

TEST REPORT

FCC ID..... :	2AC23-WCTA1	
Test Report No..... :	TCT210506E022	
Date of issue..... :	Jun. 11, 2021	
Testing laboratory	SHENZHEN TONGCE TESTING LAB	
Testing location/ address:	TCT Testing Industrial Park Fuqiao 5th Industrial Zone, Fuhai Street, Bao'an District Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name..... :	Hui Zhou Gaoshengda Technology Co., LTD	
Address..... :	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China	
Manufacturer's name ... :	Hui Zhou Gaoshengda Technology Co., LTD	
Address..... :	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China	
Standard(s)	FCC CFR Title 47 Part 15 Subpart E Section 15.407 KDB 662911 D01 Multiple Transmitter Output v02r01 KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Test item description	WIFI Module	
Trade Mark	N/A	
Model/Type reference..... :	WCTA1M2501	
Rating(s)	DC 3.3V	
Date of receipt of test item	May 06, 2021	
Date (s) of performance of test..... :	See dates for each test case	
Tested by (+signature) ... :	Brews Xu	
Check by (+signature).... :	Beryl Zhao	
Approved by (+signature):	Tomsin	



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Appendix A: Test Result of Conducted Test

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1. General Product Information

1.1. EUT description

Test item description	WIFI Module
Model/Type reference.....	WCTA1M2501
Sample Number.....	TCT210506E003-0105
Operation Frequency	Band 1: 5180 MHz -5240 MHz Band 2A: 5260 MHz -5320 MHz Band 2C: 5500 MHz -5700 MHz Band 3: 5745 MHz -5825 MHz
Channel Bandwidth.....	802.11a: 20MHz 802.11n: 20MHz, 40MHz 802.11ac: 20MHz, 40MHz, 80MHz
Modulation Technology	Orthogonal Frequency Division Multiplexing(OFDM)
Modulation Type.....	256QAM, 64QAM, 16QAM, BPSK, QPSK
Antenna Type.....	PCB Antenna
Antenna Gain.....	4dBi
Rating(s)	DC 3.3V
Remark.....	/

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2. Model(s) list

None.

1.3. Test Frequency

Band 1

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180	38	5190	42	5210
40	5200	46	5230		
48	5240				

Band 2A

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
52	5260	54	5270	58	5290
56	5280	62	5310		
64	5320				

Band 2C

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
100	5500	102	5510	106	5530
120	5600	118	5590	122	5610
140	5700	134	5670		

Band 3

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745	151	5755	155	5775
157	5785	159	5795		
165	5825				

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Maximum Conducted Output Power	§15.407(a)	PASS
6dB Emission Bandwidth	§15.407(a)	PASS
26dB Emission Bandwidth& 99% Occupied Bandwidth	§15.407(a)	PASS
Power Spectral Density	§15.407(a)	PASS
Restricted Bands around fundamental frequency	§15.407(b)	PASS
Radiated Emission	§15.407(b)	PASS
Frequency Stability	§15.407(g)	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.
5. For the band 5.15-5.25GHz, EUT meet the requirements of 15.407(a)(ii).

3. General Information

3.1. Test environment and mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Software:	
Software Information:	QATool_Dbg
Power Level:	1D
Test Mode:	
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations with max. duty cycle.
The sample was placed 0.8m/1.5m for blow/above 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:	
Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.	
Mode	Data rate
802.11a(SISO)	6 Mbps
802.11n(HT20) (MIMO)	6.5 Mbps
802.11n(HT40) (MIMO)	13.5 Mbps
802.11ac(VHT20) (MIMO)	6.5 Mbps
802.11ac(VHT40) (MIMO)	13.5 Mbps
802.11ac(VHT80) (MIMO)	29.3 Mbps
Final Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation

3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Notebook Computer	XiaoXin CHAO5000	PF0WZYD9	/	Lenovo

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

4. Facilities and Accreditations

4.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

SHENZHEN TONGCE TESTING LAB

Designation Number: CN1205

sting lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

SHENZHEN TONGCE TESTING LAB

CAB identifier: CN0031

The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB

Address: TCT Testing Industrial Park Fuqiao 5th Industrial Zone, Fuhai Street, Bao'an District Shenzhen, Guangdong, 518103, People's Republic of China

TEL: +86-755-27673339

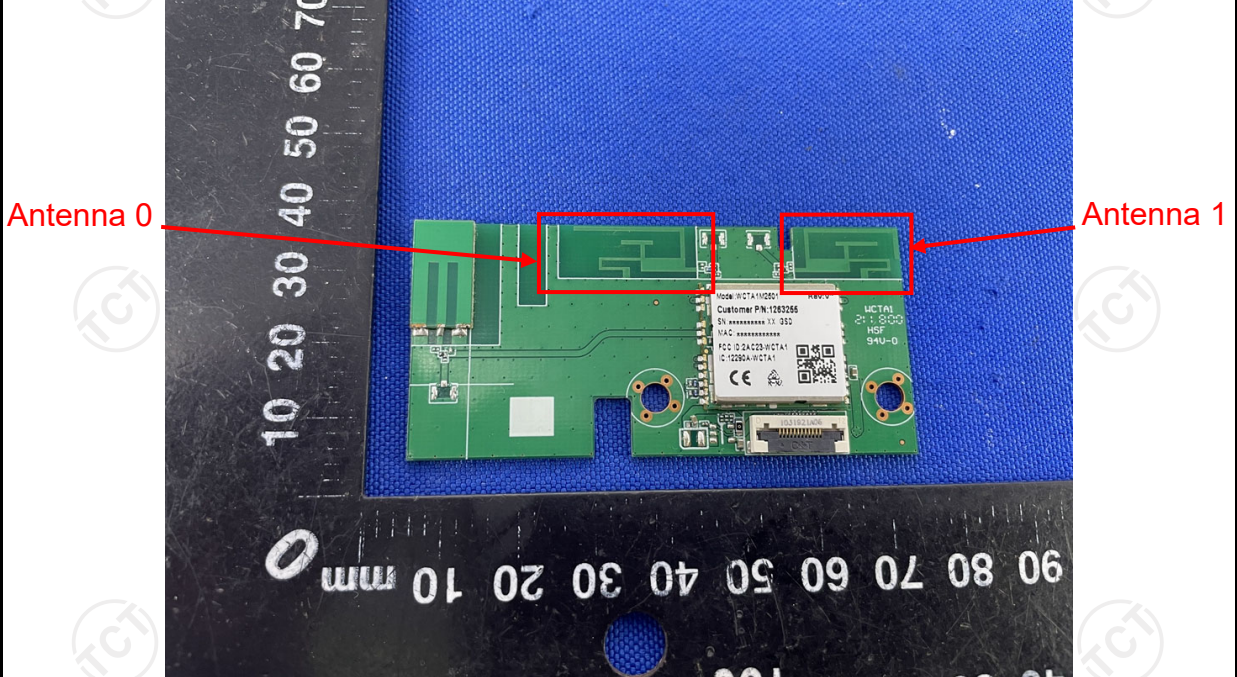
4.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB

5. Test Results and Measurement Data

5.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
The EUT has two PCB antennas which permanently attached, and the best case gains of the both antennas are 4dBi.	
	

5.2. Conducted Emission

5.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10:2013														
Frequency Range:	150 kHz to 30 MHz														
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test Setup:	Reference Plane  Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m														
Test Mode:	Tx Mode														
Test Procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.														
Test Result:	PASS														

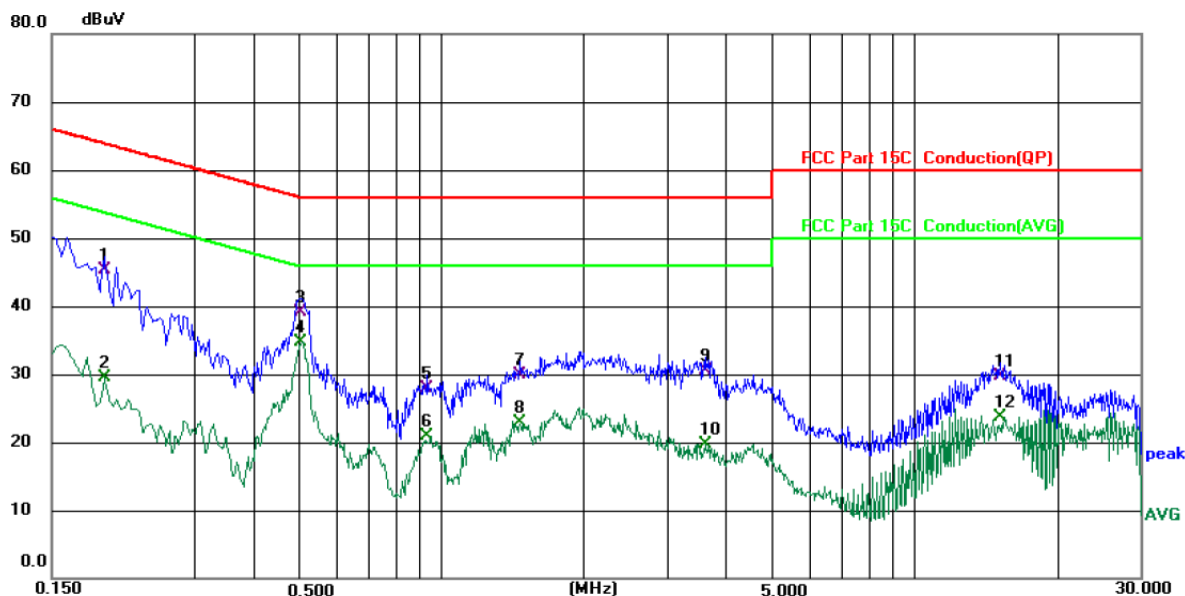
5.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	R&S	ESCI3	100898	Jul. 27, 2021
LISN-2	Schwarzbeck	NSLK 8126	8126453	Sep. 11, 2021
Line-5	TCT	CE-05	N/A	Sep. 02, 2021
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

5.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site: Phase: **L1** Temperature: 25 (°C)
 Limit: FCC Part 15C Conduction(QP) Power: AC 120V/60Hz Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1940	35.94	9.41	45.35	63.86	-18.51	QP	
2		0.1940	20.03	9.41	29.44	53.86	-24.42	AVG	
3		0.5060	29.89	9.25	39.14	56.00	-16.86	QP	
4	*	0.5060	25.40	9.25	34.65	46.00	-11.35	AVG	
5		0.9340	18.48	9.37	27.85	56.00	-28.15	QP	
6		0.9340	11.53	9.37	20.90	46.00	-25.10	AVG	
7		1.4700	20.37	9.45	29.82	56.00	-26.18	QP	
8		1.4700	13.46	9.45	22.91	46.00	-23.09	AVG	
9		3.6220	20.84	9.60	30.44	56.00	-25.56	QP	
10		3.6220	10.17	9.60	19.77	46.00	-26.23	AVG	
11		15.2019	19.85	9.84	29.69	60.00	-30.31	QP	
12		15.2019	13.90	9.84	23.74	50.00	-26.26	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBuV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

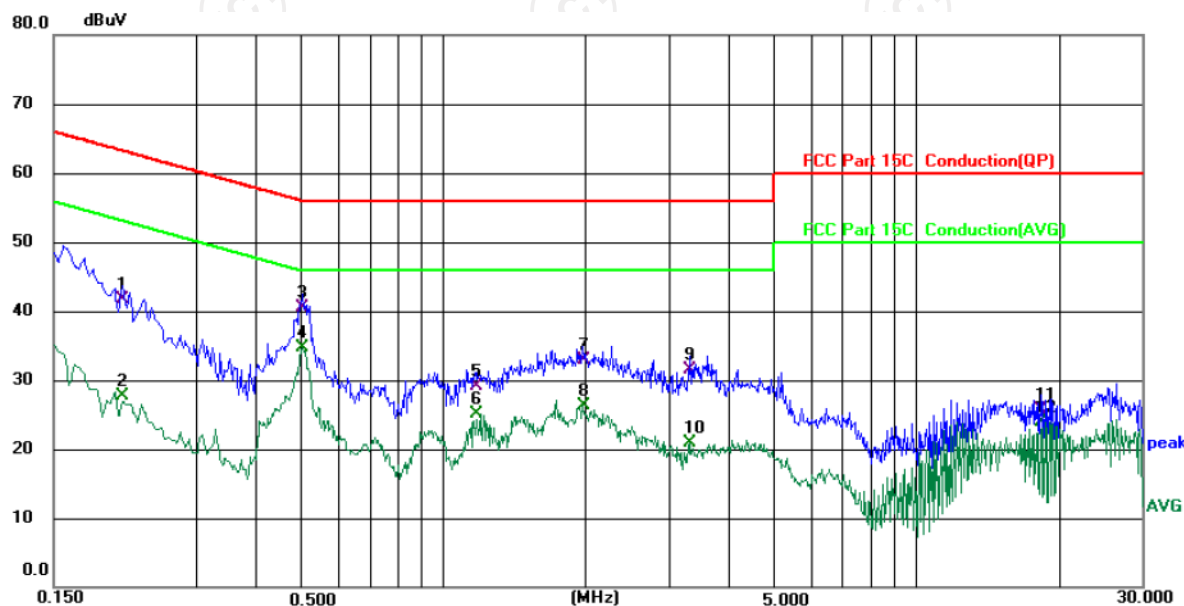
Margin (dB) = Measurement (dBuV) – Limits (dBuV)

Q.P. =Quasi-Peak

AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site: Phase: **N** Temperature: 25 (°C)
 Limit: FCC Part 15C Conduction(QP) Power: AC 120V/60Hz Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2100	32.40	9.33	41.73	63.21	-21.48	QP	
2		0.2100	18.29	9.33	27.62	53.21	-25.59	AVG	
3		0.5060	31.24	9.27	40.51	56.00	-15.49	QP	
4	*	0.5060	25.38	9.27	34.65	46.00	-11.35	AVG	
5		1.1780	19.73	9.40	29.13	56.00	-26.87	QP	
6		1.1780	15.75	9.40	25.15	46.00	-20.85	AVG	
7		1.9780	23.51	9.45	32.96	56.00	-23.04	QP	
8		1.9780	16.87	9.45	26.32	46.00	-19.68	AVG	
9		3.3380	22.07	9.50	31.57	56.00	-24.43	QP	
10		3.3380	11.32	9.50	20.82	46.00	-25.18	AVG	
11		18.3900	15.80	10.00	25.80	60.00	-34.20	QP	
12		18.3900	13.92	10.00	23.92	50.00	-26.08	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBuV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

Margin (dB) = Measurement (dBuV) – Limits (dBuV)

Q.P. =Quasi-Peak

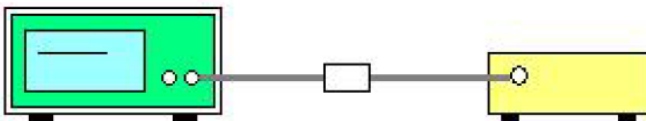
AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

Measurements were conducted in all three channels (high, middle, low) and all modulation (802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20), 802.11ac(VHT40), 802.11ac(VHT80) and the worst case Mode (Highest channel and 802.11a) was submitted only.

5.3. Maximum Conducted Output Power

5.3.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407(a)& Part 2 J Section 2.1046		
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E		
Limit:	Frequency Band (MHz)	Limit	
	5180 - 5240	24dBm(250mW) for client device	
	5260 - 5320	24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz	
	5470 - 5725	24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz	
	5745 - 5825	30dBm(1W)	
Test Setup:	 Power meterEUT		
Test Mode:	Transmitting mode with modulation		
Test Procedure:	1. The testing follows the Measurement Procedure of KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E, 3, a 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 5. Measure the conducted output power and record the results in the test report.		
Test Result:	PASS		
Remark:	Conducted output power= measurement power +10log(1/x) X is duty cycle=1, so 10log(1/1)=0 Conducted output power= measurement power		

5.3.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2021
Power Meter	Agilent	E4418B	GB43312526	Sep. 21, 2021
Power Sensor	Agilent	E9301A	MY41497725	Sep. 21, 2021
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	N/A	Sep. 02, 2021
Combiner Box	Ascentest	AT890-RFB	N/A	Sep. 02, 2021

5.3.3. Test Data

Configuration Band 1 (5180 - 5240 MHz) / Antenna 0+Antenna 1						
Mode	Test channel	Maximum Conducted (Average) Output Power (dBm)			Limit (dBm)	Result
		Ant0	Ant1	Total		
11a	CH36	14.69	14.26	/	24	PASS
11a	CH40	14.86	14.11	/	24	PASS
11a	CH48	14.69	13.72	/	24	PASS
11n(HT20)	CH36	12.85	11.82	15.38	24	PASS
11n(HT20)	CH40	12.83	11.71	15.32	24	PASS
11n(HT20)	CH48	12.80	11.33	15.14	24	PASS
11n(HT40)	CH38	13.25	12.07	15.71	24	PASS
11n(HT40)	CH46	13.35	11.75	15.63	24	PASS
11ac(VHT20)	CH36	13.10	12.16	15.67	24	PASS
11ac(VHT20)	CH40	13.09	12.05	15.61	24	PASS
11ac(VHT20)	CH48	13.17	11.67	15.49	24	PASS
11ac(VHT40)	CH38	13.53	12.50	16.06	24	PASS
11ac(VHT40)	CH46	13.50	12.25	15.93	24	PASS
11ac(VHT80)	CH42	13.47	12.24	15.91	24	PASS

Refer to KDB 662911 D01 Multiple Transmitter Output v02r01:

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

Directional gain = $G_{ant} + \text{Array Gain} = 4\text{dBi}$, so limit of conducted output power is 250mW(24dBm).

Note: The result have added a Correction Factor: $10\log(1/x)$ when the duty cycle is less than 98%, where x is the duty cycle.

Configuration Band 2A (5260 - 5320 MHz) / Antenna 0+Antenna 1

Mode	Test channel	Maximum Conducted (Average) Output Power (dBm)			26 dB Bandwidth (MHz)	11dBm+10logB (dBm)	Limit (dBm)	Result
		Ant0	Ant1	Total				
11a	CH52	14.67	13.05	/	20.34	24.08	24	PASS
11a	CH56	14.90	12.95	/	20.41	24.10	24	PASS
11a	CH64	15.30	12.89	/	19.50	23.90	23.90	PASS
11n(HT20)	CH52	12.71	10.63	14.80	21.68	24.36	24	PASS
11n(HT20)	CH56	12.85	10.29	14.77	21.47	24.32	24	PASS
11n(HT20)	CH64	13.38	10.44	15.16	22.56	24.53	24	PASS
11n(HT40)	CH54	13.11	10.98	15.18	40.56	27.08	24	PASS
11n(HT40)	CH62	13.43	10.87	15.35	40.68	27.09	24	PASS
11ac(VHT20)	CH52	12.74	11.02	14.97	20.31	24.08	24	PASS
11ac(VHT20)	CH56	13.12	11.02	15.21	20.47	24.11	24	PASS
11ac(VHT20)	CH64	13.75	11.05	15.62	20.39	24.09	24	PASS
11ac(VHT40)	CH54	13.22	11.46	15.44	40.95	27.12	24	PASS
11ac(VHT40)	CH62	13.86	11.37	15.80	41.06	27.13	24	PASS
11ac(VHT80)	CH58	13.41	11.40	15.53	81.71	30.12	24	PASS

Refer to KDB 662911 D01 Multiple Transmitter Output v02r01:

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

Directional gain = $G_{ant} + \text{Array Gain} = 4\text{dBi}$, so limit of conducted output power is 250mW(24dBm).

Note : The maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz

The power result have added a Correction Factor: $10\log(1/x)$ when the duty cycle is less than 98%, where x is the duty cycle.

Configuration Band 2C (5500 - 5720 MHz) / Antenna 0+Antenna 1

Mode	Test channel	Maximum Conducted (Average) Output Power (dBm)			26 dB Bandwidth (MHz)	11dBm+ 10logB (dBm)	Limit (dBm)	Result
		Ant0	Ant1	Total				
11a	CH100	14.43	13.99	/	20.21	24.06	24	PASS
11a	CH120	14.19	12.79	/	20.34	24.08	24	PASS
11a	CH140	13.71	13.25	/	20.33	24.08	24	PASS
11n(HT20)	CH100	12.55	12.29	15.43	21.48	24.32	24	PASS
11n(HT20)	CH120	12.17	10.85	14.57	20.38	24.09	24	PASS
11n(HT20)	CH140	11.86	11.62	14.75	21.35	24.29	24	PASS
11n(HT40)	CH102	12.91	12.53	15.73	40.72	27.10	24	PASS
11n(HT40)	CH118	12.51	11.40	15.00	40.73	27.10	24	PASS
11n(HT40)	CH134	13.13	10.30	14.95	40.97	27.12	24	PASS
11ac(VHT20)	CH100	12.90	12.39	15.66	20.34	24.08	24	PASS
11ac(VHT20)	CH120	12.81	11.13	15.06	20.32	24.08	24	PASS
11ac(VHT20)	CH140	12.50	11.84	15.19	20.32	24.08	24	PASS
11ac(VHT40)	CH102	12.99	12.59	15.80	41.04	27.13	24	PASS
11ac(VHT40)	CH118	12.79	11.55	15.22	40.98	27.13	24	PASS
11ac(VHT40)	CH134	13.60	10.55	15.35	48.62	27.87	24	PASS
11ac(VHT80)	CH106	12.99	12.50	15.76	81.68	30.12	24	PASS
11ac(VHT80)	CH122	12.99	11.25	15.22	81.67	30.12	24	PASS

Refer to KDB 662911 D01 Multiple Transmitter Output v02r01:

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

Directional gain = $G_{ant} + \text{Array Gain} = 4\text{dBi}$, so limit of conducted output power is 250mW(24dBm).

Note : The maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz

The power result have added a Correction Factor: $10\log(1/x)$ when the duty cycle is less than 98%, where x is the duty cycle.

Configuration Band 3 (5745 - 5825 MHz) / Antenna 0+Antenna 1

Mode	Test channel	Maximum Conducted (Average) Output Power (dBm)			Limit (dBm)	Result
		Ant0	Ant1	Total		
11a	CH149	13.55	12.83	/	30	PASS
11a	CH157	13.68	12.54	/	30	PASS
11a	CH165	12.84	11.54	/	30	PASS
11n(HT20)	CH149	11.54	11.14	14.35	30	PASS
11n(HT20)	CH157	11.91	10.81	14.41	30	PASS
11n(HT20)	CH165	11.02	9.72	13.43	30	PASS
11n(HT40)	CH151	11.70	10.97	14.36	30	PASS
11n(HT40)	CH159	12.21	11.14	14.72	30	PASS
11ac(VHT20)	CH149	11.88	11.28	14.60	30	PASS
11ac(VHT20)	CH157	12.27	11.00	14.69	30	PASS
11ac(VHT20)	CH165	11.51	10.50	14.04	30	PASS
11ac(VHT40)	CH151	12.00	11.23	14.64	30	PASS
11ac(VHT40)	CH159	12.56	11.16	14.93	30	PASS
11ac(VHT80)	CH155	12.15	11.12	14.68	30	PASS

Refer to KDB 662911 D01 Multiple Transmitter Output v02r01:

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

Directional gain = $G_{ant} + \text{Array Gain} = 4\text{dBi}$, so limit of conducted output power is 1W(30dBm).

Note : The power result have added a Correction Factor: $10\log(1/x)$ when the duty cycle is less than 98%, where x is the duty cycle.

5.4. 6dB Emission Bandwidth

5.4.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407(e)& Part 2 J Section 2.1049
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C
Limit:	>500kHz
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. 4. Measure and record the results in the test report.
Test Result:	PASS

5.4.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2021
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	N/A	Sep. 02, 2021
Combiner Box	Ascentest	AT890-RFB	N/A	Sep. 02, 2021

5.5. 26dB Bandwidth and 99% Occupied Bandwidth

5.5.1. Test Specification

Test Requirement:	47 CFR Part 15C Section 15.407 (a)& Part 2 J Section 2.1049
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section D
Limit:	No restriction limits
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section D 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1% to 5% of the OBW. Set the Video bandwidth (VBW) = 3 *RBW. In order to make an accurate measurement. 4. Measure and record the results in the test report.
Test Result:	PASS

5.5.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2021
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	N/A	Sep. 02, 2021
Combiner Box	Ascentest	AT890-RFB	N/A	Sep. 02, 2021

5.6. Power Spectral Density

5.6.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407 (a)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section F
Limit:	$\leq 11.00\text{dBm/MHz}$ for Band 1 5150MHz-5250MHz(client device) $\leq 11.00\text{dBm/MHz}$ for Band 2A&2C 5250-5350&5470-5725 $\leq 30.00\text{dBm/500KHz}$ for Band 3 5725MHz-5850MHz The e.i.r.p spectral density for Band 1 5150MHz – 5250 MHz should not exceed 10dBm/MHz
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth. 1. Set RBW = 510 kHz/1 MHz, VBW $\geq 3 \times$ RBW, Sweep time = Auto, Detector = RMS. 2. Allow the sweeps to continue until the trace stabilizes. 3. Use the peak marker function to determine the maximum amplitude level. 4. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.
Test Result:	PASS

5.6.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2021
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	N/A	Sep. 02, 2021
Combiner Box	Ascentest	AT890-RFB	N/A	Sep. 02, 2021

5.6.3. Test data

Configuration Band 1 (5180 - 5240 MHz) / Antenna 0+Antenna 1						
Mode	Test channel	Power Spectral Density			Limit (dBm/MHz)	Result
		Ant0	Ant1	Total		
11a	CH36	4.125	3.795	/	11	PASS
11a	CH40	4.239	3.609	/	11	PASS
11a	CH48	4.224	3.312	/	11	PASS
11n(HT20)	CH36	2.210	1.154	4.72	9.99	PASS
11n(HT20)	CH40	2.171	1.066	4.66	9.99	PASS
11n(HT20)	CH48	2.161	0.597	4.46	9.99	PASS
11n(HT40)	CH38	-0.704	-2.092	1.67	9.99	PASS
11n(HT40)	CH46	-0.689	-2.140	1.66	9.99	PASS
11ac(VHT20)	CH36	2.508	1.632	5.10	9.99	PASS
11ac(VHT20)	CH40	2.607	1.537	5.12	9.99	PASS
11ac(VHT20)	CH48	2.672	1.097	4.97	9.99	PASS
11ac(VHT40)	CH38	-0.362	-1.429	2.15	9.99	PASS
11ac(VHT40)	CH46	-0.607	-1.683	1.90	9.99	PASS
11ac(VHT80)	CH42	-3.907	-5.048	-1.43	9.99	PASS

Refer to KDB 662911 D01 Multiple Transmitter Output v02r01:

For power spectral density (PSD) measurements on all devices,
Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

Directional gain = $G_{ant} + \text{Array Gain} = 7.01\text{dBi}$, $7.01\text{dBi} > 6\text{dBi}$, so limit of power spectral density in MIMO mode is $11 - (7.01-6) = 9.99$.

Note: The result have added a Correction Factor: $10\log(1/x)$ when the duty cycle is less than 98%, where x is the duty cycle.

Configuration Band 2A (5260-5320MHz) /Antenna 0+Antenna 1

Mode	Test channel	Power Spectral Density			Limit (dBm/MHz)	Result
		Ant0	Ant1	Total		
11a	CH52	4.263	2.583	/	11	PASS
11a	CH56	4.421	2.197	/	11	PASS
11a	CH64	4.842	2.425	/	11	PASS
11n(HT20)	CH52	2.129	-0.002	4.20	9.99	PASS
11n(HT20)	CH56	2.212	-0.257	4.16	9.99	PASS
11n(HT20)	CH64	2.691	-0.225	4.48	9.99	PASS
11n(HT40)	CH54	-0.909	-3.130	1.13	9.99	PASS
11n(HT40)	CH62	-0.604	-3.158	1.31	9.99	PASS
11ac(VHT20)	CH52	2.151	0.429	4.39	9.99	PASS
11ac(VHT20)	CH56	2.503	0.323	4.56	9.99	PASS
11ac(VHT20)	CH64	3.052	0.386	4.93	9.99	PASS
11ac(VHT40)	CH54	-0.780	-2.650	1.40	9.99	PASS
11ac(VHT40)	CH62	0.020	-2.401	1.99	9.99	PASS
11ac(VHT80)	CH58	-3.720	-5.878	-1.66	9.99	PASS

Refer to KDB 662911 D01 Multiple Transmitter Output v02r01:

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

Directional gain = $G_{ant} + \text{Array Gain} = 7.01\text{dBi}$, $7.01\text{dBi} > 6\text{dBi}$, so limit of power spectral density in MIMO mode is $11 - (7.01 - 6) = 9.99$.

Note: The result have added a Correction Factor: $10\log(1/x)$ when the duty cycle is less than 98%, where x is the duty cycle.

Configuration Band 2C (5500-5720 MHz) /Antenna 0+Antenna 1

Mode	Test channel	Power Spectral Density			Limit (dBm/MHz)	Result
		Ant0	Ant1	Total		
11a	CH100	3.897	3.554	/	11	PASS
11a	CH120	3.769	2.306	/	11	PASS
11a	CH140	3.197	2.999	/	11	PASS
11n(HT20)	CH100	1.867	1.604	4.75	9.99	PASS
11n(HT20)	CH120	1.539	0.384	4.01	9.99	PASS
11n(HT20)	CH140	1.235	1.005	4.13	9.99	PASS
11n(HT40)	CH102	-1.194	-1.534	1.65	9.99	PASS
11n(HT40)	CH118	-1.517	-2.518	1.02	9.99	PASS
11n(HT40)	CH134	-0.879	-3.707	0.94	9.99	PASS
11ac(VHT20)	CH100	2.186	1.987	5.10	9.99	PASS
11ac(VHT20)	CH120	1.989	0.529	4.33	9.99	PASS
11ac(VHT20)	CH140	1.615	1.140	4.39	9.99	PASS
11ac(VHT40)	CH102	-0.876	-1.191	1.98	9.99	PASS
11ac(VHT40)	CH118	-0.983	-2.304	1.42	9.99	PASS
11ac(VHT40)	CH134	-0.426	-3.399	1.35	9.99	PASS
11ac(VHT80)	CH106	-4.327	-4.734	-1.52	9.99	PASS
11ac(VHT80)	CH122	-4.286	-6.301	-2.17	9.99	PASS

Refer to KDB 662911 D01 Multiple Transmitter Output v02r01:

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

Directional gain = $G_{ant} + \text{Array Gain} = 7.01\text{dBi}$, $7.01\text{dBi} > 6\text{dBi}$, so limit of power spectral density is $11 - (7.01 - 6) = 9.99$.

Note: The result have added a Correction Factor: $10\log(1/x)$ when the duty cycle is less than 98%, where x is the duty cycle.

Configuration Band 3(5745-5825MHz) / Antenna 0+Antenna 1

Mode	Test channel	Power Spectral Density			Limit (dBm/MHz)	Result
		Ant0	Ant1	Total		
11a	CH149	0.221	-0.429	/	30	PASS
11a	CH157	0.506	-0.755	/	30	PASS
11a	CH165	-0.319	-1.553	/	30	PASS
11n(HT20)	CH149	-1.850	-2.278	0.95	28.99	PASS
11n(HT20)	CH157	-1.466	-2.559	1.03	28.99	PASS
11n(HT20)	CH165	-2.297	-3.663	0.08	28.99	PASS
11n(HT40)	CH151	-5.446	-6.121	-2.76	28.99	PASS
11n(HT40)	CH159	-4.765	-5.819	-2.25	28.99	PASS
11ac(VHT20)	CH149	-1.636	-2.135	1.13	28.99	PASS
11ac(VHT20)	CH157	-1.321	-2.353	1.20	28.99	PASS
11ac(VHT20)	CH165	-1.973	-3.509	0.34	28.99	PASS
11ac(VHT40)	CH151	-4.938	-5.653	-2.27	28.99	PASS
11ac(VHT40)	CH159	-4.068	-5.531	-1.73	28.99	PASS
11ac(VHT80)	CH155	-7.915	-8.809	-5.33	28.99	PASS

Refer to KDB 662911 D01 Multiple Transmitter Output v02r01:

For power spectral density (PSD) measurements on all devices,

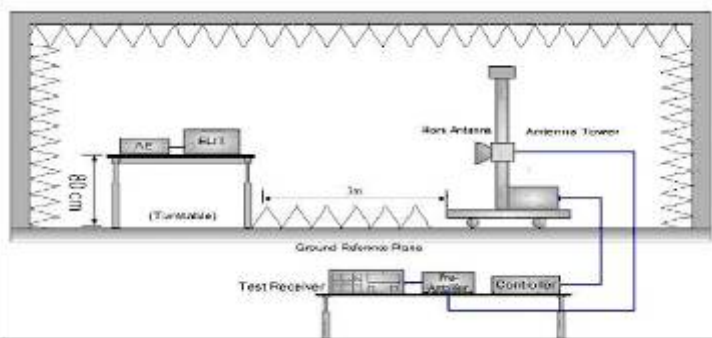
Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

Directional gain = $G_{ant} + \text{Array Gain} = 7.01\text{dBi}$, $7.01\text{dBi} > 6\text{dBi}$, so limit of power spectral density in MIMO mode is $30 - (7.01-6) = 28.99$.

Note: The result have added a Correction Factor: $10\log(1/x)$ when the duty cycle is less than 98%, where x is the duty cycle.

5.7. Band edge

5.7.1. Test Specification

Test Requirement:	FCC CFR47 Part 15E Section 15.407																				
Test Method:	ANSI C63.10 2013																				
Limit:	In un-restricted band: For Band 1&2A&2C: -27dBm/MHz For Band 3:																				
	<table><tr><td>Frequency (MHz)</td><td>Limit (dBm/MHz)</td><td>Frequency (MHz)</td><td>Limit (dBm/MHz)</td></tr><tr><td>< 5650</td><td>-27</td><td>5850~5855</td><td>27~15.6</td></tr><tr><td>5650~5700</td><td>-27~10</td><td>5855~5875</td><td>15.6~10</td></tr><tr><td>5700~5720</td><td>10~15.6</td><td>5875~5925</td><td>10~-27</td></tr><tr><td>5720~5725</td><td>15.6~27</td><td>> 5925</td><td>-27</td></tr></table>	Frequency (MHz)	Limit (dBm/MHz)	Frequency (MHz)	Limit (dBm/MHz)	< 5650	-27	5850~5855	27~15.6	5650~5700	-27~10	5855~5875	15.6~10	5700~5720	10~15.6	5875~5925	10~-27	5720~5725	15.6~27	> 5925	-27
	Frequency (MHz)	Limit (dBm/MHz)	Frequency (MHz)	Limit (dBm/MHz)																	
	< 5650	-27	5850~5855	27~15.6																	
	5650~5700	-27~10	5855~5875	15.6~10																	
5700~5720	10~15.6	5875~5925	10~-27																		
5720~5725	15.6~27	> 5925	-27																		
E[dBμV/m] = EIRP[dBm] + 95.2 @3m																					
In restricted band:																					
<table><tr><td>Detector</td><td>Limit@3m</td></tr><tr><td>Peak</td><td>74dBμV/m</td></tr><tr><td>AVG</td><td>54dBμV/m</td></tr></table>		Detector	Limit@3m	Peak	74dBμV/m	AVG	54dBμV/m														
Detector	Limit@3m																				
Peak	74dBμV/m																				
AVG	54dBμV/m																				
Test Setup:																					
Test Mode:	Transmitting mode with modulation																				
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold																				

	Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.
Test Result:	PASS

5.7.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	ROHDE&SCHW ARZ	ESIB7	100197	Jul. 27, 2021
Spectrum Analyzer	ROHDE&SCHW ARZ	FSQ40	200061	Sep. 11, 2021
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2021
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 02, 2021
Pre-amplifier	HP	8447D	2727A05017	Sep. 02, 2021
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 05, 2022
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 04, 2022
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 04, 2022
Horn Antenna	A-INFO	LB-180400-KF	J211020657	Sep. 02, 2021
Line-4	TCT	RE-high-04	N/A	Sep. 02, 2021
Line-8	TCT	RE-01	N/A	Jul. 27, 2021
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

5.7.3. Test Data

802.11 a	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 & Band 2A	Lowest	5150	41.63	5.82	47.45	74	54	-6.55	H
		5150	37.51	5.82	43.33	74	54	-10.67	V
	Highest	5350	41.38	6.52	47.90	74	54	-6.10	H
		5350	38.95	6.52	45.47	74	54	-8.53	V
Band 2C & Band 3	Lowest	5470	52.84	5.82	58.66	68.2	/	-9.54	H
		5470	47.11	5.82	52.93	68.2	/	-15.27	V
	Highest	5850	65.05	6.52	71.57	122.2	/	-50.63	H
		5850	61.96	6.52	68.48	122.2	/	-53.72	V
Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor									

802.11 n HT20	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 &Band 2A	Lowest	5150	41.15	6.96	48.11	74	54	-5.89	H
		5150	40.14	6.96	47.10	74	54	-6.90	V
	Highest	5350	35.89	8.21	44.10	74	54	-9.90	H
		5350	38.01	8.21	46.22	74	54	-7.78	V
Band 2C & Band 3	Lowest	5470	51.72	8.21	59.93	68.2	/	-8.27	H
		5470	48.11	8.21	56.32	68.2	/	-11.88	V
	Highest	5850	61.59	8.87	70.46	122.2	/	-51.74	H
		5850	59.13	8.87	68.00	122.2	/	-54.20	V
Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor									

802.11 n HT40	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 &Band 2A	Lowest	5150	42.73	5.82	48.55	74	54	-5.45	H
		5150	38.04	5.82	43.86	74	54	-10.14	V
	Highest	5350	41.17	6.52	47.69	74	54	-6.31	H
		5350	38.65	6.52	45.17	74	54	-8.83	V

Band 2C & Band 3	Lowest	5470	52.87	5.82	58.69	68.2	/	-9.51	H
		5470	47.30	5.82	53.12	68.2	/	-15.08	V
	Highest	5850	64.22	6.52	70.74	122.2	/	-51.46	H
		5850	61.53	6.52	68.05	122.2	/	-54.15	V

Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor

802.11 ac HT20	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 &Band 2A	Lowest	5150	42.39	6.96	49.35	74	54	-4.65	H
		5150	40.46	6.96	47.42	74	54	-6.58	V
	Highest	5350	35.42	8.21	43.63	74	54	-10.37	H
		5350	38.11	8.21	46.32	74	54	-7.68	V

Band 2C & Band 3	Lowest	5470	50.83	8.21	59.04	68.2	/	-9.16	H
		5470	46.03	8.21	54.24	68.2	/	-13.96	V
	Highest	5850	61.11	8.87	69.98	122.2	/	-52.22	H
		5850	58.72	8.87	67.59	122.2	/	-54.61	V

Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor

802.11 ac HT40	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 &Band 2A	Lowest	5150	42.94	5.82	48.76	74	54	-5.24	H
		5150	38.23	5.82	44.05	74	54	-9.95	V
	Highest	5350	41.99	6.52	48.51	74	54	-5.49	H
		5350	39.46	6.52	45.98	74	54	-8.02	V

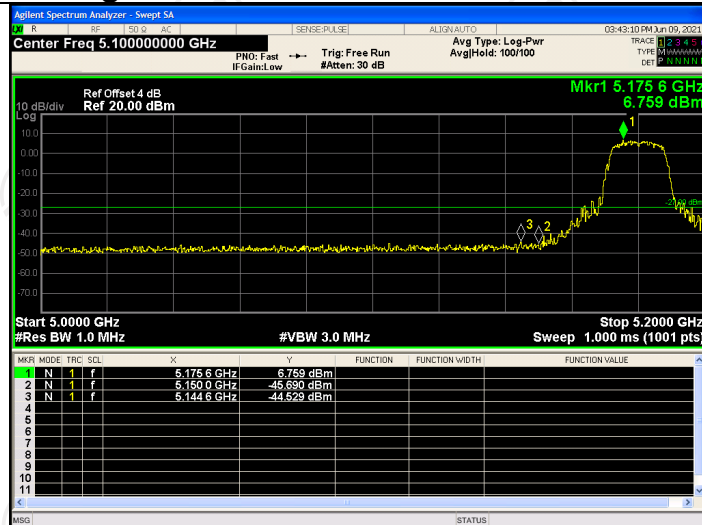
Band 2C & Band 3	Lowest	5470	52.93	5.82	58.75	68.2	/	-9.45	H
		5470	47.41	5.82	53.23	68.2	/	-14.97	V
	Highest	5850	64.59	6.52	71.11	122.2	/	-51.09	H
		5850	62.06	6.52	68.58	122.2	/	-53.62	V

Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor

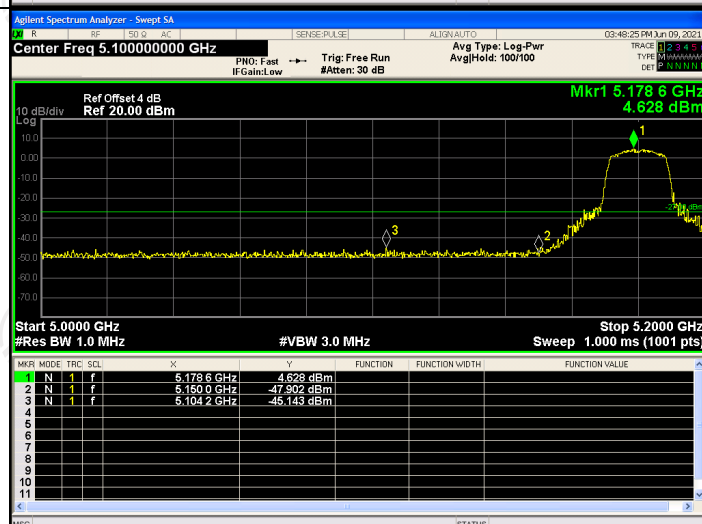
802.11 ac HT80	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 &Band 2A	Lowest	5150	42.83	6.96	49.79	74	54	-4.21	H
		5150	41.57	6.96	48.53	74	54	-5.47	V
	Highest	5350	40.02	8.21	48.23	74	54	-5.77	H
		5350	38.87	8.21	47.08	74	54	-6.92	V
Band 2C & Band 3	Lowest	5470	43.38	8.21	51.59	68.2	/	-16.61	H
		5470	43.05	8.21	51.26	68.2	/	-16.94	V
	Highest	5850	42.44	8.87	51.31	122.2	/	-70.89	H
		5850	39.71	8.87	48.58	122.2	/	-73.62	V
Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor									

Band 1 Band-edge for RF Conducted Emissions

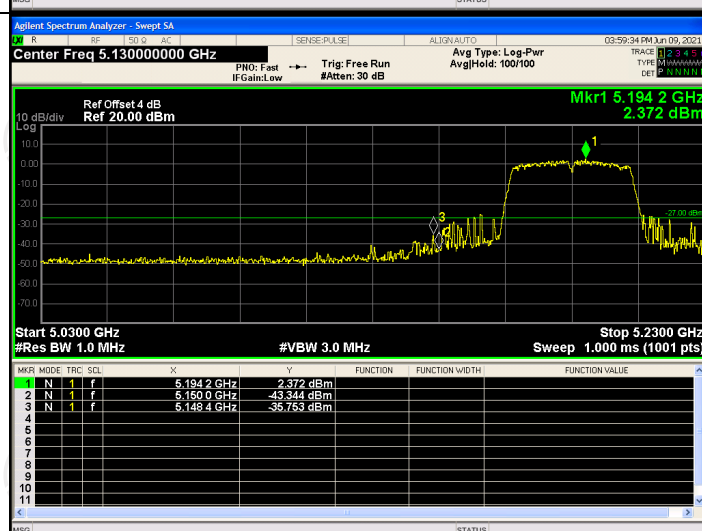
802.11a
/LCH



802.11n
HT20 / LCH

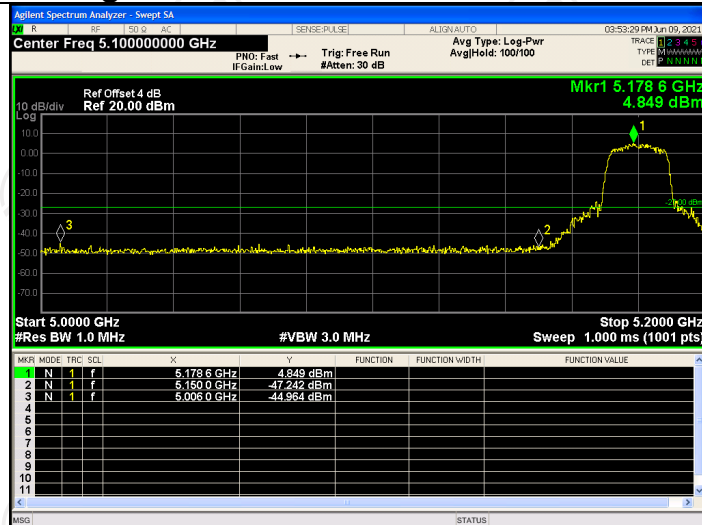


802.11n
HT40 / LCH

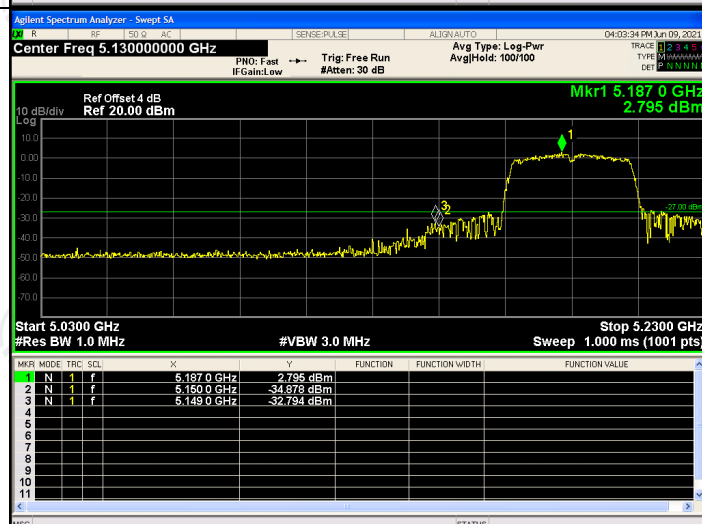


Band 1 Band-edge for RF Conducted Emissions

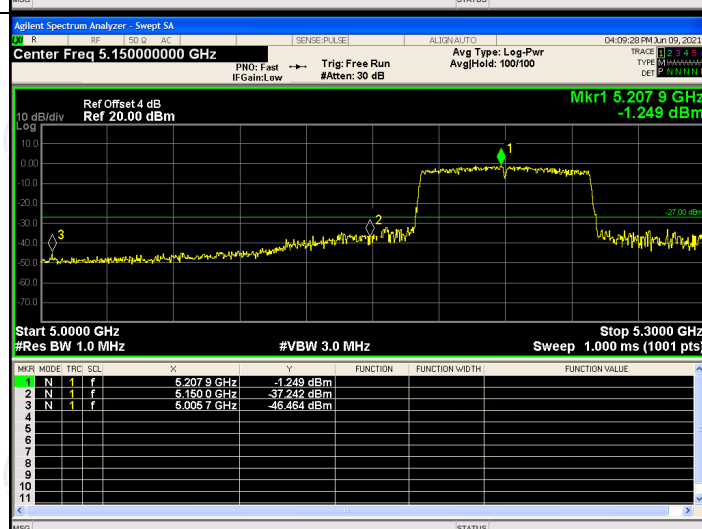
802.11ac
HT20 / LCH



802.11ac
HT40 / LCH

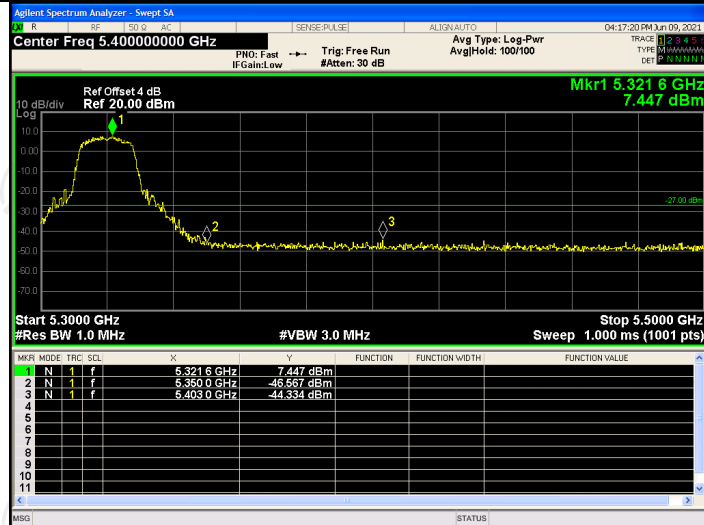


802.11ac
HT80 / LCH

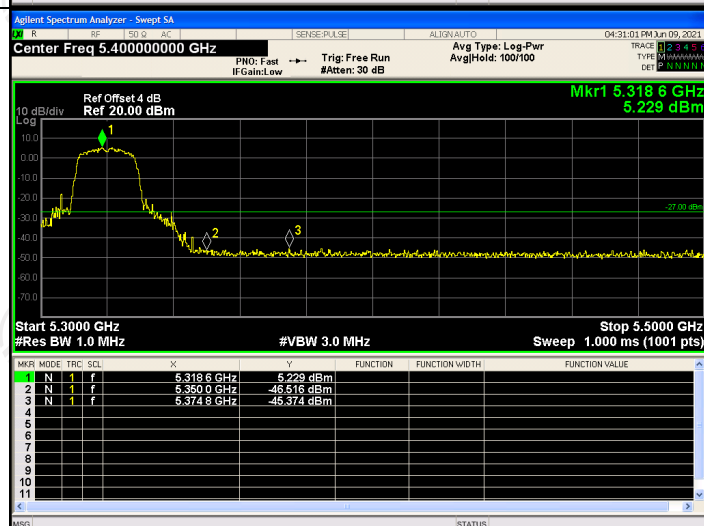


Band 2A Band-edge for RF Conducted Emissions

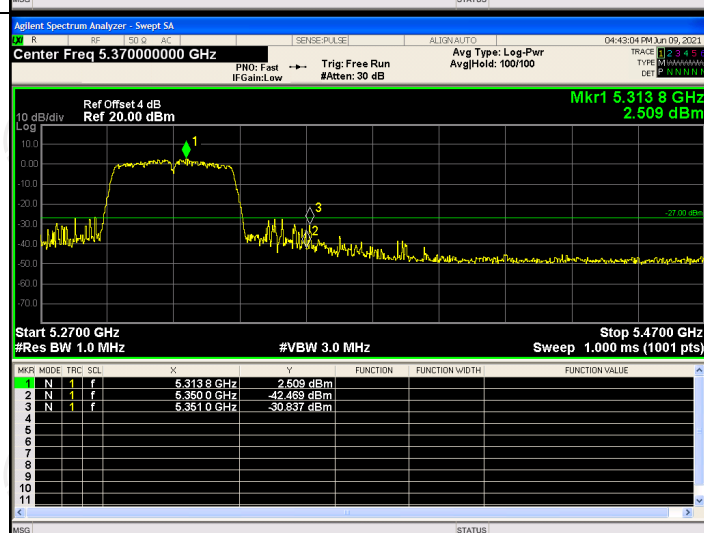
802.11a
/HCH



802.11n
HT20 / HCH

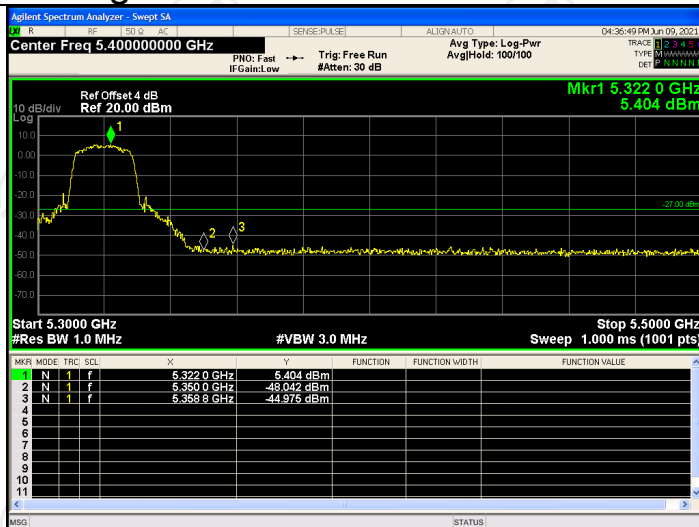


802.11n
HT40 / HCH

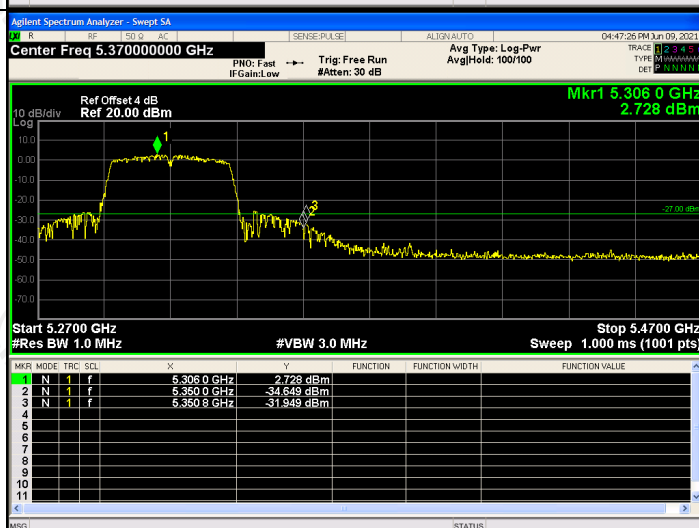


Band 2A Band-edge for RF Conducted Emissions

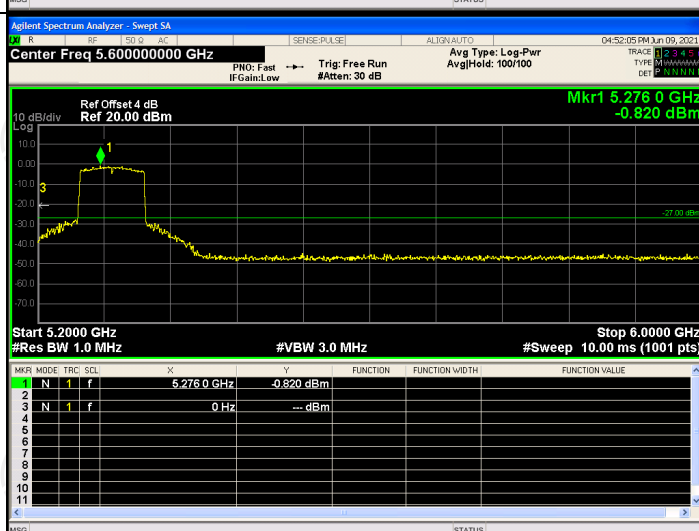
802.11ac
HT20 / HCH



802.11ac
HT40 / HCH

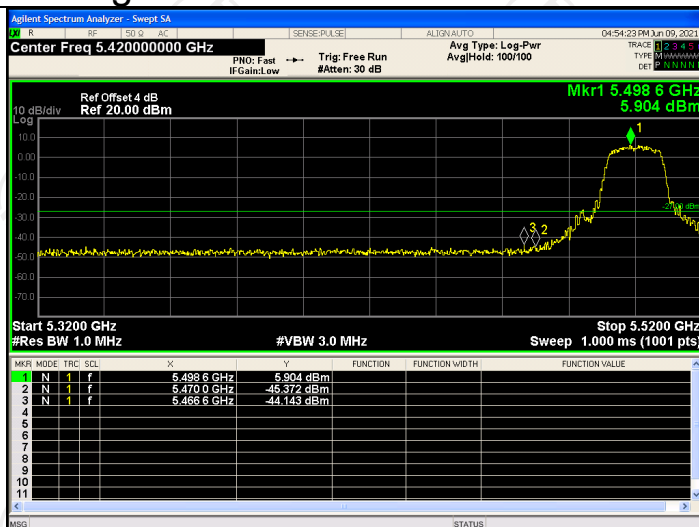


802.11ac
HT80 / HCH

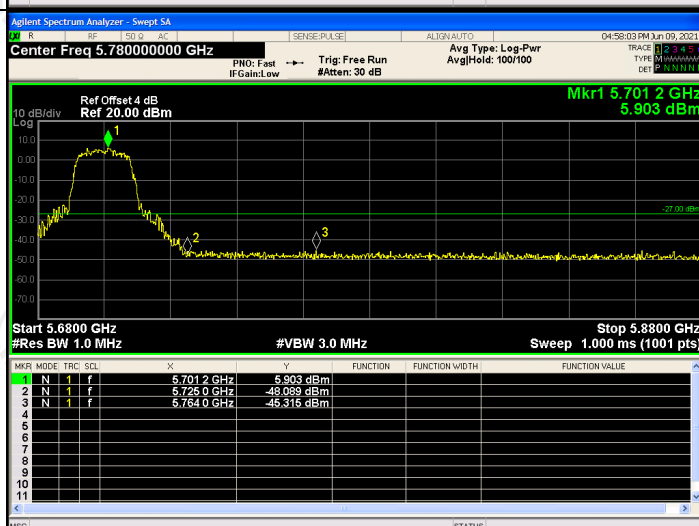


Band 2C Band-edge for RF Conducted Emissions

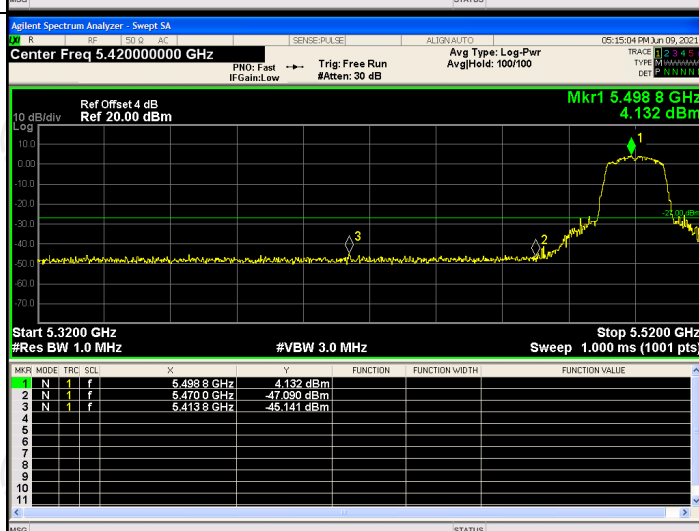
802.11a
/LCH



802.11a
/HCH

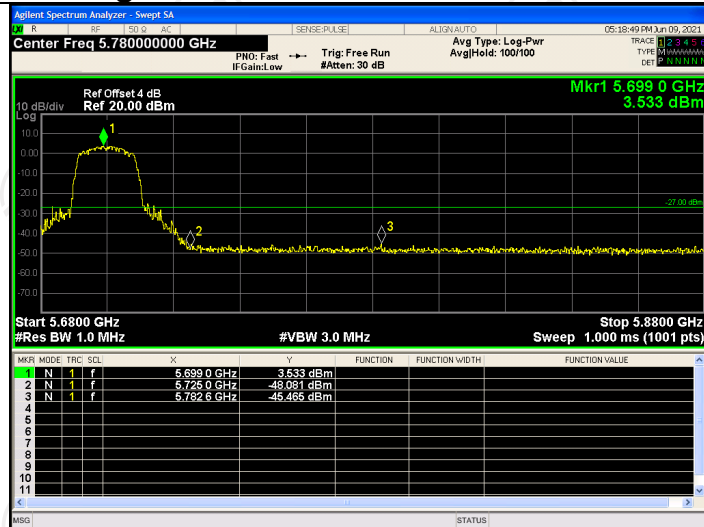


802.11n
HT20 / LCH

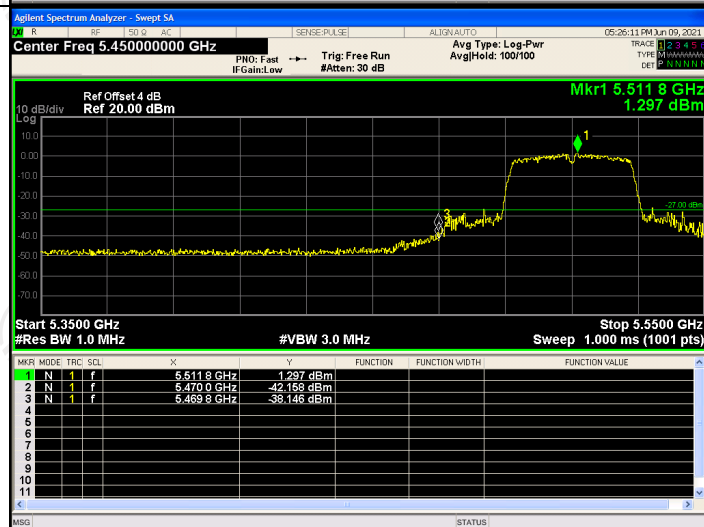


Band 2C Band-edge for RF Conducted Emissions

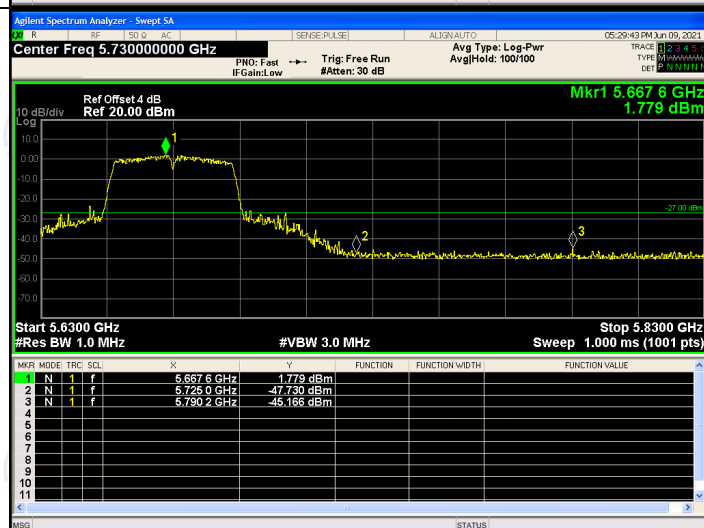
802.11n
HT20 / HCH



802.11n
HT40 / LCH

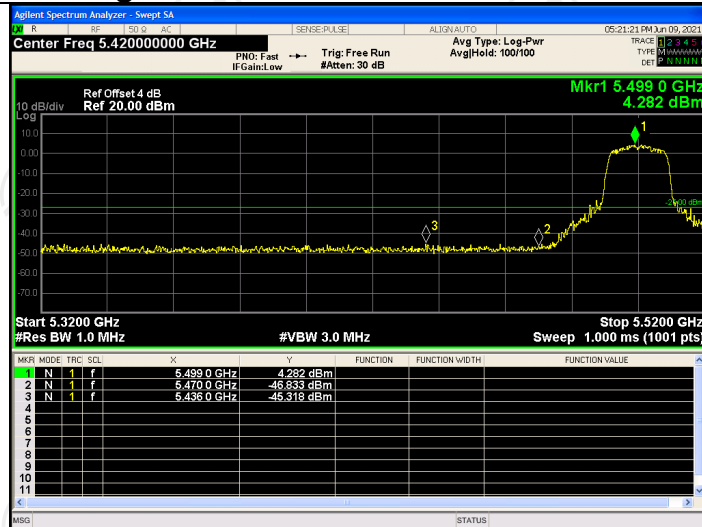


802.11n
HT40 / HCH

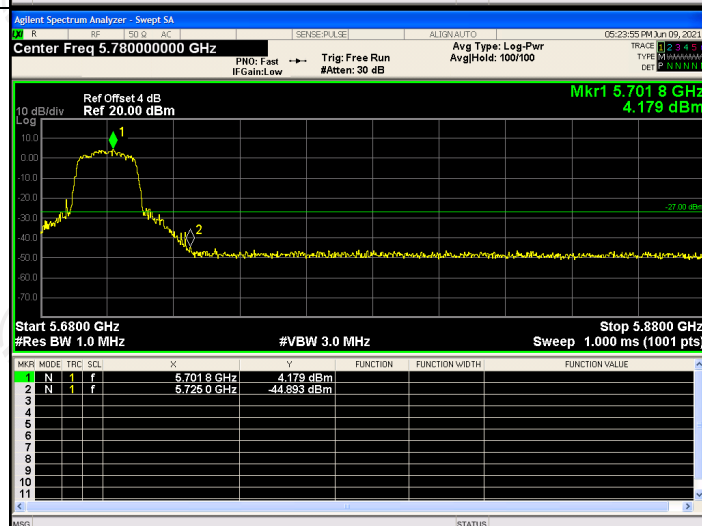


Band 2C Band-edge for RF Conducted Emissions

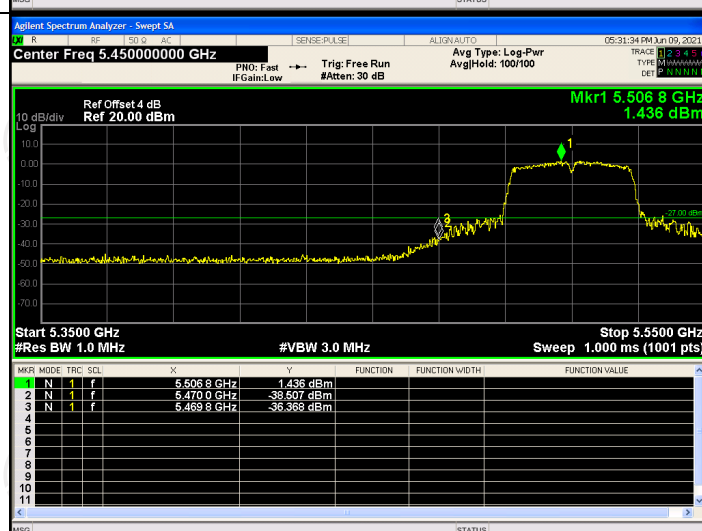
802.11ac
HT20 / LCH



802.11ac
HT20 / HCH

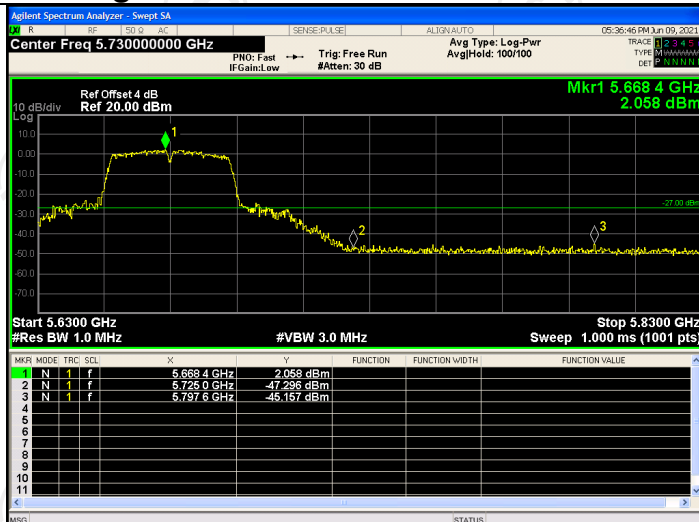


802.11ac
HT40 / LCH

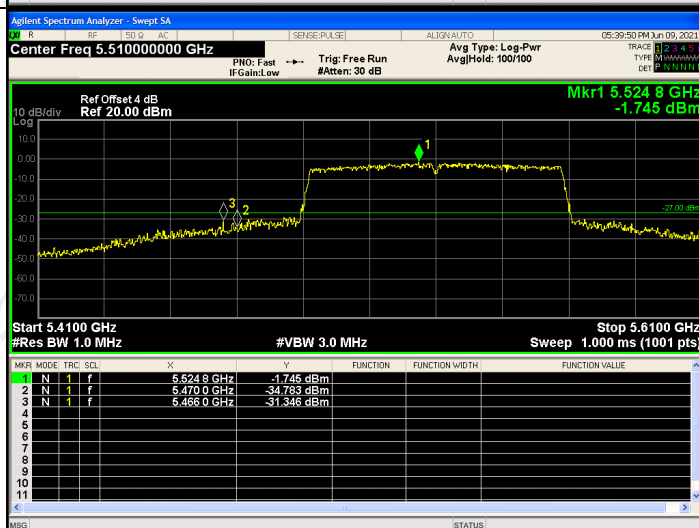


Band 2C Band-edge for RF Conducted Emissions

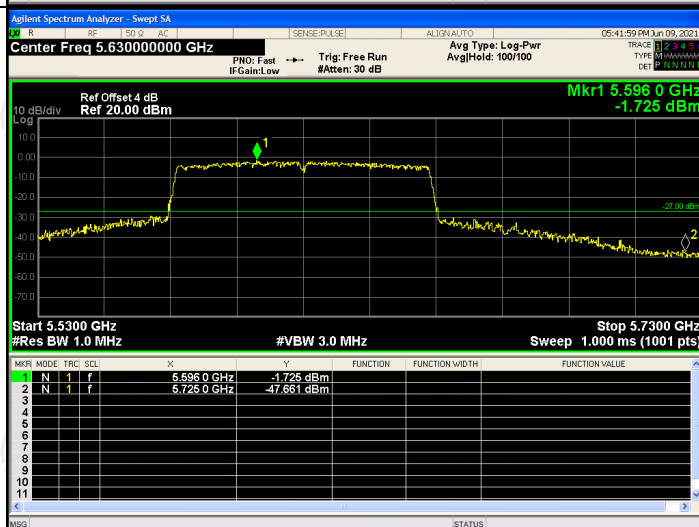
802.11ac
HT40 / HCH



802.11ac
HT80 / LCH

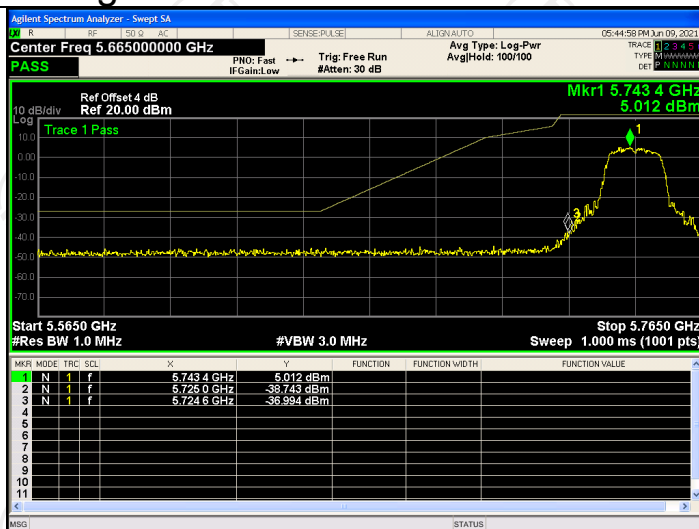


802.11ac
HT80 / HCH

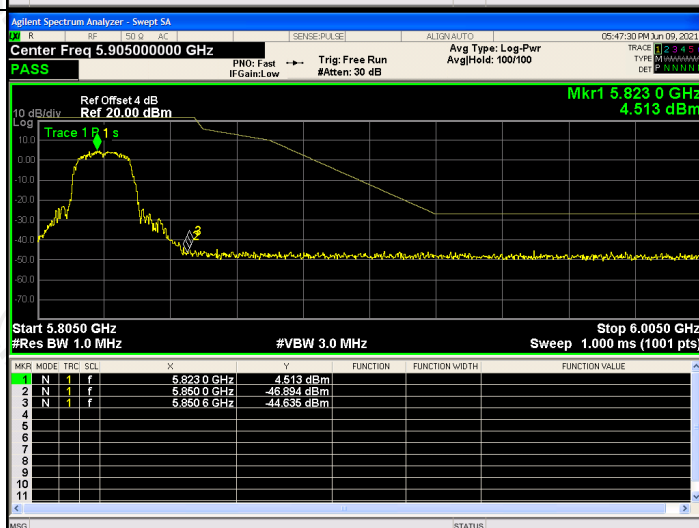


Band 3 Band-edge for RF Conducted Emissions

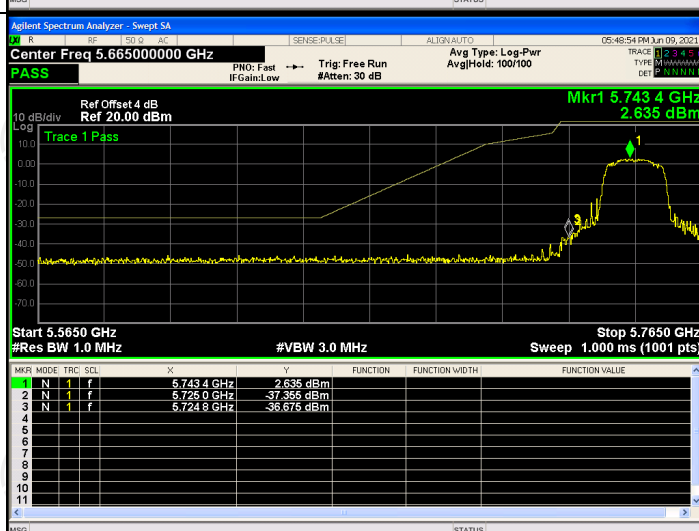
802.11a
/LCH



802.11a
/HCH

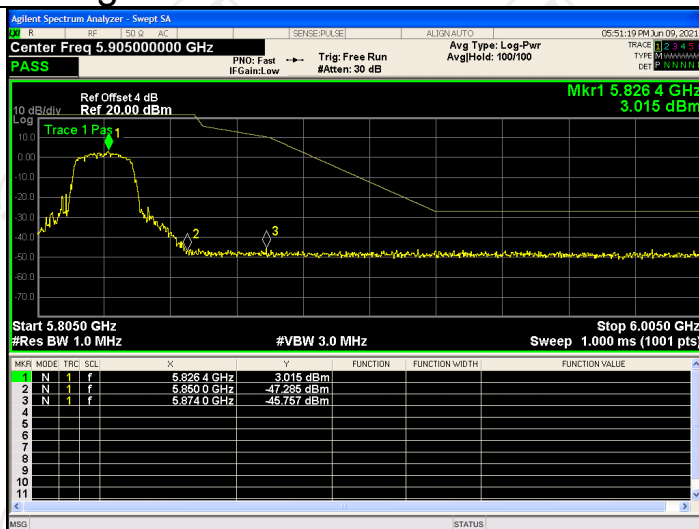


802.11n
HT20 / LCH

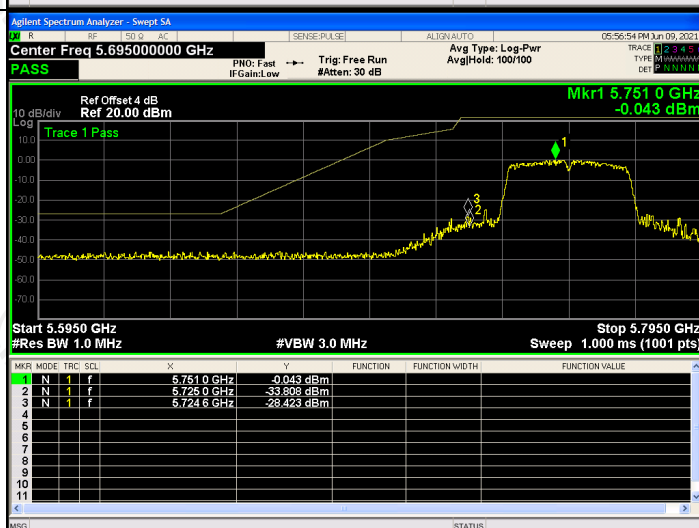


Band 3 Band-edge for RF Conducted Emissions

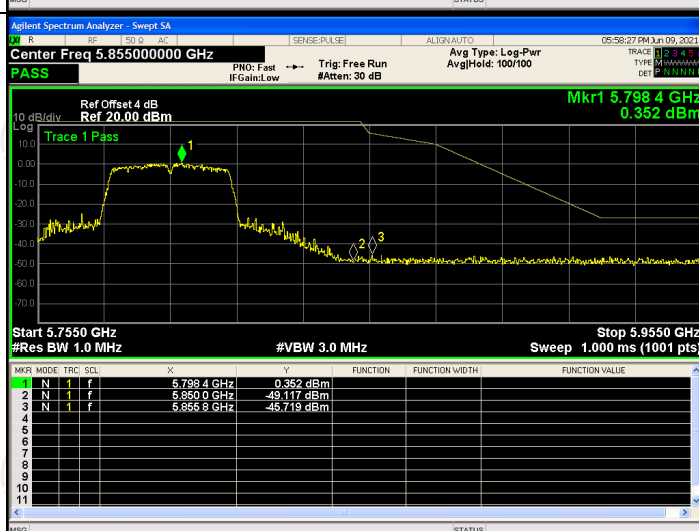
802.11n
HT20 / HCH



802.11n
HT40 / LCH

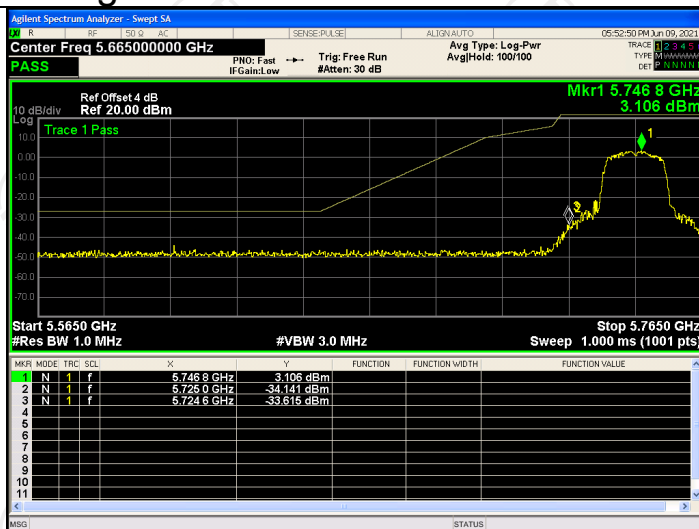


802.11n
HT40 / HCH

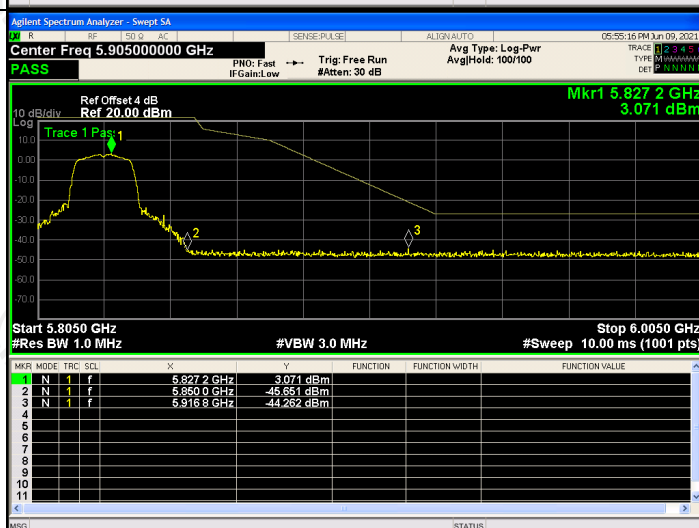


Band 3 Band-edge for RF Conducted Emissions

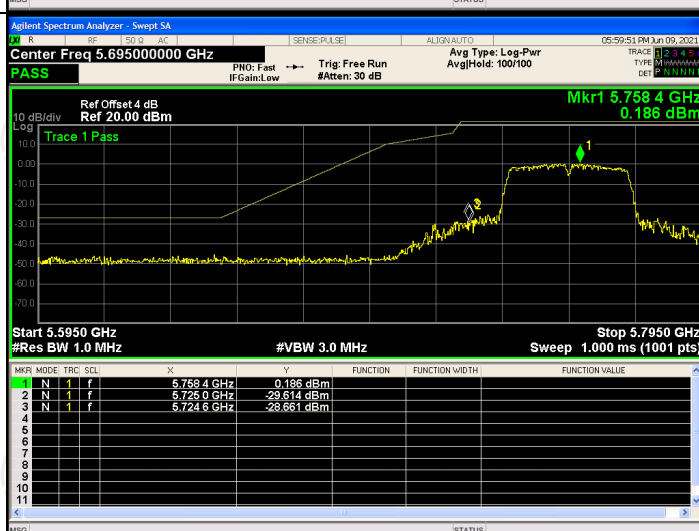
802.11ac
HT20 / LCH



802.11ac
HT20 / HCH



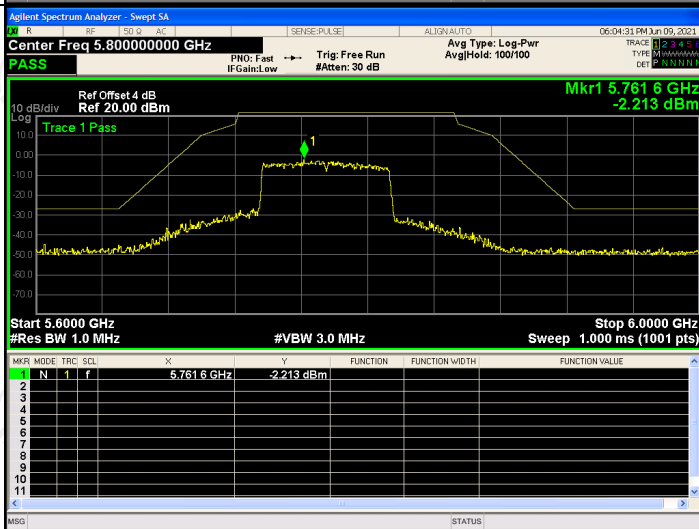
802.11ac
HT40 / LCH



802.11ac
HT40 / HCH

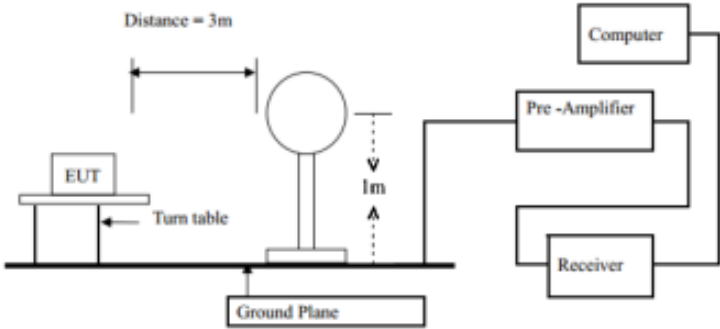


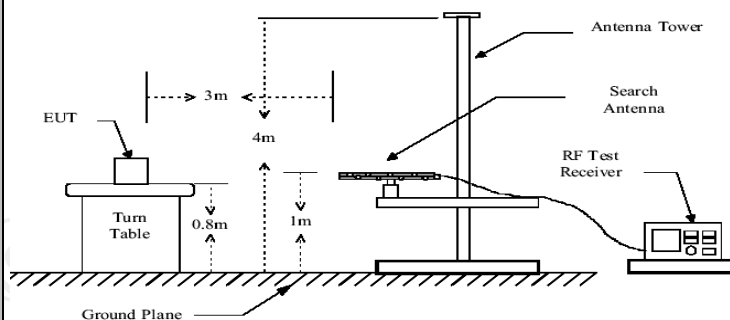
802.11ac
HT80 / HCH



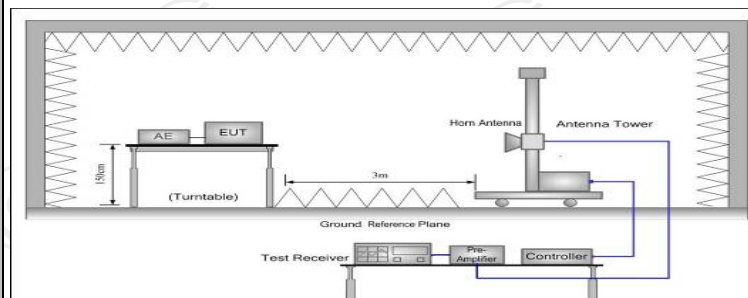
5.8. Unwanted Emissions

5.8.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407 & 15.209 & 15.205				
Test Method:	KDB 789033 D02 v02r01				
Frequency Range:	9kHz to 40GHz				
Measurement Distance:	3 m				
Antenna Polarization:	Horizontal & Vertical				
Operation mode:	Transmitting mode with modulation				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	10Hz	Average Value	
Limit:	Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table, In restricted bands:				
	Frequency		Detector		Limit@3m
	Above 1G		Peak		74dBuV/m
			AVG		54dBuV/m
	Frequency		Field Strength (microvolts/meter)	Measurement Distance (meters)	
	0.009-0.490		2400/F(KHz)	300	
	0.490-1.705		24000/F(KHz)	3	
	1.705-30		30	30	
	30-88		100	3	
	88-216		150	3	
216-960		200	3		
Above 960		500	3		
Test setup:	In un-restricted bands: 68.2dBuV/m				
	For radiated emissions below 30MHz				
					
	30MHz to 1GHz				



Above 1GHz



Test Procedure:

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotating table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Test results:

PASS

5.8.2. Test Data

Please refer to following diagram for individual
Below 1GHz

Horizontal:



Site

Polarization: **Horizontal**

Temperature: 19.6(C)

Limit: FCC Part 15C 3M Radiation

Power: DC 5V

Humidity: 53 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	32.7486	6.93	13.08	20.01	40.00	-19.99	QP	P	
2	45.6946	5.05	13.86	18.91	40.00	-21.09	QP	P	
3	166.0680	20.27	13.29	33.56	43.50	-9.94	QP	P	
4	233.3486	25.21	12.28	37.49	46.00	-8.51	QP	P	
5 *	467.2348	20.24	18.23	38.47	46.00	-7.53	QP	P	
6	833.3170	6.71	24.70	31.41	46.00	-14.59	QP	P	

Vertical:



Site

Polarization: **Vertical**

Temperature: 19.6(C)

Limit: FCC Part 15C 3M Radiation

Power: DC 5V

Humidity: 53 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	39.4371	5.71	13.93	19.64	40.00	-20.36	QP	P	
2	55.6092	6.75	13.07	19.82	40.00	-20.18	QP	P	
3	132.6850	13.24	12.78	26.02	43.50	-17.48	QP	P	
4	233.3486	13.04	12.28	25.32	46.00	-20.68	QP	P	
5	499.4245	13.65	19.02	32.67	46.00	-13.33	QP	P	
6 *	599.3211	12.64	21.38	34.02	46.00	-11.98	QP	P	

Note: 1. The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported

2. Measurements were conducted in all three channels (high, middle, low) and all modulation (802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20), 802.11ac(VHT40), 802.11ac(VHT80) and the worst case Mode (Highest channel and 802.11a) was submitted only.

3. Measurement (dBuV) = Reading level + Correction Factor, correction Factor= Antenna Factor + Cable loss - Pre-amplifier.

Modulation Type: Band 1									
11a CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10360	H	39.05	---	8.02	47.07	---	68.2	---	-21.13
15540	H	39.49	---	9.87	49.36	---	74	54	-4.64
---	H	---	---	---	---	---	---	---	---
10360	V	38.20	---	8.02	46.22	---	68.2	---	-21.98
15540	V	39.94	---	9.87	49.81	---	74	54	-4.19
---	V	---	---	---	---	---	---	---	---
11a CH40: 5200MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10400	H	41.06	---	7.97	49.03	---	68.2	---	-19.17
15600	H	38.91	---	9.83	48.74	---	74	54	-5.26
---	H	---	---	---	---	---	---	---	---
10400	V	41.48	---	7.97	49.45	---	68.2	---	-18.75
15600	V	38.66	---	9.83	48.49	---	74	54	-5.51
---	V	---	---	---	---	---	---	---	---
11a CH48: 5240MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10480	H	39.17	---	7.97	47.14	---	68.2	---	-21.06
15720	H	39.09	---	9.83	48.92	---	74	54	-5.08
---	H	---	---	---	---	---	---	---	---
10480	V	39.87	---	7.97	47.84	---	68.2	---	-20.36
15720	V	37.25	---	9.83	47.08	---	74	54	-6.92
---	V	---	---	---	---	---	---	---	---
11n(HT20) CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10360	H	42.24	---	8.02	50.26	---	68.2	---	-17.94
15540	H	38.87	---	9.87	48.74	---	74	54	-5.26
---	H	---	---	---	---	---	---	---	---
10360	V	42.45	---	8.02	50.47	---	68.2	---	-17.73
15540	V	39.22	---	9.87	49.09	---	74	54	-4.91
---	V	---	---	---	---	---	---	---	---
11n(HT20) CH40: 5200MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10400	H	41.76	---	7.97	49.73	---	68.2	---	-18.47
15600	H	39.28	---	9.83	49.11	---	74	54	-4.89
---	H	---	---	---	---	---	---	---	---
10400	V	41.62	---	7.97	49.59	---	68.2	---	-18.61
15600	V	39.05	---	9.83	48.88	---	74	54	-5.12
---	V	---	---	---	---	---	---	---	---
11n(HT20) CH48: 5240MHz									

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10480	H	42.40	---	7.97	50.37	---	68.2	---	-17.83
15720	H	40.11	---	9.83	49.94	---	74	54	-4.06
---	H	---	---	---	---	---	---	---	---
10480	V	41.31	---	7.97	49.28	---	68.2	---	-18.92
15720	V	40.27	---	9.83	50.10	---	74	54	-3.90
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH38: 5190MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10380	H	41.33	---	7.75	49.08	---	68.2	---	-19.12
15570	H	38.49	---	9.87	48.36	---	74	54	-5.64
---	H	---	---	---	---	---	---	---	---
10380	V	41.40	---	7.75	49.15	---	68.2	---	-19.05
15570	V	39.25	---	9.87	49.12	---	74	54	-4.88
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH46: 5230MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10460	H	42.26	---	7.97	50.23	---	68.2	---	-17.97
15690	H	38.44	---	9.83	48.27	---	74	54	-5.73
---	H	---	---	---	---	---	---	---	---
10460	V	42.07	---	7.97	50.04	---	68.2	---	-18.16
15690	V	39.14	---	9.83	48.97	---	74	54	-5.03
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH36: 5180MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10360	H	41.66	---	8.02	49.68	---	68.2	---	-18.52
15540	H	39.04	---	9.87	48.91	---	74	54	-5.09
---	H	---	---	---	---	---	---	---	---
10360	V	39.92	---	8.02	47.94	---	68.2	---	-20.26
15540	V	40.17	---	9.87	50.04	---	74	54	-3.96
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH40: 5200MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10400	H	41.14	---	7.97	49.11	---	68.2	---	-19.09
15600	H	39.62	---	9.83	49.45	---	74	54	-4.55
---	H	---	---	---	---	---	---	---	---
10400	V	39.86	---	7.97	47.83	---	68.2	---	-20.37
15600	V	39.10	---	9.83	48.93	---	74	54	-5.07
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH48: 5240MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10480	H	38.16	---	7.97	46.13	---	68.2	---	-22.07
15720	H	38.53	---	9.83	48.36	---	74	54	-5.64
---	H	---	---	---	---	---	---	---	---
10480	V	39.89	---	7.97	47.86	---	68.2	---	-20.34
15720	V	39.41	---	9.83	49.24	---	74	54	-4.76
---	V	---	---	---	---	---	---	---	---
11ac(VHT40) CH38: 5190MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10380	H	41.88	---	7.75	49.63	---	68.2	---	-18.57
15570	H	39.91	---	9.87	49.78	---	74	54	-4.22
---	H	---	---	---	---	---	---	---	---
10380	V	39.37	---	7.75	47.12	---	68.2	---	-21.08
15570	V	39.69	---	9.87	49.56	---	74	54	-4.44
---	V	---	---	---	---	---	---	---	---
11ac(VHT40) CH46: 5230MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10460	H	40.07	---	7.97	48.04	---	68.2	---	-20.16
15690	H	39.69	---	9.83	49.52	---	74	54	-4.48
---	H	---	---	---	---	---	---	---	---
10460	V	40.36	---	7.97	48.33	---	68.2	---	-19.87
15690	V	38.77	---	9.83	48.60	---	74	54	-5.40
---	V	---	---	---	---	---	---	---	---
11ac(VHT80) CH42:5210									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10420	H	42.17	---	7.96	50.13	---	68.2	---	-18.07
15630	H	40.90	---	9.84	50.74	---	74	54	-3.26
---	H	---	---	---	---	---	---	---	---
10420	V	42.40	---	7.96	50.36	---	68.2	---	-17.84
15630	V	40.29	---	9.84	50.13	---	74	54	-3.87
---	V	---	---	---	---	---	---	---	---

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
2. Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 40GHz.
5. Data of measurement shown "—" in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

Modulation Type: Band 2A									
11a CH52: 5260MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10520	H	38.79	---	7.97	46.76	---	68.2	---	-21.44
15780	H	37.62	---	9.83	47.45	---	74	54	-6.55
---	H	---	---	---	---	---	---	---	---
10520	V	42.46	---	7.97	50.43	---	68.2	---	-17.77
15780	V	39.23	---	9.83	49.06	---	74	54	-4.94
---	V	---	---	---	---	---	---	---	---
11a CH56: 5280MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10560	H	39.62	---	7.98	47.60	---	74	54	-6.40
15840	H	39.30	---	9.85	49.15	---	74	54	-4.85
---	H	---	---	---	---	---	---	---	---
10560	V	40.41	---	7.98	48.39	---	74	54	-5.61
15840	V	38.75	---	9.85	48.60	---	74	54	-5.40
---	V	---	---	---	---	---	---	---	---
11a CH64: 5320MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10640	H	40.91	---	7.98	48.89	---	74	54	-5.11
15960	H	37.77	---	9.85	47.62	---	74	54	-6.38
---	H	---	---	---	---	---	---	---	---
10640	V	40.36	---	7.98	48.34	---	74	54	-5.66
15960	V	36.42	---	9.85	46.27	---	74	54	-7.73
---	V	---	---	---	---	---	---	---	---
11n(HT20) C52: 5260MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10520	H	41.82	---	7.97	49.79	---	68.2	---	-18.41
15780	H	39.06	---	9.83	48.89	---	74	54	-5.11
---	H	---	---	---	---	---	---	---	---
10520	V	38.95	---	7.97	46.92	---	68.2	---	-21.28
15780	V	36.61	---	9.83	46.44	---	74	54	-7.56
---	V	---	---	---	---	---	---	---	---
11n(HT20) CH58: 5280MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10560	H	40.17	---	7.98	48.15	---	74	54	-5.85
15840	H	38.89	---	9.85	48.74	---	74	54	-5.26
---	H	---	---	---	---	---	---	---	---
10560	V	40.84	---	7.98	48.82	---	74	54	-5.18
15840	V	40.36	---	9.85	50.21	---	74	54	-3.79
---	V	---	---	---	---	---	---	---	---
11n(HT20) CH64: 5320MHz									

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10640	H	38.74	---	7.98	46.72	---	74	54	-7.28
15960	H	36.09	---	9.85	45.94	---	74	54	-8.06
---	H	---	---	---	---	---	---	---	---
10640	V	40.15	---	7.98	48.13	---	74	54	-5.87
15960	V	39.92	---	9.85	49.77	---	74	54	-4.23
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH54: 5270MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10540	H	41.89	---	7.97	49.86	---	68.2	---	-18.34
15810	H	38.32	---	9.83	48.15	---	74	54	-5.85
---	H	---	---	---	---	---	---	---	---
10540	V	38.83	---	7.97	46.80	---	68.2	---	-21.40
15810	V	37.46	---	9.83	47.29	---	74	54	-6.71
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH62: 5310MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10620	H	41.43	---	7.98	49.41	---	74	54	-4.59
15930	H	39.06	---	9.85	48.91	---	74	54	-5.09
---	H	---	---	---	---	---	---	---	---
10620	V	38.78	---	7.98	46.76	---	74	54	-7.24
15930	V	37.49	---	9.85	47.34	---	74	54	-6.66
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) C52: 5260MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10520	H	40.73	---	7.97	48.70	---	68.2	---	-19.50
15780	H	40.08	---	9.83	49.91	---	74	54	-4.09
---	H	---	---	---	---	---	---	---	---
10520	V	40.78	---	7.97	48.75	---	68.2	---	-19.45
15780	V	37.59	---	9.83	47.42	---	74	54	-6.58
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH56: 5280MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10560	H	39.57	---	7.98	47.55	---	74	54	-6.45
15840	H	37.83	---	9.85	47.68	---	74	54	-6.32
---	H	---	---	---	---	---	---	---	---
10560	V	38.38	---	7.98	46.36	---	74	54	-7.64
15840	V	37.16	---	9.85	47.01	---	74	54	-6.99
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH64: 5320MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10640	H	41.55	---	7.98	49.53	---	74	54	-4.47
15960	H	39.80	---	9.85	49.65	---	74	54	-4.35
---	H	---	---	---	---	---	---	---	---
10640	V	40.97	---	7.98	48.95	---	74	54	-5.05
15960	V	37.24	---	9.85	47.09	---	74	54	-6.91
---	V	---	---	---	---	---	---	---	---
11ac(VHT40) CH54: 5270MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10540	H	40.90	---	7.97	48.87	---	68.2	---	-19.33
15810	H	38.45	---	9.83	48.28	---	74	54	-5.72
---	H	---	---	---	---	---	---	---	---
10540	V	40.17	---	7.97	48.14	---	68.2	---	-20.06
15810	V	38.08	---	9.83	47.91	---	74	54	-6.09
---	V	---	---	---	---	---	---	---	---
11ac(VHT40) CH60: 5310MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10620	H	39.47	---	7.98	47.45	---	74	54	-6.55
15930	H	37.95	---	9.85	47.80	---	74	54	-6.20
---	H	---	---	---	---	---	---	---	---
10620	V	39.34	---	7.98	47.32	---	74	54	-6.68
15930	V	38.16	---	9.85	48.01	---	74	54	-5.99
---	V	---	---	---	---	---	---	---	---
11ac(VHT80) C58:5290MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10580	H	42.18	---	7.98	50.16	---	74	54	-3.84
15870	H	39.90	---	9.85	49.75	---	74	54	-4.25
---	H	---	---	---	---	---	---	---	---
10580	V	41.17	---	7.98	49.15	---	74	54	-4.85
15870	V	38.32	---	9.85	48.17	---	74	54	-5.83
---	V	---	---	---	---	---	---	---	---

Note:

- Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
- Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 40GHz.
- Data of measurement shown “---”in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

Modulation Type: Band 2C									
11a CH100: 5500MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11000	H	40.04	---	8.03	48.07	---	74	54	-5.93
16500	H	40.57	---	9.76	50.33	---	68.2	---	-17.87
---	H	---	---	---	---	---	---	---	---
11000	V	41.34	---	8.03	49.37	---	74	54	-4.63
16500	V	40.58	---	9.76	50.34	---	68.2	---	-17.86
---	V	---	---	---	---	---	---	---	---
11a CH120: 5600MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11200	H	40.59	---	8.04	48.63	---	74	54	-5.37
16800	H	41.21	---	9.74	50.95	---	68.2	---	-17.25
---	H	---	---	---	---	---	---	---	---
11200	V	38.78	---	8.04	46.82	---	74	54	-7.18
16800	V	40.39	---	9.74	50.13	---	68.2	---	-18.07
---	V	---	---	---	---	---	---	---	---
11a CH140: 5700MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11400	H	39.31	---	8.05	47.36	---	74	54	-6.64
17100	H	41.06	---	9.72	50.78	---	68.2	---	-17.42
---	H	---	---	---	---	---	---	---	---
11400	V	39.23	---	8.05	47.28	---	74	54	-6.72
17100	V	41.58	---	9.72	51.30	---	68.2	---	-16.90
---	V	---	---	---	---	---	---	---	---
11n(HT20) CH100: 5500MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11000	H	41.10	---	8.03	49.13	---	74	54	-4.87
16500	H	39.28	---	9.76	49.04	---	68.2	---	-19.16
---	H	---	---	---	---	---	---	---	---
11000	V	38.83	---	8.03	46.86	---	74	54	-7.14
16500	V	41.96	---	9.76	51.72	---	68.2	---	-16.48
---	V	---	---	---	---	---	---	---	---
11n(HT20) CH120: 5600MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11200	H	40.15	---	8.04	48.19	---	74	54	-5.81
16800	H	41.03	---	9.74	50.77	---	68.2	---	-17.43
---	H	---	---	---	---	---	---	---	---
11200	V	38.99	---	8.04	47.03	---	74	54	-6.97
16800	V	39.62	---	9.74	49.36	---	68.2	---	-18.84
---	V	---	---	---	---	---	---	---	---
11n(HT20) CH140: 5700MHz									

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11400	H	39.74	---	8.05	47.79	---	74	54	-6.21
17100	H	41.36	---	9.72	51.08	---	68.2	---	-17.12
---	H	---	---	---	---	---	---	---	---
11400	V	38.97	---	8.05	47.02	---	74	54	-6.98
17100	V	40.55	---	9.72	50.27	---	68.2	---	-17.93
---	V	---	---	---	---	---	---	---	---

11n(HT40)CH102: 5510MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11020	H	39.50	---	8.03	47.53	---	74	54	-6.47
16530	H	40.27	---	9.76	50.03	---	68.2	---	-18.17
---	H	---	---	---	---	---	---	---	---
11020	V	39.63	---	8.03	47.66	---	74	54	-6.34
16530	V	38.78	---	9.76	48.54	---	68.2	---	-19.66
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH118: 5590MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11180	H	40.10	---	8.04	48.14	---	74	54	-5.86
16770	H	39.35	---	9.74	49.09	---	68.2	---	-19.11
---	H	---	---	---	---	---	---	---	---
11180	V	38.22	---	8.04	46.26	---	74	54	-7.74
16770	V	41.80	---	9.74	51.54	---	68.2	---	-16.66
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH134: 5670MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11340	H	41.28	---	8.05	49.33	---	74	54	-4.67
17010	H	42.15	---	9.72	51.87	---	68.2	---	-16.33
---	H	---	---	---	---	---	---	---	---
11340	V	39.77	---	8.05	47.82	---	74	54	-6.18
17010	V	38.50	---	9.72	48.22	---	68.2	---	-19.98
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH100: 5500MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11000	H	38.11	---	8.03	46.14	---	74	54	-7.86
16500	H	40.48	---	9.76	50.24	---	68.2	---	-17.96
---	H	---	---	---	---	---	---	---	---
11000	V	39.60	---	8.03	47.63	---	74	54	-6.37
16500	V	40.23	---	9.76	49.99	---	68.2	---	-18.21
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH120: 5600MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11200	H	40.74	---	8.04	48.78	---	74	54	-5.22
16800	H	40.02	---	9.74	49.76	---	68.2	---	-18.44
---	H	---	---	---	---	---	---	---	---
11200	V	39.71	---	8.04	47.75	---	74	54	-6.25
16800	V	40.44	---	9.74	50.18	---	68.2	---	-18.02
---	V	---	---	---	---	---	---	---	---
11ac(VHT20) CH140: 5700MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11400	H	40.04	---	8.05	48.09	---	74	54	-5.91
17100	H	39.59	---	9.72	49.31	---	68.2	---	-18.89
---	H	---	---	---	---	---	---	---	---
11400	V	41.58	---	8.05	49.63	---	74	54	-4.37
17100	V	40.24	---	9.72	49.96	---	68.2	---	-18.24
---	V	---	---	---	---	---	---	---	---
11ac(VHT40) CH102: 5510MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11020	H	38.53	---	8.03	46.56	---	74	54	-7.44
16530	H	40.16	---	9.76	49.92	---	68.2	---	-18.28
---	H	---	---	---	---	---	---	---	---
11020	V	41.65	---	8.03	49.68	---	74	54	-4.32
16530	V	38.99	---	9.76	48.75	---	68.2	---	-19.45
---	V	---	---	---	---	---	---	---	---
11ac(VHT40) CH118:5590									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11180	H	39.49	---	8.04	47.53	---	74	54	-6.47
16770	H	37.62	---	9.74	47.36	---	68.2	---	-20.84
---	H	---	---	---	---	---	---	---	---
11180	V	39.07	---	8.04	47.11	---	74	54	-6.89
16770	V	38.13	---	9.74	47.87	---	68.2	---	-20.33
---	V	---	---	---	---	---	---	---	---

11ac(VHT40) CH134: 5670MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11340	H	38.18	---	8.05	46.23	---	74	54	-7.77
17010	H	36.70	---	9.72	46.42	---	68.2	---	-21.78
---	H	---	---	---	---	---	---	---	---
11340	V	38.43	---	8.05	46.48	---	74	54	-7.52
17010	V	40.06	---	9.72	49.78	---	68.2	---	-18.42
---	V	---	---	---	---	---	---	---	---
11ac(VHT80) CH106: 5530MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11060	H	39.91	---	8.03	47.94	---	74	54	-6.06
16590	H	41.45	---	9.75	51.20	---	68.2	---	-17.00
---	H	---	---	---	---	---	---	---	---
11060	V	40.56	---	8.03	48.59	---	74	54	-5.41
16590	V	42.03	---	9.75	51.78	---	68.2	---	-16.42
---	V	---	---	---	---	---	---	---	---
11a(HT80) CH122: 5610MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11220	H	41.65	---	8.05	49.70	---	74	54	-4.30
16830	H	39.21	---	9.72	48.93	---	68.2	---	-19.27
---	H	---	---	---	---	---	---	---	---
11220	V	40.03	---	8.05	48.08	---	74	54	-5.92
16830	V	40.22	---	9.72	49.94	---	68.2	---	-18.26
---	V	---	---	---	---	---	---	---	---

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
2. Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 40GHz.
5. Data of measurement shown “---“in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

Modulation Type: Band 3									
11a(HT20) CH149: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11490	H	38.67	---	8.09	46.76	---	74	54	-7.24
17235	H	37.88	---	9.67	47.55	---	68.2	---	-20.65
---	H	---	---	---	---	---	---	---	---
11490	V	41.27	---	8.09	49.36	---	74	54	-4.64
17235	V	41.55	---	9.67	51.22	---	68.2	---	-16.98
---	V	---	---	---	---	---	---	---	---

11a(HT20) CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	39.83	---	8.10	47.93	---	74	54	-6.07
17355	H	39.59	---	9.65	49.24	---	68.2	---	-18.96
---	H	---	---	---	---	---	---	---	---
11570	V	39.26	---	8.10	47.36	---	74	54	-6.64
17355	V	40.34	---	9.65	49.99	---	68.2	---	-18.21
---	V	---	---	---	---	---	---	---	---

11a(HT20) CH161: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	38.80	---	8.12	46.92	---	74	54	-7.08
17475	H	37.37	---	9.62	46.99	---	68.2	---	-21.21
---	H	---	---	---	---	---	---	---	---
11650	V	39.46	---	8.12	47.58	---	74	54	-6.42
17475	V	39.52	---	9.62	49.14	---	68.2	---	-19.06
---	V	---	---	---	---	---	---	---	---

11n(HT20) CH151: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11510	H	39.75	---	8.09	47.84	---	74	54	-6.16
17265	H	39.34	---	9.67	49.01	---	68.2	---	-19.19
---	H	---	---	---	---	---	---	---	---
11510	V	40.20	---	8.09	48.29	---	74	54	-5.71
17265	V	38.41	---	9.67	48.08	---	68.2	---	-20.12
---	V	---	---	---	---	---	---	---	---

11n(HT20) CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	39.38	---	8.10	47.48	---	74	54	-6.52
17355	H	40.56	---	9.65	50.21	---	68.2	---	-17.99
---	H	---	---	---	---	---	---	---	---
11570	V	39.41	---	8.10	47.51	---	74	54	-6.49
17355	V	40.03	---	9.65	49.68	---	68.2	---	-18.52
---	V	---	---	---	---	---	---	---	---

11n(HT20) CH165: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	39.57	---	8.12	47.69	---	74	54	-6.31
17475	H	38.21	---	9.62	47.83	---	68.2	---	-20.37
---	H	---	---	---	---	---	---	---	---
11650	V	36.92	---	8.12	45.04	---	74	54	-8.96
17475	V	40.07	---	9.62	49.69	---	68.2	---	-18.51
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH151: 5755MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11510	H	41.27	---	8.09	49.36	---	74	54	-4.64
17265	H	41.61	---	9.67	51.28	---	68.2	---	-16.92
---	H	---	---	---	---	---	---	---	---
11510	V	41.28	---	8.09	49.37	---	74	54	-4.63
17265	V	39.65	---	9.67	49.32	---	68.2	---	-18.88
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH159: 5795MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11590	H	39.31	---	8.10	47.41	---	74	54	-6.59
17385	H	38.96	---	9.65	48.61	---	68.2	---	-19.59
---	H	---	---	---	---	---	---	---	---
11590	V	38.83	---	8.10	46.93	---	74	54	-7.07
17385	V	38.79	---	9.65	48.44	---	68.2	---	-19.76
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH149: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11490	H	41.04	---	8.09	49.13	---	74	54	-4.87
17235	H	41.97	---	9.67	51.64	---	68.2	---	-16.56
---	H	---	---	---	---	---	---	---	---
11490	V	40.64	---	8.09	48.73	---	74	54	-5.27
17235	V	42.51	---	9.67	52.18	---	68.2	---	-16.02
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	39.15	---	8.10	47.25	---	74	54	-6.75
17355	H	37.64	---	9.65	47.29	---	68.2	---	-20.91
---	H	---	---	---	---	---	---	---	---
11570	V	38.24	---	8.10	46.34	---	74	54	-7.66
17355	V	39.39	---	9.65	49.04	---	68.2	---	-19.16
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH165: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	40.37	---	8.12	48.49	---	74	54	-5.51
17475	H	39.11	---	9.62	48.73	---	68.2	---	-19.47
---	H	---	---	---	---	---	---	---	---
11650	V	40.01	---	8.12	48.13	---	74	54	-5.87
17475	V	41.54	---	9.62	51.16	---	68.2	---	-17.04
---	V	---	---	---	---	---	---	---	---

11ac(VHT40) CH151: 5755MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11510	H	40.29	---	8.09	48.38	---	74	54	-5.62
17265	H	38.47	---	9.67	48.14	---	68.2	---	-20.06
---	H	---	---	---	---	---	---	---	---
11510	V	41.46	---	8.09	49.55	---	74	54	-4.45
17265	V	37.27	---	9.67	46.94	---	68.2	---	-21.26
---	V	---	---	---	---	---	---	---	---

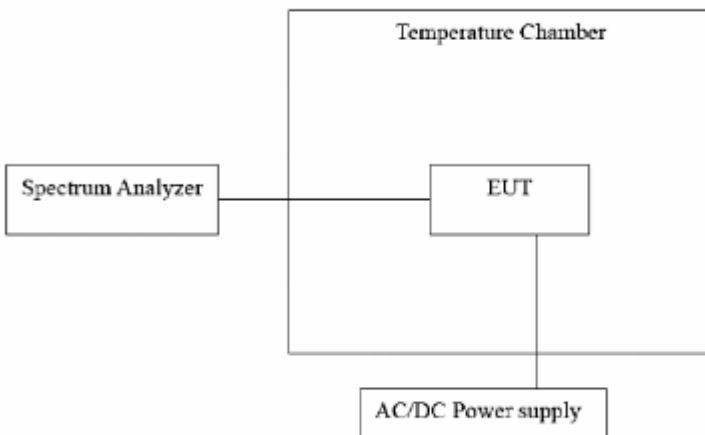
11ac(VHT40) CH159: 5795MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11590	H	40.82	---	8.10	48.92	---	74	54	-5.08
17385	H	38.31	---	9.65	47.96	---	68.2	---	-20.24
---	H	---	---	---	---	---	---	---	---
11590	V	40.88	---	8.10	48.98	---	74	54	-5.02
17385	V	39.64	---	9.65	49.29	---	68.2	---	-18.91
---	V	---	---	---	---	---	---	---	---
11ac(VHT80) CH155: 5775MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11550	H	41.12	---	8.09	49.21	---	74	54	-4.79
17325	H	42.67	---	9.66	52.33	---	68.2	---	-15.87
---	H	---	---	---	---	---	---	---	---
11550	V	42.03	---	8.09	50.12	---	74	54	-3.88
17325	V	39.89	---	9.66	49.55	---	68.2	---	-18.65
---	V	---	---	---	---	---	---	---	---

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
2. Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 40GHz.
5. Data of measurement shown “---“in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

5.9. Frequency Stability Measurement

5.9.1. Test Specification

Test Requirement:	FCC Part15 Section 15.407(g) &Part2 J Section 2.1055
Test Method:	ANSI C63.10: 2013
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 45 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	 <pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] subgraph TC [Temperature Chamber] EUT end EUT --- P[AC/DC Power supply] </pre>
Test Procedure:	The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	Pre-scan was performed at Antenna 0 and Antenna 1, the worst case was found. Only the test data of Antenna 0 was shown in this report.

Test plots as follows:

Test mode:		802.11n(HT20)	Frequency(MHz):	5180
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5180.0091	9100	PASS
35		5180.0067	6700	PASS
25		5179.9872	-12800	PASS
15		5179.9985	-1500	PASS
5		5180.0033	3300	PASS
0		5180.0049	4900	PASS
20	2.97V	5179.9836	-16400	PASS
	3.3V	5180.0033	3300	PASS
	3.63V	5179.9824	-17600	PASS

Test mode:		802.11n(HT20)	Frequency(MHz):	5200
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5200.0097	9700	PASS
35		5200.0081	8100	PASS
25		5200.0077	7700	PASS
15		5200.0043	4300	PASS
5		5199.9982	-1800	PASS
0		5199.9875	-12500	PASS
20	2.97V	5199.9953	-4700	PASS
	3.3V	5200.0036	3600	PASS
	3.63V	5200.0051	5100	PASS

Test mode:		802.11n(HT20)	Frequency(MHz):	5240
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5240.0044	4400	PASS
35		5240.0021	2100	PASS
25		5240.0029	2900	PASS
15		5239.9990	-1000	PASS
5		5239.9985	-1500	PASS
0		5239.9974	-2600	PASS
20	2.97V	5240.0036	3600	PASS
	3.3V	5240.0019	1900	PASS
	3.63V	5239.9987	-1300	PASS

Test mode:		802.11n(HT20)	Frequency(MHz):	5745
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5745.0017	1700	PASS
35		5745.0015	1500	PASS
25		5744.9966	-3400	PASS
15		5744.9951	-4900	PASS
5		5745.0037	3700	PASS
0		5745.0044	4400	PASS
20	2.97V	5745.0076	7600	PASS
	3.3V	5745.0070	7000	PASS
	3.63V	5745.0028	2800	PASS

Test mode:		802.11n(HT20)	Frequency(MHz):	5785
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5785.0081	8100	PASS
35		5785.0033	3300	PASS
25		5785.0025	2500	PASS
15		5784.9984	-1600	PASS
5		5785.0027	2700	PASS
0		5784.9976	-2400	PASS
20	2.97V	5785.0055	5500	PASS
	3.3V	5785.0021	2100	PASS
	3.63V	5784.9978	-2200	PASS

Test mode:		802.11n(HT20)	Frequency(MHz):	5825
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5824.9804	-19600	PASS
35		5825.0088	8800	PASS
25		5824.9951	-4900	PASS
15		5824.9986	-1400	PASS
5		5825.0017	1700	PASS
0		5825.0044	4400	PASS
20	2.97V	5825.0049	4900	PASS
	3.3V	5824.9985	-1500	PASS
	3.63V	5825.0024	2400	PASS

Test mode:		802.11n(HT40)	Frequency(MHz):	5190
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5190.0127	12700	PASS
35		5190.0115	11500	PASS
25		5190.0101	10100	PASS
15		5190.0033	3300	PASS
5		5190.0065	6500	PASS
0		5190.0079	7900	PASS
20	2.97V	5189.9914	-8600	PASS
	3.3V	5189.9972	-2800	PASS
	3.63V	5190.0048	4800	PASS

Test mode:		802.11n(HT40)	Frequency(MHz):	5230
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5230.0117	11700	PASS
35		5230.0121	12100	PASS
25		5230.0095	9500	PASS
15		5229.9984	-1600	PASS
5		5229.9986	-1400	PASS
0		5230.0058	5800	PASS
20	2.97V	5230.0049	4900	PASS
	3.3V	5230.0022	2200	PASS
	3.63V	5229.9971	-2900	PASS

Test mode:		802.11n(HT40)	Frequency(MHz):	5755
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5755.0109	10900	PASS
35		5755.0024	2400	PASS
25		5755.0111	11100	PASS
15		5755.0096	9600	PASS
5		5755.0035	3500	PASS
0		5755.0072	7200	PASS
20	2.97V	5755.0048	4800	PASS
	3.3V	5755.0033	3300	PASS
	3.63V	5755.0060	6000	PASS

Test mode:		802.11n(HT40)	Frequency(MHz):	5795
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5794.9809	-19100	PASS
35		5794.9841	-15900	PASS
25		5795.0044	4400	PASS
15		5795.0038	3800	PASS
5		5795.0026	2600	PASS
0		5795.0061	6100	PASS
20	2.97V	5795.0055	5500	PASS
	3.3V	5794.9987	-1300	PASS
	3.63V	5795.0082	8200	PASS

Test mode:		802.11n(VHT80)	Frequency(MHz):	5210
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5209.9801	-19900	PASS
35		5209.9847	-15300	PASS
25		5210.0042	4200	PASS
15		5210.0033	3300	PASS
5		5210.0029	2900	PASS
0		5210.0067	6700	PASS
20	2.97V	5210.0054	5400	PASS
	3.3V	5209.9988	-1200	PASS
	3.63V	5210.0085	8500	PASS

Test mode:		802.11n(VHT80)	Frequency(MHz):	5775
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3V	5775.0048	4800	PASS
35		5774.9971	-2900	PASS
25		5775.0044	4400	PASS
15		5775.0033	3300	PASS
5		5774.9963	-3700	PASS
0		5775.0069	6900	PASS
20	2.97V	5775.0052	5200	PASS
	3.3V	5774.9980	-2000	PASS
	3.63V	5775.0085	8500	PASS

Appendix A: Test Result of Conducted Test

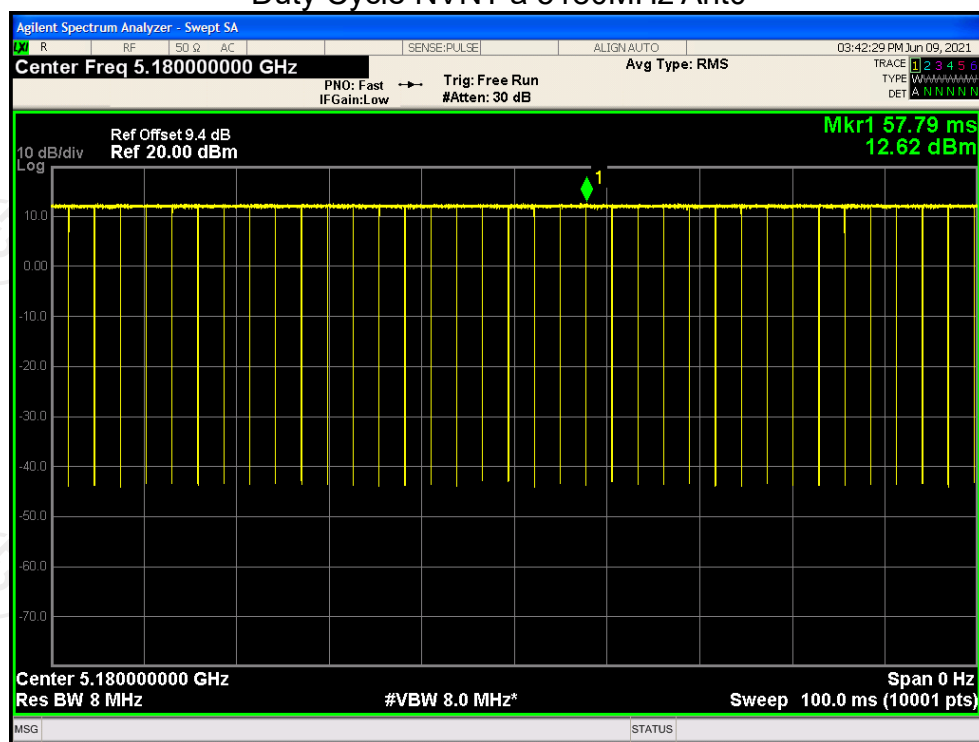
Antenna 0

Duty Cycle

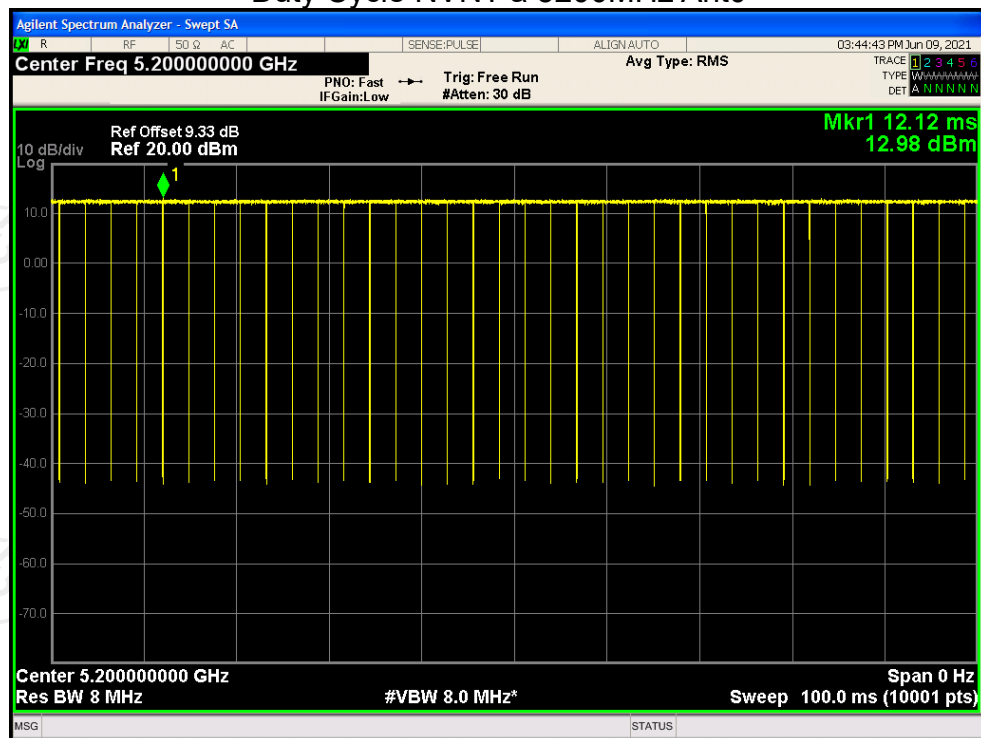
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5180	Ant0	99.13	0
NVNT	a	5200	Ant0	99.13	0
NVNT	a	5240	Ant0	99.15	0
NVNT	ac20	5180	Ant0	98.18	0
NVNT	ac20	5200	Ant0	98.16	0
NVNT	ac20	5240	Ant0	98.18	0
NVNT	ac40	5190	Ant0	96.47	0.16
NVNT	ac40	5230	Ant0	96.49	0.16
NVNT	ac80	5210	Ant0	92.46	0.34
NVNT	n20	5180	Ant0	99.07	0
NVNT	n20	5200	Ant0	99.04	0
NVNT	n20	5240	Ant0	99.06	0
NVNT	n40	5190	Ant0	98.12	0
NVNT	n40	5230	Ant0	98.12	0
NVNT	a	5260	Ant0	99.14	0
NVNT	a	5280	Ant0	99.13	0
NVNT	a	5320	Ant0	99.13	0
NVNT	ac20	5260	Ant0	98.2	0
NVNT	ac20	5280	Ant0	98.21	0
NVNT	ac20	5320	Ant0	98.2	0
NVNT	ac40	5270	Ant0	96.5	0.15
NVNT	ac40	5310	Ant0	96.48	0.16
NVNT	ac80	5290	Ant0	92.41	0.34
NVNT	n20	5260	Ant0	99.08	0
NVNT	n20	5280	Ant0	99.05	0
NVNT	n20	5320	Ant0	99.04	0
NVNT	n40	5270	Ant0	98.12	0
NVNT	n40	5310	Ant0	98.11	0
NVNT	a	5500	Ant0	99.13	0
NVNT	a	5600	Ant0	99.13	0
NVNT	a	5700	Ant0	99.13	0
NVNT	ac20	5500	Ant0	98.19	0
NVNT	ac20	5600	Ant0	98.23	0
NVNT	ac20	5700	Ant0	98.1	0
NVNT	ac40	5510	Ant0	96.5	0.15
NVNT	ac40	5590	Ant0	96.5	0.15
NVNT	ac40	5670	Ant0	96.52	0.15
NVNT	ac80	5530	Ant0	92.46	0.34
NVNT	ac80	5610	Ant0	92.45	0.34
NVNT	n20	5500	Ant0	99.04	0
NVNT	n20	5600	Ant0	99.09	0
NVNT	n20	5700	Ant0	99.01	0

NVNT	n40	5510	Ant0	98.11	0
NVNT	n40	5590	Ant0	98.14	0
NVNT	n40	5670	Ant0	98.13	0
NVNT	a	5745	Ant0	99.13	0
NVNT	a	5785	Ant0	99.13	0
NVNT	a	5825	Ant0	99.14	0
NVNT	ac20	5745	Ant0	98.16	0
NVNT	ac20	5785	Ant0	98.16	0
NVNT	ac20	5825	Ant0	98.17	0
NVNT	ac40	5755	Ant0	96.44	0.16
NVNT	ac40	5795	Ant0	96.42	0.16
NVNT	ac80	5775	Ant0	92.25	0.35
NVNT	n20	5745	Ant0	99.04	0
NVNT	n20	5785	Ant0	99.01	0
NVNT	n20	5825	Ant0	99.04	0
NVNT	n40	5755	Ant0	98.07	0
NVNT	n40	5795	Ant0	98.09	0

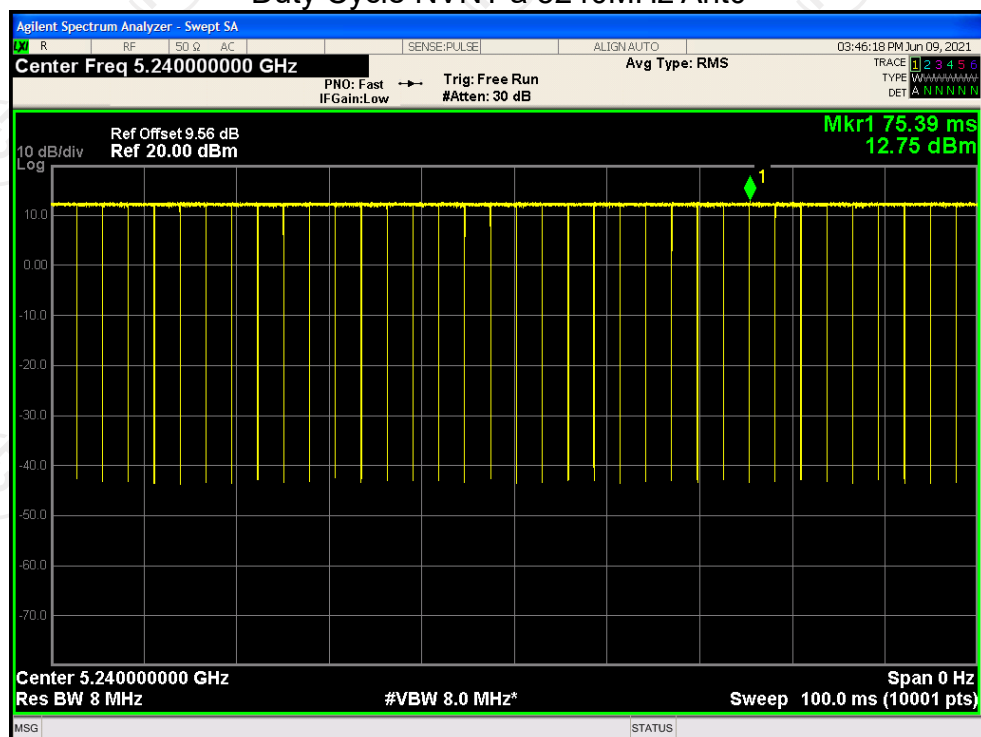
Duty Cycle NVNT a 5180MHz Ant0



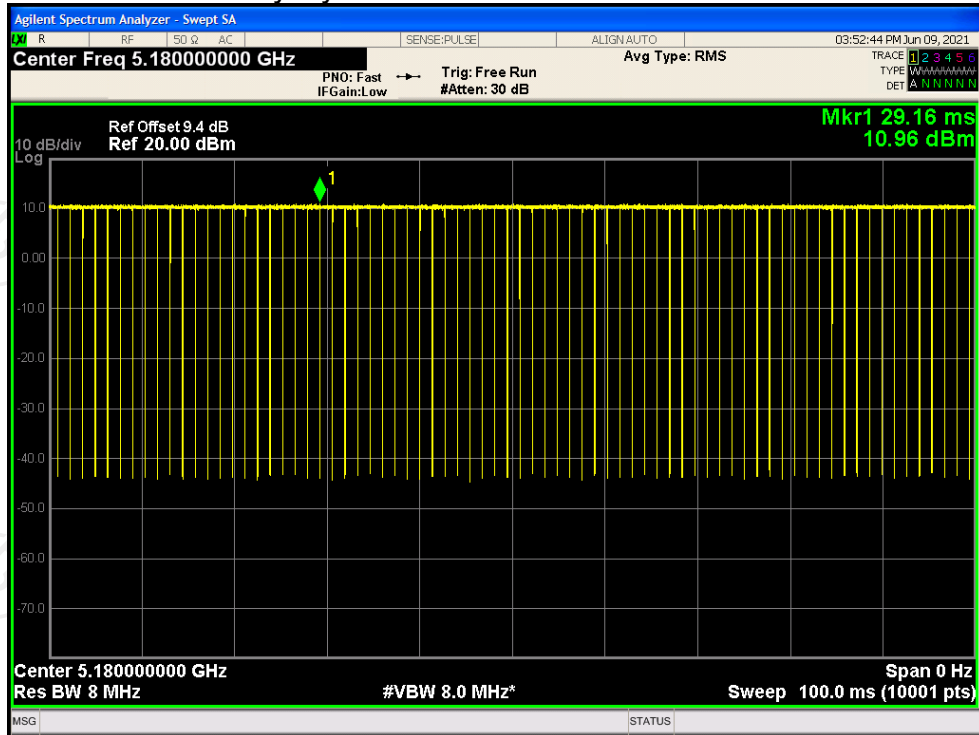
Duty Cycle NVNT a 5200MHz Ant0



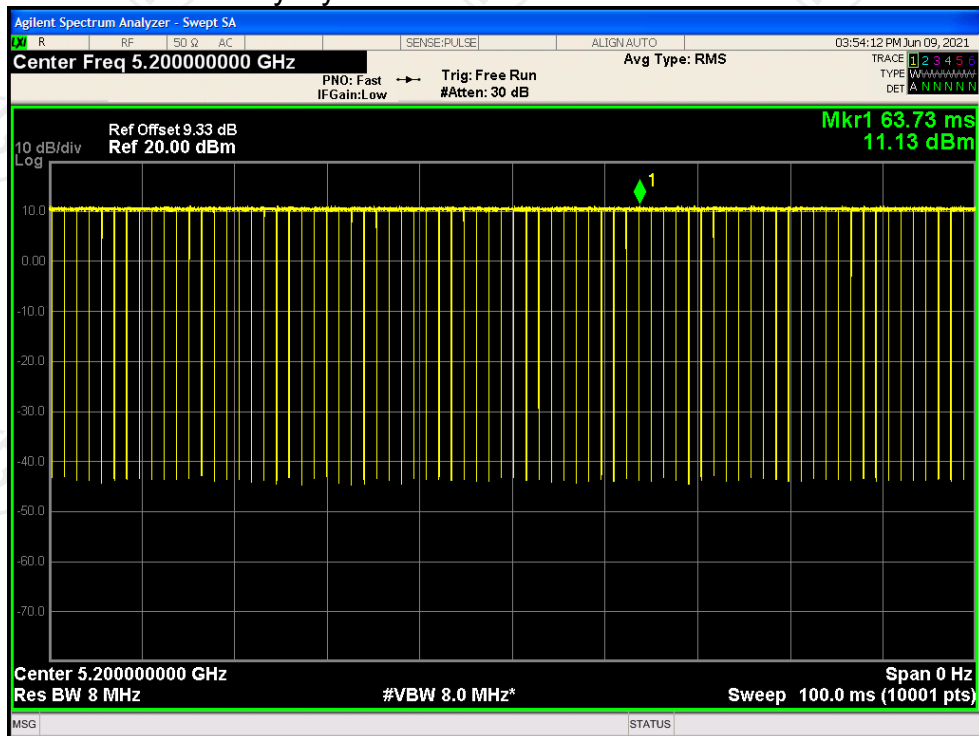
Duty Cycle NVNT a 5240MHz Ant0



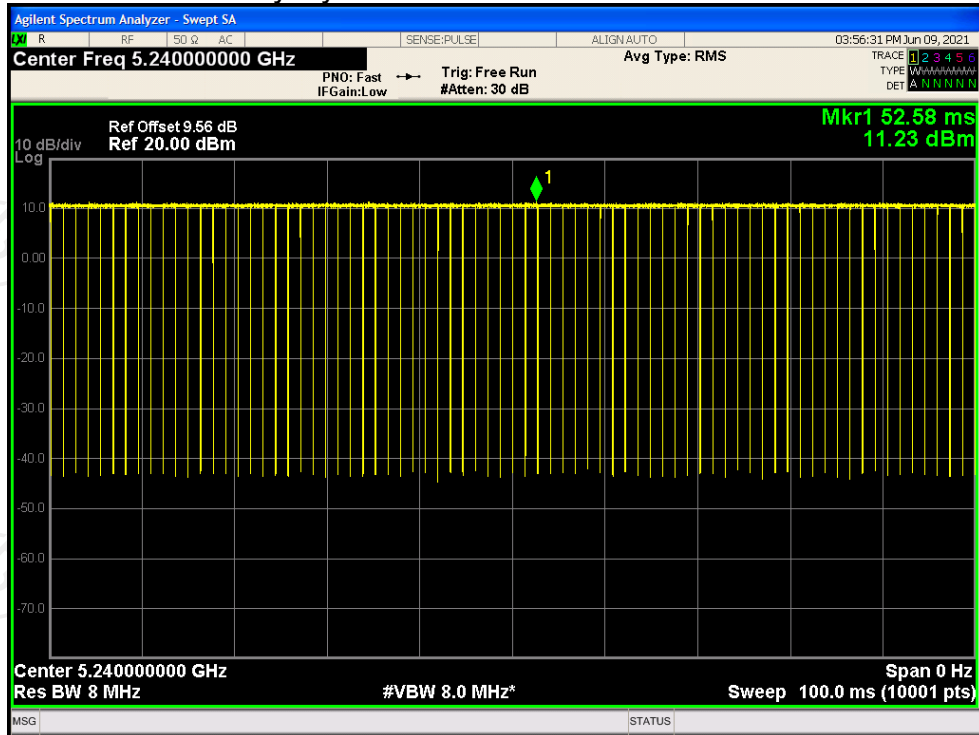
Duty Cycle NVNT ac20 5180MHz Ant0



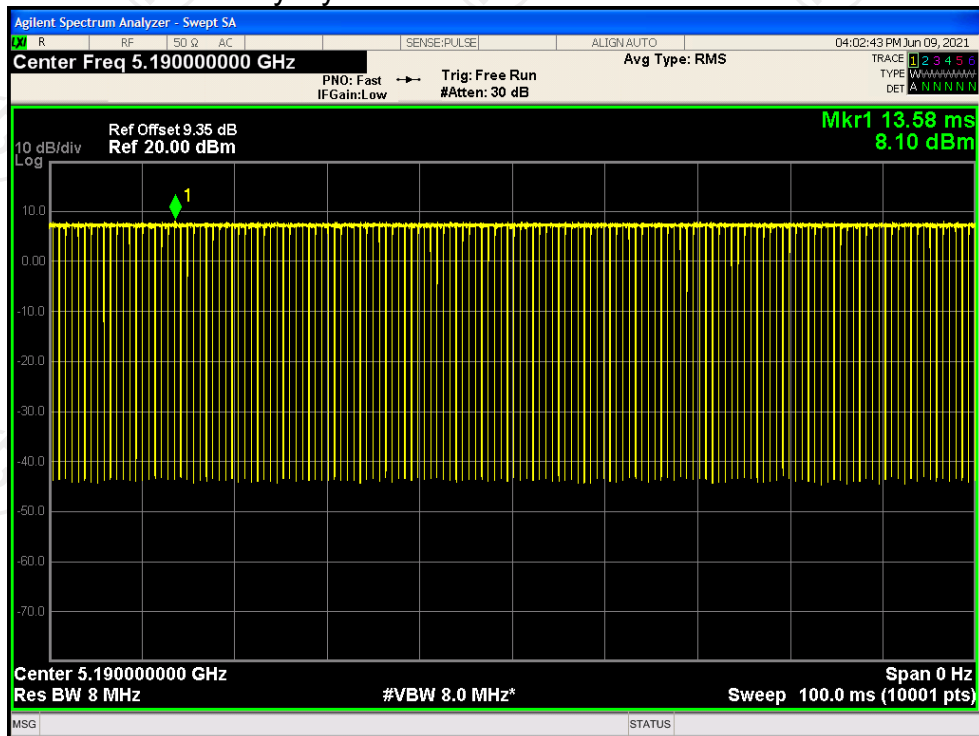
Duty Cycle NVNT ac20 5200MHz Ant0



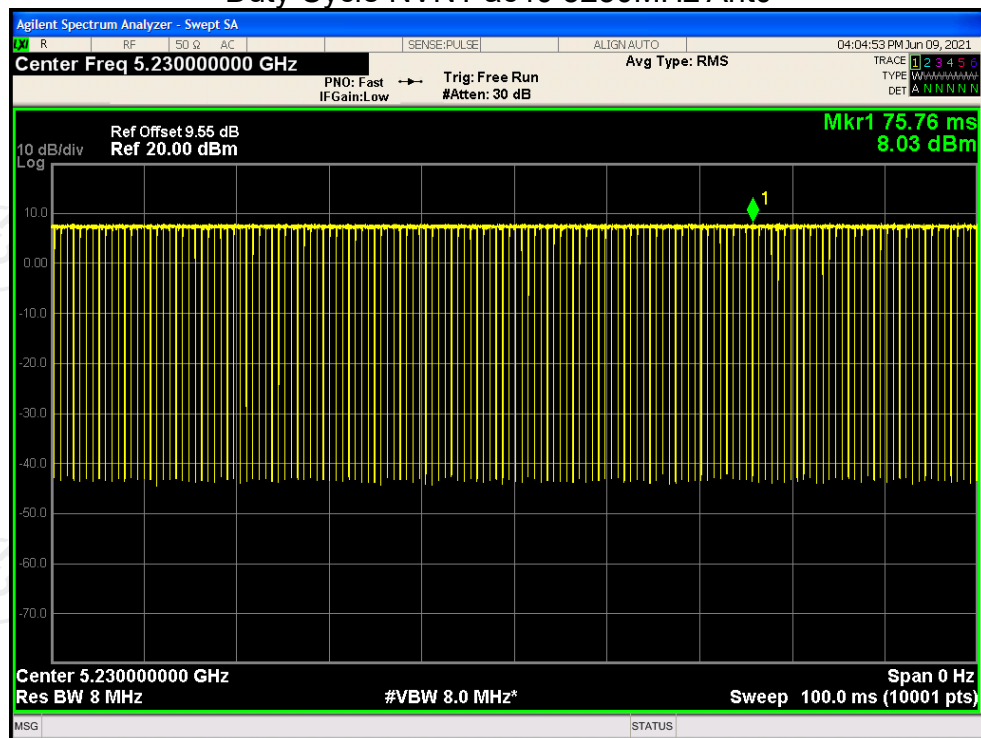
Duty Cycle NVNT ac20 5240MHz Ant0



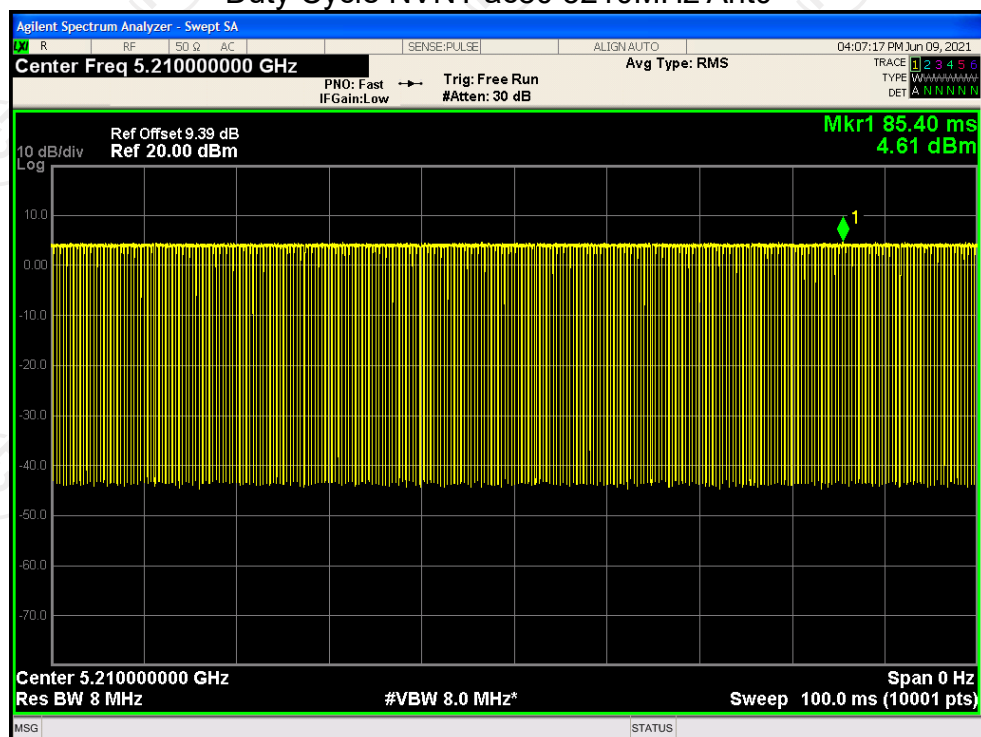
Duty Cycle NVNT ac40 5190MHz Ant0



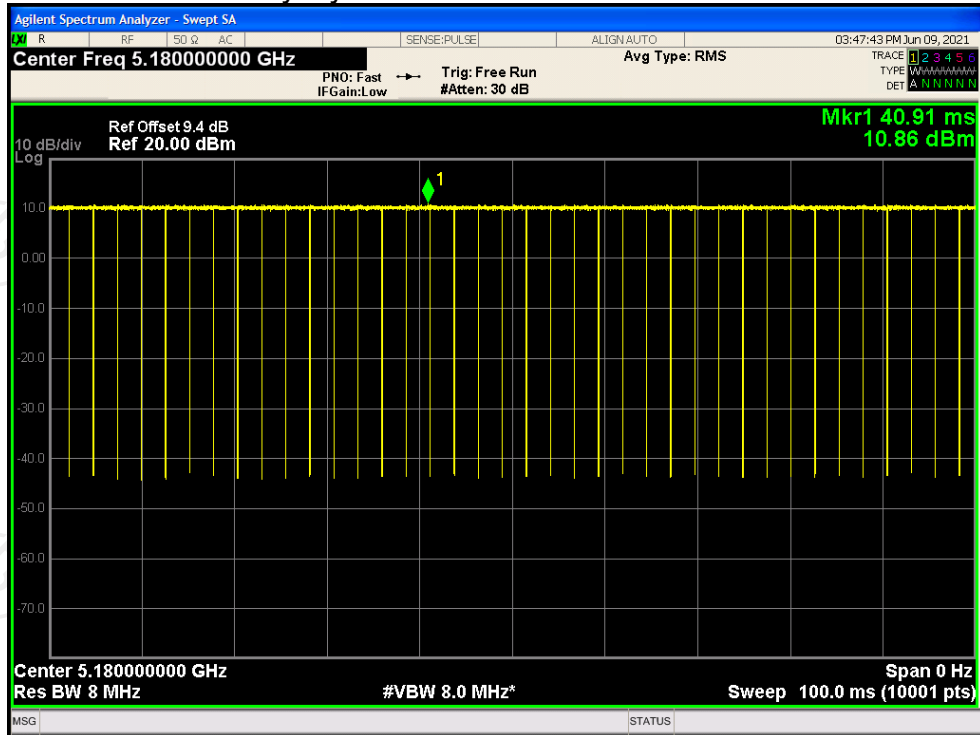
Duty Cycle NVNT ac40 5230MHz Ant0



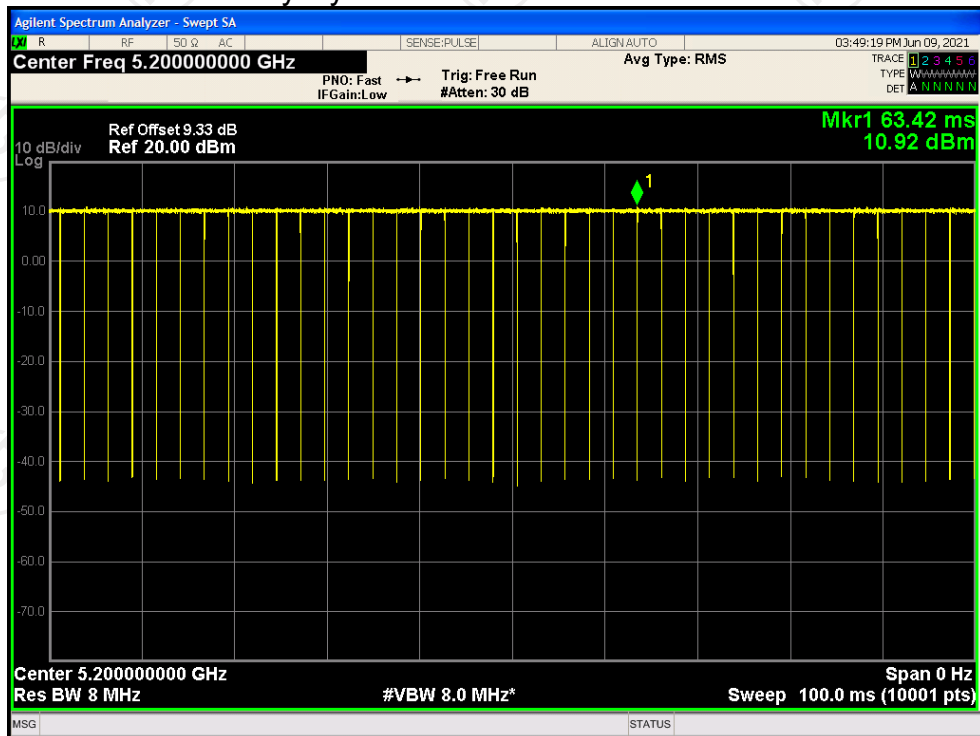
Duty Cycle NVNT ac80 5210MHz Ant0



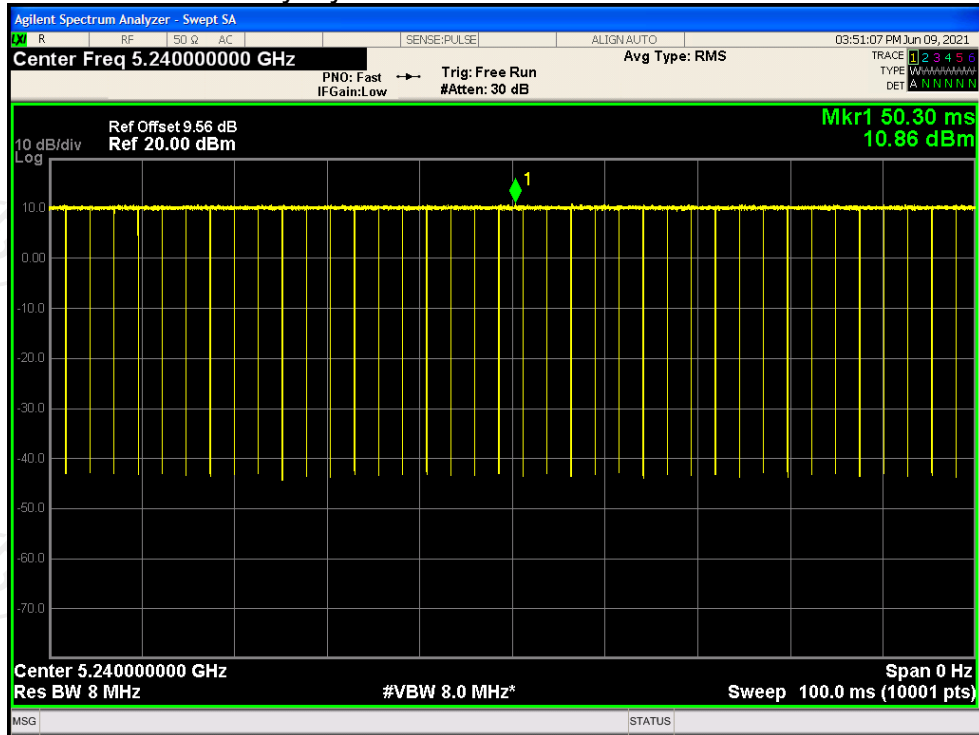
Duty Cycle NVNT n20 5180MHz Ant0



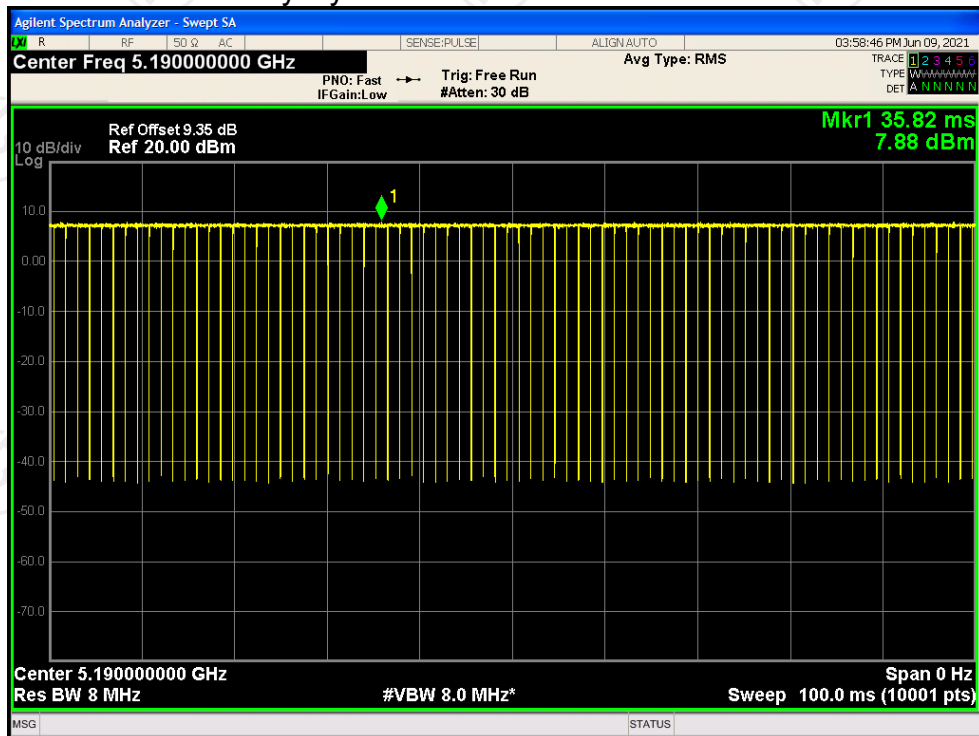
Duty Cycle NVNT n20 5200MHz Ant0



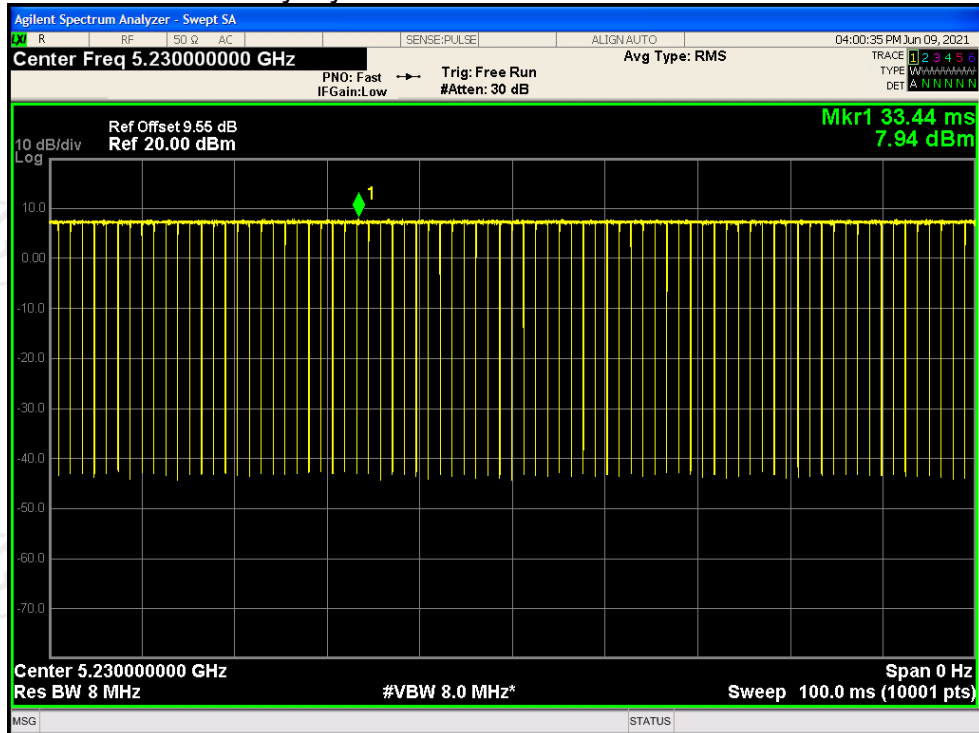
Duty Cycle NVNT n20 5240MHz Ant0



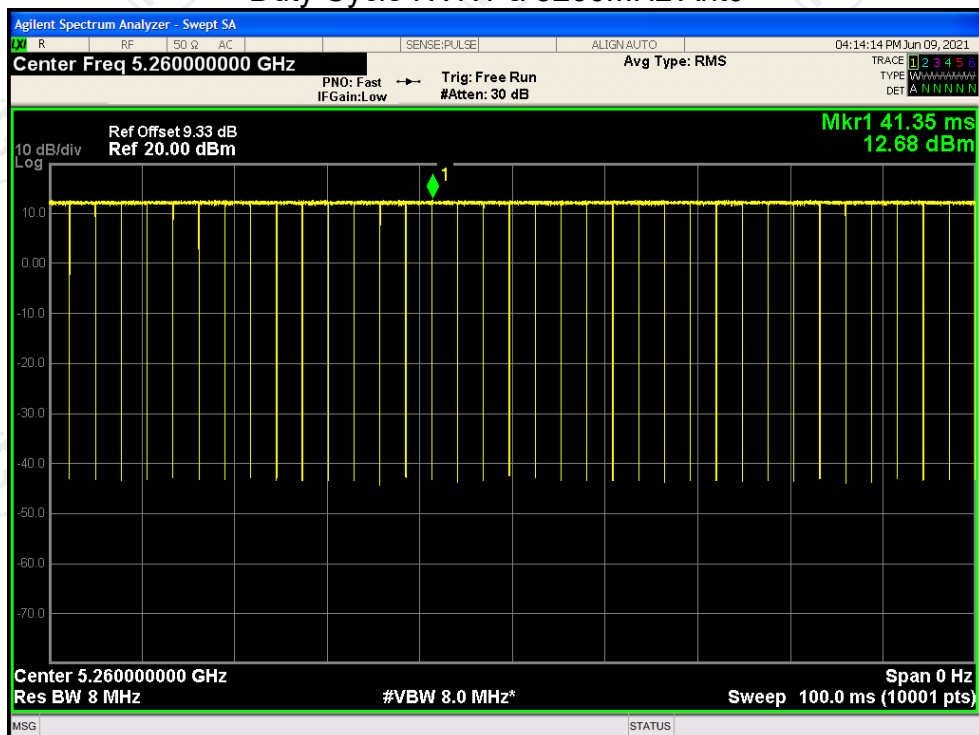
Duty Cycle NVNT n40 5190MHz Ant0



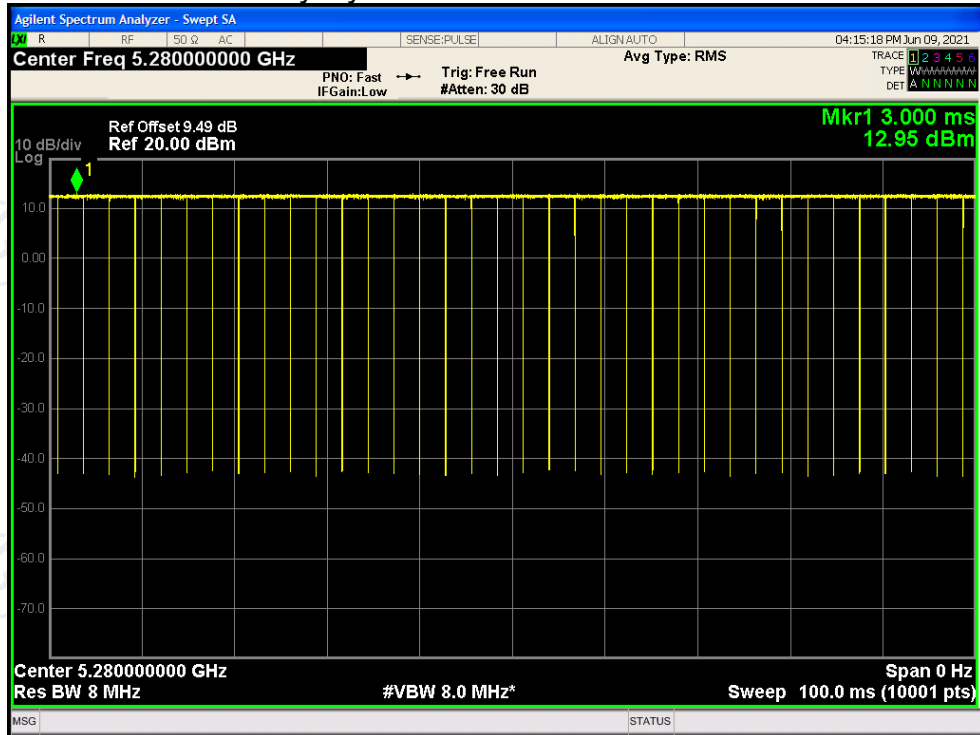
Duty Cycle NVNT n40 5230MHz Ant0



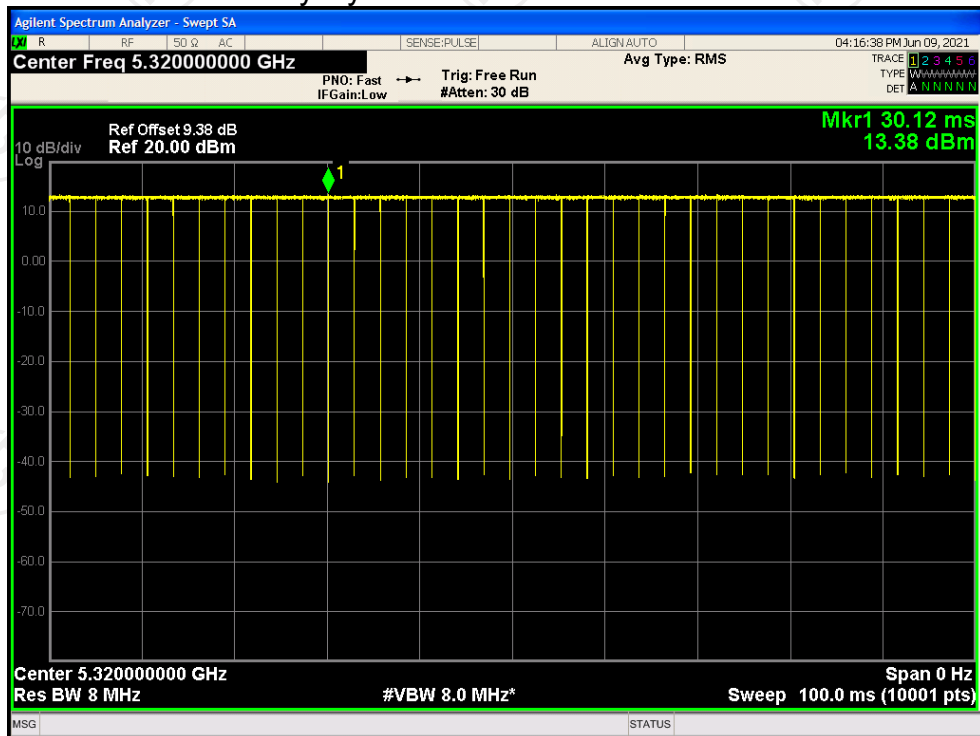
Duty Cycle NVNT a 5260MHz Ant0



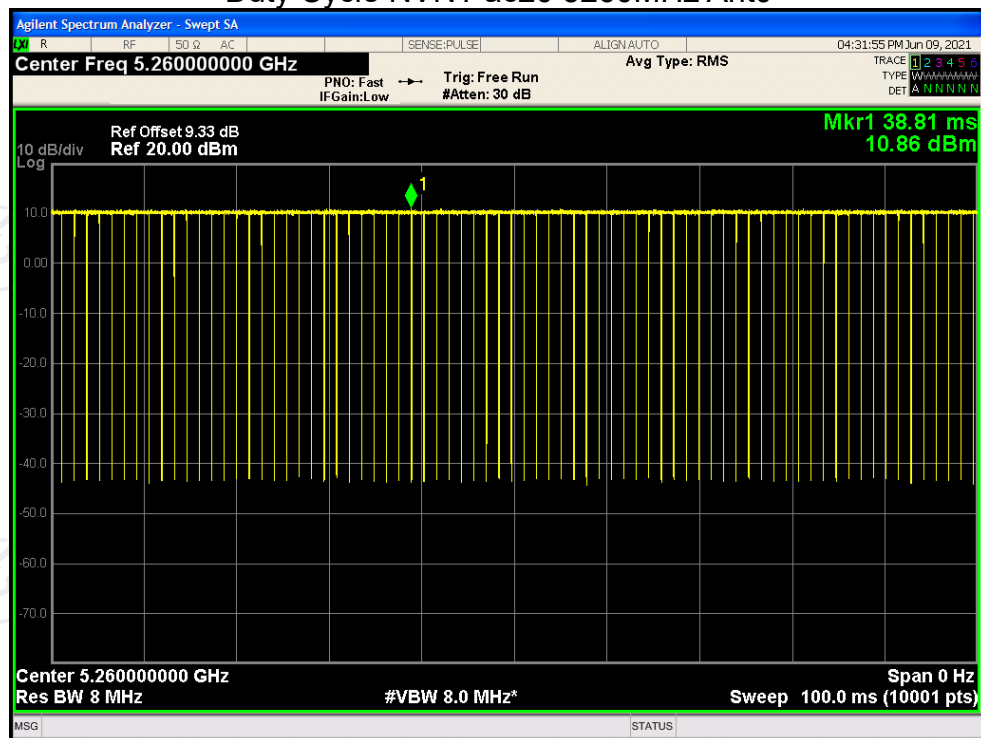
Duty Cycle NVNT a 5280MHz Ant0



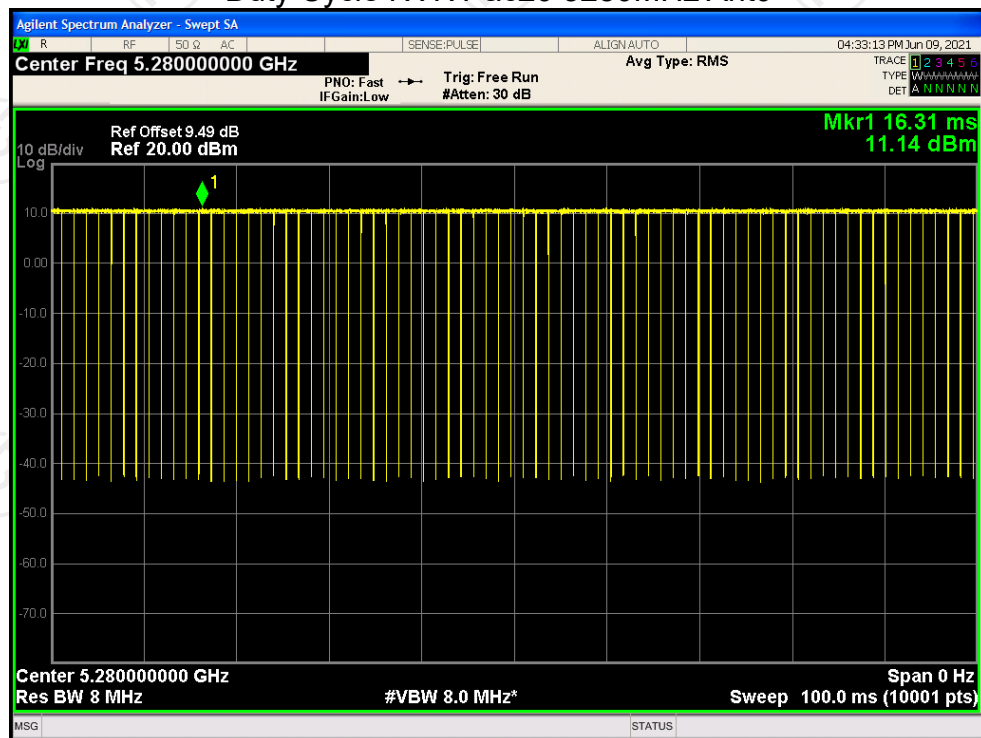
Duty Cycle NVNT a 5320MHz Ant0



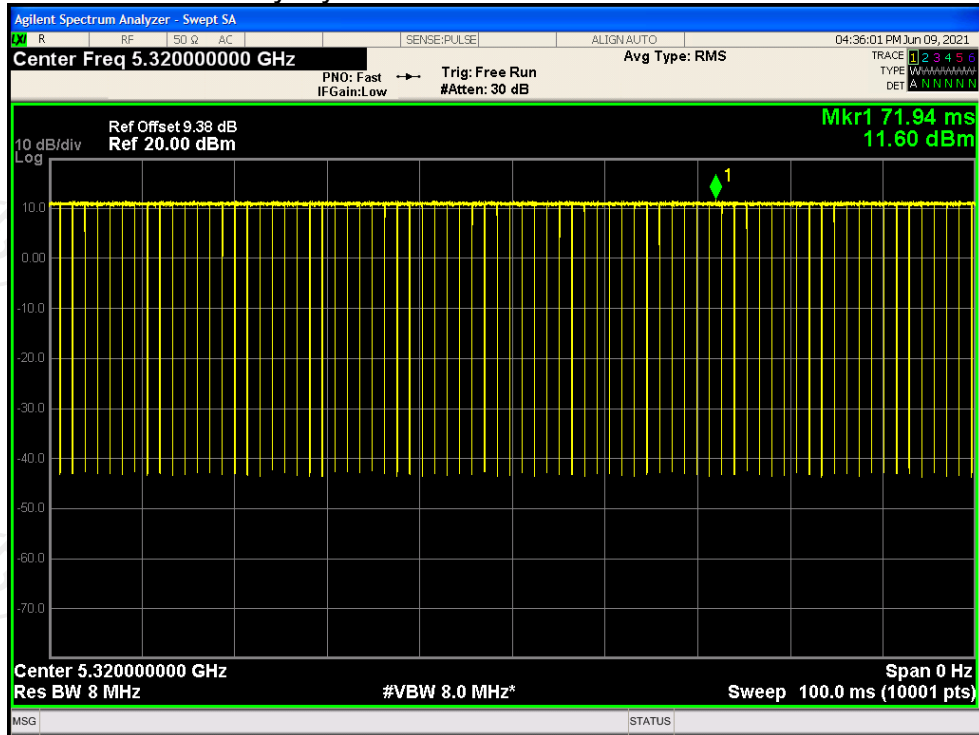
Duty Cycle NVNT ac20 5260MHz Ant0



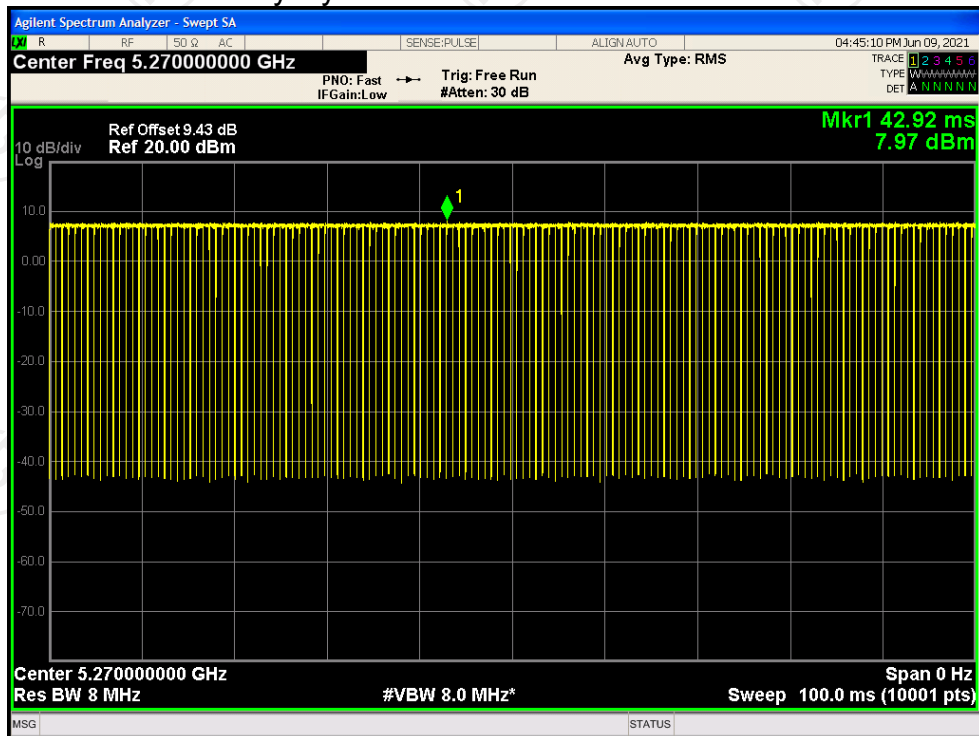
Duty Cycle NVNT ac20 5280MHz Ant0



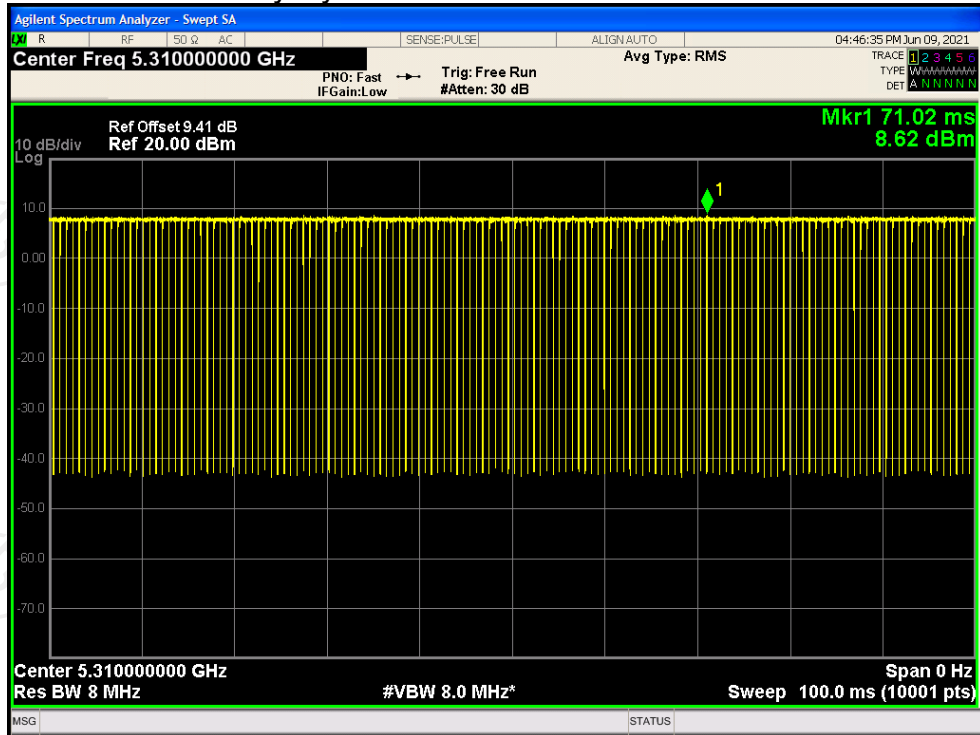
Duty Cycle NVNT ac20 5320MHz Ant0



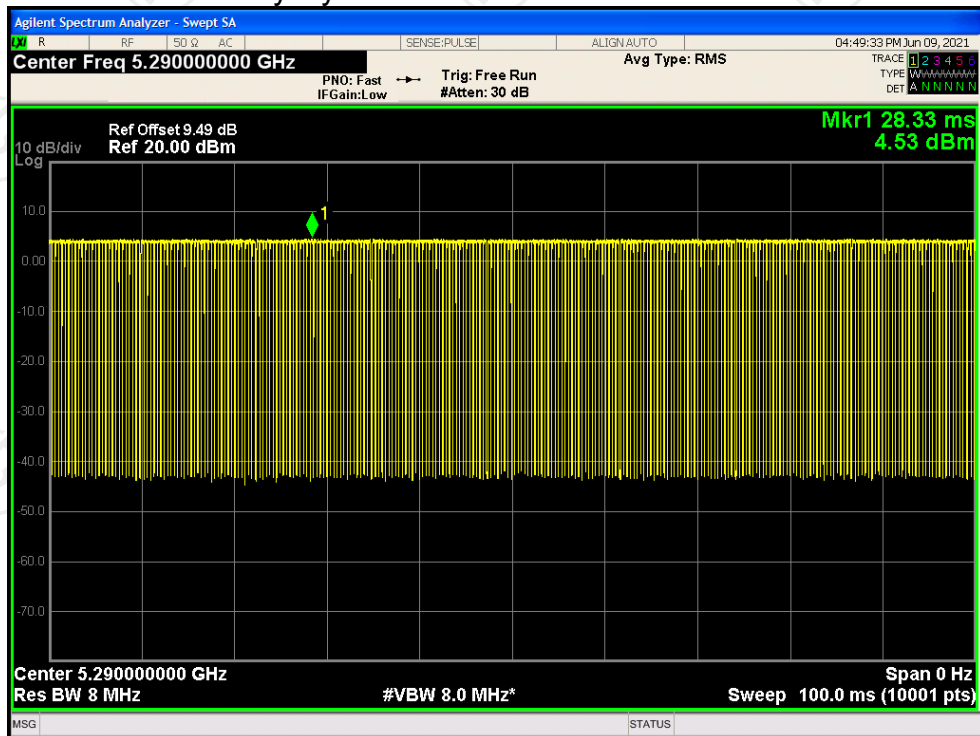
Duty Cycle NVNT ac40 5270MHz Ant0



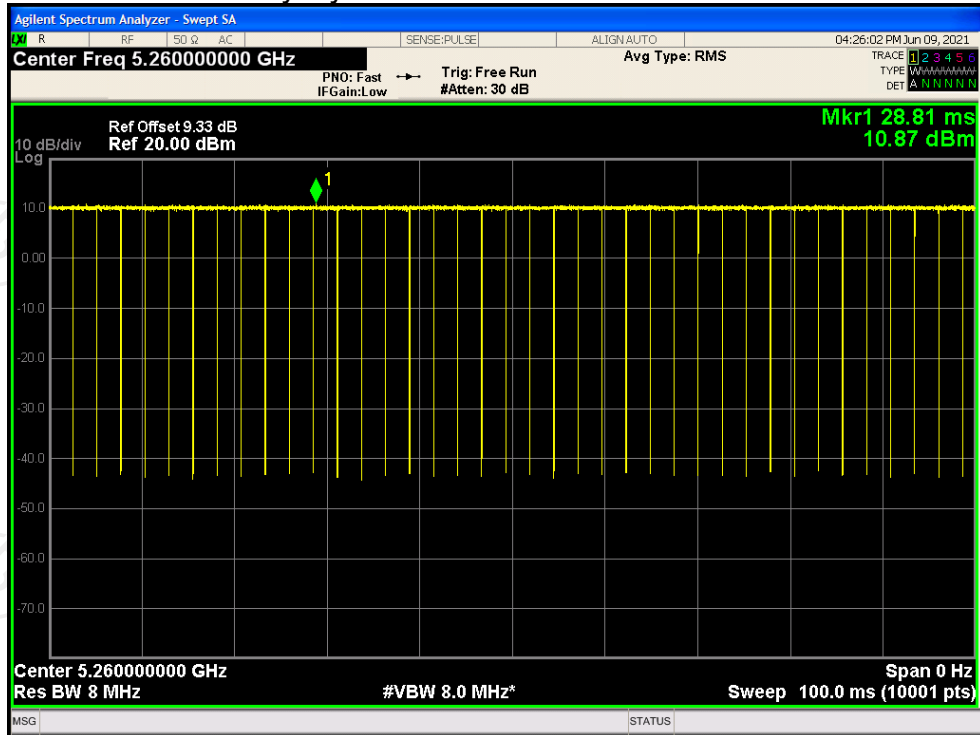
Duty Cycle NVNT ac40 5310MHz Ant0



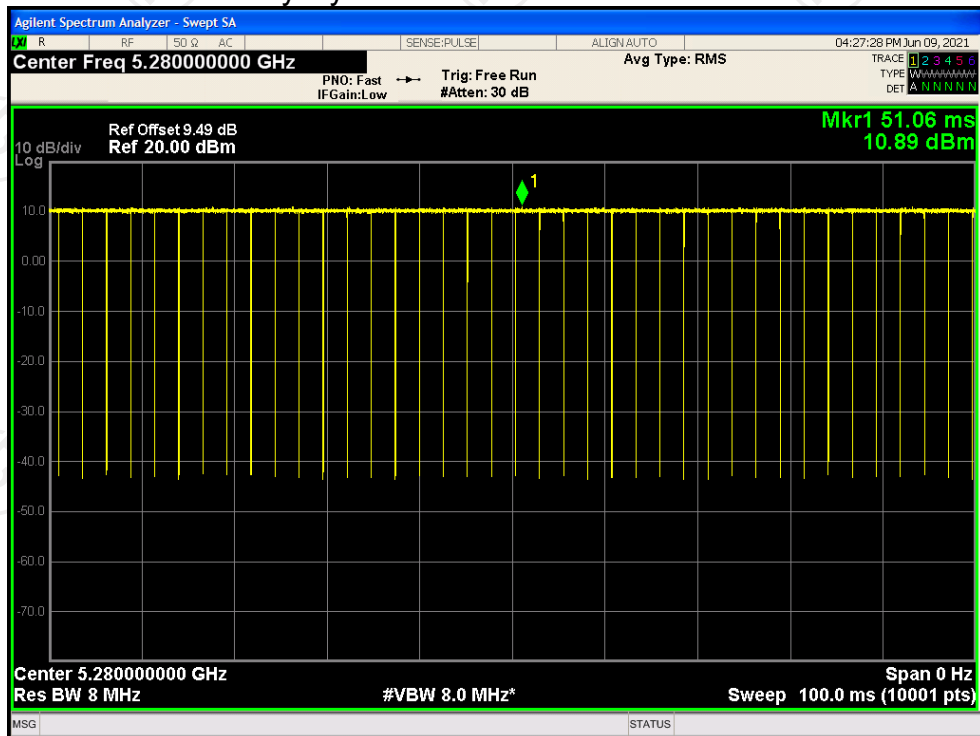
Duty Cycle NVNT ac80 5290MHz Ant0



Duty Cycle NVNT n20 5260MHz Ant0

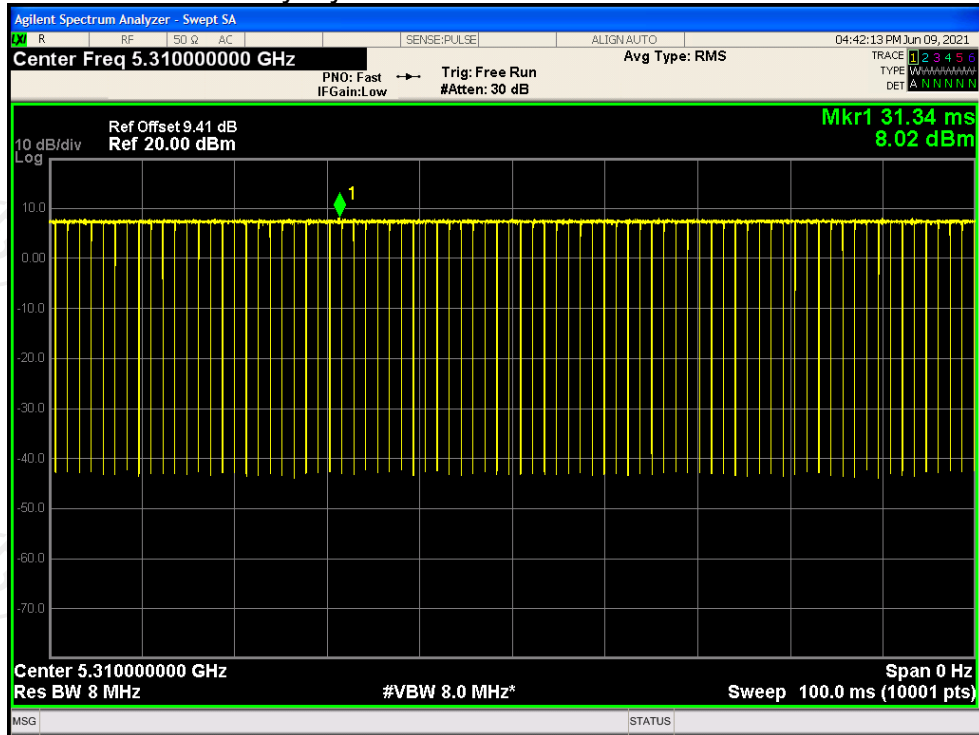


Duty Cycle NVNT n20 5280MHz Ant0

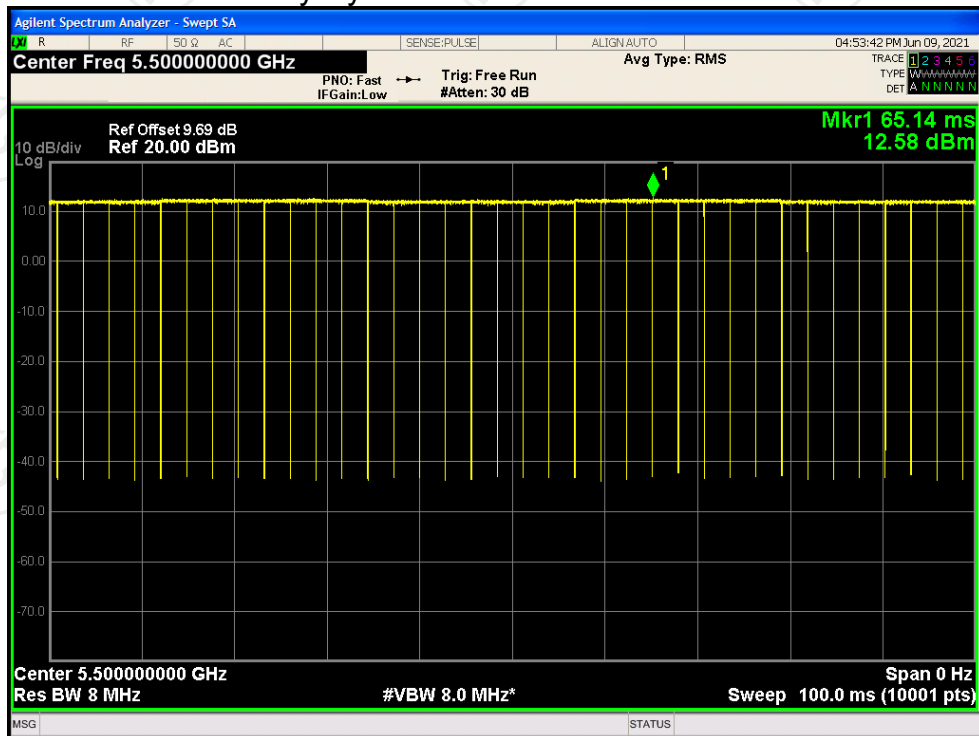




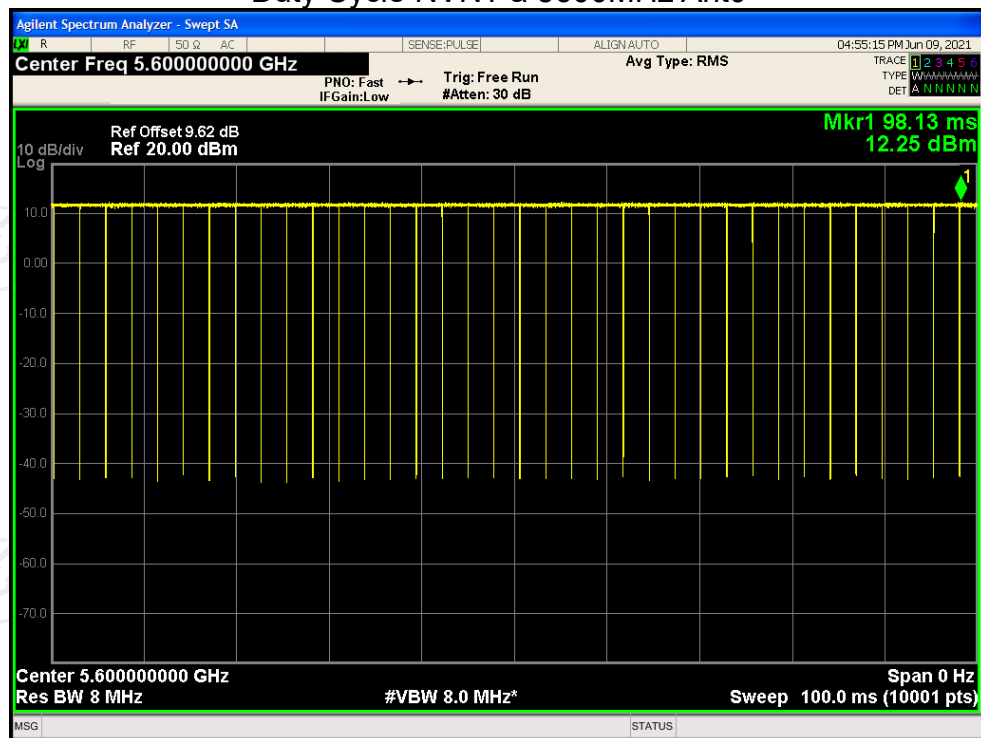
Duty Cycle NVNT n40 5310MHz Ant0



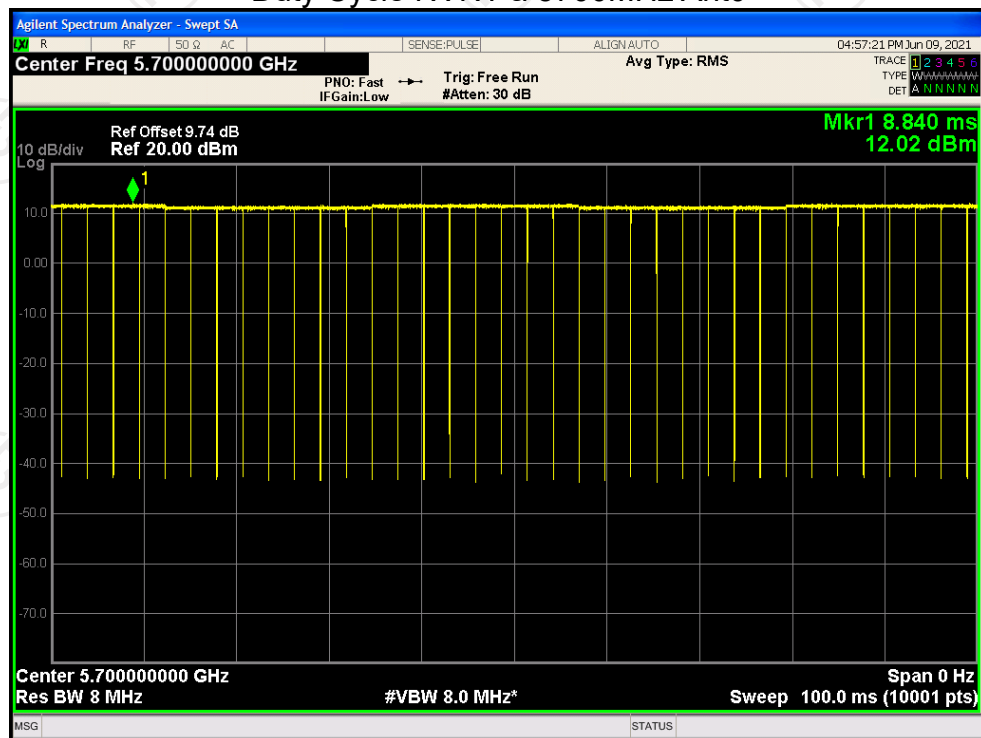
Duty Cycle NVNT a 5500MHz Ant0



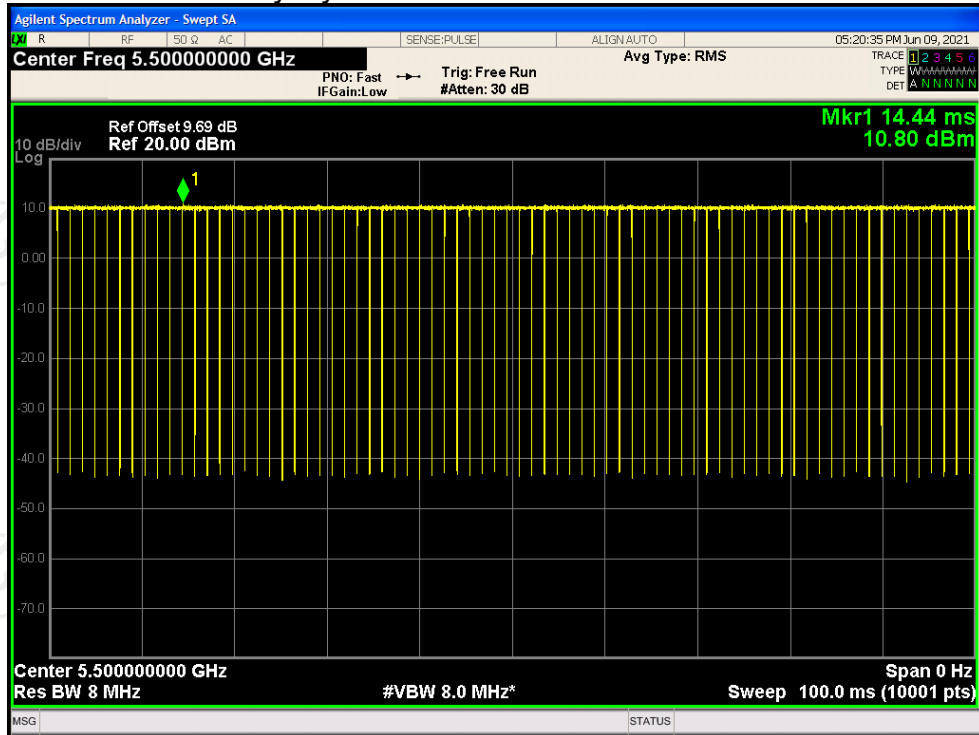
Duty Cycle NVNT a 5600MHz Ant0



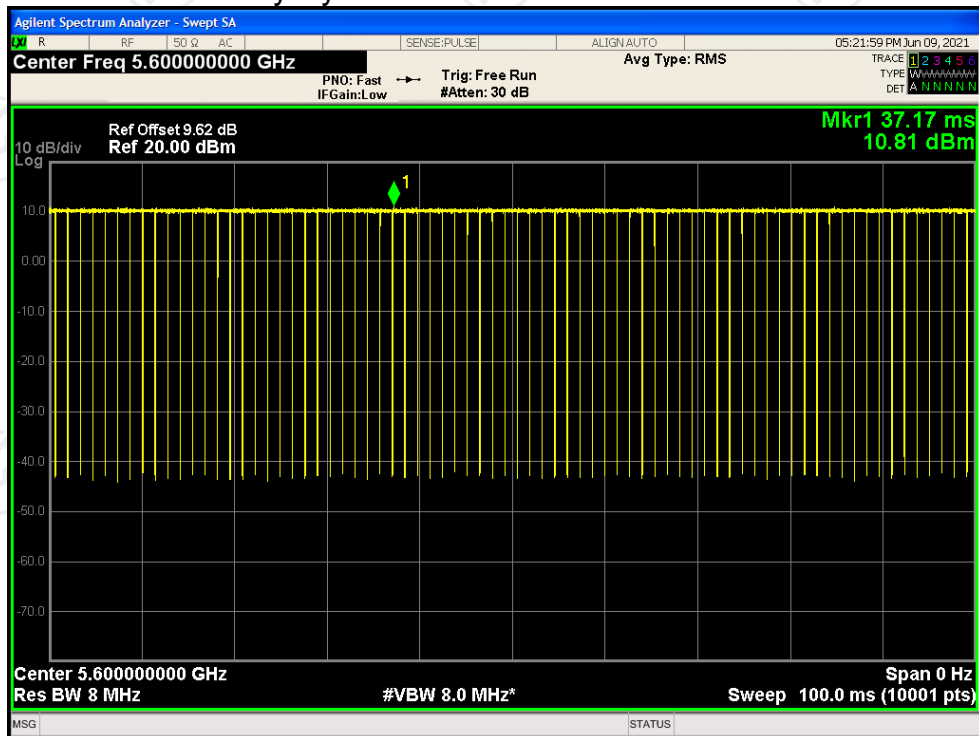
Duty Cycle NVNT a 5700MHz Ant0



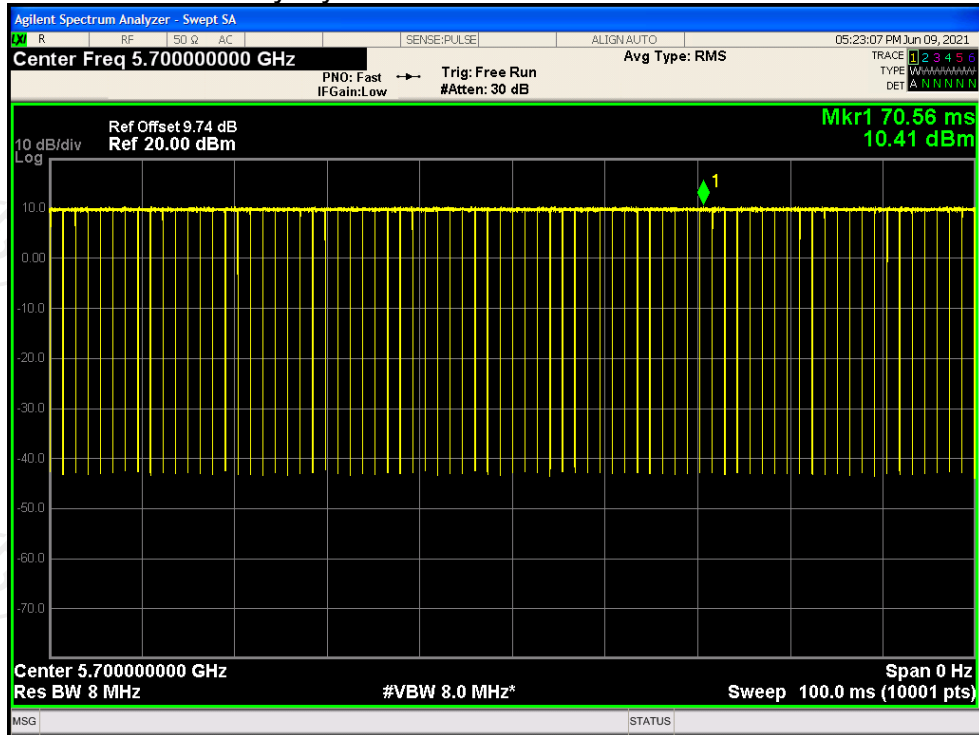
Duty Cycle NVNT ac20 5500MHz Ant0



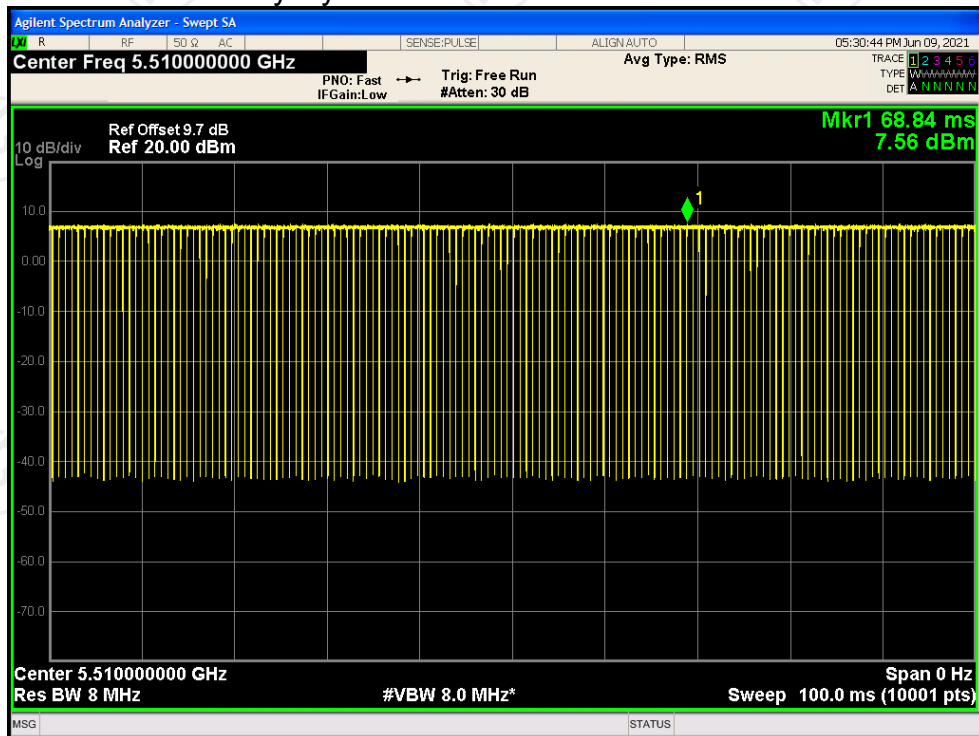
Duty Cycle NVNT ac20 5600MHz Ant0



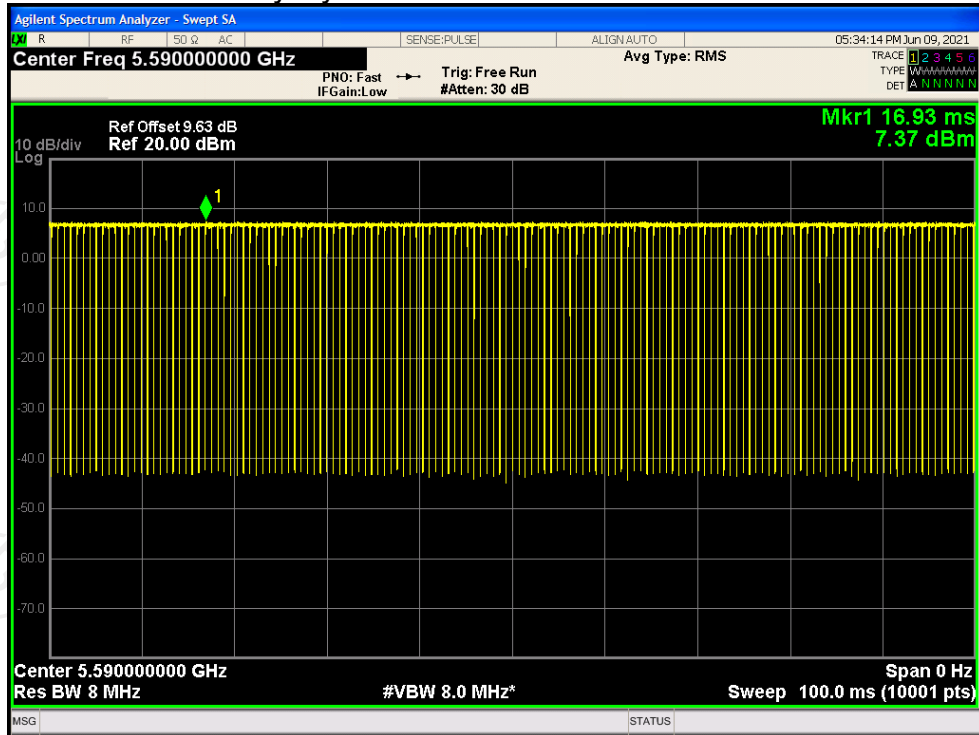
Duty Cycle NVNT ac20 5700MHz Ant0



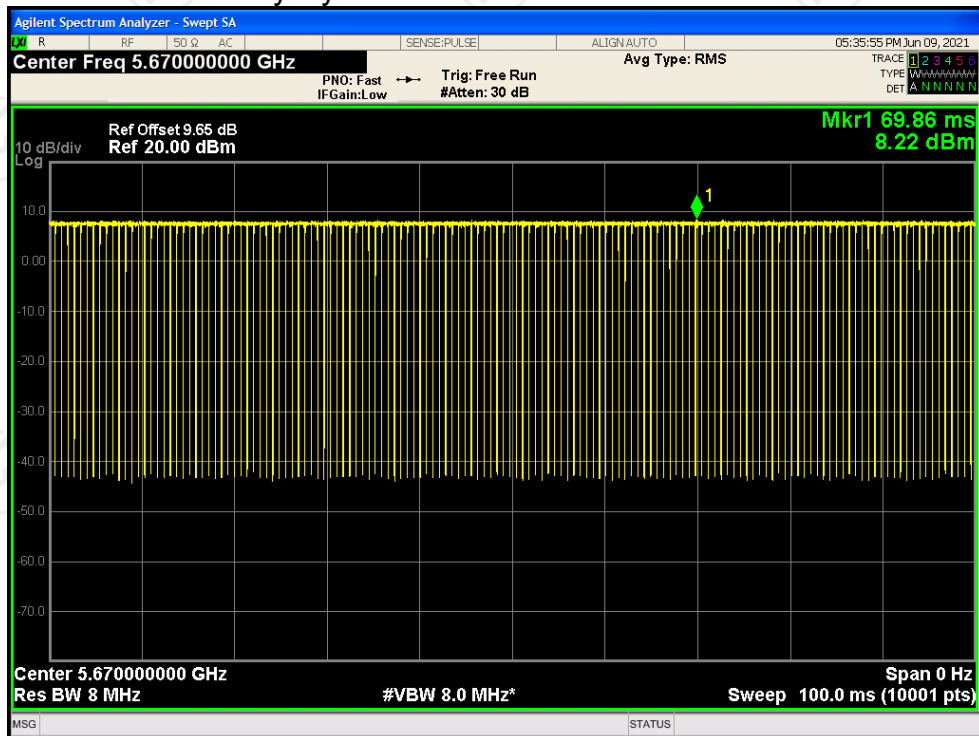
Duty Cycle NVNT ac40 5510MHz Ant0



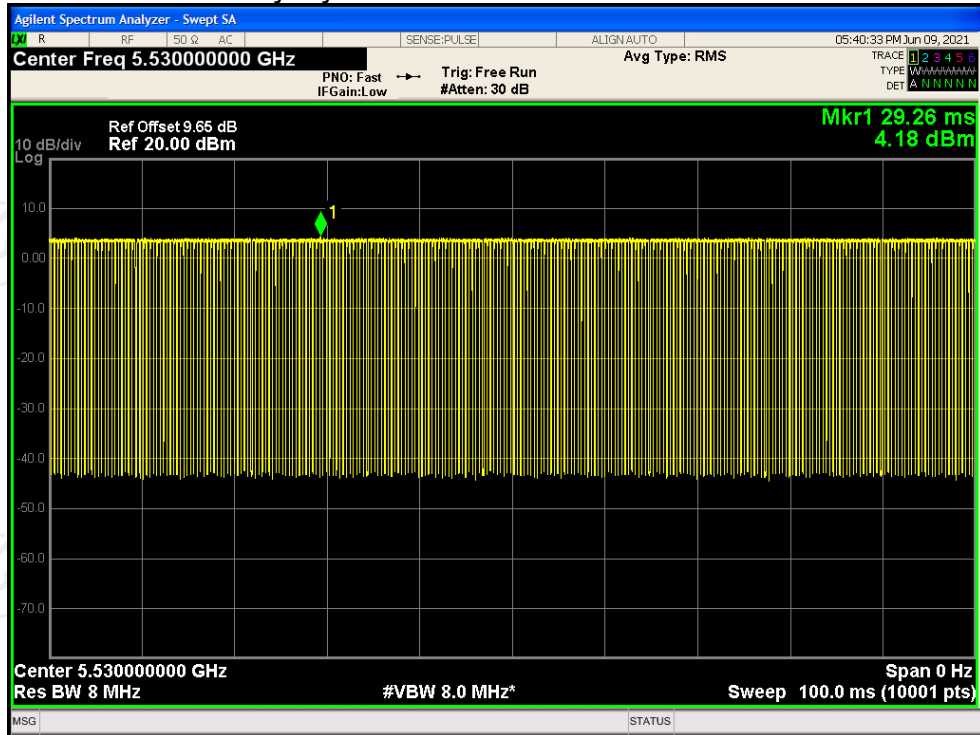
Duty Cycle NVNT ac40 5590MHz Ant0



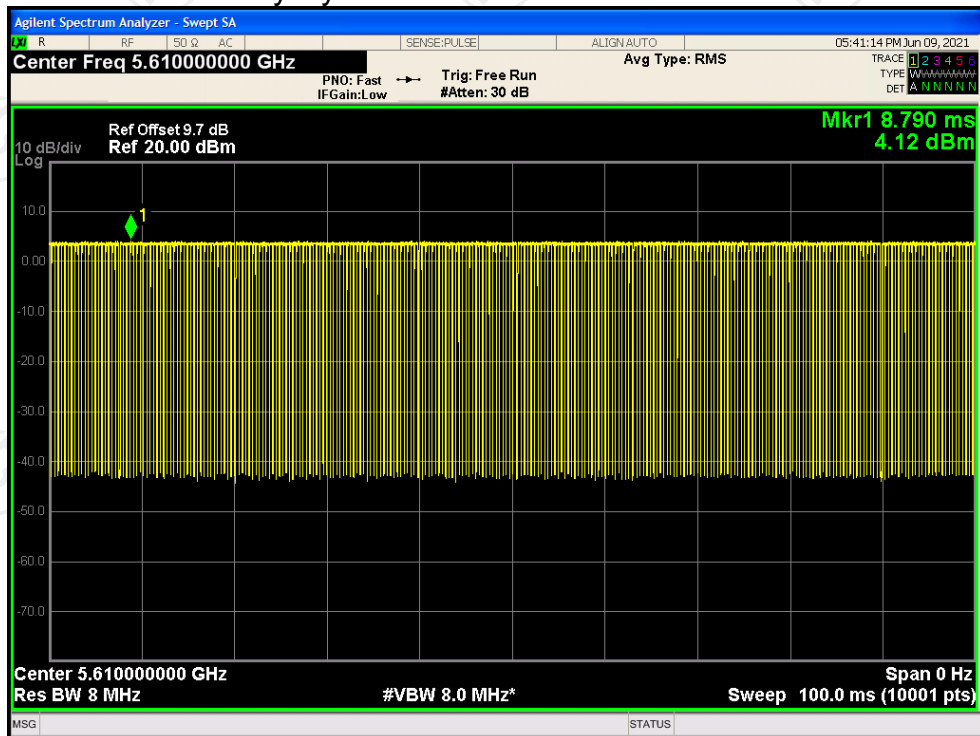
Duty Cycle NVNT ac40 5670MHz Ant0



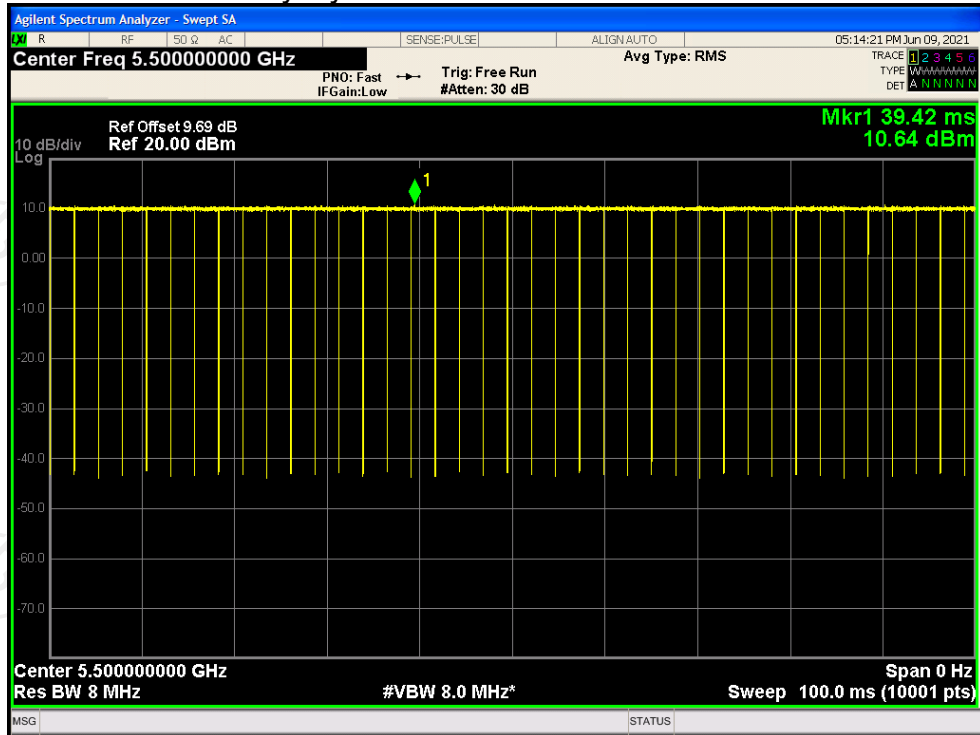
Duty Cycle NVNT ac80 5530MHz Ant0



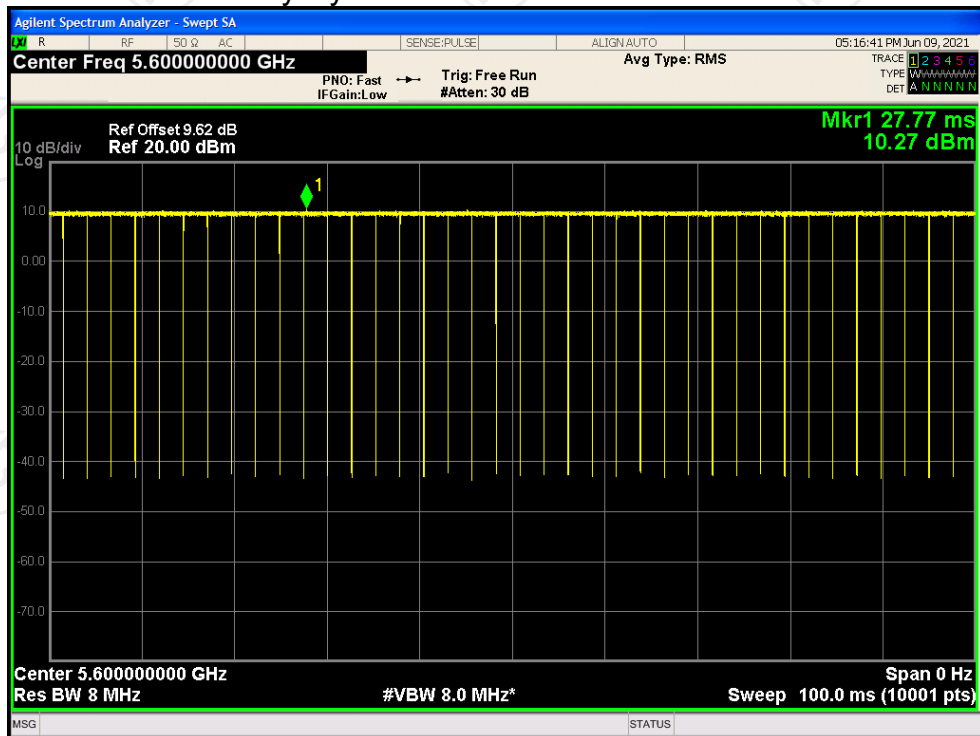
Duty Cycle NVNT ac80 5610MHz Ant0



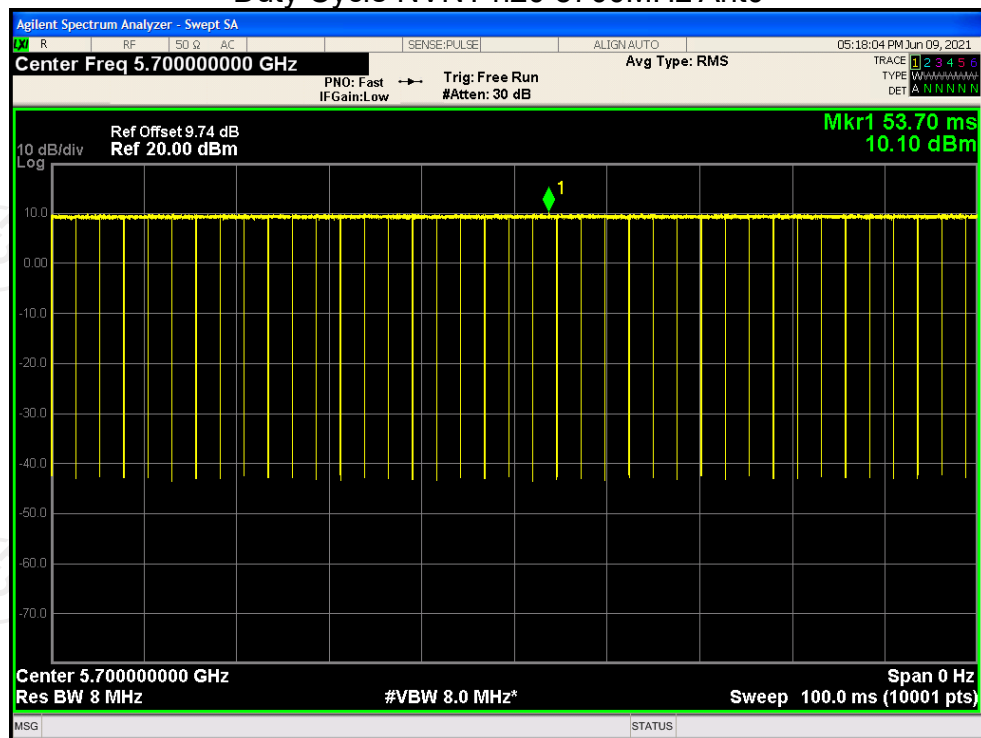
Duty Cycle NVNT n20 5500MHz Ant0



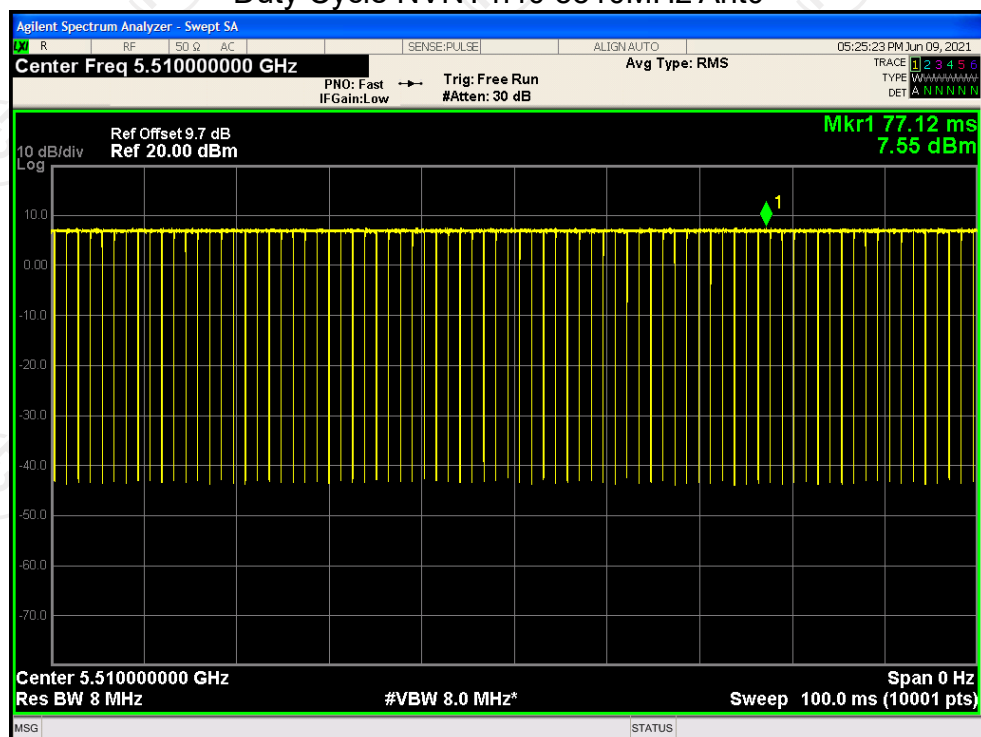
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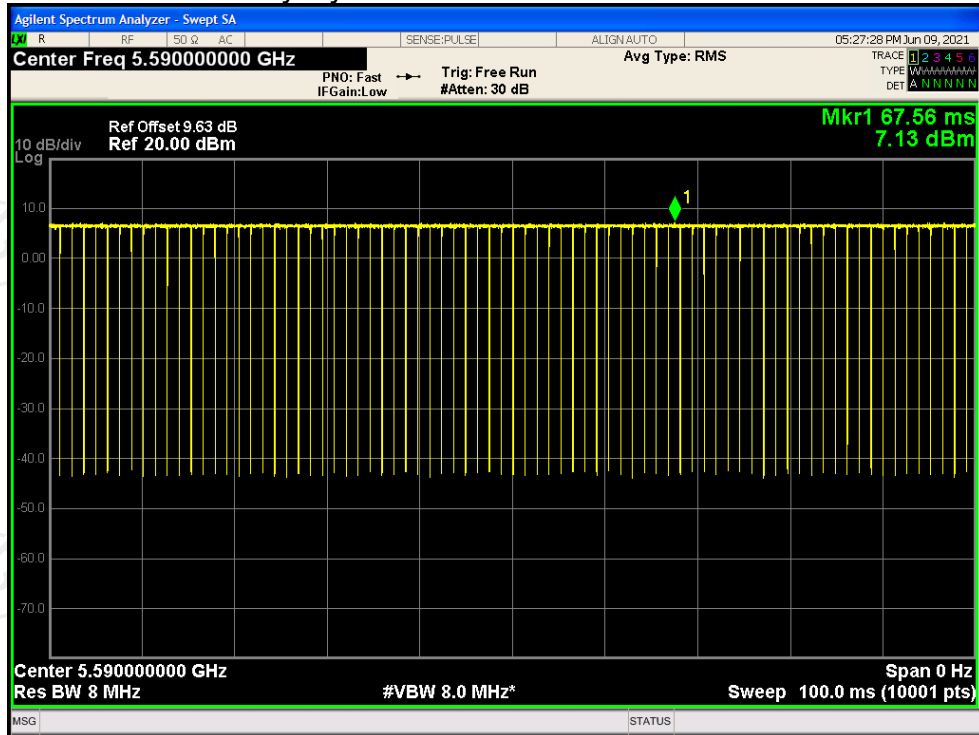
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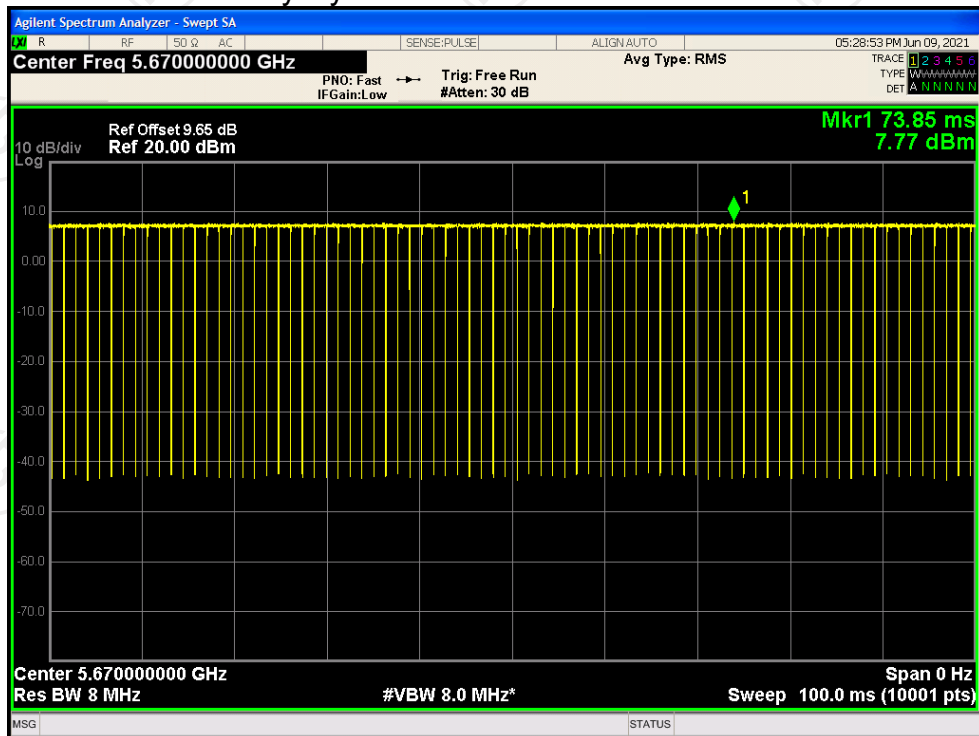
Duty Cycle NVNT n40 5510MHz Ant0



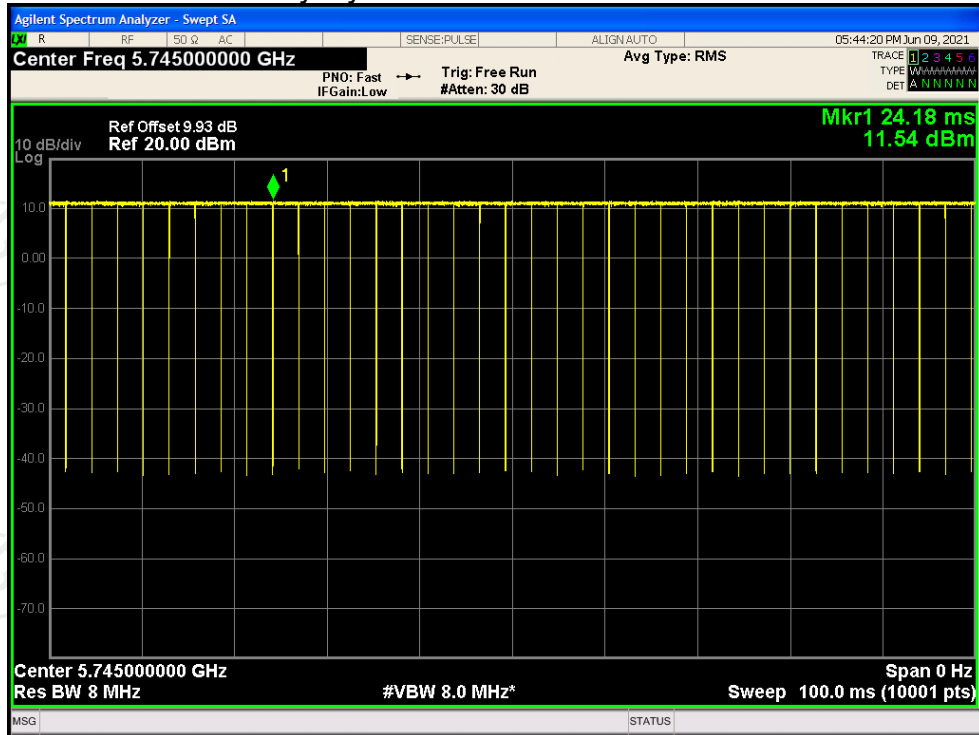
Duty Cycle NVNT n40 5590MHz Ant0



Duty Cycle NVNT n40 5670MHz Ant0



Duty Cycle NVNT a 5745MHz Ant0



Duty Cycle NVNT a 5785MHz Ant0

