FCC RADIO TEST REPORT

FCC ID	:	**2ABOF-G1BN6ASI002**
Equipment	:	**Base Node (BN)**
Brand Name	:	**TARANA**
Model Name	:	**G1BN6ASI002**
Marketing Name	:	**TARANA G1**
Applicant	:	**Tarana Wireless** **590 Alder Drive, Milpitas, CA 95035**
Manufacturer	:	**Tarana Wireless** **590 Alder Drive, Milpitas, CA 95035**
Standard	:	**FCC Part 15 Subpart E §15.407**

The product was received on Jun. 27, 2023 and testing was performed from Jun. 27, 2023 to Jul. 06, 2023. We, Sporton International (USA) Inc, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval from Sporton International (USA) Inc, the test report shall not be reproduced except in full.

Approved by: Abi Lin

Sporton International (USA) Inc.
1175 Montague Expressway, Milpitas, CA 95035

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History of this test report

Report No.	Version	Description	Issue Date
FR230625004A	01	Initial issue of report	Jul. 13, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403(i)	6dB & 26dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407(a)	Maximum Conducted Output Power	Pass	-
3.3	15.407(a)	Power Spectral Density	Pass	-
3.4	15.407(b)	Unwanted Emissions	Pass	0.42 dB under the limit at 5949.00 MHz
3.5	15.207	AC Conducted Emission	Pass	11.41 dB under the limit at 8.97 MHz
3.6	15.203	Antenna Requirement	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”.

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature
General Specs 5 GHz Access Point **Antenna Type** 5 GHz Access Point: Array Antenna

Antenna information		
5725 MHz ~ 5850 MHz	Peak Gain (dBi)	16.30

Remark:

1. The device is driving cross-polarized antenna, which has 8 horizontal polarization antenna and 8 vertical polarization antenna
2. Minimum number of spatial stream (Nss) is 8
3. The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International (USA) Inc.
Test Site Location	1175 Montague Expressway, Milpitas, CA 95035 TEL : 408 9043300
Test Site No.	**Sporton Site No.**
	TH01-CA, CO01-CA, 03CH02-CA

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: US1250

1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- ANSI C63.10-2013

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). The EUT will be installed in one orientation. For radiated measurement, the EUT was placed with same orientation as described in user manual.

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)
5725-5850 MHz (U-NII-3) 40MHz	151	5755
	153	5765
	155	5775
	157	5785
	159	5795
	161	5805
	163	5815
	165	5825
5725-5850 MHz (U-NII-3) 40+40MHz	151+159	5755 + 5795
	157+165	5785 + 5825

2.2 Test Mode

The final test modes include the worst data rates for each modulation shown in the table below.

Test Cases	
AC Conducted Emission	Mode 1 : 5GHz Link + Adapter

<Single Carrier>

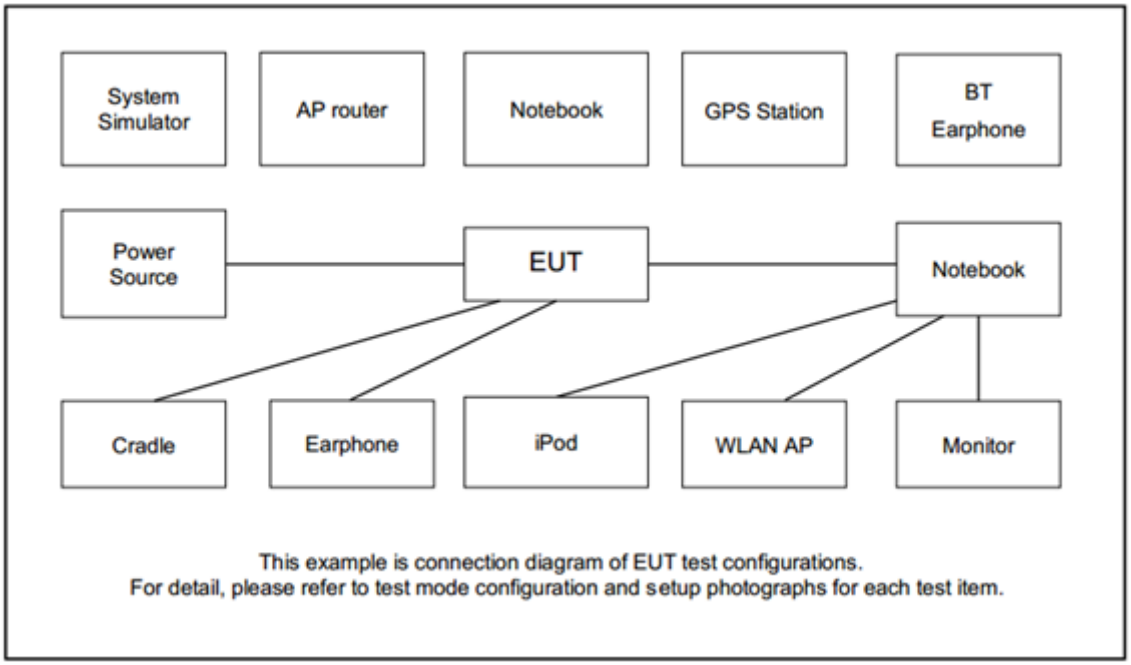
UNII-3：5725-5850 MHz
Channel BW 40MHz
5755MHz
5795MHz
5825MHz

<Multi Carrier (Contiguous)>

UNII-3：5725-5850 MHz
Channel BW 40MHz + 40MHz
5755MHz + 5795MHz
5785MHz + 5825MHz

Remark: For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Adapter/Power supply	MEAN WELL	HEP-480-54A	NA	NA	AC I/P： Unshielded, 1.8 m
2.	Laptop	Lenovo	TP00050C	NA	NA	Laptop

2.5 EUT Operation Test Setup

The RF test items, utility “Putty release 0.62” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10 dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

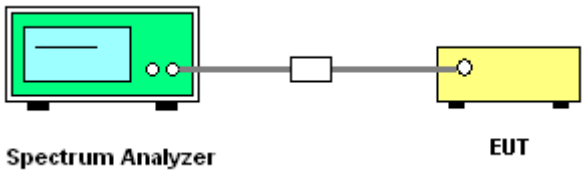
3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth for the band 5.725-5.85 GHz
2. Set RBW = 100 kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

3.1.4 Test Setup

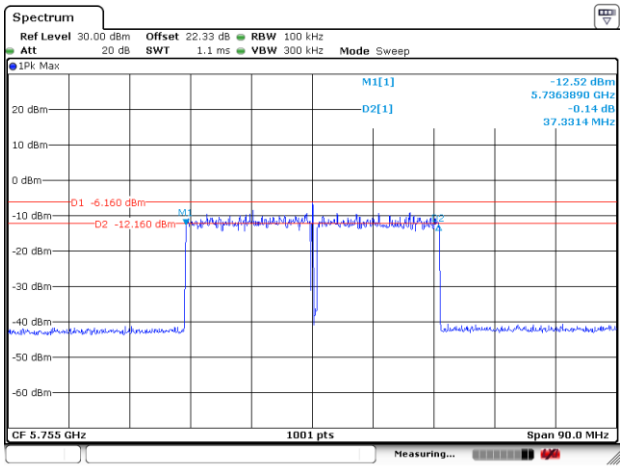
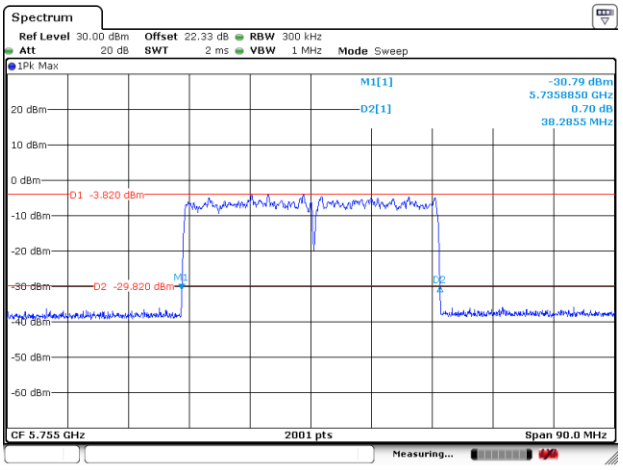
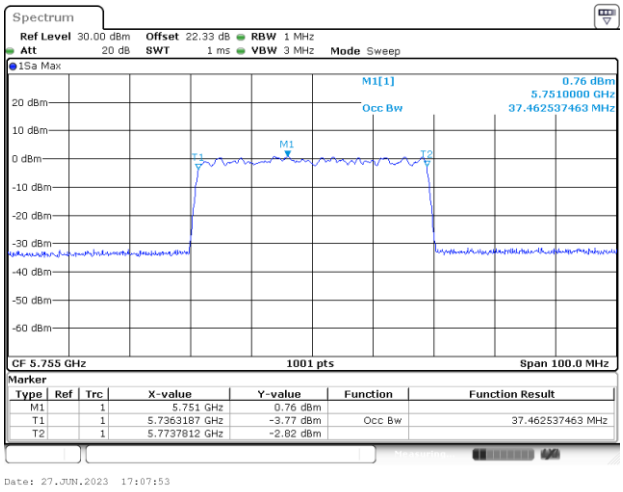


3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.

<Single Carrier>

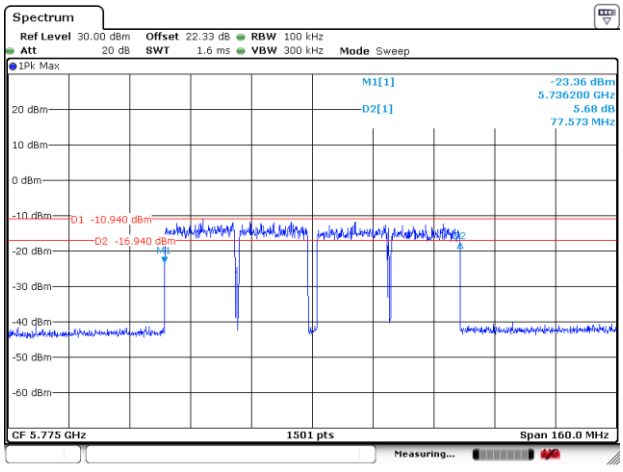
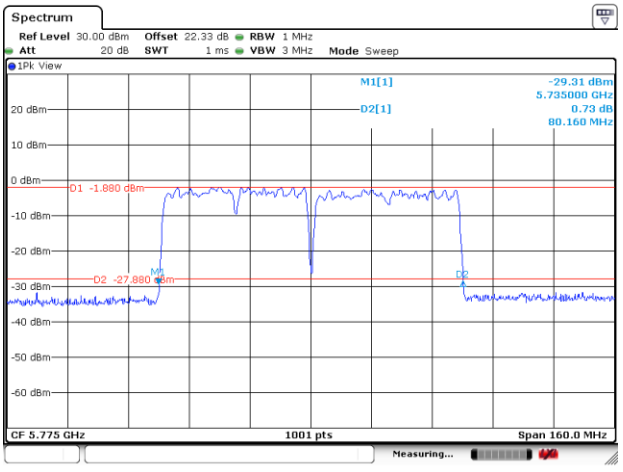
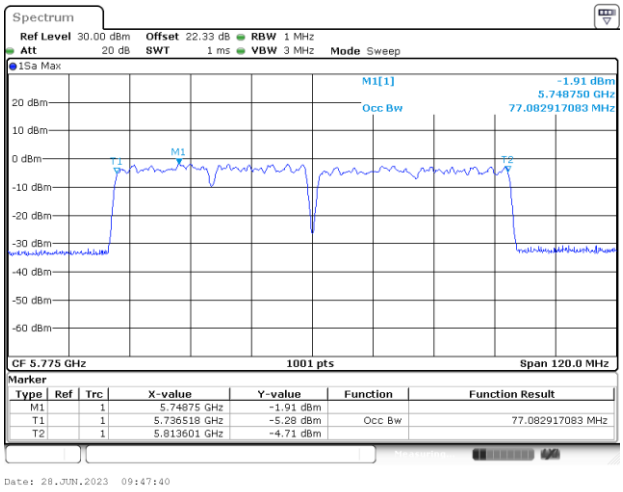
<40MHz>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**NA**
	

Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<Multi Carrier (Contiguous)>

<40MHz + 40MHz>

6dB Bandwidth	26dB Bandwidth
	
99% Occupied Bandwidth	**NA**
	

Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

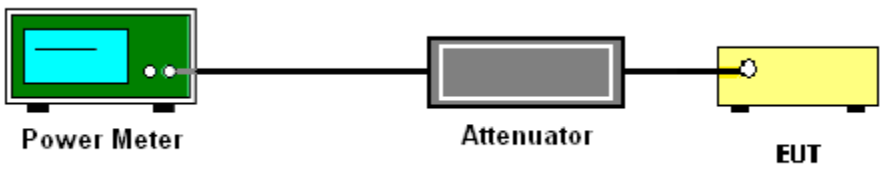
3.2.3 Test Procedures

The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM-G (Measurement using a gated RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter.
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

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

3.3.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section F) Maximum power spectral density.

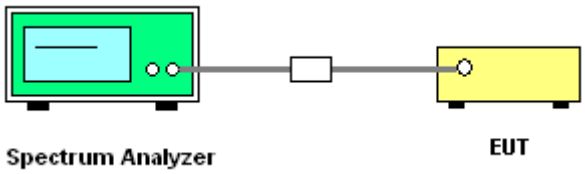
 # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

1. The RF output of EUT is connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PSD and record it.

3.3.4 Test Setup



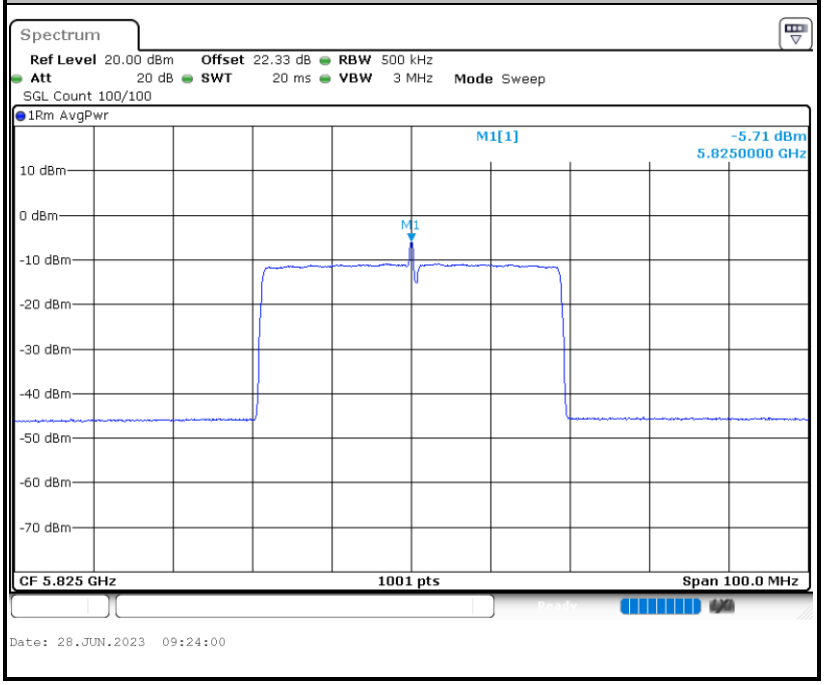
3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

<Single Carrier>

<40MHz>

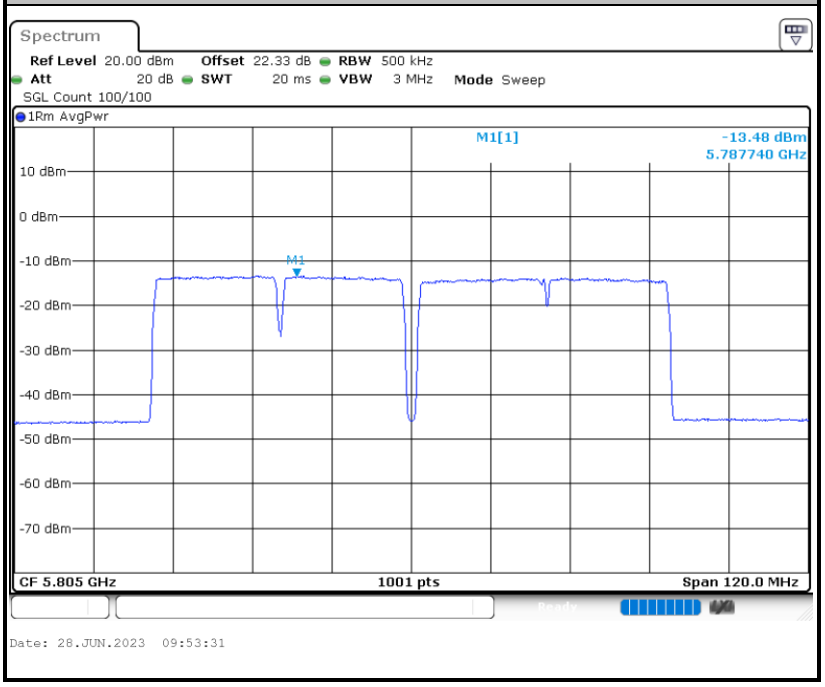
Maximum Power Density Plot (dBm/500kHz)



<Multi Carrier (Contiguous)>

<40MHz + 40MHz>

Maximum Power Density Plot (dBm/500kHz)



3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(2) Unwanted spurious emissions falls in restricted bands shall comply with the general field strength limits as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Note: The following formula is used to convert the EIRP to field strength.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.3

(3) KDB789033 D02 v02r01 G)2)c)

(i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of −27 dBm/MHz.

(ii) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are based on the use of a peak detector.

3.4.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000 MHz

   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

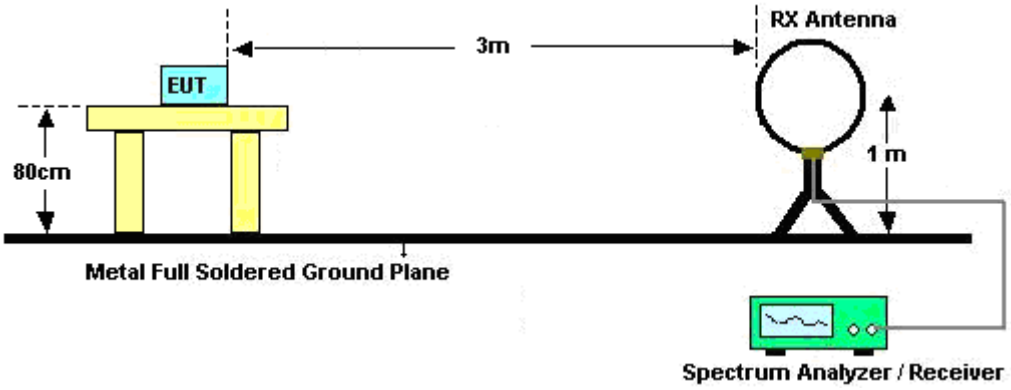
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is 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.
2. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT is set 3 meters away from the receiving antenna which is mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT is arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.

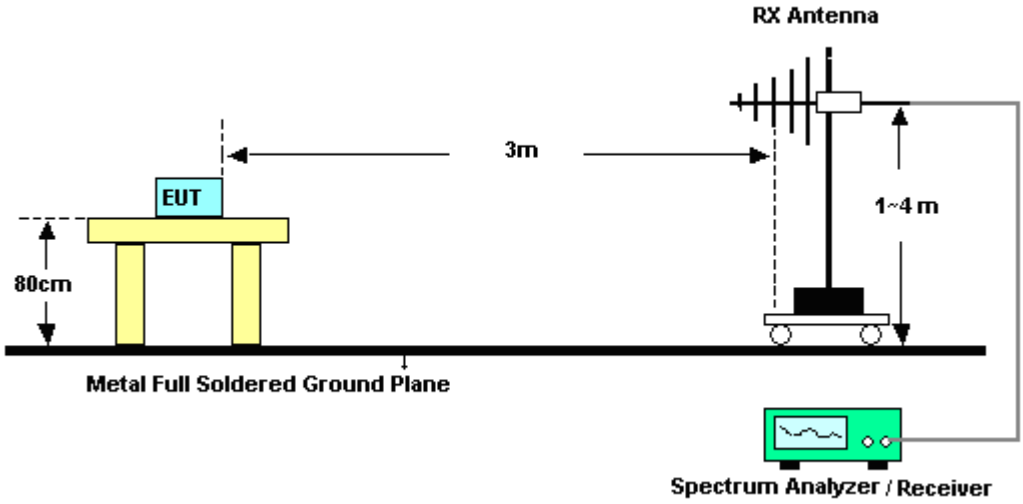
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as "-".
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies.
   When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".

3.4.4 Test Setup

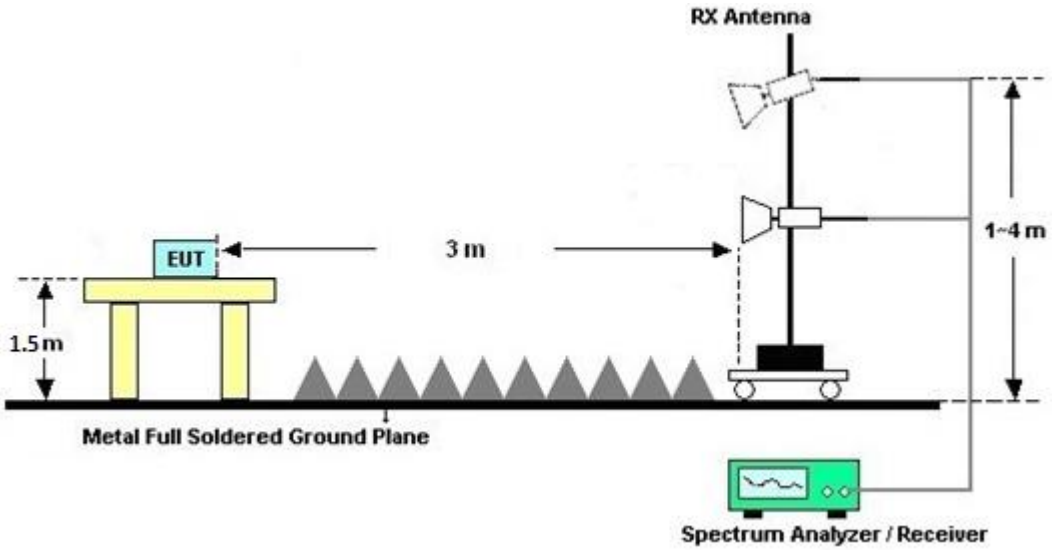
For radiated emissions below 30MHz



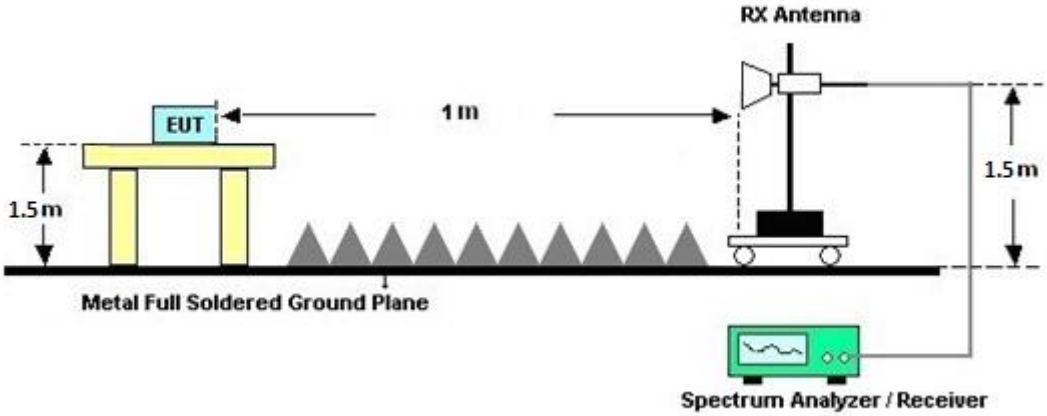
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.4.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

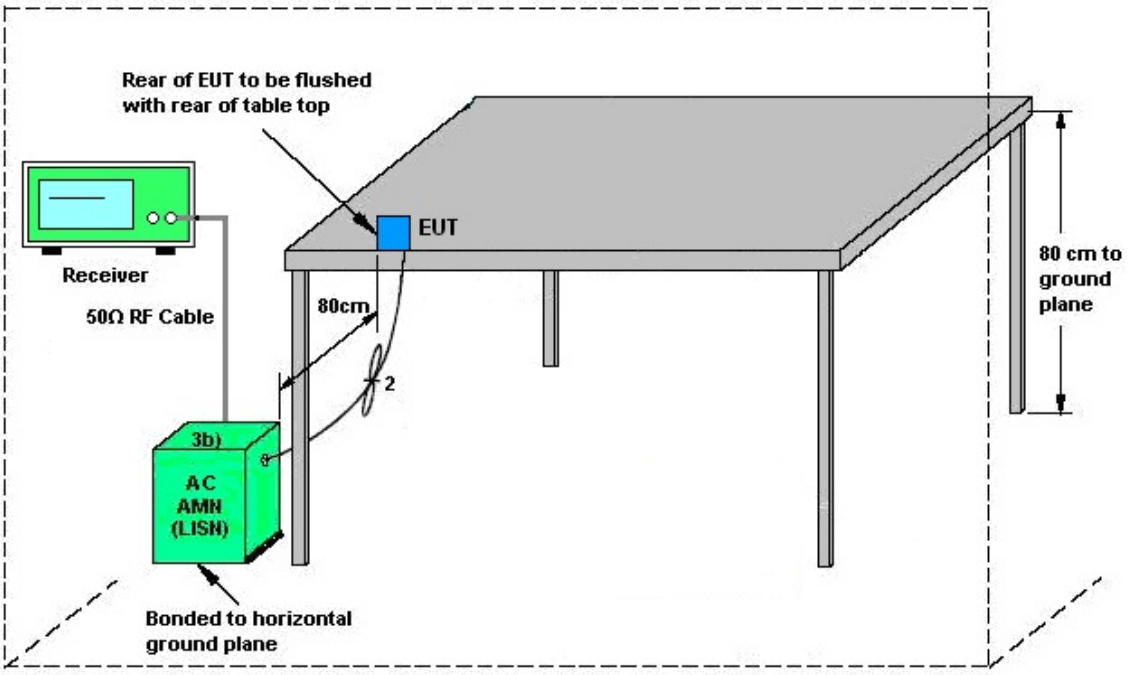
3.5.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Antenna Requirements

3.6.1 Standard Applicable

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LISN	TESEQ	NNB51	47407	N/A	May 16, 2023	Jul. 05, 2023	May 15, 2024	Conduction (CO01-CA)
EMI Test Receiver	R&S	ESR7	102177	9kHz~7GHz	May 23, 2023	Jul. 05, 2023	May 22, 2024	Conduction (CO01-CA)
Pulse limiter with 10dB attenuation	R&S	VTSD 9561-F N	9561-F- N00412	N/A	Jun. 05, 2023	Jul. 05, 2023	Jun. 04, 2024	Conduction (CO01-CA)
Test Software	R&S	EMC32 V10.30.0	N/A	N/A	N/A	Jul. 05, 2023	N/A	Conduction (CO01-CA)
Bilog Antenna	TESEQ	6111D	54683	30MHz~1GHz	Nov. 01, 2022	Jun. 29, 2023~ Jun. 30, 2023	Oct. 31, 2023	Radiation (03CH02-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120D	02140	1GHz~18GHz	Jan. 09, 2023	Jun. 29, 2023~ Jun. 30, 2023	Jan. 08, 2024	Radiation (03CH02-CA)
Horn Antenna	SCHWARZBECK	BBHA 9170D	00842	18GHz~40GHz	Aug. 16, 2022	Jun. 29, 2023~ Jun. 30, 2023	Aug. 15, 2023	Radiation (03CH02-CA)
Amplifier	SONOMA	310N	372240	N/A	May 03, 2023	Jun. 29, 2023~ Jun. 30, 2023	May 02, 2024	Radiation (03CH02-CA)
Preamplifier	Keysight	83017A	MY53270323	1GHz~26.5GHz	May 04, 2023	Jun. 29, 2023~ Jun. 30, 2023	May 03, 2024	Radiation (03CH02-CA)
Preamplifier	E-instrument	ERA-100M-18G-56-01-A70	EC1900252	1GHz~18GHz	May 23, 2023	Jun. 29, 2023~ Jun. 30, 2023	May 22, 2024	Radiation (03CH02-CA)
Preamplifier	EMEC	EMC18G40G	060725	18GHz-40GHz	May 04, 2023	Jun. 29, 2023~ Jun. 30, 2023	May 03, 2024	Radiation (03CH02-CA)
RF Cable	HUBER+SUHNER	SUCOFLEX 102	804209/2, 802406/2, 802875/2, 802952/2	N/A	Nov. 14, 2022	Jun. 29, 2023~ Jun. 30, 2023	Nov. 13, 2023	Radiation (03CH02-CA)
High Pass Filter	WOKEN	WFIL-H6500-26500F	WR67BWC4B1	6.5G-26.5G	Jun. 05, 2023	Jun. 29, 2023~ Jun. 30, 2023	Jun. 04, 2024	Radiation (03CH02-CA)
Filter	Wainwright	WLK12-1200-1272-11000-40SS	SN2	1.2GHz Low Pass Filter	Jun. 05, 2023	Jun. 29, 2023~ Jun. 30, 2023	Jun. 04, 2024	Radiation (03CH02-CA)
Hygrometer	TESEO	608-H1	45142602	N/A	Sep. 12, 2022	Jun. 29, 2023~ Jun. 30, 2023	Sep. 11, 2023	Radiation (03CH02-CA)
Controller	ChainTek	EM-1000	060876	NA	N/A	Jun. 29, 2023~ Jun. 30, 2023	N/A	Radiation (03CH02-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jun. 29, 2023~ Jun. 30, 2023	N/A	Radiation (03CH02-CA)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jun. 29, 2023~ Jun. 30, 2023	N/A	Radiation (03CH02-CA)
Software	Audix	E3	N/A	N/A	N/A	Jun. 29, 2023~ Jun. 30, 2023	N/A	Radiation (03CH02-CA)
Hygrometer	Testo	608-H1	45141354	N/A	Jul. 27, 2022	Jun. 27, 2023~ Jul. 06, 2023	Jul. 26, 2023	Conducted (TH01-CA)
Power Sensor	DARE!!	RPR3008W	RPR8W-2301002	10MHz-8GHz	Feb. 08, 2023	Jun. 27, 2023~ Jul. 06, 2023	Feb. 07, 2024	Conducted (TH01-CA)
Switch Box	EM Electronics	EMSW26	1090304	N/A	Dec. 05, 2022	Jun. 27, 2023~ Jul. 06, 2023	Dec. 04, 2023	Conducted (TH01-CA)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101089	10Hz-40GHz	May 22, 2023	Jun. 27, 2023~ Jul. 06, 2023	May 21, 2024	Conducted (TH01-CA)

5 Measurement Uncertainty

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.7 dB**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.5 dB**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.9 dB**

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.2 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Venkata Kondepudi	Temperature:	19.6~19.8	°C
Test Date:	2023/06/27~2023/07/06	Relative Humidity:	50.7~51.7	%

TEST RESULTS DATA
Average Power Table

BW	Freq	Condcuted Average Power (dBm)	MIMO Factor	Directional Gain	Total Conducted Power (dBm)	Conducted power limit (dBm)	Total EIRP (dBm)	Pass/Fail
40MHz	5755	7.63	12.04	16.3	19.67	19.70	35.97	Pass
	5795	7.61	12.04	16.3	19.65	19.70	35.95	Pass
	5825	7.65	12.04	16.3	19.69	19.70	35.99	Pass
40 + 40MHz	5755+5795	7.64	12.04	16.3	19.68	19.70	35.98	Pass
	5785+5825	7.6	12.04	16.3	19.64	19.70	35.94	Pass

TEST RESULTS DATA
Power Spectral Density

BW	Freq	Condcuted Average PSD (dBm/500kHz)	MIMO Factor	Directional Gain (dBi)	Total Conducted PSD (dBm)	Conducted PSD limit (dBm)	Pass/Fail
40MHz	5755	-6.37	12.04	16.3	5.67	19.70	Pass
	5795	-6.60	12.04	16.3	5.44	19.70	Pass
	5825	-5.71	12.04	16.3	6.33	19.70	Pass
40 + 40MHz	5755+5795	-13.85	12.04	16.3	-1.81	19.70	Pass
	5785+5825	-13.48	12.04	16.3	-1.44	19.70	Pass

Note:
Antenna Gain = 16.3dBi
The device is driving cross-polarized antenna, which has 8 horizontal polarization antenna and 8 vertical polarization antenna
Directional Gain (8H/8V) = 16.3dBi + 10log(Ntx = 8 / Nss = 8) = 16.3dBi
Conducted power limit = 30 – (Directional Gain – 6) = 19.7dBm
Conducted PSD limit = 30 – (Directional Gain – 6) = 19.7 dBm/500kHz

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

BW	Freq	26dB BW (MHz)	OBW (MHz)	6dB BW (MHz)	6dB BW limit	Pass/Fail
40MHz	5755	38.29	37.46	37.33	> 500kHz	Pass
	5795	38.30	37.46	37.53	> 500kHz	Pass
	5825	38.30	37.46	37.17	> 500kHz	Pass
40 + 40MHz	5755+5795	80.16	77.08	77.57	> 500kHz	Pass
	5785+5825	80.16	76.96	77.57	> 500kHz	Pass

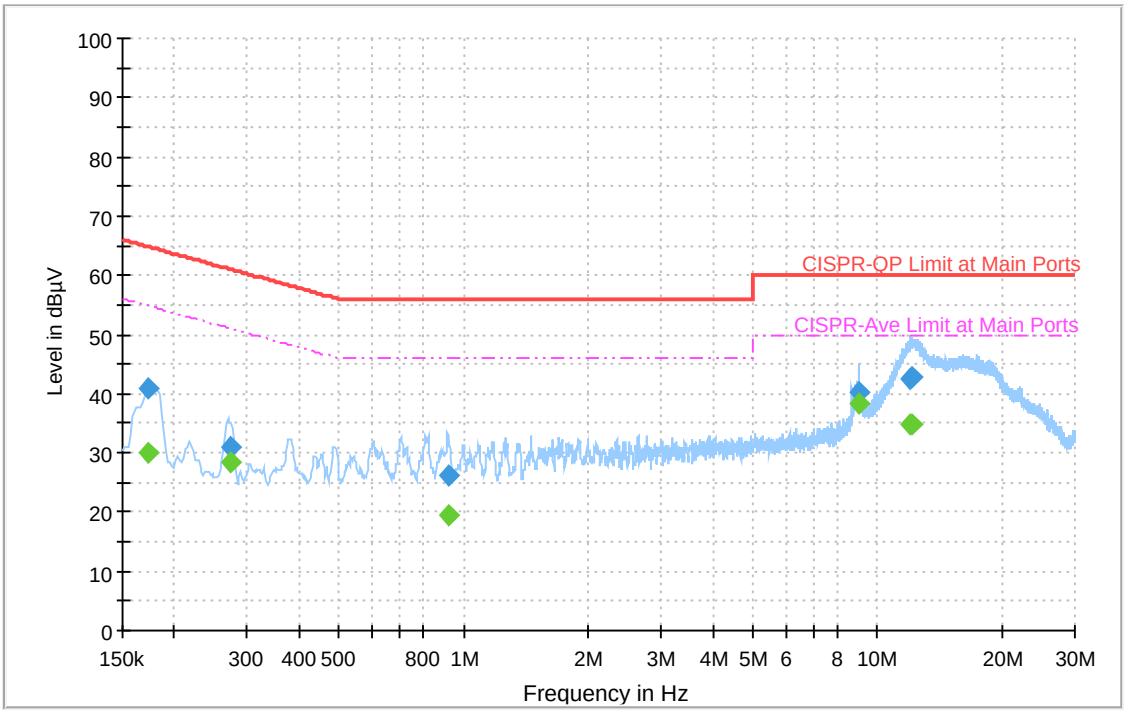
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Leo Liu	**Temperature :**	23~26℃
		Relative Humidity :	38~43%

EUT Information

Test Site Location :	CO01-CA
Project	230625004
Power:	120Vac/60Hz
Mode	1
	Line

Full Spectrum



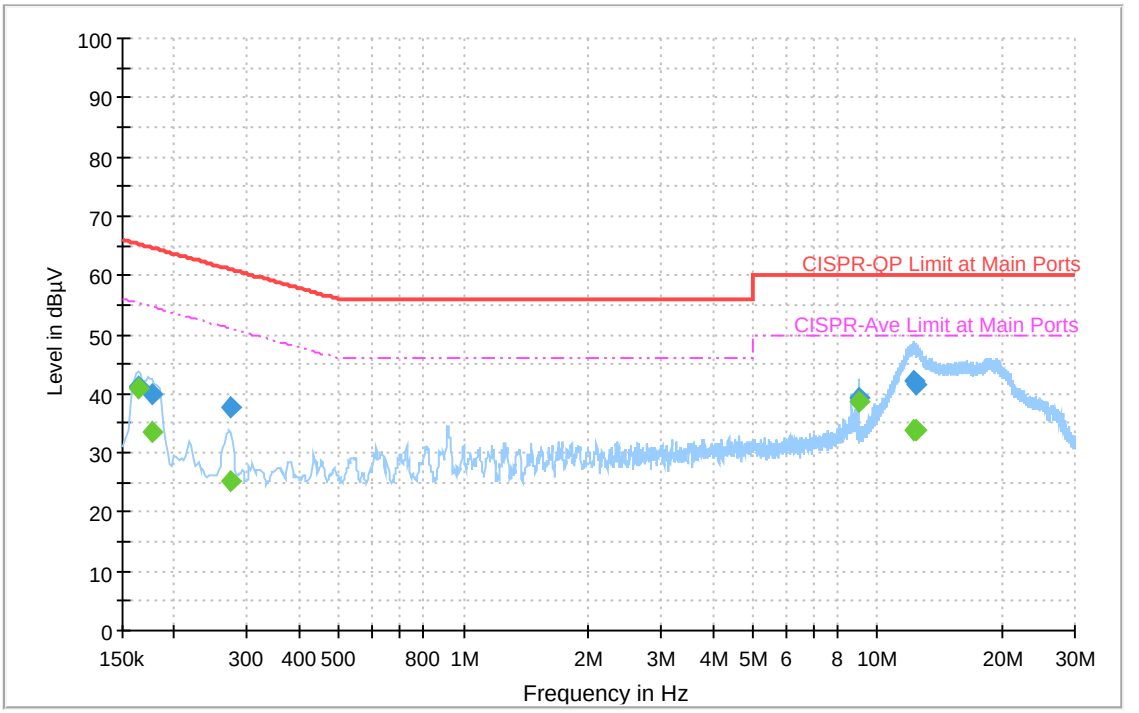
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.173328	---	30.04	54.80	24.76	L1	OFF	20.3
0.173328	41.00	---	64.80	23.80	L1	OFF	20.3
0.273714	---	28.46	51.00	22.54	L1	OFF	20.3
0.273714	31.11	---	61.00	29.89	L1	OFF	20.3
0.914793	---	19.43	46.00	26.57	L1	OFF	20.3
0.914793	26.16	---	56.00	29.84	L1	OFF	20.3
8.978703	---	38.45	50.00	11.55	L1	OFF	20.5
8.978703	40.37	---	60.00	19.63	L1	OFF	20.5
12.029217	---	34.77	50.00	15.23	L1	OFF	20.5
12.029217	42.58	---	60.00	17.42	L1	OFF	20.5
12.121944	---	34.81	50.00	15.19	L1	OFF	20.5
12.121944	42.67	---	60.00	17.33	L1	OFF	20.5

EUT Information

Test Site Location :	CO01-CA
Project	230625004
Power:	120Vac/60Hz
Mode	1
	Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.162924	---	40.74	55.31	14.57	N	OFF	20.3
0.162924	41.32	---	65.31	23.99	N	OFF	20.3
0.177099	---	33.39	54.62	21.23	N	OFF	20.3
0.177099	39.97	---	64.62	24.65	N	OFF	20.3
0.273084	---	25.38	51.02	25.64	N	OFF	20.3
0.273084	37.85	---	61.02	23.17	N	OFF	20.3
8.974833	---	38.59	50.00	11.41	N	OFF	20.4
8.974833	39.28	---	60.00	20.72	N	OFF	20.4
12.238080	---	33.94	50.00	16.06	N	OFF	20.5
12.238080	42.16	---	60.00	17.84	N	OFF	20.5
12.331509	---	33.78	50.00	16.22	N	OFF	20.5
12.331509	41.54	---	60.00	18.46	N	OFF	20.5

Appendix C. Radiated Spurious Emission

Test Engineer :	Fu Chen	Temperature :	21.2~22.8°C
		Relative Humidity :	48.4~56.1%

UNII-3 - 5725~5850MHz

single carrier_40M (Band Edge @ 3m)

	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
16Tx		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
single carrier 40M 5755MHz		5640.2	64.65	-3.55	68.2	48.83	33.11	12.43	29.72	191	182	P	H
		5699	66.28	-38.18	104.46	50.04	33.43	12.51	29.7	191	182	P	H
		5718.2	71.91	-38.39	110.3	55.52	33.56	12.53	29.7	191	182	P	H
		5724	71.93	-47.99	119.92	55.49	33.6	12.54	29.7	191	182	P	H
	*	5755	120.39	-	-	103.7	33.8	12.58	29.69	191	182	P	H
	*	5755	116.73	-	-	100.04	33.8	12.58	29.69	191	182	A	H
		5853.6	68.58	-45.41	113.99	51.35	34.22	12.7	29.69	191	182	P	H
		5865.8	68.92	-38.85	107.77	51.67	34.24	12.71	29.7	191	182	P	H
		5882	68.23	-31.77	100	50.96	34.25	12.73	29.71	191	182	P	H
		5947.8	66.77	-1.43	68.2	49.5	34.22	12.8	29.75	191	182	P	H
		5632.4	64.46	-3.74	68.2	48.67	33.09	12.42	29.72	185	181	P	V
		5689	66.42	-30.67	97.09	50.25	33.37	12.5	29.7	185	181	P	V
		5719.4	67.89	-42.74	110.63	51.48	33.57	12.54	29.7	185	181	P	V
		5723	68.27	-49.37	117.64	51.83	33.6	12.54	29.7	185	181	P	V
	*	5755	114.86	-	-	98.17	33.8	12.58	29.69	185	181	P	V
	*	5755	108.33	-	-	91.64	33.8	12.58	29.69	185	181	A	V
		5850.8	66.39	-53.99	120.38	49.16	34.22	12.7	29.69	185	181	P	V
		5865.8	67.35	-40.42	107.77	50.1	34.24	12.71	29.7	185	181	P	V
		5911	67.79	-10.74	78.53	50.5	34.26	12.76	29.73	185	181	P	V
		5930.6	67.27	-0.93	68.2	49.99	34.24	12.78	29.74	185	181	P	V

Ant. 16Tx	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
single carrier 40M 5795MHz		5623.8	64	-4.2	68.2	48.24	33.07	12.41	29.72	176	189	P	H
		5697.2	65.33	-37.81	103.14	49.1	33.42	12.51	29.7	176	189	P	H
		5712.4	66.71	-41.96	108.67	50.36	33.52	12.53	29.7	176	189	P	H
		5723.4	65.51	-53.04	118.55	49.07	33.6	12.54	29.7	176	189	P	H
	*	5795	120.03	-	-	103.09	34	12.63	29.69	176	189	P	H
	*	5795	117.74	-	-	100.8	34	12.63	29.69	176	189	A	H
		5855.2	68.62	-42.12	110.74	51.38	34.23	12.7	29.69	176	189	P	H
		5866.2	68.69	-38.97	107.66	51.44	34.24	12.71	29.7	176	189	P	H
		5923.4	66.93	-2.45	69.38	49.64	34.25	12.78	29.74	176	189	P	H
		5949	67.78	-0.42	68.2	50.51	34.22	12.8	29.75	176	189	P	H
		5631.2	64.6	-3.6	68.2	48.81	33.09	12.42	29.72	184	182	P	V
		5681.6	65.16	-26.46	91.62	49.05	33.33	12.49	29.71	184	182	P	V
		5713.2	66.29	-42.61	108.9	49.93	33.53	12.53	29.7	184	182	P	V
		5722.4	66.26	-50.01	116.27	49.83	33.59	12.54	29.7	184	182	P	V
	*	5795	109.56	-	-	92.62	34	12.63	29.69	184	182	P	V
	*	5795	103.11	-	-	86.17	34	12.63	29.69	184	182	A	V
		5854.4	67.24	-44.93	112.17	50.01	34.22	12.7	29.69	184	182	P	V
		5859.6	67.67	-41.84	109.51	50.42	34.23	12.71	29.69	184	182	P	V
		5924.2	67.6	-1.19	68.79	50.31	34.25	12.78	29.74	184	182	P	V
		5934.6	67.31	-0.89	68.2	50.02	34.24	12.79	29.74	184	182	P	V

Ant. 16Tx	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
single carrier 40M 5825MHz		5636.765	64.32	-3.88	68.2	48.51	33.1	12.43	29.72	182	176	P	H
		5672.675	65.36	-19.66	85.02	49.32	33.28	12.47	29.71	182	176	P	H
		5705.735	65.97	-40.84	106.81	49.67	33.48	12.52	29.7	182	176	P	H
		5724.83	65.09	-56.72	121.81	48.64	33.61	12.54	29.7	182	176	P	H
	*	5825	124.97	-	-	107.87	34.12	12.67	29.69	182	176	P	H
	*	5825	116.26	-	-	99.16	34.12	12.67	29.69	182	176	A	H
		5852.8	84.12	-31.7	115.82	66.89	34.22	12.7	29.69	182	176	P	H
		5856.6	81.65	-28.7	110.35	64.41	34.23	12.7	29.69	182	176	P	H
		5919.8	67.54	-4.49	72.03	50.25	34.25	12.77	29.73	182	176	P	H
		5942.4	67.73	-0.47	68.2	50.45	34.23	12.8	29.75	182	176	P	H
		5630.78	63.79	-4.41	68.2	48	33.09	12.42	29.72	186	182	P	V
		5699.465	65.1	-39.71	104.81	48.85	33.44	12.51	29.7	186	182	P	V
		5709.155	66.08	-41.69	107.77	49.76	33.5	12.52	29.7	186	182	P	V
		5722.835	65.95	-51.31	117.26	49.51	33.6	12.54	29.7	186	182	P	V
	*	5825	121.75	-	-	104.65	34.12	12.67	29.69	186	182	P	V
	*	5825	113.52	-	-	96.42	34.12	12.67	29.69	186	182	A	V
		5850	76.69	-45.51	122.2	59.47	34.22	12.69	29.69	186	182	P	V
		5856	73.59	-36.93	110.52	56.35	34.23	12.7	29.69	186	182	P	V
		5901.6	68.73	-16.75	85.48	51.43	34.27	12.75	29.72	186	182	P	V
		5931.6	67.68	-0.52	68.2	50.4	34.24	12.78	29.74	186	182	P	V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

UNII-3 5725~5850MHz

single carrier_40M (Harmonic @ 3m)

Ant. 16Tx	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
single carrier 40M 5755MHz		7095	60.11	-8.09	68.2	73.9	36.33	14.45	64.57	185	183	P	H
		11510	45.55	-28.45	74	55.28	38.93	18	66.66	-	-	P	H
		17265	49.49	-18.71	68.2	55.92	38.47	22.54	67.44	-	-	P	H
		7001.625	59.19	-9.01	68.2	74.35	35.97	14.42	65.55	188	170	P	V
		11510	46.14	-27.86	74	55.87	38.93	18	66.66	-	-	P	V
		17265	49.02	-19.18	68.2	55.45	38.47	22.54	67.44	-	-	P	V
single carrier 40M 5795MHz		7074.583	59.49	-8.71	68.2	73.57	36.23	14.44	64.75	186	183	P	H
		11590	45.9	-28.1	74	55.71	38.84	18.07	66.72	-	-	P	H
		17385	50.06	-18.14	68.2	56.64	38.9	22.65	68.13	-	-	P	H
		7004.695	59.47	-8.73	68.2	74.58	35.98	14.42	65.51	185	169	P	V
		11590	46.32	-27.68	74	56.13	38.84	18.07	66.72	-	-	P	V
		17385	49.08	-19.12	68.2	55.66	38.9	22.65	68.13	-	-	P	V
single carrier 40M 5825MHz		7073.097	59.68	-8.52	68.2	73.78	36.23	14.44	64.77	189	182	P	H
		11650	46.62	-27.38	74	56.51	38.77	18.11	66.77	-	-	P	H
		17475	49.12	-19.08	68.2	55.79	39.19	22.73	68.59	-	-	P	H
		7028.722	60.43	-7.77	68.2	75.18	36.05	14.43	65.23	184	169	P	V
		11650	45.98	-28.02	74	55.87	38.77	18.11	66.77	-	-	P	V
		17475	50.6	-17.6	68.2	57.27	39.19	22.73	68.59	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												

UNII-3 5725~5850MHz

Multiple carrier_contiguous 40M+40M (Band Edge @ 3m)

Ant. 16Tx	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Multiple carrier_contiguous 40M+40M 5755MHz +5795MHz		5648.195	63.69	-4.51	68.2	47.84	33.13	12.44	29.72	190	176	P	H
		5699.96	73.37	-31.8	105.17	57.12	33.44	12.51	29.7	190	176	P	H
		5718.065	77.78	-32.48	110.26	61.39	33.56	12.53	29.7	190	176	P	H
		5724.695	77.64	-43.86	121.5	61.19	33.61	12.54	29.7	190	176	P	H
	*	5755	120.96	-	-	104.27	33.8	12.58	29.69	190	176	P	H
	*	5795	119.14	-	-	102.2	34	12.63	29.69	190	176	P	H
	*	5755	112.96	-	-	96.27	33.8	12.58	29.69	190	176	A	H
	*	5795	110.99	-	-	94.05	34	12.63	29.69	190	176	P	H
		5850.805	72.08	-48.28	120.36	54.85	34.22	12.7	29.69	190	176	P	H
		5856.16	72.52	-37.95	110.47	55.28	34.23	12.7	29.69	190	176	P	H
		5881.915	70.08	-29.98	100.06	52.81	34.25	12.73	29.71	190	176	P	H
		5940.565	66.77	-1.43	68.2	49.5	34.23	12.79	29.75	190	176	P	H
		5639.78	64.39	-3.81	68.2	48.57	33.11	12.43	29.72	187	183	P	V
		5694.095	67.97	-32.88	100.85	51.77	33.4	12.5	29.7	187	183	P	V
		5711.18	68.17	-40.16	108.33	51.83	33.52	12.52	29.7	187	183	P	V
		5722.145	68.15	-47.54	115.69	51.72	33.59	12.54	29.7	187	183	P	V
	*	5755	110.72	-	-	94.03	33.8	12.58	29.69	187	183	P	V
	*	5795	109.79	-	-	92.85	34	12.63	29.69	187	183	P	V
	*	5755	108.17	-	-	91.48	33.8	12.58	29.69	187	183	P	V
	*	5795	108.3	-	-	91.36	34	12.63	29.69	187	183	A	V
		5854.63	68.51	-43.13	111.64	51.28	34.22	12.7	29.69	187	183	P	V
		5856.415	68.49	-41.91	110.4	51.25	34.23	12.7	29.69	187	183	P	V
		5876.05	67.74	-36.68	104.42	50.47	34.25	12.72	29.7	187	183	P	V
		5925.265	65.88	-2.32	68.2	48.6	34.24	12.78	29.74	187	183	P	V

Ant. 16Tx	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Multiple carrier_contiguous 40M+40M 5785MHz +5825MHz		5645.315	63.26	-4.94	68.2	47.41	33.13	12.44	29.72	181	177	P	H
		5697.185	67.69	-35.44	103.13	51.46	33.42	12.51	29.7	181	177	P	H
		5718.845	73.58	-36.9	110.48	57.18	33.57	12.53	29.7	181	177	P	H
		5723.405	74.71	-43.85	118.56	58.27	33.6	12.54	29.7	181	177	P	H
	*	5785	122.26	-	-	105.38	33.95	12.62	29.69	181	177	P	H
	*	5825	120.28	-	-	103.18	34.12	12.67	29.69	181	177	P	H
	*	5785	113.77	-	-	96.89	33.95	12.62	29.69	181	177	A	H
	*	5825	112.9	-	-	95.8	34.12	12.67	29.69	181	177	P	H
		5853.475	79.8	-34.48	114.28	62.57	34.22	12.7	29.69	181	177	P	H
		5861.35	77.58	-31.44	109.02	60.33	34.23	12.71	29.69	181	177	P	H
		5875.3	73.66	-31.32	104.98	56.39	34.25	12.72	29.7	181	177	P	H
		5932.9	67.04	-1.16	68.2	49.75	34.24	12.79	29.74	181	177	P	H
		5628.785	63.21	-4.99	68.2	47.43	33.08	12.42	29.72	181	181	P	V
		5691.77	66.38	-32.75	99.13	50.19	33.39	12.5	29.7	181	181	P	V
		5719.985	66.6	-44.2	110.8	50.18	33.58	12.54	29.7	181	181	P	V
		5723.975	68.48	-51.38	119.86	52.04	33.6	12.54	29.7	181	181	P	V
	*	5785	120.45	-	-	103.57	33.95	12.62	29.69	181	181	P	V
	*	5825	112.69	-	-	95.59	34.12	12.67	29.69	181	181	P	V
	*	5785	112.18	-	-	95.3	33.95	12.62	29.69	181	181	A	V
	*	5825	104.63	-	-	87.53	34.12	12.67	29.69	181	181	P	V
		5850.325	71.96	-49.5	121.46	54.73	34.22	12.7	29.69	181	181	P	V
		5855.275	71.54	-39.18	110.72	54.3	34.23	12.7	29.69	181	181	P	V
		5881.375	69.81	-30.66	100.47	52.54	34.25	12.73	29.71	181	181	P	V
		5936.05	66.59	-1.61	68.2	49.31	34.23	12.79	29.74	181	181	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

UNII-3 5725~5850MHz

Multiple carrier_contiguous 40M+40M (Harmonic @ 3m)

Ant. 16Tx	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Multiple carrier_contiguous 40M+40M 5755MHz +5795MHz		7003.139	56.78	-11.42	68.2	71.92	35.97	14.42	65.53	186	181	P	H
		11510	46.24	-27.76	74	55.97	38.93	18	66.66	-	-	P	H
		11590	46.42	-27.58	74	56.23	38.84	18.07	66.72	-	-	P	H
		17265	48.73	-19.47	68.2	55.16	38.47	22.54	67.44	-	-	P	H
		17385	50.7	-17.5	68.2	57.28	38.9	22.65	68.13	-	-	P	H
		7000.486	56.38	-11.82	68.2	71.56	35.96	14.42	65.56	183	167	P	V
		11510	46.3	-27.7	74	56.03	38.93	18	66.66	-	-	P	V
		11590	47.32	-26.68	74	57.13	38.84	18.07	66.72	-	-	P	V
		17265	48.85	-19.35	68.2	55.28	38.47	22.54	67.44	-	-	P	V
		17385	49.72	-18.48	68.2	56.3	38.9	22.65	68.13	-	-	P	V
Multiple carrier_contiguous 40M+40M 5785MHz +5825MHz		7001.944	55.98	-12.22	68.2	71.14	35.97	14.42	65.55	184	182	P	H
		11570	47.2	-26.8	74	56.95	38.87	18.05	66.67	-	-	P	H
		11650	46.21	-27.79	74	56.1	38.77	18.11	66.77	-	-	P	H
		17355	49.84	-18.36	68.2	56.24	38.81	22.63	67.84	-	-	P	H
		17475	49.83	-18.37	68.2	56.5	39.19	22.73	68.59	-	-	P	H
		7008	56.64	-11.56	68.2	71.7	35.99	14.42	65.47	185	170	P	V
		11570	46.54	-27.46	74	56.29	38.87	18.05	66.67	-	-	P	V
		11650	46.07	-27.93	74	55.96	38.77	18.11	66.77	-	-	P	V
		17355	50.3	-17.9	68.2	56.7	38.81	22.63	67.84	-	-	P	V
		17475	49.52	-18.68	68.2	56.19	39.19	22.73	68.59	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												

Emission above 18GHz

5GHz (SHF @ 1m)

	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
16Tx		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
SHF		39005.29	55.41	-18.59	74	37.45	45.07	25.52	52.63	-	-	P	H
		39005.29	43.47	-10.53	54	25.5	45.07	25.52	52.62	-	-	A	H
		39789.85	55.26	-18.74	74	36.04	44.6	26.25	51.63	-	-	P	H
		39789.85	44.89	-9.11	54	25.67	44.6	26.25	51.63	-	-	A	H
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												

Emission below 1GHz

5GHz (LF @ 3m)

	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
16Tx		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
LF		59.1	32.88	-7.12	40	52.18	11.79	1.32	32.41	-	-	P	H
		106.63	37.24	-6.26	43.5	50.9	16.96	1.86	32.48	271	111	Q	H
		264.74	34.17	-11.83	46	43.76	20.01	2.79	32.39	-	-	P	H
		306.45	36.32	-9.68	46	46.41	19.33	3.04	32.46	-	-	P	H
		537.31	35.24	-10.76	46	39.69	24.15	3.99	32.59	-	-	P	H
		740.04	38.78	-7.22	46	38.26	28	4.86	32.34	-	-	P	H
		59.1	34.8	-5.2	40	54.1	11.79	1.32	32.41	100	0	Q	V
		81.41	36.26	-3.74	40	53.31	13.84	1.56	32.45	100	107	Q	V
		105.66	35.75	-7.75	43.5	49.49	16.87	1.87	32.48	100	48	Q	V
		264.74	38.62	-7.38	46	48.21	20.01	2.79	32.39	-	-	P	V
		349.13	38.07	-7.93	46	46.91	20.38	3.2	32.42	-	-	P	V
		403.45	38.97	-7.03	46	45.93	22.07	3.47	32.5	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as “-” means no suspected emission found and emission level has at least 6dB margin against limit or noise floor only.												

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
16Tx		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5745MHz		5650	55.45	-12.75	68.2	54.51	32.22	4.58	35.86	103	308	P	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 5650MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 68.2(dBμV/m)

= -12.75 (dB)

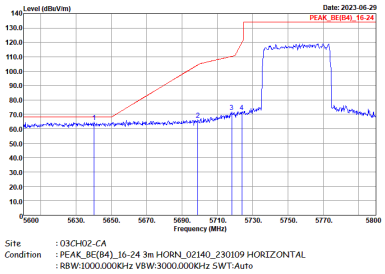
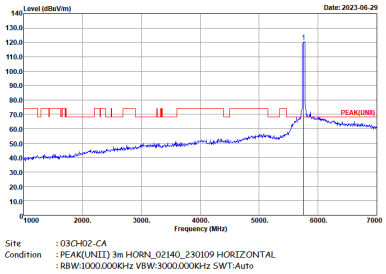
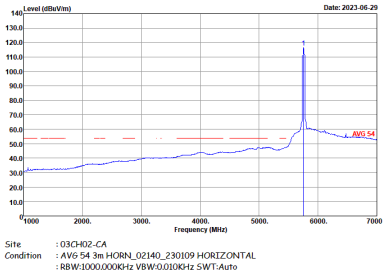
Peak measured complies with the limit line, so test result is “PASS”.

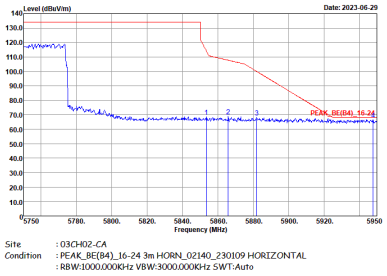
Appendix D. Radiated Spurious Emission Plots

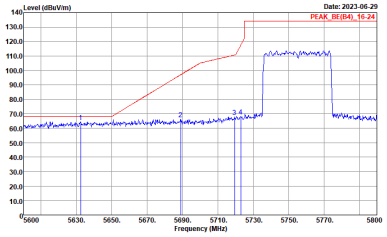
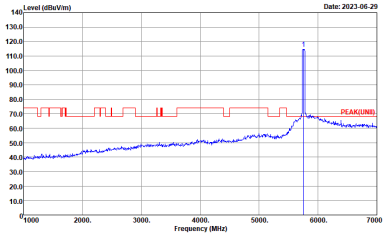
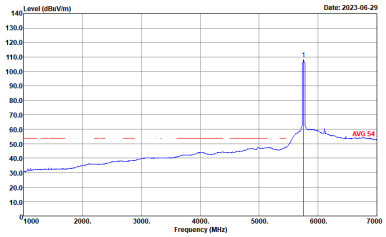
Test Engineer :	Fu Chen	**Temperature :**	21.2~22.8°C
		Relative Humidity :	48.4~56.1%

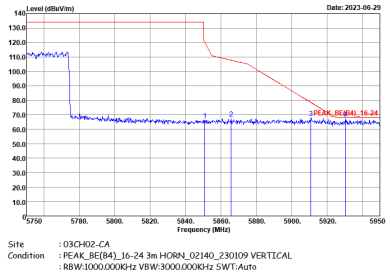
UNII-3 - 5725~5850MHz

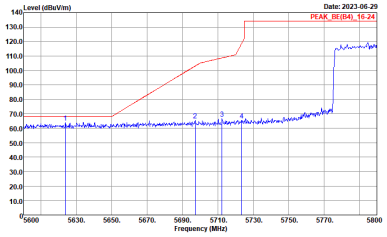
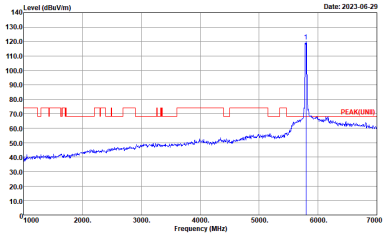
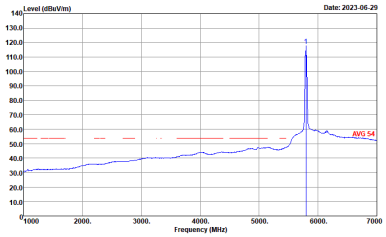
single carrier_40M (Band Edge @ 3m)

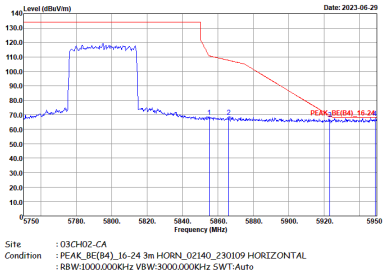
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5755MHz	
16Tx	Horizontal	Fundamental
Peak		
Avg	Left blank		

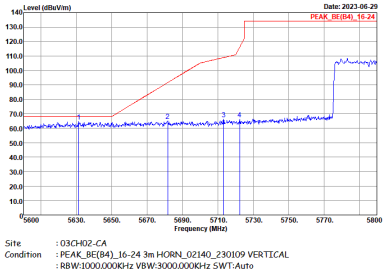
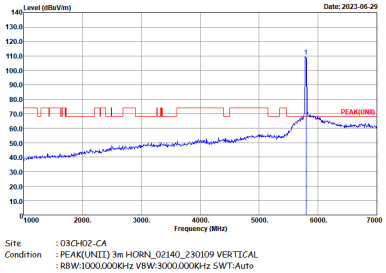
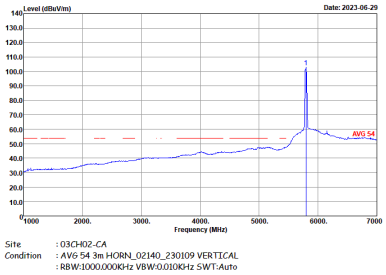
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5755MHz	
16Tx	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

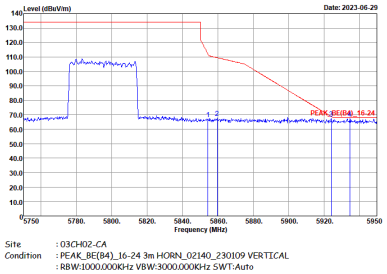
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	**single carrier 40M 5755MHz**	
16Tx	**Vertical**	**Fundamental**
Peak	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	Left blank	 Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

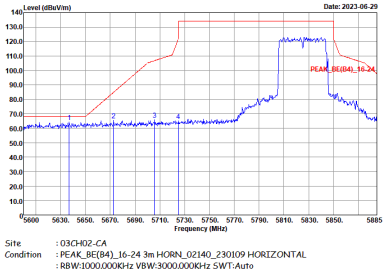
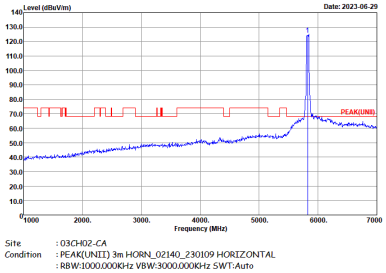
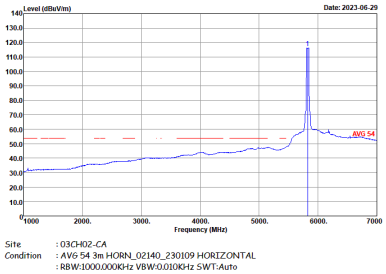
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5755MHz	
16Tx	Vertical	Fundamental
Peak		Left blank

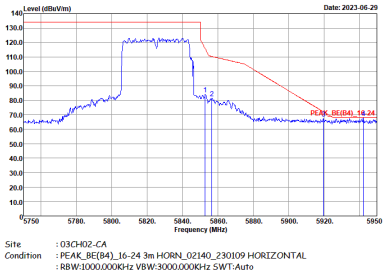
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	**single carrier 40M 5795MHz**	
16Tx	**Horizontal**	**Fundamental**
Peak	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	Left blank	 Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

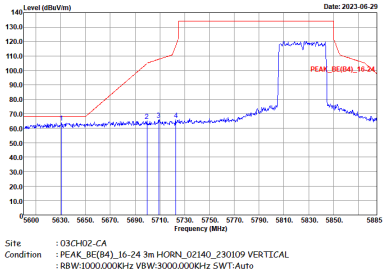
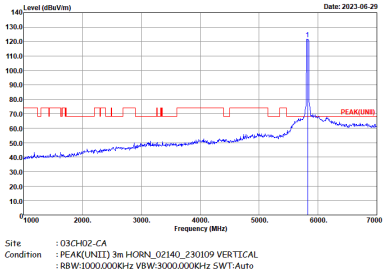
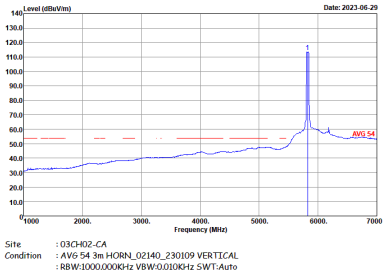
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5795MHz	
16Tx	Horizontal	Fundamental
Peak		Left blank

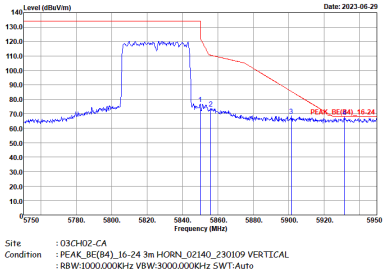
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5795MHz	
16Tx	Vertical	Fundamental
Peak		
Avg	Left blank	

	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5795MHz	
16Tx	Vertical	Fundamental
Peak		Left blank

	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	**single carrier 40M 5825MHz**	
16Tx	**Horizontal**	**Fundamental**
Peak		
Avg	Left blank	

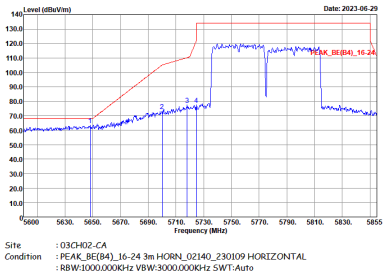
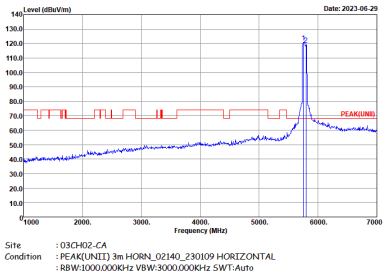
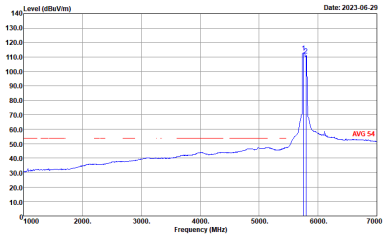
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5825MHz	
16Tx	Horizontal	Fundamental
Peak		Left blank

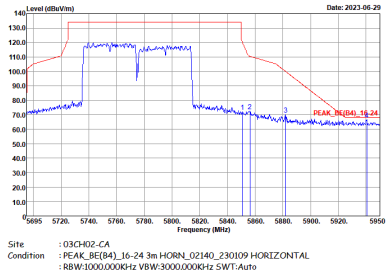
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5825MHz	
16Tx	Vertical	Fundamental
Peak		
Avg	Left blank	

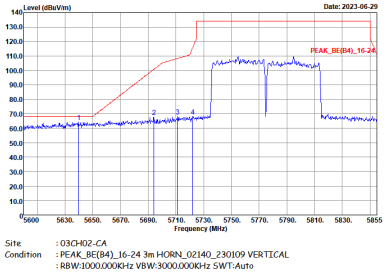
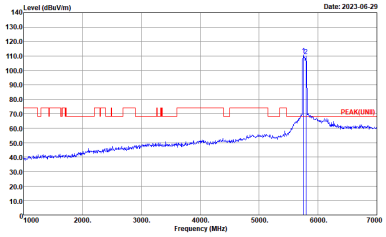
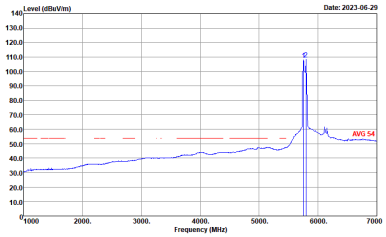
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5825MHz	
16Tx	Vertical	Fundamental
Peak		Left blank

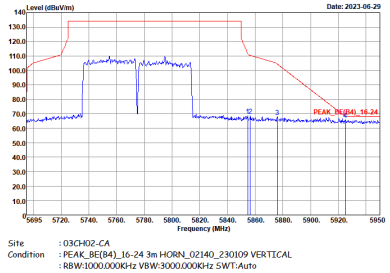
UNII-3 - 5725~5850MHz

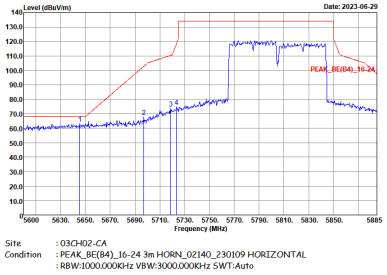
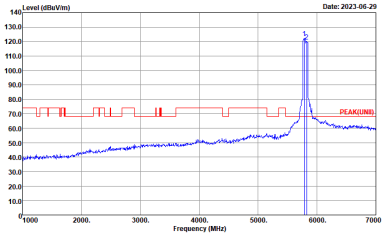
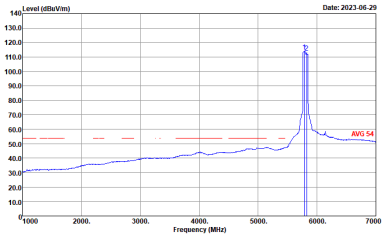
Multiple carrier_contiguous 40M+40M (Band Edge @ 3m)

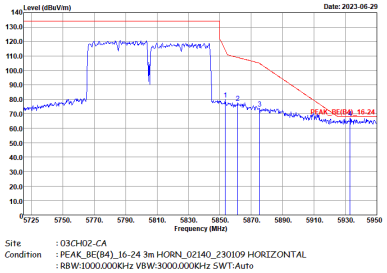
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	**Multiple carrier_contiguous 40M+40M 5755MHz+5795MHz**	
16Tx	**Horizontal**	**Fundamental**
Peak	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	Left blank	 Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

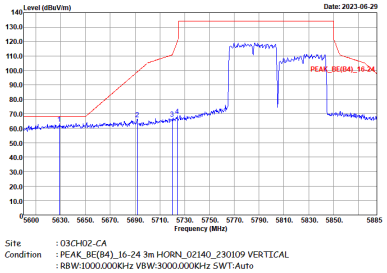
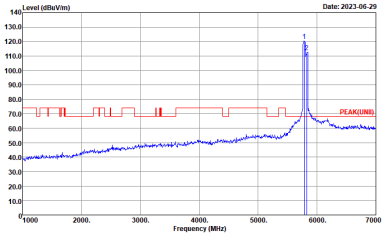
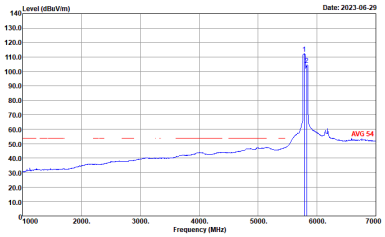
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5755MHz+5795MHz	
16Tx	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

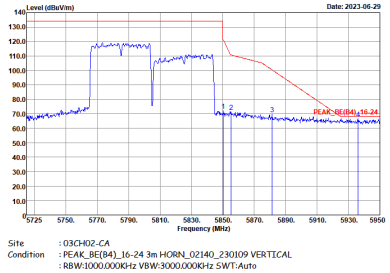
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5755MHz+5795MHz	
16Tx	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	Left blank	 Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5755MHz+5795MHz	
16Tx	Vertical	Fundamental
Peak		Left blank

	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz	
16Tx	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	Left blank	 Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

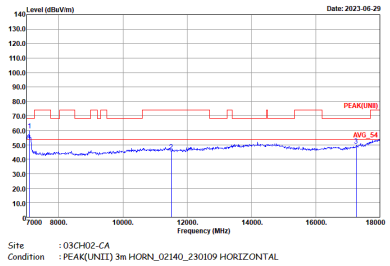
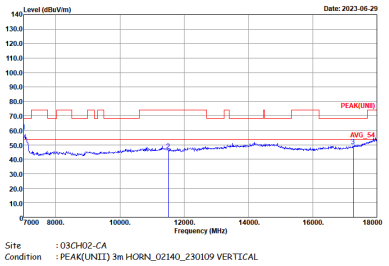
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz	
16Tx	Horizontal	Fundamental
Peak		Left blank

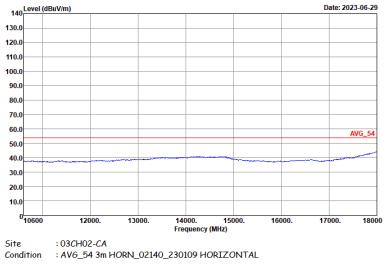
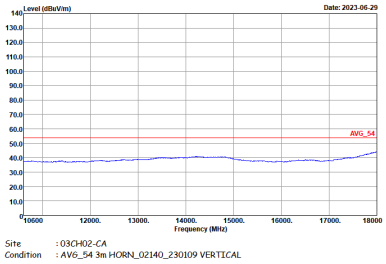
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz	
16Tx	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg	Left blank	 Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

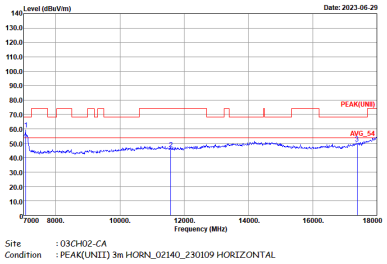
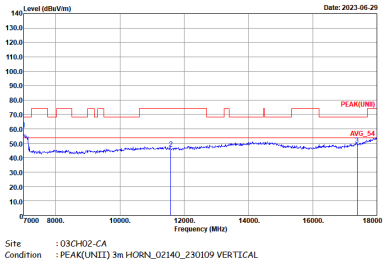
	UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz	
16Tx	Vertical	Fundamental
Peak		Left blank

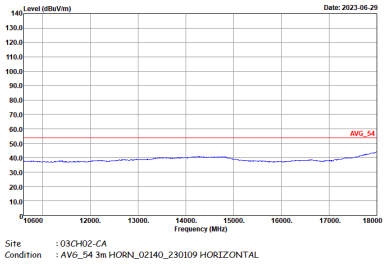
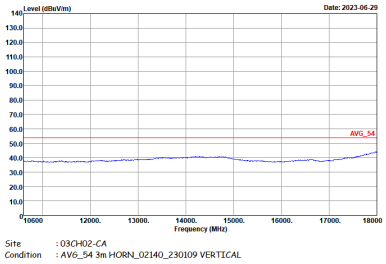
UNII-3 - 5725~5850MHz

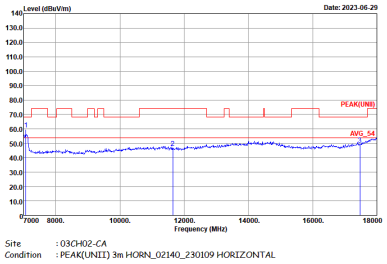
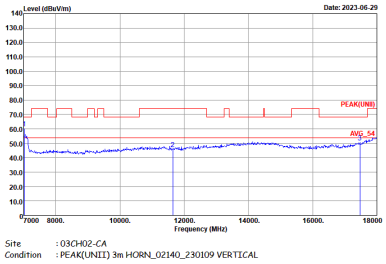
single carrier_40M (Harmonic @ 3m)

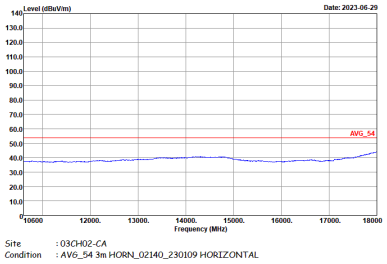
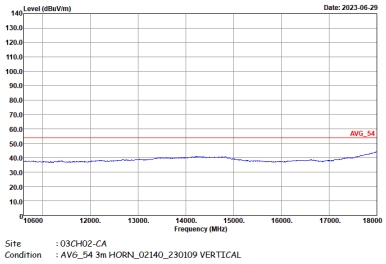
	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5755MHz	
16Tx	Horizontal	Vertical
Peak Avg.		

	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5755MHz	
16Tx	Horizontal	Vertical
10.6G ~18G Avg		

	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5795MHz	
16Tx	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL

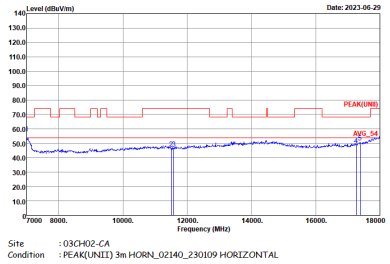
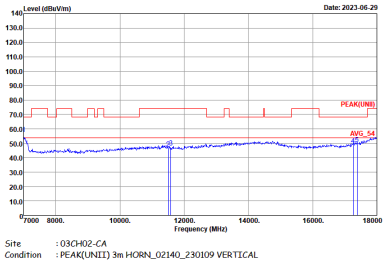
	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5795MHz	
16Tx	Horizontal	Vertical
10.6G ~18G Avg		

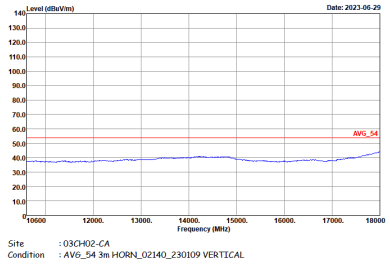
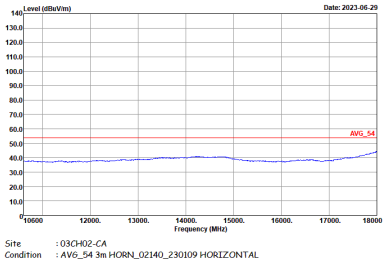
	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5825MHz	
16Tx	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL

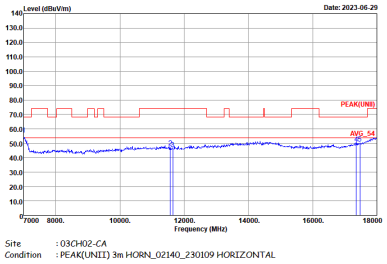
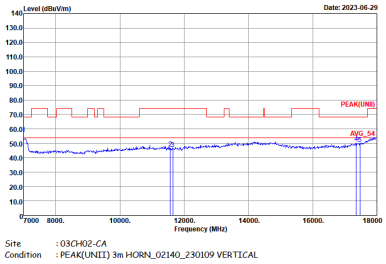
	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5825MHz	
16Tx	Horizontal	Vertical
10.6G ~18G Avg		

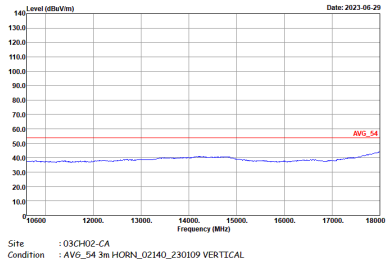
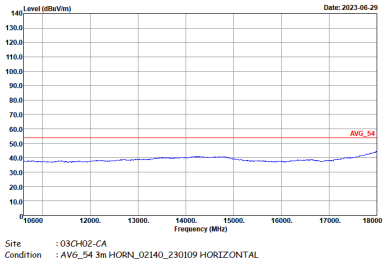
UNII-3 5725~5850MHz

Multiple carrier_contiguous 40M+40M (Harmonic @ 3m)

	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5755MHz+5795MHz	
16Tx	Horizontal	Vertical
Peak Avg.		

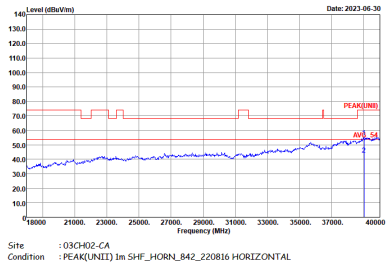
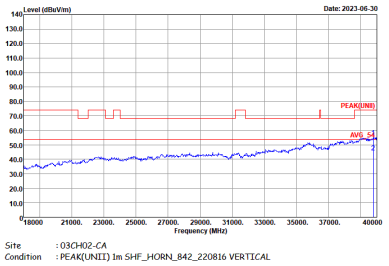
	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5755MHz+5795MHz	
16Tx	Horizontal	Vertical
10.6G ~18G Avg		

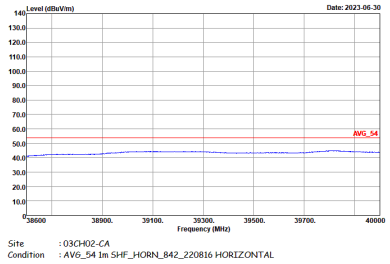
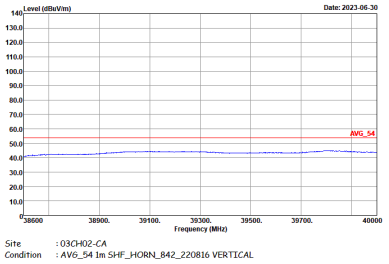
	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz	
16Tx	Horizontal	Vertical
Peak Avg.		

	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz	
16Tx	Horizontal	Vertical
10.6G ~18G Avg		

Emission above 18GHz

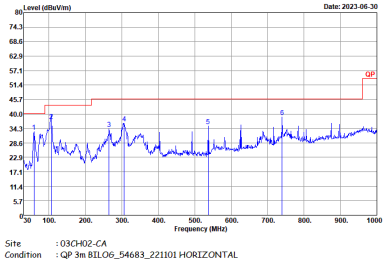
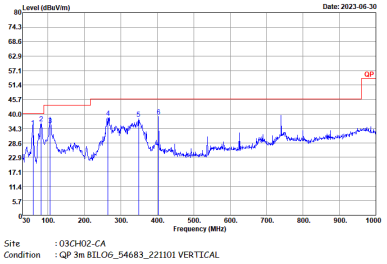
5GHz (SHF @ 1m)

	5GHz	
ANT	SHF	
16Tx	Horizontal	Vertical
Peak Avg.		

	UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	SHF	
16Tx	Horizontal	Vertical
39.6G ~40G Avg		

Emission below 1GHz

5GHz (LF @ 3m)

	5GHz	
ANT	LF	
16Tx	Horizontal	Vertical
QP / Peak		

Appendix E. Duty Cycle Plots

<Single Carrier>

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
16Tx	40MHz	100%	-	-	10Hz

40MHz