

FCC Test Report

Product Name	DIGITAL CAMERA
Model No	R04010
FCC ID	BBP-R04010

Applicant	Ricoh Company Ltd
Address	2-7-1 Izumi Ebina Kanagawa, 243-0460 Japan.

Date of Receipt	Jun. 24, 2021
Issued Date	Sep. 08, 2021
Report No.	2161023R-E3032110125
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test Report

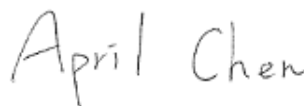
Issued Date: Sep. 08, 2021

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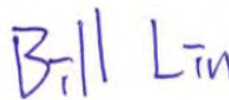
Product Name	DIGITAL CAMERA
Applicant	Ricoh Company Ltd
Address	2-7-1 Izumi Ebina Kanagawa, 243-0460 Japan.
Manufacturer	Ricoh Company, Ltd.
Model No.	R04010
FCC ID.	BBP-R04010
EUT Rated Voltage	DC 5V by USB or DC 3.6V by Battery
EUT Test Voltage	DC 5V by USB
Trade Name	RICOH
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E ANSI C63.4: 2014, ANSI C63.10: 2013 KDB Publication 789033
Test Result	Complied

Documented By :



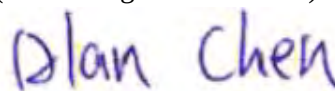
(Senior Project Specialist / April Chen)

Tested By :



(Senior Engineer / Bill Lin)

Approved By :



(Senior Engineer / Alan Chen)

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Revision History

Report No.	Version	Description	Issued Date
2161023R-E3032110125	V1.0	Initial issue of report.	Sep. 08, 2021

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	DIGITAL CAMERA
Trade Name	RICOH
FCC ID.	BBP-R04010
Model No.	R04010
Frequency Range	802.11a/n-20MHz: 5180-5240MHz 802.11n/ac-40MHz: 5190-5230MHz 802.11ac-80MHz: 5210MHz
Number of Channels	802.11a/n-20MHz: 4, 802.11n/ac-40MHz: 2, 802.11ac-80MHz: 1
Data Rate	802.11a: 6 - 54Mbps 802.11n: up to 300Mbps 802.11ac-80MHz: up to 866.7MHz
Channel Control	Auto
Type of Modulation	802.11a/n/ac: OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM
Antenna type	PIFA Antenna
Antenna Gain	Refer to the table "Antenna List"
USB Cable	Trade Name: YiChenXing, M/N: YCX-A0020184A Shielded, 0.40m
Serial No.	A0M63P000070
FW version	0.89

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	LYNwave	ALX20M-222AAA-00(Main) ALX20M-222AAA-01(Aux)	PIFA Antenna	0.5dBi For 5.15~5.25GHz

Note: The antenna of EUT is conform to FCC 15.203.

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 36:	5180 MHz	Channel 40:	5200 MHz	Channel 44:	5220 MHz	Channel 48:	5240 MHz

802.11n/ac-40MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency
Channel 38:	5190 MHz	Channel 46:	5230 MHz

802.11ac-80MHz Center Working Frequency of Each Channel:

Channel	Frequency
Channel 42:	5210 MHz

Note:

1. This device is a DIGITAL CAMERA with a built-in WLAN transceiver, the test report is for 5GHz WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
4. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance of transmitter with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.

Test Mode	Mode 1: Transmit (802.11a 6Mbps) Mode 2: Transmit (802.11n-20BW 14.4Mbps) Mode 3: Transmit (802.11n-40BW 30Mbps) Mode 4: Transmit (802.11ac-40BW 30Mbps) Mode 5: Transmit (802.11ac-80BW 65Mbps)
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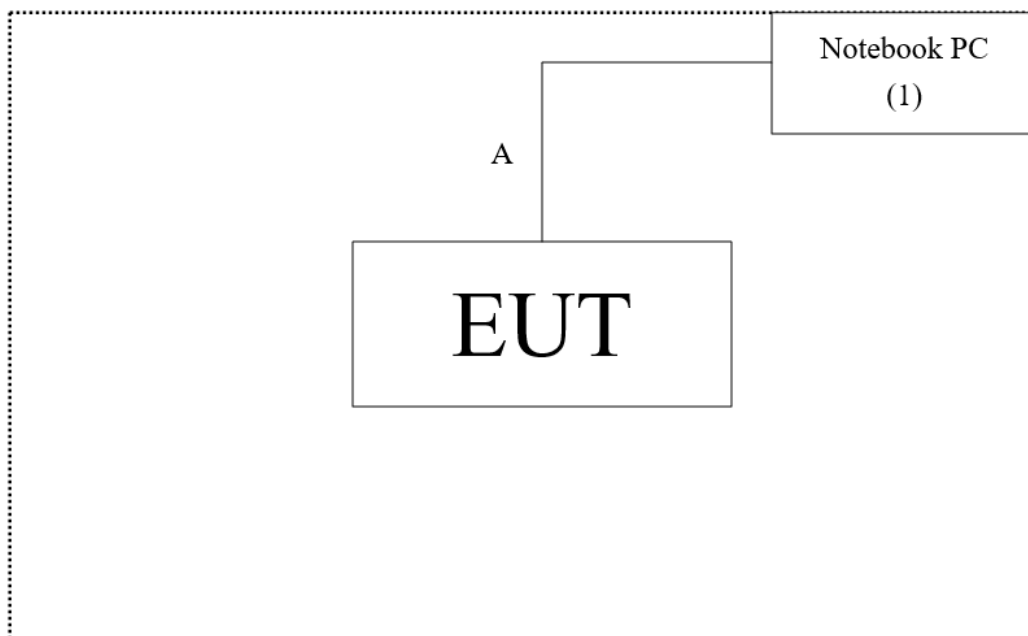
1.2. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude E5440	FS9TK32	N/A

Signal Cable Type	Signal cable Description
A USB Cable	Shielded, 0.4m

1.3. Configuration of Tested System



1.4. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software "Qualcomm ® Radio Control Toolkit Version 4.0.00172.0" on the Notebook PC.
3. Configure the test mode, the test channel, and the data rate.
4. Press "OK" to start the continuous Transmit.
5. Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	26.8 °C
	Humidity (%RH)	10~90 %	60.5 %
Radiated Emission	Temperature (°C)	10~40 °C	25.5 °C
	Humidity (%RH)	10~90 %	62.3 %
Conductive	Temperature (°C)	10~40 °C	25.2 °C
	Humidity (%RH)	10~90 %	49.0 %

USA : FCC Registration Number: TW0033

Canada : IC Registration Number: 26930

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No. 26, Huaya 1st Rd., Guishan Dist.,
Taoyuan City 333411, Taiwan, R.O.C.
Phone number : 886-3-275-7255
Fax number : 866-3-327-5505
Email address : info.tw@dekra.com
Website : <http://www.dekra.com.tw>

1.6. List of Test Equipment

For Conduction measurements /SH1

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	EMI Test Receiver	R&S	ESR7	101601	2021.01.04	2022.01.03
X	Two-Line V-Network	R&S	ENV216	101306	2021.04.08	2022.04.07
X	Two-Line V-Network	R&S	ENV216	101307	2021.04.16	2022.04.15
X	Coaxial Cable	DEKRA	RG400_BNC	RF001	2021.05.24	2022.05.23

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Testing System V2.0

For Conducted measurements /SH2

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Spectrum Analyzer	R&S	FSV30	103466	2020.12.28	2021.12.27
X	Power Meter	Anritsu	ML2496A	MY51000539	2021.06.07	2022.06.06
X	Power Sensor	Anritsu	MA2411B	MY59240002	2021.05.17	2022.05.16
X	Power Sensor	Anritsu	MA2411B	MY59240003	2021.05.17	2022.05.16

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Conduction Test System V9.0.5.

For Radiated measurements / 966-3

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Loop Antenna	AMETEK	HLA6121	56736	2021.04.14	2022.04.13
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-678	2020.09.04	2021.09.03
X	Horn Antenna	ETS-Lindgren	3117	00201259	2020.10.23	2021.10.22
X	Horn Antenna	Com-Power	AH-840	101087	2021.06.16	2022.06.15
X	Pre-Amplifier	EMCI	EMC001330	980302	2021.07.26	2022.07.25
X	Pre-Amplifier	EMCI	EMC051835SE	980312	2021.02.24	2022.02.23
X	Pre-Amplifier	EMCI	EMC05820SE	980308	2020.09.18	2021.09.17
X	Pre-Amplifier	EMCI	EMC184045SE	980369	2021.04.27	2022.04.26
	Filter	MICRO TRONICS	BRM50702	G251	2020.09.17	2021.09.16
X	Filter	MICRO TRONICS	BRM50716	G188	2020.09.17	2021.09.16
X	EMI Test Receiver	R&S	ESR7	102793	2020.12.17	2021.12.16
X	Spectrum Analyzer	R&S	FSV3044	101113	2021.02.03	2022.02.02
X	Coaxial Cable	SGH, EMCI	HA800 , SGH18	HY2103-001C	2021.03.03	2022.03.02
	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2021.06.25	2022.06.24

Note:

1. Loop Antenna is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Testing System V2.0

1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document, and is described in each test chapter of this report.

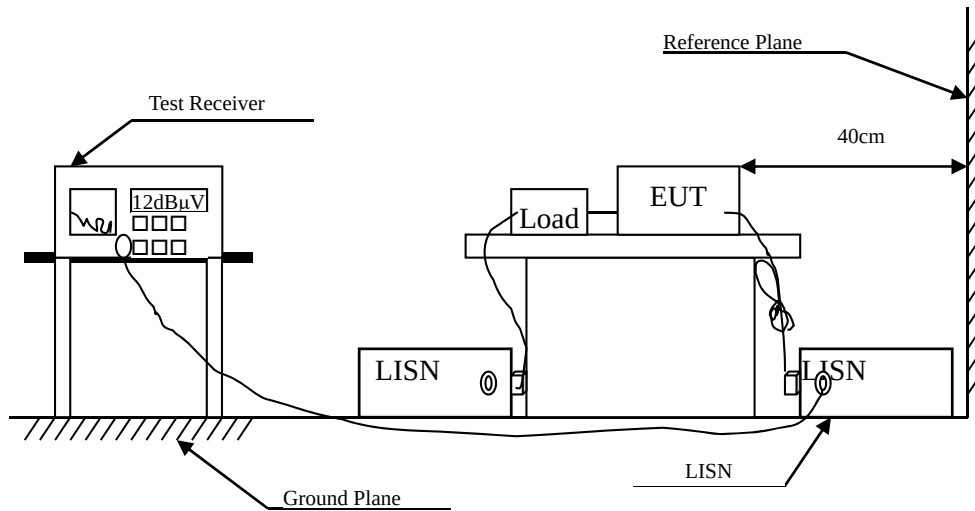
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	Uncertainty	
Conducted Emission	± 3.42 dB	
Maximun conducted output power	Power Meter ± 0.91 dB	
Peak Power Spectral Density	± 2.53 dB	
Radiated Emission	Under 1GHz ± 4.06 dB	Above 1GHz ± 3.73 dB
Band Edge	± 2.53 dB	
Occupied Bandwidth	± 682.83 Hz	
Duty Cycle	± 2.31 ms	

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB μ V) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

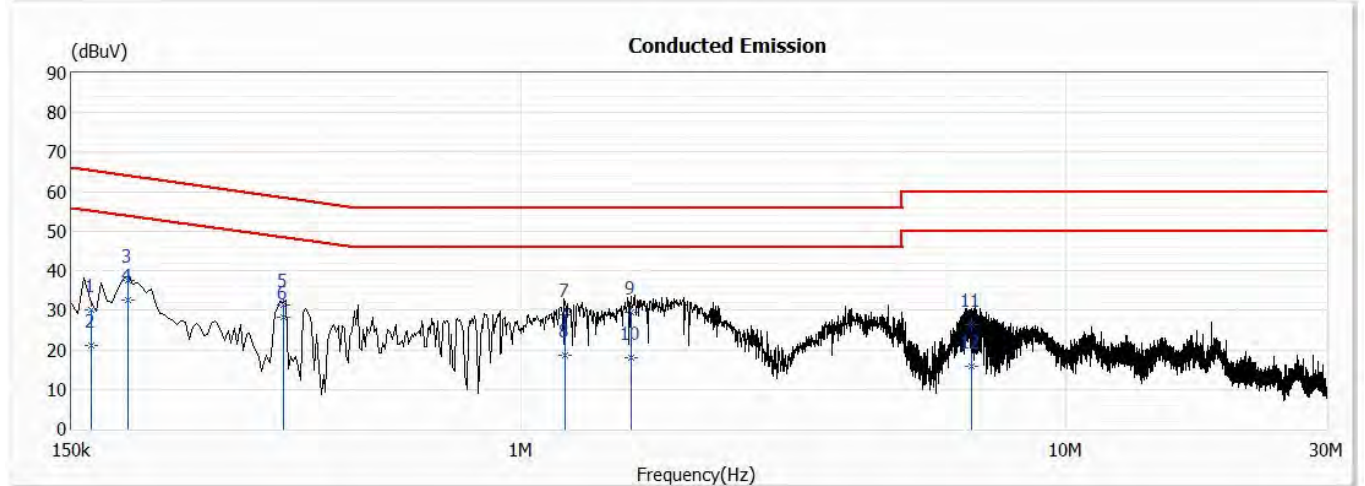
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

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.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Test Result of Conducted Emission

Model No	R04010	Site	SH1
Test Voltage	AC 120V/60Hz	Test Date	2021/8/25
Test Mode	Mode 1: Transmit	Engineer	Jason Tuan
Phase	L1	Temperature (°C)	26.8
Test Condition	--	Humidity (%RH)	60.5
Note	802.11ac80,5210MHz		

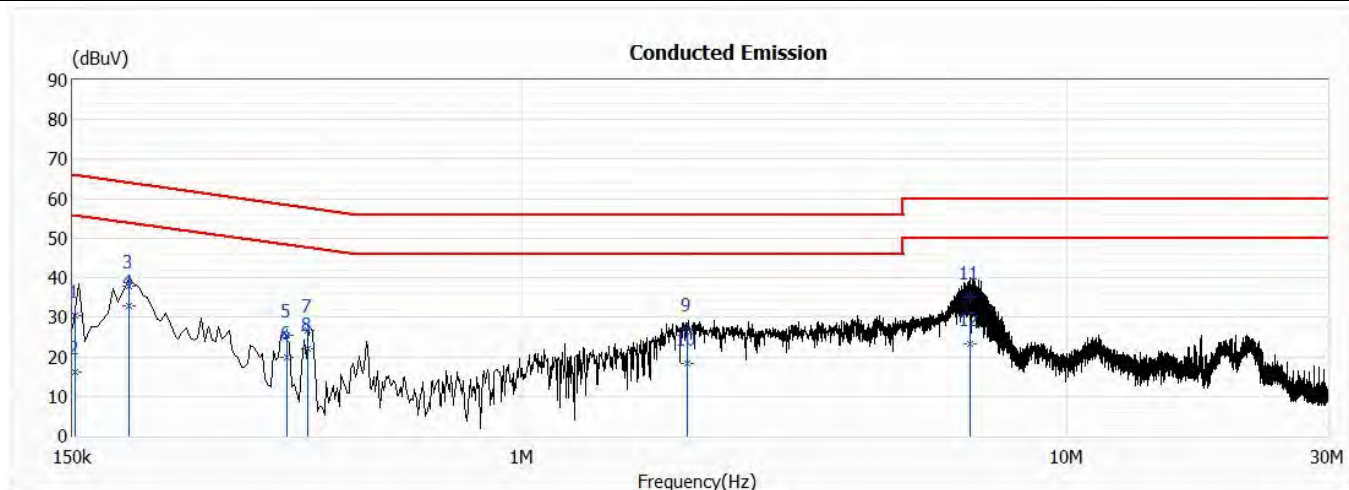


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.163	30.09	65.32	-35.23	20.39	9.70	QP
2	0.163	20.98	55.32	-34.34	11.28	9.70	AV
3	0.190	37.63	64.03	-26.40	27.94	9.69	QP
4	0.190	32.58	54.03	-21.45	22.89	9.69	AV
5	0.367	31.40	58.58	-27.18	21.70	9.70	QP
*6	0.367	28.15	48.58	-20.43	18.45	9.70	AV
7	1.203	28.94	56.00	-27.06	19.18	9.76	QP
8	1.203	18.68	46.00	-27.32	8.92	9.76	AV
9	1.596	29.62	56.00	-26.38	19.83	9.79	QP
10	1.596	18.01	46.00	-27.99	8.22	9.79	AV
11	6.696	26.52	60.00	-33.48	15.68	10.84	QP
12	6.696	15.77	50.00	-34.23	4.93	10.84	AV

Note:

1. “*” means this data is the worst emission level.
2. Emission Level = Reading Level + Correct Factor.
3. Margin = Emission Level – Limit.
4. Correct Factor = LISN insertion loss + Cable loss.

Model No	R04010	Site	SH1
Test Voltage	AC 120V/60Hz	Test Date	2021/8/25
Test Mode	Mode 1: Transmit	Engineer	Jason Tuan
Phase	N	Temperature (°C)	26.8
Test Condition	--	Humidity (%RH)	60.5
Note	802.11ac80,5210MHz		



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.152	30.47	65.91	-35.44	20.76	9.71	QP
2	0.152	16.12	55.91	-39.79	6.41	9.71	AV
3	0.191	37.99	64.01	-26.02	28.28	9.71	QP
*4	0.191	32.91	54.01	-21.10	23.20	9.71	AV
5	0.371	25.42	58.48	-33.06	15.71	9.71	QP
6	0.371	19.73	48.48	-28.75	10.02	9.71	AV
7	0.404	26.64	57.76	-31.12	16.93	9.71	QP
8	0.404	22.10	47.76	-25.66	12.39	9.71	AV
9	2.014	27.15	56.00	-28.85	17.31	9.84	QP
10	2.014	18.46	46.00	-27.54	8.62	9.84	AV
11	6.617	35.14	60.00	-24.86	24.28	10.86	QP
12	6.617	23.35	50.00	-26.65	12.49	10.86	AV

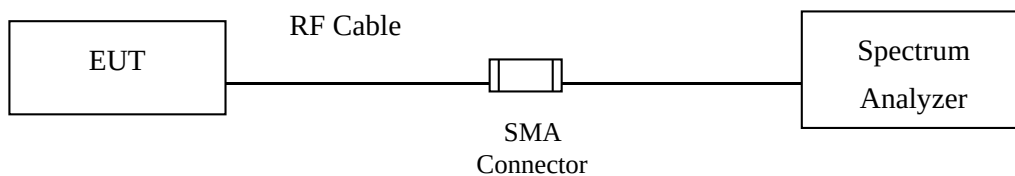
Note:

1. “*” means this data is the worst emission level.
2. Emission Level = Reading Level + Correct Factor.
3. Margin = Emission Level – Limit.
4. Correct Factor = LISN insertion loss + Cable loss.

3. Maximun conducted output power

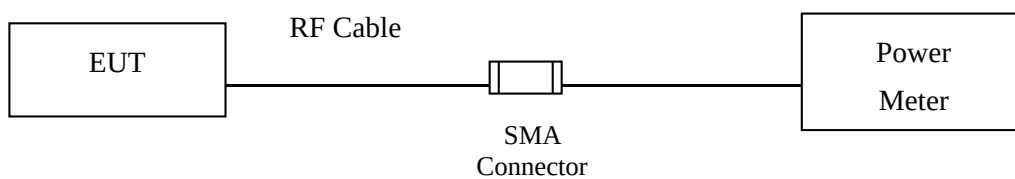
3.1. Test Setup

99% Occupied Bandwidth

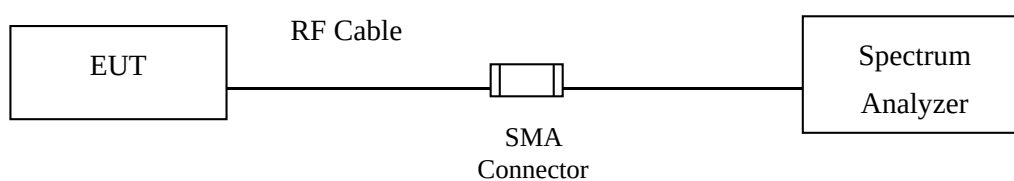


Conduction Power Measurement

Conduction Power Measurement (for 802.11an)



Conduction Power Measurement (for 802.11ac)



3.2. Limits

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W, provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 99% emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

3.3. Test Procedure

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater than the 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

802.11an (BW $\leq$ 40MHz) Maximum conducted output power using KDB 789033 section E)3)b)
Method PM-G (Measurement using a gated RF average power meter)

Note: the power meter have a video bandwidth that is greater than or equal to the measurement bandwidth, (Anritsu/ MA2411B video bandwidth: 65MHz)

802.11ac (BW=80MHz) Maximum conducted output power using KDB 789033 section E)2)b)
Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

When transmitted signals consist of two or more non-contiguous spectrum segments (e.g., 80+80 MHz mode) or when a single spectrum segment of a transmission crosses the boundary between two adjacent U-NII bands, KDB 644545 D03 section D) procedure is used for measurements.

3.4. Test Result of Maximum conducted output power

Product : DIGITAL CAMERA
 Test Item : Maximum conducted output power
 Test Mode : Mode 1: Transmit (802.11a 6Mbps)
 Test Date : 2021/08/05

Chain A

Cable loss=0dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
		Measurement Level (dBm)							
36	5180	6.95	--	--	--	--	--	--	--
44	5220	6.94	6.85	6.8	6.7	6.66	6.6	6.51	6.44
48	5240	6.99	--	--	--	--	--	--	--

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain B

Cable loss=0dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
		Measurement Level (dBm)							
36	5180	6.51	--	--	--	--	--	--	--
44	5220	6.71	6.61	6.56	6.53	6.5	6.42	6.36	6.32
48	5240	6.81	--	--	--	--	--	--	--

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel Number	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit
						(dBm)
36	5180	--	6.95	6.51	9.75	24
44	5220	--	6.94	6.71	9.84	24
48	5240	--	6.99	6.81	9.91	24

Note: Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

Product : DIGITAL CAMERA
 Test Item : Maximum conducted output power
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps)
 Test Date : 2021/08/05

Chain A

Cable loss=0dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4
		Measurement Level (dBm)							
36	5180	6.98	--	--	--	--	--	--	--
44	5220	6.74	6.64	6.6	6.54	6.49	6.46	6.42	6.34
48	5240	6.96	--	--	--	--	--	--	--

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain B

Cable loss=0dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4
		Measurement Level (dBm)							
36	5180	6.64	--	--	--	--	--	--	--
44	5220	6.73	6.66	6.56	6.48	6.38	6.28	6.19	6.11
48	5240	6.91	--	--	--	--	--	--	--

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel Number	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit
						(dBm)
36	5180	--	6.98	6.64	9.82	24
44	5220	--	6.74	6.73	9.75	24
48	5240	--	6.96	6.91	9.95	24

Note: Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

Product : DIGITAL CAMERA
 Test Item : Maximum conducted output power
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps)
 Test Date : 2021/08/05

Chain A

Cable loss=0dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		30	60	90	120	180	240	270	300
		Measurement Level (dBm)							
38	5190	6.94	--	--	--	--	--	--	--
46	5230	6.83	6.77	6.74	6.71	6.62	6.53	6.46	6.42

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain B

Cable loss=0dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		30	60	90	120	180	240	270	300
		Measurement Level (dBm)							
38	5190	6.71	--	--	--	--	--	--	--
46	5230	6.58	6.49	6.41	6.34	6.29	6.25	6.22	6.15

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel Number	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit
						(dBm)
38	5190	--	6.94	6.71	9.84	24
46	5230	--	6.83	6.58	9.72	24

Note: Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

Product : DIGITAL CAMERA
 Test Item : Maximum conducted output power
 Test Mode : Mode 4: Transmit (802.11ac-40BW 30Mbps)
 Test Date : 2021/08/18

Chain A

Cable loss=0dB		Maximum conducted output power									
Channel No	Frequency (MHz)	Data Rate (Mbps)									
		VHT0	VHT1	VHT2	VHT3	VHT4	VHT5	VHT6	VHT7	VHT8	VHT9
38	5190	6.97	--	--	--	--	--	--	--	--	--
46	5230	6.96	6.92	6.87	6.83	6.76	6.69	6.6	6.57	6.48	6.35

Note: Maximum conducted output power Value =Reading value on Spectrum Analyzer + cable loss

Chain B

Cable loss=0dB		Maximum conducted output power									
Channel No	Frequency (MHz)	Data Rate (Mbps)									
		VHT0	VHT1	VHT2	VHT3	VHT4	VHT5	VHT6	VHT7	VHT8	VHT9
38	5190	6.69	--	--	--	--	--	--	--	--	--
46	5230	6.64	6.58	6.55	6.47	6.43	6.39	6.32	6.24	6.2	6.11

Note: Maximum conducted output power Value =Reading value on Spectrum Analyzer + cable loss

Maximum conducted output power Measurement

Channel Number	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit
						(dBm)
38	5190	--	6.97	6.69	9.84	24
46	5230	--	6.96	6.64	9.81	24

Note: Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

Product : DIGITAL CAMERA
 Test Item : Maximum conducted output power
 Test Mode : Mode 5: Transmit (802.11ac-80BW 65Mbps)
 Test Date : 2021/08/18

Chain A

Cable loss=0dB		Maximum conducted output power									
Channel No	Frequency (MHz)	Data Rate (Mbps)									
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9
42	5210	6.91	6.83	6.75	6.69	6.66	6.61	6.57	6.47	6.43	6.35

Note: Maximum conducted output power Value =Reading value on Spectrum Analyzer + cable loss

Chain B

Cable loss=0dB		Maximum conducted output power									
Channel No	Frequency (MHz)	Data Rate (Mbps)									
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9
42	5210	6.52	6.43	6.37	6.28	6.18	6.13	6.1	6.06	5.96	5.87

Note: Maximum conducted output power Value =Reading value on Spectrum Analyzer + cable loss

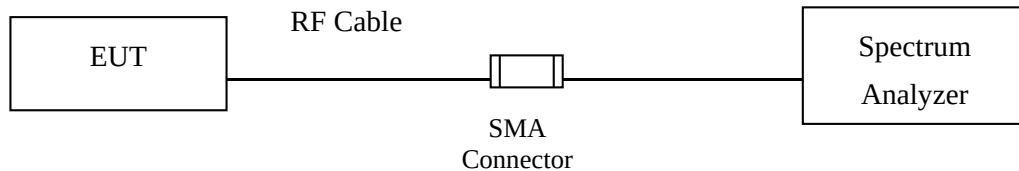
Maximum conducted output power Measurement

Channel Number	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit
						(dBm)
42	5210	--	6.91	6.52	9.73	30

Note: Otpu Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

4. Peak Power Spectral Density

4.1. Test Setup



4.2. Limits

- (1) For the band 5.15-5.25 GHz,
 - (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
 - (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

- (3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

4.3. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer.

SA-1 method is selected to run the test.

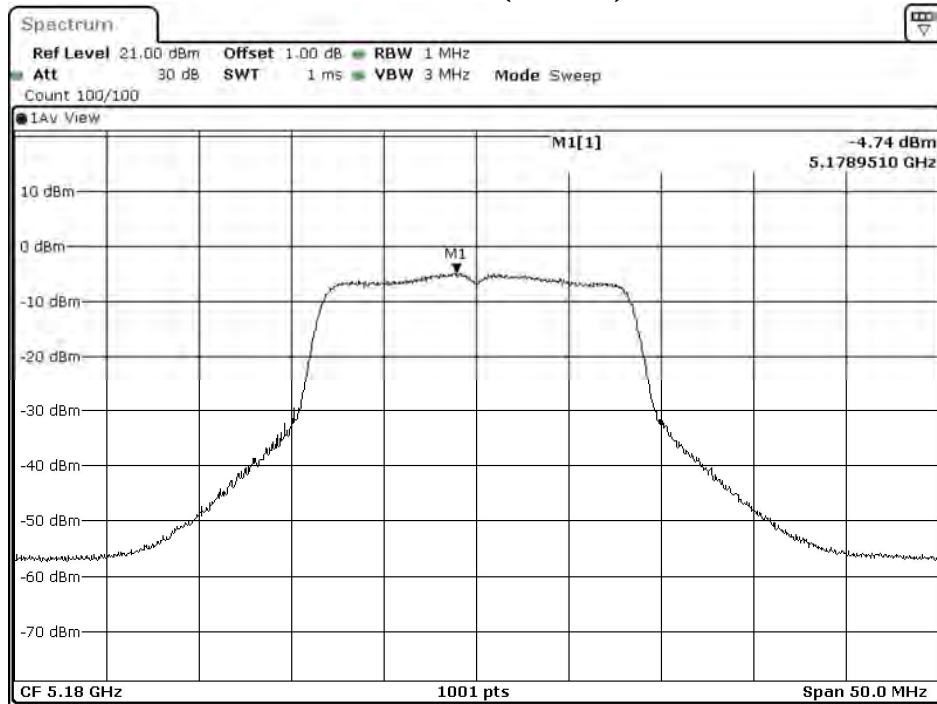
For the band 5.725-5.85 GHz, Scale the observed power level to an equivalent value in 500 kHz by adjusting (increase) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500\text{ kHz}/100\text{ kHz}) = 6.98\text{ dB}$.

4.4. Test Result of Peak Power Spectral Density

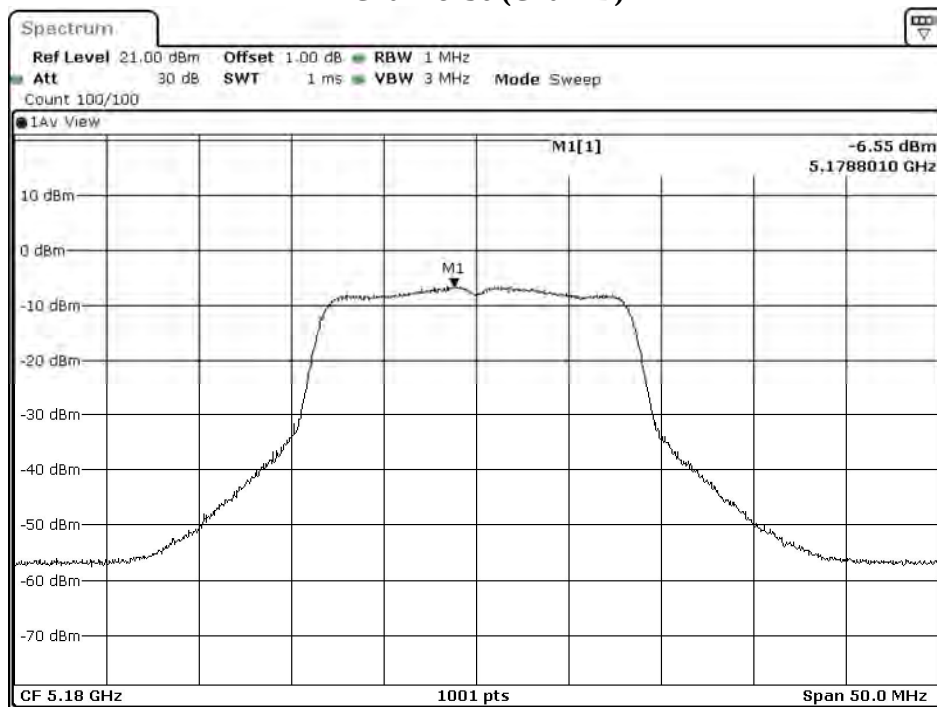
Product : DIGITAL CAMERA
 Test Item : Peak Power Spectral Density
 Test Mode : Mode 1: Transmit (802.11a 6Mbps)
 Test Date : 2021/08/05

Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	10*log(2) (dB)	Duty factor (dB)	Total PSD/MHz (dBm)	Required Limit (dBm)	Result
36	5180	6	A	-4.74	3.01	--	-1.73	<11	Pass
			B	-6.55	3.01	--	-3.54	<11	Pass
44	5220	6	A	-5.34	3.01	--	-2.33	<11	Pass
			B	-6.35	3.01	--	-3.34	<11	Pass
48	5240	6	A	-4.99	3.01	--	-1.98	<11	Pass
			B	-5.86	3.01	--	-2.85	<11	Pass

Note: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

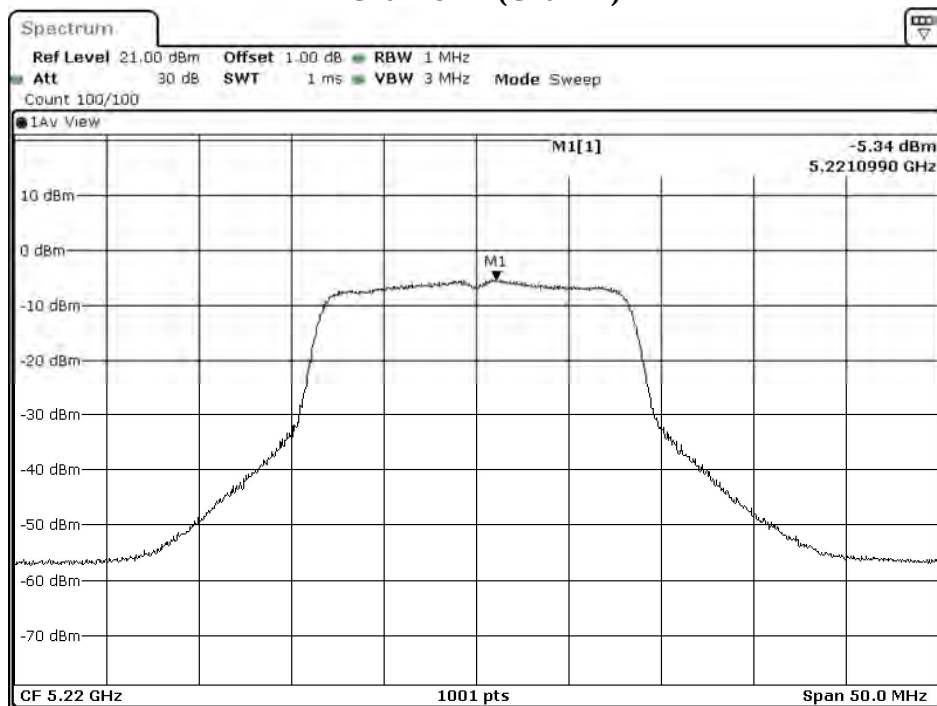
Channel 36 (Chain A)

Date: 9.AUG.2021 17:18:30

Channel 36 (Chain B)

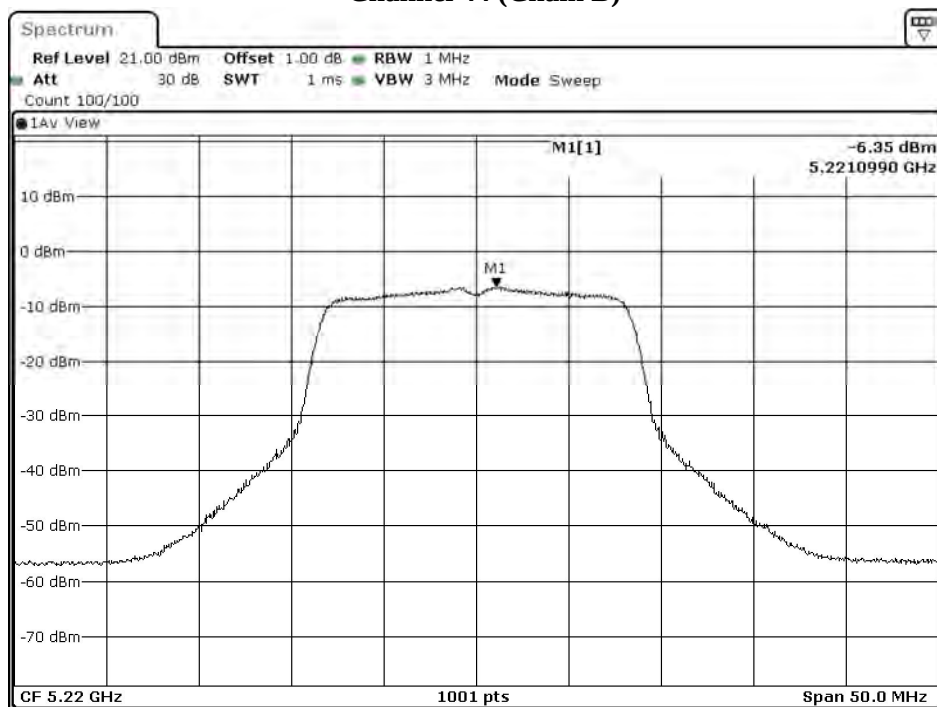
Date: 9.AUG.2021 17:19:37

Channel 44 (Chain A)

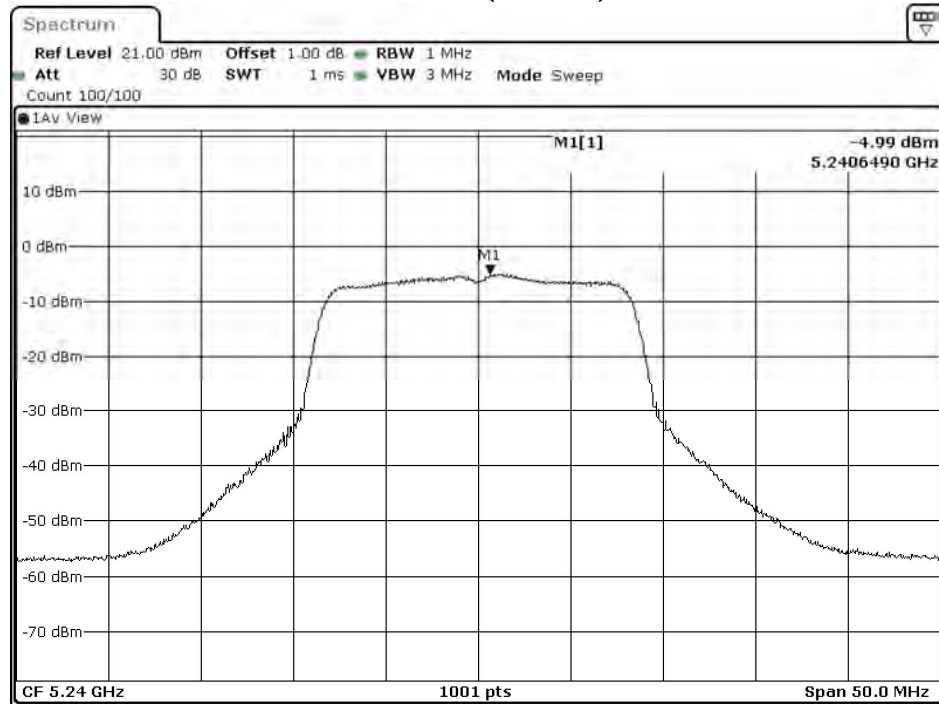


Date: 9.AUG.2021 17:26:26

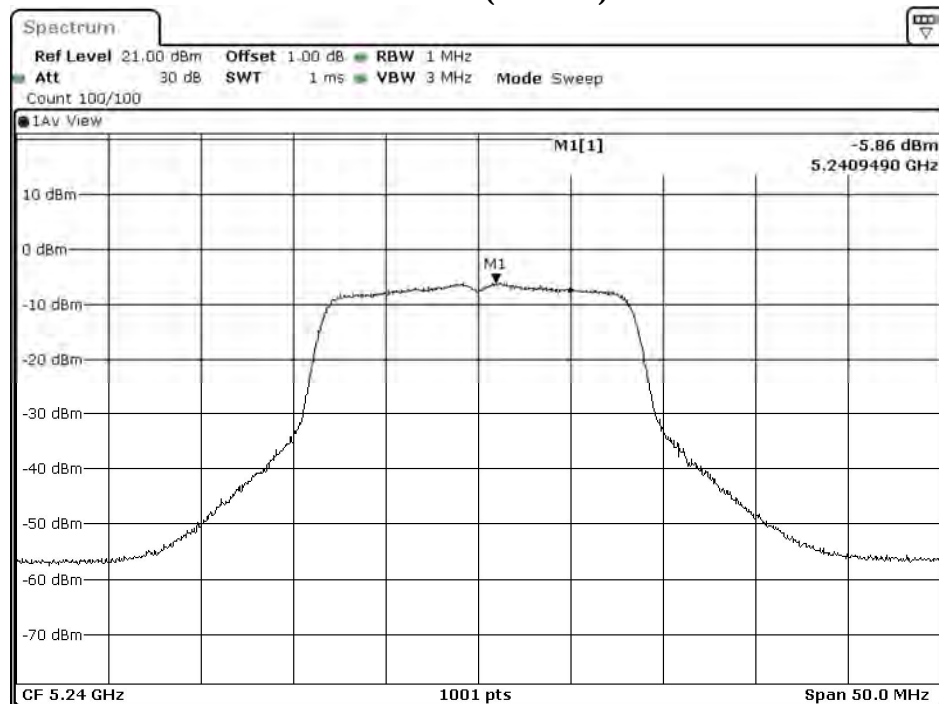
Channel 44 (Chain B)



Date: 9.AUG.2021 17:27:56

Channel 48 (Chain A)

Date: 9.AUG.2021 17:33:46

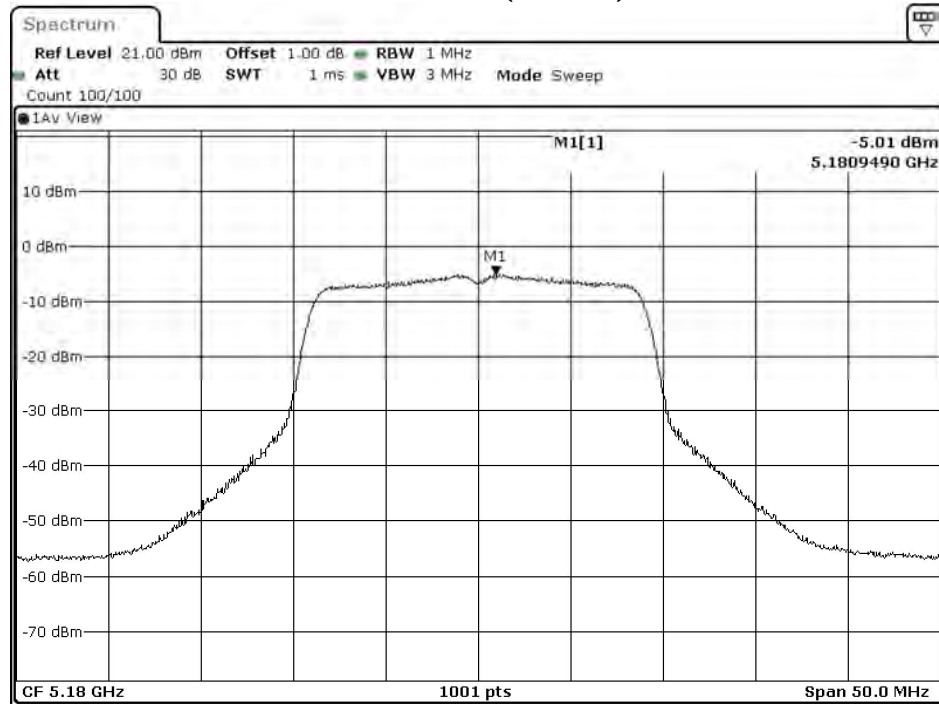
Channel 48 (Chain B)

Date: 9.AUG.2021 17:34:56

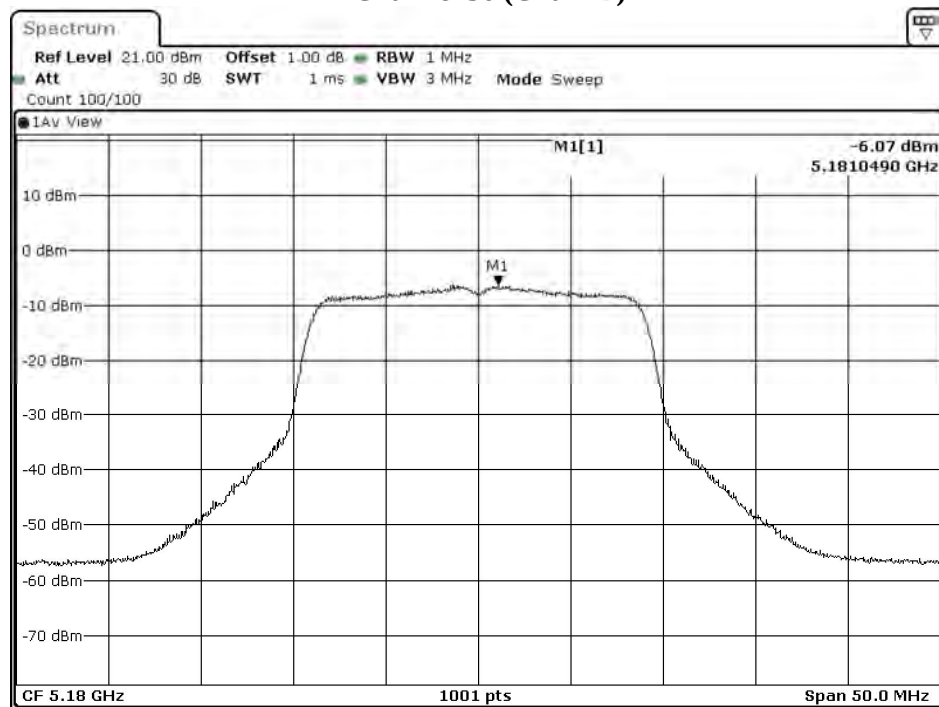
Product : DIGITAL CAMERA
 Test Item : Peak Power Spectral Density
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps)
 Test Date : 2021/08/05

Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	10*log(2) (dB)	Duty factor (dB)	Total PSD/MHz (dBm)	Required Limit (dBm)	Result
36	5180	HT8	A	-5.01	3.01	--	-2.00	<11	Pass
			B	-6.07	3.01	--	-3.06	<11	Pass
44	5220	HT8	A	-5.52	3.01	--	-2.51	<11	Pass
			B	-6.75	3.01	--	-3.74	<11	Pass
48	5240	HT8	A	-5.58	3.01	--	-2.57	<11	Pass
			B	-6.44	3.01	--	-3.43	<11	Pass

Note: The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

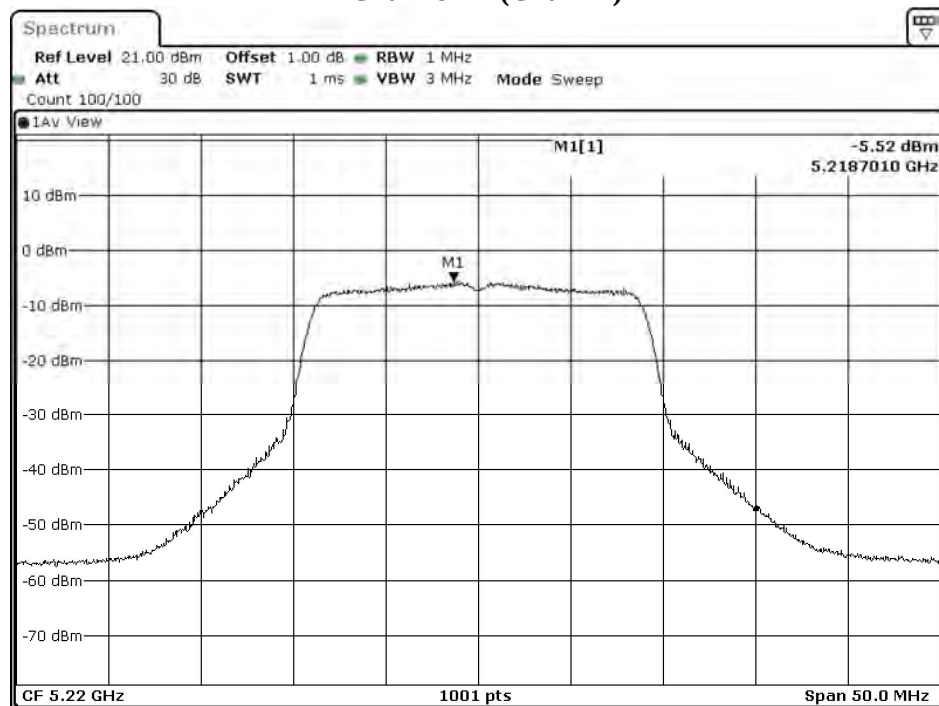
Channel 36 (Chain A)

Date: 9.AUG.2021 17:50:32

Channel 36 (Chain B)

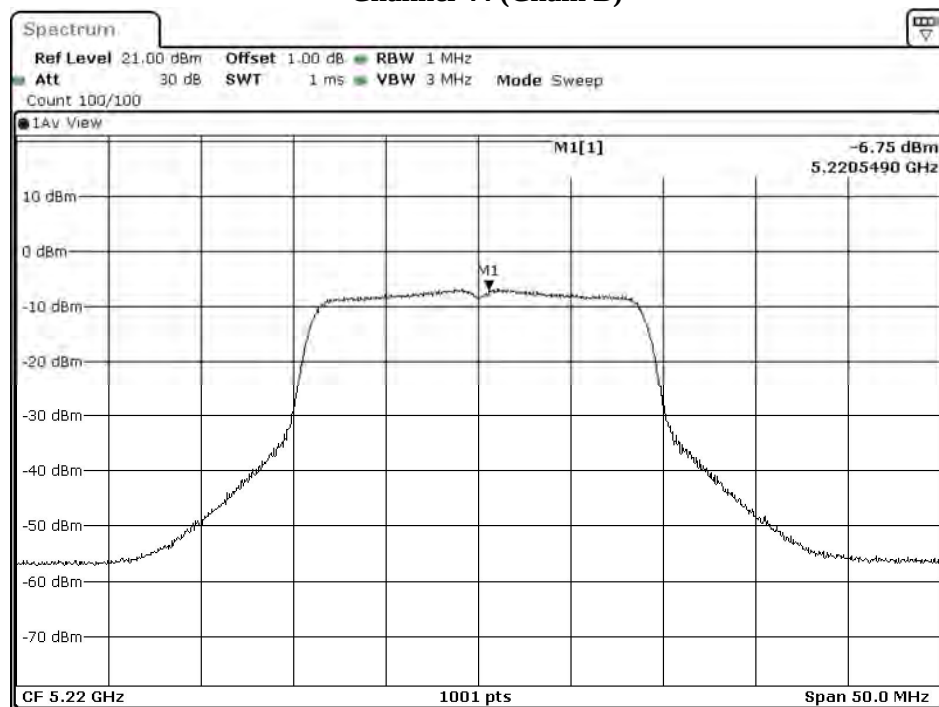
Date: 9.AUG.2021 17:51:42

Channel 44 (Chain A)

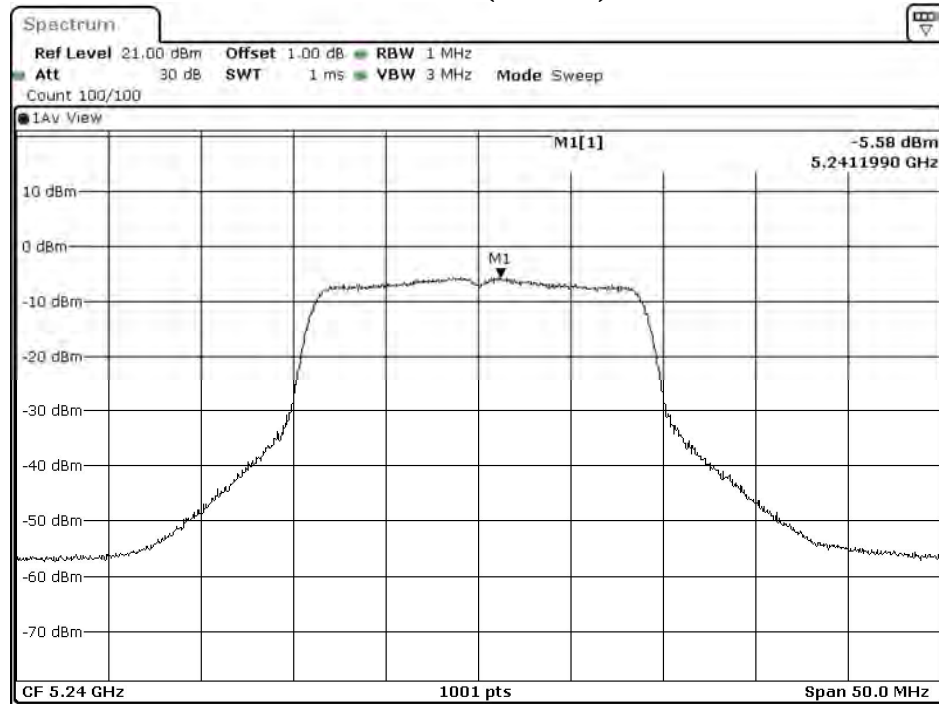


Date: 9.AUG.2021 18:21:58

Channel 44 (Chain B)



Date: 9.AUG.2021 18:34:52

Channel 48 (Chain A)

Date: 9.AUG.2021 19:06:41

Channel 48 (Chain B)

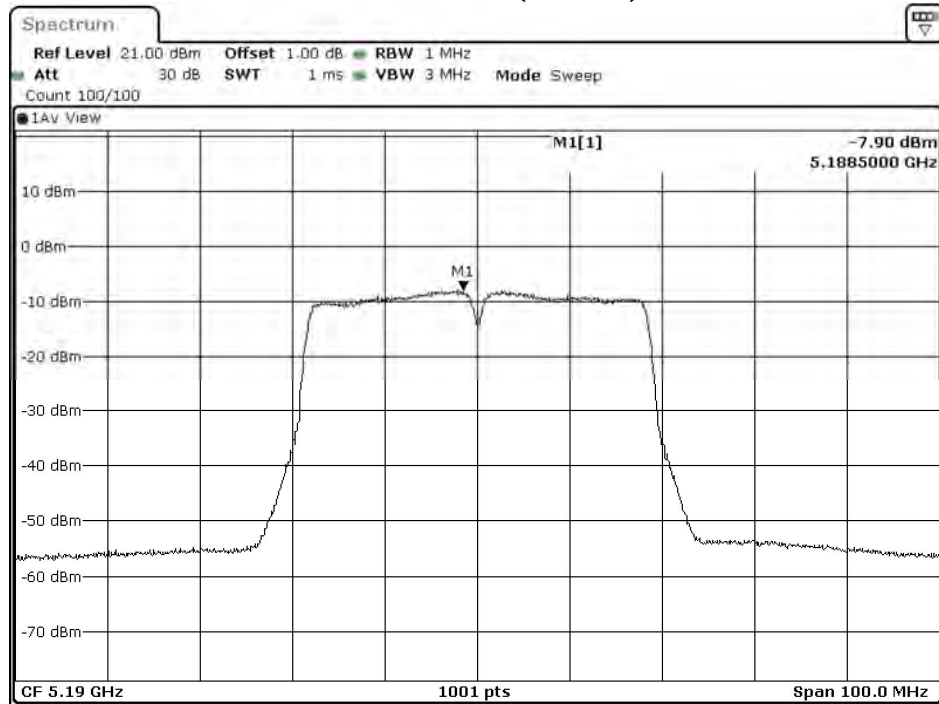
Date: 9.AUG.2021 19:08:14

Product : DIGITAL CAMERA
 Test Item : Peak Power Spectral Density
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps)
 Test Date : 2021/08/05

Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	$10 \cdot \log(2)$ (dB)	Duty factor (dB)	Total PSD/MHz (dBm)	Required Limit (dBm)	Result
38	5190	HT8	A	-7.90	3.01	0.46	-4.43	<11	Pass
			B	-9.23	3.01	0.46	-5.76	<11	Pass
46	5230	HT8	A	-7.85	3.01	0.46	-4.38	<11	Pass
			B	-9.17	3.01	0.46	-5.70	<11	Pass

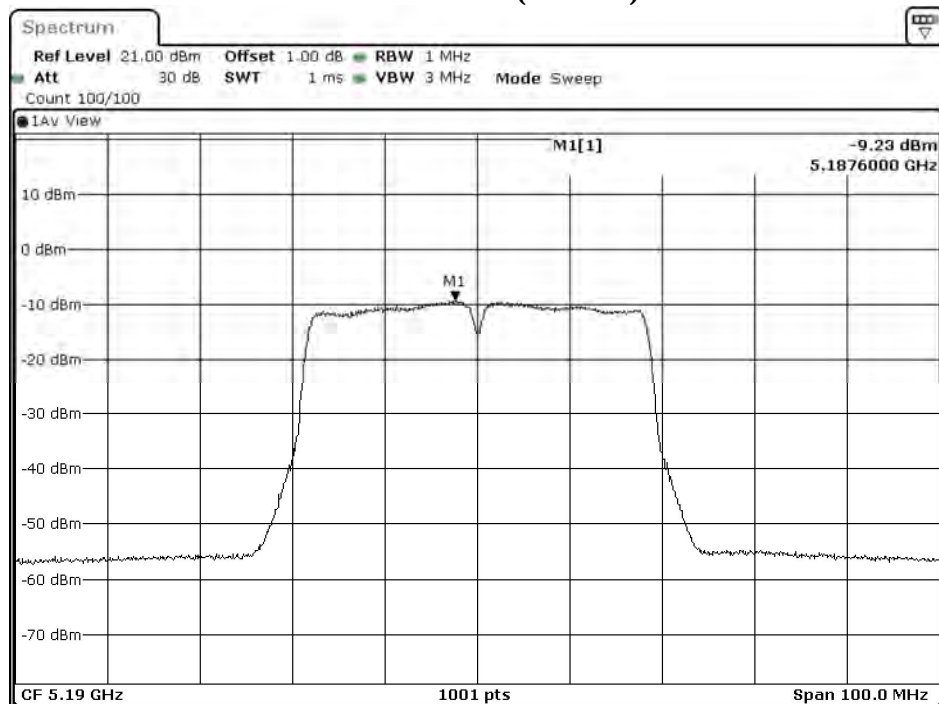
Note: The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel 38 (Chain A)



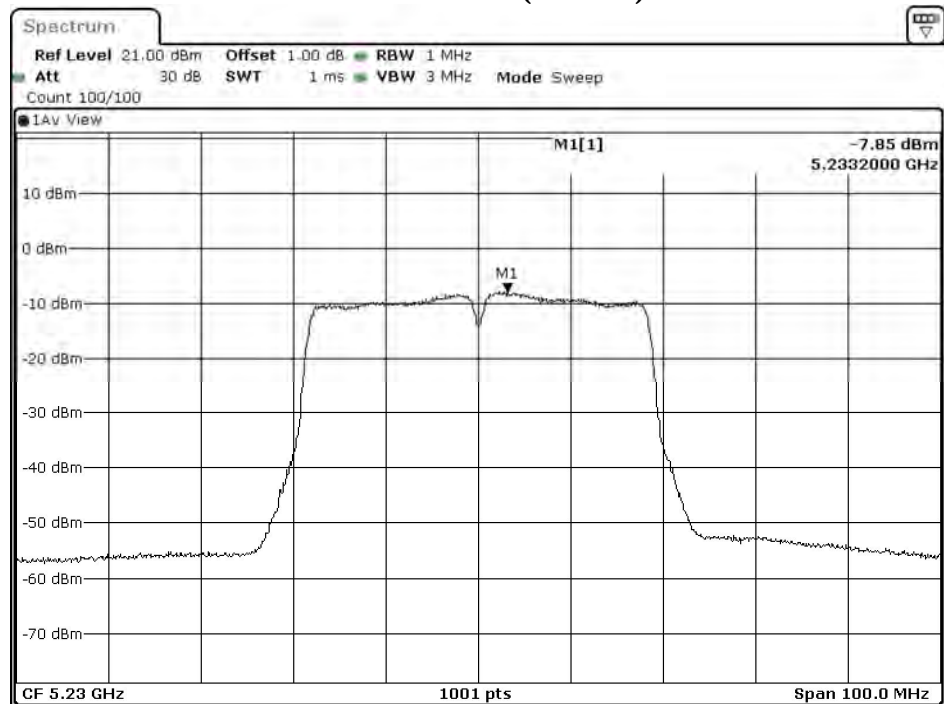
Date: 9.AUG.2021 19:54:48

Channel 38 (Chain B)



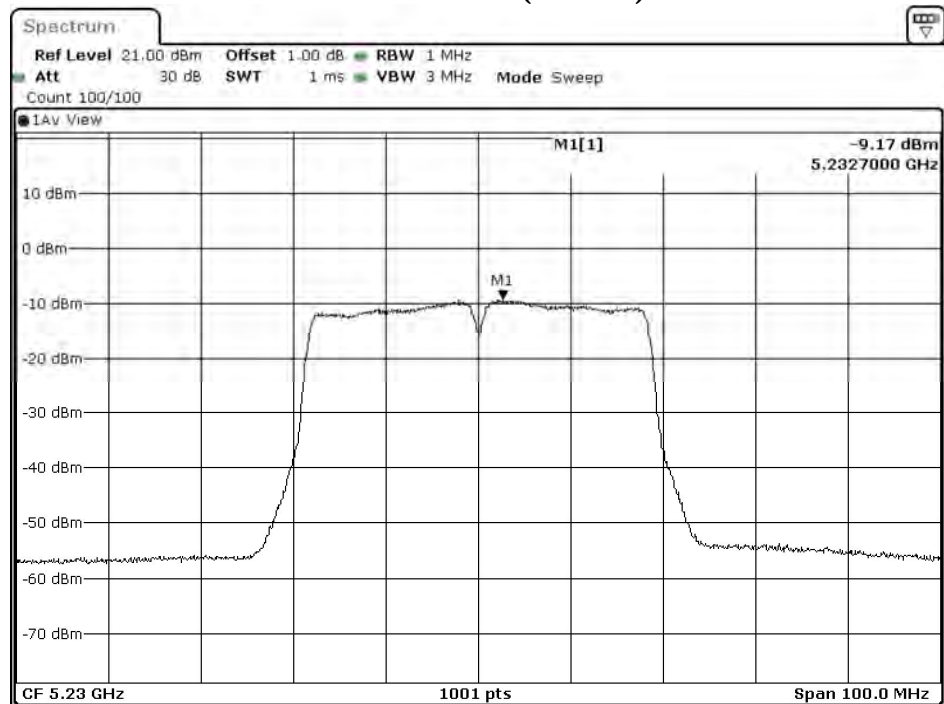
Date: 9.AUG.2021 20:00:00

Channel 46 (Chain A)



Date: 9.AUG.2021 20:51:22

Channel 46 (Chain B)



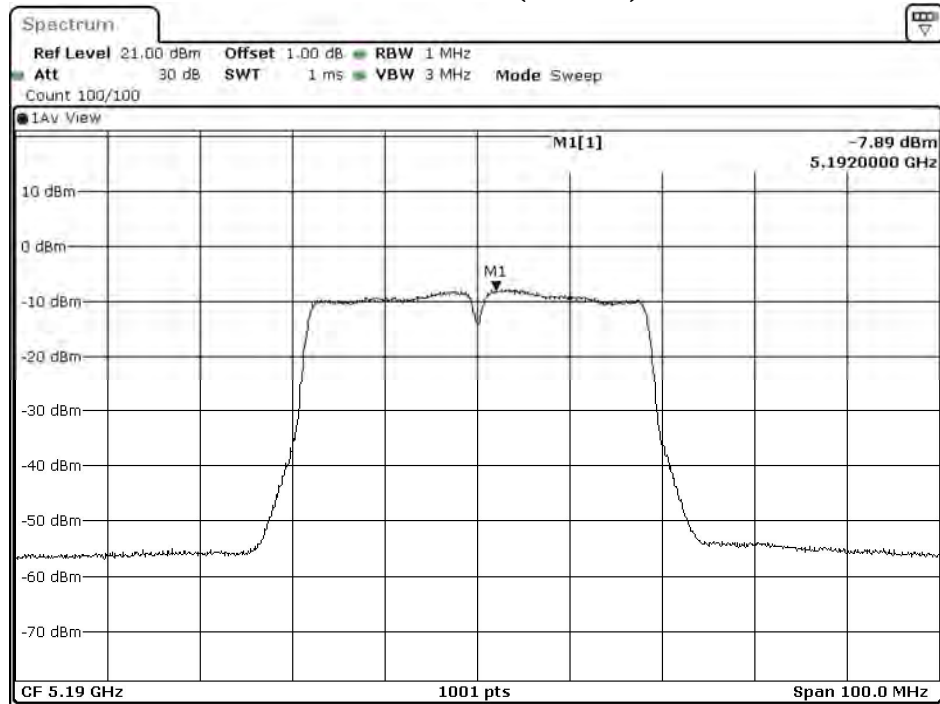
Date: 9.AUG.2021 20:52:18

Product : DIGITAL CAMERA
 Test Item : Peak Power Spectral Density
 Test Mode : Mode 4: Transmit (802.11ac-40BW 30Mbps)
 Test Date : 2021/08/18

Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	$10 \cdot \log(2)$ (dB)	Duty factor (dB)	Total PSD/MHz (dBm)	Required Limit (dBm)	Result
38	5190	HT8	A	-7.89	3.01	0.38	-4.50	<11	Pass
			B	-9.01	3.01	0.38	-5.62	<11	Pass
46	5230	HT8	A	-8.19	3.01	0.38	-4.80	<11	Pass
			B	-9.44	3.01	0.38	-6.05	<11	Pass

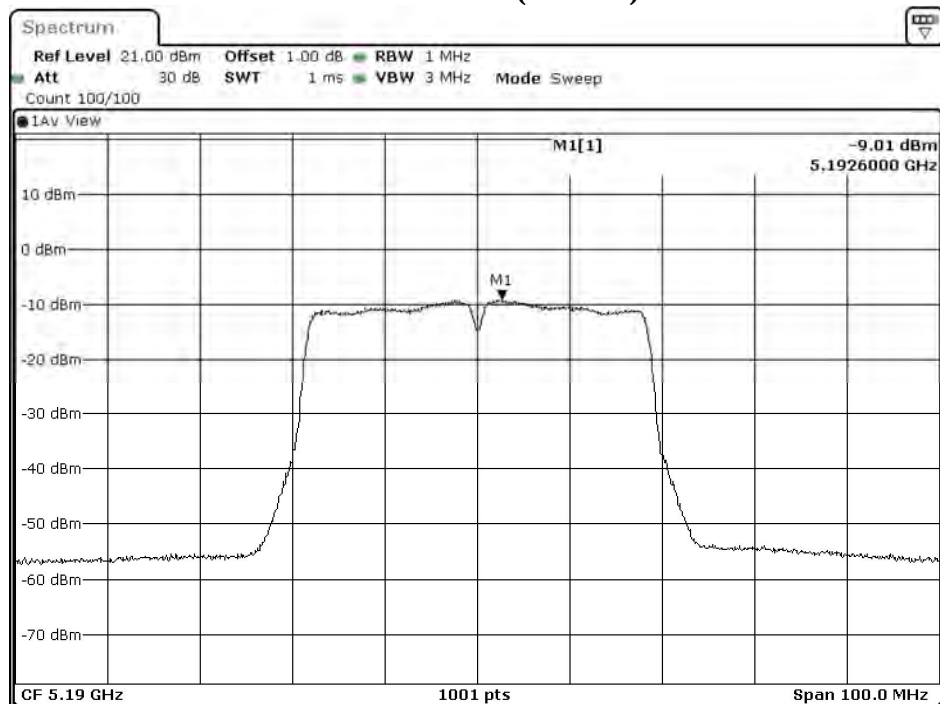
Note: The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel 38 (Chain A)



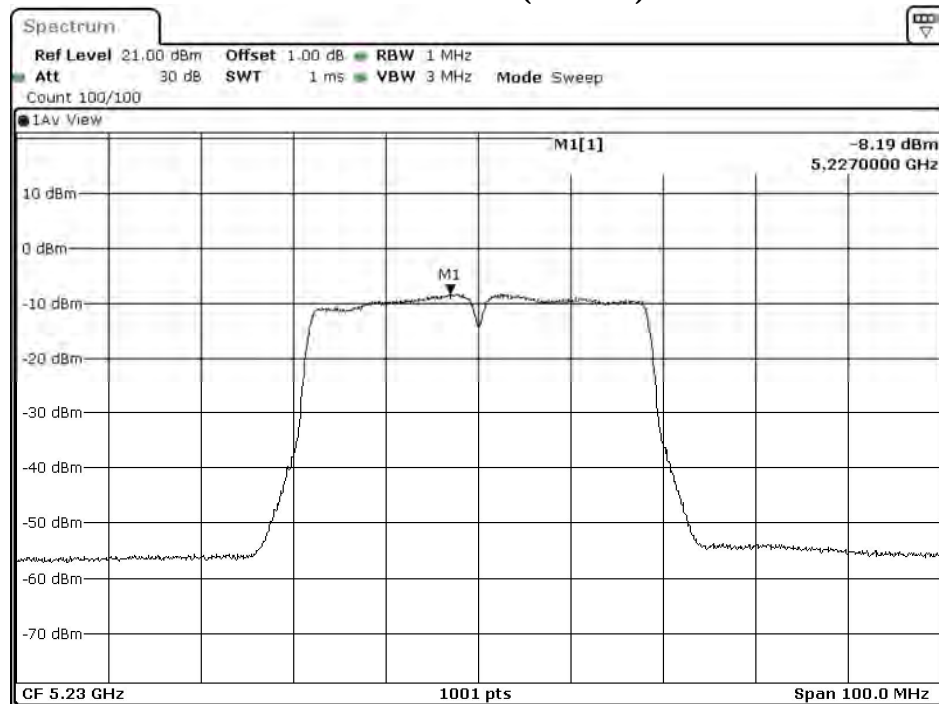
Date: 9.AUG.2021 21:10:33

Channel 38 (Chain B)



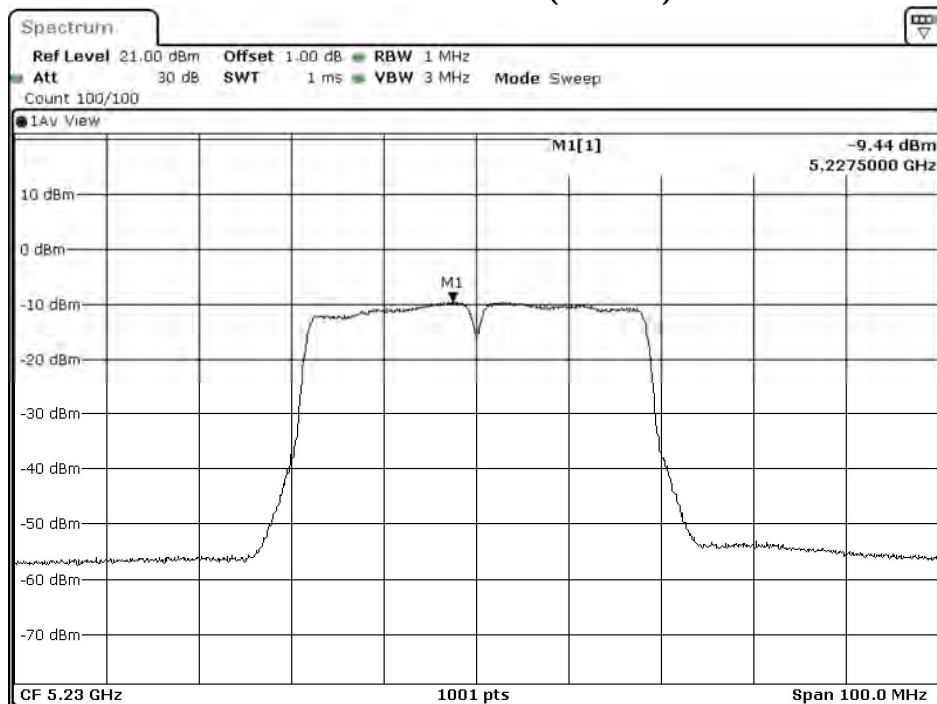
Date: 9.AUG.2021 21:11:38

Channel 46 (Chain A)



Date: 9.AUG.2021 21:20:23

Channel 46 (Chain B)



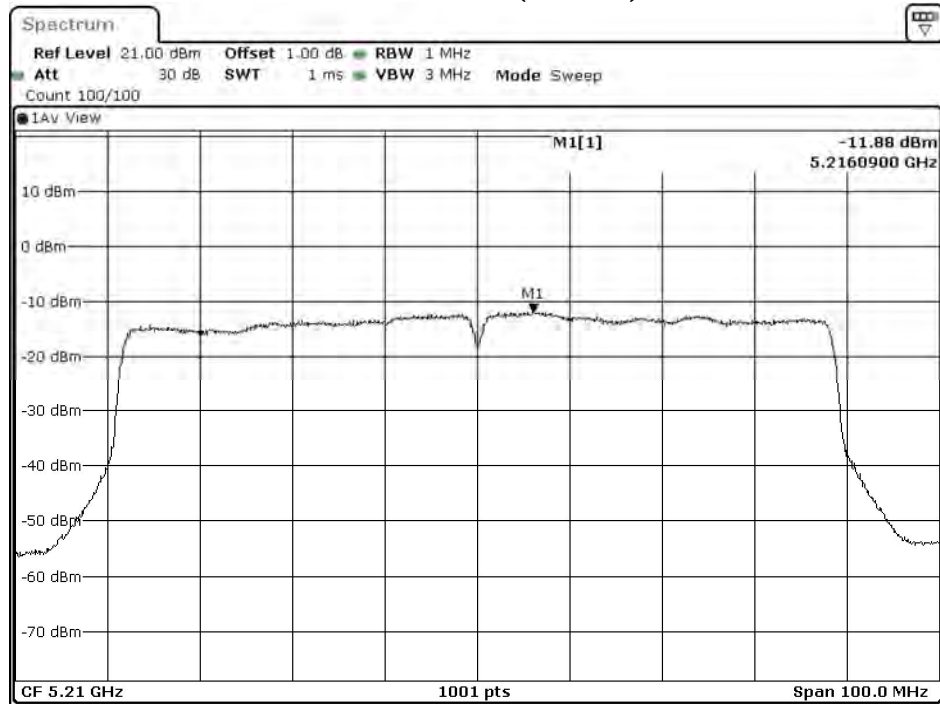
Date: 9.AUG.2021 21:21:26

Product : DIGITAL CAMERA
Test Item : Peak Power Spectral Density
Test Mode : Mode 5: Transmit (802.11ac-80BW 65Mbps)
Test Date : 2021/08/18

Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	$10 \cdot \log(2)$ (dB)	Duty factor (dB)	Total PSD/MHz (dBm)	Required Limit (dBm)	Result
42	5210	VHTO	A	-11.88	3.01	0.32	-8.55	<11	Pass
		MCS0	B	-12.84	3.01	0.32	-9.51	<11	Pass

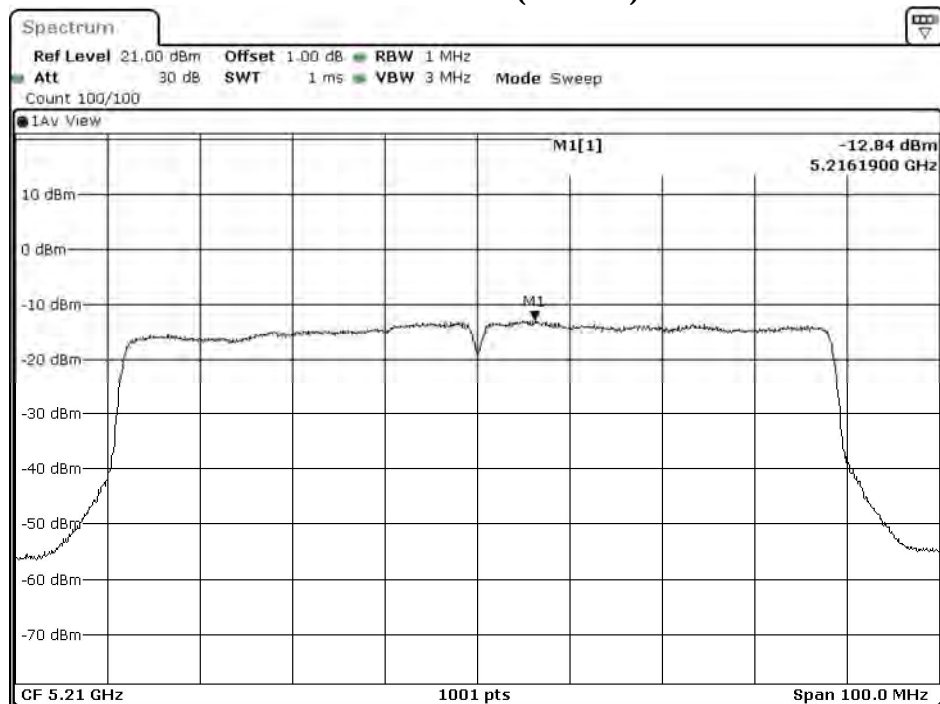
Note: The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel 42 (Chain A)



Date: 9.AUG.2021 17:41:03

Channel 42 (Chain B)

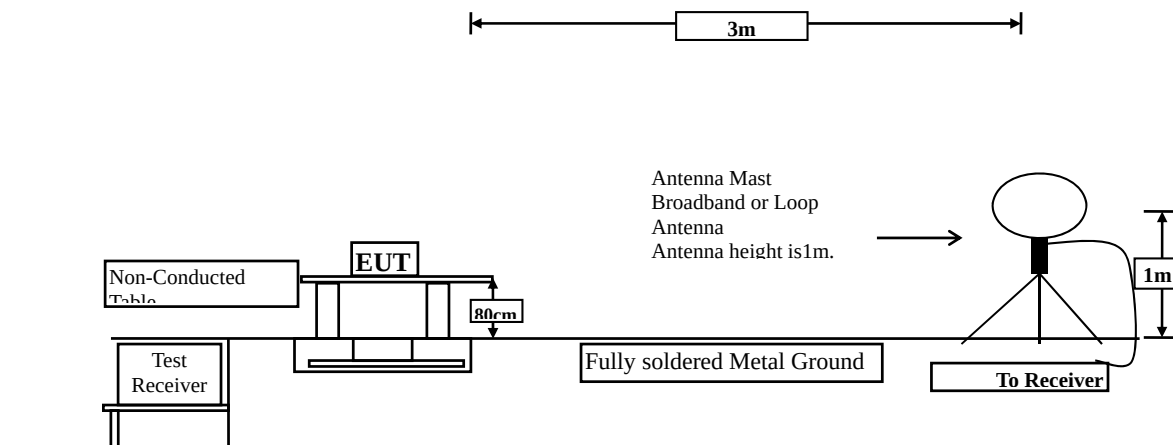


Date: 9.AUG.2021 17:43:26

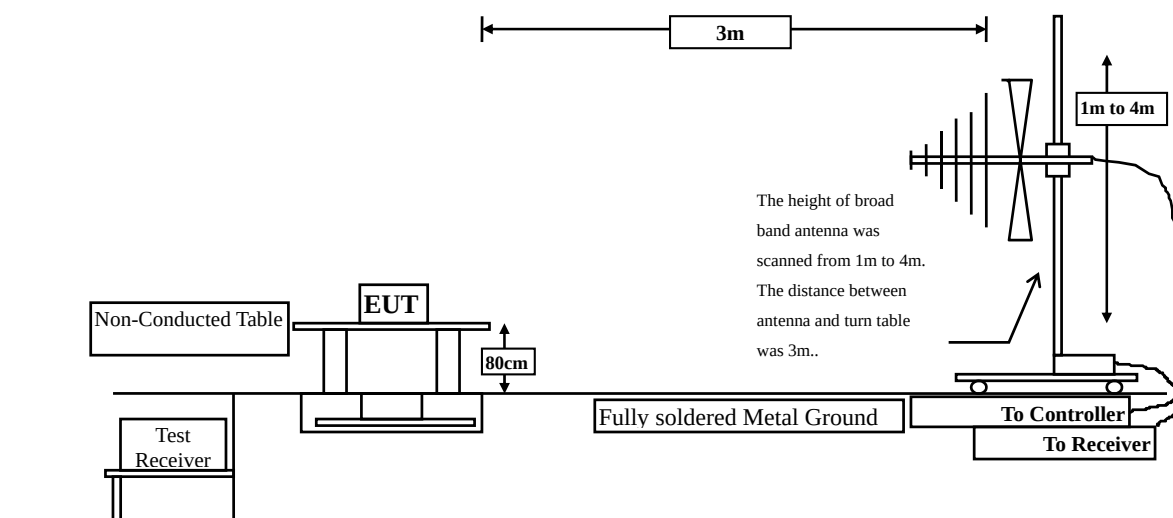
5. Radiated Emission

5.1. Test Setup

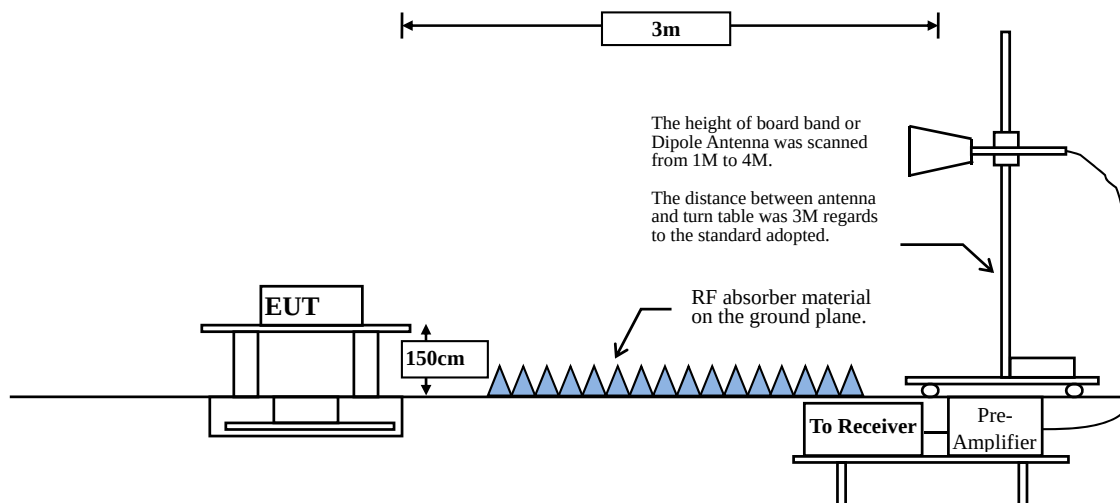
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



5.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dB μ V/m) = 20 log E field strength (uV/m)

5.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna. The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

RBW and VBW Parameter setting:

According to KDB 789033 section II.G.5 Procedure for Unwanted Maximum Emissions
Measurements above 1000 MHz.

RBW = 1MHz.

VBW $\geq$ 3MHz.

According to KDB 789033 section II.G.6 Procedures for Average Unwanted Emissions
Measurements above 1000 MHz.

RBW = 1MHz.

VBW = 10Hz, when duty cycle $\geq$ 98 %

VBW $\geq$ 1/T, when duty cycle < 98 %

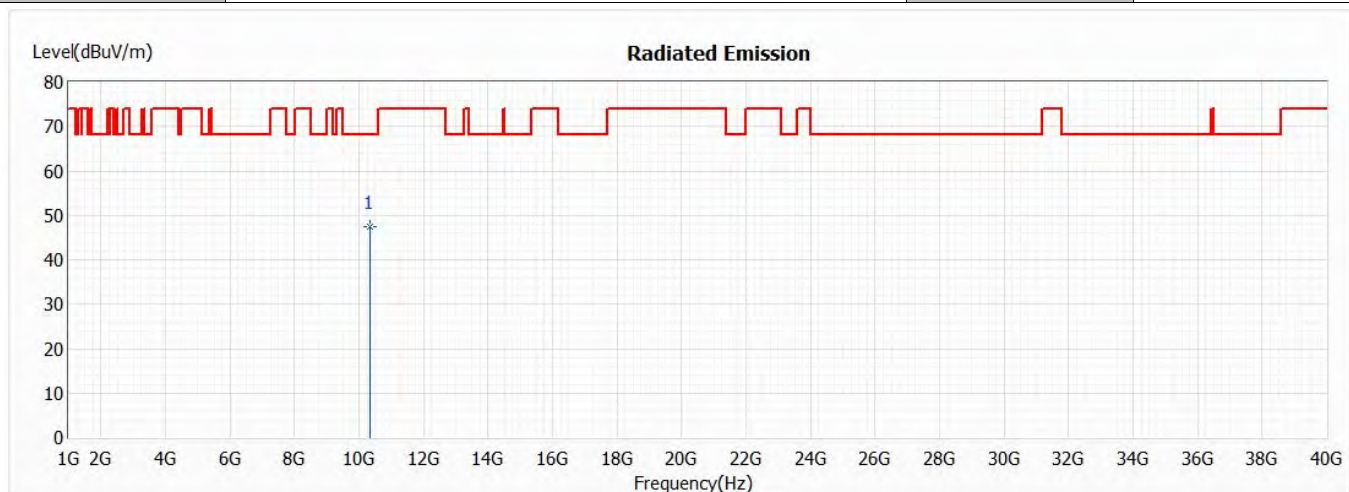
(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

5GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11 a	98.10	2.0640	484	10
802.11 n20	99.39	9.7600	102	10
802.11 n40	89.90	0.8900	1124	2000
802.11 ac40	91.54	0.9090	1100	2000
802.11 ac80	92.81	0.4650	2151	3000

Note: Duty Cycle Refer to Section 8

5.4. Test Result of Radiated Emission

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11a,5.18GHz	Humidity (%RH)	62.3

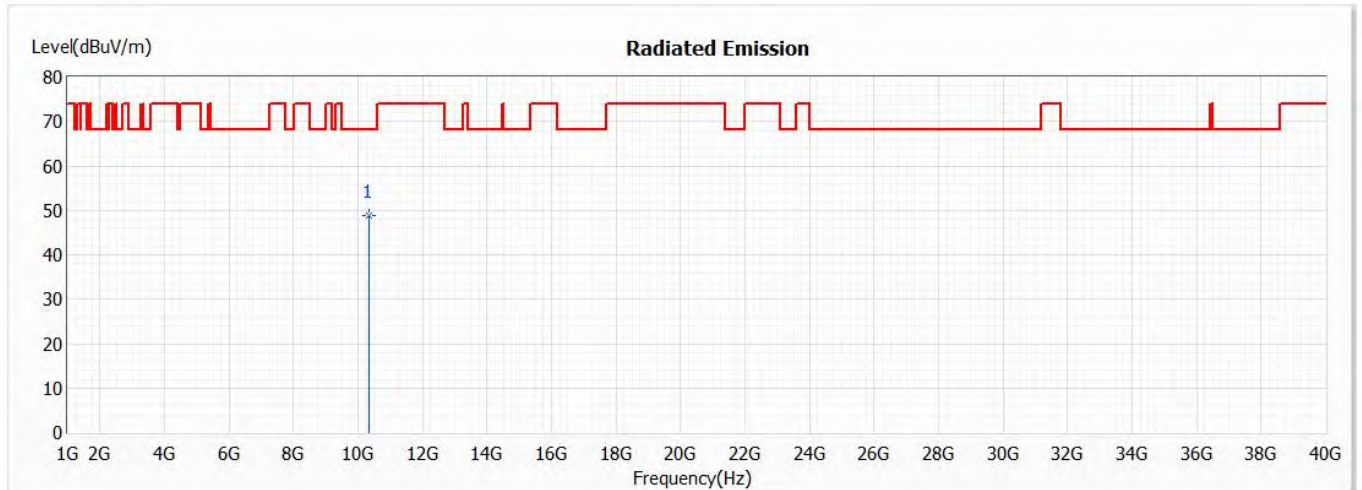


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10360.000	47.32	68.22	-20.90	39.59	7.73	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11a,5.18GHz	Humidity (%RH)	62.3

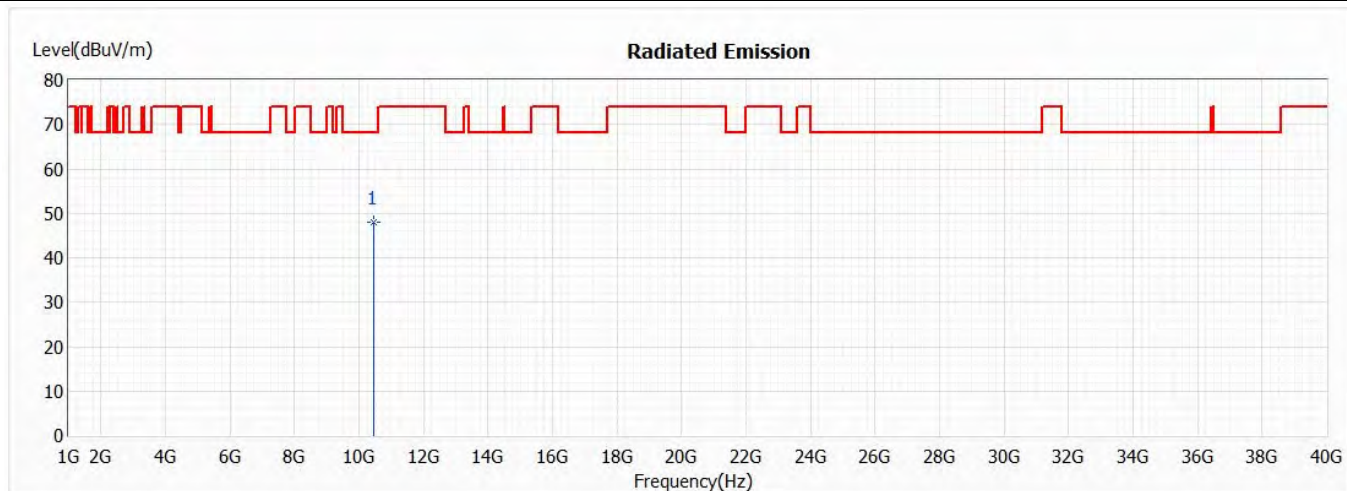


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10360.000	48.71	68.22	-19.51	40.98	7.73	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11a,5.22GHz	Humidity (%RH)	62.3

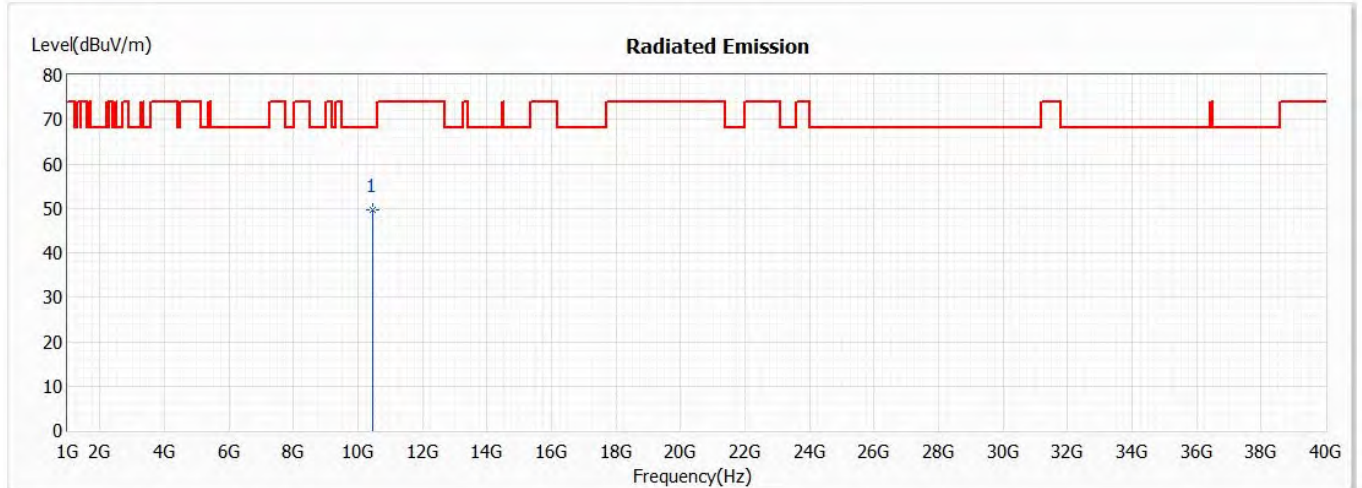


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10440.000	48.07	68.22	-20.15	40.32	7.75	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11a,5.22GHz	Humidity (%RH)	62.3

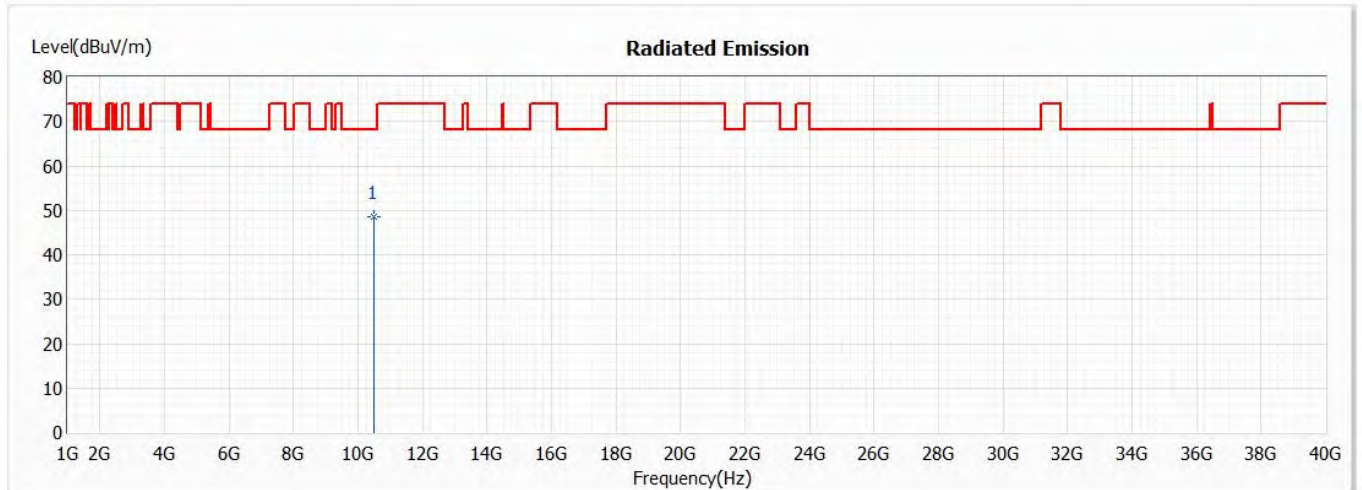


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10440.000	49.74	68.22	-18.48	41.99	7.75	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11a,5.24GHz	Humidity (%RH)	62.3

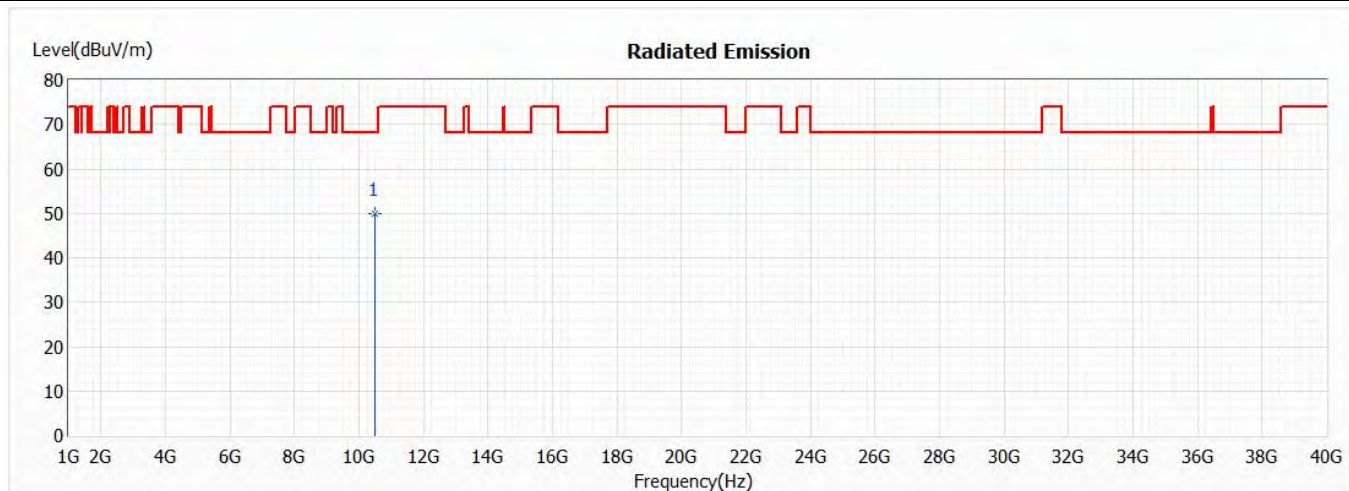


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10480.000	48.46	68.22	-19.76	40.75	7.71	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11a,5.24GHz	Humidity (%RH)	62.3

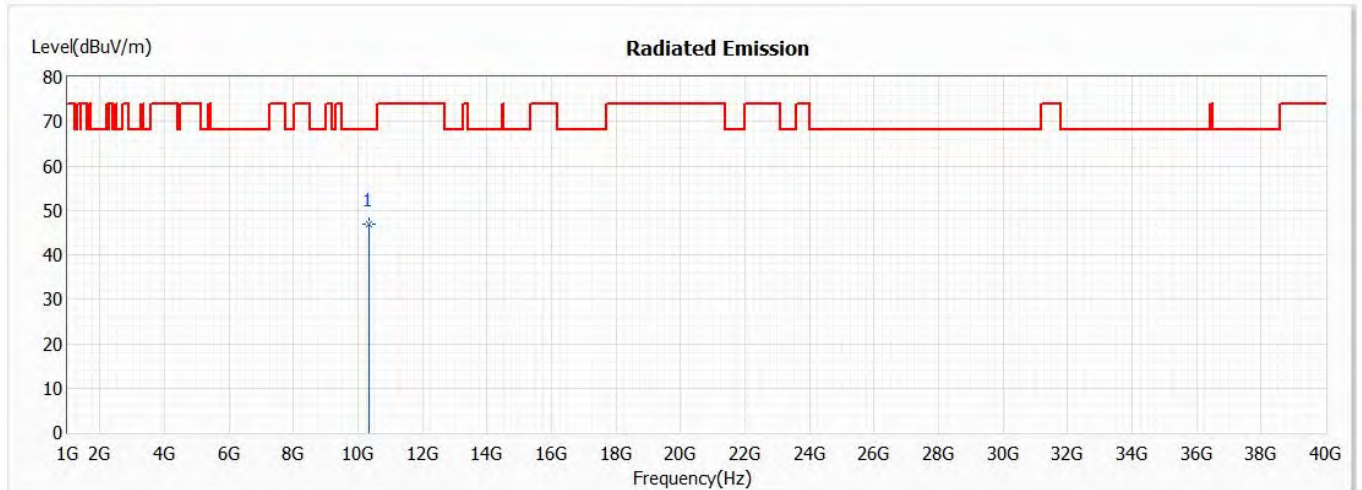


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10480.000	50.06	68.22	-18.16	42.35	7.71	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11n20,5.18GHz	Humidity (%RH)	62.3

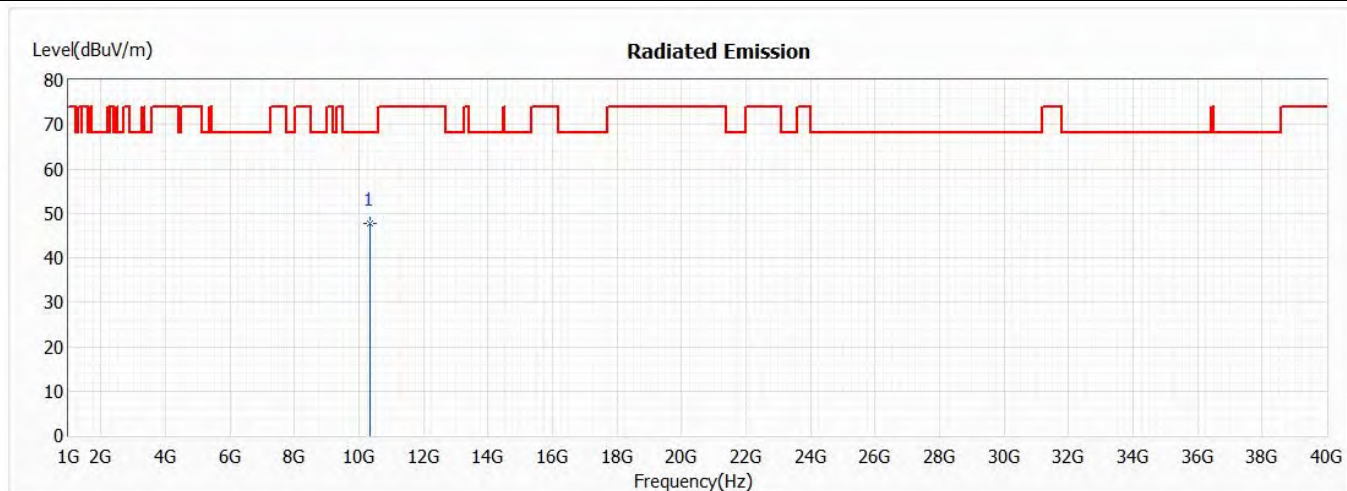


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10360.000	46.77	68.22	-21.45	39.04	7.73	PK

Remark:

1. "*" means this data is the worst emission level;
"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11n20,5.18GHz	Humidity (%RH)	62.3

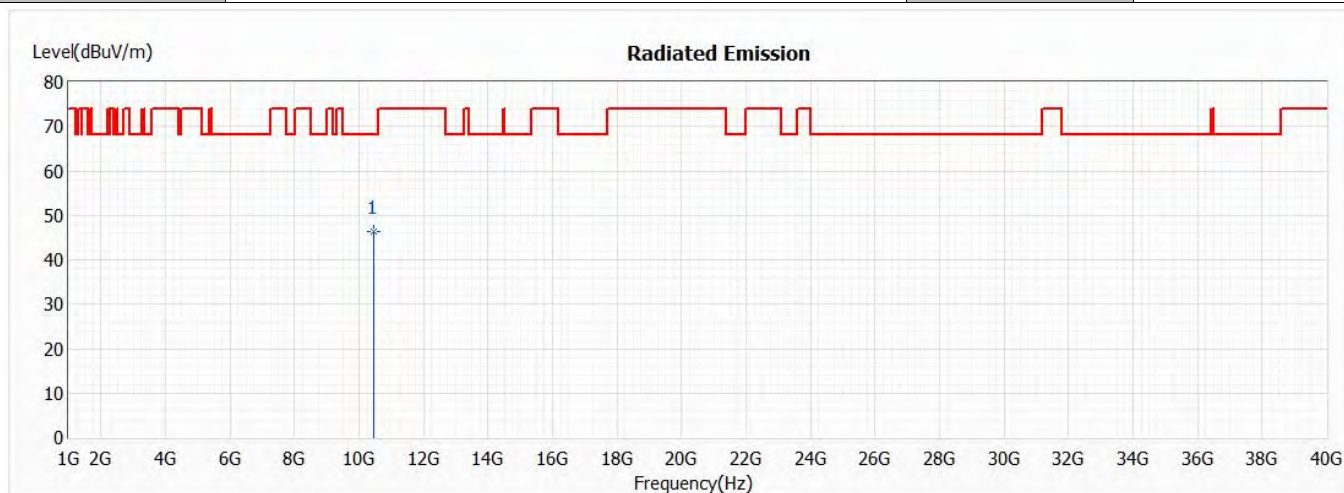


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10360.000	47.79	68.22	-20.43	40.06	7.73	PK

Remark:

1. "*" means this data is the worst emission level;
"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11n20,5.22GHz	Humidity (%RH)	62.3

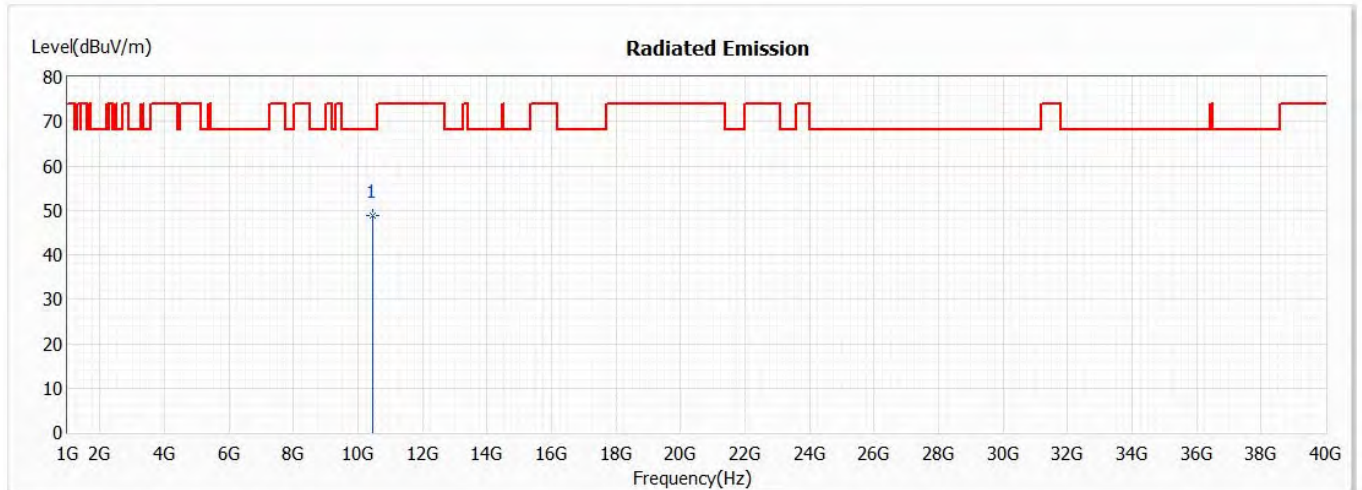


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10440.000	46.25	68.22	-21.97	38.50	7.75	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11n20,5.22GHz	Humidity (%RH)	62.3

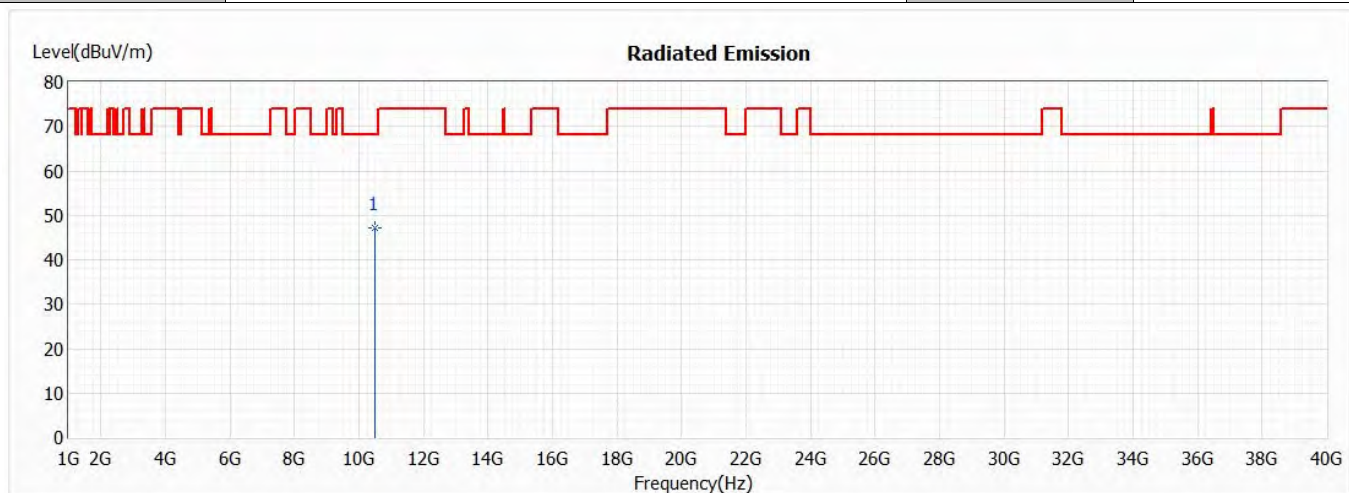


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10440.000	48.90	68.22	-19.32	41.15	7.75	PK

Remark:

1. "*" means this data is the worst emission level;
"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11n20,5.24GHz	Humidity (%RH)	62.3

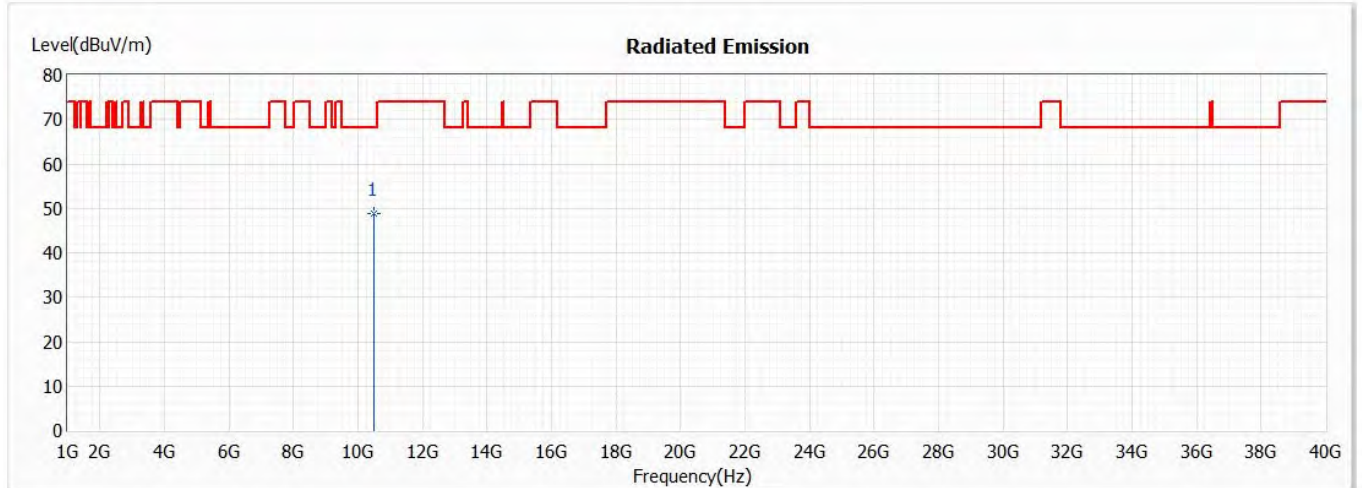


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10480.000	47.28	68.22	-20.94	39.57	7.71	PK

Remark:

1. "*" means this data is the worst emission level;
"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11n20,5.24GHz	Humidity (%RH)	62.3

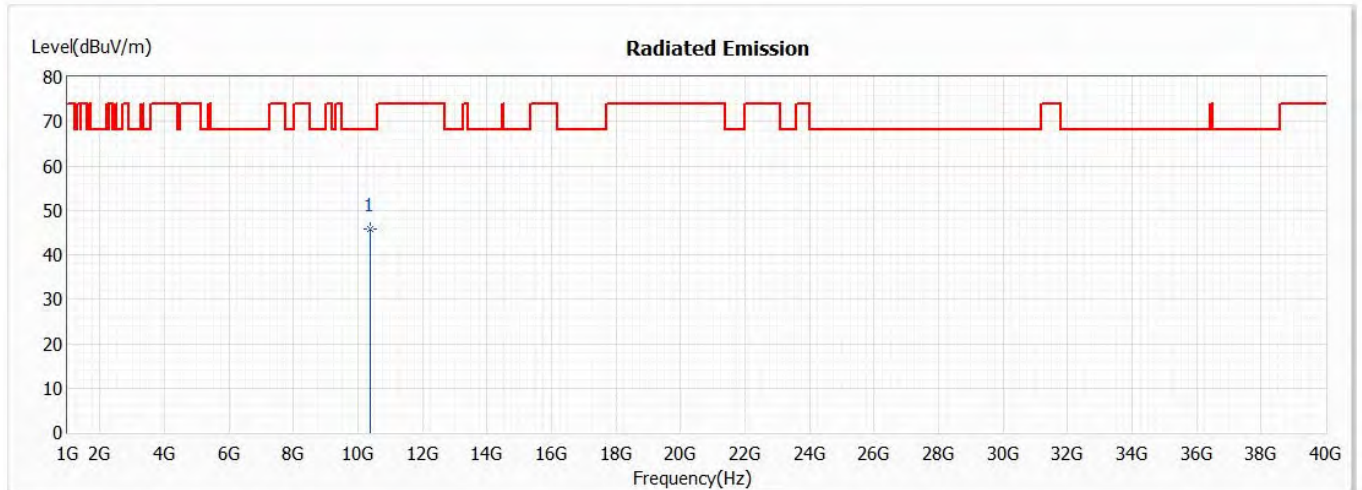


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10480.000	48.95	68.22	-19.27	41.24	7.71	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11ac40,5.19GHz	Humidity (%RH)	62.3

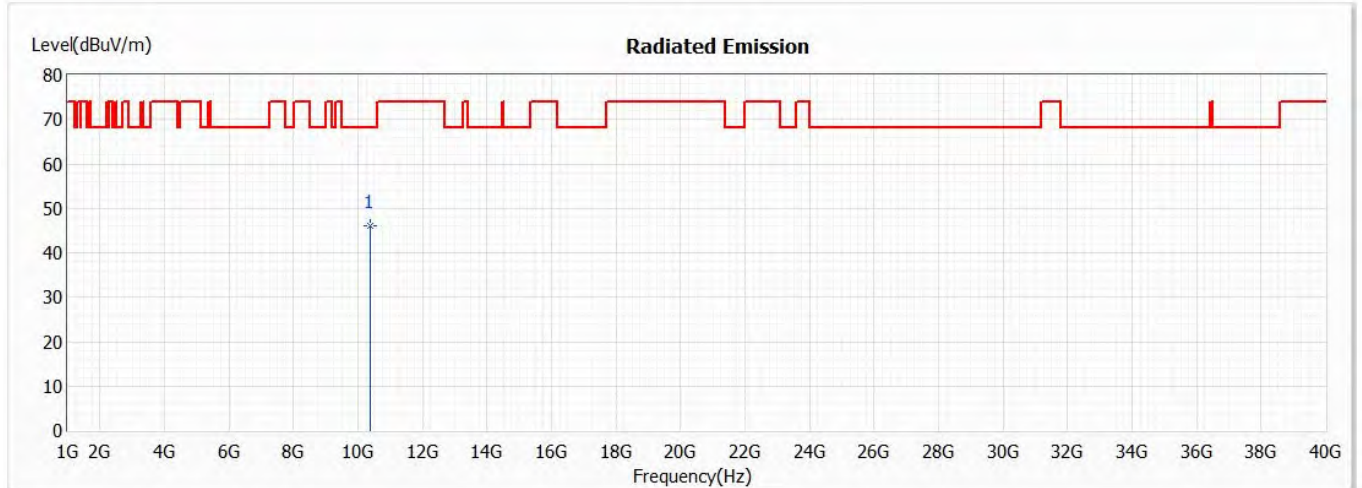


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10380.000	45.87	68.22	-22.35	38.13	7.74	PK

Remark:

1. "*" means this data is the worst emission level;
"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11ac40,5.19GHz	Humidity (%RH)	62.3

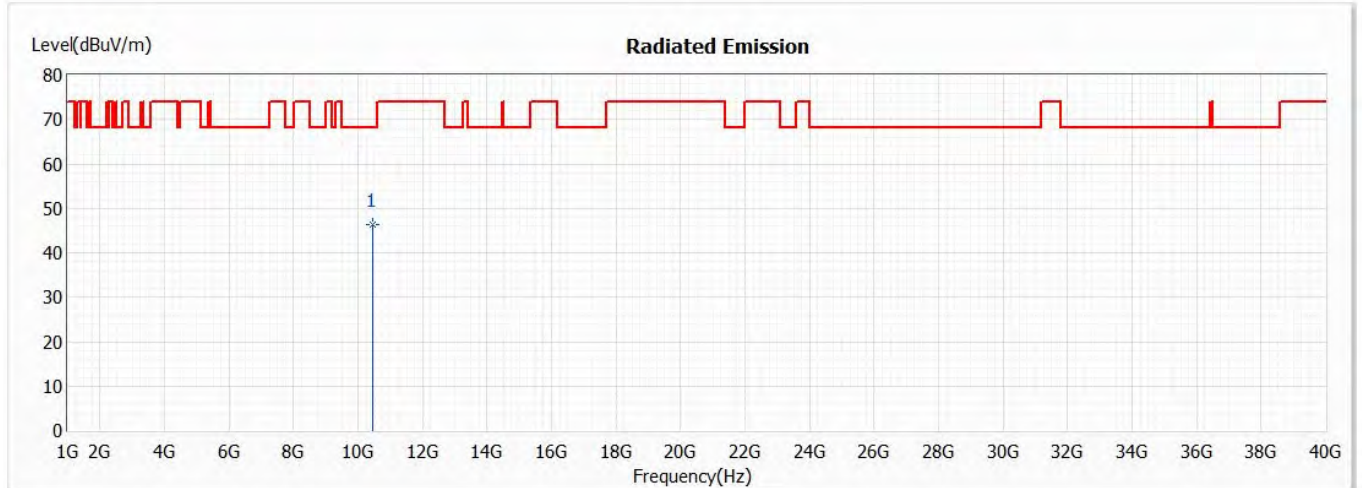


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10380.000	46.13	68.22	-22.09	38.39	7.74	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11ac40,5.23GHz	Humidity (%RH)	62.3

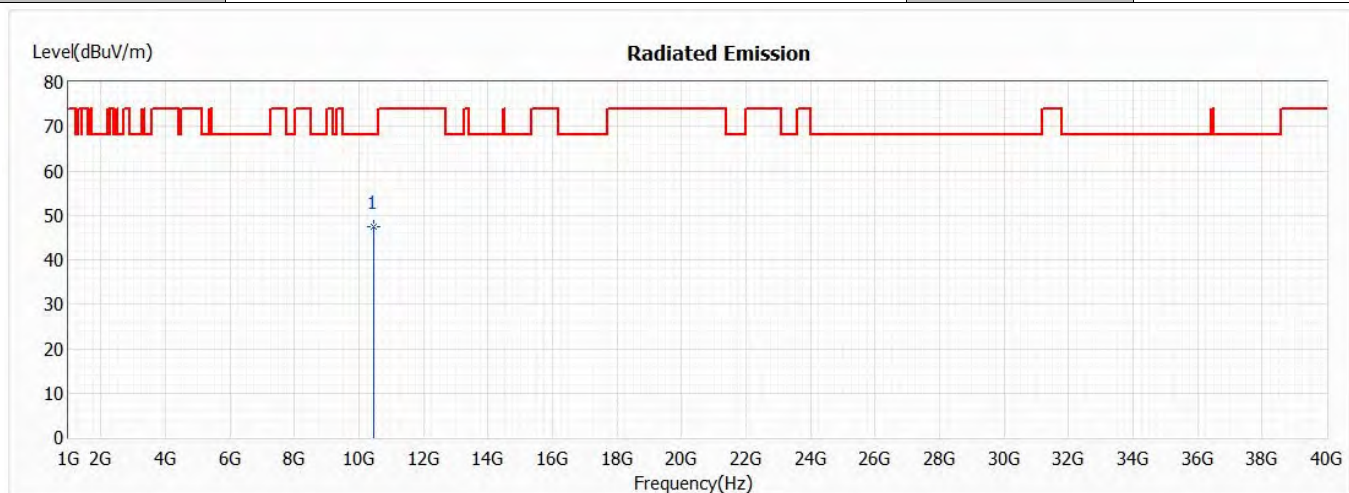


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10460.000	46.38	68.22	-21.84	38.65	7.73	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11ac40,5.23GHz	Humidity (%RH)	62.3

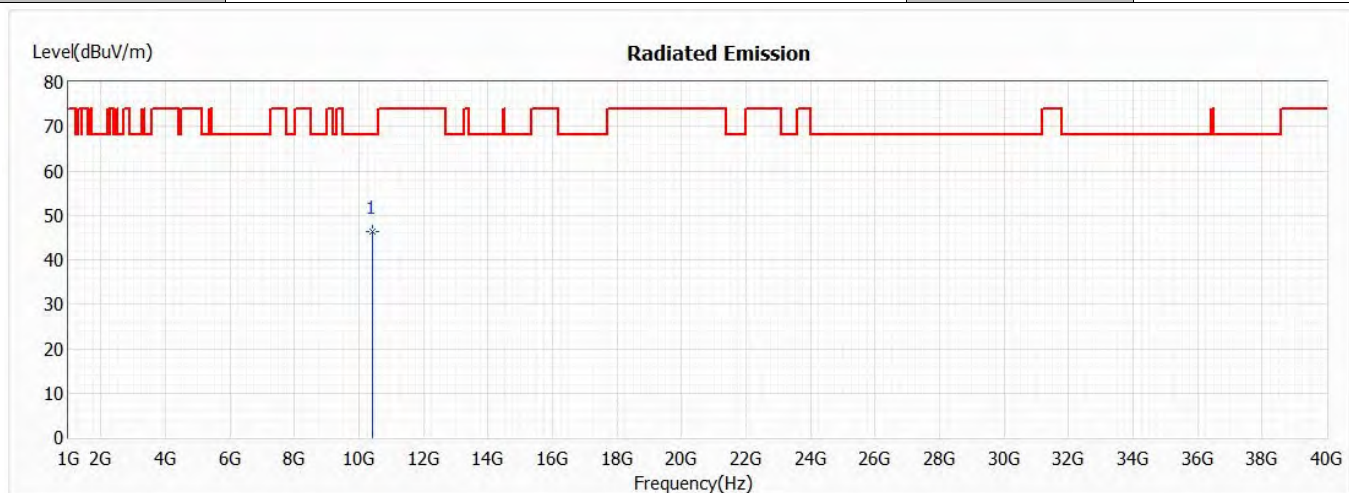


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10460.000	47.44	68.22	-20.78	39.71	7.73	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11ac80,5.21GHz	Humidity (%RH)	62.3

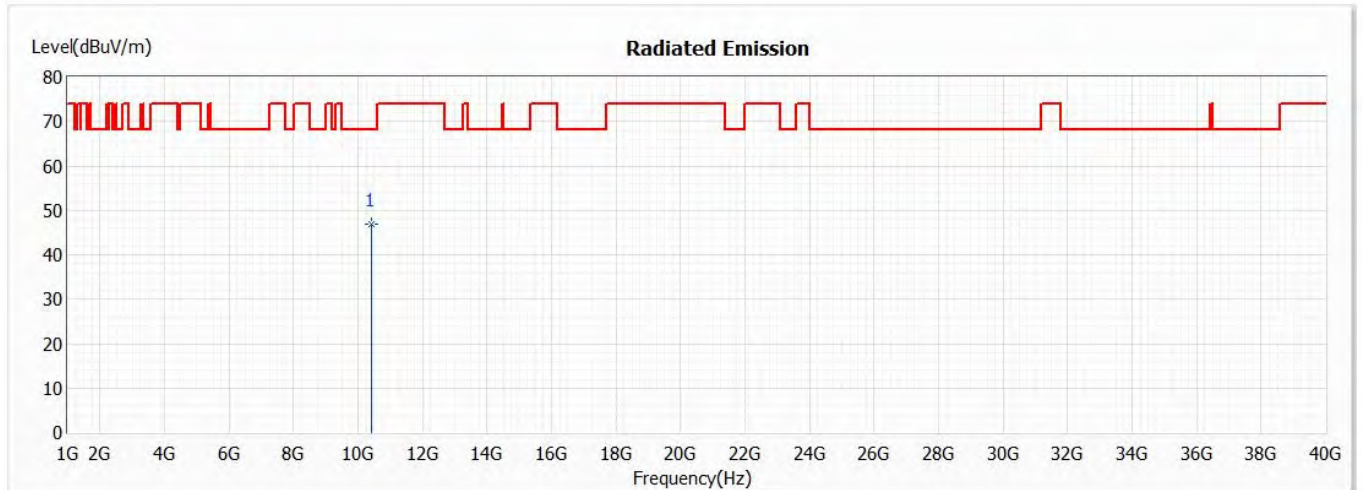


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10420.000	46.34	68.22	-21.88	38.59	7.75	PK

Remark:

1. "*" means this data is the worst emission level;
"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11ac80,5.21GHz	Humidity (%RH)	62.3

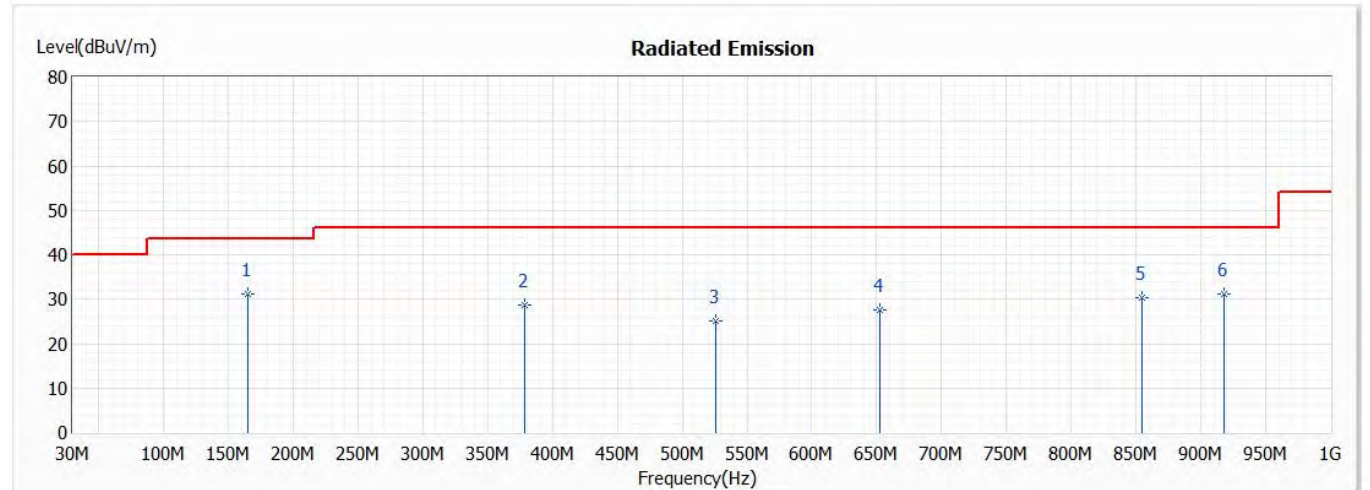


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	10420.000	46.99	68.22	-21.23	39.24	7.75	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11ac80,5.21GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	164.830	31.15	43.50	-12.35	41.63	-10.48	QP
2	378.230	28.79	46.00	-17.21	36.56	-7.77	QP
3	525.670	25.23	46.00	-20.77	29.85	-4.62	QP
4	652.740	27.50	46.00	-18.50	30.00	-2.50	QP
5	854.500	30.31	46.00	-15.69	30.05	0.26	QP
6	917.550	31.17	46.00	-14.83	29.95	1.22	QP

Remark:

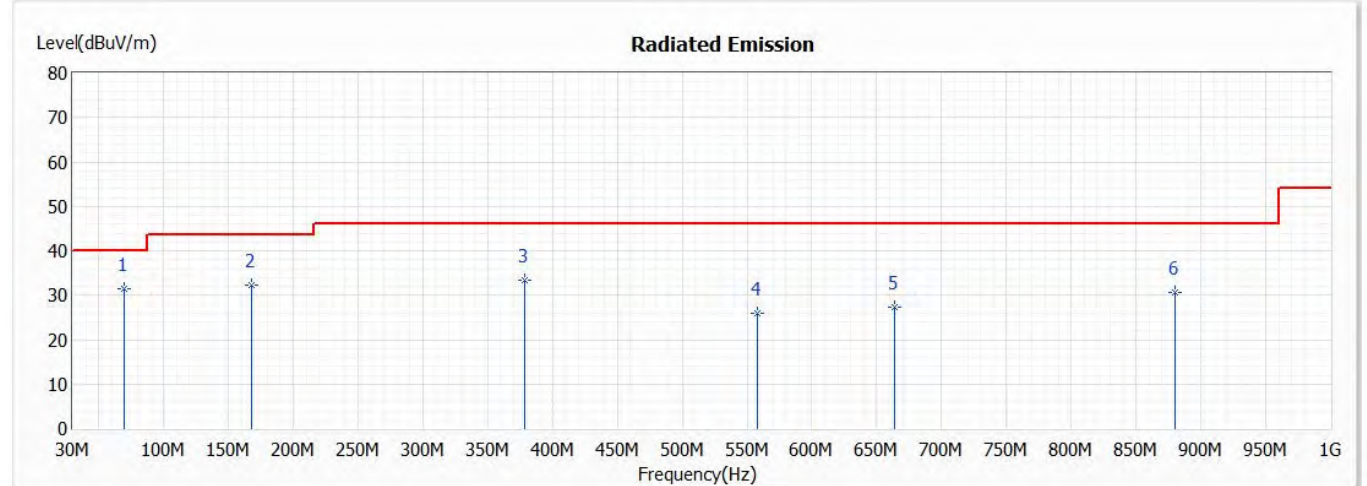
1. "*" means this data is the worst emission level;

"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/8/2
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11ac80,5.21GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	69.770	31.45	40.00	-8.55	44.86	-13.41	QP
2	167.740	32.25	43.50	-11.25	42.71	-10.46	QP
3	378.230	33.43	46.00	-12.57	41.20	-7.77	QP
4	557.680	25.87	46.00	-20.13	29.94	-4.07	QP
5	663.410	27.34	46.00	-18.66	29.77	-2.43	QP
6	879.720	30.51	46.00	-15.49	30.03	0.48	QP

Remark:

1. "*" means this data is the worst emission level;

"!" means this data is over limit.

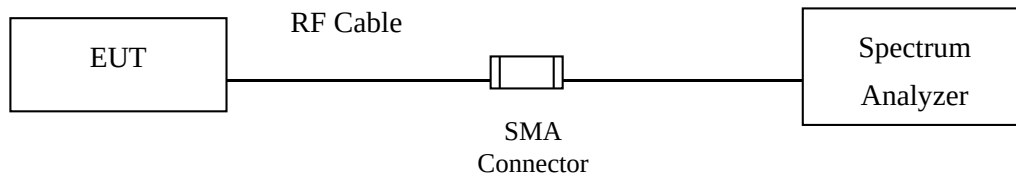
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

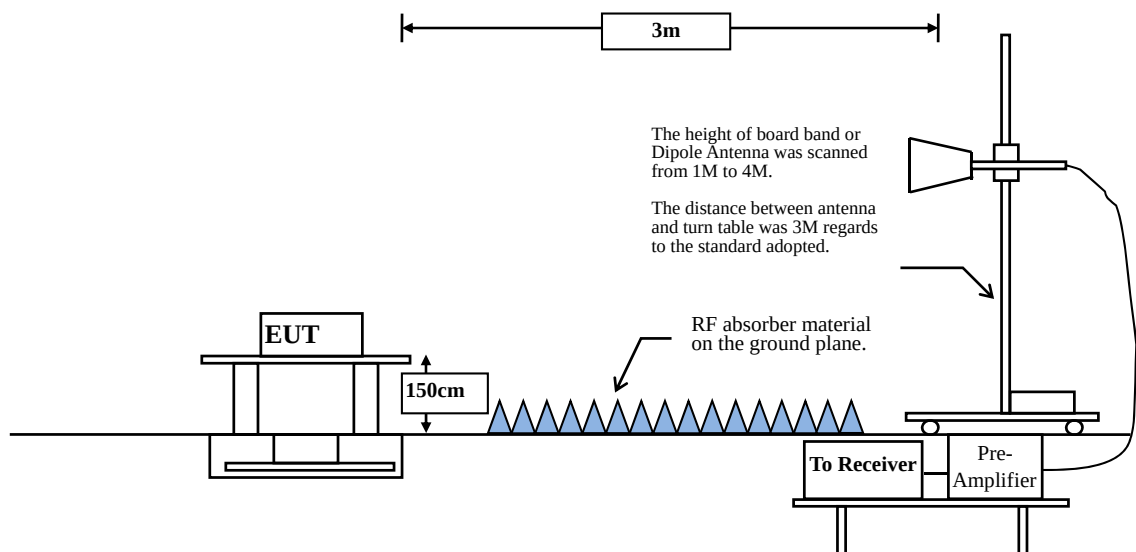
6. Band Edge

6.1. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:



6.2. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBμV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks :

1. RF Voltage (dBμV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

6.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz. The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

RBW and VBW Parameter setting:

According to KDB 789033 section II.G.5 Procedure for Unwanted Maximum Emissions
Measurements above 1000 MHz.

RBW = 1MHz.

VBW $\geq$ 3MHz.

According to KDB 789033 section II.G.6 Procedures for Average Unwanted Emissions
Measurements above 1000 MHz.

RBW = 1MHz.

VBW = 10Hz, when duty cycle $\geq$ 98 %

VBW $\geq$ 1/T, when duty cycle < 98 %

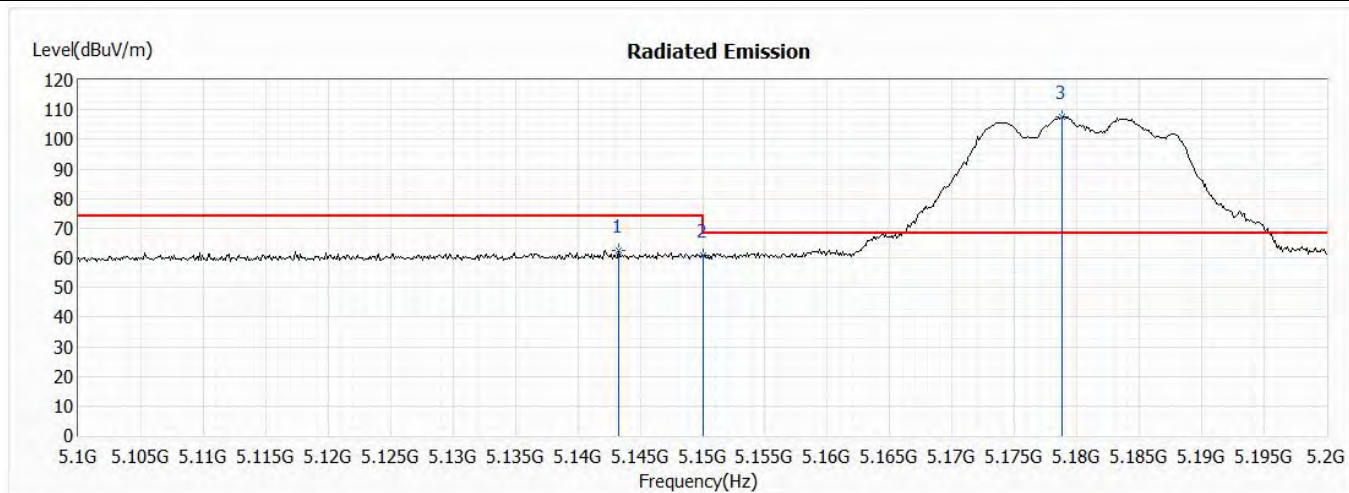
(T refers to the minimum transmission duration over which the transmitter is on and is
transmitting at its maximum power control level for the tested mode of operation.)

5GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11 a	98.10	2.0640	484	10
802.11 n20	99.39	9.7600	102	10
802.11 n40	89.90	0.8900	1124	2000
802.11 ac40	91.54	0.9090	1100	2000
802.11 ac80	92.81	0.4650	2151	3000

Note: Duty Cycle Refer to Section 8

6.4. Test Result of Band Edge

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11a,MIMO,5.18GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5143.300	62.49	74.00	-11.51	43.20	19.29	PK
2	5150.000	60.76	74.00	-13.24	41.45	19.31	PK
! 3	5178.800	107.42	68.22	39.20	88.00	19.42	PK

Remark:

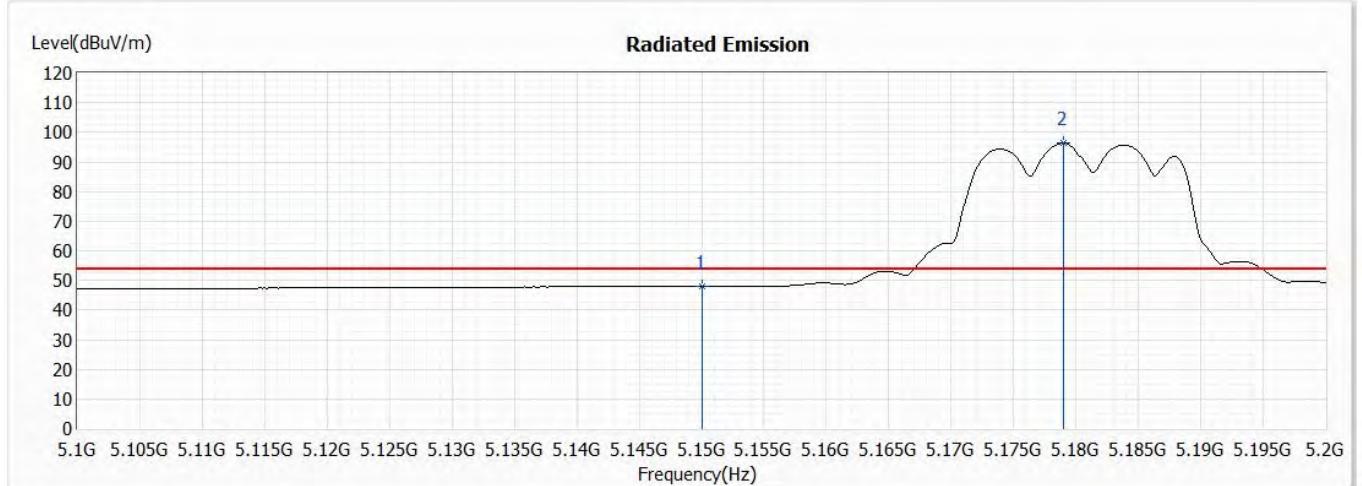
1. "*" means this data is the worst emission level;

"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11a,MIMO,5.18GHz	Humidity (%RH)	62.3

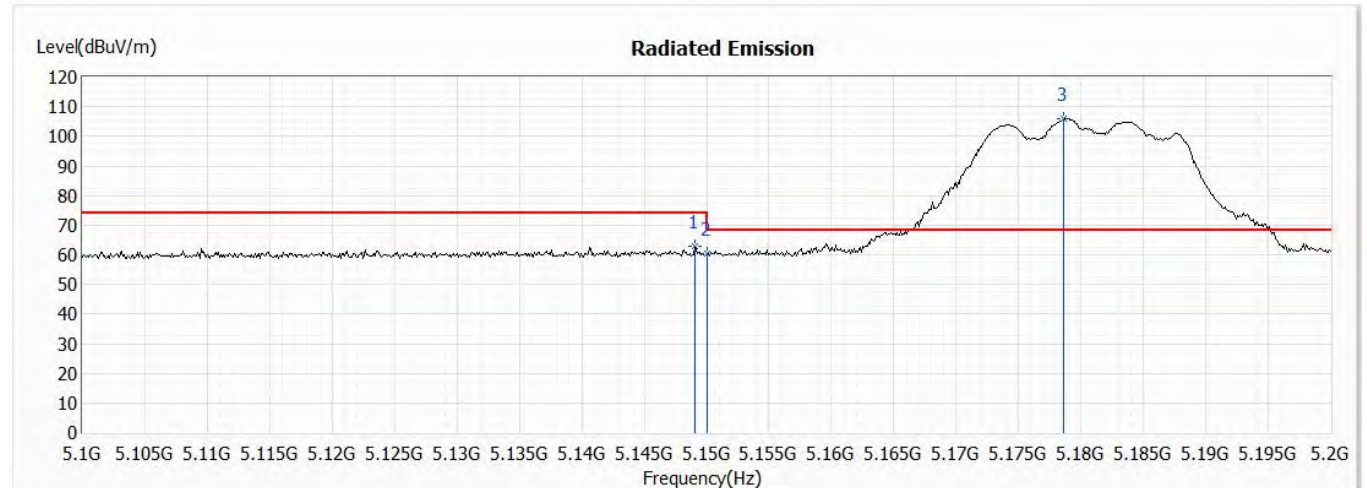


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5150.000	48.06	54.00	-5.94	28.75	19.31	AV
! 2	5179.000	96.33	54.00	42.33	76.91	19.42	AV

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11a,MIMO,5.18GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5149.100	63.02	74.00	-10.98	43.71	19.31	PK
2	5150.000	60.22	74.00	-13.78	40.91	19.31	PK
! 3	5178.600	105.80	68.22	37.58	86.38	19.42	PK

Remark:

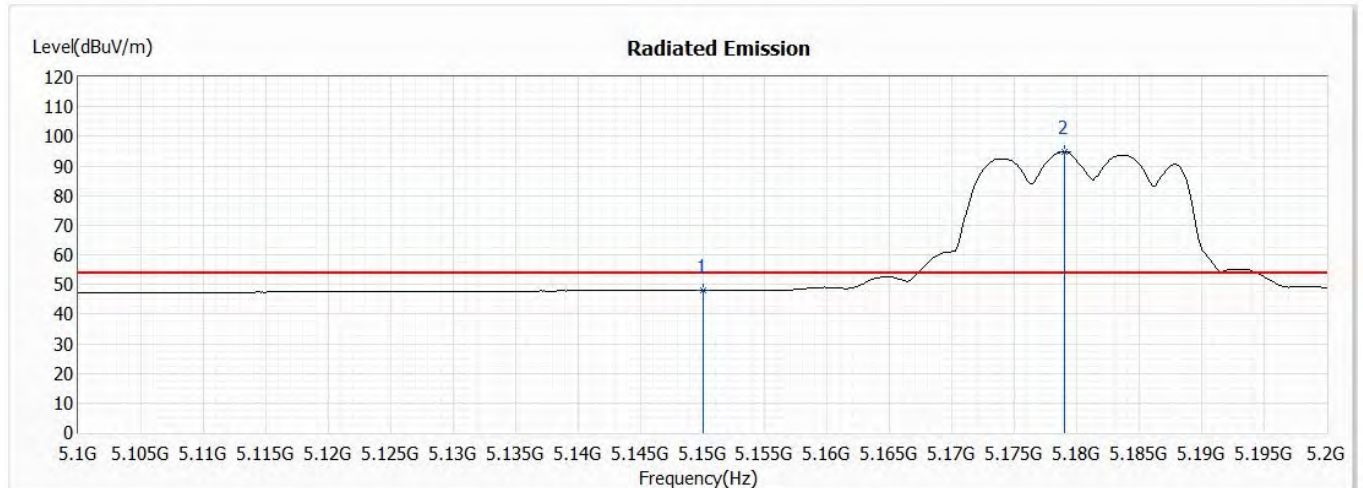
1. "*" means this data is the worst emission level;

"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11a,MIMO,5.18GHz	Humidity (%RH)	62.3

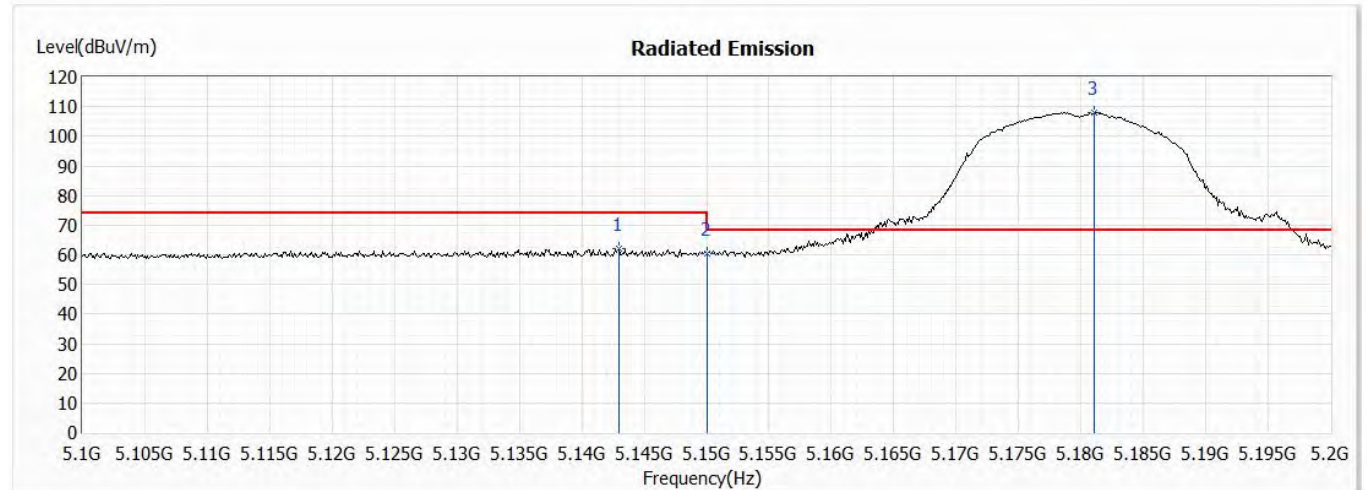


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5150.000	48.01	54.00	-5.99	28.70	19.31	AV
! 2	5179.000	94.72	54.00	40.72	75.30	19.42	AV

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11n20,MIMO,5.18GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5143.000	62.05	74.00	-11.95	42.76	19.29	PK
2	5150.000	60.62	74.00	-13.38	41.31	19.31	PK
! 3	5181.100	108.05	68.22	39.83	88.62	19.43	PK

Remark:

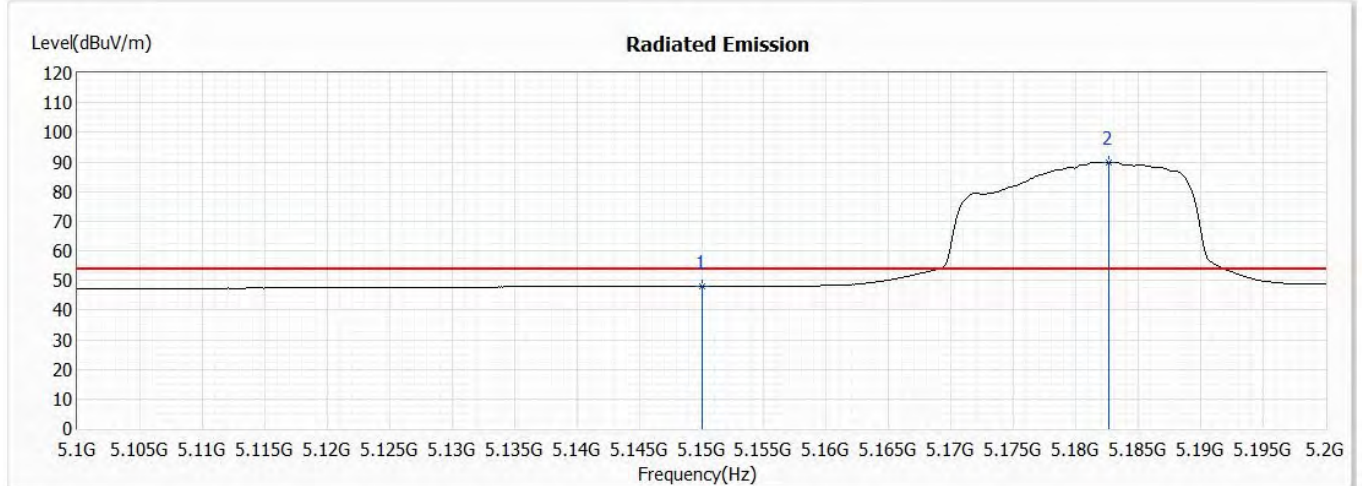
1. "*" means this data is the worst emission level;

"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11n20,MIMO,5.18GHz	Humidity (%RH)	62.3

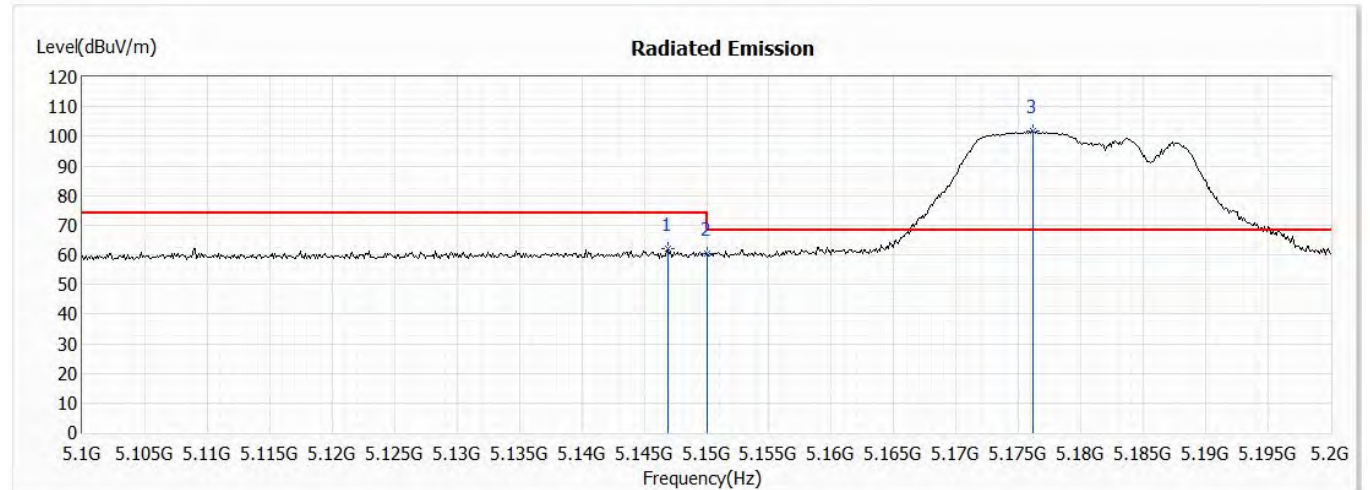


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5150.000	48.04	54.00	-5.96	28.73	19.31	AV
! 2	5182.600	89.86	54.00	35.86	70.42	19.44	AV

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11n20,MIMO,5.18GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5146.900	61.87	74.00	-12.13	42.57	19.30	PK
2	5150.000	60.23	74.00	-13.77	40.92	19.31	PK
! 3	5176.200	101.66	68.22	33.44	82.25	19.41	PK

Remark:

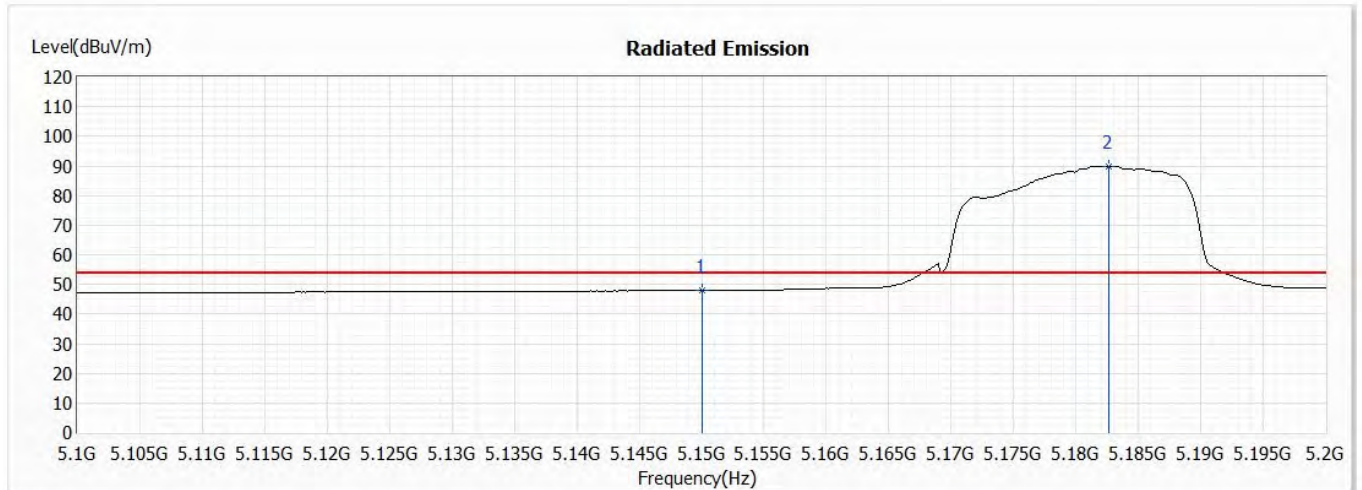
1. "*" means this data is the worst emission level;

"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11n20,MIMO,5.18GHz	Humidity (%RH)	62.3

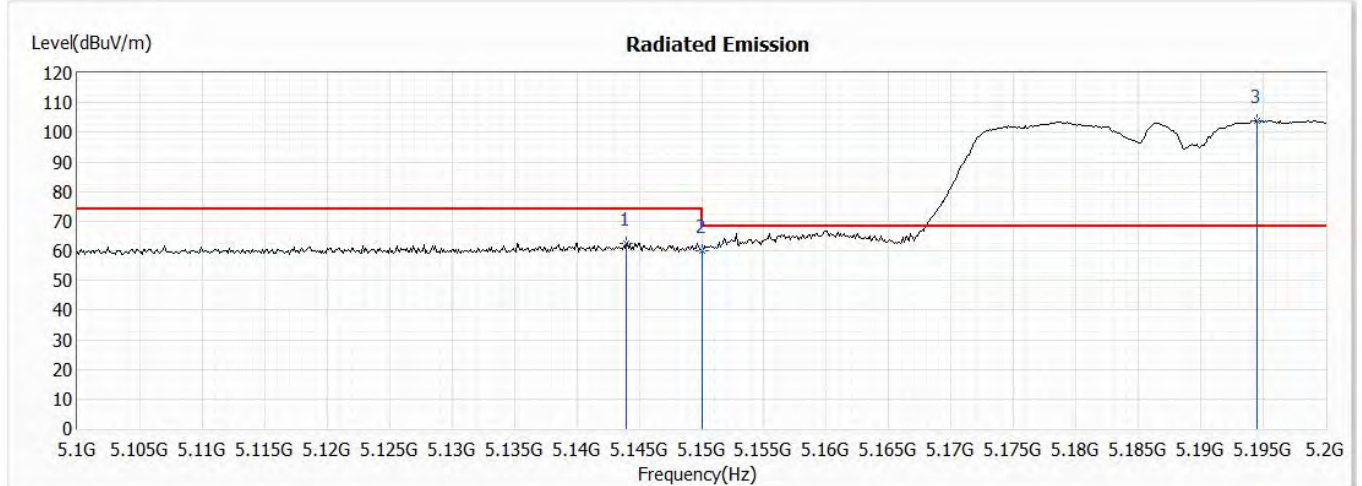


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5150.000	47.89	54.00	-6.11	28.58	19.31	AV
! 2	5182.600	89.86	54.00	35.86	70.42	19.44	AV

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11ac40,MIMO,5.19GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5144.000	62.62	74.00	-11.38	43.32	19.30	PK
2	5150.000	60.20	74.00	-13.80	40.89	19.31	PK
! 3	5194.500	103.94	68.22	35.72	84.46	19.48	PK

Remark:

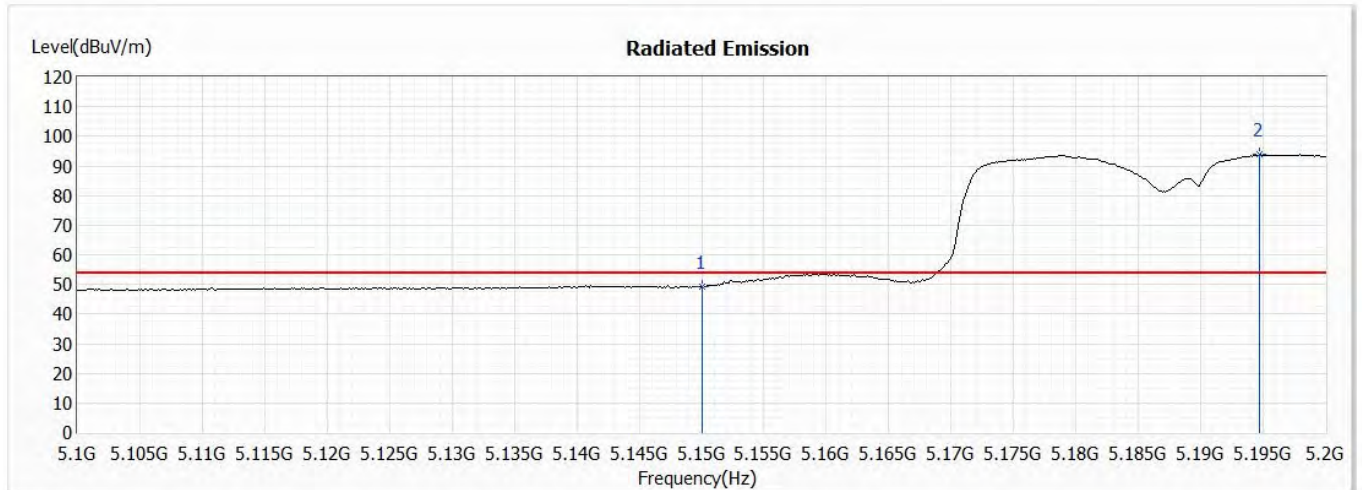
1. "*" means this data is the worst emission level;

"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11ac40,MIMO,5.19GHz	Humidity (%RH)	62.3

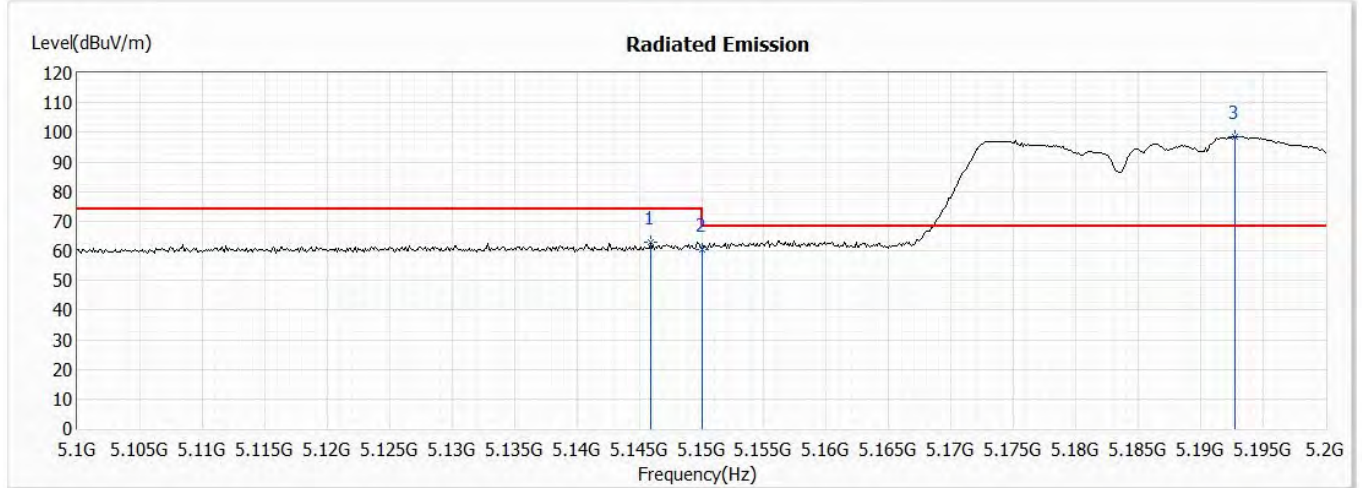


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5150.000	49.39	54.00	-4.61	30.08	19.31	AV
! 2	5194.700	93.85	54.00	39.85	74.37	19.48	AV

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11ac40,MIMO,5.19GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5145.900	62.84	74.00	-11.16	43.54	19.30	PK
2	5150.000	60.51	74.00	-13.49	41.20	19.31	PK
! 3	5192.700	98.45	68.22	30.23	78.97	19.48	PK

Remark:

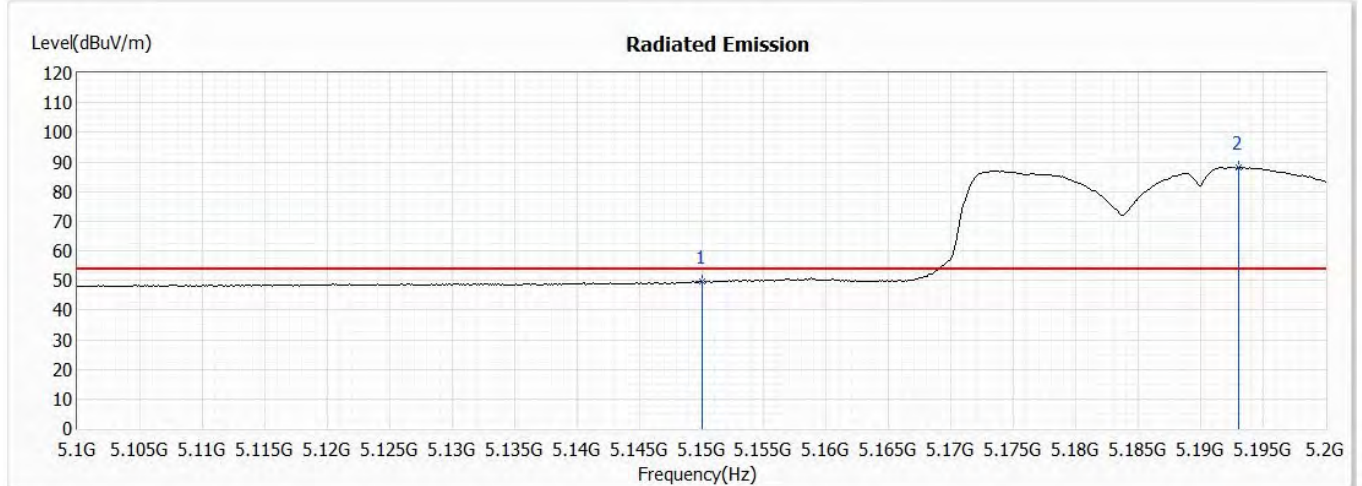
1. "*" means this data is the worst emission level;

"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11ac40,MIMO,5.19GHz	Humidity (%RH)	62.3

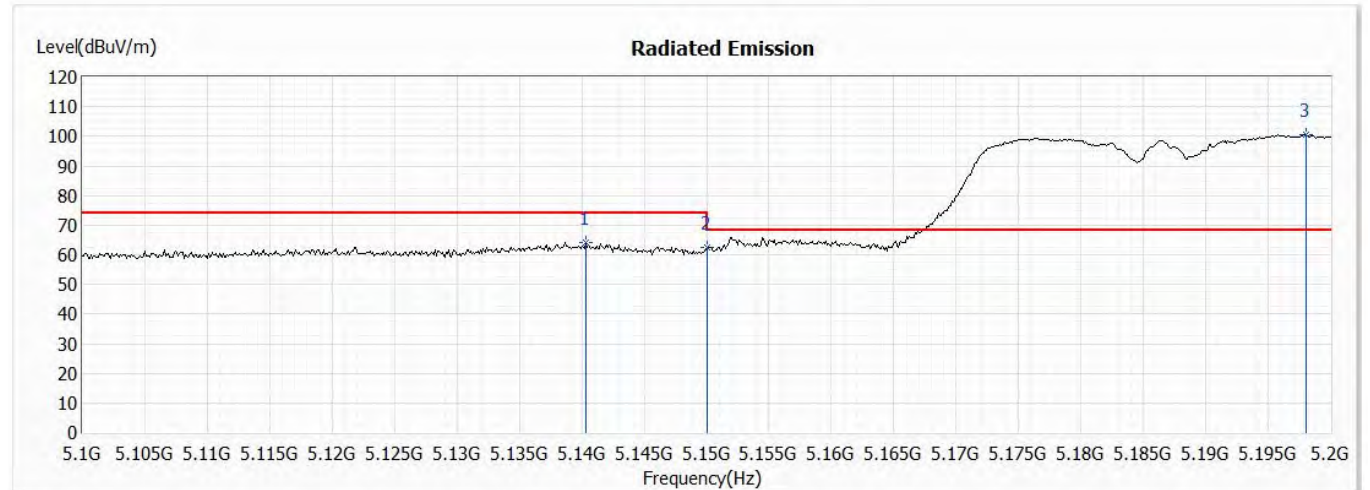


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5150.000	49.63	54.00	-4.37	30.32	19.31	AV
! 2	5193.000	88.14	54.00	34.14	68.66	19.48	AV

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11ac80,MIMO,5.21GHz	Humidity (%RH)	62.3

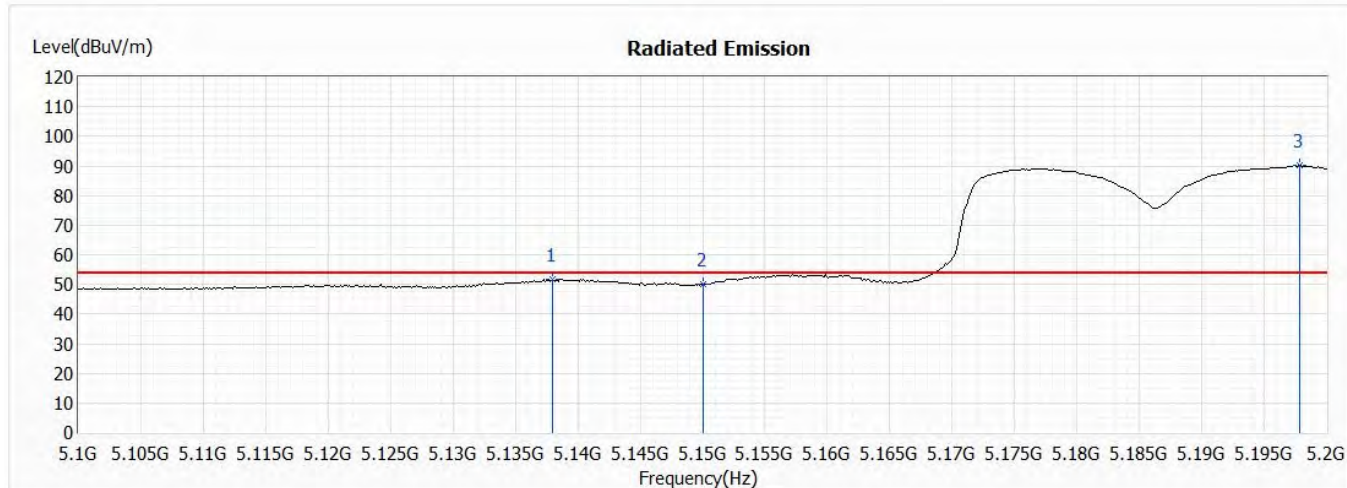


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5140.300	64.34	74.00	-9.66	45.06	19.28	PK
2	5150.000	62.41	74.00	-11.59	43.10	19.31	PK
! 3	5198.000	100.71	68.22	32.49	81.21	19.50	PK

Remark:

- "*" means this data is the worst emission level;
"!" means this data is over limit.
- Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).
- Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Horizontal	Temperature (°C)	25.5
Test Condition	802.11ac80,MIMO,5.21GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5138.000	51.61	54.00	-2.39	32.34	19.27	AV
2	5150.000	49.92	54.00	-4.08	30.61	19.31	AV
! 3	5197.800	90.23	54.00	36.23	70.73	19.50	AV

Remark:

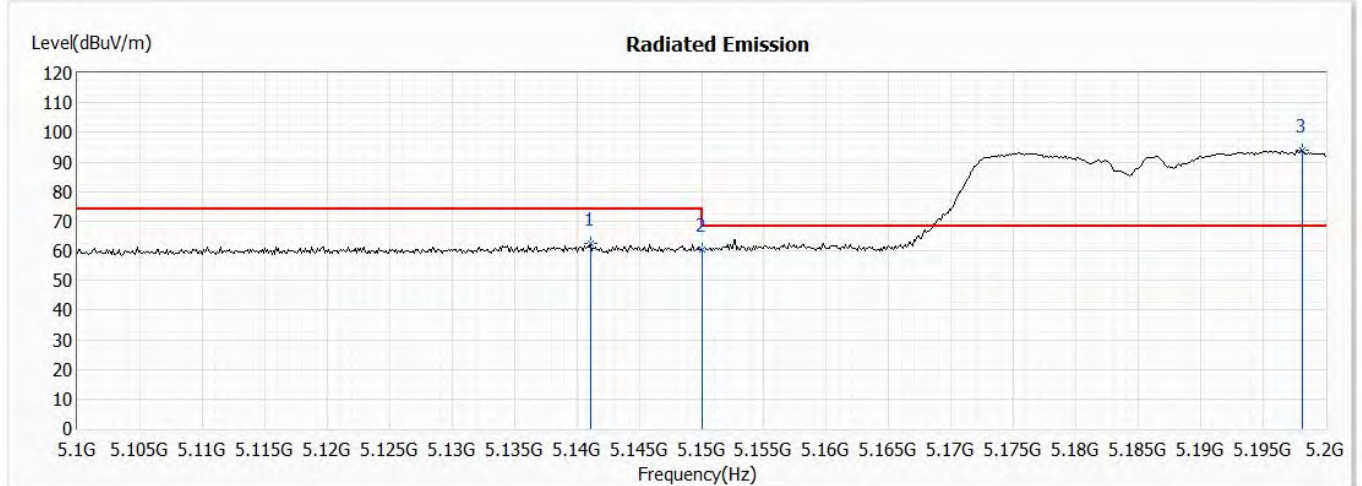
1. "*" means this data is the worst emission level;

"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11ac80,MIMO,5.21GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5141.100	62.38	74.00	-11.62	43.10	19.28	PK
2	5150.000	60.34	74.00	-13.66	41.03	19.31	PK
! 3	5198.100	94.01	68.22	25.79	74.51	19.50	PK

Remark:

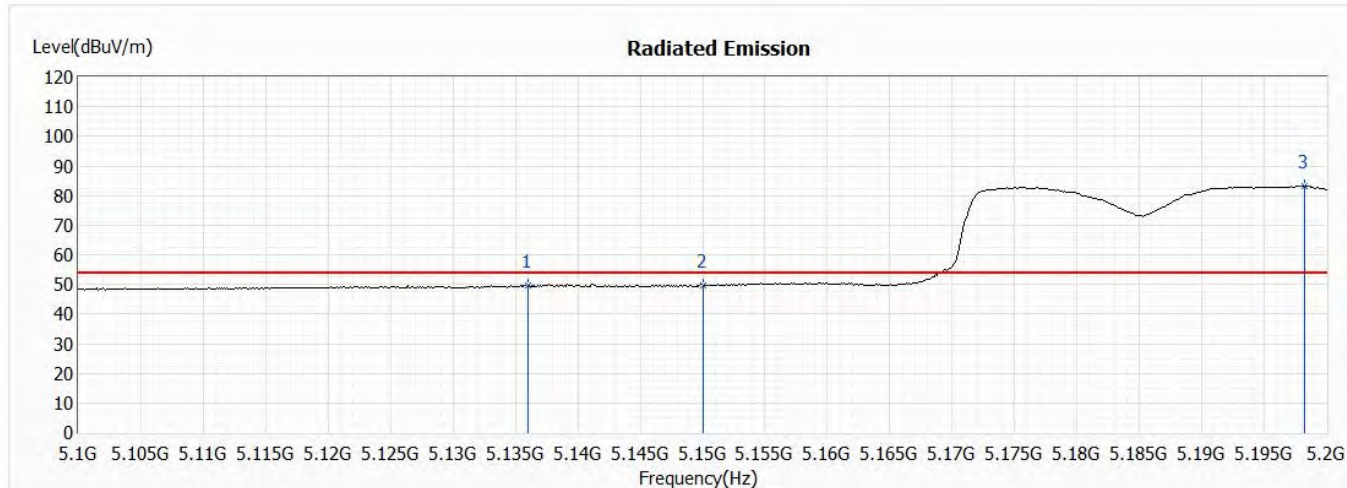
1. "*" means this data is the worst emission level;

"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

Model No	R04010	Site	966-3
Test Voltage	AC 120 V / 60 Hz	Test Date	2021/7/27
Test Mode	Mode 1: Transmit	Engineer	Nick Chen
Polarity	Vertical	Temperature (°C)	25.5
Test Condition	802.11ac80,MIMO,5.21GHz	Humidity (%RH)	62.3



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	5136.000	49.77	54.00	-4.23	30.51	19.26	AV
2	5150.000	49.60	54.00	-4.40	30.29	19.31	AV
! 3	5198.200	83.33	54.00	29.33	63.83	19.50	AV

Remark:

1. "*" means this data is the worst emission level;

"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+ Cable Loss- Pre Amp).

3. Margin= Emission Level- Limit.

Product : DIGITAL CAMERA
Test Item : Band Edge Data
Test Mode : Mode 1: Transmit (802.11a 6Mbps)

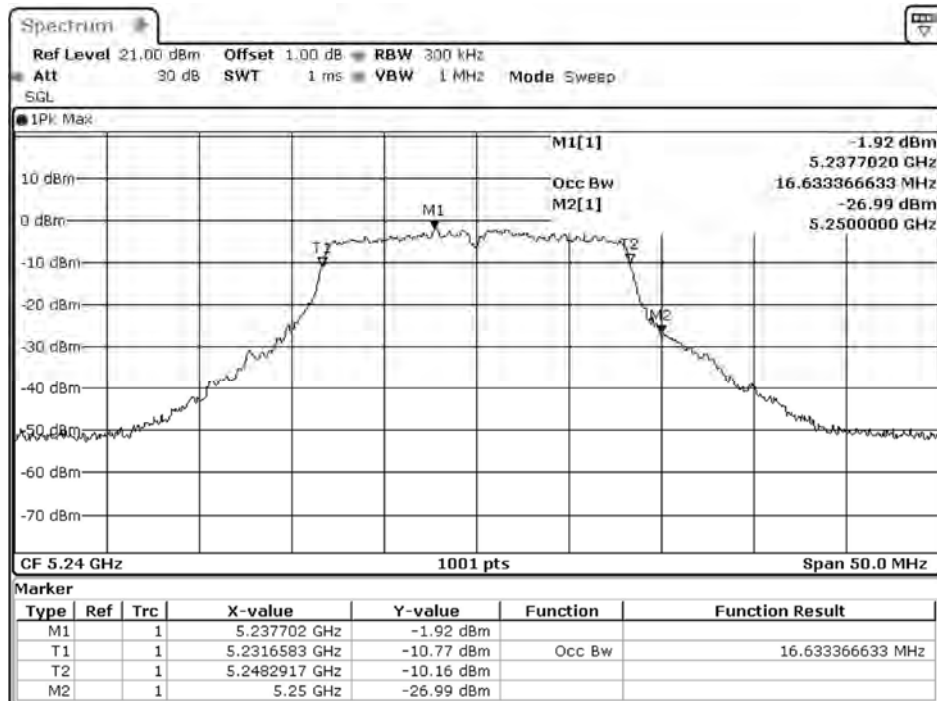
Chain A

Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
5240	5248.29	<5250	PASS

Chain B

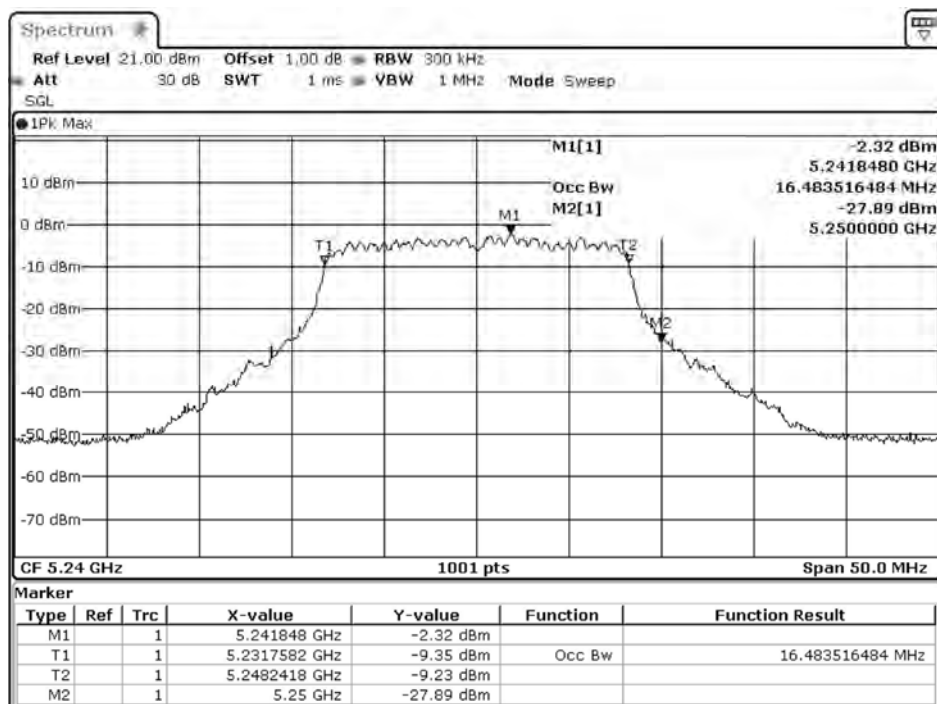
Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
5240	5248.24	<5250	PASS

Chain A



Date: 9.AUG.2021 17:29:03

Chain B



Date: 9.AUG.2021 17:30:30

Product : DIGITAL CAMERA
Test Item : Band Edge Data
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps)

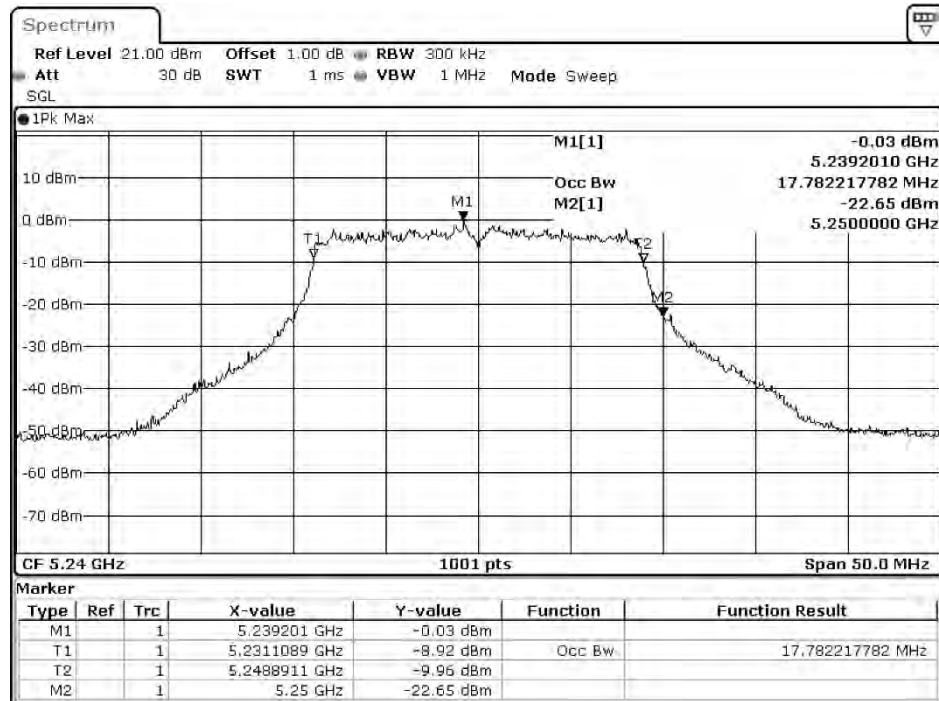
Chain A

Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
5240	5248.89	<5250	PASS

Chain B

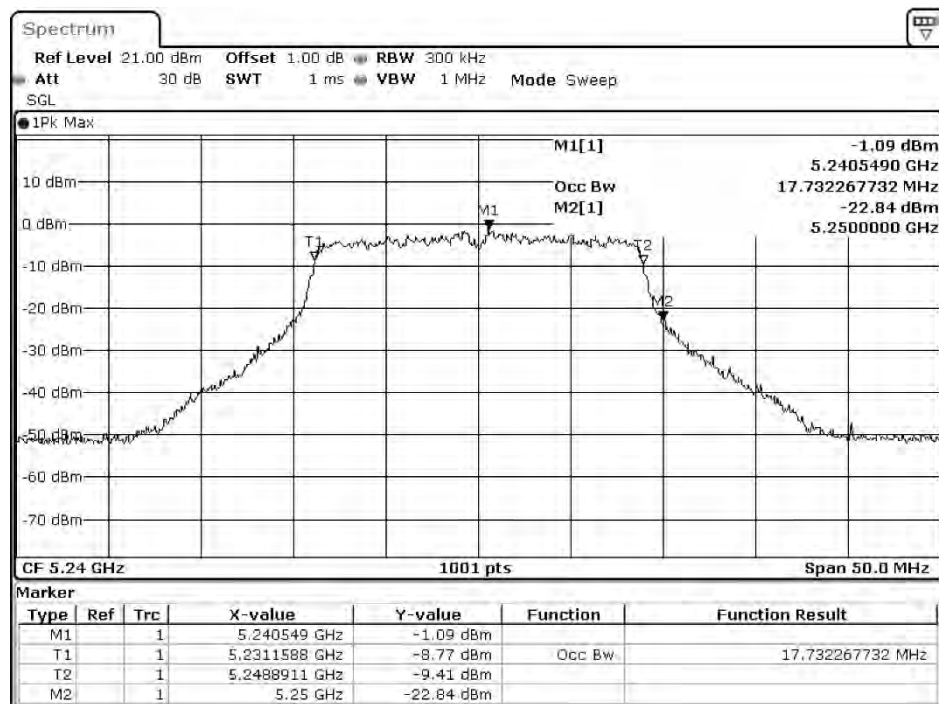
Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
5240	5248.89	<5250	PASS

Chain A



Date: 9.AUG.2021 18:36:41

Chain B



Date: 9.AUG.2021 18:48:31

Product : DIGITAL CAMERA
Test Item : Band Edge Data
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps)

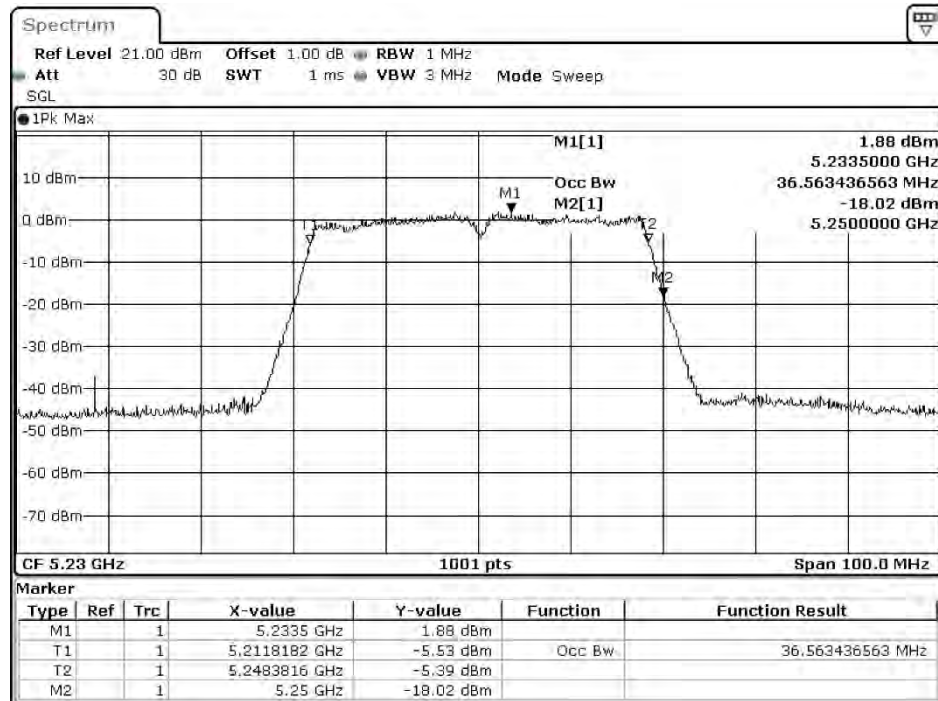
Chain A

Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
5230	5248.38	<5250	PASS

Chain B

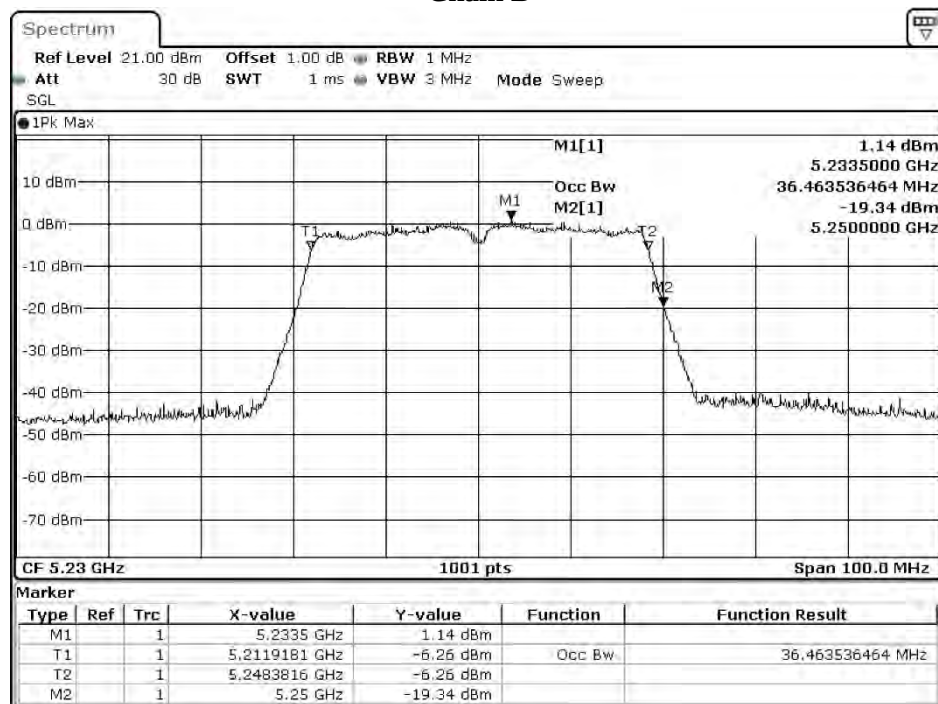
Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
5230	5248.38	<5250	PASS

Chain A



Date: 9.AUG.2021 20:10:44

Chain B



Date: 9.AUG.2021 20:14:35

Product : DIGITAL CAMERA
Test Item : Band Edge Data
Test Mode : Mode 4: Transmit (802.11ac-40BW 30Mbps)

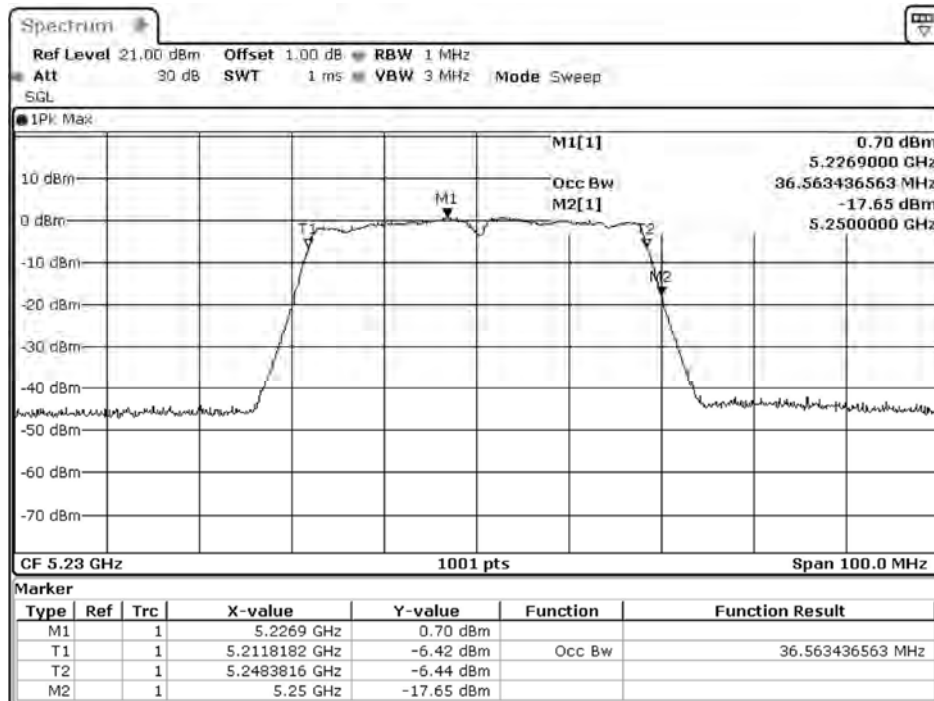
Chain A

Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
5230	5248.38	<5250	PASS

Chain B

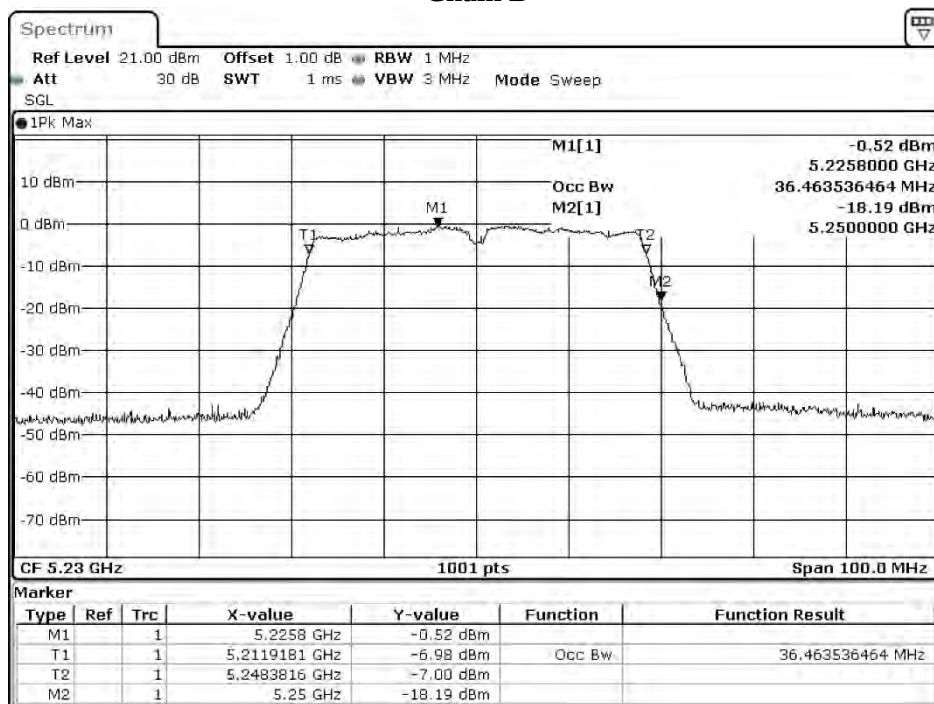
Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
5230	5248.38	<5250	PASS

Chain A



Date: 9.AUG.2021 21:14:44

Chain B



Date: 9.AUG.2021 21:16:57

Product : DIGITAL CAMERA
Test Item : Band Edge Data
Test Mode : Mode 5: Transmit (802.11ac-80BW 65Mbps)

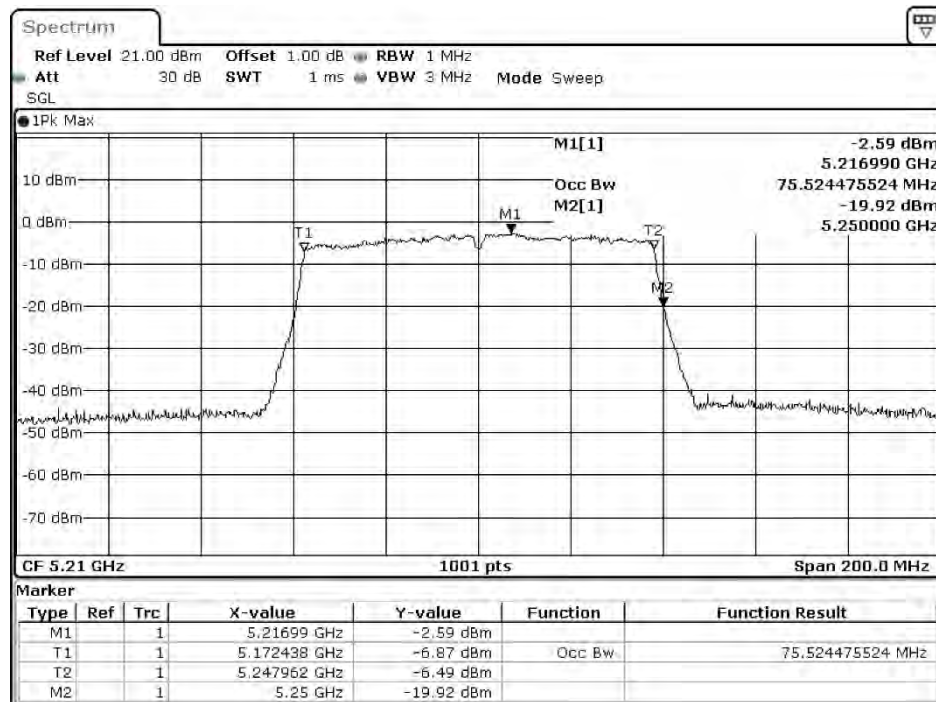
Chain A

Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
5210	5247.96	<5250	PASS

Chain B

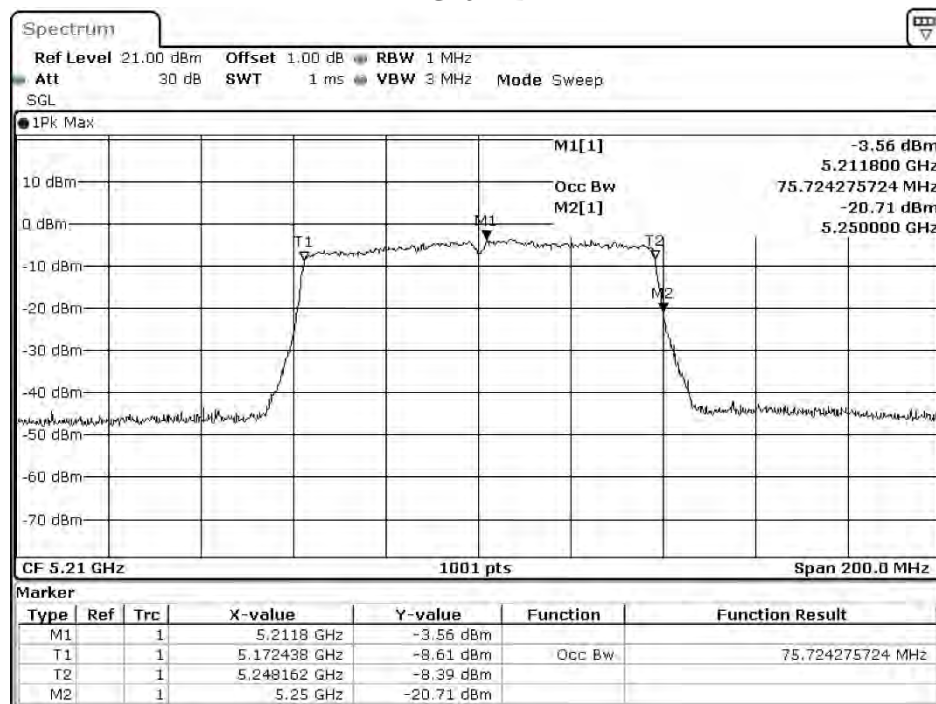
Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
5210	5248.16	<5250	PASS

Chain A



Date: 9.AUG.2021 17:36:18

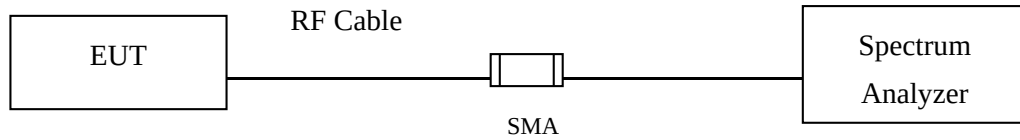
Chain B



Date: 9.AUG.2021 17:37:31

7. Duty Cycle

7.1. Test Setup



7.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to U-NII test procedure of KDB789033 for compliance to FCC 47CFR 15.407 requirements.

7.3. Test Result of Duty Cycle

Product : DIGITAL CAMERA
 Test Item : Duty Cycle
 Test Mode : Transmit

Duty Cycle Formula:

Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

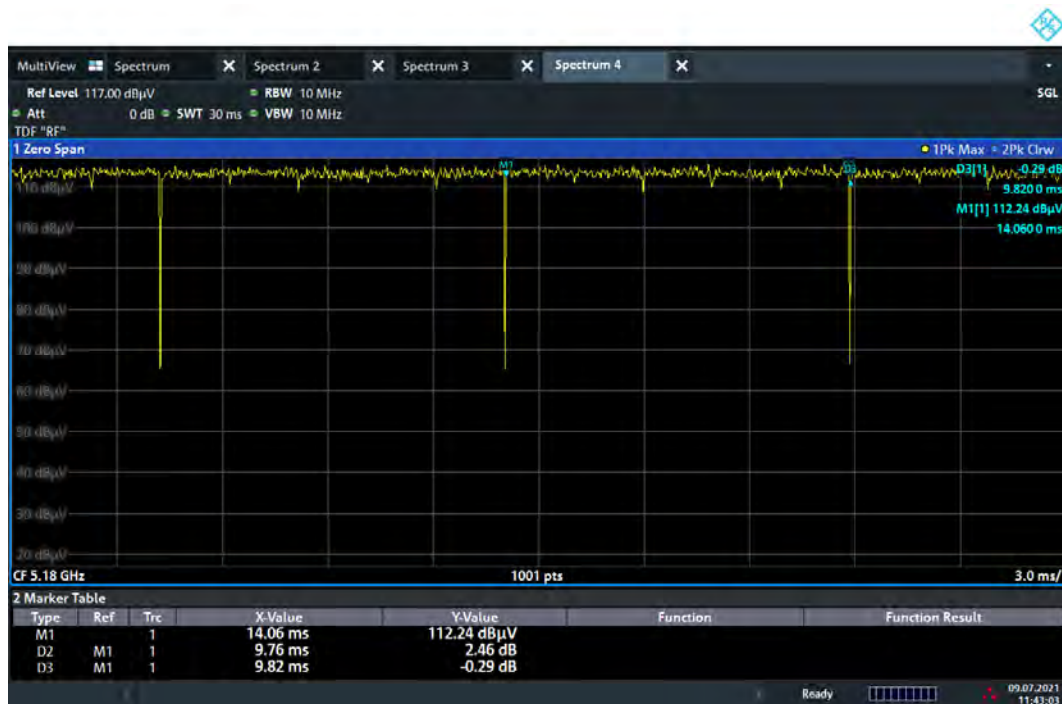
Results:

5GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11 a	2.0640	2.1040	98.10	0.08
802.11 n20	9.7600	9.8200	99.39	0.03
802.11 n40	0.8900	0.9900	89.90	0.46
802.11 ac40	0.9090	0.9930	91.54	0.38
802.11 ac80	0.4650	0.5010	92.81	0.32

802.11a



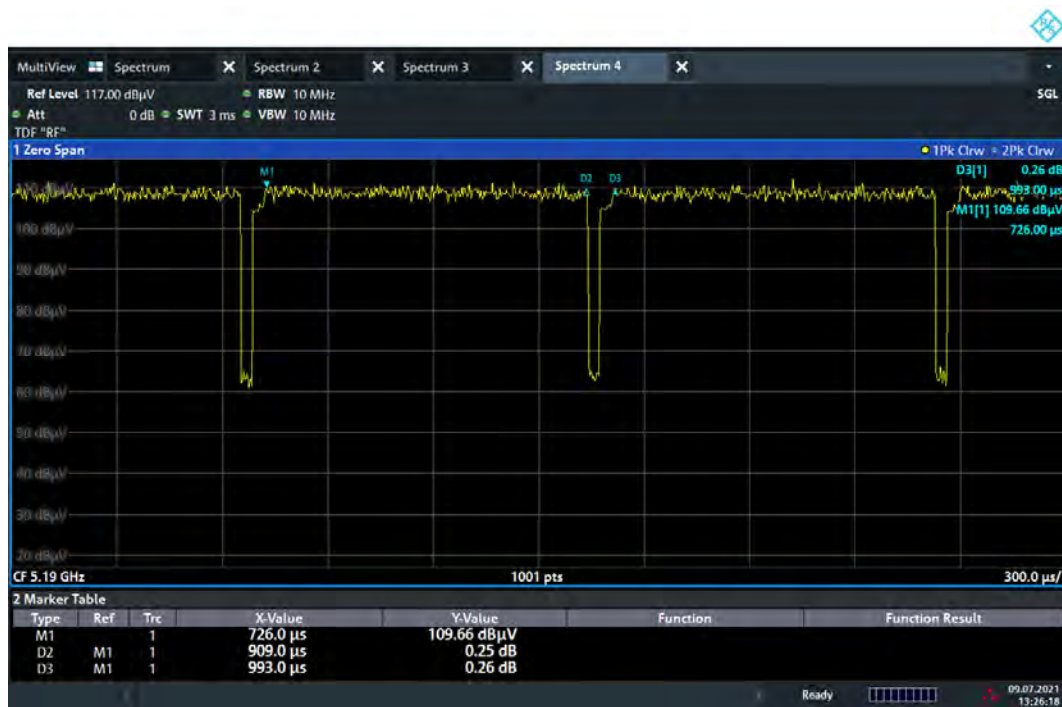
802.11n20



802.11n40



802.11ac40



802.11ac80



8. EMI Reduction Method During Compliance Testing

No modification was made during testing.