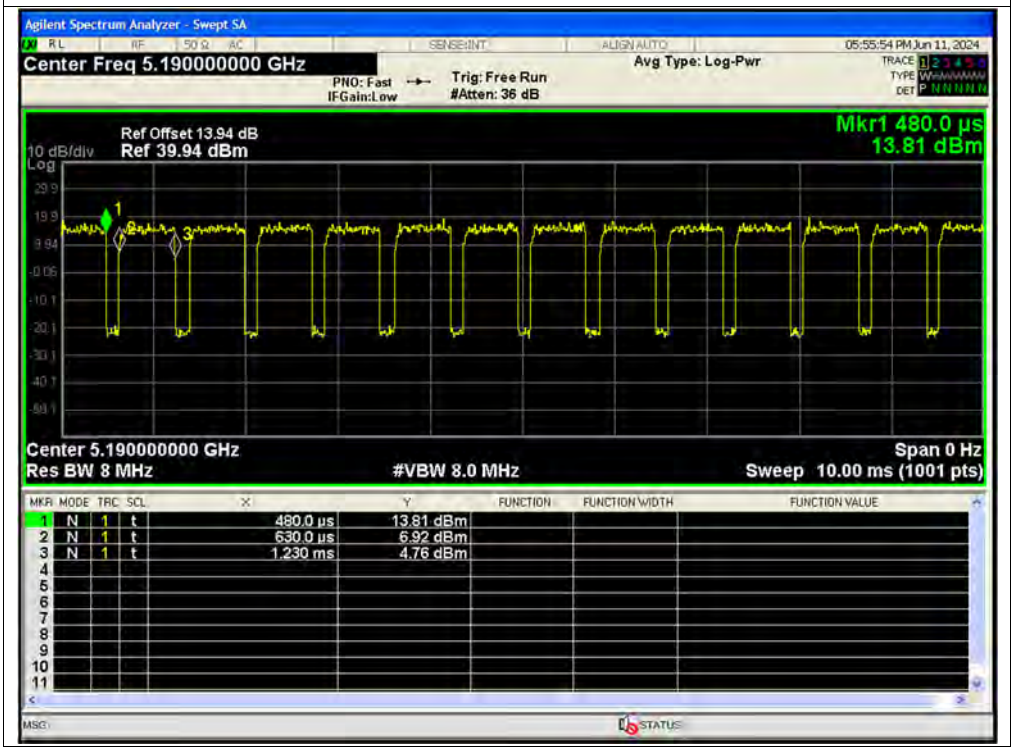
Duty Cycle NVNT ac20 5785MHz Ant1



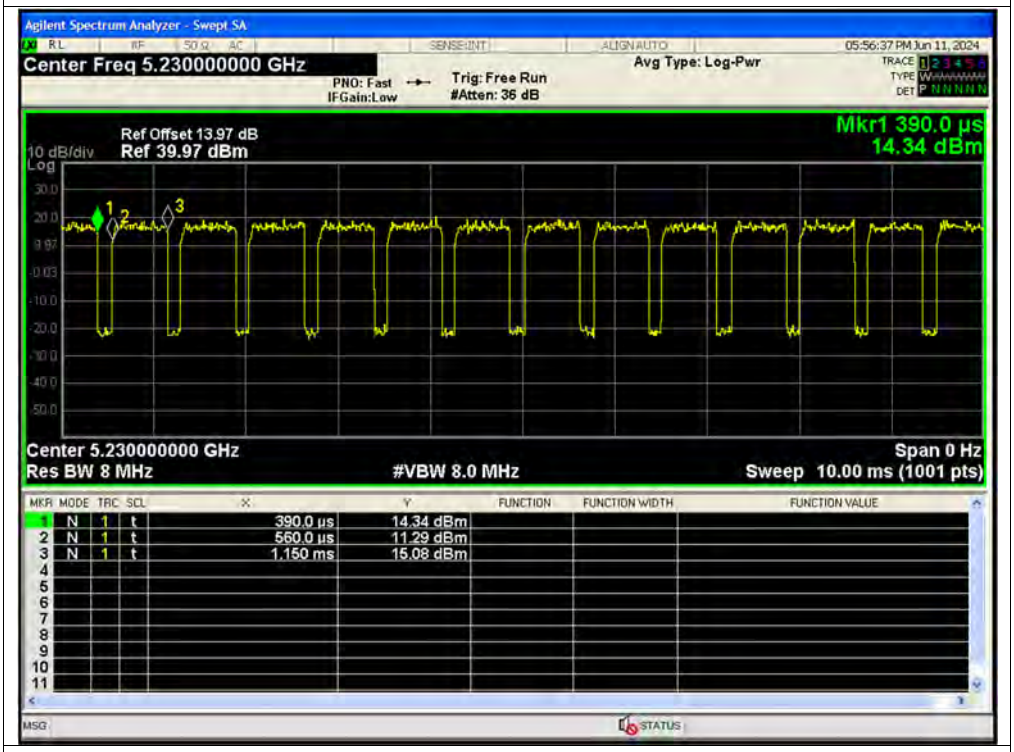
Duty Cycle NVNT ac20 5825MHz Ant1



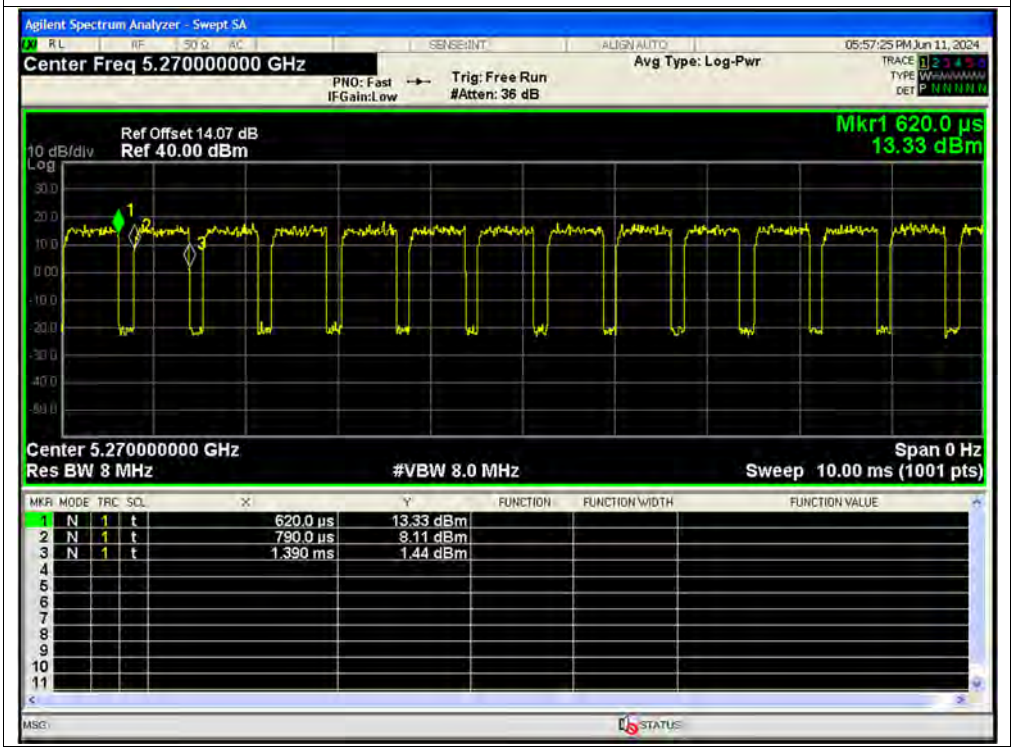
Duty Cycle NVNT ac40 5190MHz Ant1



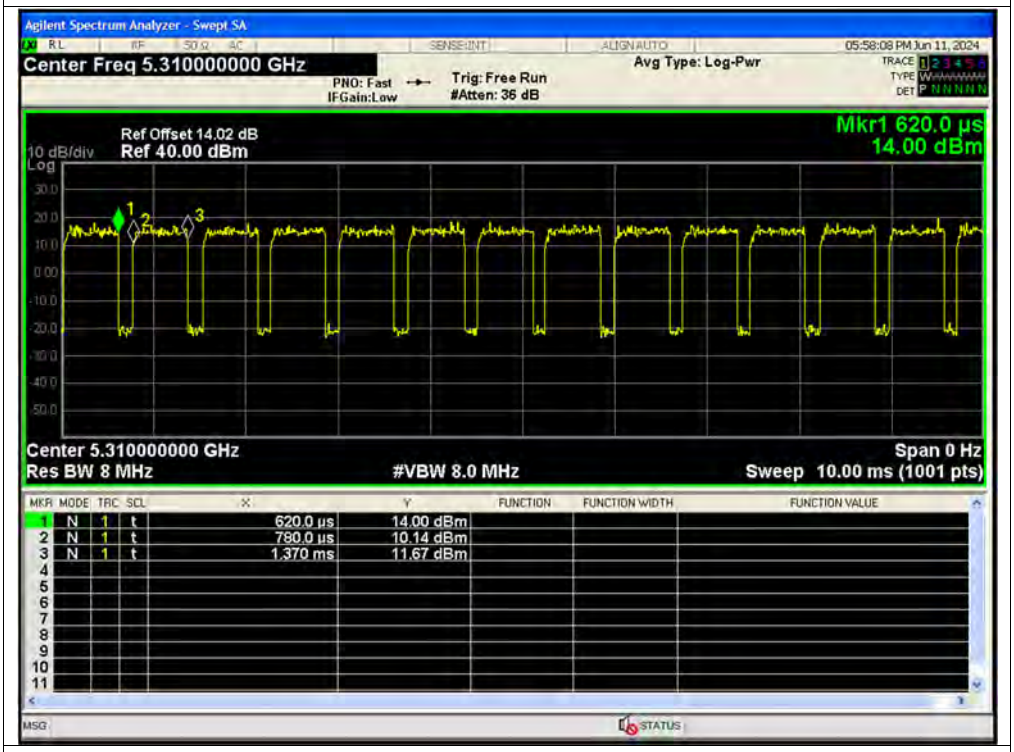
Duty Cycle NVNT ac40 5230MHz Ant1



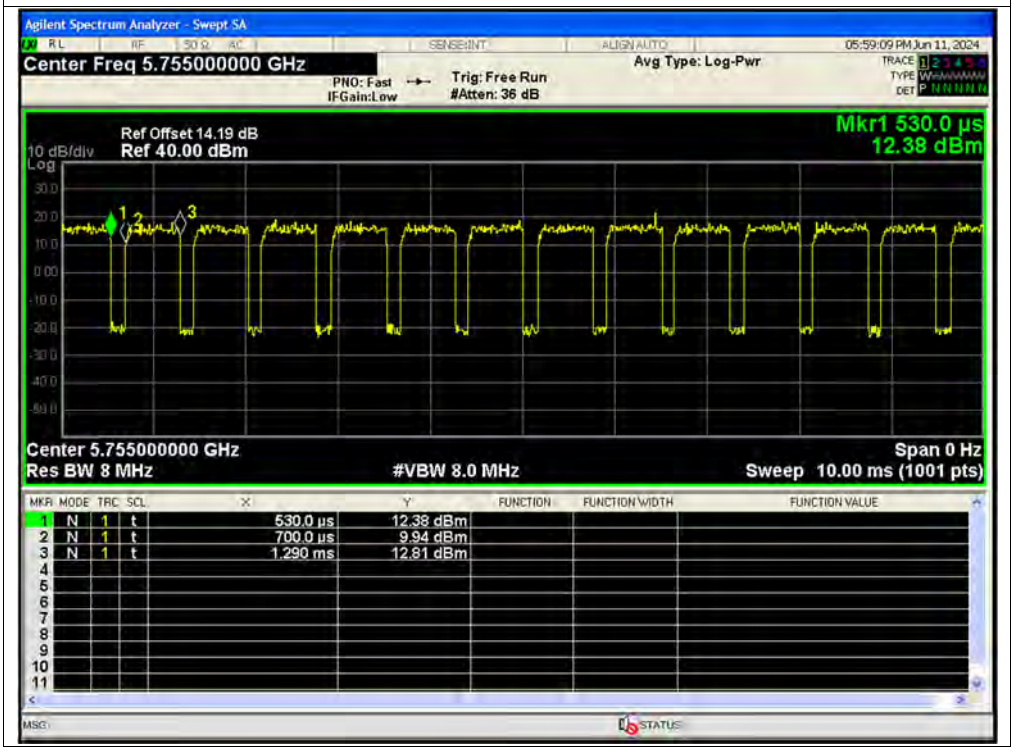
Duty Cycle NVNT ac40 5270MHz Ant1



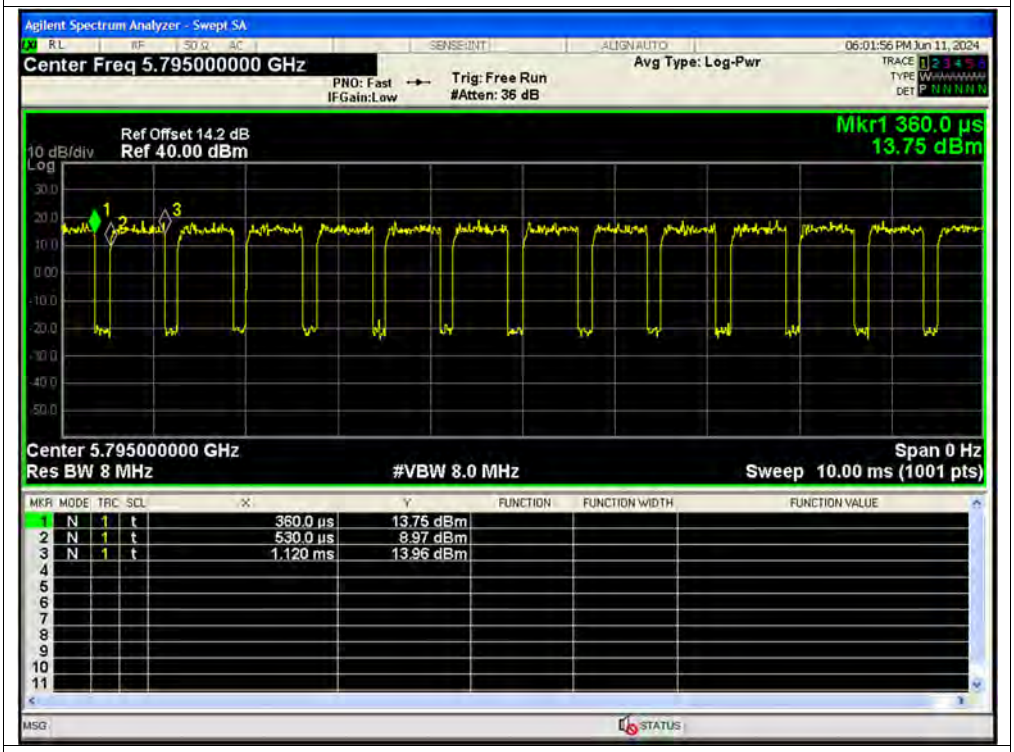
Duty Cycle NVNT ac40 5310MHz Ant1



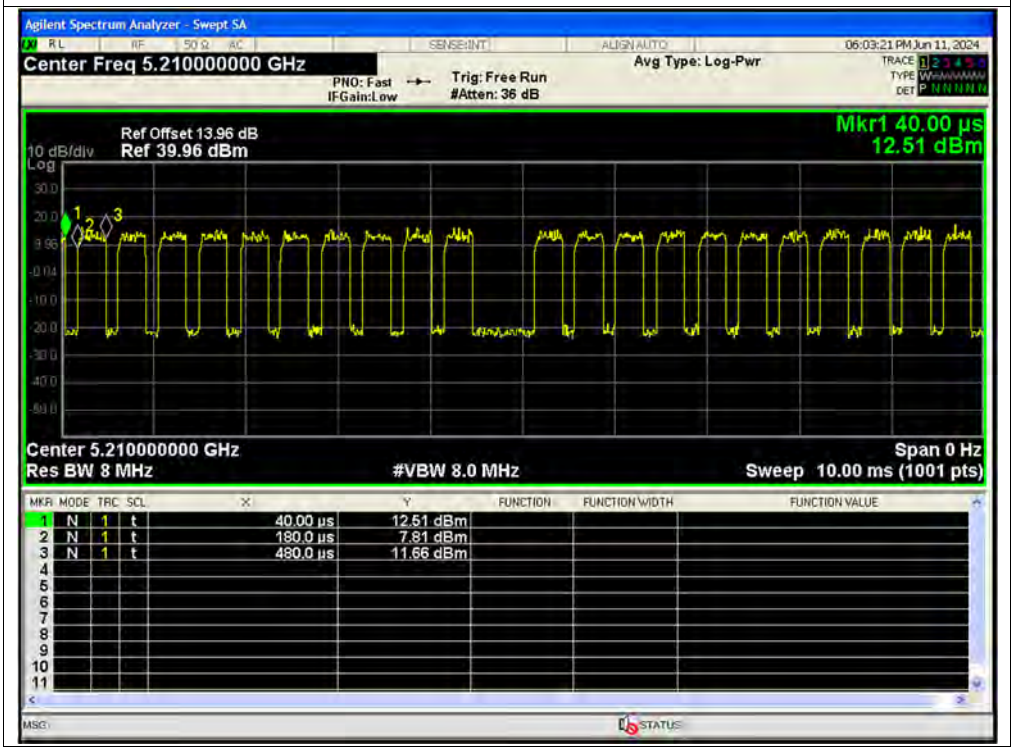
Duty Cycle NVNT ac40 5755MHz Ant1



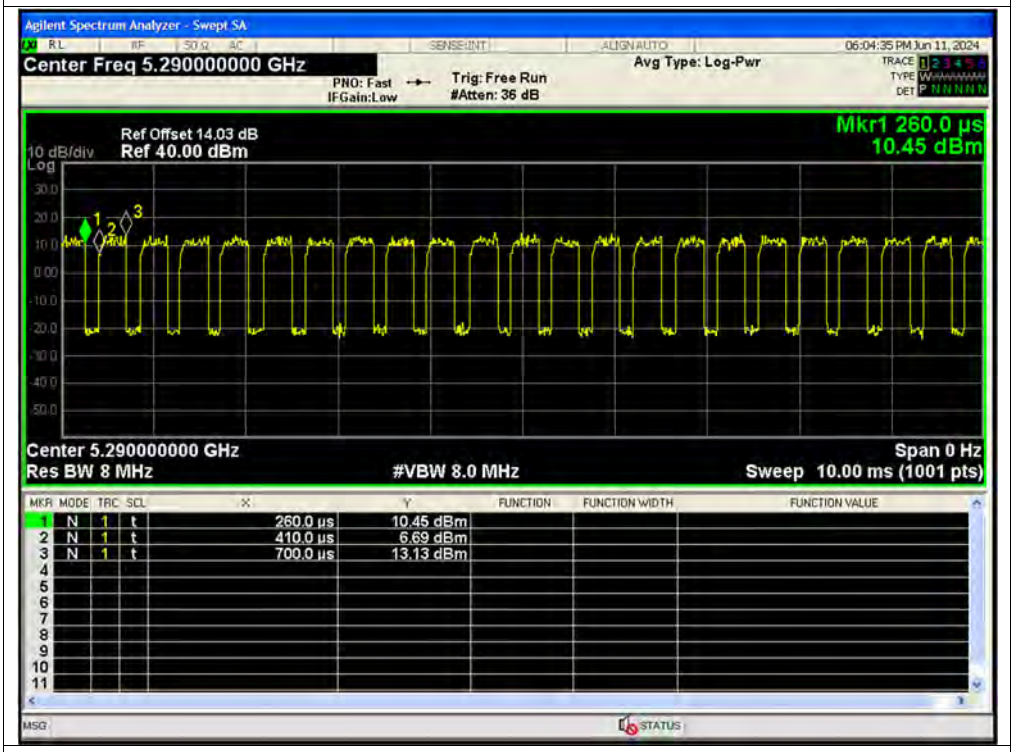
Duty Cycle NVNT ac40 5795MHz Ant1



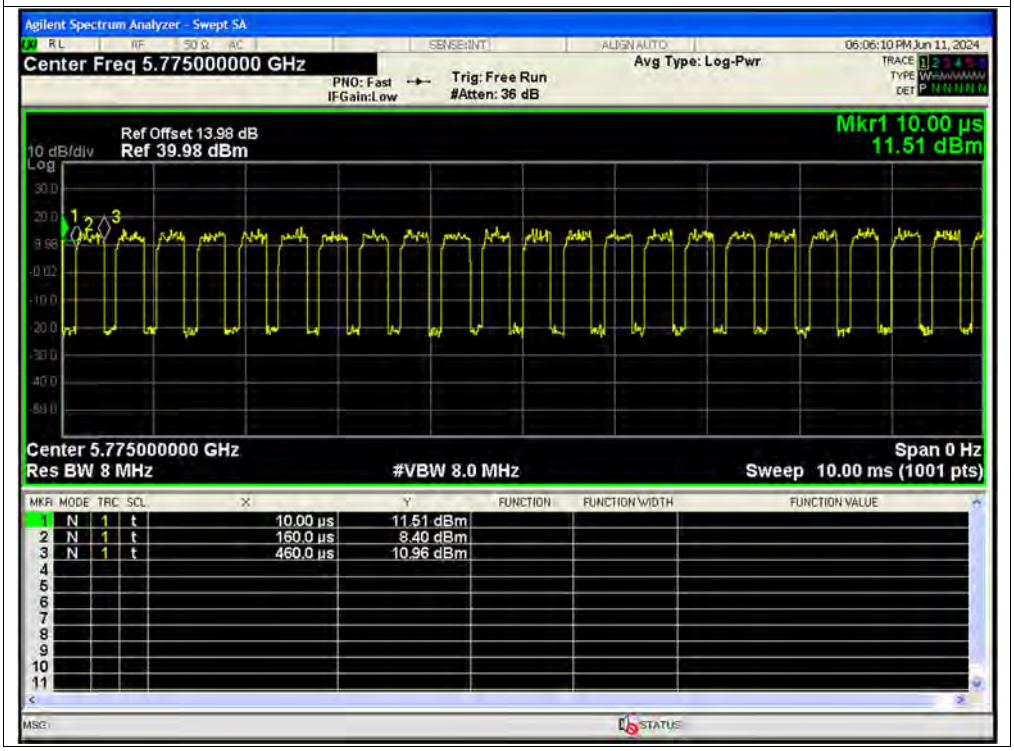
Duty Cycle NVNT ac80 5210MHz Ant1



Duty Cycle NVNT ac80 5290MHz Ant1



Duty Cycle NVNT ac80 5775MHz Ant1



A.2. Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	15.2	0.03311	24	Pass
NVNT	a	5220	Ant1	17.01	0.05023	24	Pass
NVNT	a	5240	Ant1	14.31	0.02698	24	Pass
NVNT	a	5260	Ant1	14.45	0.02786	24	Pass
NVNT	a	5300	Ant1	14.64	0.02911	24	Pass
NVNT	a	5320	Ant1	13.74	0.02366	24	Pass
NVNT	a	5745	Ant1	15.48	0.03532	30	Pass
NVNT	a	5785	Ant1	16.58	0.04550	30	Pass
NVNT	a	5825	Ant1	14.23	0.02649	30	Pass
NVNT	n20	5180	Ant1	15.15	0.03273	24	Pass
NVNT	n20	5220	Ant1	16.58	0.04550	24	Pass
NVNT	n20	5240	Ant1	14.32	0.02704	24	Pass
NVNT	n20	5260	Ant1	14.47	0.02799	24	Pass
NVNT	n20	5300	Ant1	14.19	0.02624	24	Pass
NVNT	n20	5320	Ant1	13.76	0.02377	24	Pass
NVNT	n20	5745	Ant1	15.52	0.03565	30	Pass
NVNT	n20	5785	Ant1	16.52	0.04487	30	Pass
NVNT	n20	5825	Ant1	14.31	0.02698	30	Pass
NVNT	n40	5190	Ant1	15.47	0.03524	24	Pass
NVNT	n40	5230	Ant1	15.72	0.03733	24	Pass
NVNT	n40	5270	Ant1	14.63	0.02904	24	Pass
NVNT	n40	5310	Ant1	14.33	0.02710	24	Pass
NVNT	n40	5755	Ant1	16.36	0.04325	30	Pass
NVNT	n40	5795	Ant1	16.12	0.04093	30	Pass
NVNT	ac20	5180	Ant1	15.15	0.03273	24	Pass
NVNT	ac20	5220	Ant1	16.99	0.05000	24	Pass
NVNT	ac20	5240	Ant1	14.36	0.02729	24	Pass
NVNT	ac20	5260	Ant1	14.49	0.02812	24	Pass
NVNT	ac20	5300	Ant1	14.18	0.02618	24	Pass
NVNT	ac20	5320	Ant1	13.76	0.02377	24	Pass
NVNT	ac20	5745	Ant1	15.54	0.03581	30	Pass
NVNT	ac20	5785	Ant1	16.28	0.04246	30	Pass
NVNT	ac20	5825	Ant1	14.27	0.02673	30	Pass
NVNT	ac40	5190	Ant1	15.46	0.03516	24	Pass

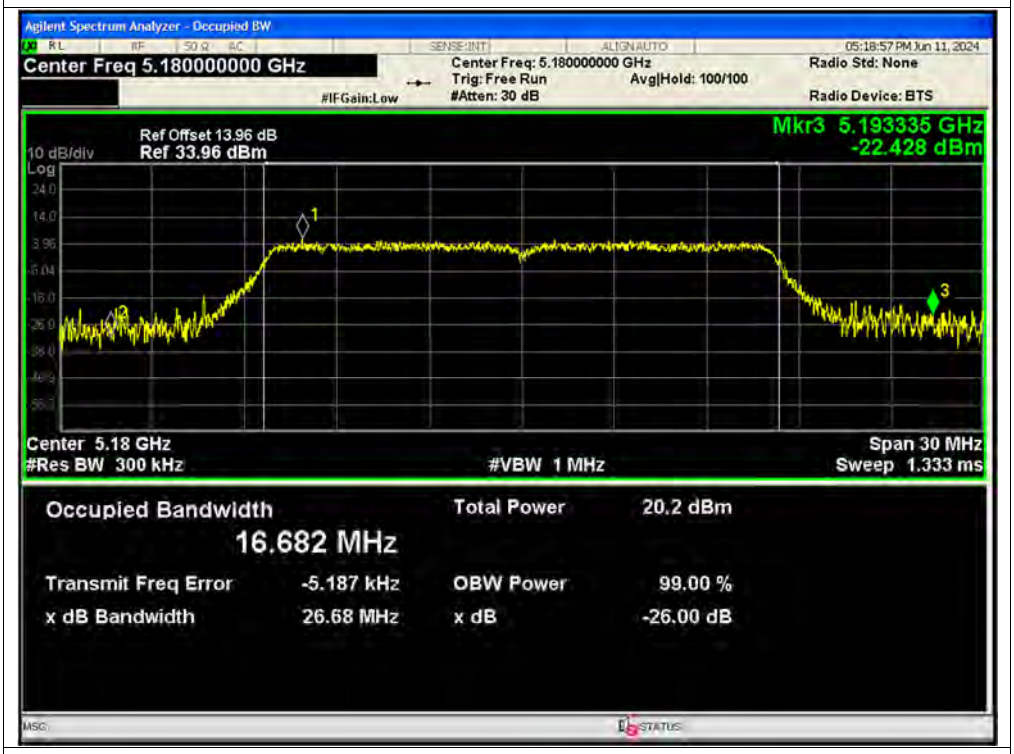
NVNT	ac40	5230	Ant1	15.74	0.03750	24	Pass
NVNT	ac40	5270	Ant1	14.44	0.02780	24	Pass
NVNT	ac40	5310	Ant1	14.38	0.02742	24	Pass
NVNT	ac40	5755	Ant1	16.33	0.04295	30	Pass
NVNT	ac40	5795	Ant1	16.19	0.04159	30	Pass
NVNT	ac80	5210	Ant1	15.42	0.03483	24	Pass
NVNT	ac80	5290	Ant1	14.59	0.02877	24	Pass
NVNT	ac80	5775	Ant1	15.72	0.03733	30	Pass

A.3. Emission Bandwidth

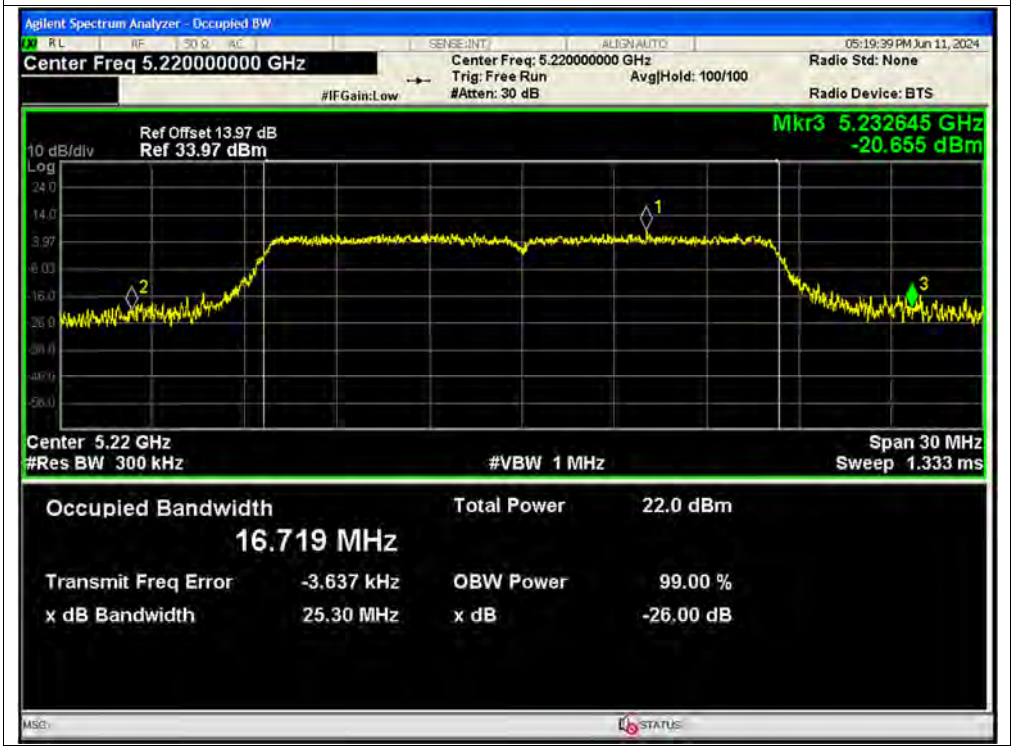
Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)
NVNT	a	5180	Ant1	26.681
NVNT	a	5220	Ant1	25.298
NVNT	a	5240	Ant1	26.183
NVNT	a	5260	Ant1	25.894
NVNT	a	5300	Ant1	24.185
NVNT	a	5320	Ant1	25.094
NVNT	n20	5180	Ant1	29.508
NVNT	n20	5220	Ant1	29.085
NVNT	n20	5240	Ant1	28.216
NVNT	n20	5260	Ant1	28.623
NVNT	n20	5300	Ant1	28.647
NVNT	n20	5320	Ant1	28.775
NVNT	n40	5190	Ant1	49.155
NVNT	n40	5230	Ant1	50.15
NVNT	n40	5270	Ant1	48.36
NVNT	n40	5310	Ant1	50.514
NVNT	ac20	5180	Ant1	27.921
NVNT	ac20	5220	Ant1	27.94
NVNT	ac20	5240	Ant1	26.085
NVNT	ac20	5260	Ant1	24.354
NVNT	ac20	5300	Ant1	26.022
NVNT	ac20	5320	Ant1	25.851
NVNT	ac40	5190	Ant1	54.559
NVNT	ac40	5230	Ant1	54.301
NVNT	ac40	5270	Ant1	53.747
NVNT	ac40	5310	Ant1	53.232
NVNT	ac80	5210	Ant1	90.004
NVNT	ac80	5290	Ant1	90.546

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	a	5745	Ant1	16.312	0.5	Pass
NVNT	a	5785	Ant1	16.344	0.5	Pass
NVNT	a	5825	Ant1	16.328	0.5	Pass
NVNT	n20	5745	Ant1	17.291	0.5	Pass
NVNT	n20	5785	Ant1	17.43	0.5	Pass
NVNT	n20	5825	Ant1	17.306	0.5	Pass
NVNT	n40	5755	Ant1	36.102	0.5	Pass
NVNT	n40	5795	Ant1	36.062	0.5	Pass
NVNT	ac20	5745	Ant1	17.292	0.5	Pass
NVNT	ac20	5785	Ant1	17.222	0.5	Pass
NVNT	ac20	5825	Ant1	17.133	0.5	Pass
NVNT	ac40	5755	Ant1	36.016	0.5	Pass
NVNT	ac40	5795	Ant1	36.108	0.5	Pass
NVNT	ac80	5775	Ant1	75.611	0.5	Pass

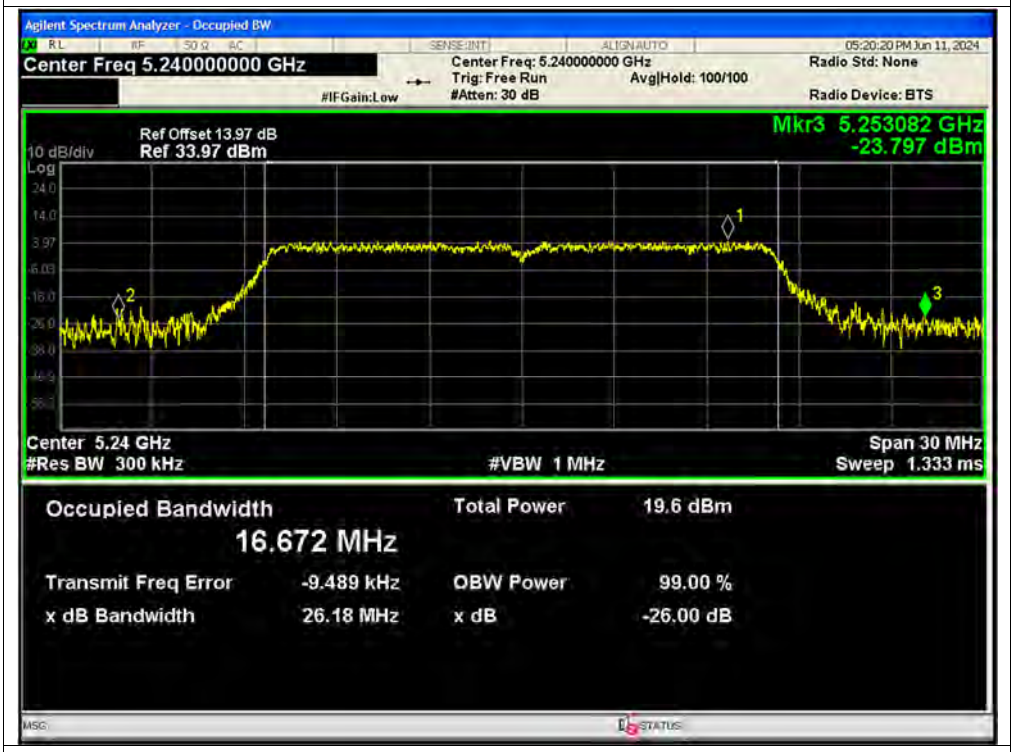
Test Graphs
-26dB Bandwidth NVNT a 5180MHz Ant1



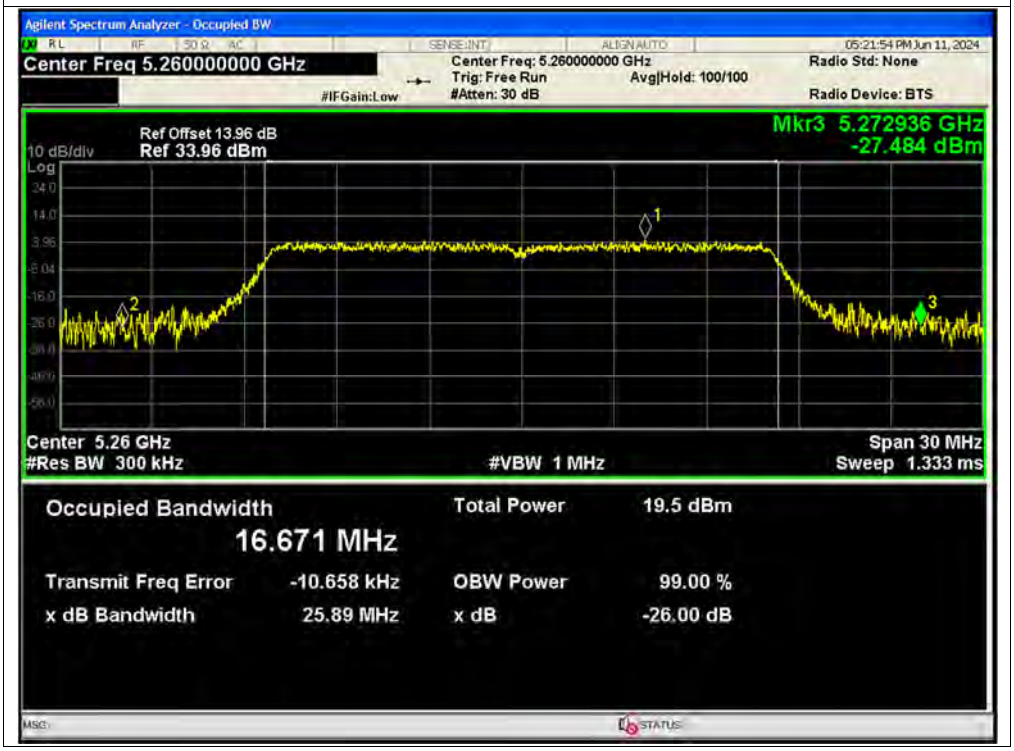
-26dB Bandwidth NVNT a 5220MHz Ant1



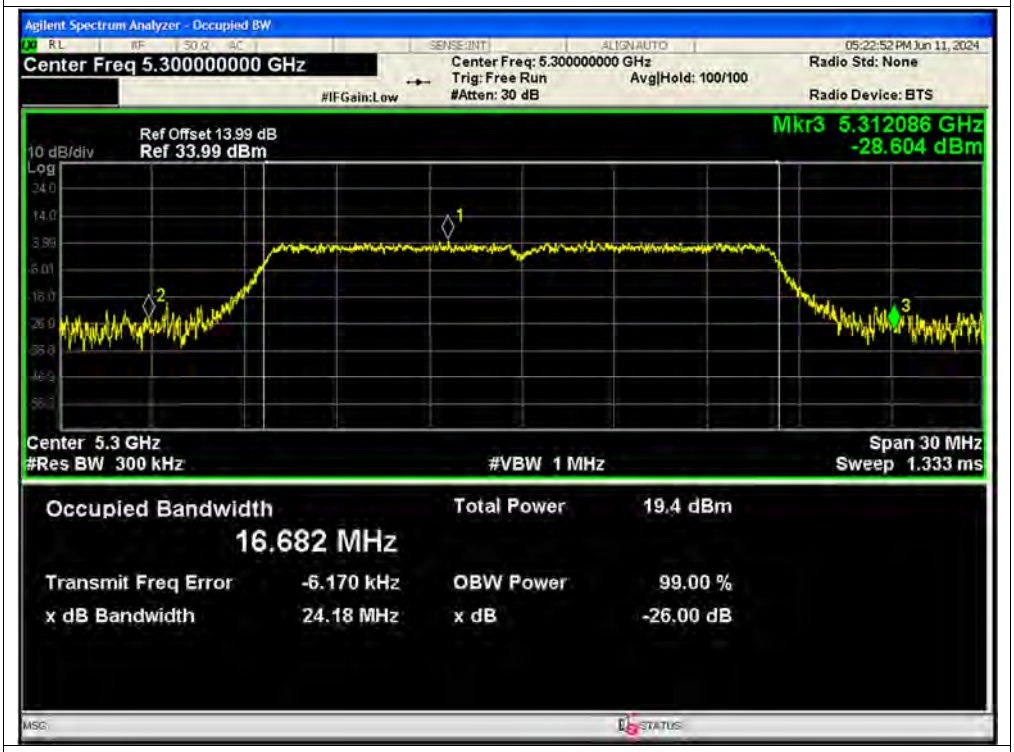
-26dB Bandwidth NVNT a 5240MHz Ant1



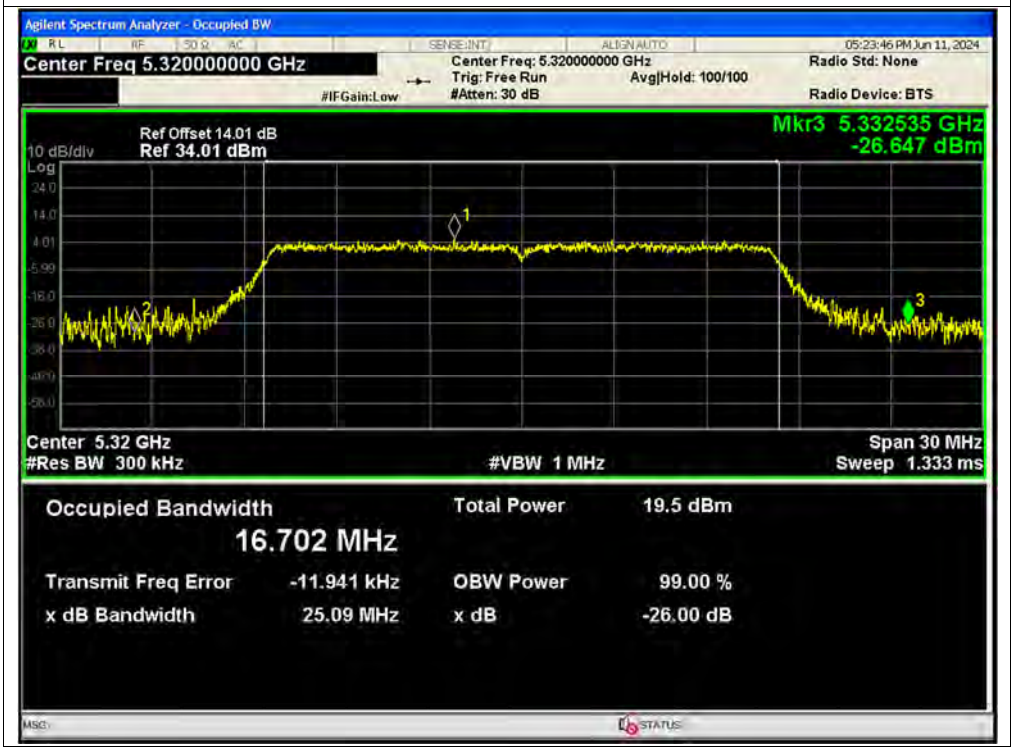
-26dB Bandwidth NVNT a 5260MHz Ant1



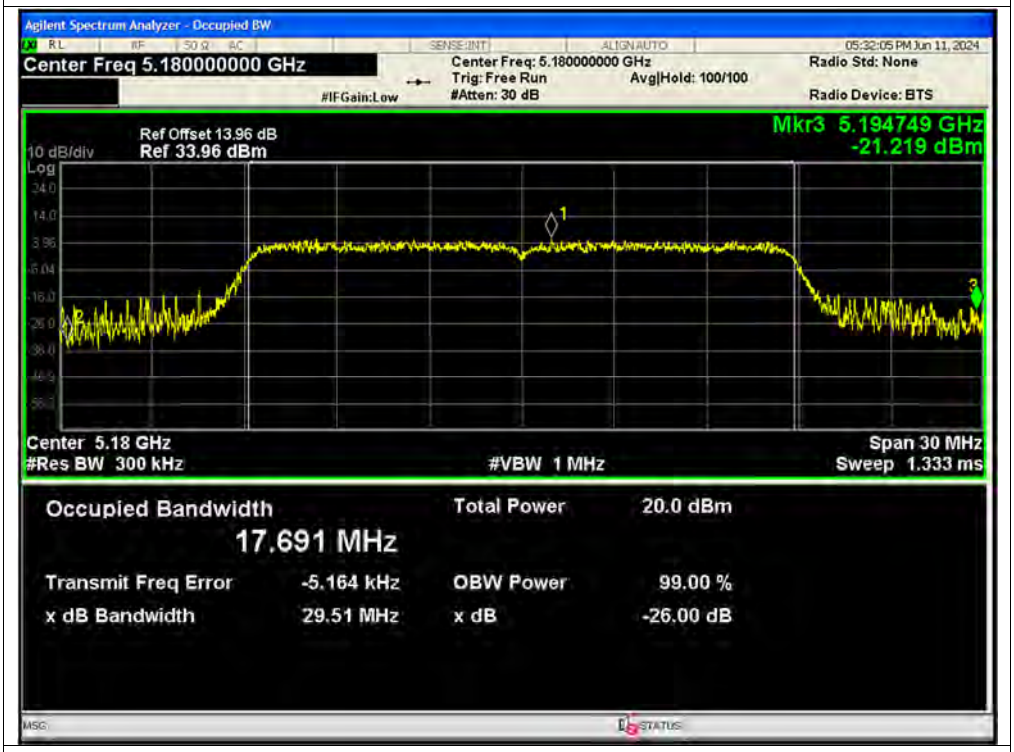
-26dB Bandwidth NVNT a 5300MHz Ant1



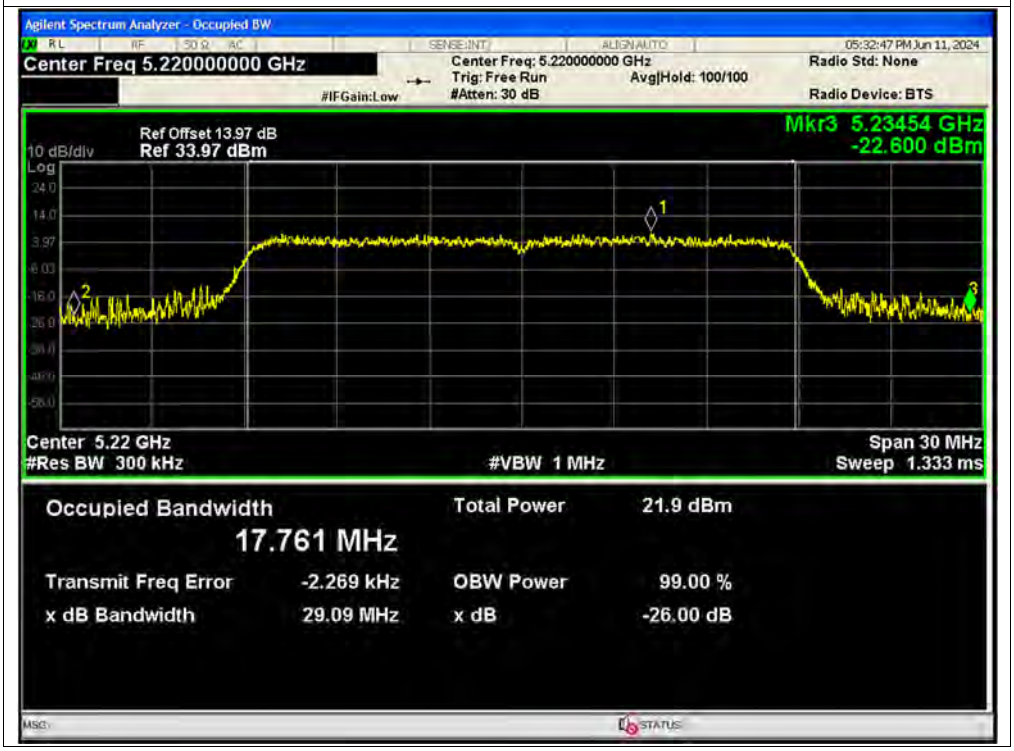
-26dB Bandwidth NVNT a 5320MHz Ant1



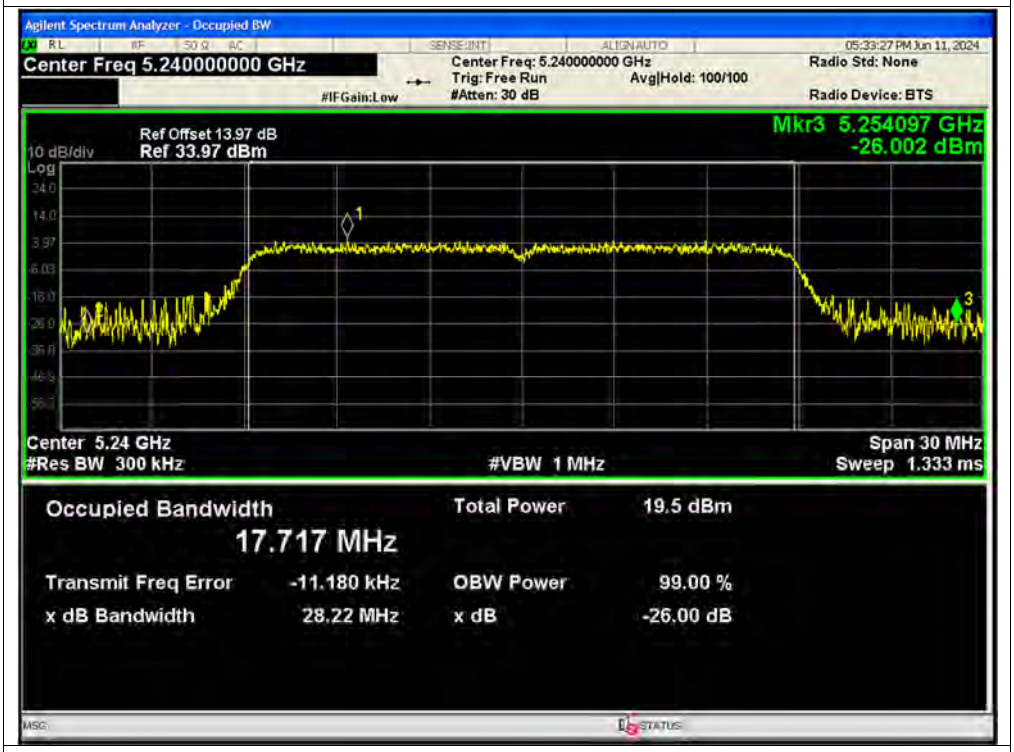
-26dB Bandwidth NVNT n20 5180MHz Ant1



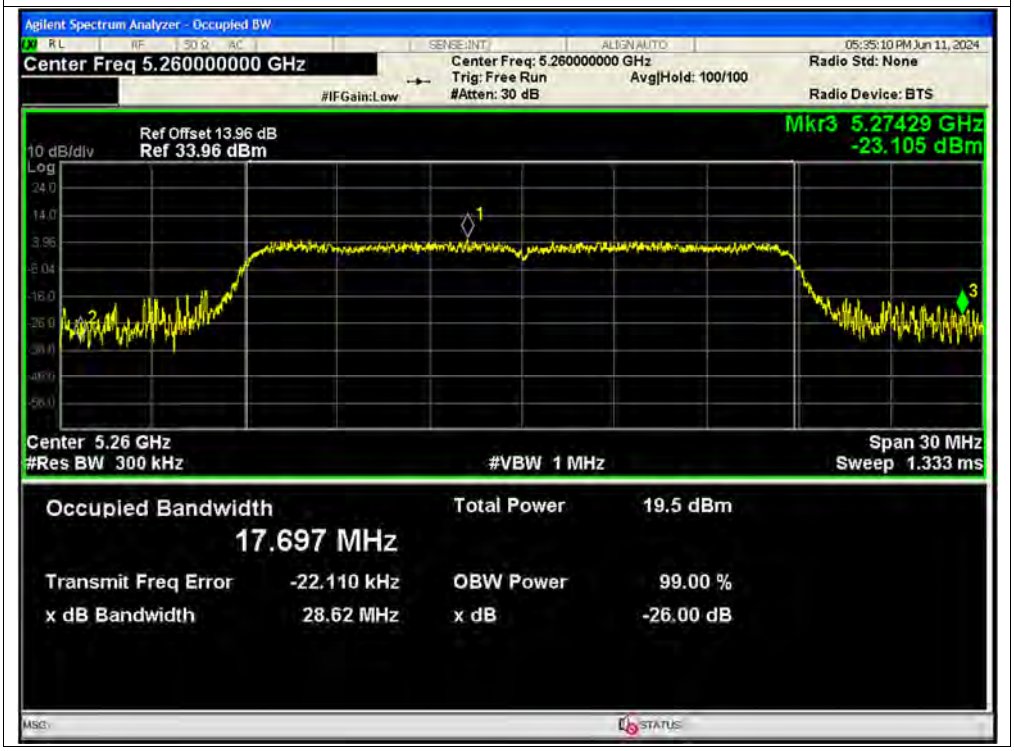
-26dB Bandwidth NVNT n20 5220MHz Ant1



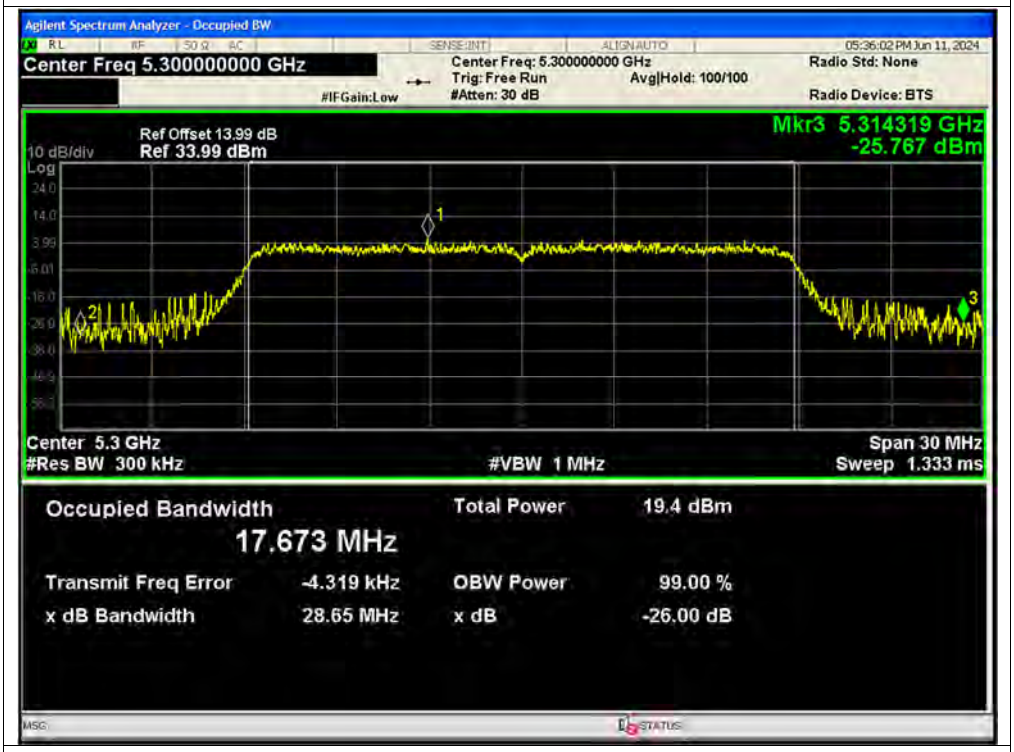
-26dB Bandwidth NVNT n20 5240MHz Ant1



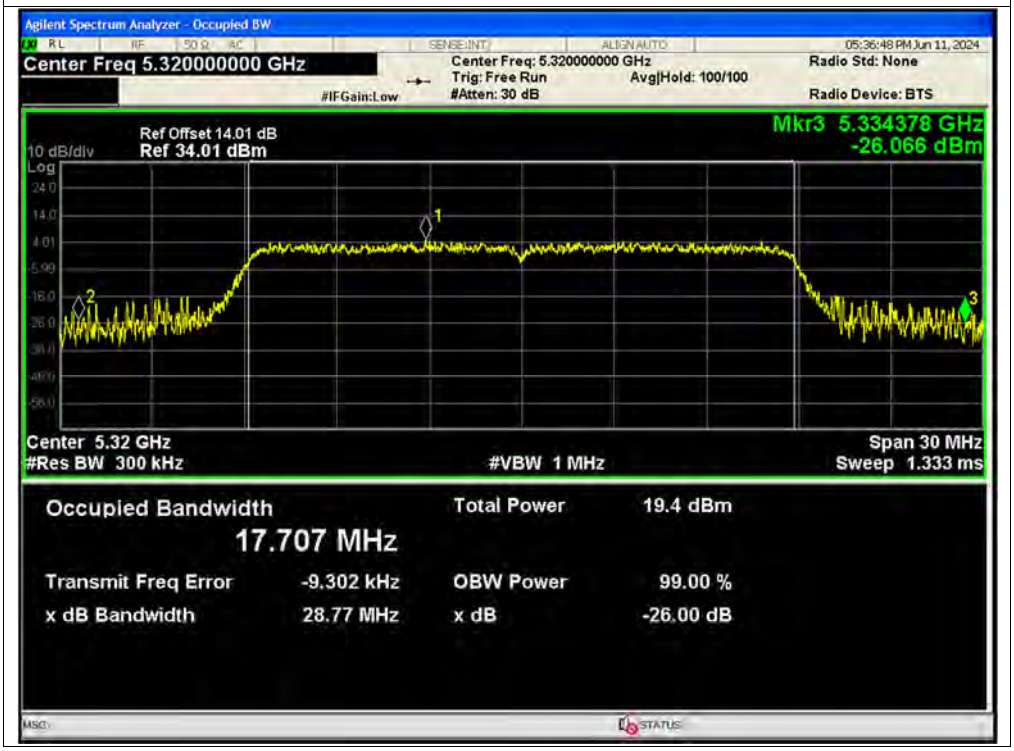
-26dB Bandwidth NVNT n20 5260MHz Ant1



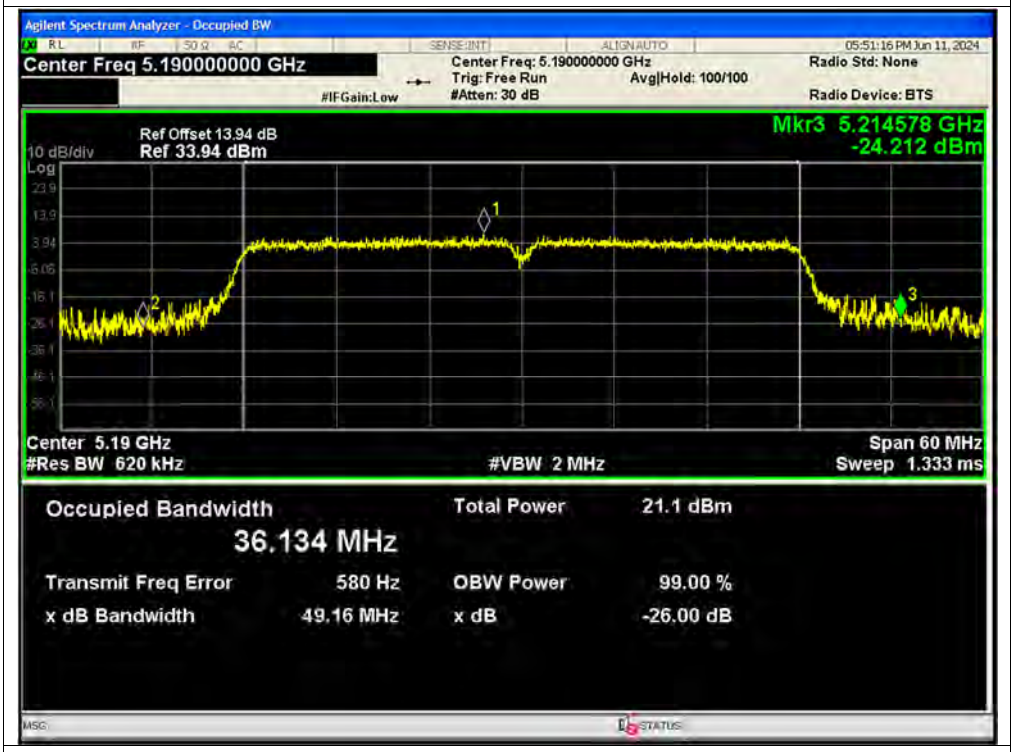
-26dB Bandwidth NVNT n20 5300MHz Ant1



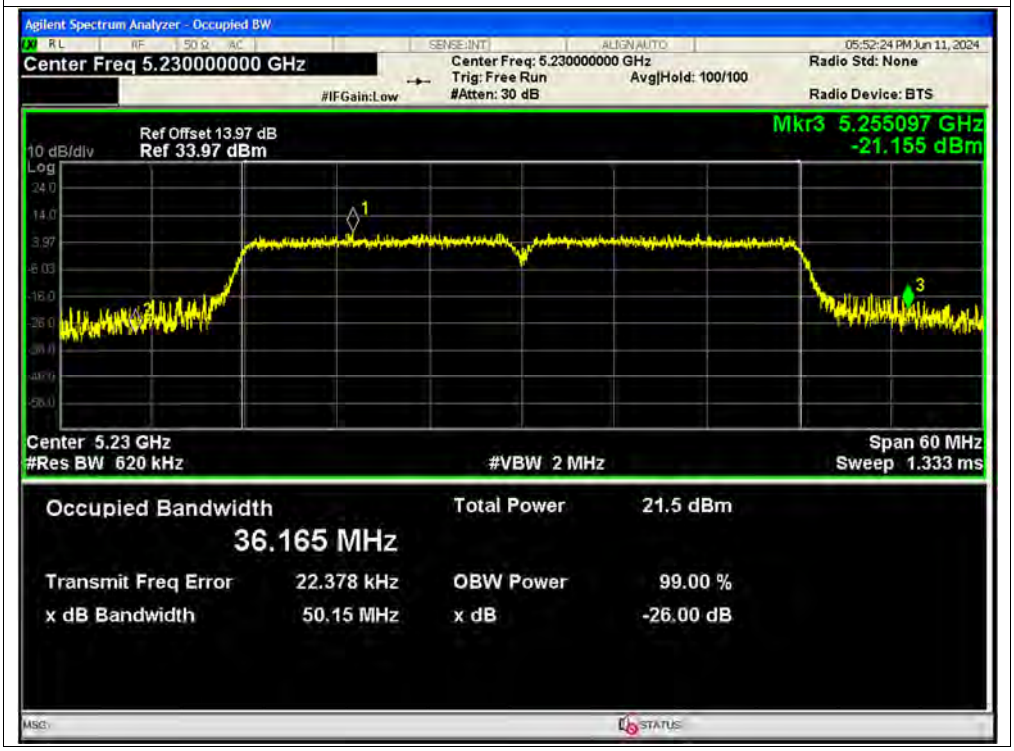
-26dB Bandwidth NVNT n20 5320MHz Ant1



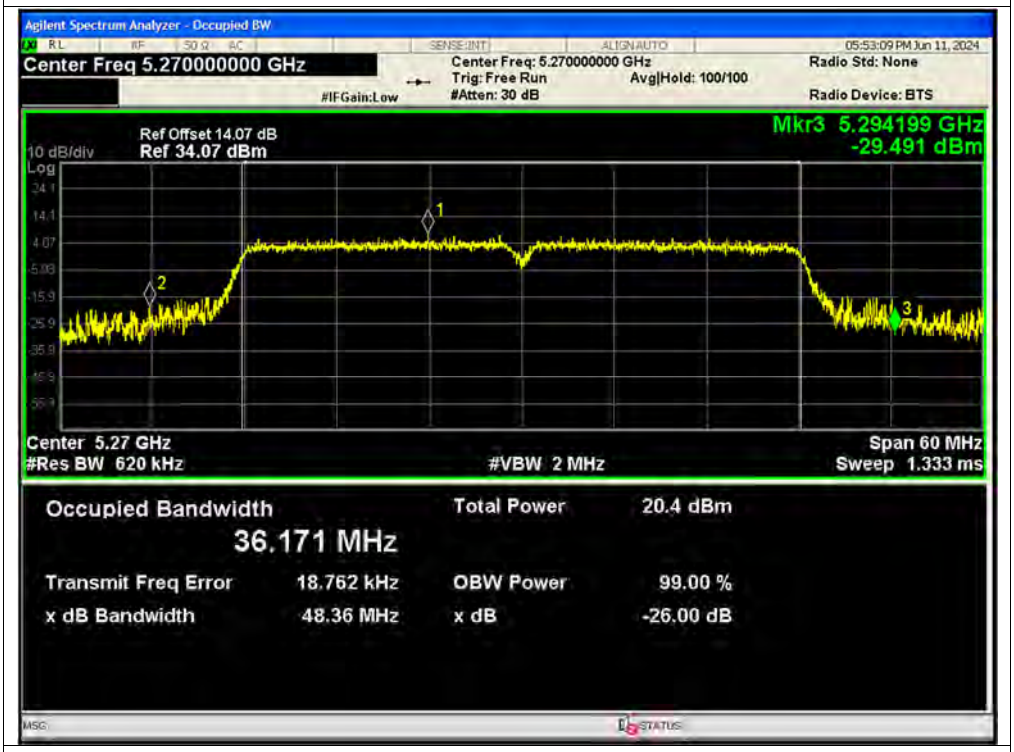
-26dB Bandwidth NVNT n40 5190MHz Ant1



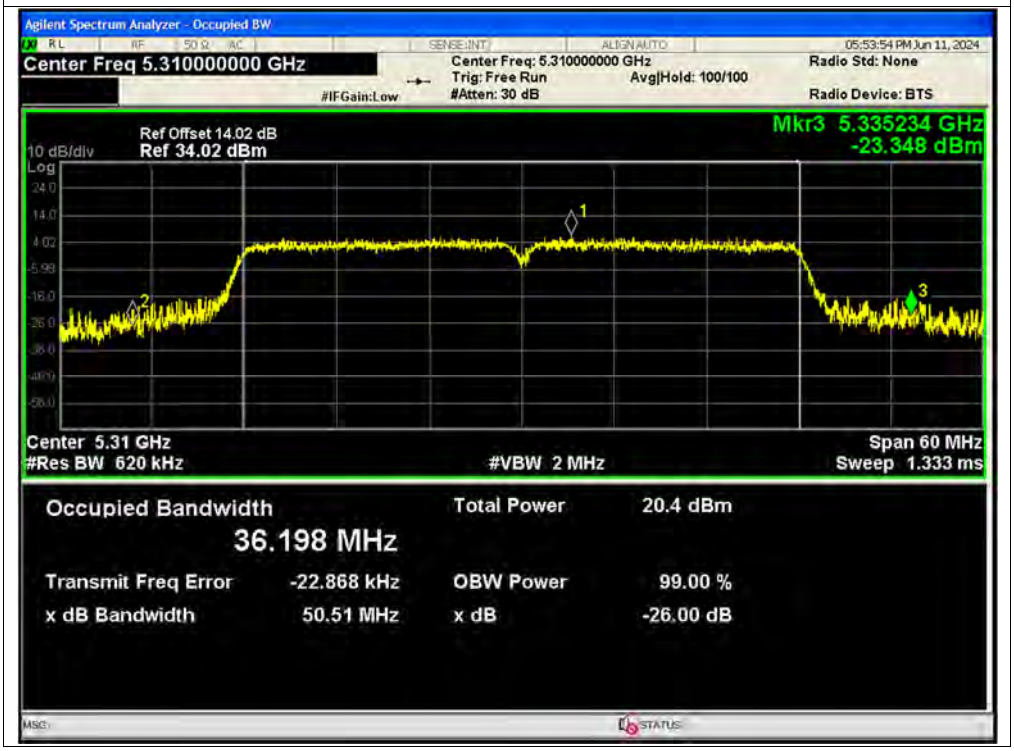
-26dB Bandwidth NVNT n40 5230MHz Ant1



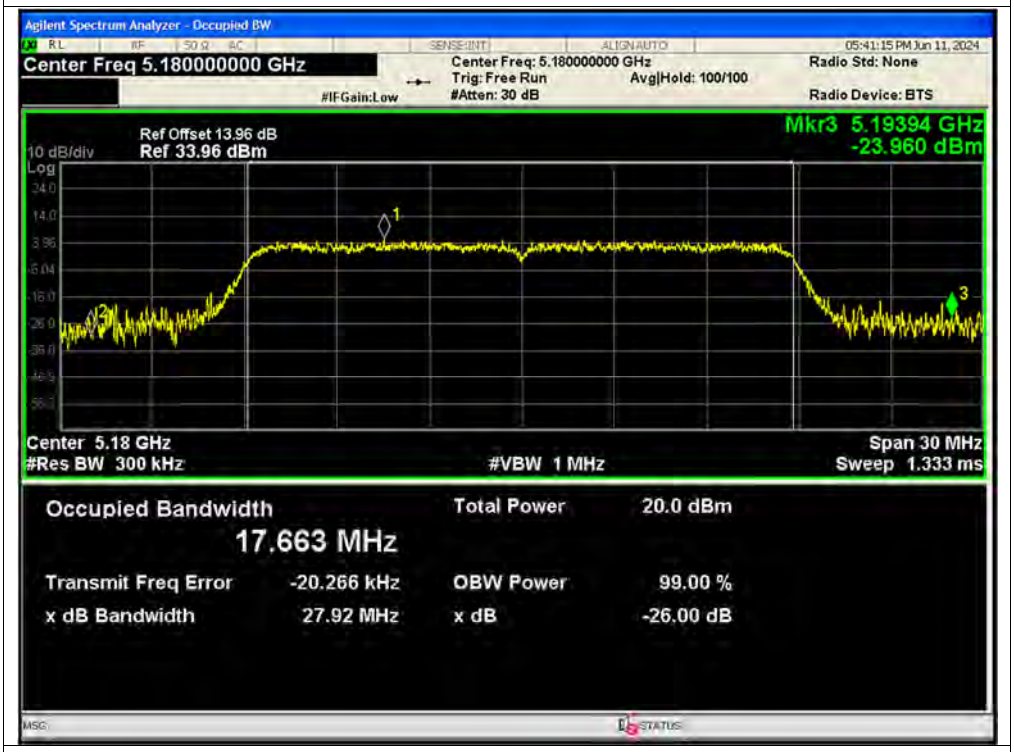
-26dB Bandwidth NVNT n40 5270MHz Ant1



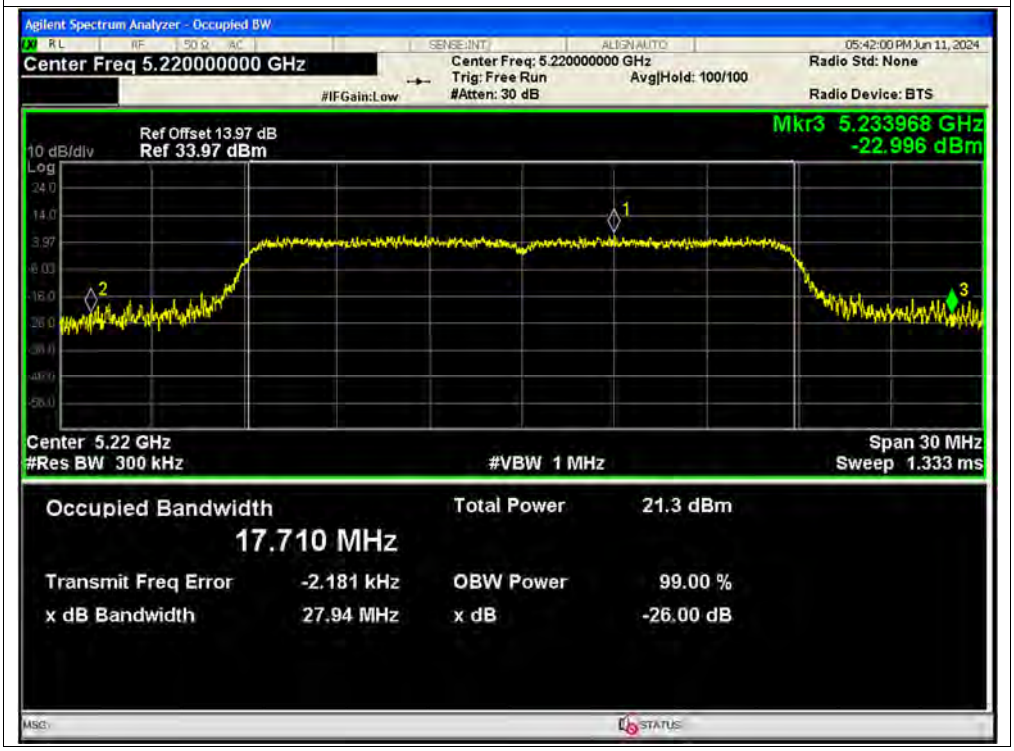
-26dB Bandwidth NVNT n40 5310MHz Ant1



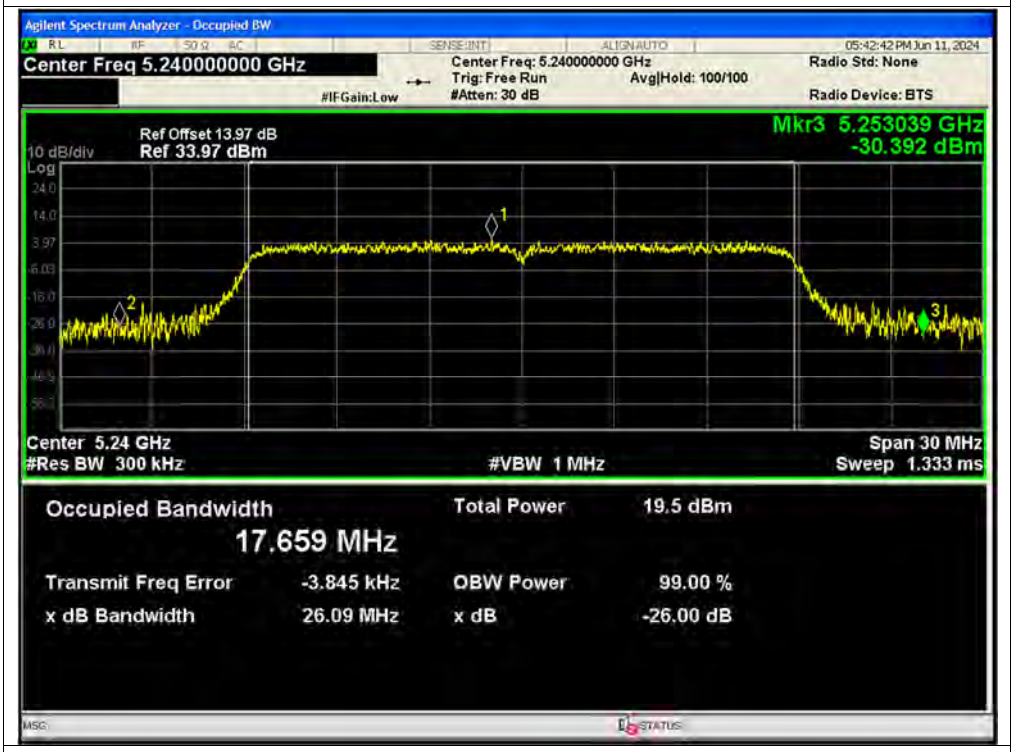
-26dB Bandwidth NVNT ac20 5180MHz Ant1



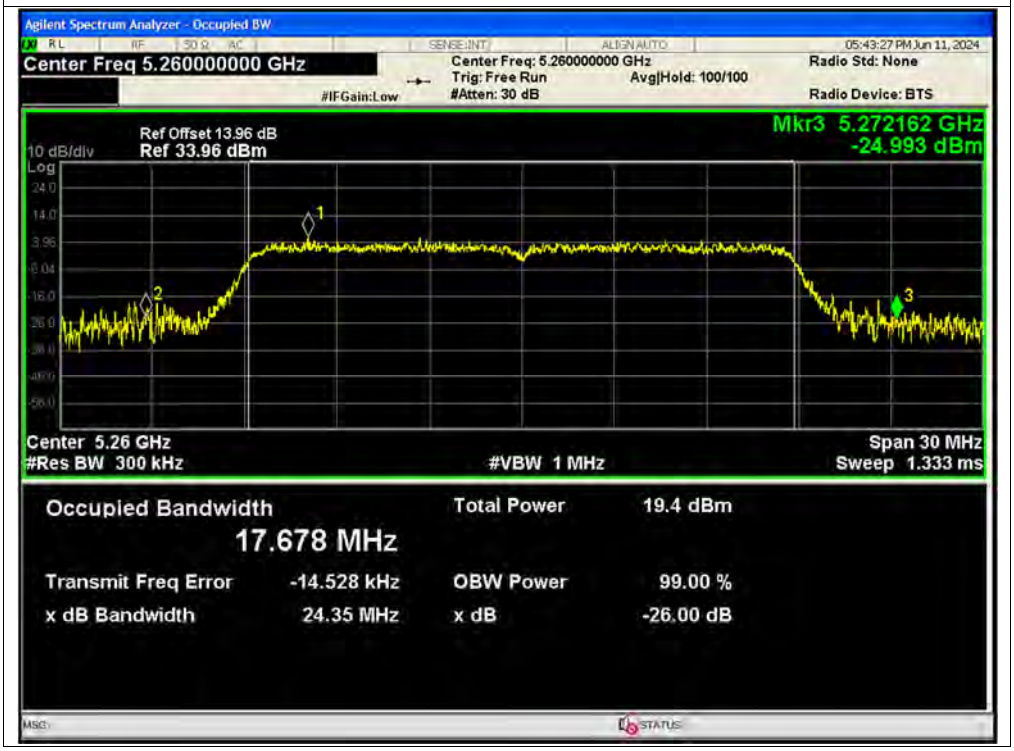
-26dB Bandwidth NVNT ac20 5220MHz Ant1



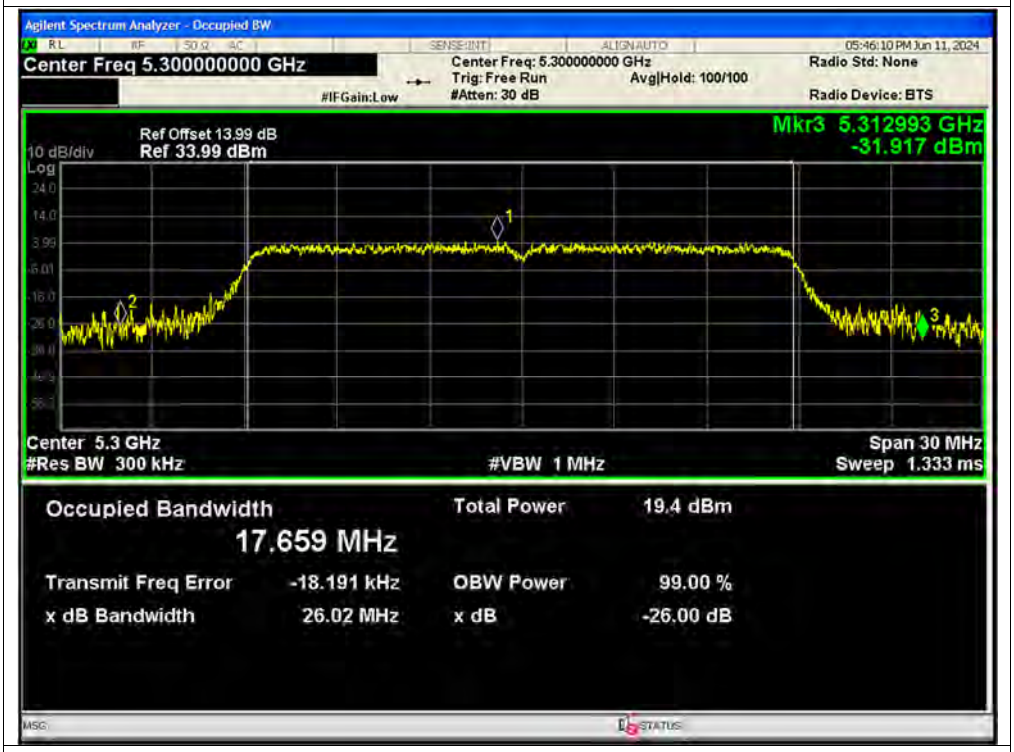
-26dB Bandwidth NVNT ac20 5240MHz Ant1



-26dB Bandwidth NVNT ac20 5260MHz Ant1



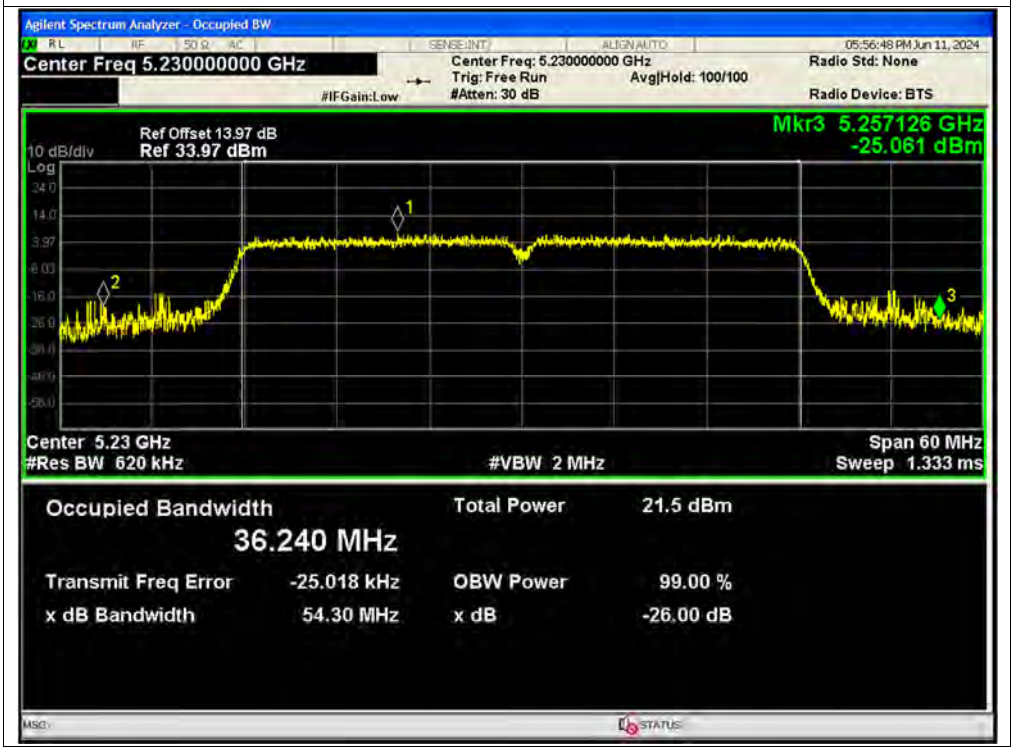
-26dB Bandwidth NVNT ac20 5300MHz Ant1



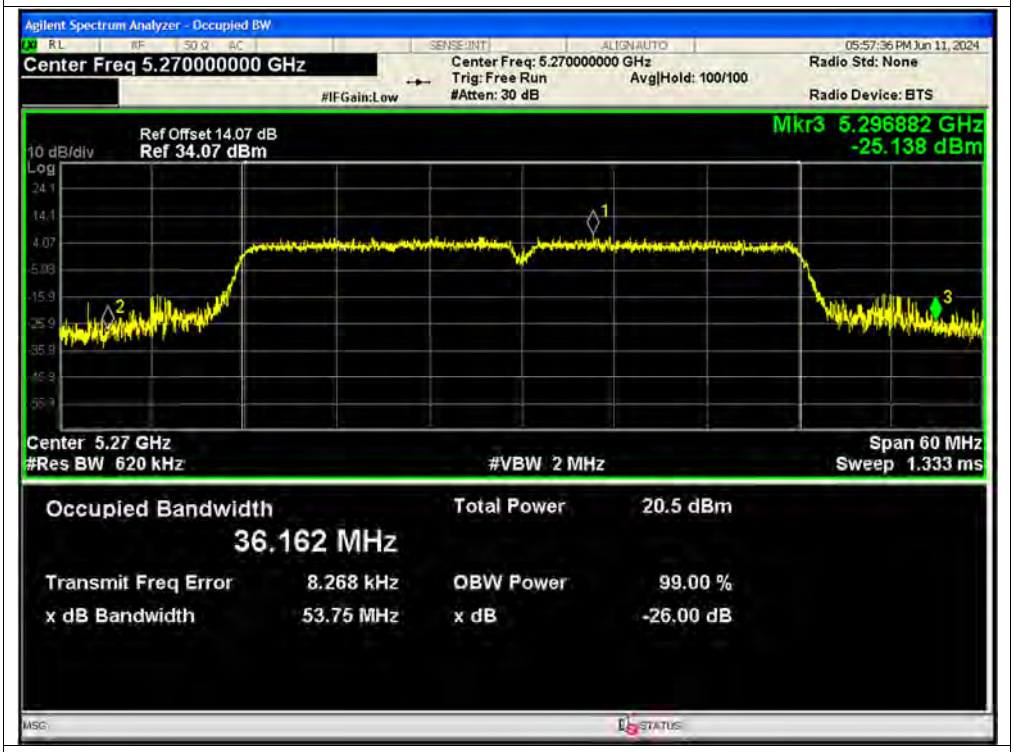
-26dB Bandwidth NVNT ac20 5320MHz Ant1

-26dB Bandwidth NVNT ac40 5190MHz Ant1

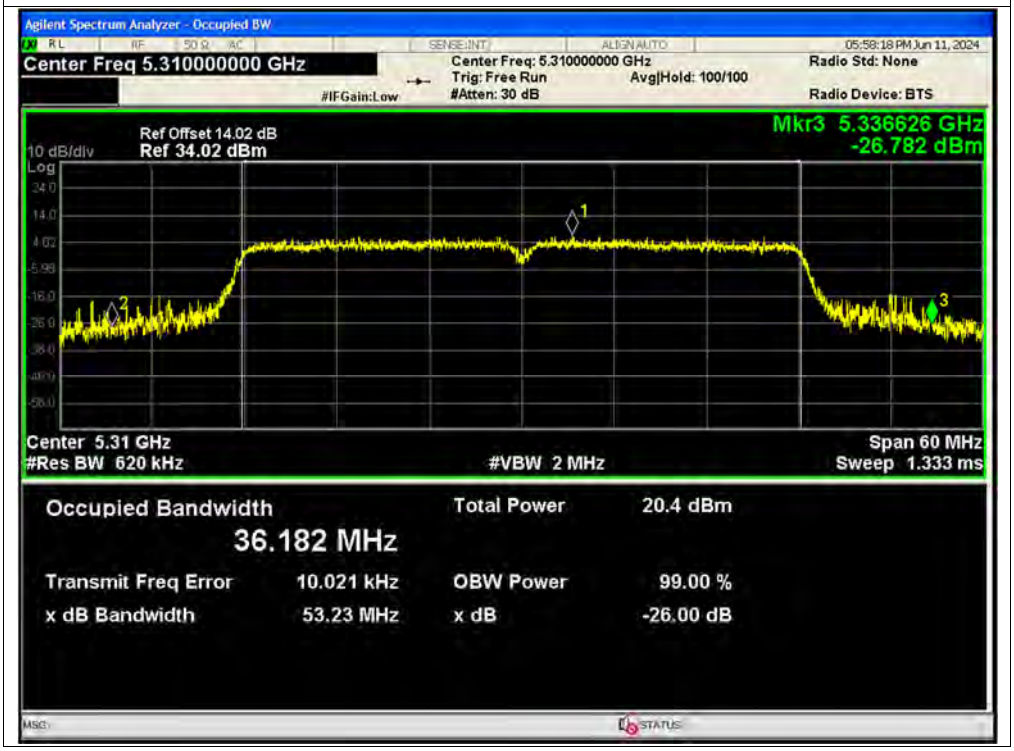
-26dB Bandwidth NVNT ac40 5230MHz Ant1



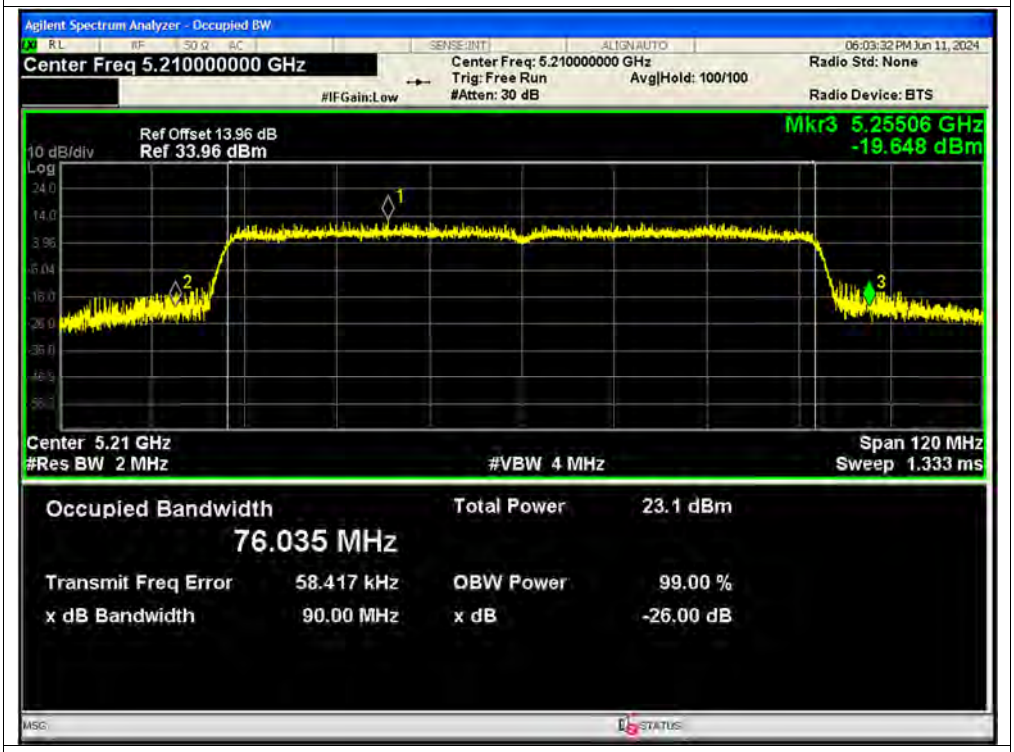
-26dB Bandwidth NVNT ac40 5270MHz Ant1



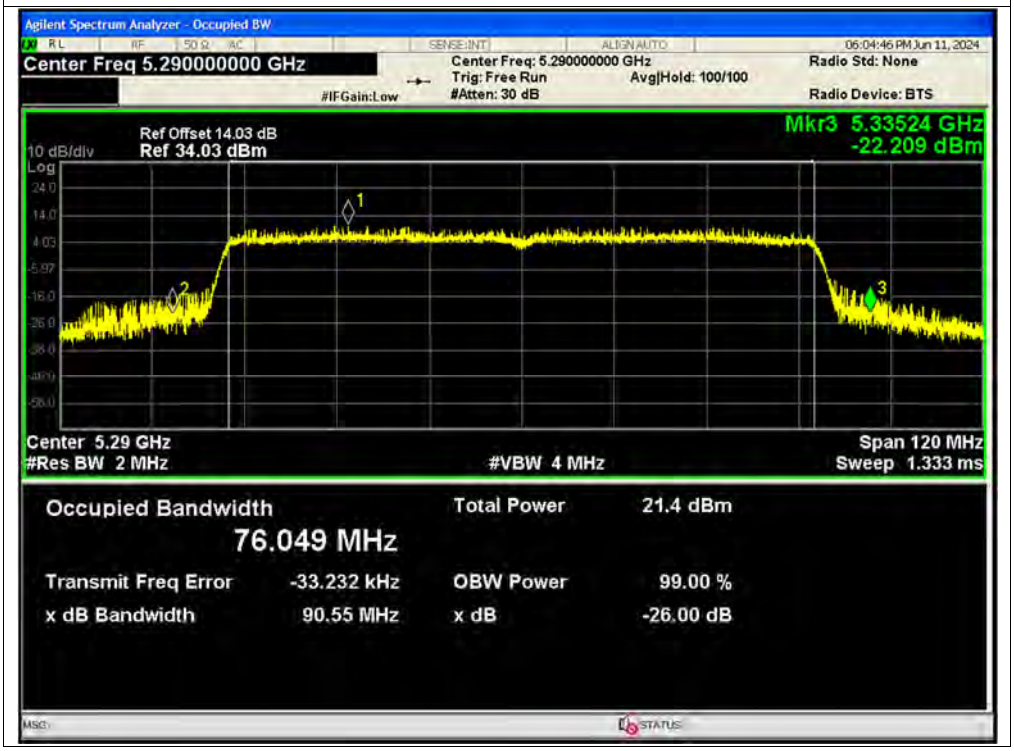
-26dB Bandwidth NVNT ac40 5310MHz Ant1



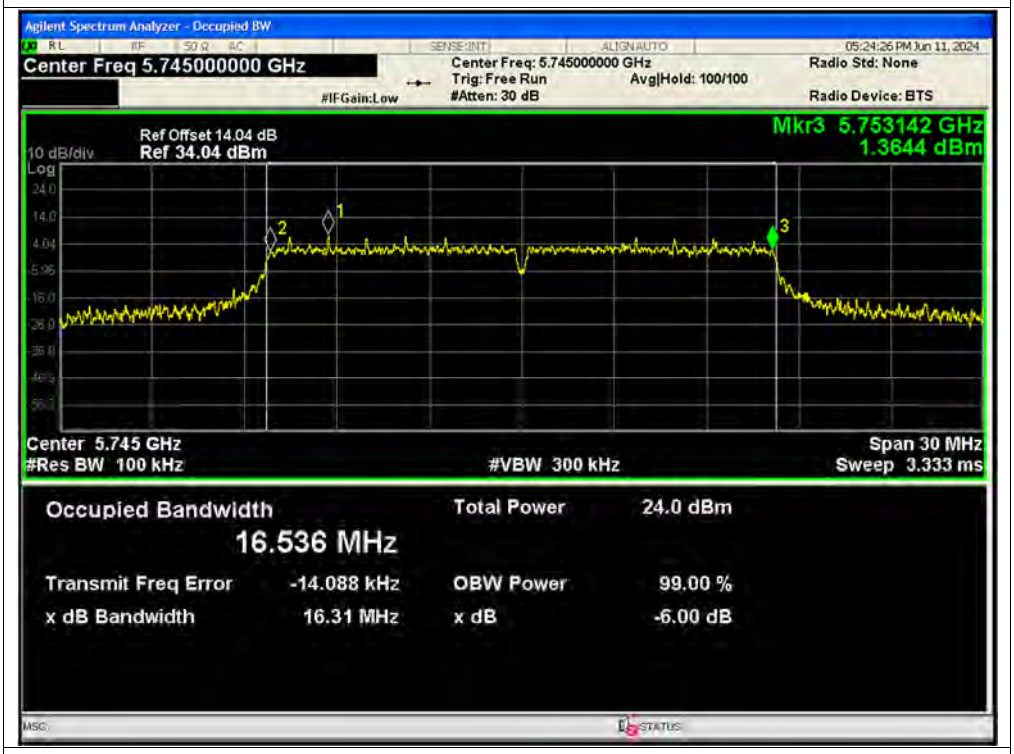
-26dB Bandwidth NVNT ac80 5210MHz Ant1



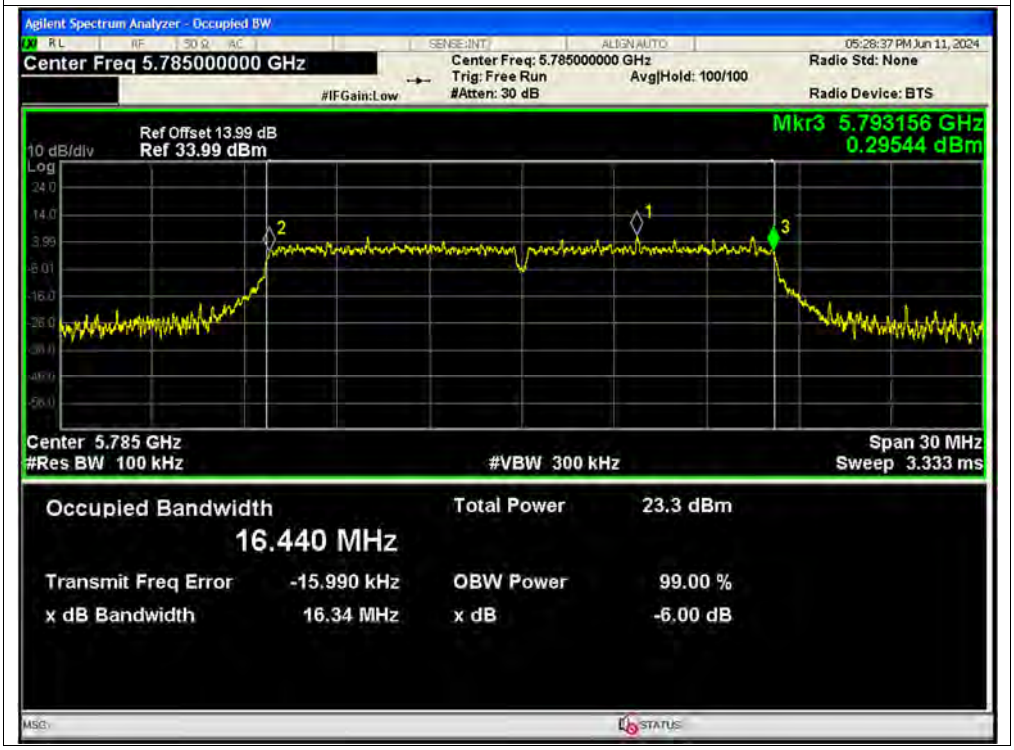
-26dB Bandwidth NVNT ac80 5290MHz Ant1



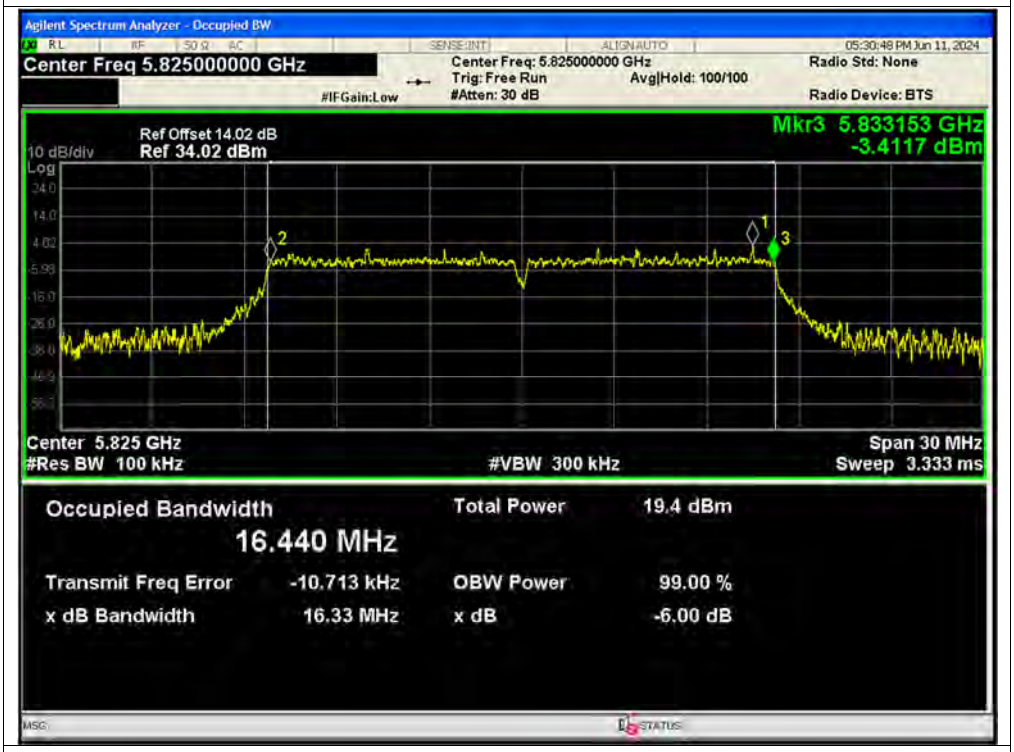
Test Graphs
-6dB Bandwidth NVNT a 5745MHz Ant1



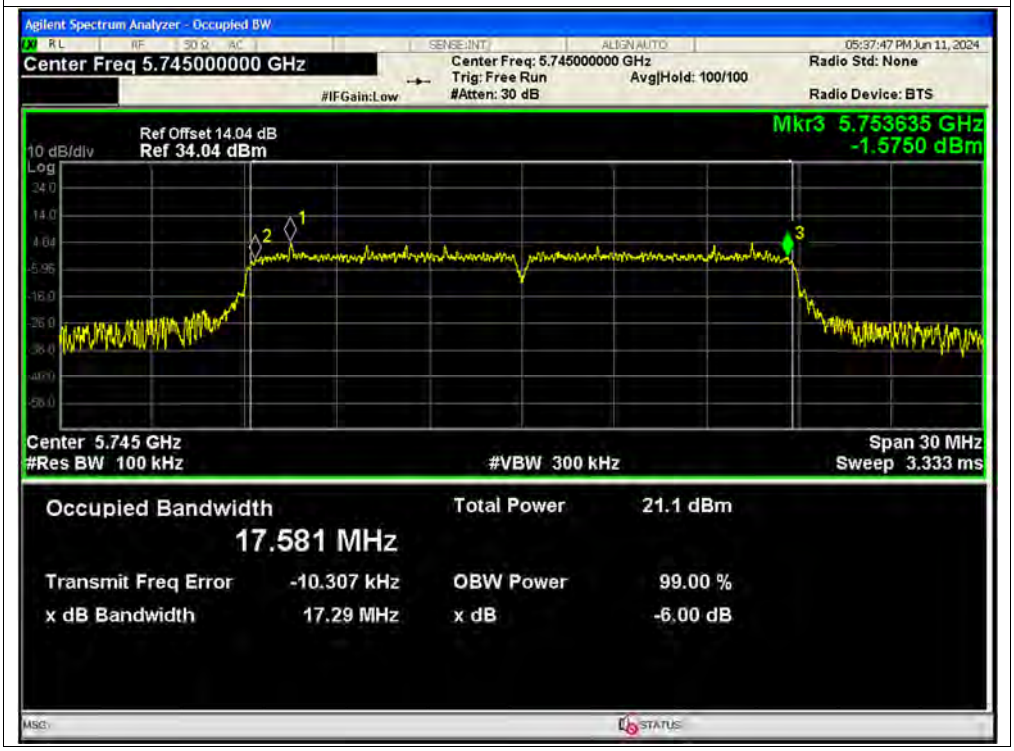
-6dB Bandwidth NVNT a 5785MHz Ant1



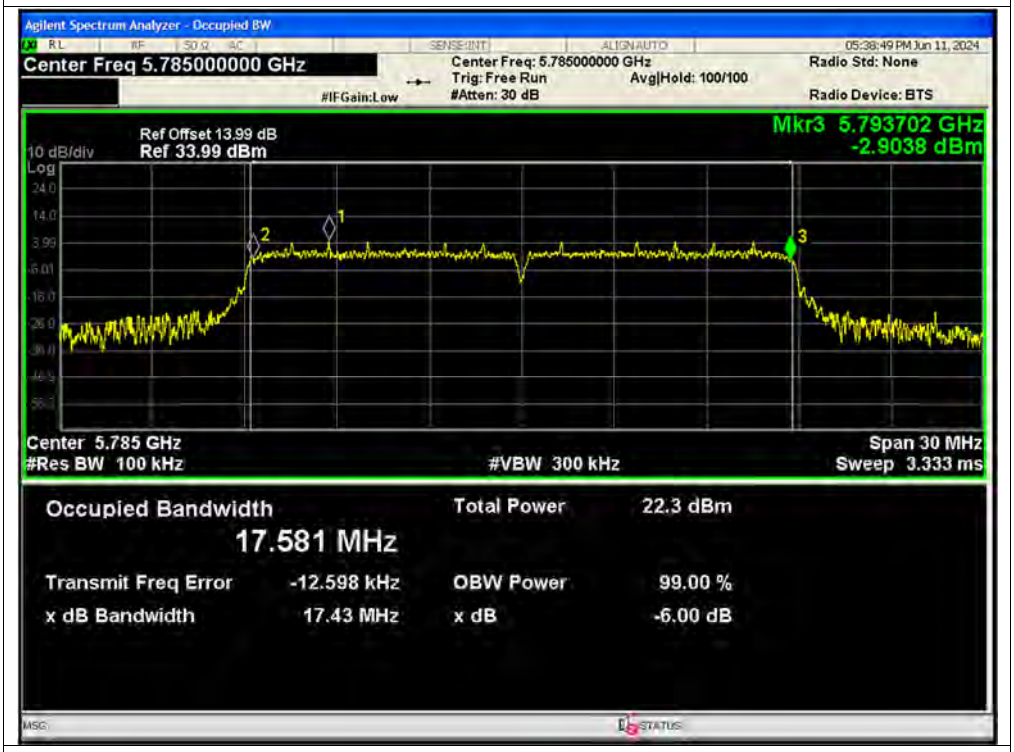
-6dB Bandwidth NVNT a 5825MHz Ant1



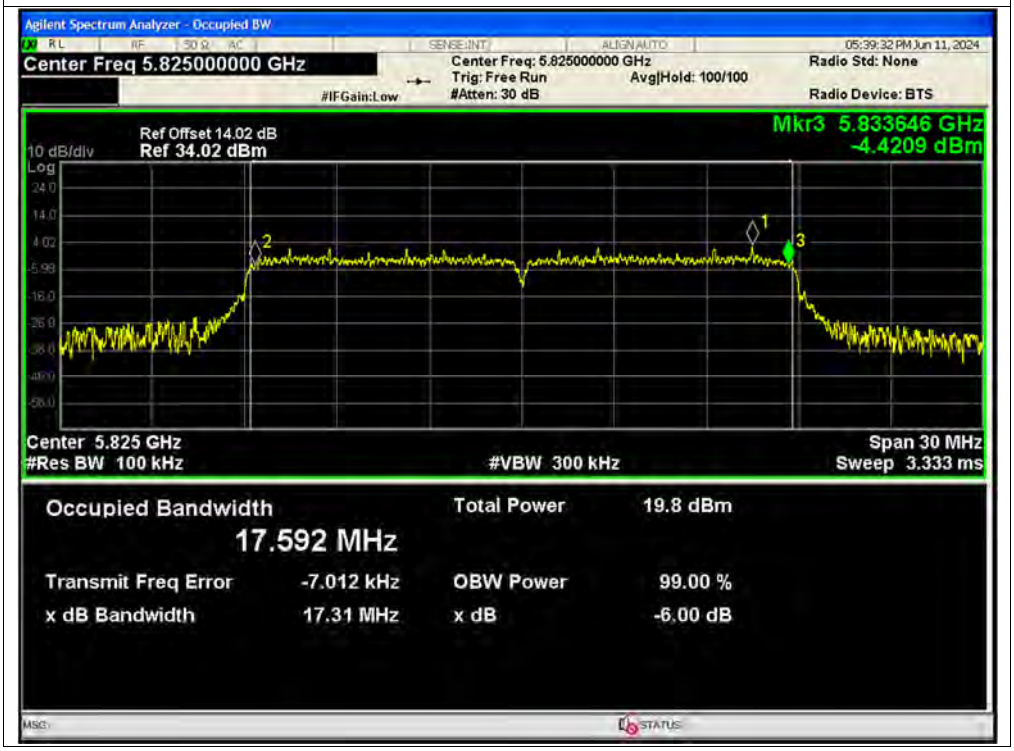
-6dB Bandwidth NVNT n20 5745MHz Ant1



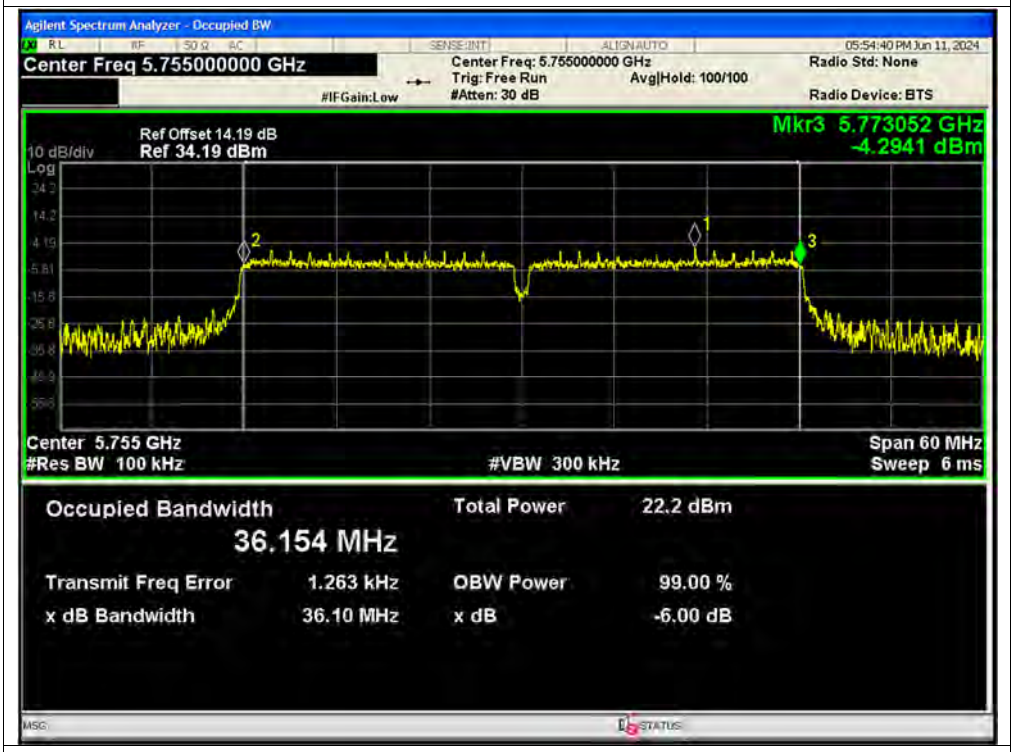
-6dB Bandwidth NVNT n20 5785MHz Ant1



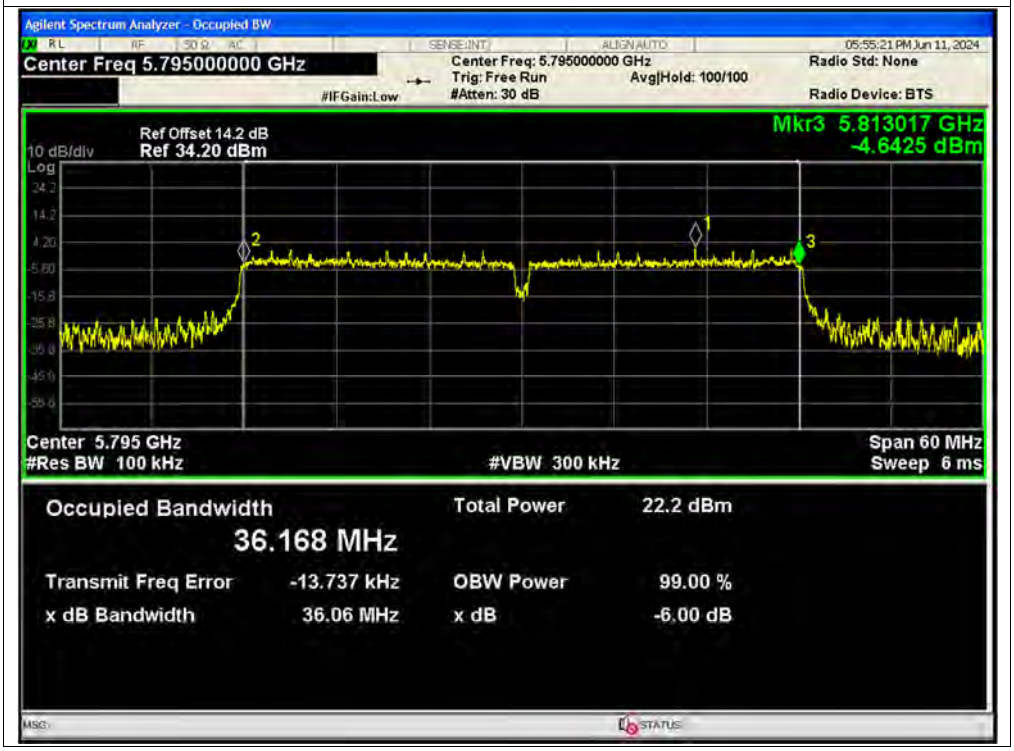
-6dB Bandwidth NVNT n20 5825MHz Ant1



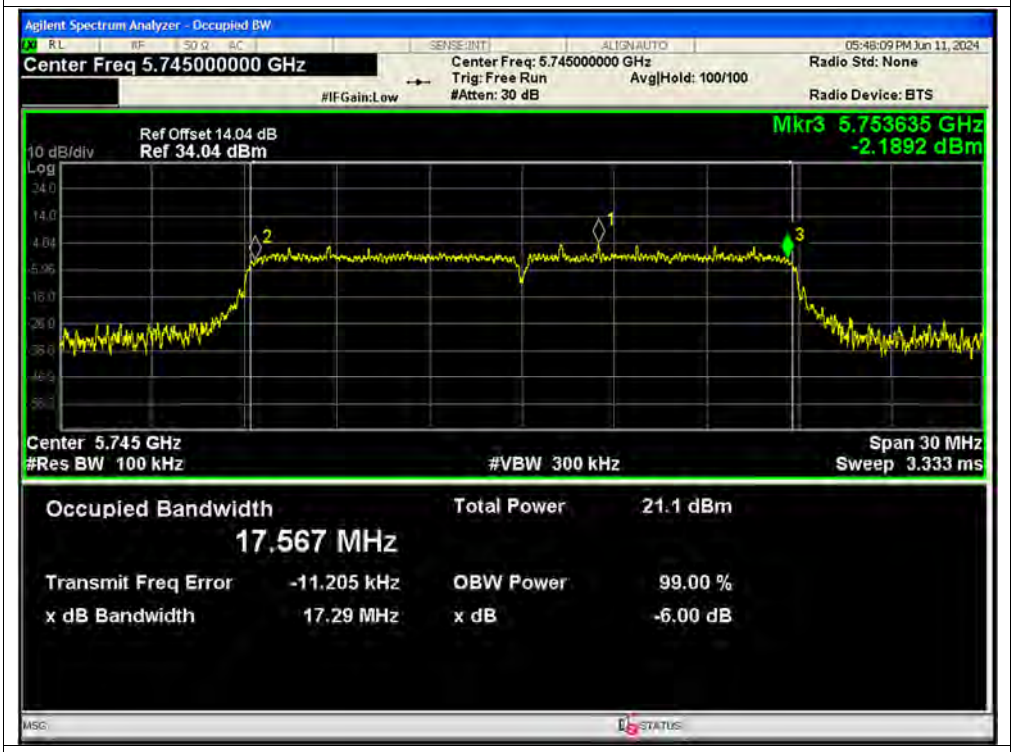
-6dB Bandwidth NVNT n40 5755MHz Ant1



-6dB Bandwidth NVNT n40 5795MHz Ant1

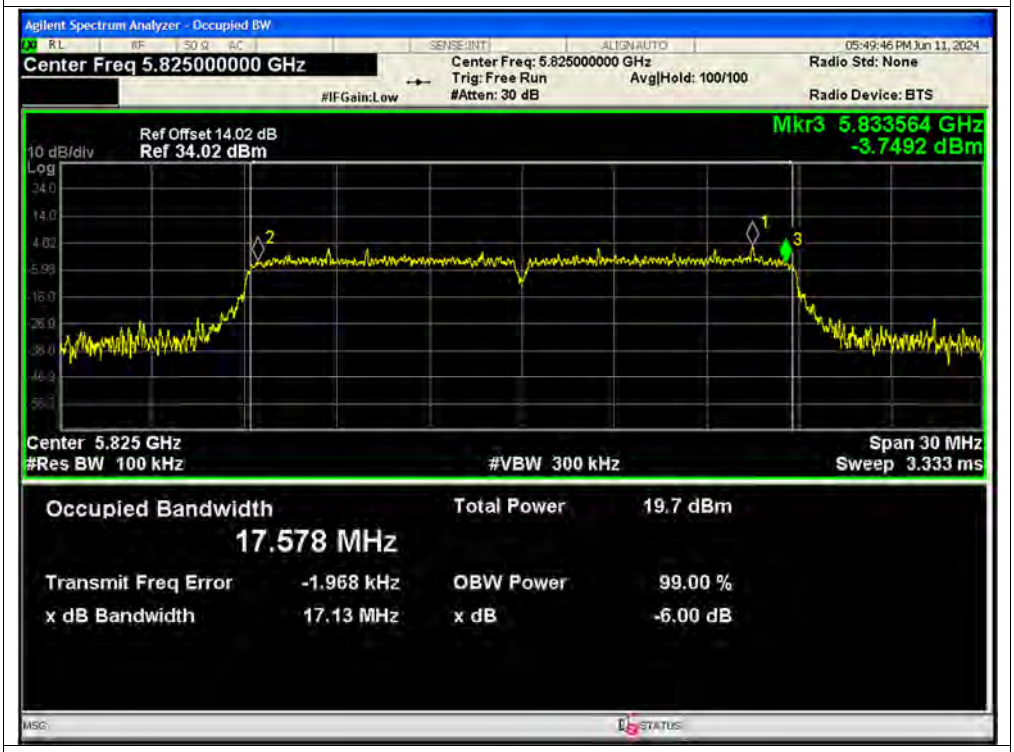


-6dB Bandwidth NVNT ac20 5745MHz Ant1

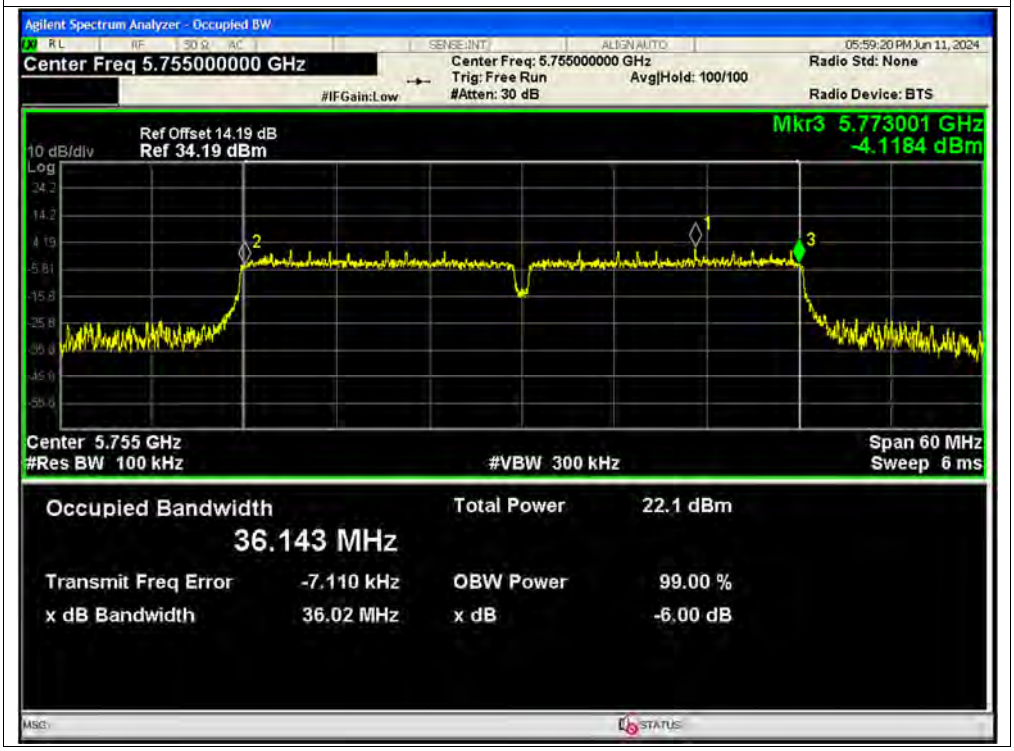


-6dB Bandwidth NVNT ac20 5785MHz Ant1

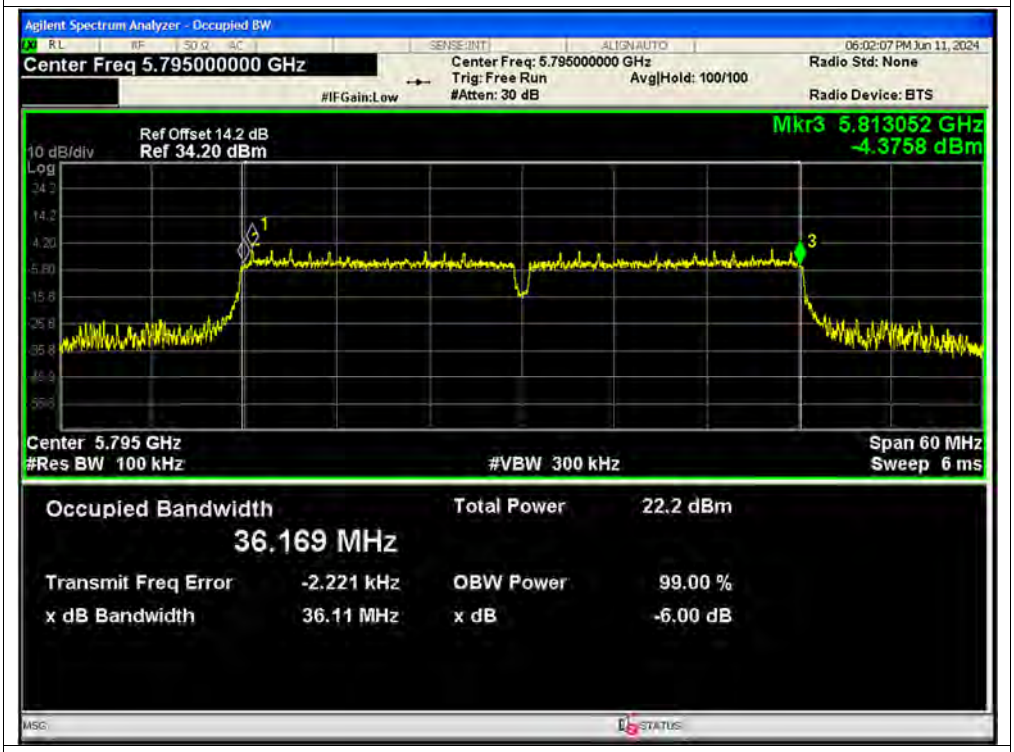
-6dB Bandwidth NVNT ac20 5825MHz Ant1



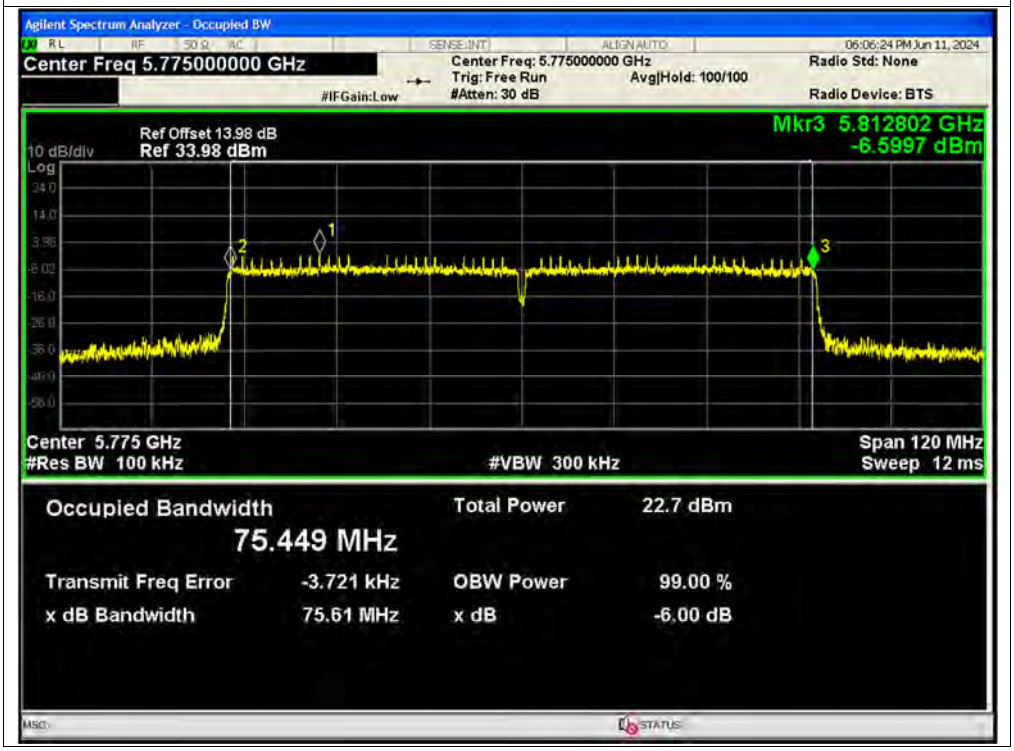
-6dB Bandwidth NVNT ac40 5755MHz Ant1



-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	3.11	0.42	3.53	11	Pass
NVNT	a	5220	Ant1	5.03	0.45	5.48	11	Pass
NVNT	a	5240	Ant1	2.43	0.45	2.88	11	Pass
NVNT	a	5260	Ant1	2.39	0.45	2.84	11	Pass
NVNT	a	5300	Ant1	2.26	0.45	2.71	11	Pass
NVNT	a	5320	Ant1	2.12	0.41	2.53	11	Pass
NVNT	a	5745	Ant1	3.6	0.41	4.01	30	Pass
NVNT	a	5785	Ant1	2.95	0.41	3.36	30	Pass
NVNT	a	5825	Ant1	-0.77	0.45	-0.32	30	Pass
NVNT	n20	5180	Ant1	2.5	0.52	3.02	11	Pass
NVNT	n20	5220	Ant1	4.34	0.52	4.86	11	Pass
NVNT	n20	5240	Ant1	1.96	0.49	2.45	11	Pass
NVNT	n20	5260	Ant1	2.01	0.52	2.53	11	Pass
NVNT	n20	5300	Ant1	2.01	0.52	2.53	11	Pass
NVNT	n20	5320	Ant1	1.83	0.52	2.35	11	Pass
NVNT	n20	5745	Ant1	0.09	0.59	0.68	30	Pass
NVNT	n20	5785	Ant1	1.27	0.52	1.79	30	Pass
NVNT	n20	5825	Ant1	-1.26	0.49	-0.77	30	Pass
NVNT	n40	5190	Ant1	-0.4	0.92	0.52	11	Pass
NVNT	n40	5230	Ant1	-0.01	0.92	0.91	11	Pass
NVNT	n40	5270	Ant1	-0.93	1.1	0.17	11	Pass
NVNT	n40	5310	Ant1	-1.01	0.98	-0.03	11	Pass
NVNT	n40	5755	Ant1	-2.22	1.1	-1.12	30	Pass
NVNT	n40	5795	Ant1	-2.14	0.92	-1.22	30	Pass
NVNT	ac20	5180	Ant1	2.55	0.52	3.07	11	Pass
NVNT	ac20	5220	Ant1	0.86	0.52	1.38	11	Pass
NVNT	ac20	5240	Ant1	2.07	0.52	2.59	11	Pass
NVNT	ac20	5260	Ant1	2.13	0.52	2.65	11	Pass
NVNT	ac20	5300	Ant1	1.85	0.55	2.4	11	Pass
NVNT	ac20	5320	Ant1	1.91	0.52	2.43	11	Pass
NVNT	ac20	5745	Ant1	0.1	0.52	0.62	30	Pass
NVNT	ac20	5785	Ant1	1.18	0.52	1.7	30	Pass
NVNT	ac20	5825	Ant1	-1.28	0.52	-0.76	30	Pass
NVNT	ac40	5190	Ant1	-0.37	0.97	0.61	11	Pass

NVNT	ac40	5230	Ant1	0.22	1.1	1.32	11	Pass
NVNT	ac40	5270	Ant1	-1.01	1.08	0.07	11	Pass
NVNT	ac40	5310	Ant1	-1	1.04	0.04	11	Pass
NVNT	ac40	5755	Ant1	-2.07	1.1	-0.97	30	Pass
NVNT	ac40	5795	Ant1	-1.86	1.1	-0.76	30	Pass
NVNT	ac80	5210	Ant1	-2.82	1.66	-1.16	11	Pass
NVNT	ac80	5290	Ant1	-4.63	1.81	-2.82	11	Pass
NVNT	ac80	5775	Ant1	-5.06	1.76	-3.3	30	Pass

Test Graphs
PSD NVNT a 5180MHz Ant1

PSD NVNT a 5220MHz Ant1

PSD NVNT a 5240MHz Ant1

PSD NVNT a 5260MHz Ant1

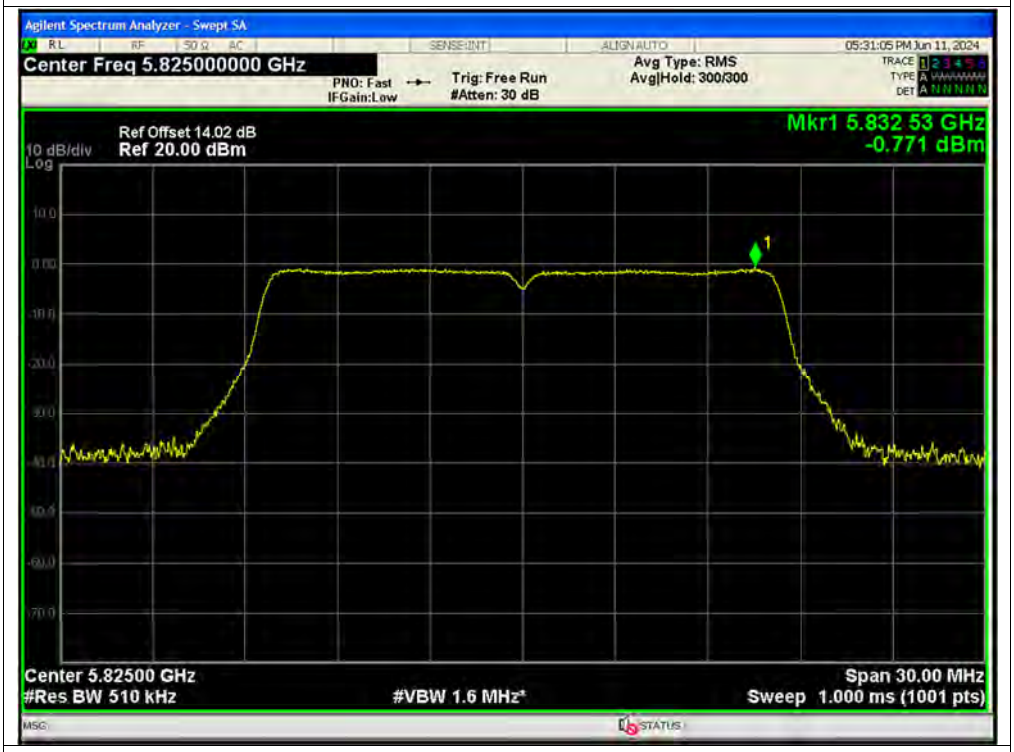
PSD NVNT a 5300MHz Ant1

PSD NVNT a 5320MHz Ant1

PSD NVNT a 5745MHz Ant1

PSD NVNT a 5785MHz Ant1

PSD NVNT a 5825MHz Ant1



PSD NVNT n20 5180MHz Ant1

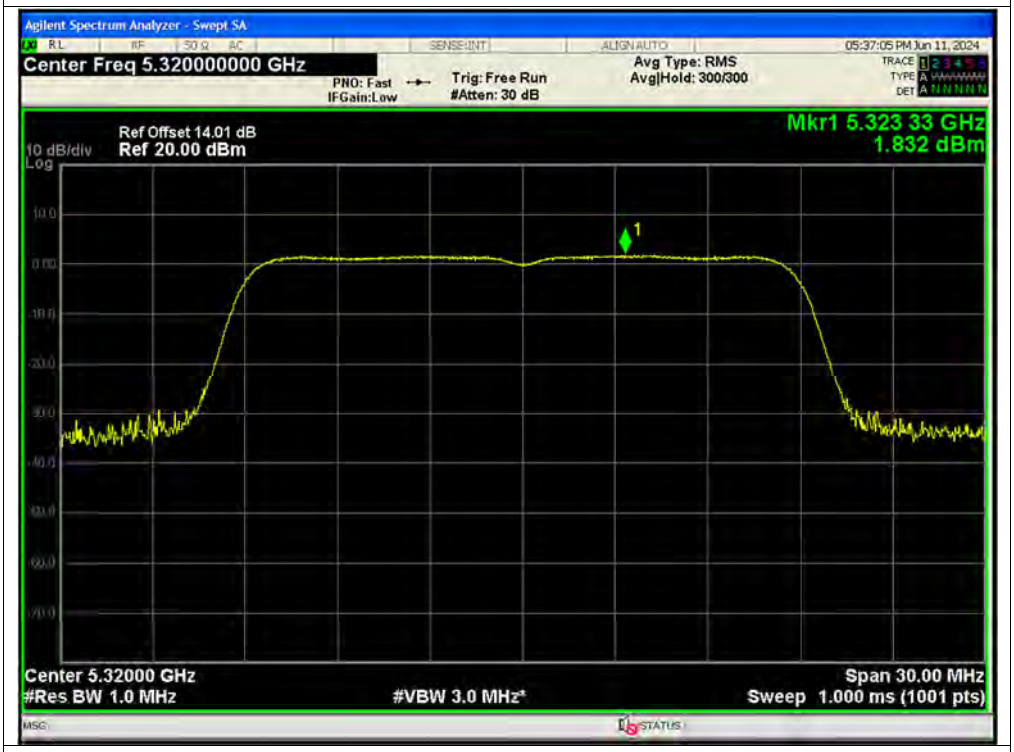
PSD NVNT n20 5220MHz Ant1

PSD NVNT n20 5240MHz Ant1

PSD NVNT n20 5260MHz Ant1

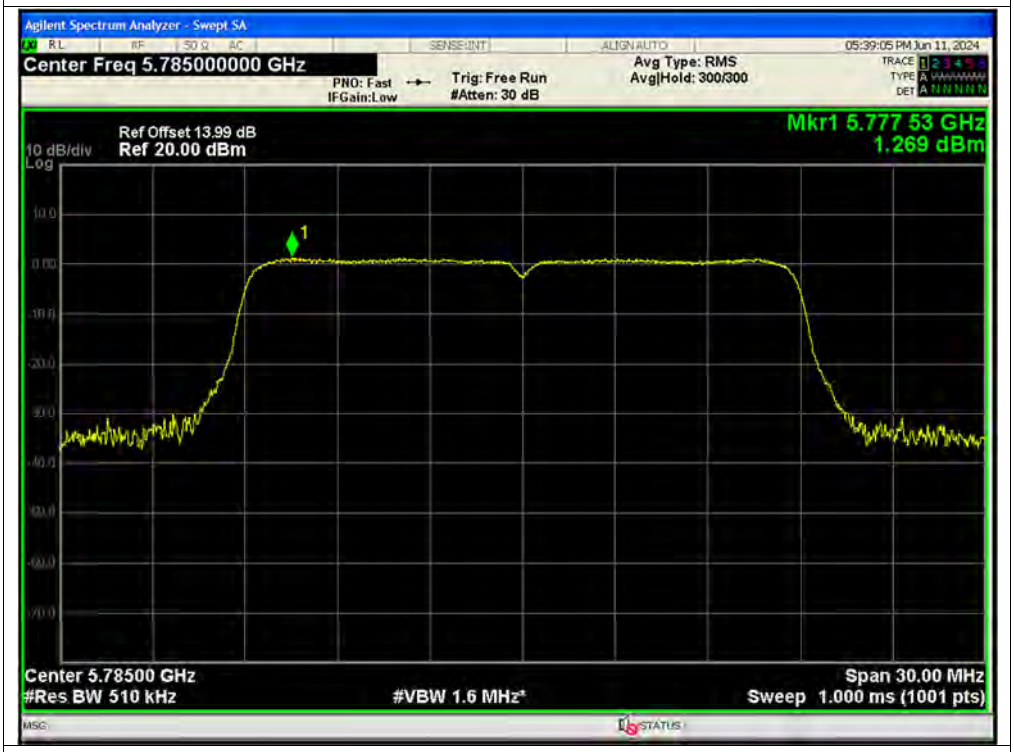
PSD NVNT n20 5300MHz Ant1

PSD NVNT n20 5320MHz Ant1

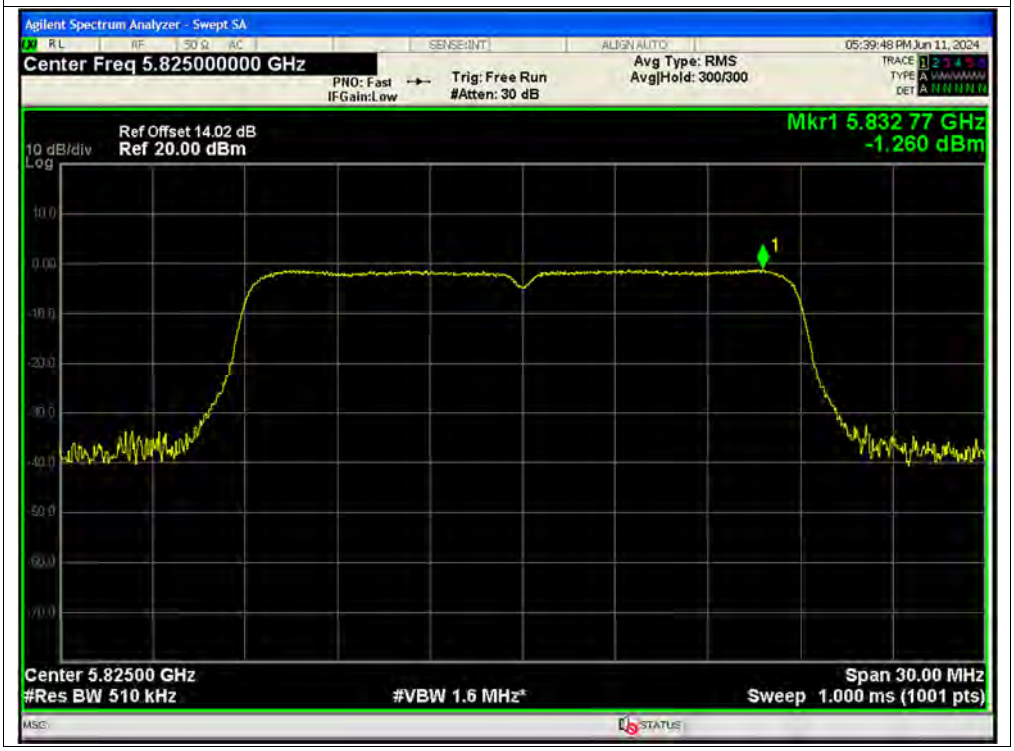


PSD NVNT n20 5745MHz Ant1

PSD NVNT n20 5785MHz Ant1



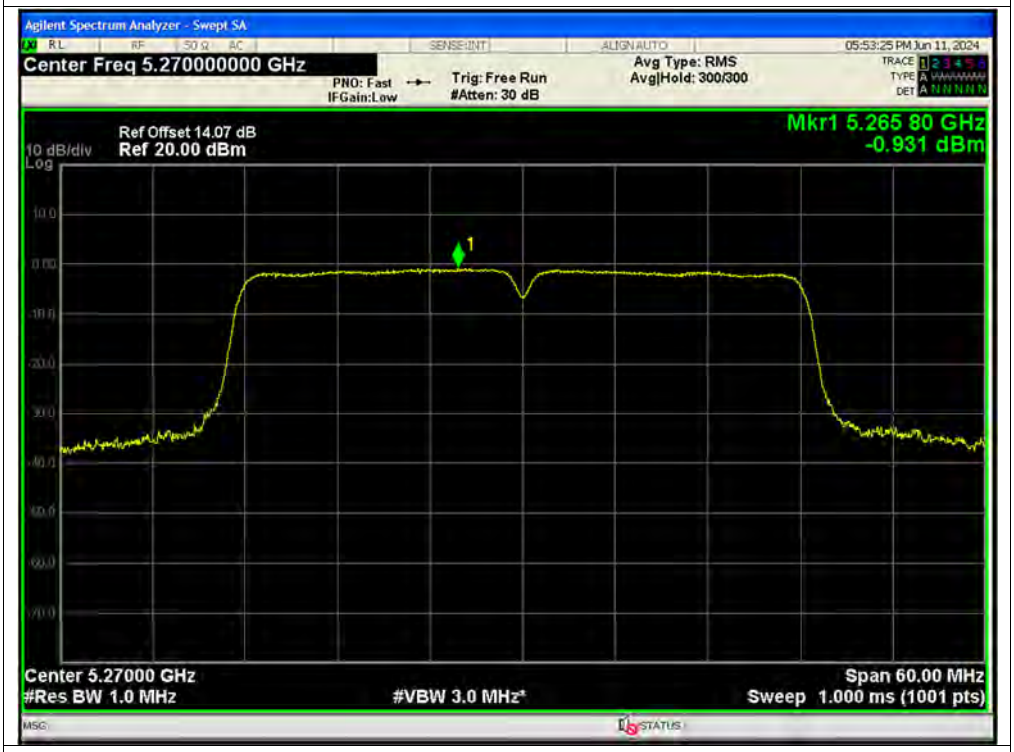
PSD NVNT n20 5825MHz Ant1



PSD NVNT n40 5190MHz Ant1

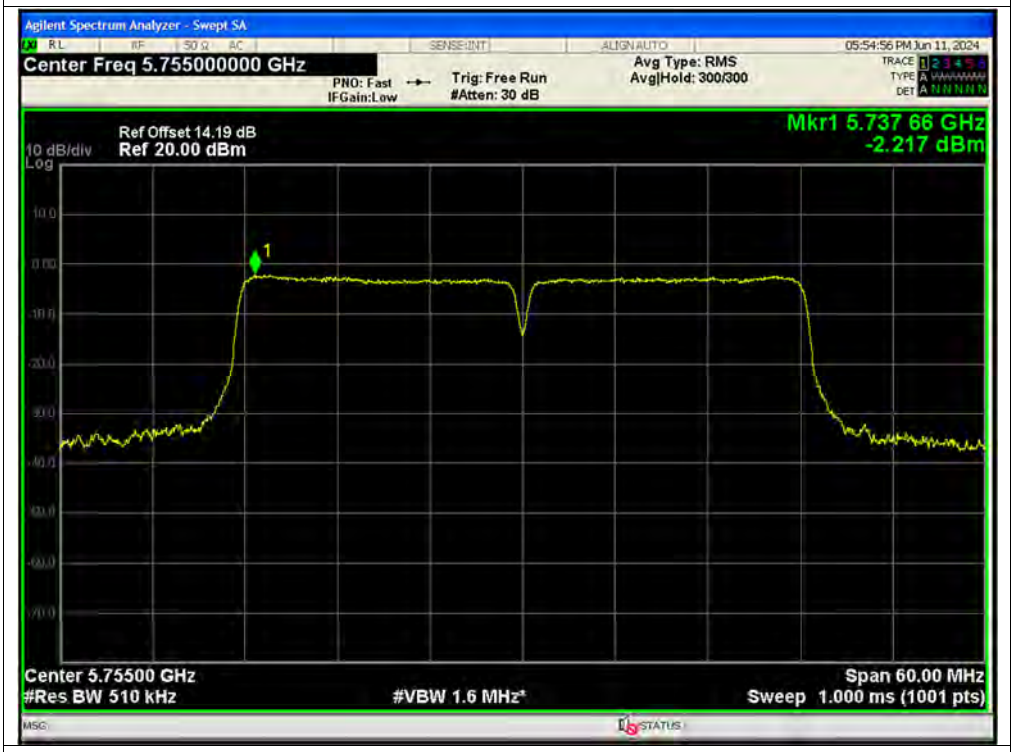
PSD NVNT n40 5230MHz Ant1

PSD NVNT n40 5270MHz Ant1



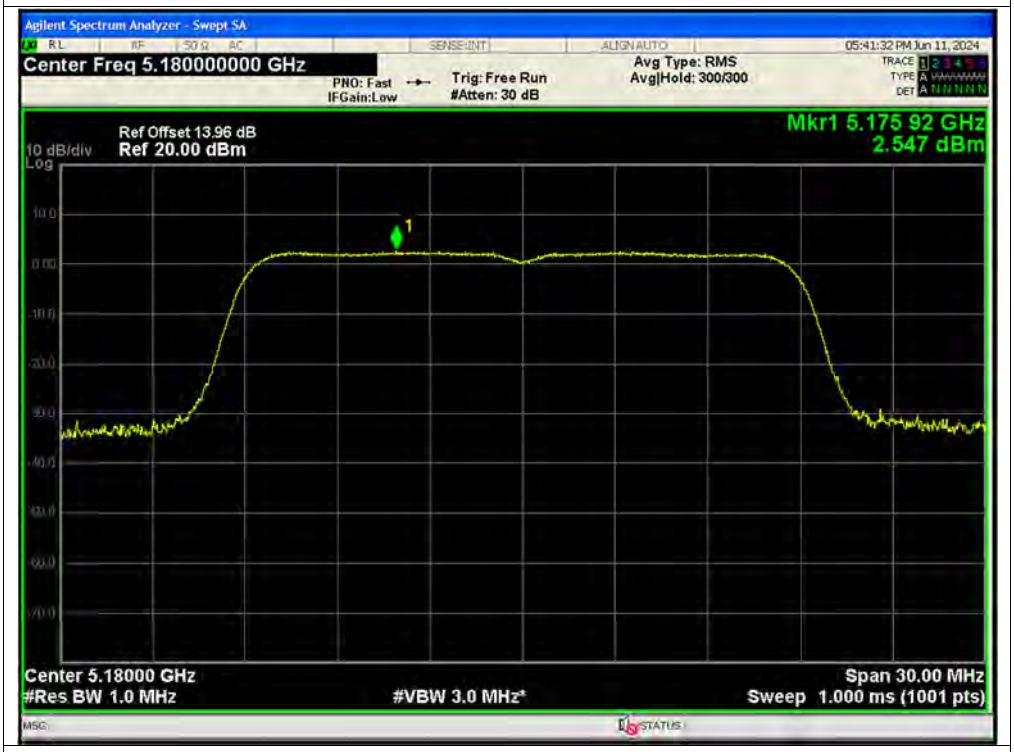
PSD NVNT n40 5310MHz Ant1

PSD NVNT n40 5755MHz Ant1



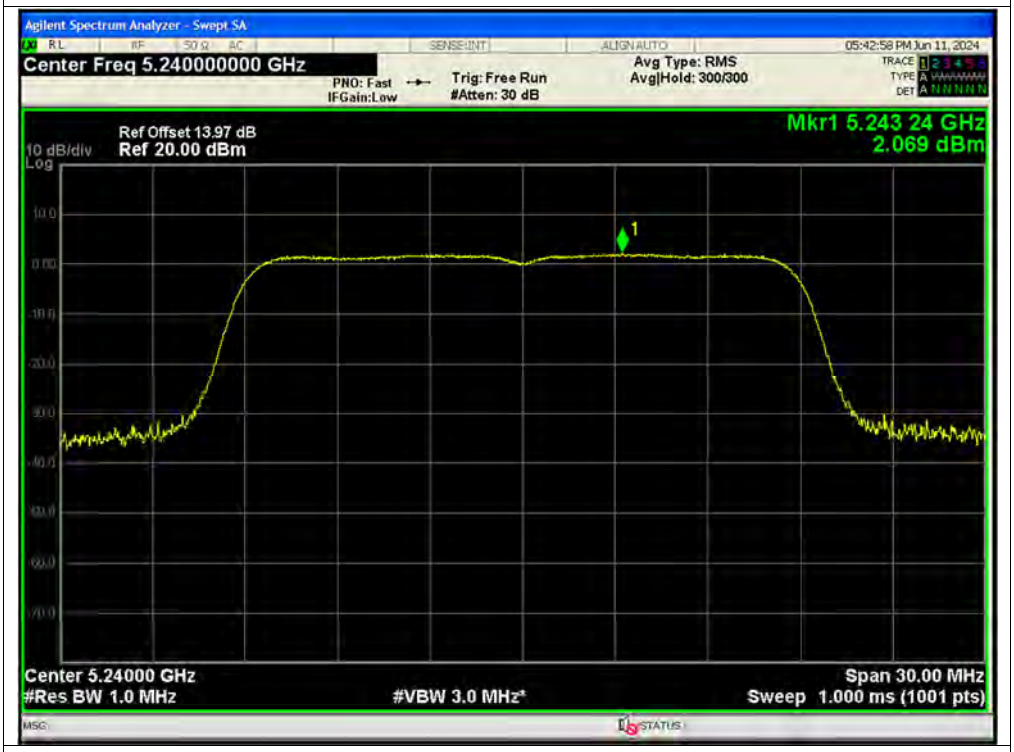
PSD NVNT n40 5795MHz Ant1

PSD NVNT ac20 5180MHz Ant1



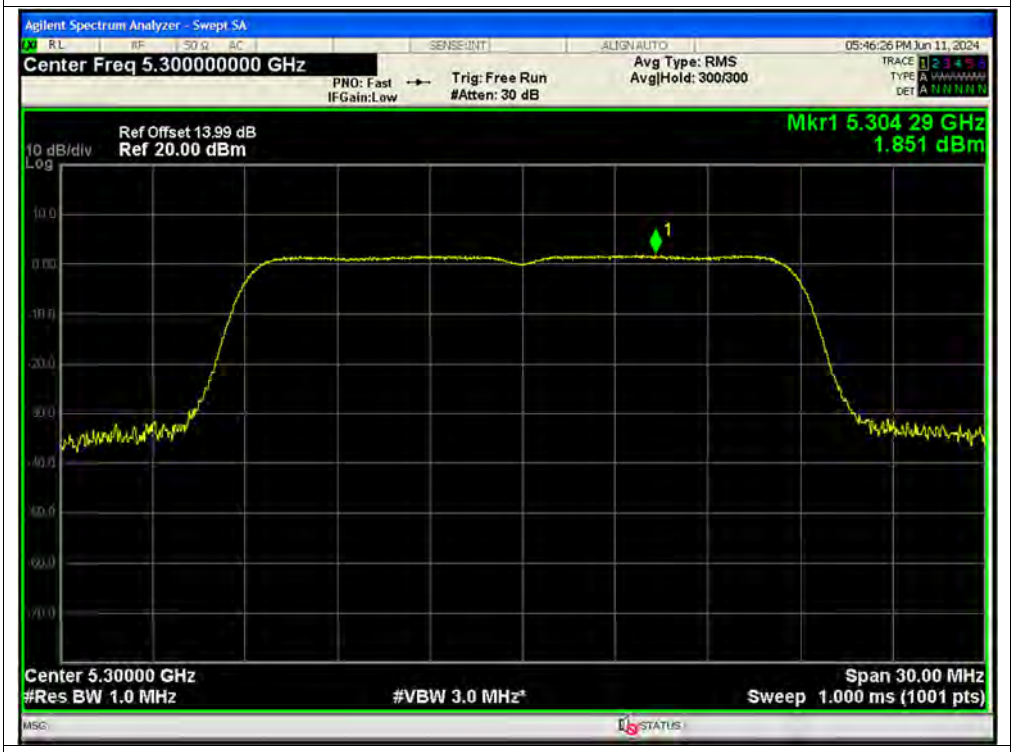
PSD NVNT ac20 5220MHz Ant1

PSD NVNT ac20 5240MHz Ant1



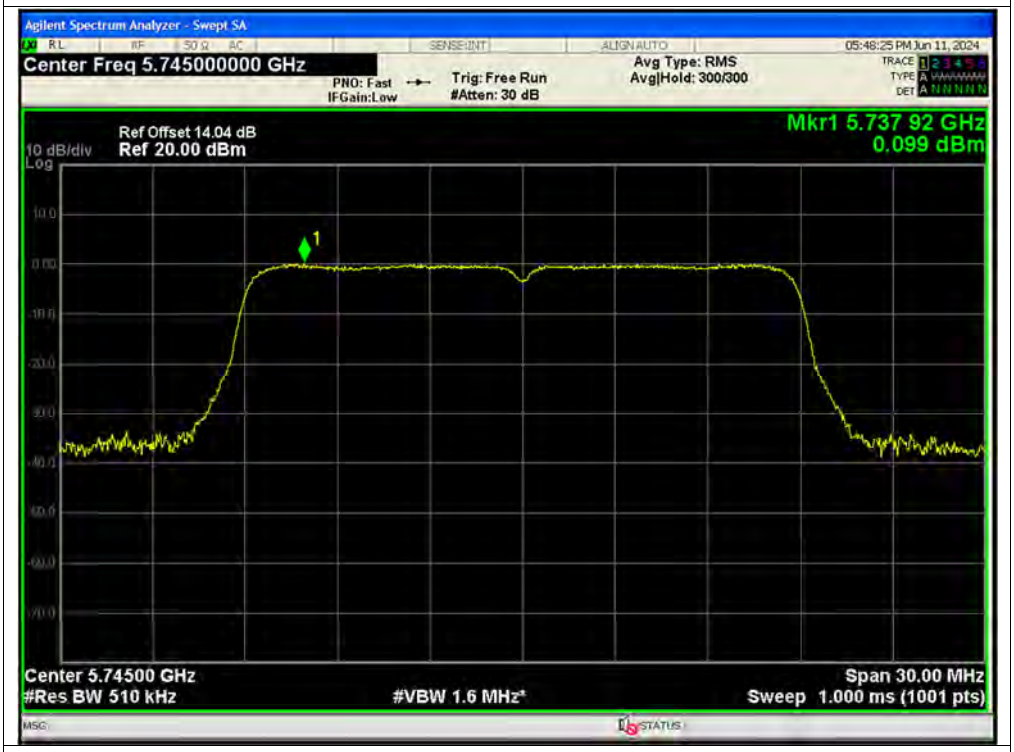
PSD NVNT ac20 5260MHz Ant1

PSD NVNT ac20 5300MHz Ant1

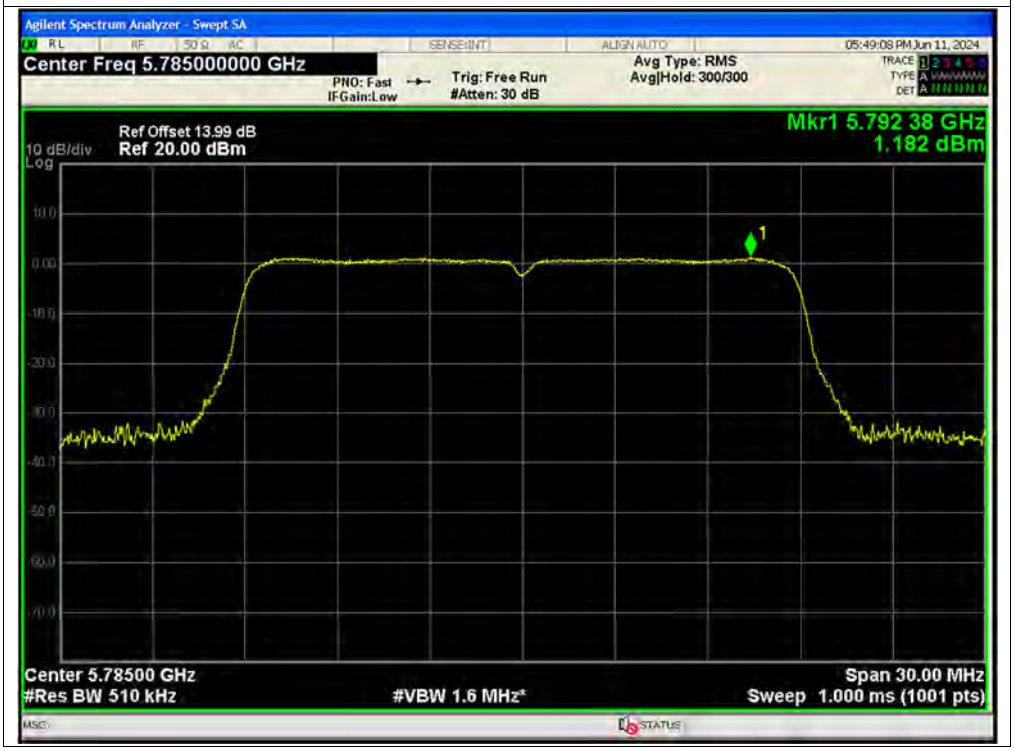


PSD NVNT ac20 5320MHz Ant1

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 5270MHz Ant1

PSD NVNT ac40 5310MHz Ant1

PSD NVNT ac40 5755MHz Ant1

PSD NVNT ac40 5795MHz Ant1

PSD NVNT ac80 5210MHz Ant1

PSD NVNT ac80 5290MHz Ant1

PSD NVNT ac80 5775MHz Ant1

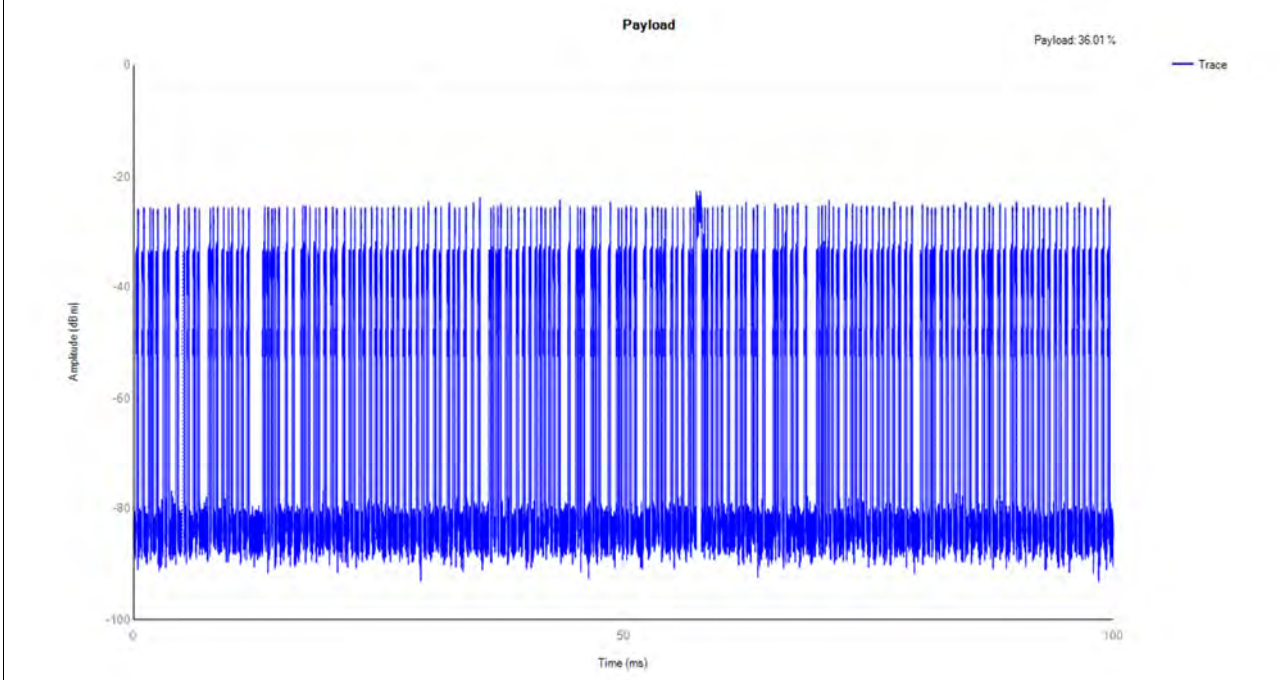
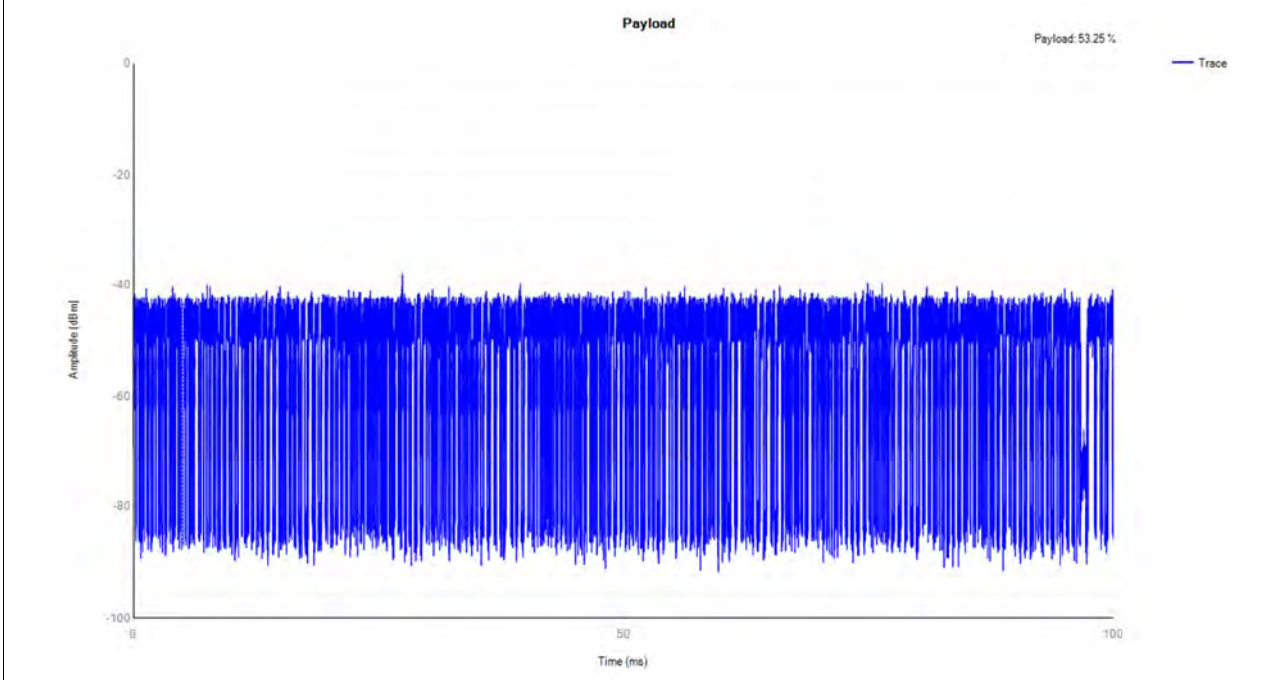
A.5. Frequency Stability

Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
20C 3.4V	a	5180	Ant1	5179.987	-13000	-2.51	25	Pass
20C 3.87V	a	5180	Ant1	5179.987	-13000	-2.51	25	Pass
20C 4.45V	a	5180	Ant1	5179.987	-13000	-2.51	25	Pass
-10C 3.87V	a	5180	Ant1	5179.987	-13000	-2.51	25	Pass
0C 3.87V	a	5180	Ant1	5179.987	-13000	-2.51	25	Pass
10C 3.87V	a	5180	Ant1	5179.987	-13000	-2.51	25	Pass
30C 3.87V	a	5180	Ant1	5179.987	-13000	-2.51	25	Pass
40C 3.87V	a	5180	Ant1	5179.987	-13000	-2.51	25	Pass
55C 3.87V	a	5180	Ant1	5179.987	-13000	-2.51	25	Pass
20C 3.4V	a	5260	Ant1	5259.987	-13000	-2.47	25	Pass
20C 3.87V	a	5260	Ant1	5259.987	-13000	-2.47	25	Pass
20C 4.45V	a	5260	Ant1	5259.987	-13000	-2.47	25	Pass
-10C 3.87V	a	5260	Ant1	5259.987	-13000	-2.47	25	Pass
0C 3.87V	a	5260	Ant1	5259.987	-13000	-2.47	25	Pass
10C 3.87V	a	5260	Ant1	5259.987	-13000	-2.47	25	Pass
30C 3.87V	a	5260	Ant1	5259.987	-13000	-2.47	25	Pass
40C 3.87V	a	5260	Ant1	5259.986	-14000	-2.66	25	Pass
55C 3.87V	a	5260	Ant1	5259.986	-14000	-2.66	25	Pass
20C 3.4V	a	5745	Ant1	5744.985	-15000	-2.61	25	Pass
20C 3.87V	a	5745	Ant1	5744.985	-15000	-2.61	25	Pass
20C 4.45V	a	5745	Ant1	5744.985	-15000	-2.61	25	Pass
-10C 3.87V	a	5745	Ant1	5744.985	-15000	-2.61	25	Pass
0C 3.87V	a	5745	Ant1	5744.985	-15000	-2.61	25	Pass
10C 3.87V	a	5745	Ant1	5744.985	-15000	-2.61	25	Pass
30C 3.87V	a	5745	Ant1	5744.985	-15000	-2.61	25	Pass
40C 3.87V	a	5745	Ant1	5744.985	-15000	-2.61	25	Pass
55C 3.87V	a	5745	Ant1	5744.985	-15000	-2.61	25	Pass

A.6. Dynamic Frequency Selection

Payload

Mode	Frequency (MHz)	Result	Verdict
a	5320	36.01	Pass
ac80	5290	53.25	Pass

Test Graphs
a 5320MHz Payload

ac80 5290MHz Payload


Detection Thresholds

Mode	Frequency (MHz)	Type	Result	Verdict
a	5320	DFS_FCC_T0	See test Graph	Pass
ac80	5290	DFS_FCC_T0	See test Graph	Pass

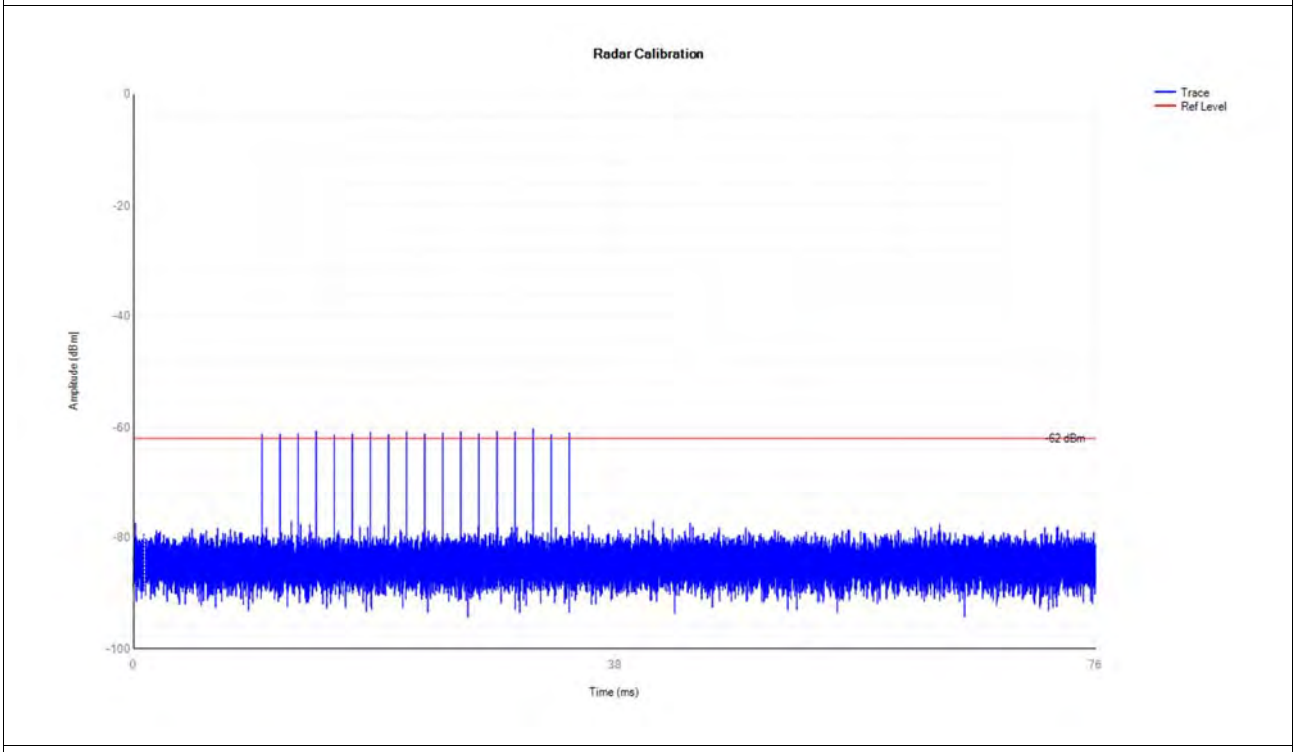
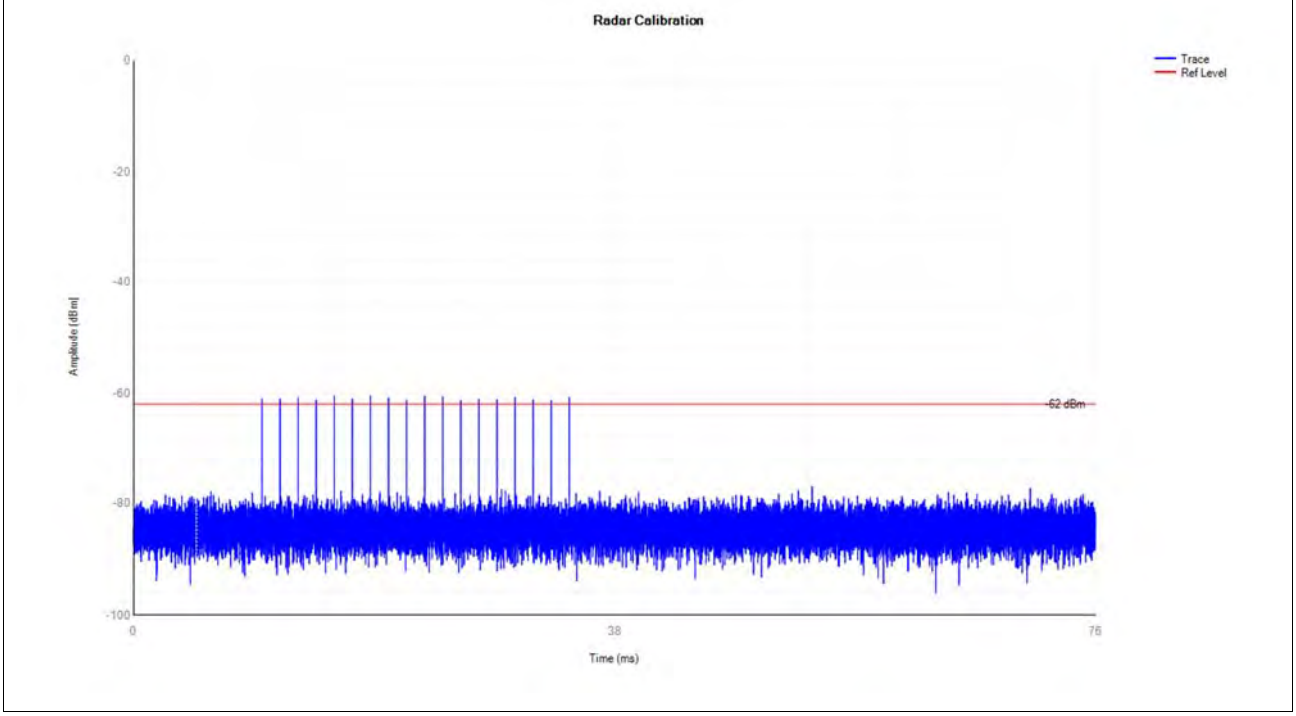
Spectrum analyzer settings:

Span: Zero

Detector Type: Peak

RBW: 3MHz

VBW: 3MHz

Test Graphs
5320MHz DFS_FCC_T0

5290MHz DFS_FCC_T0


Channel Move Time and Channel Closing Transmission Time

Mode	Frequency (MHz)	Channel Move Time (s)	Limit Channel Move Time (s)	Close Transmission Time (s)	Limit Close Transmission Time (s)	Close Transmission Time after 200ms(s)	Limit Close Transmission Time after 200ms (s)	Verdict
a	5320	0.894	10	0.041	0.26	0.009	0.06	Pass
ac80	5290	0.128	10	0.091	0.26	0	0.06	Pass

Spectrum analyzer settings:

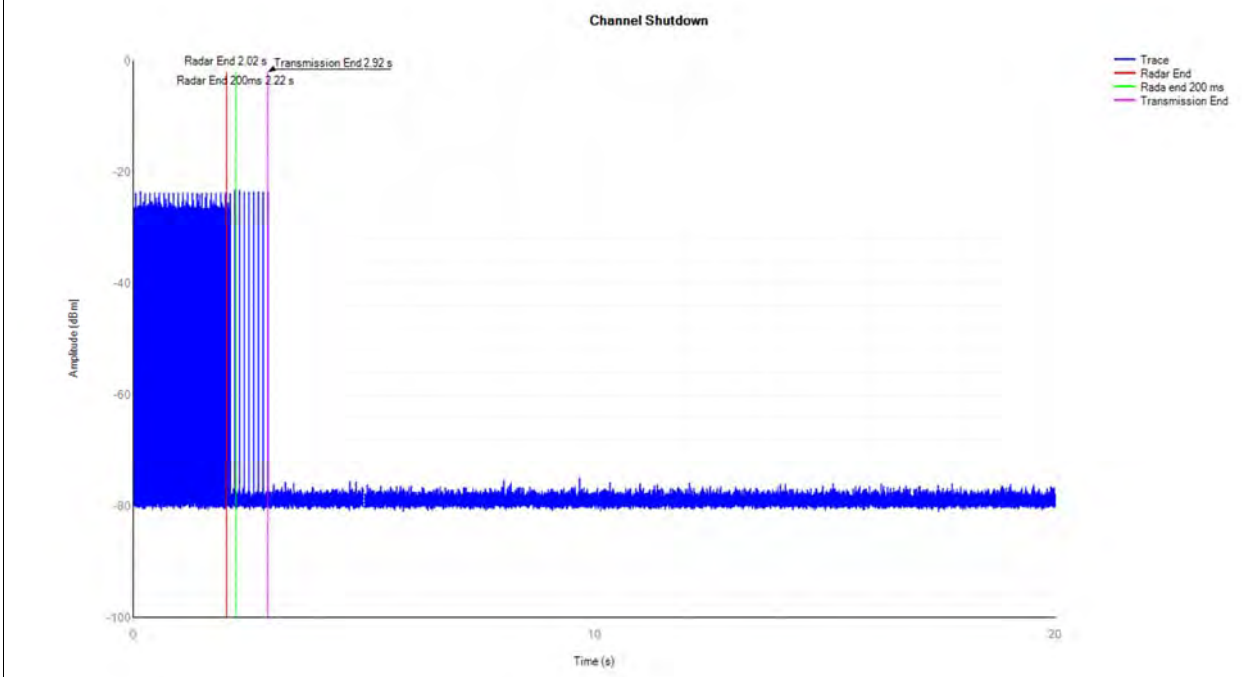
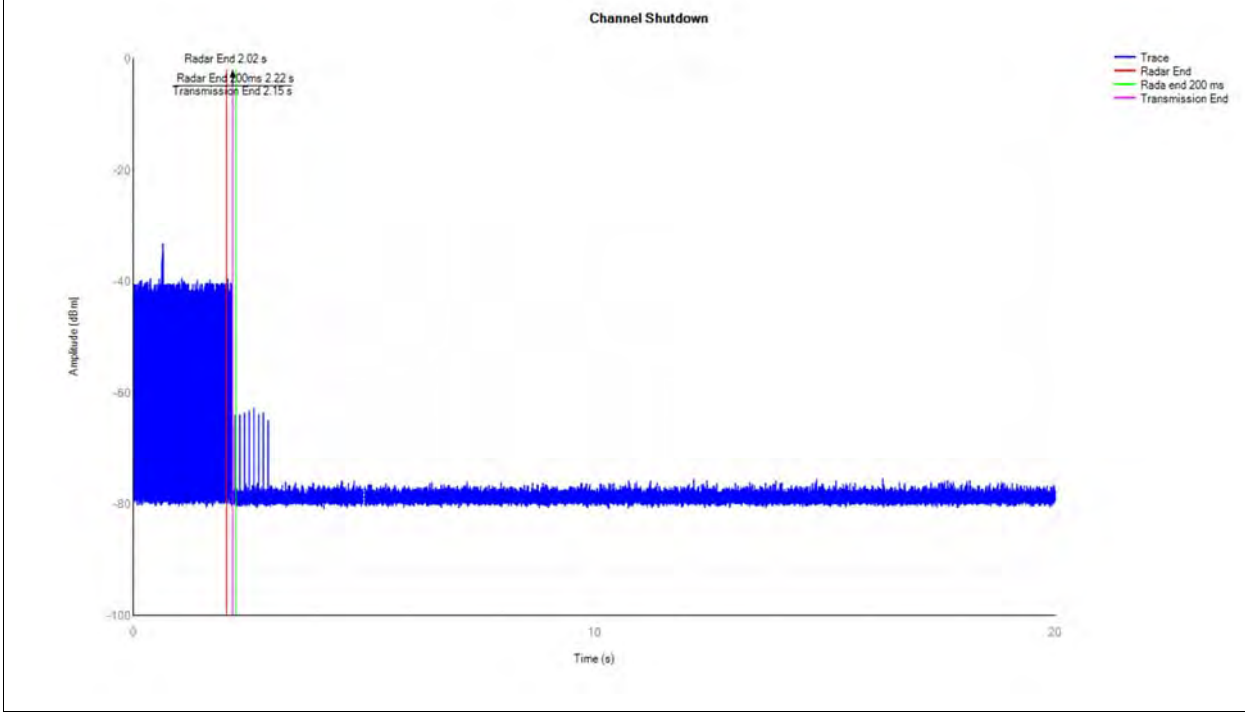
Span: Zero

Detector type: Peak

RBW: 3MHz

VBW: 3MHz

Sweep time: 20s

Test Graphs
a 5320MHz Shutdown

ac80 5290MHz Shutdown


Note：The signal above the noise floor after the radar signal ends is the signal which leaked from other channels that have been moved following the Master device.

Non-Occupancy Period

Mode	Frequency (MHz)	Result	Verdict
a	5320	See test Graph	Pass
ac80	5290	See test Graph	Pass

Spectrum analyzer settings:

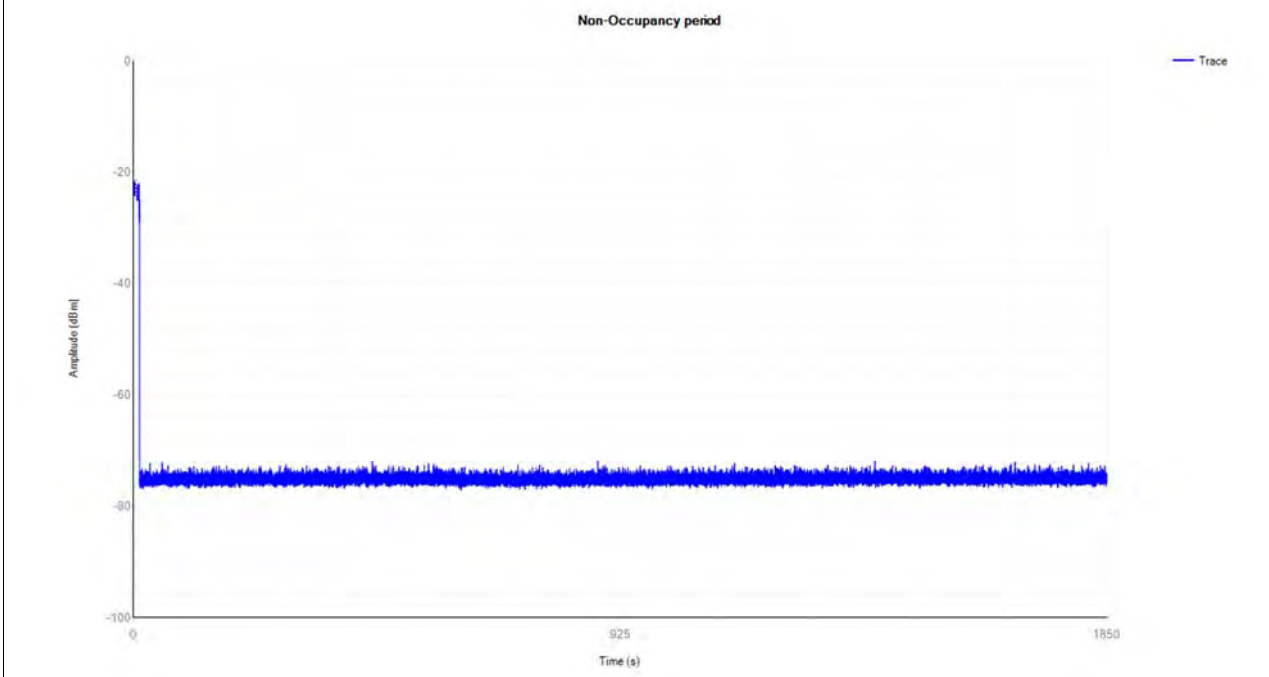
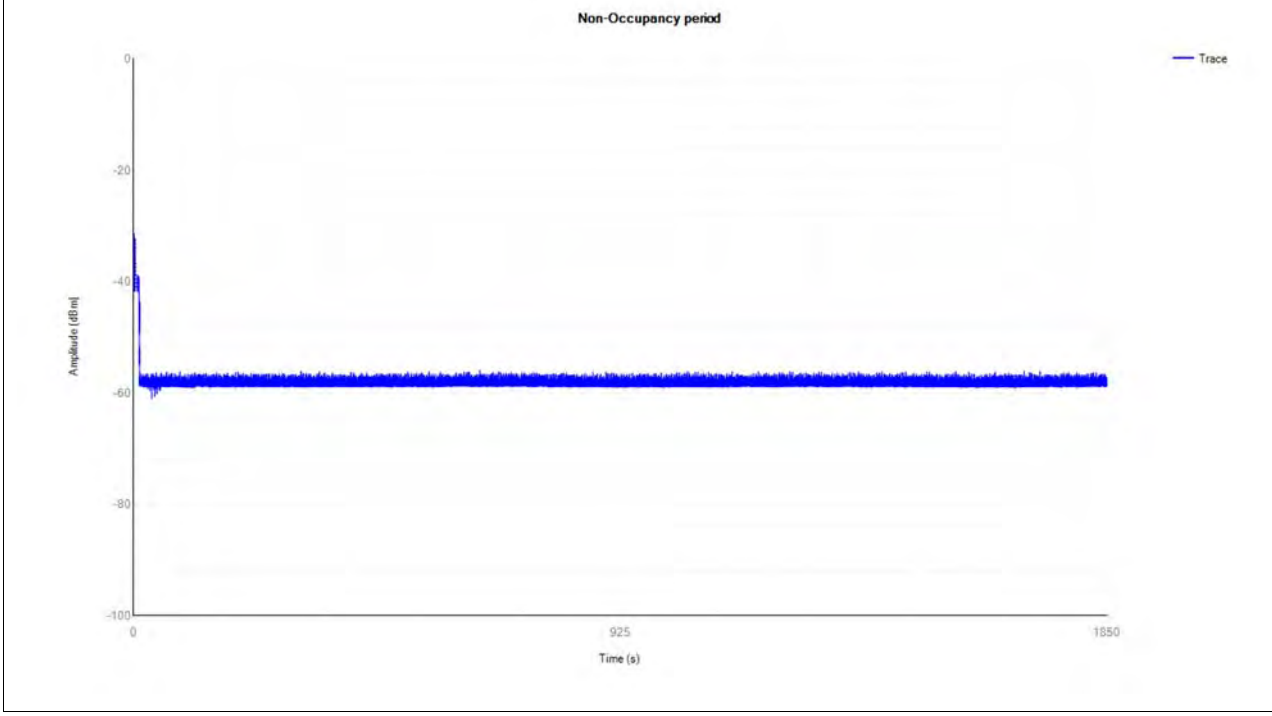
Span: Zero

Detector type: Peak

RBW: 3MHz

VBW: 3MHz

Sweep time: 1850s

Test Graphs
a 5320MHz Non-Occupancy

ac80 5290MHz Non-Occupancy


A.7. 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 + WIFI TX

Test voltage: AC 120V/60Hz

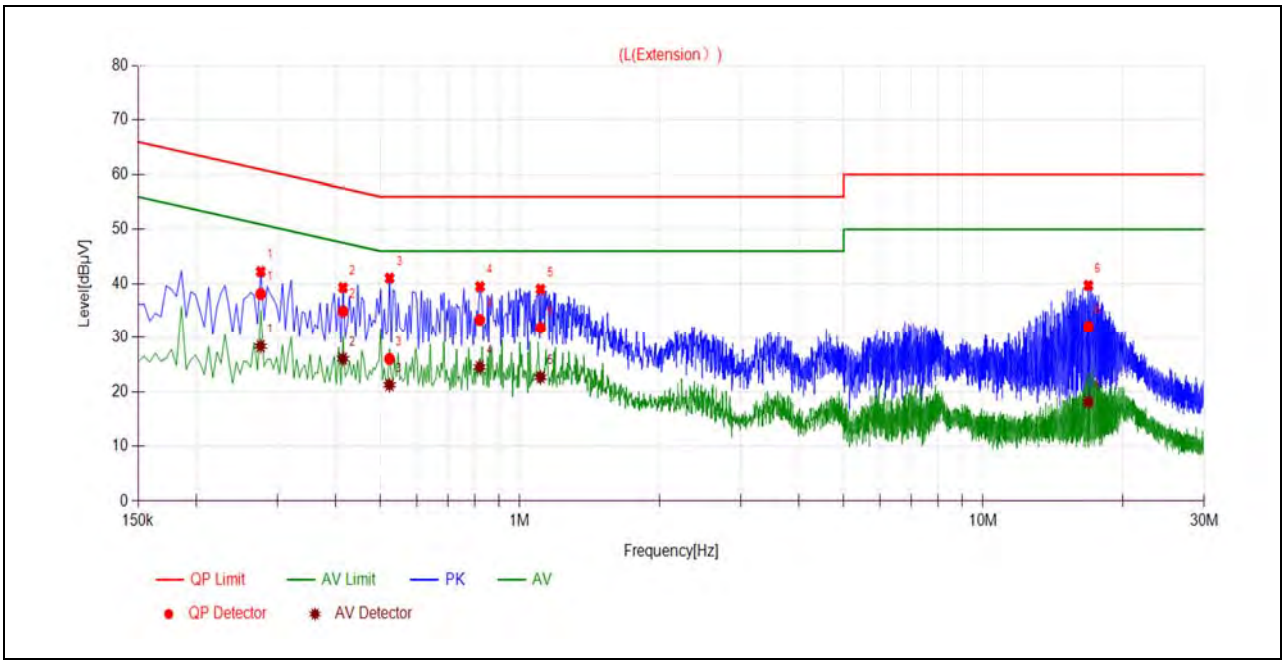
The measurement results are obtained as below:

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

U_R: Receiver Reading

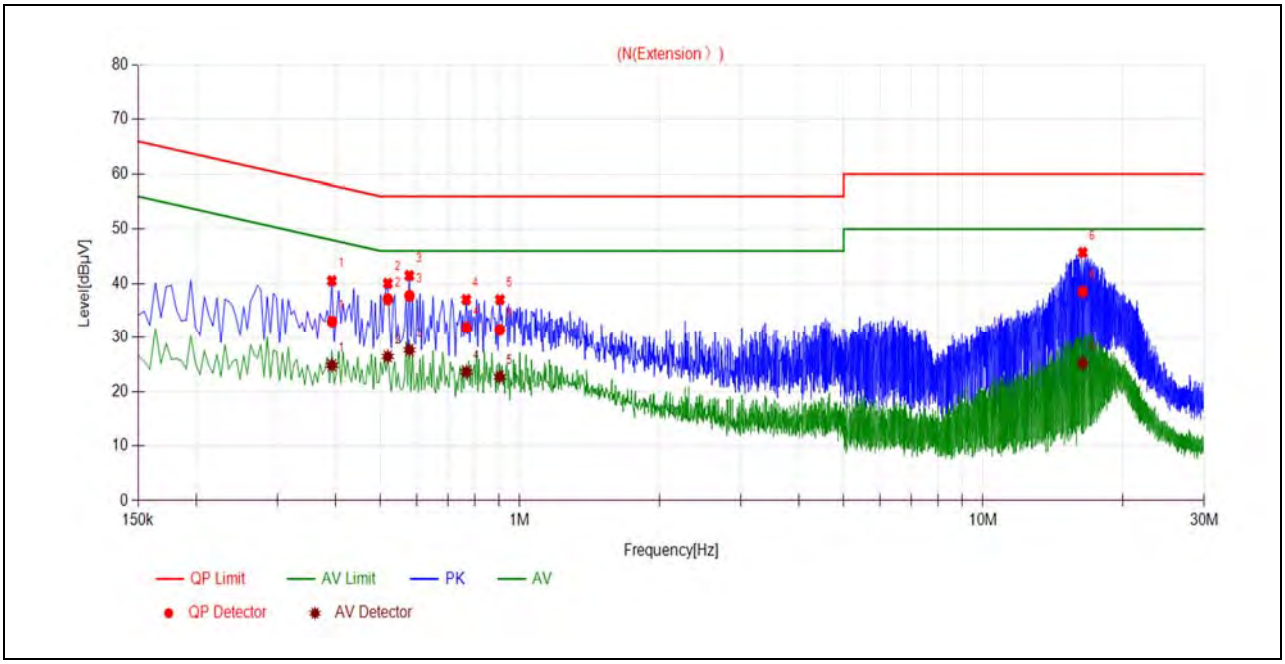
A_{Factor}: Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.2758	38.10	28.36	60.94	50.94	Line	PASS
2	0.4154	34.91	26.03	57.54	47.54		PASS
3	0.5234	26.00	21.22	56.00	46.00		PASS
4	0.8198	33.30	24.51	56.00	46.00		PASS
5	1.1088	31.82	22.64	56.00	46.00		PASS
6	16.8771	32.03	18.10	60.00	50.00		PASS



(N Phase)

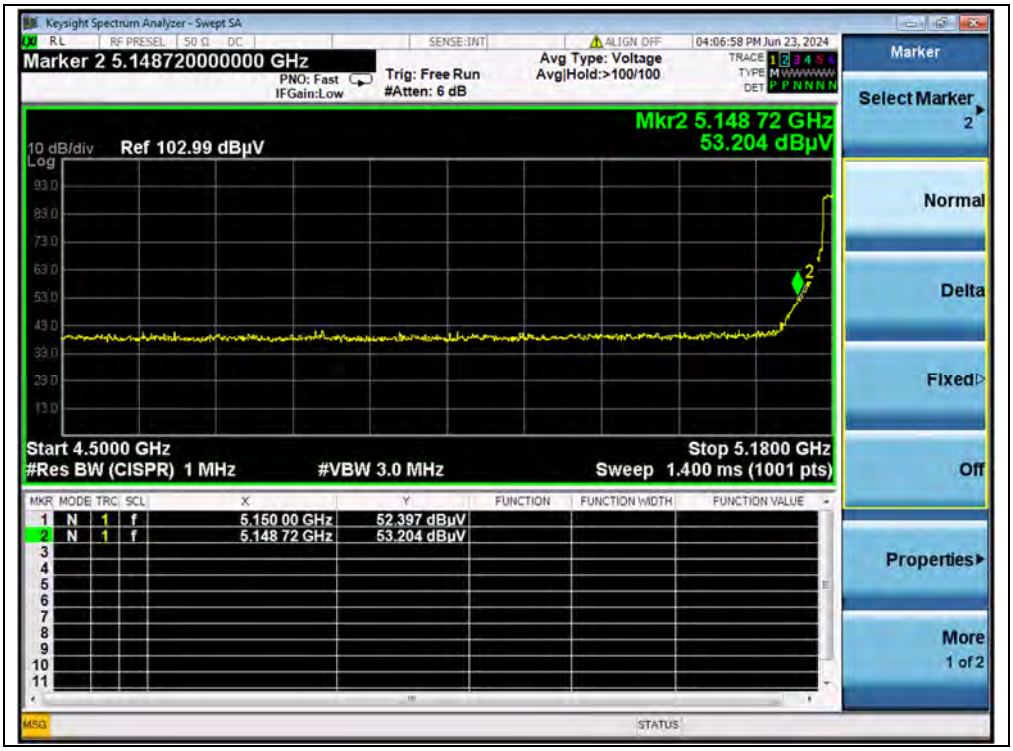
No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.3933	33.01	24.83	57.99	47.99	Neutral	PASS
2	0.5190	37.13	26.44	56.00	46.00		PASS
3	0.5780	37.76	27.66	56.00	46.00		PASS
4	0.7670	31.85	23.62	56.00	46.00		PASS
5	0.9053	31.43	22.68	56.00	46.00		PASS
6	16.4024	38.51	25.14	60.00	50.00		PASS

A.8. Restricted Frequency Bands

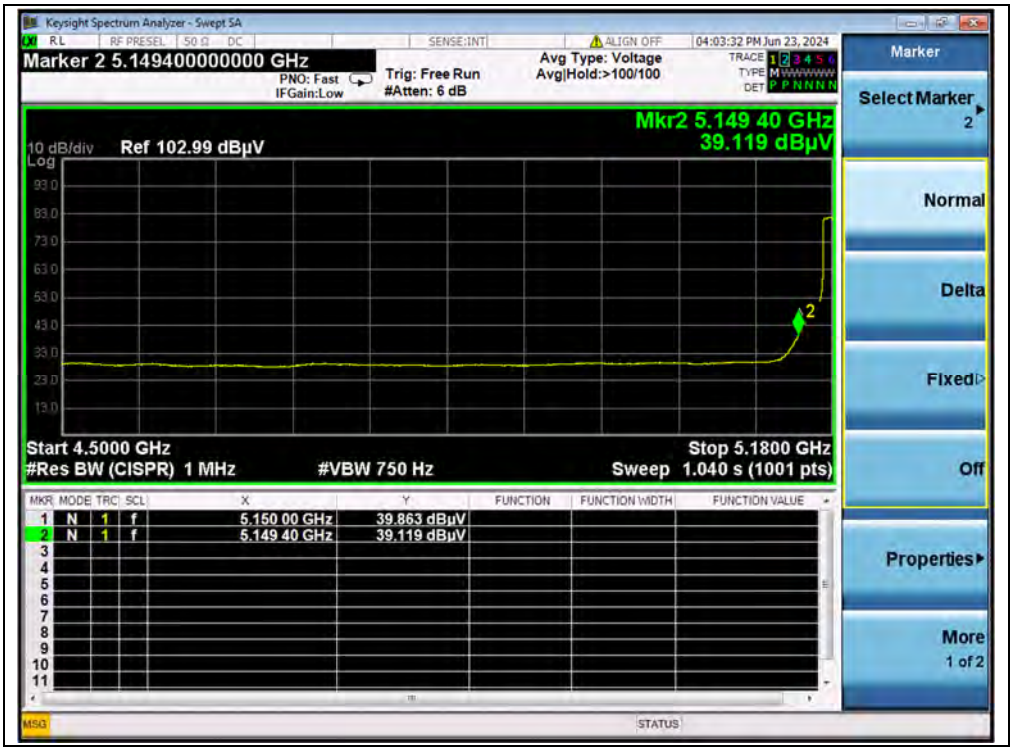
The lowest and highest channels are tested to verify the Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] =U_R + A_T + A_{Factor} [dB]; A_T =$L_{Cable\ loss}$ [dB]-G_{preamp} [dB]
A_T: Total correction Factor except Antenna
U_R: Receiver Reading
G_{preamp}: Preamplifier 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

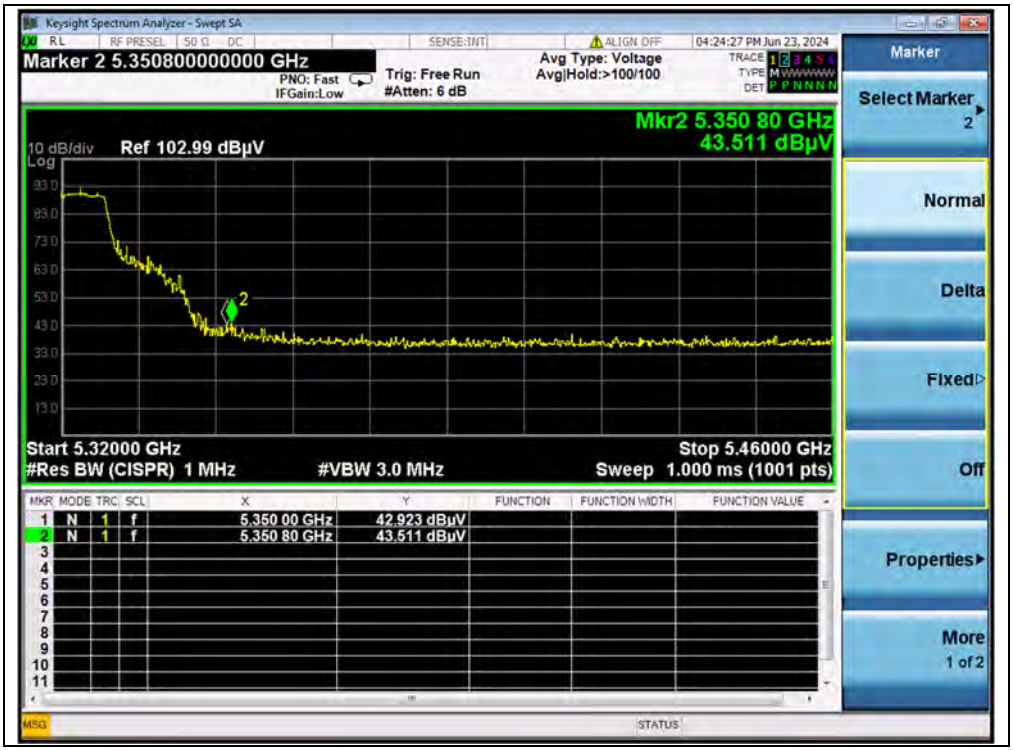
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
36	5148.72	PK	53.20	-21.29	32.20	64.11	74	PASS
36	5150.00	AV	39.86	-21.29	32.20	50.77	54	PASS
64	5350.80	PK	43.51	-20.66	32.20	55.05	74	PASS
64	5350.00	AV	30.76	-20.66	32.20	42.30	54	PASS
149	5725.00	PK	57.51	-21.11	32.20	68.60	122.23	PASS
165	5855.00	PK	43.16	-21.11	32.20	54.25	110.83	PASS



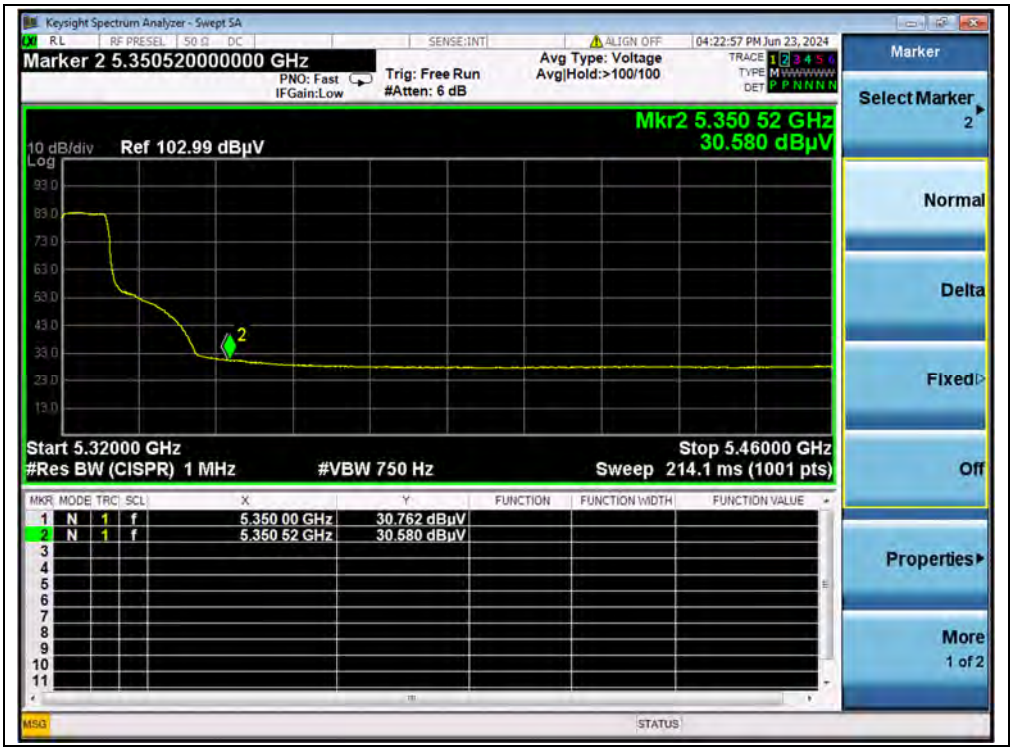
(PEAK, Channel 36, 802.11a)



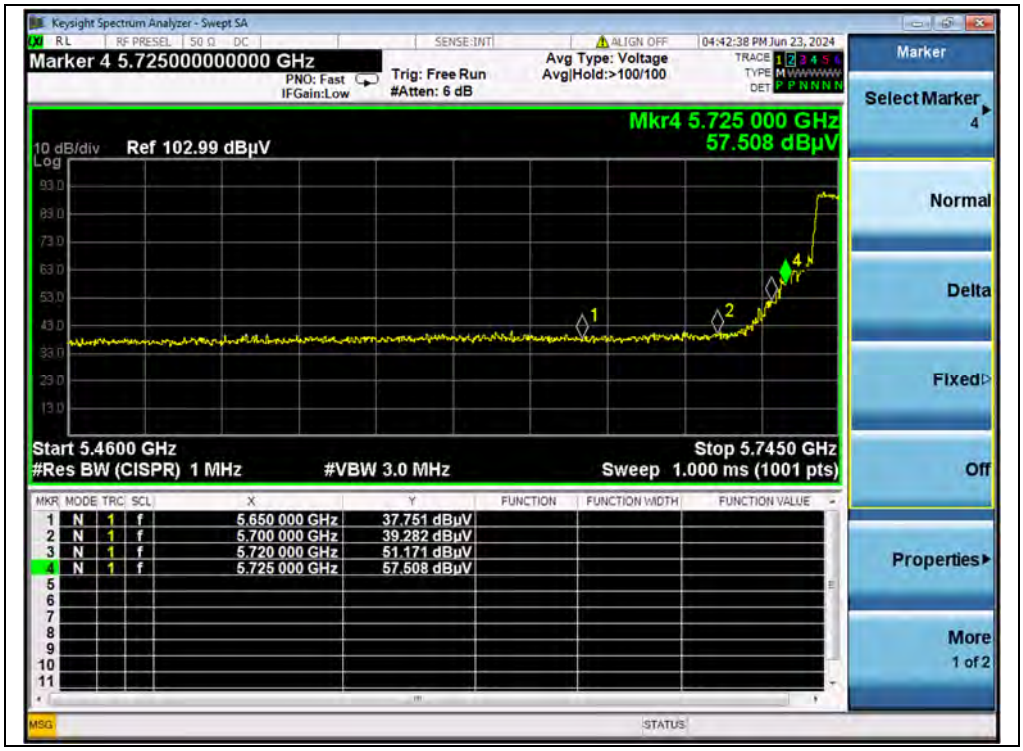
(AVERAGE, Channel 36, 802.11a)



(PEAK, Channel 64, 802.11a)



(AVERAGE, Channel 64, 802.11a)

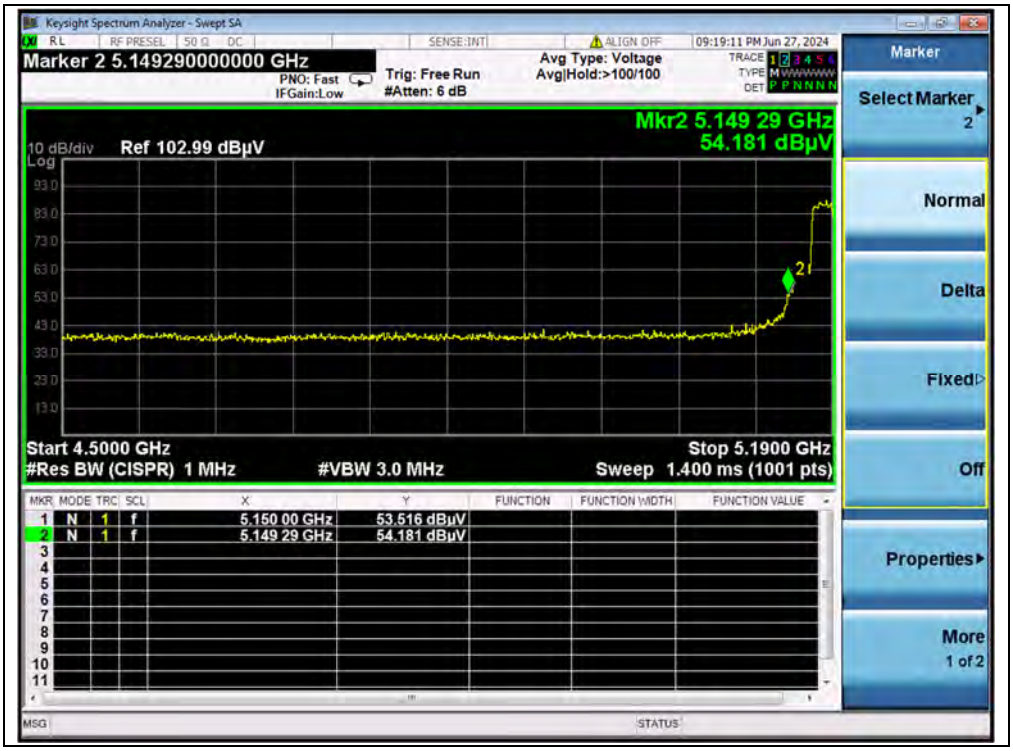


(PEAK, Channel 149, 802.11a)

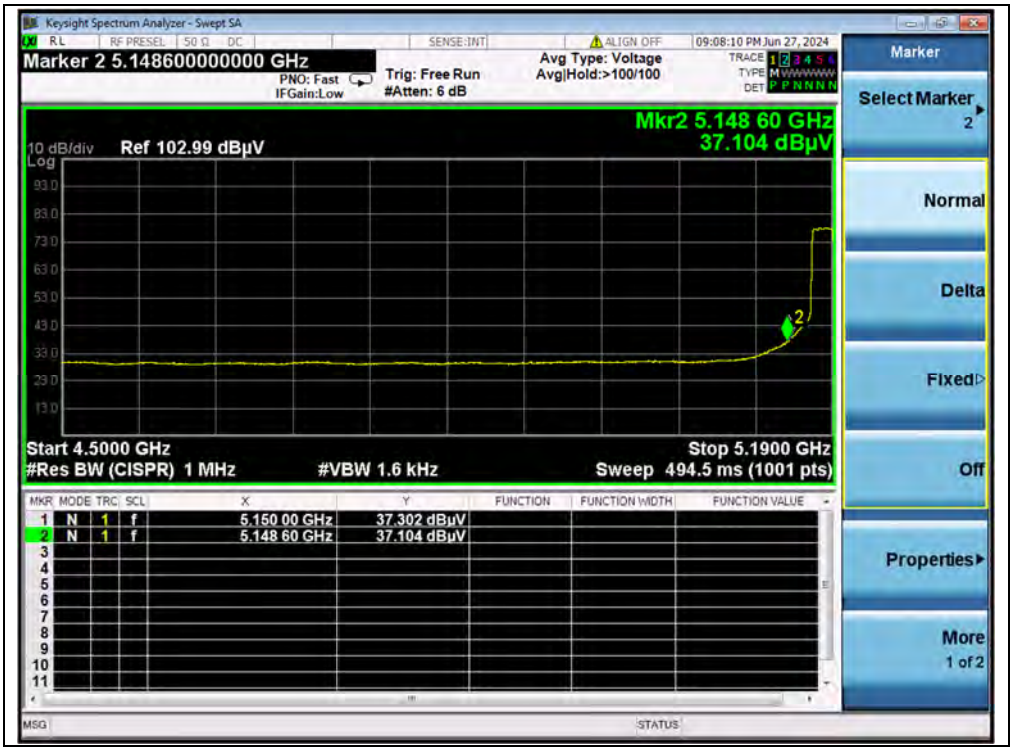
(PEAK, Channel 165, 802.11a)

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	5149.29	PK	54.18	-21.29	32.20	65.09	74	PASS
38	5150.00	AV	37.30	-21.29	32.20	48.21	54	PASS
62	5350.95	PK	51.14	-20.66	32.20	62.68	74	PASS
62	5350.00	AV	37.74	-20.66	32.20	49.28	54	PASS
151	5720.00	PK	63.61	-21.11	32.20	74.70	110.83	PASS
159	5850.00	PK	41.32	-21.11	32.20	65.09	122.23	PASS

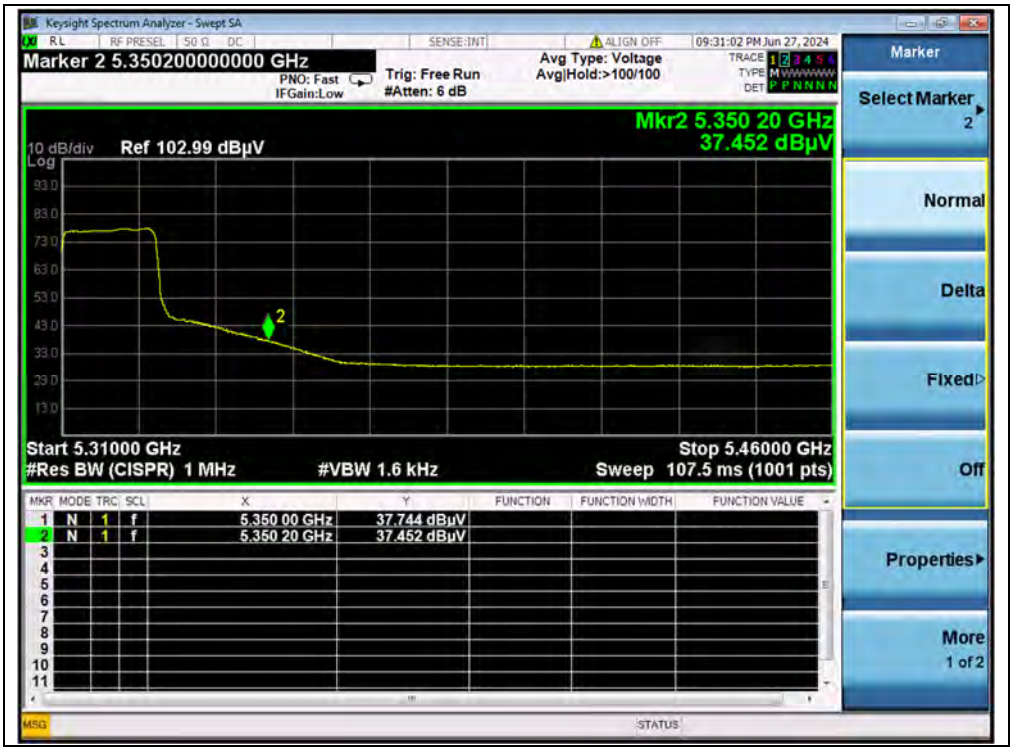


(PEAK, Channel 38, 802.11n (HT40))



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

(PEAK, Channel 62, 802.11n (HT40))



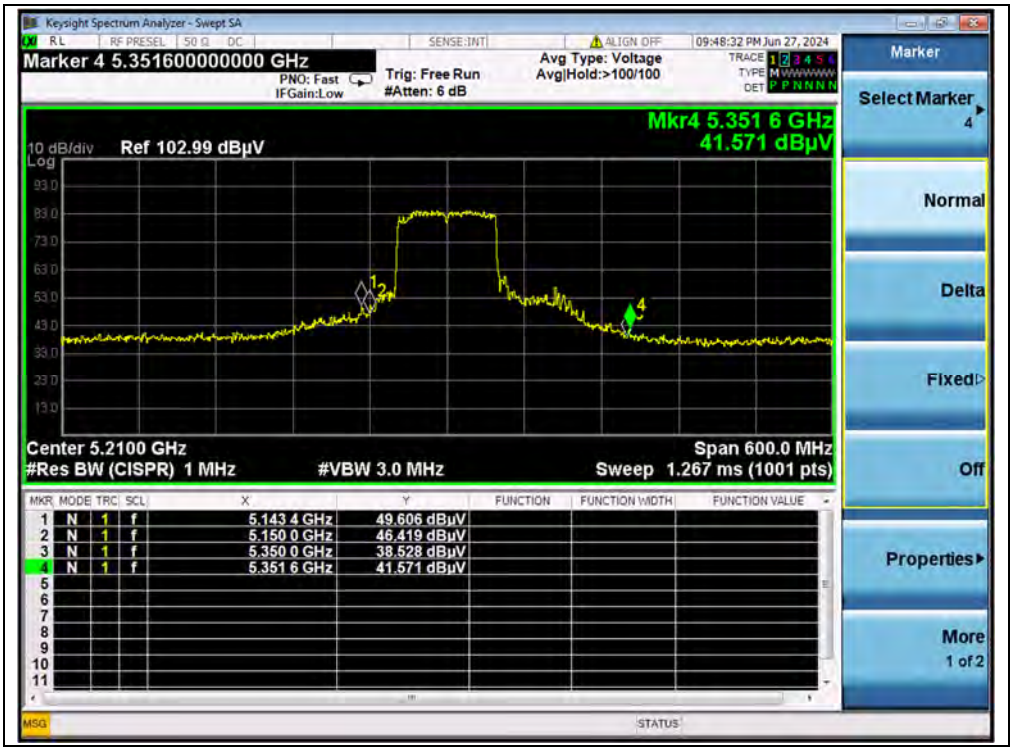
(AVERAGE, Channel 62, 802.11n (HT40))

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

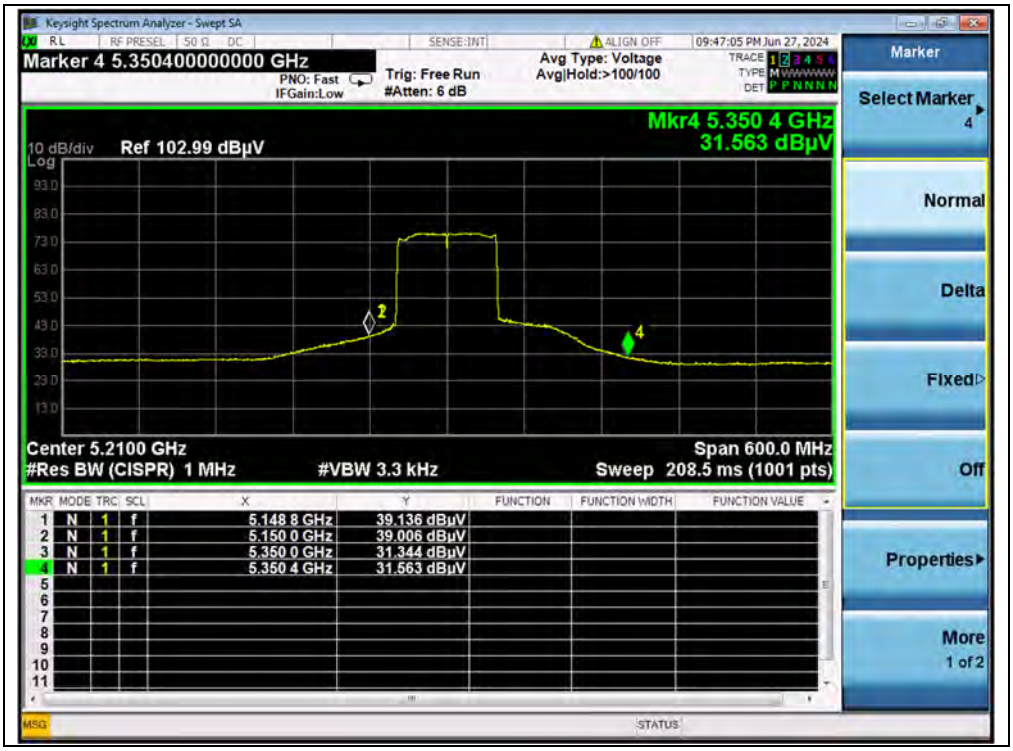
(PEAK, Channel 159, 802.11n (HT40))

802.11ac (VHT80) Mode

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
42	5143.40	PK	49.61	-21.29	32.20	60.52	74	PASS
42	5148.80	AV	39.14	-21.29	32.20	50.05	54	PASS
58	5355.20	PK	48.55	-20.66	32.20	60.09	74	PASS
58	5352.80	AV	37.49	-20.66	32.20	49.03	54	PASS
155	5720.00	PK	56.19	-21.11	32.20	67.28	110.83	PASS
155	5850.00	PK	48.31	-21.11	32.20	59.40	122.23	PASS

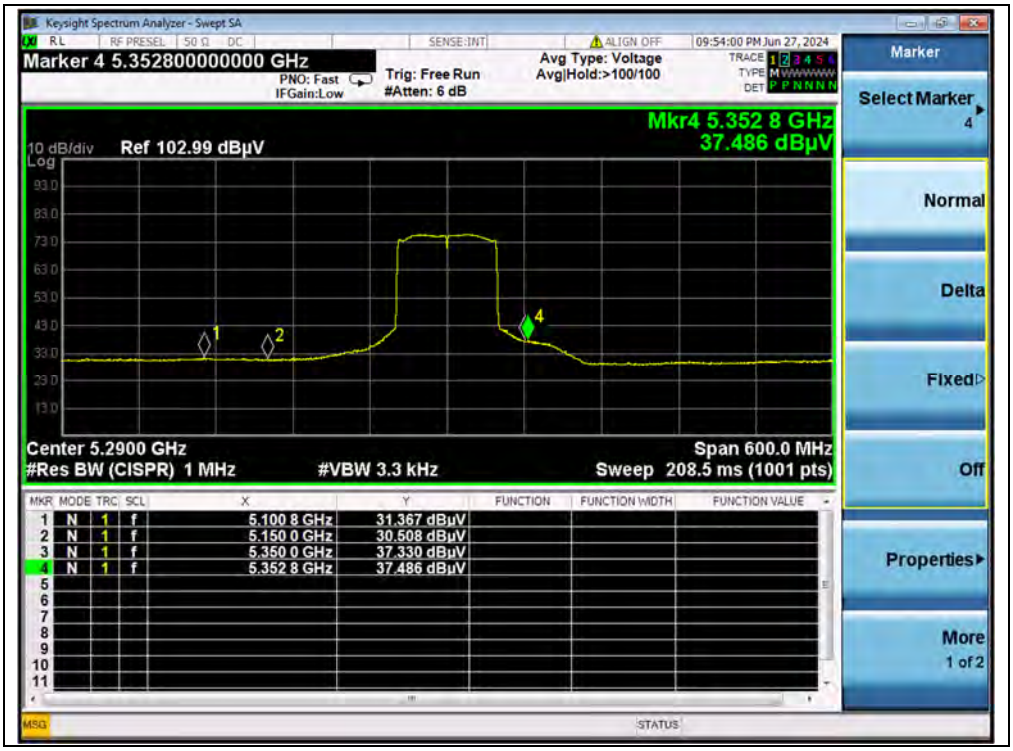


(PEAK, Channel 42, 802.11ac (VHT80))



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

(PEAK, Channel 58, 802.11ac (VHT80))



(AVERAGE, Channel 58, 802.11ac (VHT80))

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

A.9. 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.

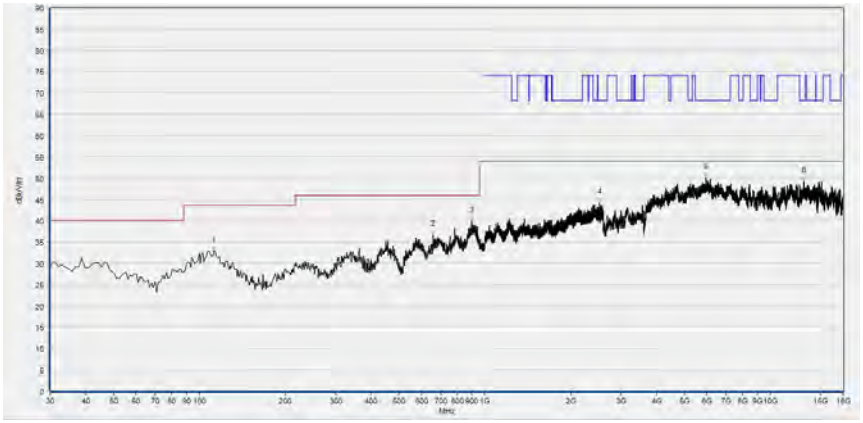
Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note3: For the frequency, which started from 18GHz to 40GHz 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.

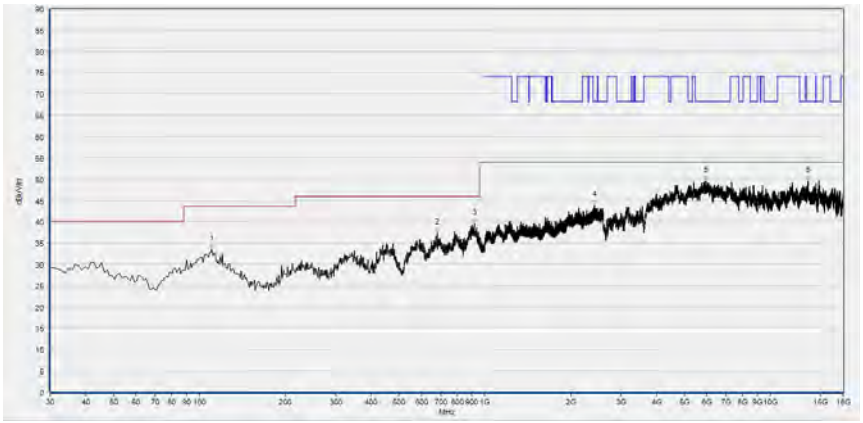
802.11a Mode

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
112.533	32.91	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
660.160	36.78	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
899.990	39.96	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2524.241	44.17	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5960.952	50.06	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13141.868	49.25	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

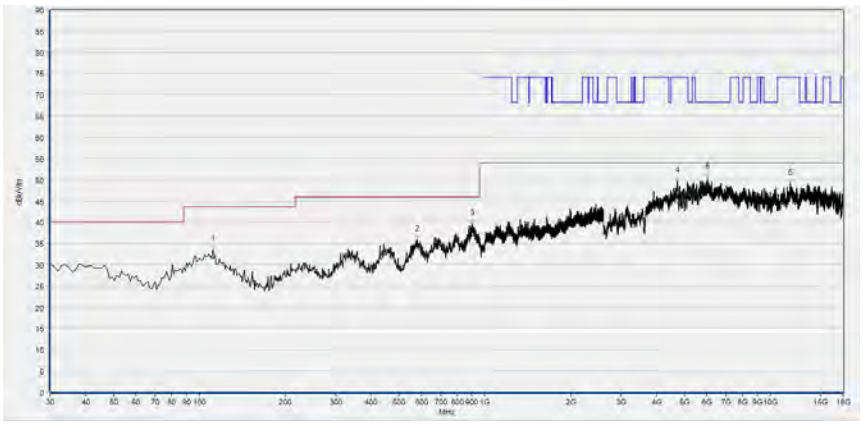
(Antenna Horizontal, 30MHz to 18GHz)



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
110.591	33.48	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
681.522	37.30	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
919.409	39.48	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2419.673	43.84	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5957.872	49.54	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13582.396	49.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

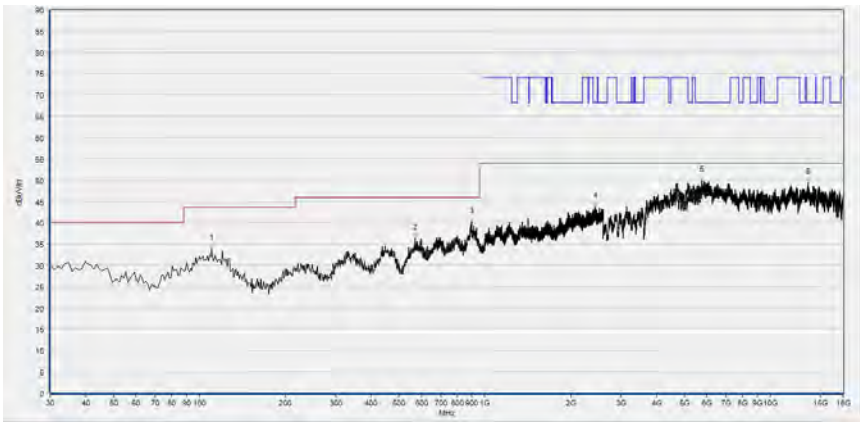
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 60



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
111.562	33.52	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
581.512	35.91	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
905.816	39.58	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4725.625	49.62	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
6037.968	50.45	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
11743.269	49.04	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

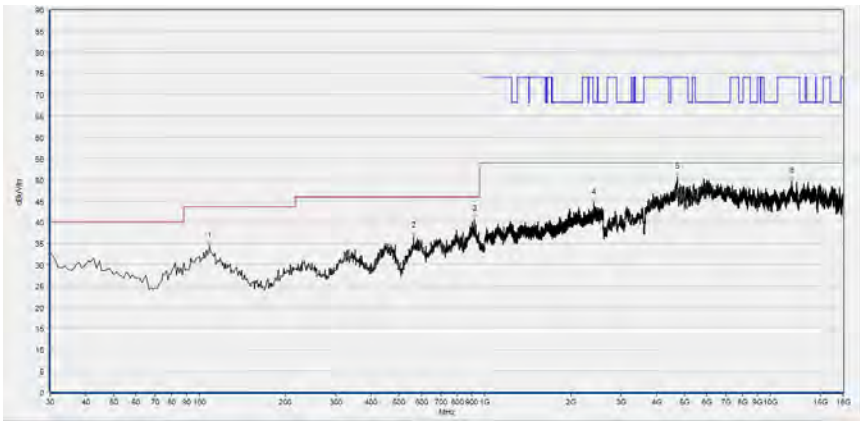
(Antenna Horizontal, 30MHz to 18GHz)



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	33.93	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
570.831	36.33	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
899.019	40.17	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2437.813	43.77	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5760.712	50.01	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13576.235	49.42	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

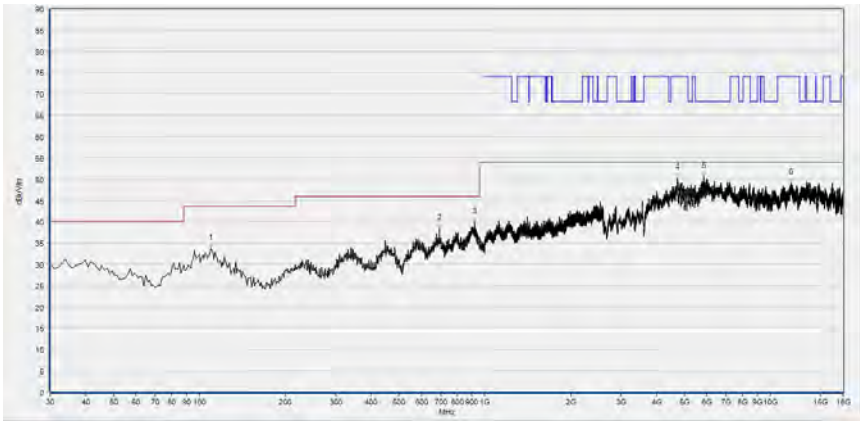
(Antenna Vertical, 30MHz to 18GHz)

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
108.649	34.36	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
563.063	36.72	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
917.467	40.70	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2412.738	44.52	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
4722.545	50.68	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
11909.622	49.68	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

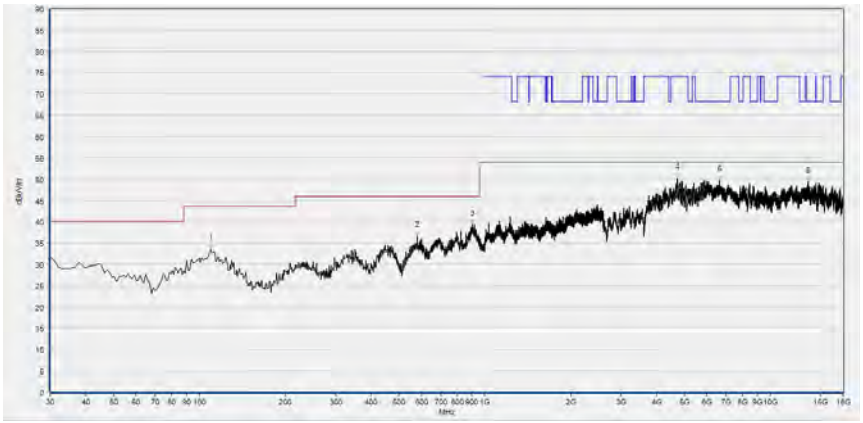


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
109.620	33.71	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
694.144	38.31	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
922.322	39.87	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4722.545	50.26	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5846.969	50.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
11801.800	49.18	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

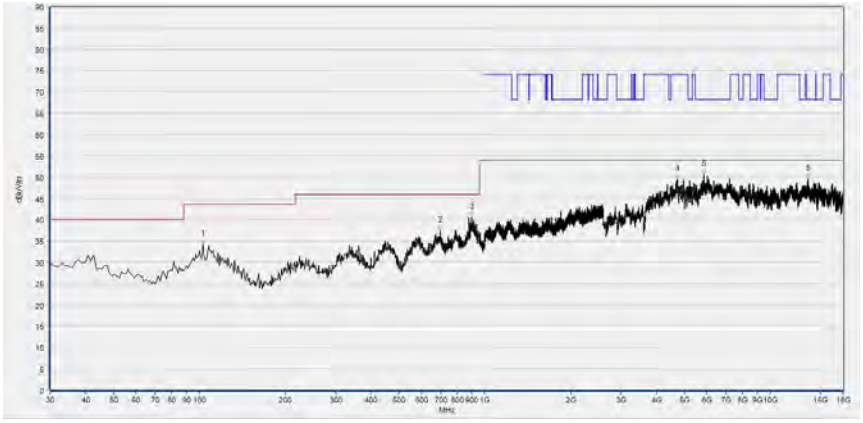
802.11n (HT40) mode

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
109.620	33.46	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
580.541	36.71	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
905.816	39.32	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4734.867	50.20	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
6629.446	49.81	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13566.993	49.44	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

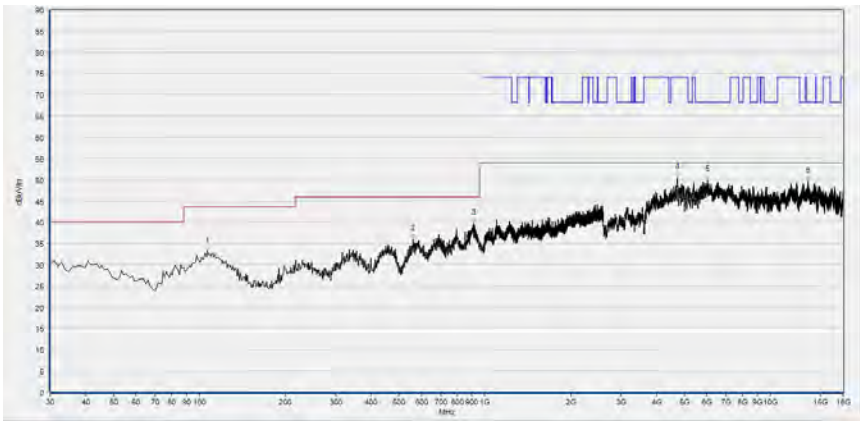
(Antenna Horizontal, 30MHz to 18GHz)



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
102.823	34.20	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
698.999	37.44	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
898.048	40.54	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4728.706	49.46	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5840.808	50.63	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13579.316	49.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

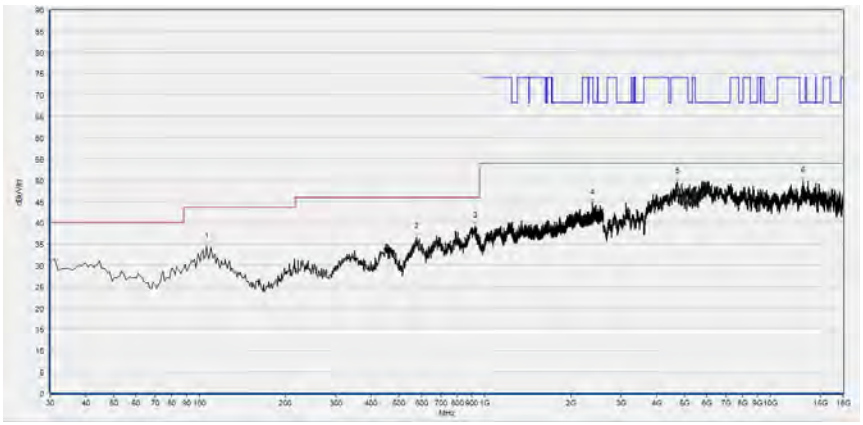
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 62



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	33.25	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
560.150	36.06	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
916.496	39.72	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4728.706	50.53	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
6037.968	49.89	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13563.913	49.69	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

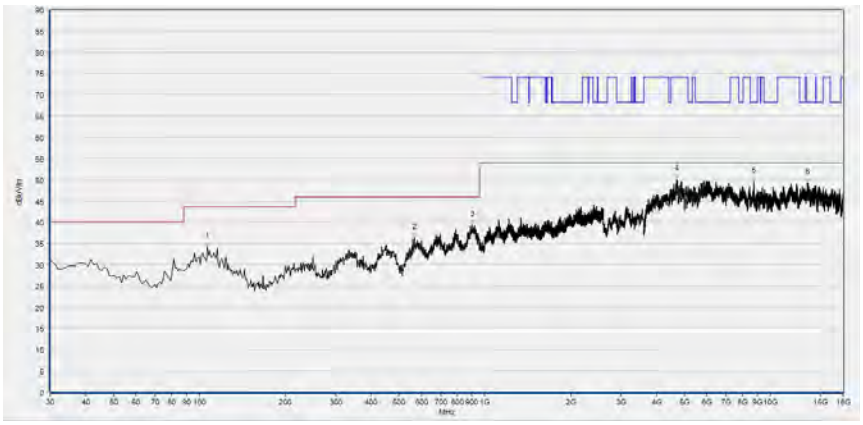
(Antenna Horizontal, 30MHz to 18GHz)



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	34.40	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
576.657	36.50	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
923.293	39.21	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2382.861	44.59	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4722.545	49.55	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
13034.047	49.72	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

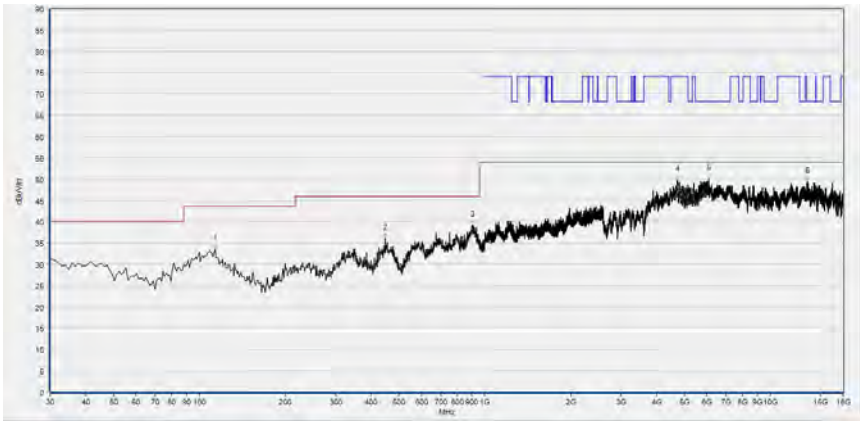
(Antenna Vertical, 30MHz to 18GHz)

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
106.707	34.24	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
567.918	36.40	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
901.932	39.39	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4710.222	50.08	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8742.749	49.66	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13477.656	49.32	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

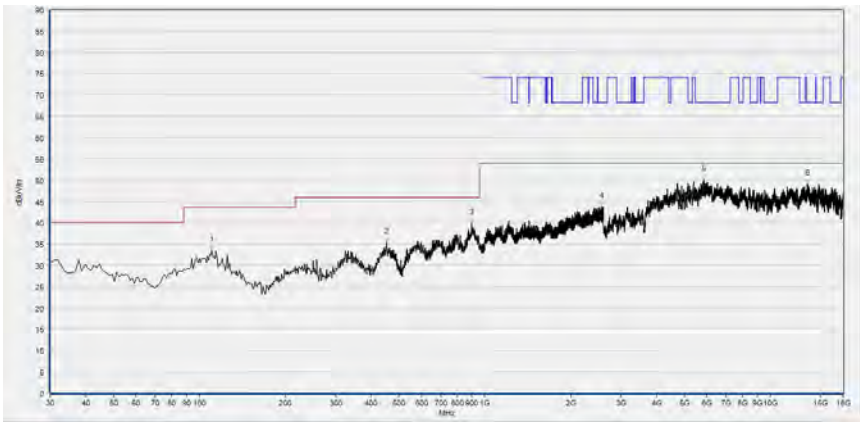


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
113.504	33.48	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
448.488	36.07	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
902.903	39.24	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4722.545	49.80	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
6087.257	50.06	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13474.575	49.47	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

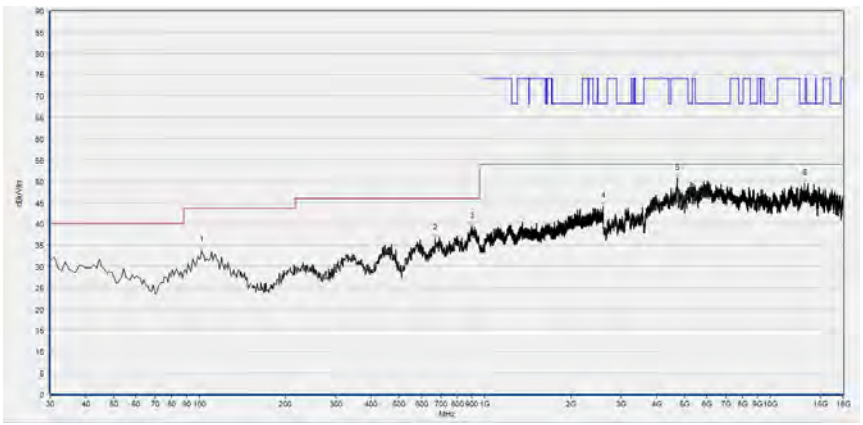
802.11ac (VHT80) Mode

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
110.591	33.46	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
452.372	35.28	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
899.019	39.82	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2570.657	43.68	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5853.131	50.03	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13477.656	49.03	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

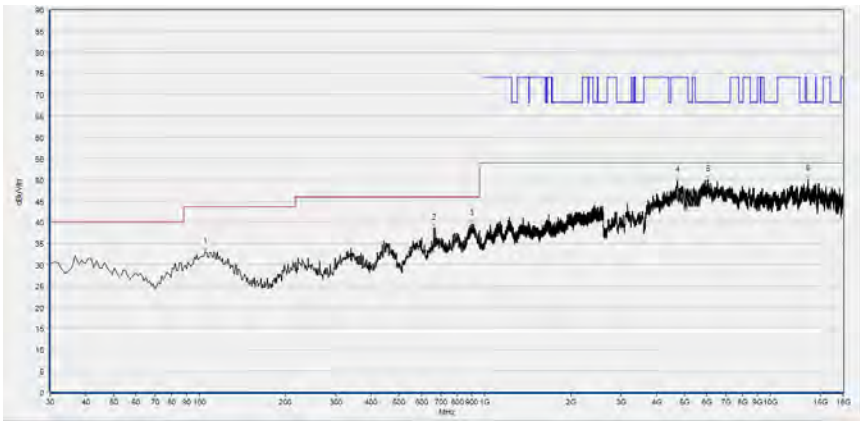
(Antenna Horizontal, 30MHz to 18GHz)



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
101.852	33.68	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
670.841	36.55	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
899.019	39.36	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2595.198	44.09	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
4719.464	50.64	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
13160.352	49.42	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

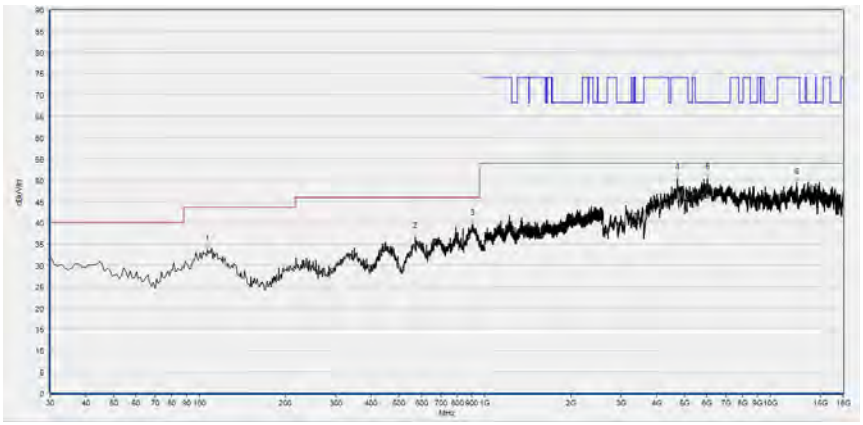
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 58



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	33.09	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
662.102	38.52	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
898.048	39.62	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4728.706	49.84	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
6044.129	49.87	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13548.510	50.16	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

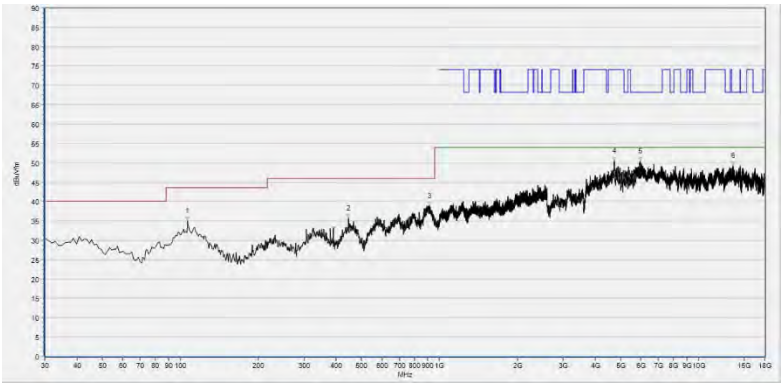
(Antenna Horizontal, 30MHz to 18GHz)



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	33.65	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
571.802	36.64	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
905.816	39.79	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4731.786	50.39	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
6034.887	50.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12399.440	49.39	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

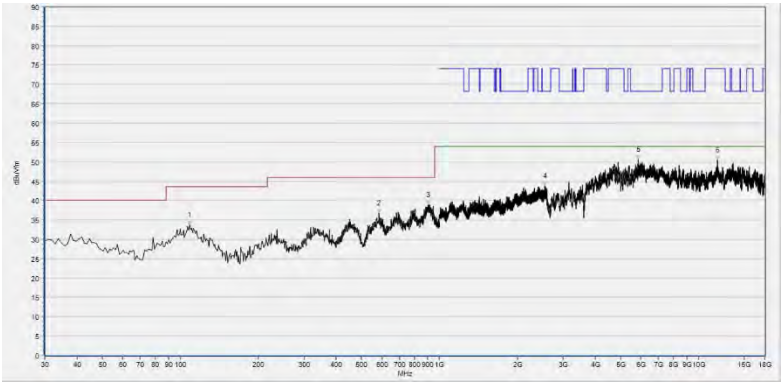
(Antenna Vertical, 30MHz to 18GHz)

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
106.707	35.03	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
445.576	35.62	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
916.496	38.84	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4719.464	50.45	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5967.113	50.41	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13570.074	49.30	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
108.649	33.71	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
584.424	36.63	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
902.903	38.87	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2551.450	43.78	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5843.889	50.57	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
11829.526	50.42	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

END OF REPORT