Test Report

Product Name	QCast Mirror
Model No	QP30
FCC ID	JVPQP30

Applicant	BenQ Corporation
Address	16, Jihu Road,Taipei Neihu 114 Taiwan

Date of Receipt	Sep. 14, 2022
Issued Date	Nov. 18, 2022
Report No.	2290395R-RFUSWL5V01-A
Report Version	V1.0

Test Report

Issued Date: Nov. 18, 2022
Report No.: 2290395R-RFUSWL5V01-A

Product Name	QCast Mirror
Applicant	BenQ Corporation
Address	16, Jihu Road,Taipei Neihu 114 Taiwan
Manufacturer	BenQ Corporation
Model No.	QP30
FCC ID	JVPQP30
EUT Rated Voltage	DC 5V (Power By USB)
EUT Test Voltage	DC 5V (Power By USB)
Trade Name	BenQ
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 : Ida Tung

(Project Specialist / Ida Tung)

Tested By : Ivan Chuang

(Senior Engineer / Ivan Chuang)

Approved By : Jack Hsu

(Senior Engineer / Jack Hsu)

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Revision History

Report No.	Version	Description	Issued Date
2290395R-RFUSWL5V01-A	V1.0	Initial issue of report.	Nov. 18, 2022

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	QCast Mirror
Trade Name	BenQ
Model No.	QP30
FCC ID	JVPQP30
Frequency Range	802.11a/n/ac-20 MHz: 5180-5240 MHz 802.11n/ac-40 MHz: 5190-5230 MHz 802.11ac-80 MHz: 5210 MHz
Number of Channels	802.11a/n/ac-20 MHz: 4 CH 802.11n/ac-40 MHz: 2 CH 802.11ac-80 MHz: 1 CH
Data Rate	802.11a: 6–54 Mbps 802.11n: 30-300MHz 802.11ac: up to 866.7MHz
Type of Modulation	802.11a/n/ac: OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM
Antenna type	PIFA Antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”
USB Cable	MFR: Shenzhen Hongdaxin Computer Accessories Co., Ltd M/N: 400Q-010B-EAMC TypeC, Shielded, 1m
HDMI Cable	MFR: Shenzhen Lensonbng Technolgy Co., Ltd M/N: 400B-020B-MF HDMI, Shielded, 0.2m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Actions Microelectronics Co., Ltd	ANT-PCB-PRO-DONGLE-2 (Main)(Aux)	PIFA	1.18dBi for 5GHz

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

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
036	5180 MHz	040	5200 MHz	044	5220 MHz	048	5240 MHz

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
038	5190 MHz	046	5230 MHz

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

Channel	Frequency (MHz)
042	5210 MHz

Note:

1. This device is a QCast Mirror with built-in WLAN(802.11a/b/g/n/ac) transceiver, this report for 5GHz WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest data rates are tested in each mode. Only worst case is shown in the report.
   (802.11a is 6Mbps、802.11ac-20BW/40BW/80BW is VHT0)
4. The spectrum plot against conducted item only shows the worst case.
5. These tests were conducted on a sample for the purpose of demonstrating compliance of 802.11a/n/ac transmitter with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.

Test Mode	Mode 1	Transmit (802.11a)
		Transmit (802.11n-20BW)
		Transmit (802.11n-40BW)
		Transmit (802.11ac-20BW)
		Transmit (802.11ac-40BW)
		Transmit (802.11ac-80BW)

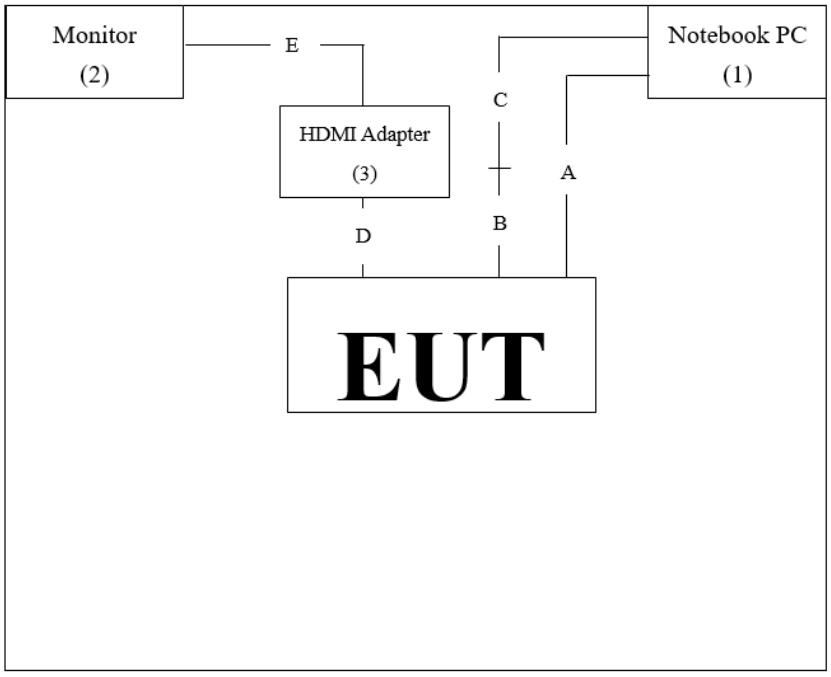
1.2. Tested System Datails

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 5580	2HRD7H2	N/A
2	Monitor	DELL	U2415	CN-01RMGX-74261-63H-09UL-A02	Non-shielded, 1.8m
3	HDMI Adapter	PX	CA-101	N/A	N/A

Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 1m
B	USB Cable	Shielded, 0.25m
C	USB Cable	Shielded, 1m
D	HDMI Cable	Shielded, 0.2m
E	HDMI Cable	Shielded, 2m

1.3. Configuration of tested System



1.4. EUT Exercise Software

1. Setup the EUT as shown in Section 1.3.
2. Execute software “MPTool Version 0.0006.03.20180914” 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	23.7 °C
	Humidity (%RH)	10~90 %	56.5 %
Radiated Emission	Temperature (°C)	10~40 °C	23.5 °C
	Humidity (%RH)	10~90 %	65.3 %
Conductive	Temperature (°C)	10~40 °C	22.0 °C
	Humidity (%RH)	10~90 %	55.0 %

USA : FCC Registration Number: TW0033

Canada : CAB Identifier Number: TW3023 / Company Number: 26930

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan
Performed Location : No. 26, Huaya 1st Rd., Guishan Dist.,Taoyuan City 333411, Taiwan, R.O.C.
Phone Number : +886-3-275-7255
Fax Number : +886-3-327-8031
Email Address : info.tw@dekra.com
Website : http://www.dekra.com.tw

1.6. List of Test Equipment

For Conduction measurements /HY-SR01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	EMI Test Receiver	R&S	ESR7	101601	2022/06/23	2023/06/22
V	Two-Line V-Network	R&S	ENV216	101306	2022/05/23	2023/05/22
V	Two-Line V-Network	R&S	ENV216	101307	2022/07/04	2023/07/03
V	Coaxial Cable	SUHNER	RG400_BNC	RF001	2022/05/24	2023/05/23

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “V” are used to measure the final test results.
3. Test Software version : E3 210616 dekra V9

For Conducted measurements /HY-SR02

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Spectrum Analyzer	R&S	FSV30	103466	2021/12/27	2022/12/26
V	Peak Power Analyzer	KEYSIGHT	8900B	MY51000539	2022/05/27	2023/05/26
V	Power Sensor	KEYSIGHT	N1923A	MY59240002	2022/05/19	2023/05/18
V	Power Sensor	KEYSIGHT	N1923A	MY59240003	2022/05/19	2023/05/18

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “V” are used to measure the final test results.
3. Test Software version : RF Conducted Test Tools R3 V3.0.0.14

For Radiated measurements /HY-CB03

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Loop Antenna	AMETEK	HLA6121	56736	2022/05/14	2023/05/13
V	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-675	2021/08/11	2023/08/10
V	Horn Antenna	RF SPIN	DRH18-E	210508A18ES	2022/06/08	2023/06/07
V	Horn Antenna	Com-Power	AH-840	101100	2021/10/04	2023/10/03
V	Pre-Amplifier	SGH	SGH0301-9	20211007-10	2022/02/22	2023/02/21
V	Pre-Amplifier	EMCI	EMC051835SE	980313	2021/11/24	2022/11/23
V	Pre-Amplifier	EMCI	EMC05820SE	980310	2022/07/28	2023/07/27
V	Pre-Amplifier	EMCI	EMC184045SE	980369	2022/05/12	2023/05/11
	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160314		
	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242		
	Filter	MICRO TRONICS	BRM50702	G251	2022/07/27	2023/07/26
V	Filter	MICRO TRONICS	BRM50716	G188	2022/07/27	2023/07/26
V	EMI Test Receiver	R&S	ESR3	102793	2021/12/15	2022/12/14
V	Spectrum Analyzer	R&S	FSV3044	101113	2022/01/25	2023/02/24
V	Coaxial Cable	SGH	SGH18	2021005-1	2022/03/18	2023/03/17
	Coaxial Cable	SGH	SGH18	202108-4		
	Coaxial Cable	SGH	SGH18	GD20110223-1		
	Coaxial Cable	SGH	HA800	GD20110222-3		

Note:

1. Bi-Log Antenna and Horn Antenna (AH-840) is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with “V” are used to measure the final test results.
3. Test Software version : E3 210616 dekra V9

1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.

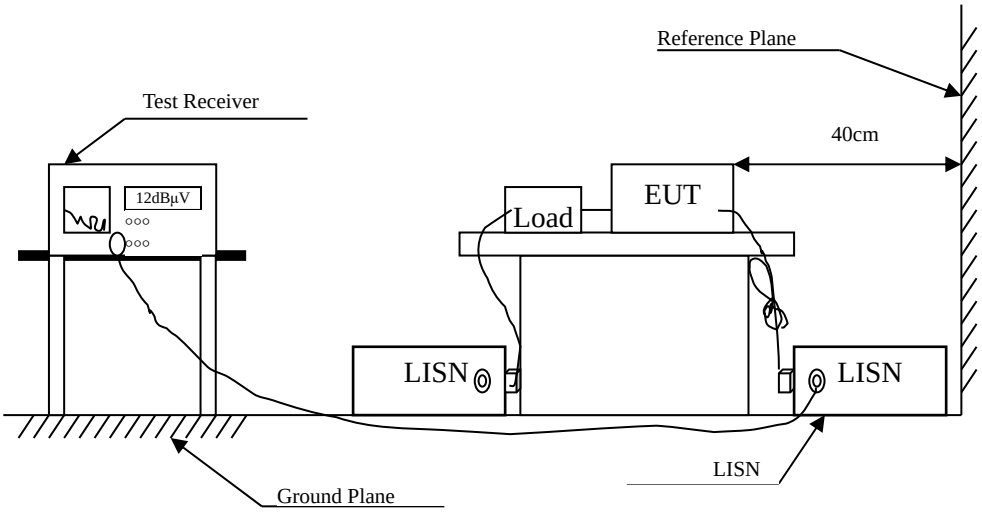
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

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	
Maximum conducted output power	Power Meter ±0.89 dB	Spectrum Analyzer ±2.06 dB
Peak Power Spectral Density	±2.06 dB	
Radiated Emission	Under 1GHz ±4.05 dB	Above 1GHz ±3.73 dB
Band Edge	Under 1GHz ±4.05 dB	Above 1GHz ±3.73 dB
Occupied Bandwidth	±1544.74 Hz	
Duty Cycle	±2.31msec	

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) 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

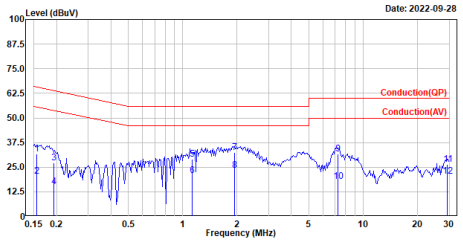
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling 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 C63.4:2014 on conducted measurement.

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

2.4. Test Result of Conducted Emission

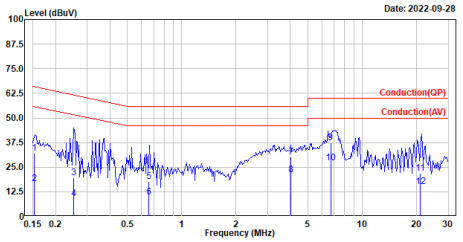
Site :HY-SR01
Condition :Line
Mode :ac80_5210MHz_TX
test by :Pounder



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	0.155	31.81	65.73	-33.92	22.13	9.68	QP
2	0.155	20.22	55.73	-35.51	10.54	9.68	Average
3	0.193	27.12	63.89	-36.77	17.44	9.68	QP
4	0.193	15.23	53.89	-38.66	5.55	9.68	Average
5	1.128	29.12	56.00	-26.88	19.39	9.73	QP
6	1.128	20.65	46.00	-25.35	10.92	9.73	Average
7	1.948	32.46	56.00	-23.54	22.64	9.82	QP
8	1.948	23.23	46.00	-22.77	13.41	9.82	Average
9	7.233	31.51	60.00	-28.49	20.68	10.83	QP
10	7.233	17.68	50.00	-32.32	6.85	10.83	Average
11	29.274	26.42	60.00	-33.58	15.90	10.52	QP
12	29.274	20.55	50.00	-29.45	10.03	10.52	Average

Note:
1. Level = Read Level + Factor
2. Factor = LISN insertion loss + Cable loss
3. Over Limit = Level - Limit Line

Site :HY-SR01
Condition :Neutral
Mode :ac80_5210MHz_TX
test by :Pounder



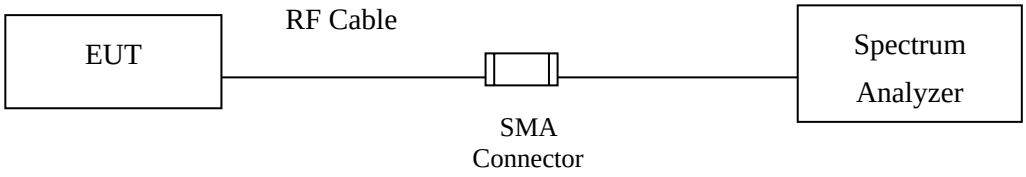
No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	0.153	31.91	65.86	-33.95	22.25	9.66	QP
2	0.153	16.42	55.86	-39.44	6.76	9.66	Average
3	0.252	19.52	61.71	-42.19	9.86	9.66	QP
4	0.252	9.12	51.71	-42.59	-0.54	9.66	Average
5	0.658	17.66	56.00	-38.34	7.98	9.68	QP
6	0.658	9.74	46.00	-36.26	0.06	9.68	Average
7	4.014	30.28	56.00	-25.72	19.80	10.48	QP
8	4.014	21.27	46.00	-24.73	10.79	10.48	Average
9	6.685	37.29	60.00	-22.71	26.47	10.82	QP
10	6.685	27.18	50.00	-22.82	16.36	10.82	Average
11	20.918	21.70	60.00	-38.30	10.94	10.76	QP
12	20.918	15.27	50.00	-34.73	4.51	10.76	Average

Note:
1. Level = Read Level + Factor
2. Factor = LISN insertion loss + Cable loss
3. Over Limit = Level - Limit Line

3. Maximum conducted output power

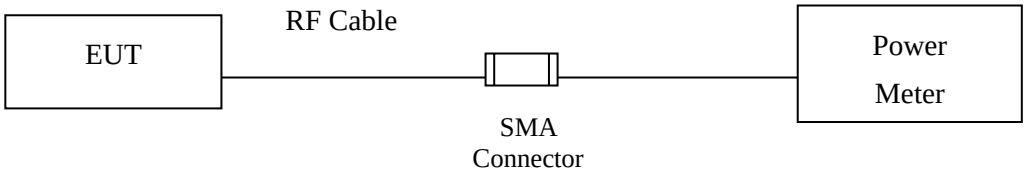
3.1. Test Setup

26dB Occupied Bandwidth

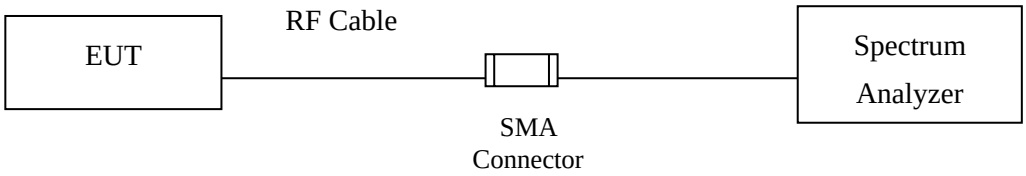


Conduction Power Measurement

Conduction Power Measurement (for 802.11an)



Conduction Power Measurement (for 802.11ac/ax)



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-topoint 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 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.

The maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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 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≦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 : QCast Mirror
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11a)
Test Date : 2022/09/21

Channel	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Limit (dBm)
36	5180	12.72	12.84	15.79	30
44	5220	12.90	12.74	15.83	30
48	5240	12.80	12.60	15.71	30

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

Product : QCast Mirror
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11n-20BW)
Test Date : 2022/09/21

Channel	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Limit (dBm)
36	5180	11.73	11.81	14.78	30
44	5220	11.61	11.93	14.78	30
48	5240	11.71	11.74	14.74	30

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

Product : QCast Mirror
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11n-40BW)
Test Date : 2022/09/21

Channel	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Limit (dBm)
38	5190	11.73	11.81	14.78	30
46	5230	11.72	11.62	14.68	30

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

Product : QCast Mirror
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11ac-20BW)
Test Date : 2022/09/21

Channel	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Limit (dBm)
36	5180	9.89	9.63	12.77	30
44	5220	9.87	9.65	12.77	30
48	5240	9.80	9.64	12.73	30

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

Product : QCast Mirror
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11ac-40BW)
Test Date : 2022/09/21

Channel	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Limit (dBm)
38	5190	9.58	9.84	12.72	30
46	5230	9.69	9.74	12.73	30

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

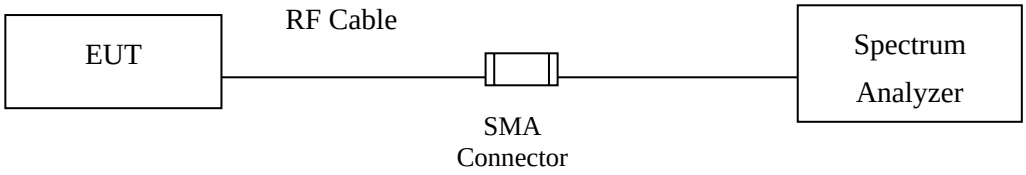
Product : QCast Mirror
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11ac-80BW)
Test Date : 2022/09/21

Channel	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Limit (dBm)
42	5210	9.63	9.74	12.70	30

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

4. Maximum Power Spectral Density

4.1. Test Setup



4.2. 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 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-topoint 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.

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.

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.

The maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5150MHz-5250MHz: Directional gain = 6.93 dBi, Limit= 16.07dBm
5250MHz-5350MHz: Directional gain = 7.30 dBi, Limit= 9.70dBm
5470MHz-5725MHz: Directional gain = 8.20 dBi, Limit= 8.80dBm
5725MHz-5850MHz: Directional gain = 8.56 dBi, Limit= 27.44dBm
Directional gain = 10 log[$(10^{G1/20} +10^{G2/20})^2$ / N_{ANT}] dBi

4.3. Test Procedure

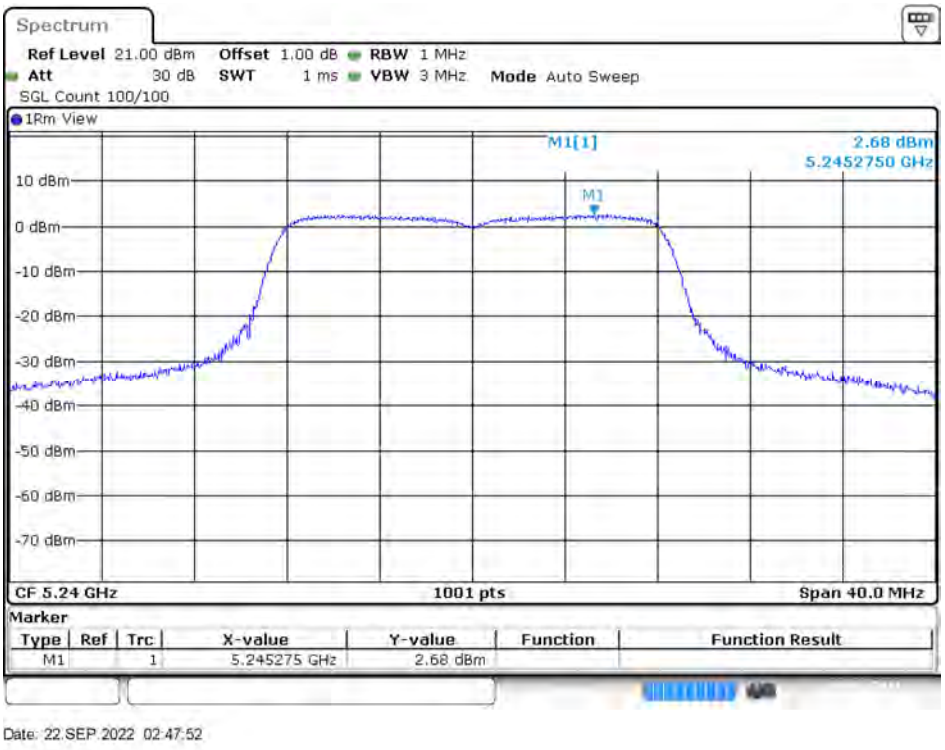
The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.
The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer.
SA-1 method is selected to run the test.

4.4. Test Result of Maximum Power Spectral Density

Product : QCast Mirror
Test Item : Maximum Power Spectral Density
Test Mode : Transmit (802.11a)
Test Date : 2022/09/22

Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain (dBm)	PPSD/MHz (dBm)	10*log(2) (dB)	Duty factor (dB)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
36	5180	6	A	-1.06	3.01	0.18	2.13	<17	Pass
			B	-1.91	3.01	0.18	1.28	<17	Pass
44	5220	6	A	-0.72	3.01	0.18	2.47	<17	Pass
			B	2.15	3.01	0.18	5.34	<17	Pass
48	5240	6	A	0.33	3.01	0.18	3.52	<17	Pass
			B	2.68	3.01	0.18	5.87	<17	Pass

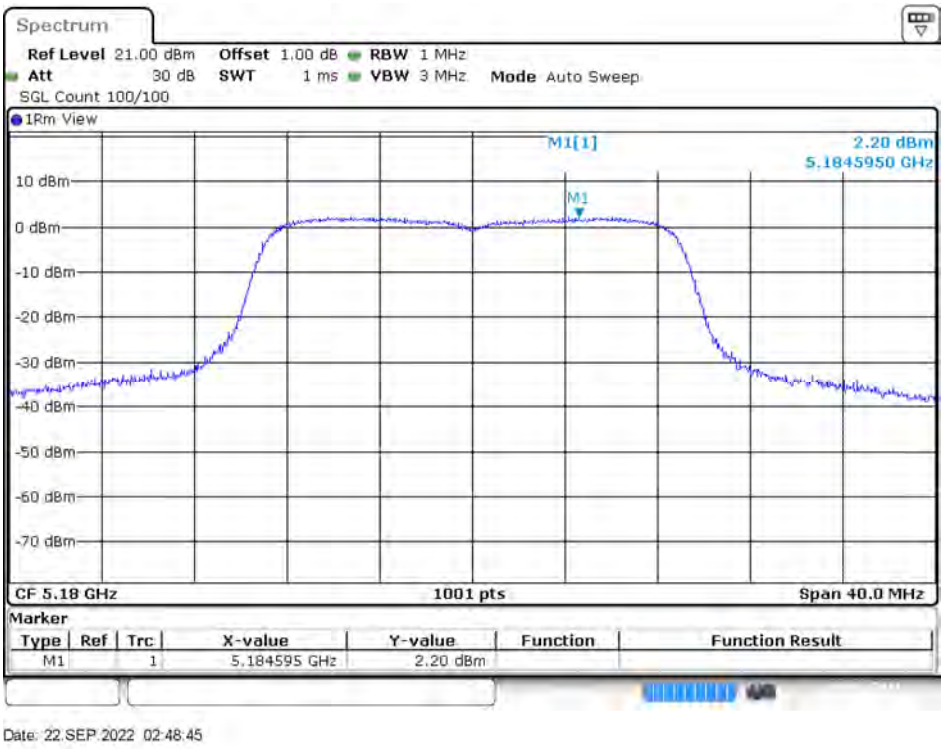
Channel 48



Product : QCast Mirror
Test Item : Maximum Power Spectral Density
Test Mode : Transmit (802.11n-20BW)
Test Date : 2022/09/22

Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain (dBm)	PPSD/MHz (dBm)	10*log(2) (dB)	Duty factor (dB)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
36	5180	HT8	A	-1.62	3.01	0.19	1.58	<17	Pass
			B	2.20	3.01	0.19	5.40	<17	Pass
44	5220	HT8	A	-0.13	3.01	0.19	3.07	<17	Pass
			B	1.49	3.01	0.19	4.69	<17	Pass
48	5240	HT8	A	-0.99	3.01	0.19	2.21	<17	Pass
			B	1.11	3.01	0.19	4.31	<17	Pass

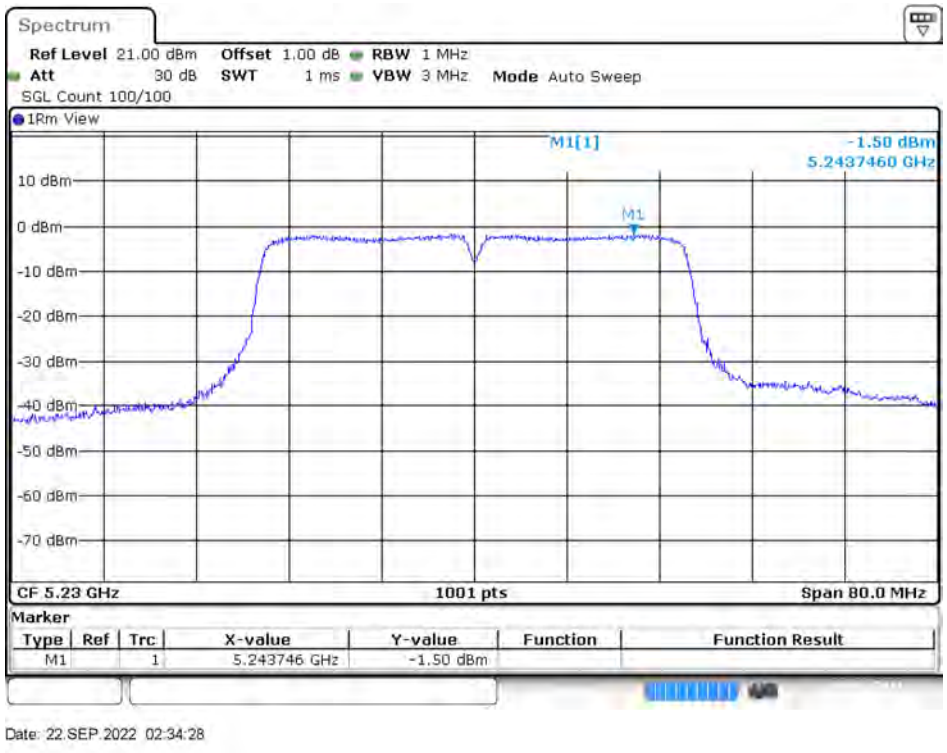
Channel 36



Product : QCast Mirror
Test Item : Maximum Power Spectral Density
Test Mode : Transmit (802.11n-40BW)
Test Date : 2022/09/22

Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain (dBm)	PPSD/MHz (dBm)	10*log(2) (dB)	Duty factor (dB)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
38	5190	HT8	A	-2.00	3.01	0.37	1.38	<17	Pass
			B	-2.54	3.01	0.37	0.84	<17	Pass
46	5230	HT8	A	-1.50	3.01	0.37	1.88	<17	Pass
			B	-2.92	3.01	0.37	0.46	<17	Pass

Channel 46



Product : QCast Mirror
Test Item : Maximum Power Spectral Density
Test Mode : Transmit (802.11ac-20BW)
Test Date : 2022/09/22

Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain (dBm)	PPSD/MHz (dBm)	10*log(2) (dB)	Duty factor (dB)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
36	5180	VHT0	A	-0.53	3.01	0.19	2.67	<17	Pass
			B	-1.71	3.01	0.19	1.49	<17	Pass
44	5220	VHT0	A	-0.42	3.01	0.19	2.78	<17	Pass
			B	-1.94	3.01	0.19	1.26	<17	Pass
48	5240	VHT0	A	-0.19	3.01	0.19	3.01	<17	Pass
			B	-1.84	3.01	0.19	1.36	<17	Pass

Channel 48

Product : QCast Mirror
Test Item : Maximum Power Spectral Density
Test Mode : Transmit (802.11ac-40BW)
Test Date : 2022/09/22

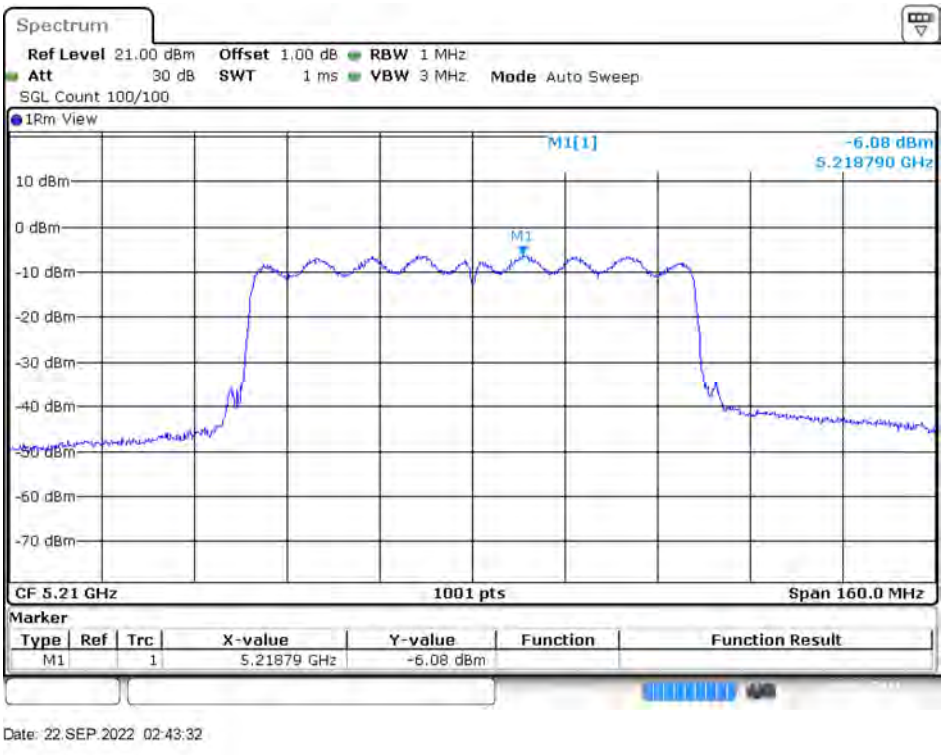
Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain (dBm)	PPSD/MHz (dBm)	10*log(2) (dB)	Duty factor (dB)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
38	5190	VHT0	A	-3.79	3.01	0.35	-0.43	<17	Pass
			B	-4.59	3.01	0.35	-1.23	<17	Pass
46	5230	VHT0	A	-3.91	3.01	0.35	-0.55	<17	Pass
			B	-4.74	3.01	0.35	-1.38	<17	Pass

Channel 38

Product : QCast Mirror
Test Item : Maximum Power Spectral Density
Test Mode : Transmit (802.11ac-80BW)
Test Date : 2022/09/22

Channel Number	Frequency (MHz)	Data Rate (Mbps)	Chain (dBm)	PPSD/MHz (dBm)	10*log(2) (dB)	Duty factor (dB)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
42	5210	VHTO	A	-6.08	3.01	0.70	-2.37	<17	Pass
			B	-7.14	3.01	0.70	-3.43	<17	Pass

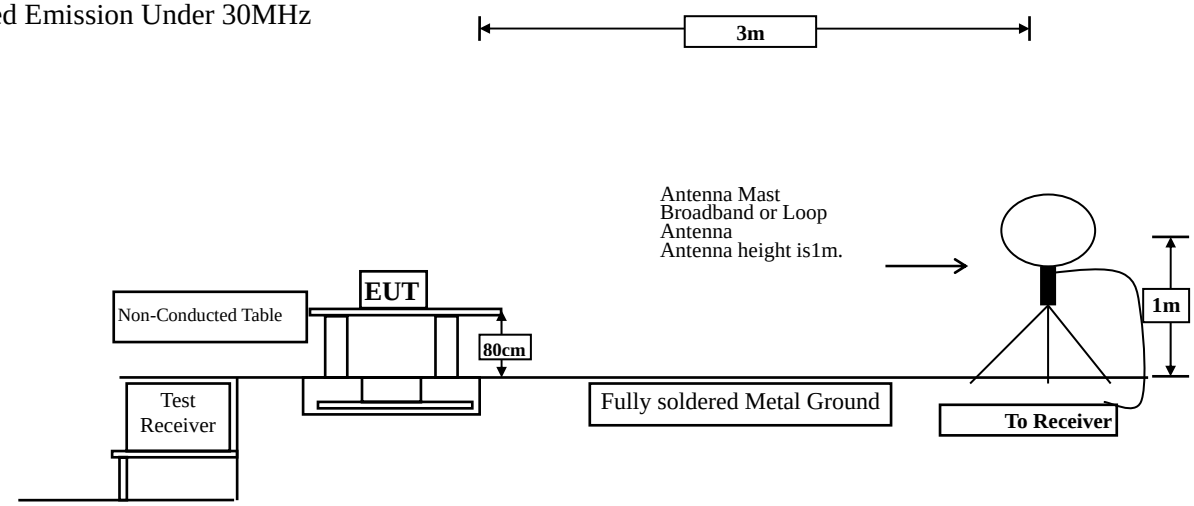
Channel 42



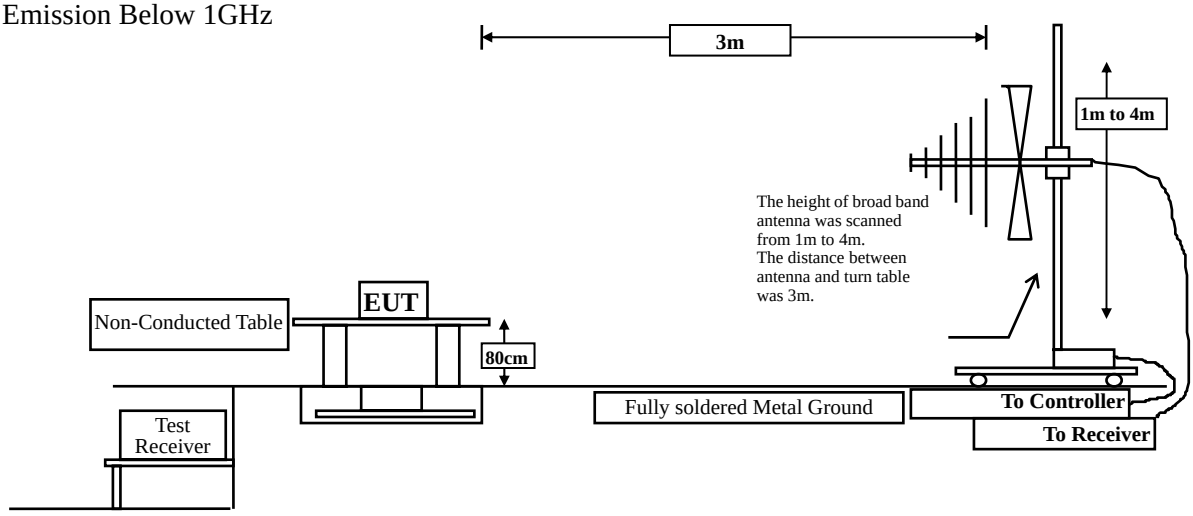
5. Radiated Emission

5.1. Test Setup

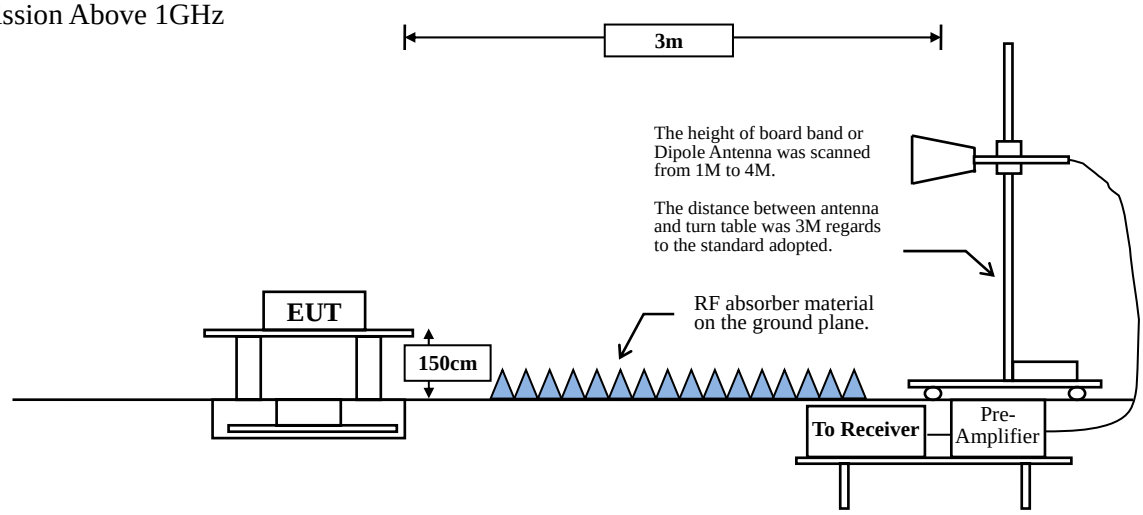
Radiated Emission Under 30MHz



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 (dBμV/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 form 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 ≥ 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 ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

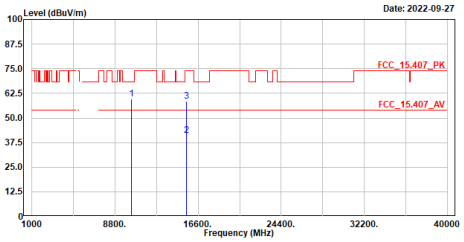
(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

5GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11 a	96.05	1.3600	735	1000
802.11 n20	95.78	1.2720	786	1000
802.11 n40	91.84	0.6300	1587	2000
802.11 ac20	95.80	1.2760	784	1000
802.11 ac40	92.17	0.6360	1572	2000
802.11 ac80	85.06	0.3144	3181	5000

Note: Duty Cycle Refer to Section 7.

5.4. Test Result of Radiated Emission

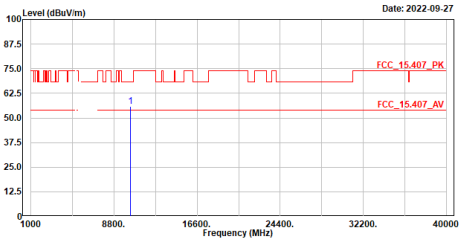
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_a_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10360.000	59.45	68.22	-8.77	65.04	-5.59	Peak
2	15540.000	41.22	54.00	-12.78	39.73	1.49	Average
3	15540.000	58.48	74.00	-15.52	56.99	1.49	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

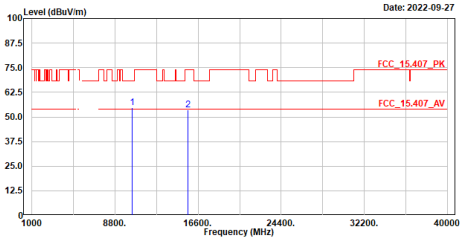
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_a_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10360.000	55.85	68.22	-12.37	61.44	-5.59	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

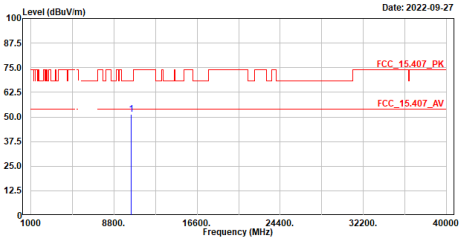
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_a_5220MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10440.000	54.62	68.22	-13.60	60.19	-5.57	Peak
2	15660.000	53.75	74.00	-20.25	52.09	1.66	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

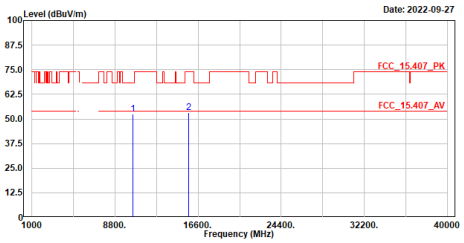
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_a_5220MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10440.000	51.18	68.22	-17.04	56.75	-5.57	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

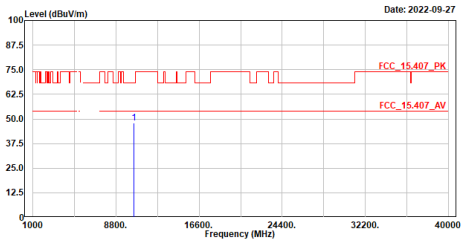
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_a_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10480.000	52.28	68.22	-15.94	57.80	-5.52	Peak
2	15720.000	53.06	74.00	-20.94	51.32	1.74	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

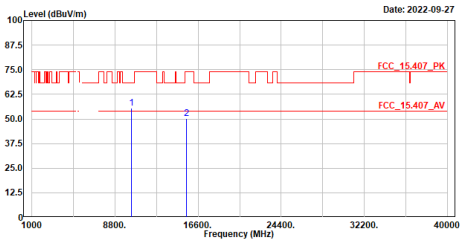
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_a_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10480.000	47.96	68.22	-20.26	53.48	-5.52	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

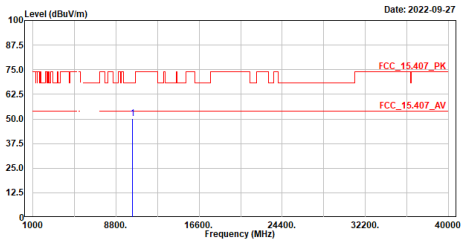
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_n20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10360.000	55.57	68.22	-12.65	61.16	-5.59	Peak
2	15540.000	50.33	74.00	-23.67	48.84	1.49	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

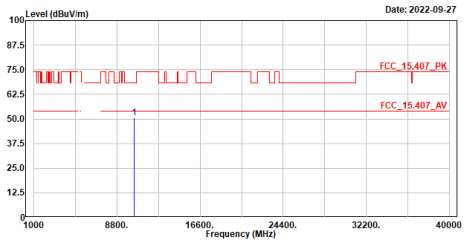
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_n20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10360.000	50.23	68.22	-17.99	55.82	-5.59	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

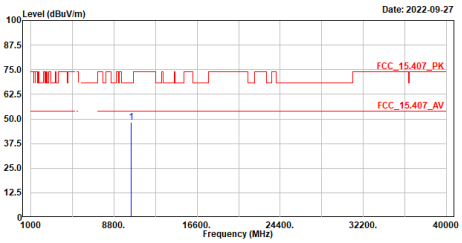
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_n20_5220MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10440.000	50.61	68.22	-17.61	56.18	-5.57	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

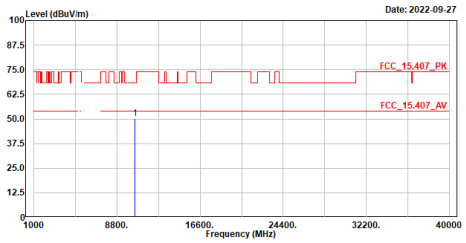
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_n20_5220MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10440.000	48.28	68.22	-19.94	53.85	-5.57	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

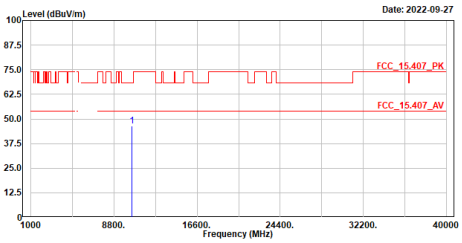
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_n20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10480.000	50.26	68.22	-17.96	55.78	-5.52	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

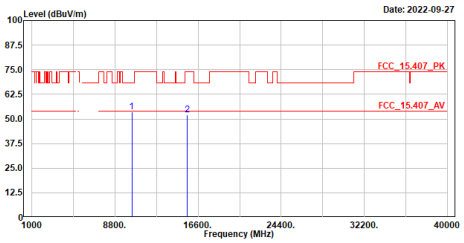
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_n20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10480.000	46.37	68.22	-21.85	51.89	-5.52	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

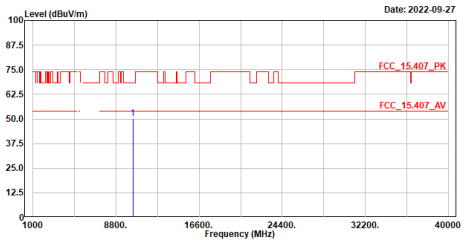
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_n40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10380.000	53.43	68.22	-14.79	59.02	-5.59	Peak
2	15570.000	52.21	74.00	-21.79	50.68	1.53	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

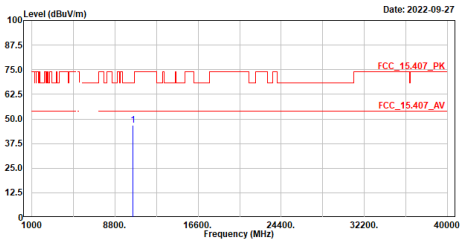
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_n40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10380.000	50.05	68.22	-18.17	55.64	-5.59	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

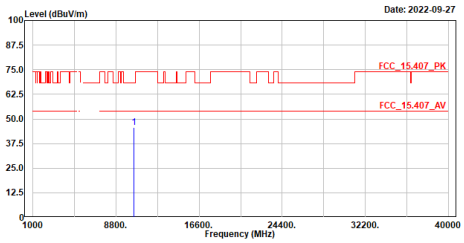
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_n40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10460.000	46.93	68.22	-21.29	52.48	-5.55	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

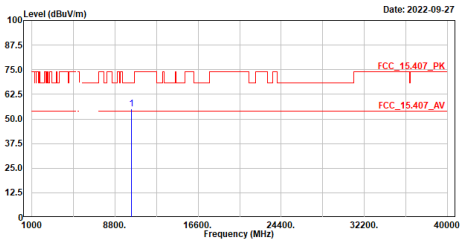
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_n40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10460.000	45.50	68.22	-22.72	51.05	-5.55	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

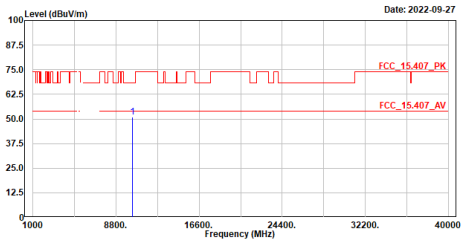
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ac20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10360.000	55.20	68.22	-13.02	60.79	-5.59	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

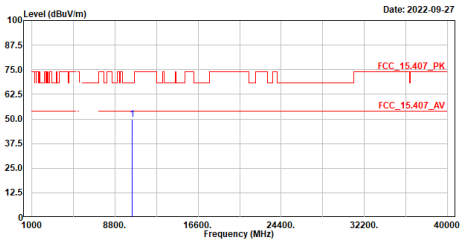
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ac20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10360.000	50.93	68.22	-17.29	56.52	-5.59	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

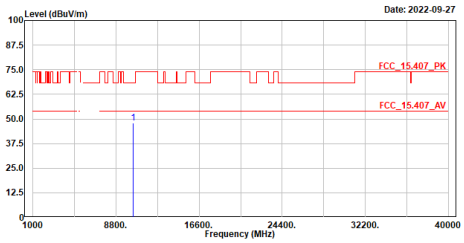
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ac20_5220MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10440.000	49.81	68.22	-18.41	55.38	-5.57	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

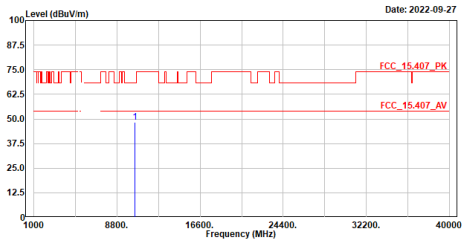
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ac20_5220MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10440.000	47.82	68.22	-20.40	53.39	-5.57	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

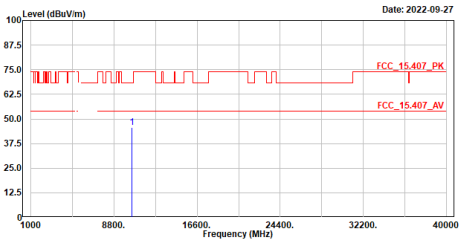
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ac20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10480.000	48.28	68.22	-19.94	53.80	-5.52	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

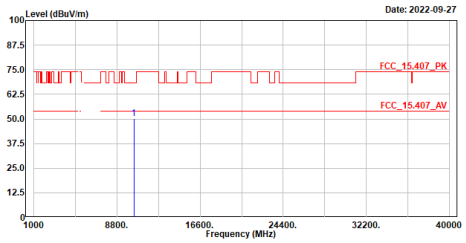
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ac20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10480.000	45.61	68.22	-22.61	51.13	-5.52	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

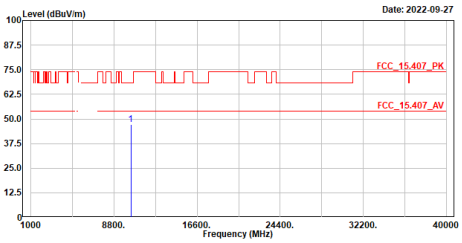
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ac40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10380.000	50.05	68.22	-18.17	55.64	-5.59	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

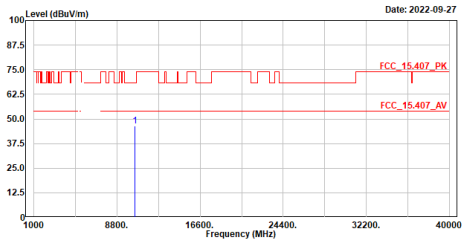
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ac40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10380.000	47.25	68.22	-20.97	52.84	-5.59	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

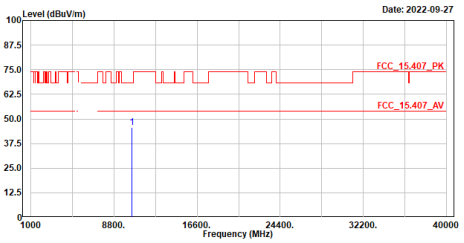
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ac40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10460.000	46.53	68.22	-21.69	52.08	-5.55	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

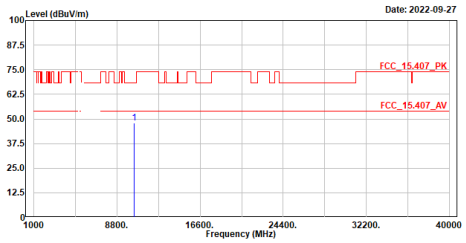
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ac40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10460.000	45.76	68.22	-22.46	51.31	-5.55	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

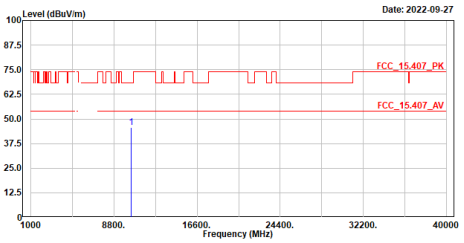
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ac80_5210MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10420.000	47.96	68.22	-20.26	53.54	-5.58	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

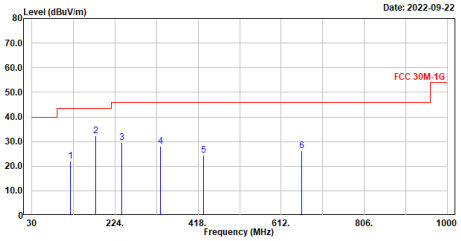
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ac80_5210MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10420.000	45.67	68.22	-22.55	51.25	-5.58	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

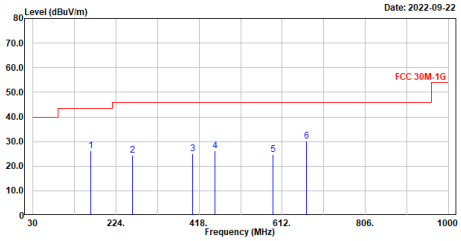
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ac80_5210MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	119.240	22.01	43.50	-21.49	48.53	-26.52	QP
2	179.380	32.20	43.50	-11.30	57.74	-25.54	QP
3	239.520	29.58	46.00	-16.42	55.24	-25.66	QP
4	329.730	27.96	46.00	-18.04	50.65	-22.69	QP
5	431.580	24.38	46.00	-21.62	44.49	-20.11	QP
6	659.530	26.28	46.00	-19.72	41.64	-15.36	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ac80_5210MHz
Test BY :Jing Chang



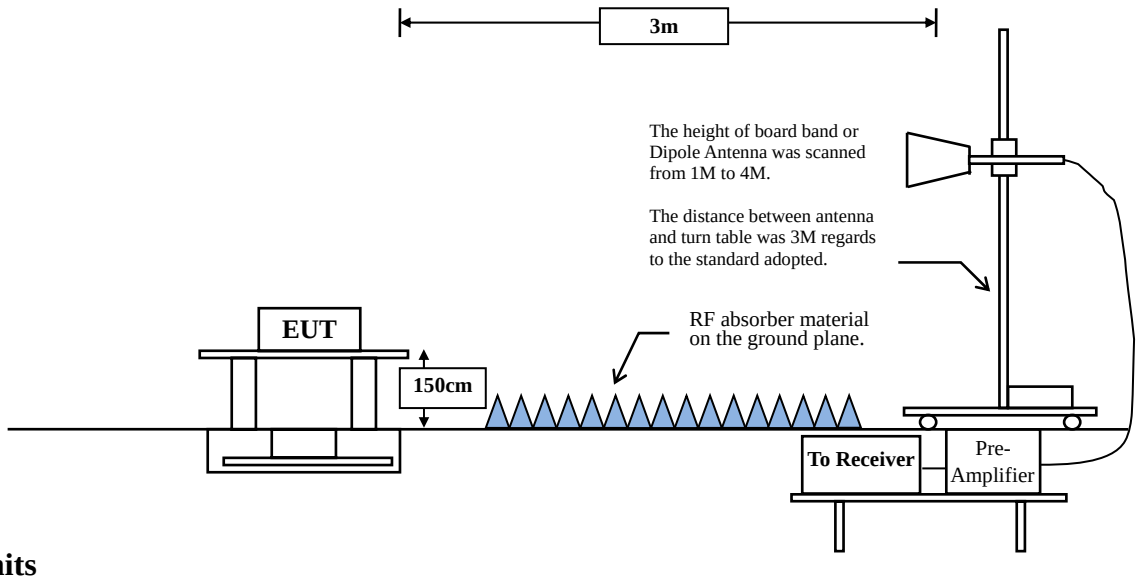
No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	164.830	26.22	43.50	-17.28	50.47	-24.25	QP
2	262.800	24.40	46.00	-21.60	49.60	-25.20	QP
3	402.480	25.15	46.00	-20.85	46.16	-21.01	QP
4	455.830	26.32	46.00	-19.68	45.73	-19.41	QP
5	590.660	24.69	46.00	-21.31	41.09	-16.40	QP
6	668.260	30.11	46.00	-15.89	45.46	-15.35	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

6. Band Edge

6.1. Test Setup

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 ≥ 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 ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

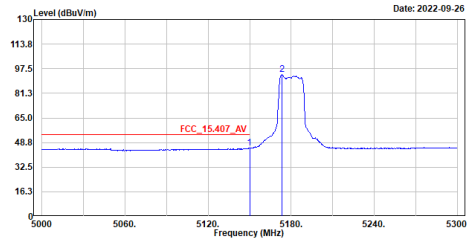
(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

5GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11 a	96.05	1.3600	735	1000
802.11 n20	95.78	1.2720	786	1000
802.11 n40	91.84	0.6300	1587	2000
802.11 ac20	95.80	1.2760	784	1000
802.11 ac40	92.17	0.6360	1572	2000
802.11 ac80	85.06	0.3144	3181	5000

Note: Duty Cycle Refer to Section 7.

6.4. Test Result of Band Edge

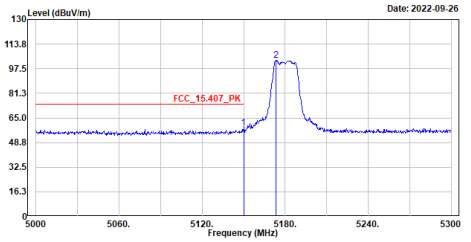
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_a_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5150.000	45.04	54.00	-8.96	28.93	16.11	Average
2	5173.400	93.45	------	------	77.35	16.10	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

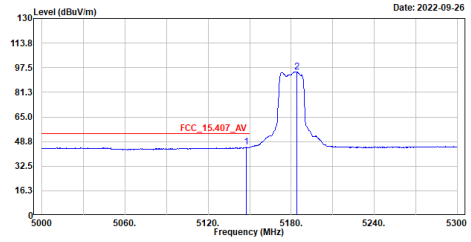
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_a_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5150.000	58.31	74.00	-15.69	42.20	16.11	Peak
2	5173.400	103.16	------	------	87.06	16.10	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

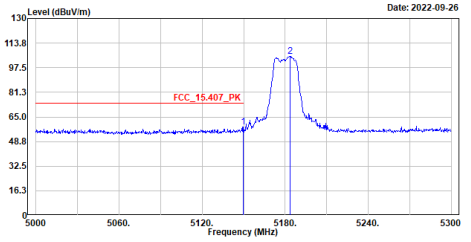
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_a_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5147.600	44.95	54.00	-9.05	28.84	16.11	Average
2	5183.900	94.87	------	------	78.77	16.10	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

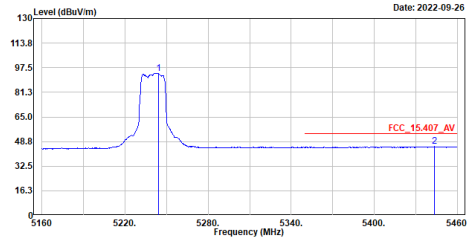
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_a_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5149.700	58.50	74.00	-15.50	42.39	16.11	Peak
2	5183.600	104.82	------	------	88.72	16.10	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

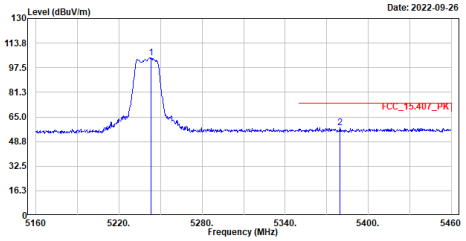
Site :HY-CB03
Condition :3m ,Horizontal
Mode :Tx_a_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5244.000	93.84	------	------	77.88	15.96	Average
2	5443.500	45.51	54.00	-8.49	29.07	16.44	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

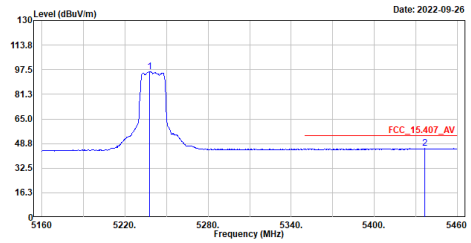
Site :HY-CB03
Condition :3m ,Horizontal
Mode :Tx_a_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5243.100	103.90	------	------	87.94	15.96	Peak
2	5379.300	57.92	74.00	-16.08	41.70	16.22	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

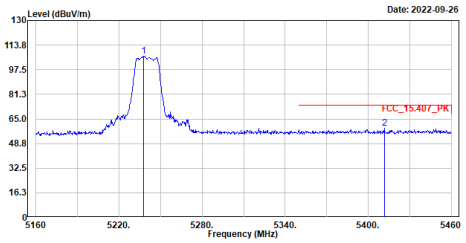
Site :HY-CB03
Condition :3m ,Vertical
Mode :Tx_a_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5237.700	96.30	------	------	80.32	15.98	Average
2	5436.300	45.40	54.00	-8.60	28.99	16.41	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

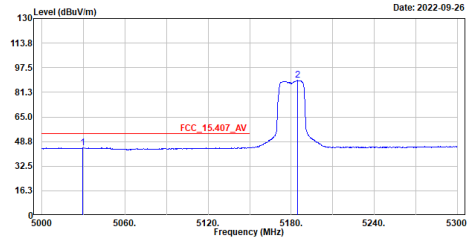
Site :HY-CB03
Condition :3m ,Vertical
Mode :Tx_a_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5237.700	106.24	------	------	90.26	15.98	Peak
2	5411.700	59.01	74.00	-14.99	42.70	16.31	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

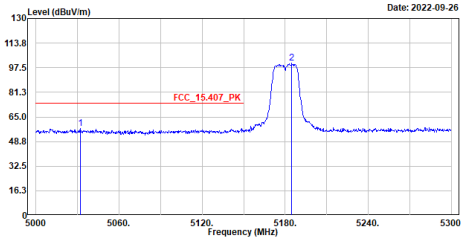
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_n20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5029.700	44.78	54.00	-9.22	28.79	15.99	Average
2	5184.500	89.04	------	------	72.93	16.11	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

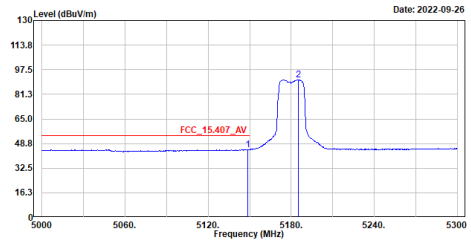
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_n20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5032.100	57.26	74.00	-16.74	41.26	16.00	Peak
2	5184.800	100.40	------	------	84.29	16.11	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

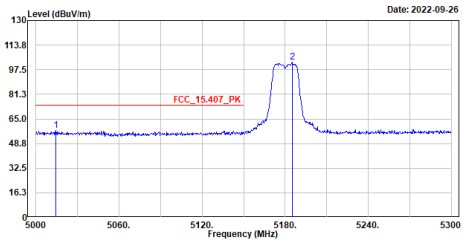
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_n20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5148.500	44.80	54.00	-9.20	28.69	16.11	Average
2	5185.100	90.68	------	------	74.57	16.11	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

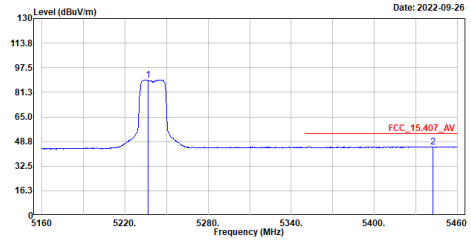
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_n20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5014.400	57.60	74.00	-16.40	41.60	16.00	Peak
2	5185.100	102.43	------	------	86.32	16.11	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

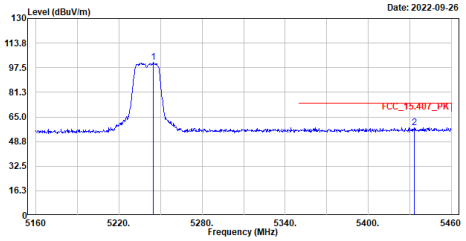
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_n20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5236.500	89.44	------	------	73.46	15.98	Average
2	5442.600	45.36	54.00	-8.64	28.92	16.44	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

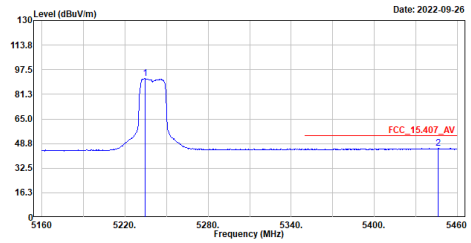
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_n20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5244.600	100.91	------	------	84.96	15.95	Peak
2	5433.300	57.99	74.00	-16.01	41.59	16.40	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

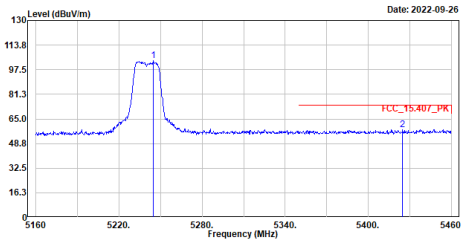
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_n20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5234.400	91.59	------	------	75.60	15.99	Average
2	5446.200	45.61	54.00	-8.39	29.16	16.45	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

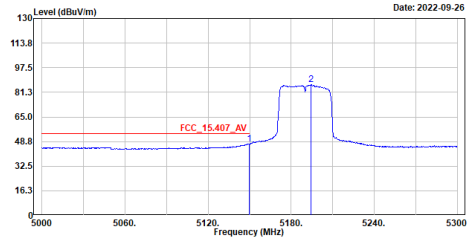
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_n20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5244.900	103.42	------	------	87.47	15.95	Peak
2	5424.900	57.89	74.00	-16.11	41.53	16.36	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

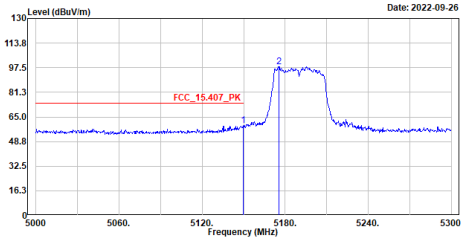
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_n40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5149.700	47.18	54.00	-6.82	31.07	16.11	Average
2	5194.400	86.16	------	------	70.04	16.12	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

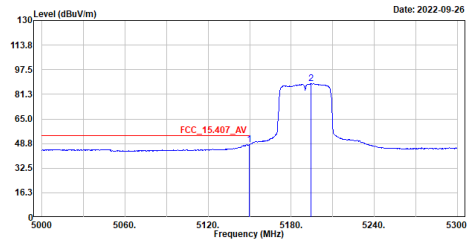
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_n40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5149.700	59.52	74.00	-14.48	43.41	16.11	Peak
2	5175.500	98.23	------	------	82.13	16.10	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

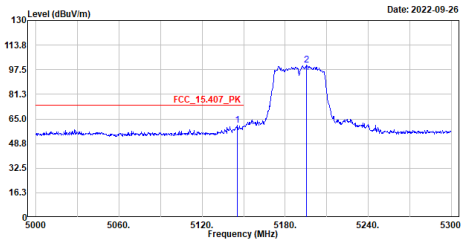
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_n40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5149.700	48.08	54.00	-5.92	31.97	16.11	Average
2	5194.400	88.44	------	------	72.32	16.12	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

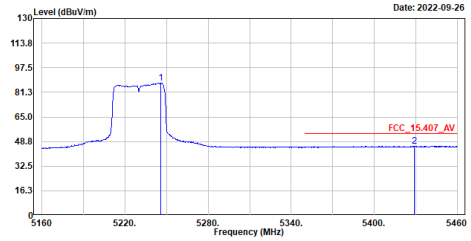
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_n40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5145.200	60.84	74.00	-13.16	44.72	16.12	Peak
2	5195.600	100.55	------	------	84.43	16.12	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

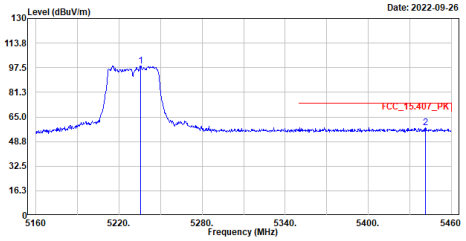
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_n40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5245.800	87.39	------	------	71.43	15.96	Average
2	5429.100	45.70	54.00	-8.30	29.31	16.39	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

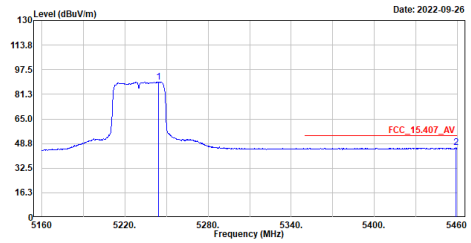
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_n40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5235.600	98.56	------	------	82.57	15.99	Peak
2	5441.400	58.08	74.00	-15.92	41.65	16.43	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

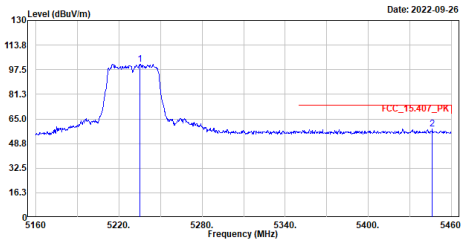
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_n40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5244.300	89.40	------	------	73.45	15.95	Average
2	5458.800	45.96	54.00	-8.04	29.46	16.50	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

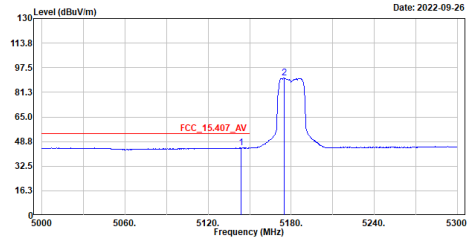
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_n40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5235.000	101.09	------	------	85.10	15.99	Peak
2	5446.200	58.18	74.00	-15.82	41.73	16.45	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

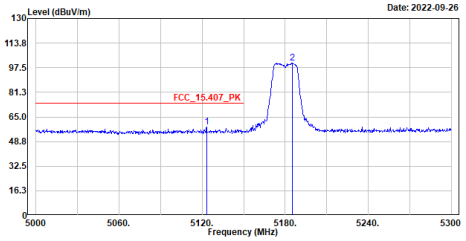
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ac20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5144.000	44.68	54.00	-9.32	28.56	16.12	Average
2	5174.900	90.66	------	------	74.56	16.10	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

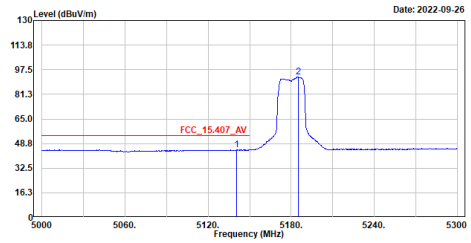
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ac20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5123.300	58.30	74.00	-15.70	42.16	16.14	Peak
2	5185.400	100.55	------	------	84.43	16.12	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

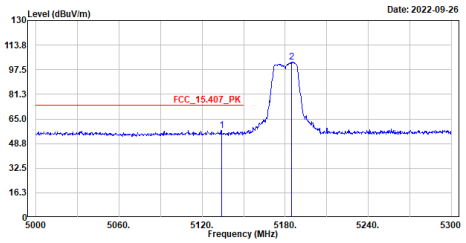
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ac20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5140.700	44.66	54.00	-9.34	28.53	16.13	Average
2	5185.100	92.60	------	------	76.49	16.11	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

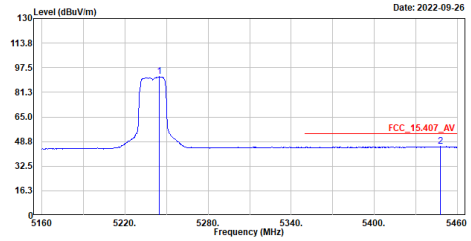
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ac20_5180MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5134.100	57.28	74.00	-16.72	41.14	16.14	Peak
2	5184.800	102.38	------	------	86.27	16.11	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

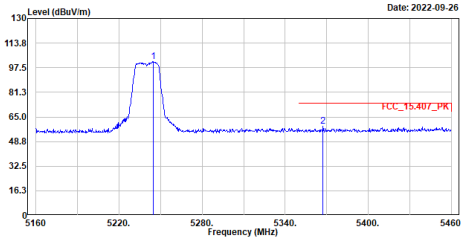
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ac20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5244.900	91.55	------	------	75.60	15.95	Average
2	5448.000	45.41	54.00	-8.59	28.95	16.46	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

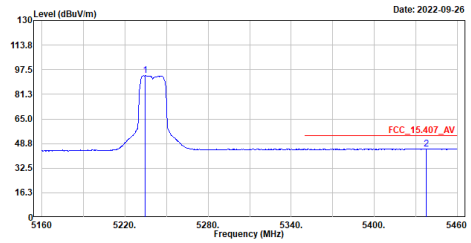
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ac20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5244.900	101.40	------	------	85.45	15.95	Peak
2	5367.300	59.03	74.00	-14.97	42.83	16.20	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

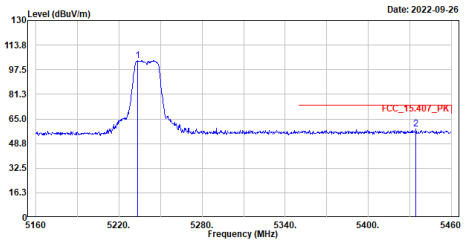
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ac20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5234.700	93.66	------	------	77.67	15.99	Average
2	5437.800	45.33	54.00	-8.67	28.91	16.42	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

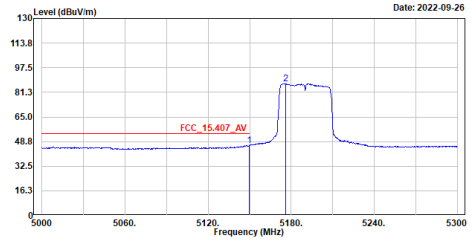
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ac20_5240MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5233.500	103.39	------	------	87.39	16.00	Peak
2	5434.500	58.25	74.00	-15.75	41.85	16.40	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

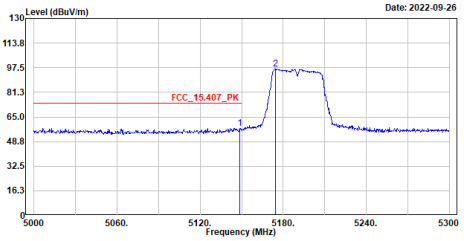
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ac40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5149.700	46.06	54.00	-7.94	29.95	16.11	Average
2	5175.800	86.98	------	------	70.88	16.10	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

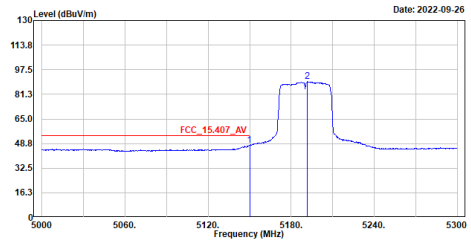
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ac40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5148.800	57.62	74.00	-16.38	41.51	16.11	Peak
2	5174.600	96.71	------	------	80.61	16.10	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

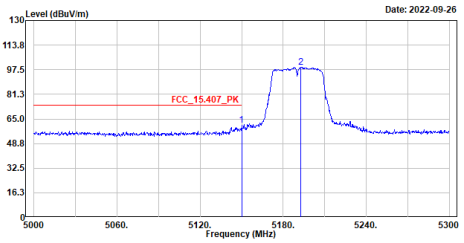
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ac40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5150.000	47.55	54.00	-6.45	31.44	16.11	Average
2	5191.700	89.57	------	------	73.46	16.11	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

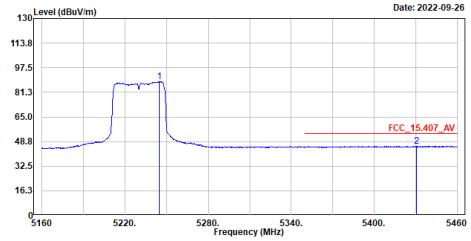
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ac40_5190MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5150.000	60.66	74.00	-13.34	44.55	16.11	Peak
2	5192.900	99.00	------	------	82.89	16.11	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

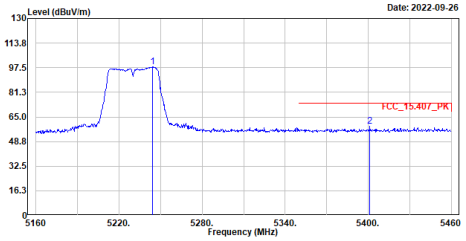
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ac40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5244.600	88.24	------	------	72.29	15.95	Average
2	5430.600	45.73	54.00	-8.27	29.34	16.39	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

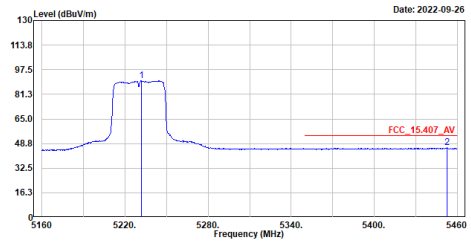
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ac40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5244.300	97.99	------	------	82.04	15.95	Peak
2	5401.200	58.95	74.00	-15.05	42.68	16.27	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

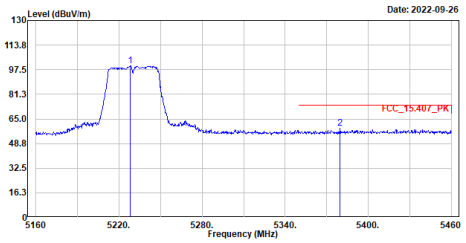
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ac40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5231.700	90.21	------	------	74.20	16.01	Average
2	5452.800	45.98	54.00	-8.02	29.49	16.49	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

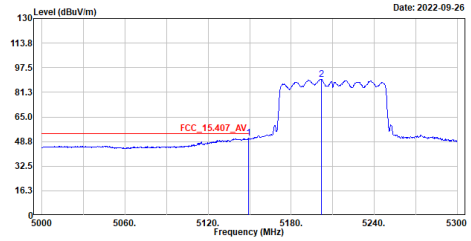
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ac40_5230MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5228.100	99.86	------	------	83.85	16.01	Peak
2	5379.600	58.89	74.00	-15.11	42.67	16.22	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

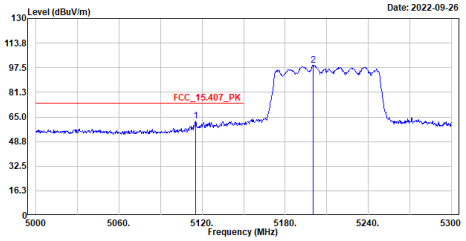
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ac80_5210MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5149.400	51.22	54.00	-2.78	35.11	16.11	Average
2	5201.600	89.78	------	------	73.67	16.11	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

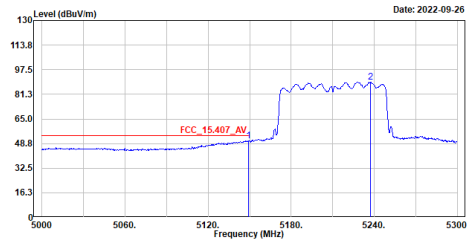
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ac80_5210MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5115.200	62.09	74.00	-11.91	45.94	16.15	Peak
2	5200.100	98.97	------	------	82.85	16.12	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

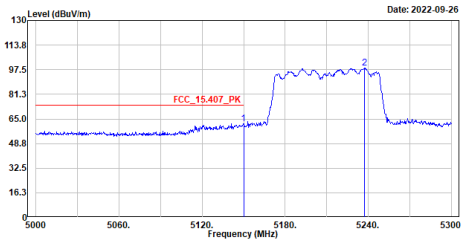
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ac80_5210MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5149.100	50.77	54.00	-3.23	34.66	16.11	Average
2	5237.300	89.38	------	------	73.39	15.99	Average

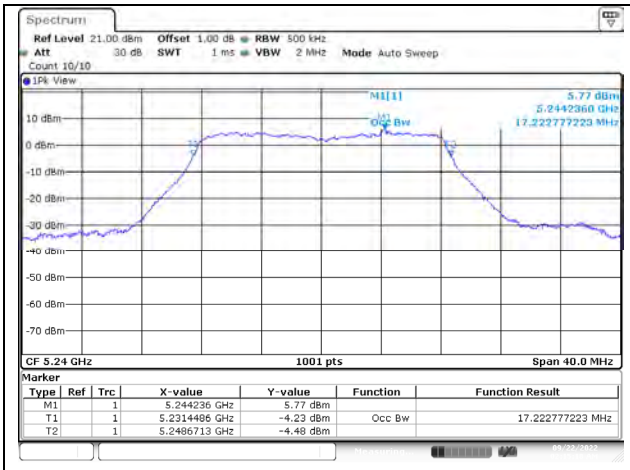
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ac80_5210MHz
Test BY :Ashton Chiu

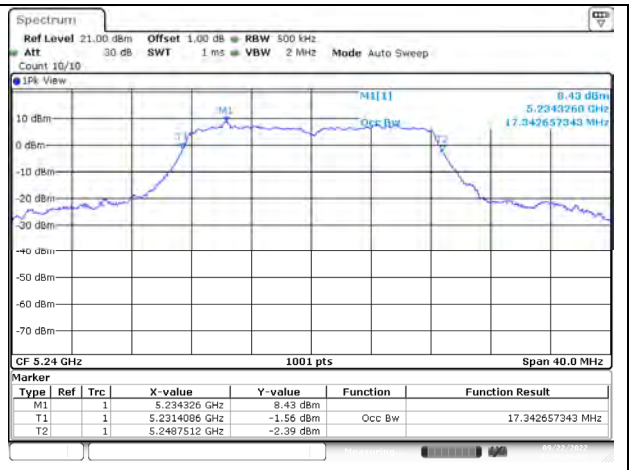


No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5150.000	61.91	74.00	-12.09	45.80	16.11	Peak
2	5237.300	98.62	------	------	82.63	15.99	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.



Transmit_a_5240MHz

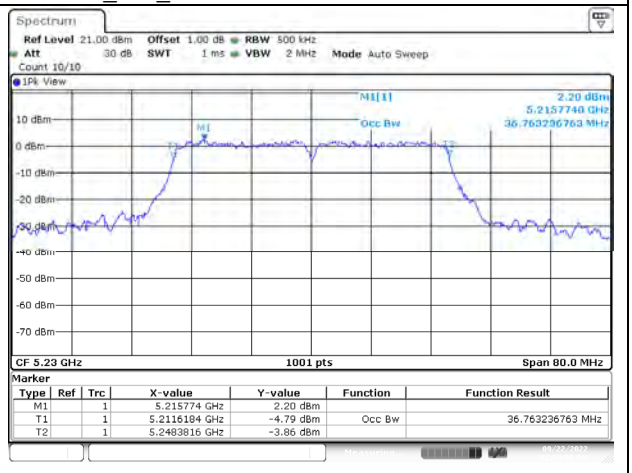


Transmit_a_5240MHz

Transmit_n20_5240MHz

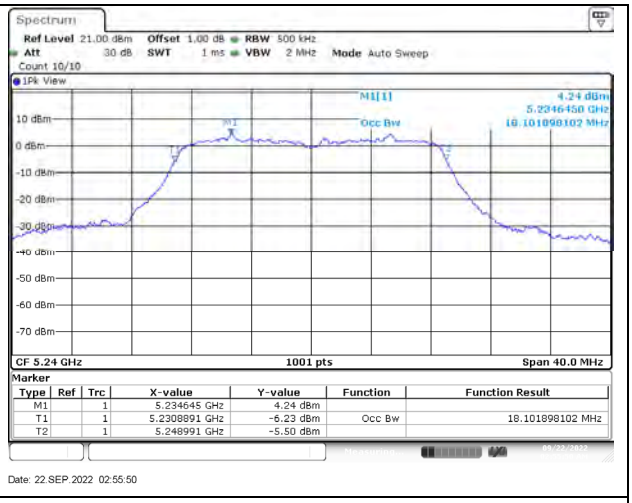
Transmit_n20_5240MHz

Transmit_n40_5230MHz

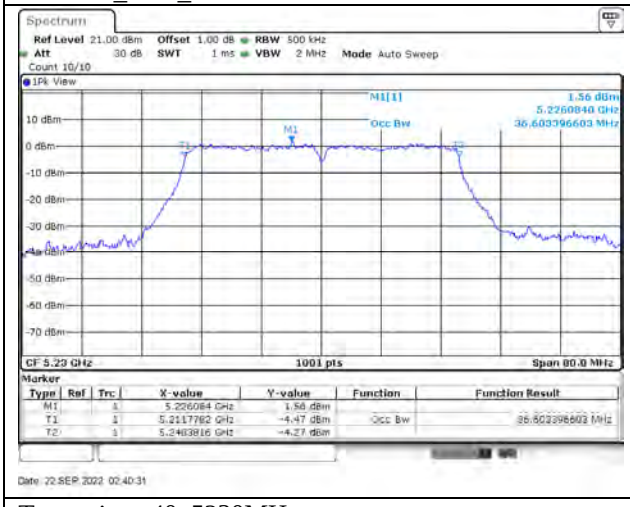


Transmit_n40_5230MHz

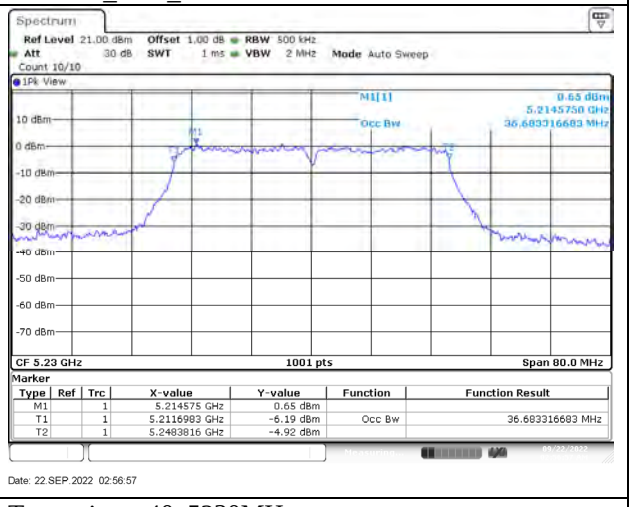
Transmit_ac20_5240MHz



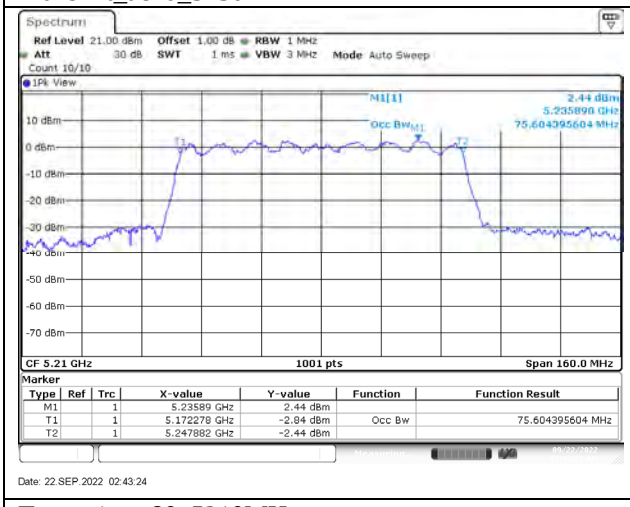
Transmit_ac20_5240MHz



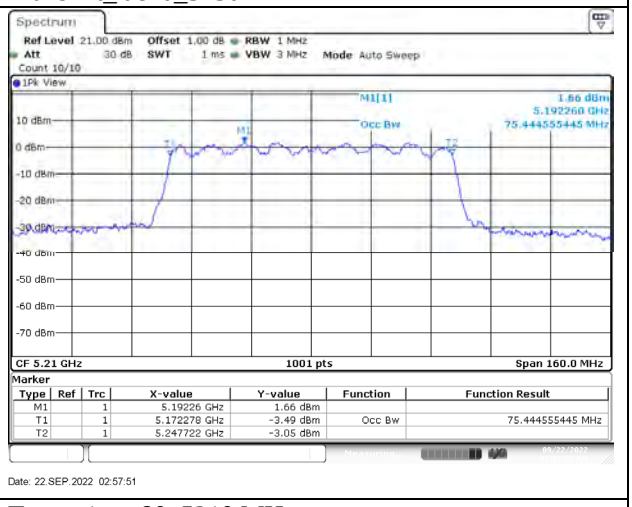
Transmit_ac40_5230MHz



Transmit_ ac40_5230MHz



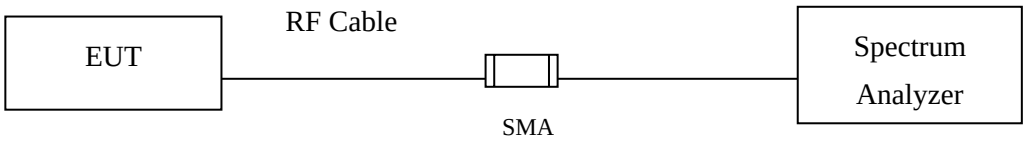
Transmit_ac80_5210MHz



Transmit_ac80_5210 MHz

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.

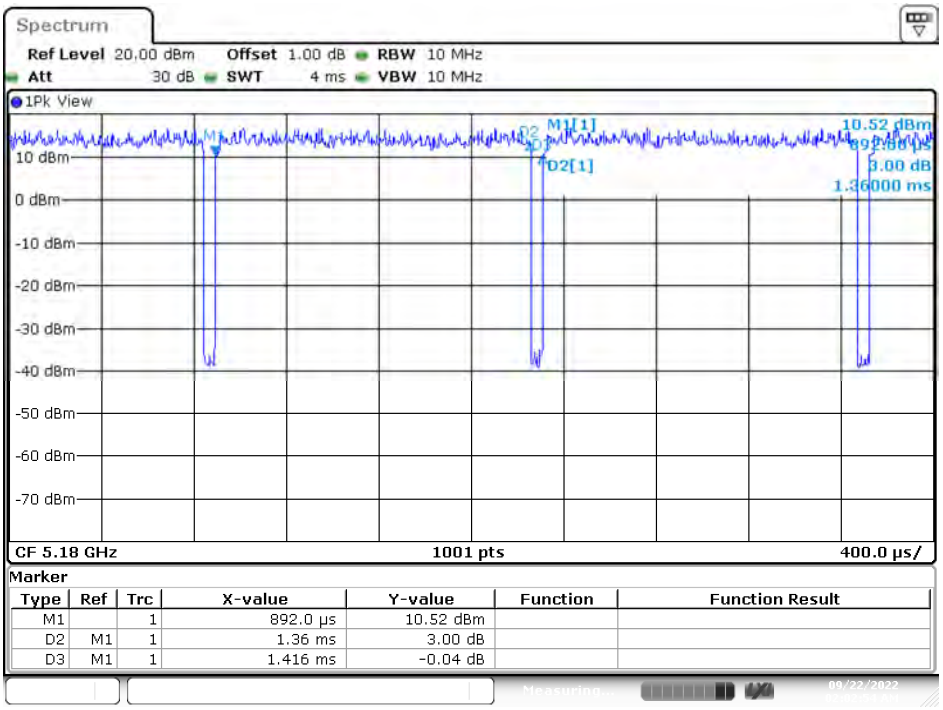
7.3. Test Result of Duty Cycle

Product : QCast Mirror
Test Item : Duty Cycle
Test Mode : Transmit
Test Date : 2022/09/22

Duty Cycle Formula:
Duty Cycle = Ton / (Ton + Toff)
Duty Factor = 10 Log (1/Duty Cycle)
Results:

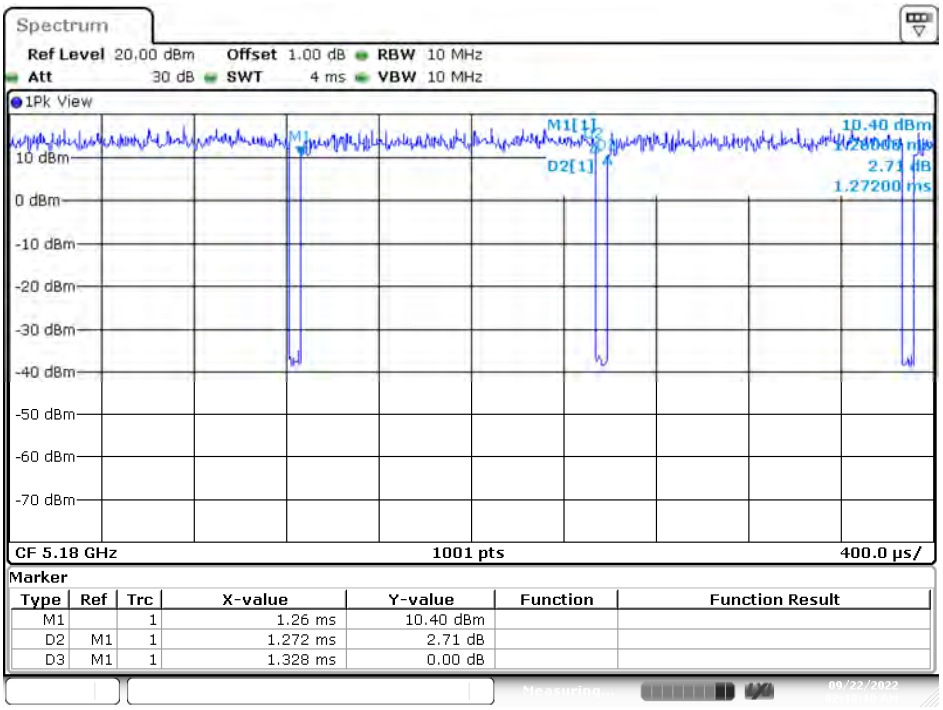
5GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11 a	1.3600	1.4160	96.05	0.18
802.11 n20	1.2720	1.3280	95.78	0.19
802.11 n40	0.6300	0.6860	91.84	0.37
802.11 ac20	1.2760	1.3320	95.80	0.19
802.11 ac40	0.6360	0.6900	92.17	0.35
802.11 ac80	0.3144	0.3696	85.06	0.70

802.11a



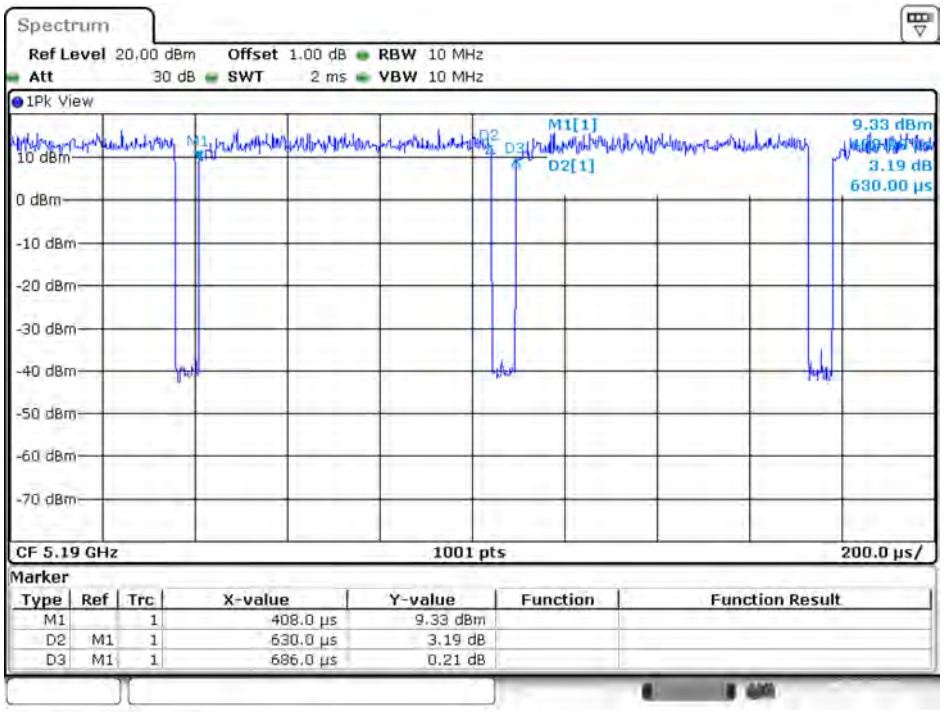
Date: 22.SEP.2022 02:02:54

802.11n20



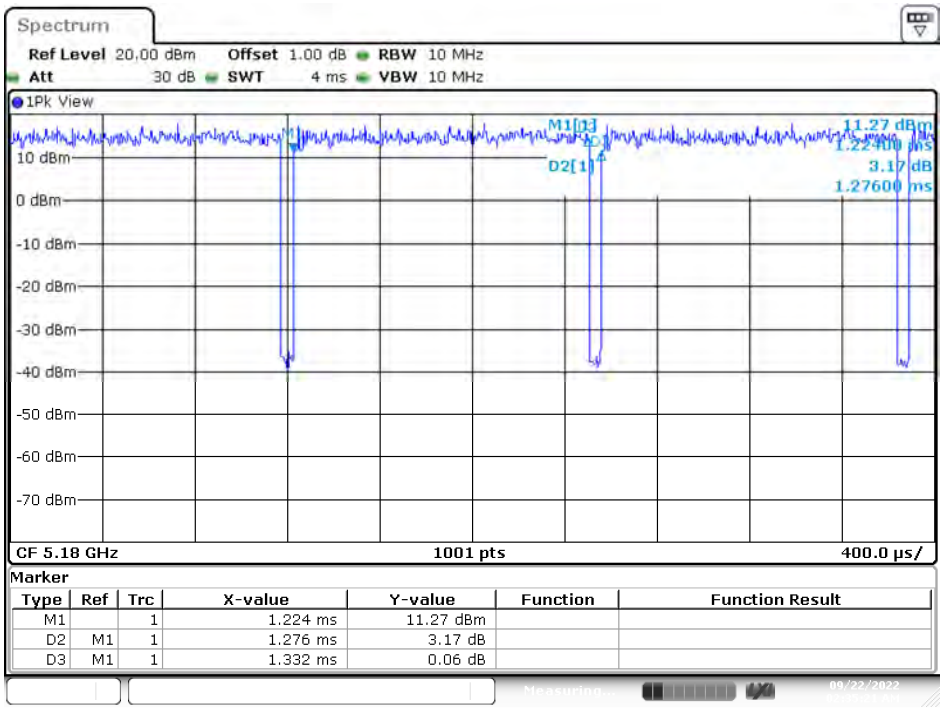
Date: 22.SEP.2022 02:18:11

802.11n40



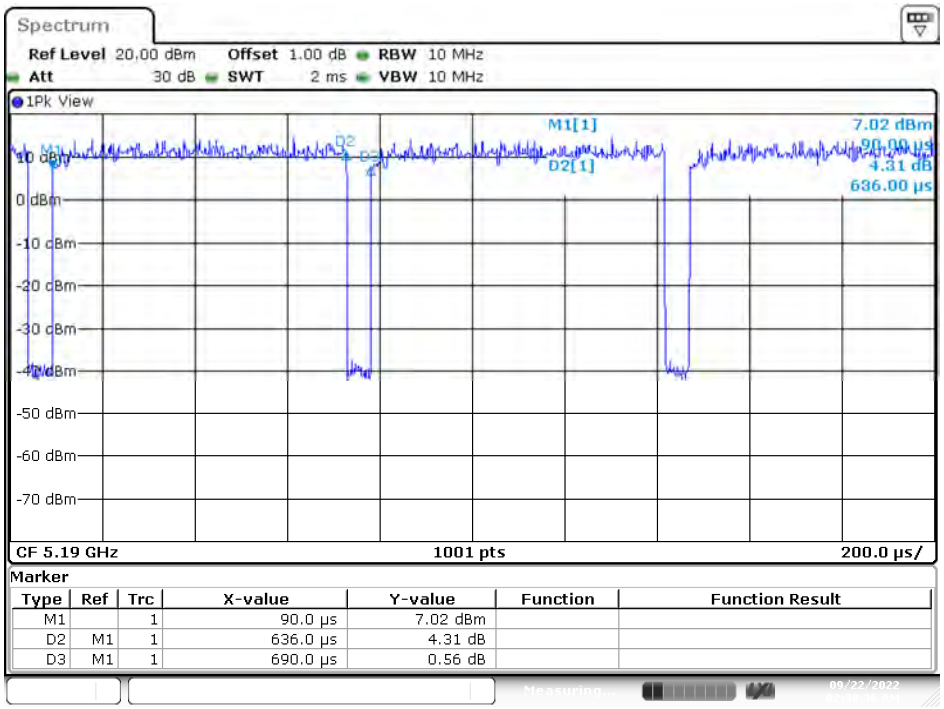
Date: 22.SEP.2022 02:31:17

802.11ac20



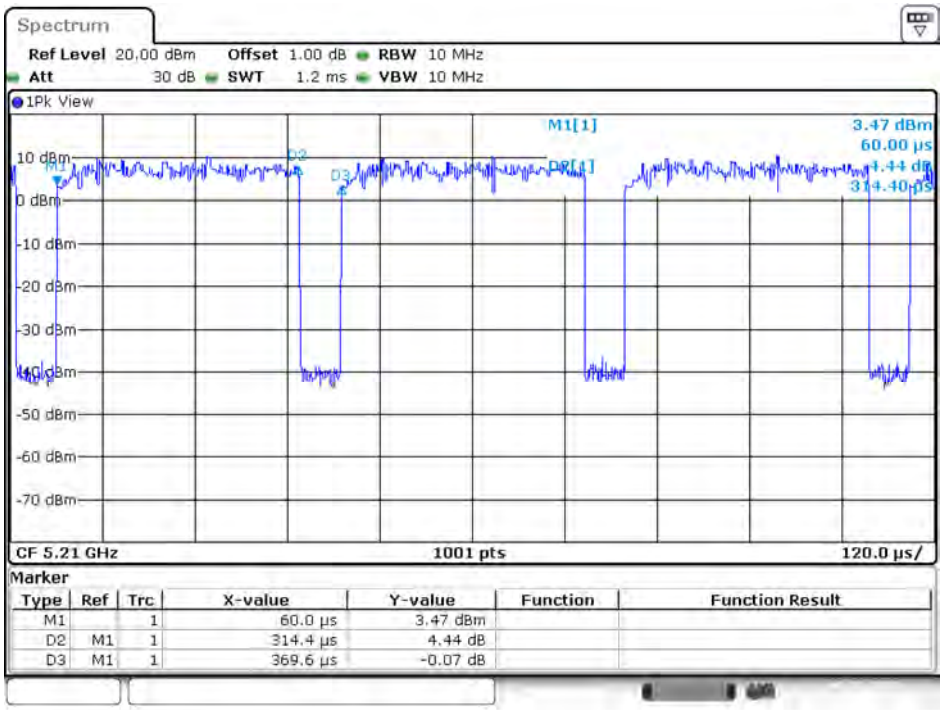
Date: 22.SEP.2022 02:35:21

802.11ac40



Date: 22.SEP.2022 02:38:36

802.11ac80

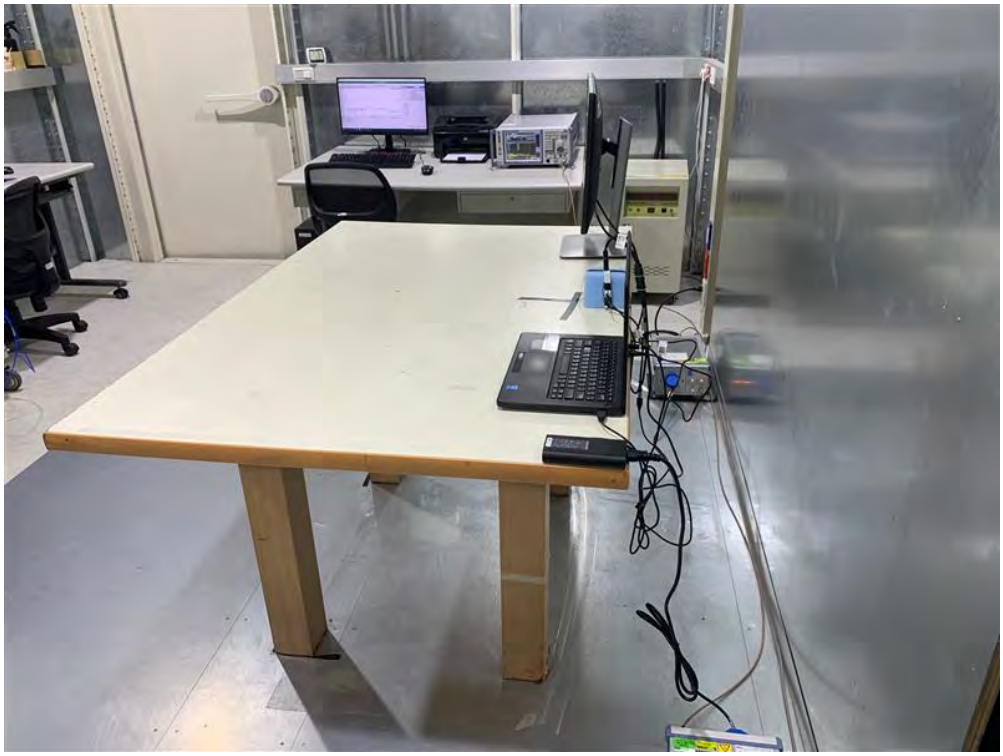


Date: 22.SEP.2022 02:43:15

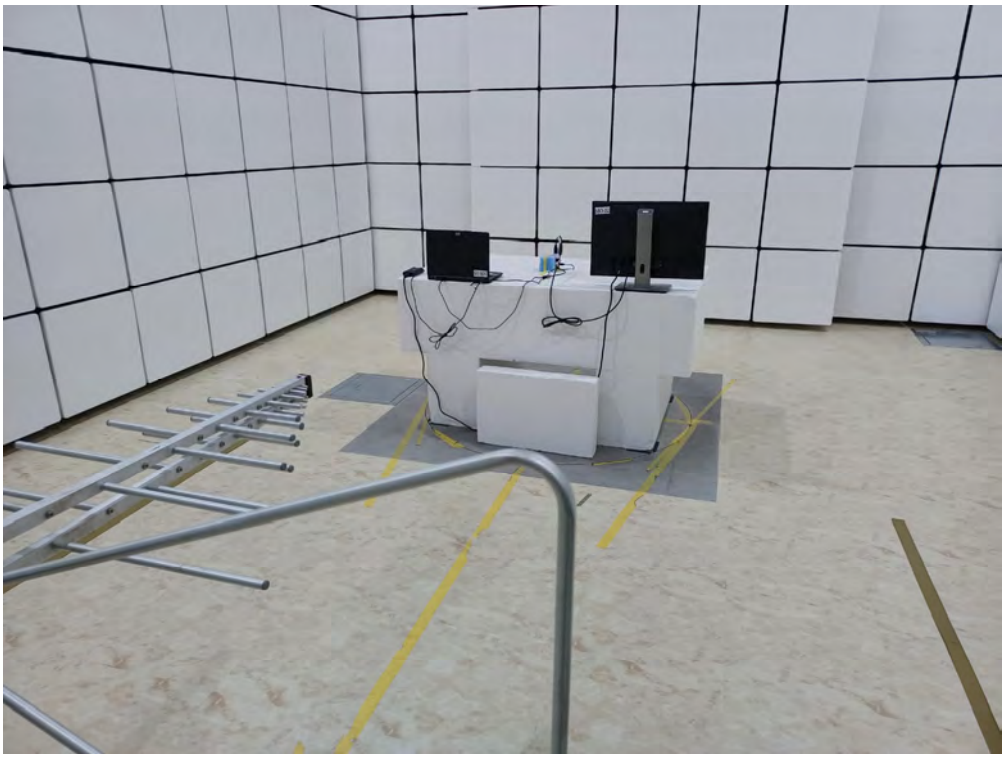
Appendix 1: EUT Test Photographs

Front View of Conducted Test

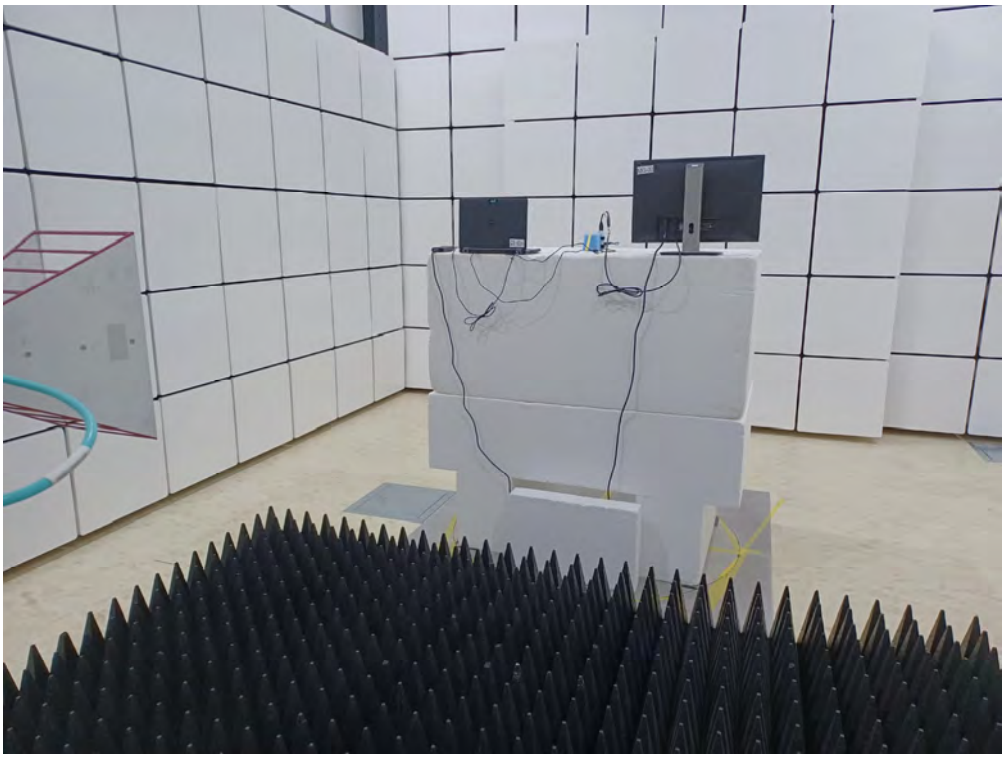
Back View of Conducted Test



Radiated Test



Radiated Test (Horn)



Radiated Test (Horn)