



FCC RADIO TEST REPORT

FCC ID : 2ABOF-G1RN6AHB012
Equipment : Remote Node (RN)
Brand Name : TARANA
Model Name : G1RN6AHB012
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 Jul. 26, 2023 and testing was performed from Jul. 27, 2023 to Aug. 02, 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
FR230713001A	01	Initial issue of report	Aug. 10, 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	0.78 dB under the limit at 5926.83 MHz
3.5	15.207	AC Conducted Emission	Pass	8.48 dB under the limit at 0.15 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)	14.1

Remark:

1. The device is driving cross-polarized antenna, which has 4 horizontal polarization antenna and 4 vertical polarization antenna
2. Minimum number of spatial stream (Nss) is 2
3. The EUT is a fixed point-to-point device operating in UNII-3.
Directional Gain (4H/4V) = 14.1dBi + 10log(Ntx = 4 / Nss = 2) = 17.11dBi
4. 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). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.

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

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4 (U-NII-3)	151	5755	159	5795
	153	5765	161	5805
	155	5775	163	5815
	157	5785	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 TX + POE

<Single Carrier>

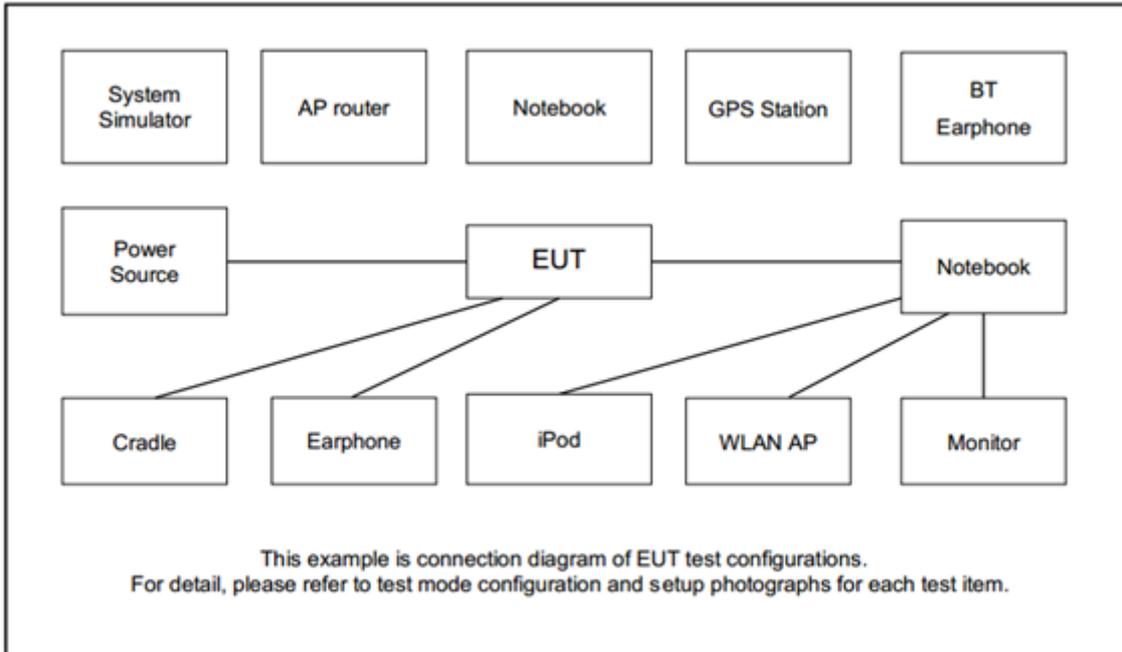
UNII-3 : 5725-5850 MHz
Channel BW 40MHz
5755MHz
5795MHz
5825MHz

<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.	POE	PHIHONG	POE60U-1BTE	N/A	N/A	Unshielded, 1.8 m
2.	Laptop	Lenovo	TP00050C	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m



2.5 EUT Operation Test Setup

The RF test items, utility “Putty v0.76.0.0” 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.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 4.2 + 10 = 14.2 \text{ (dB)} \end{aligned}$$

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.

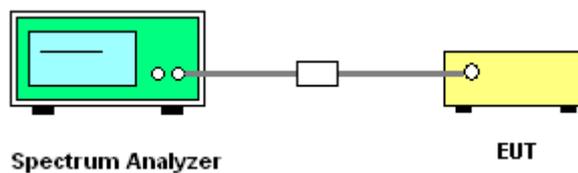
3.1.2 Measuring Instruments

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 $\geq 3 \times$ 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



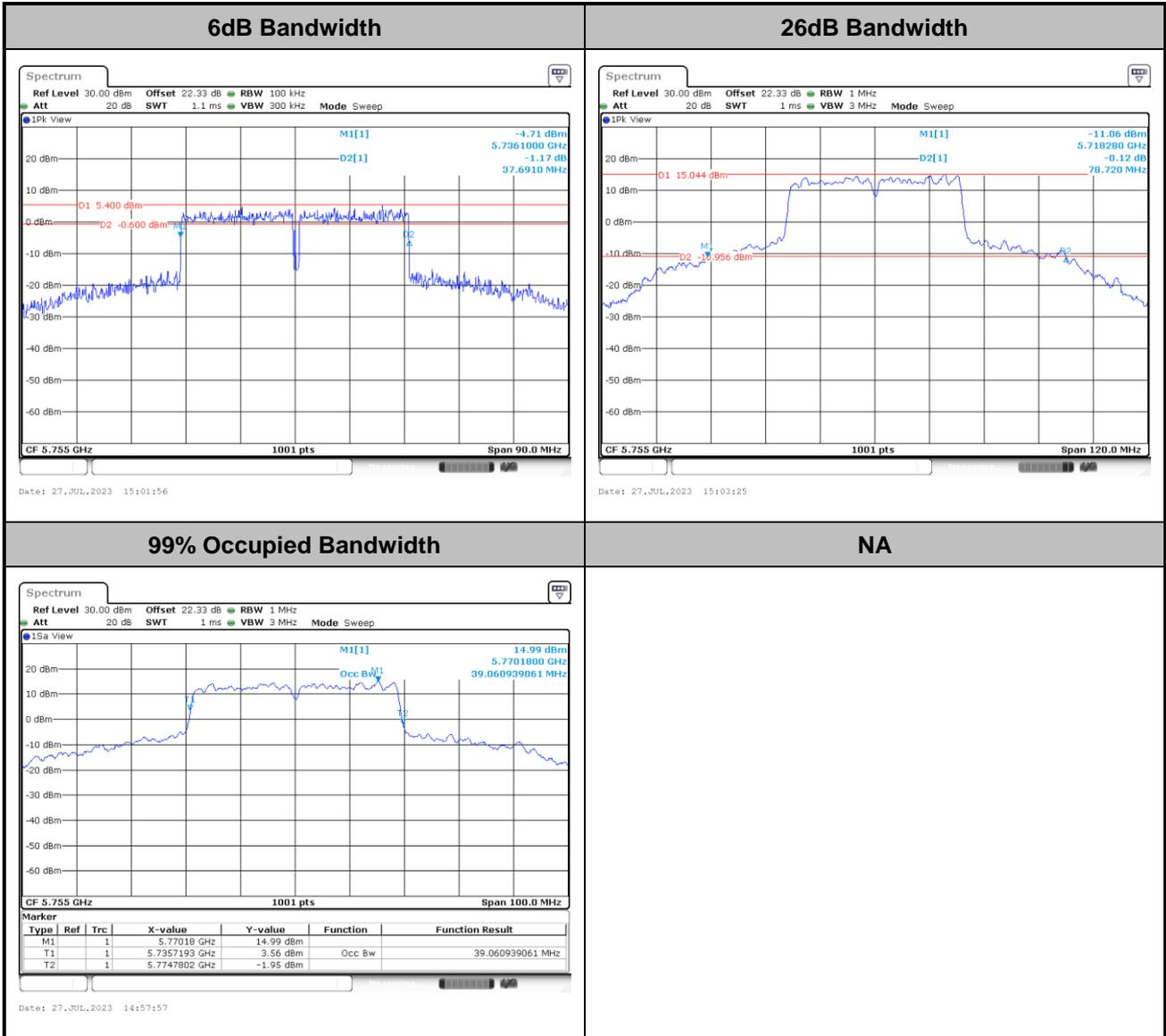
3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.



<Single Carrier>

<40MHz>

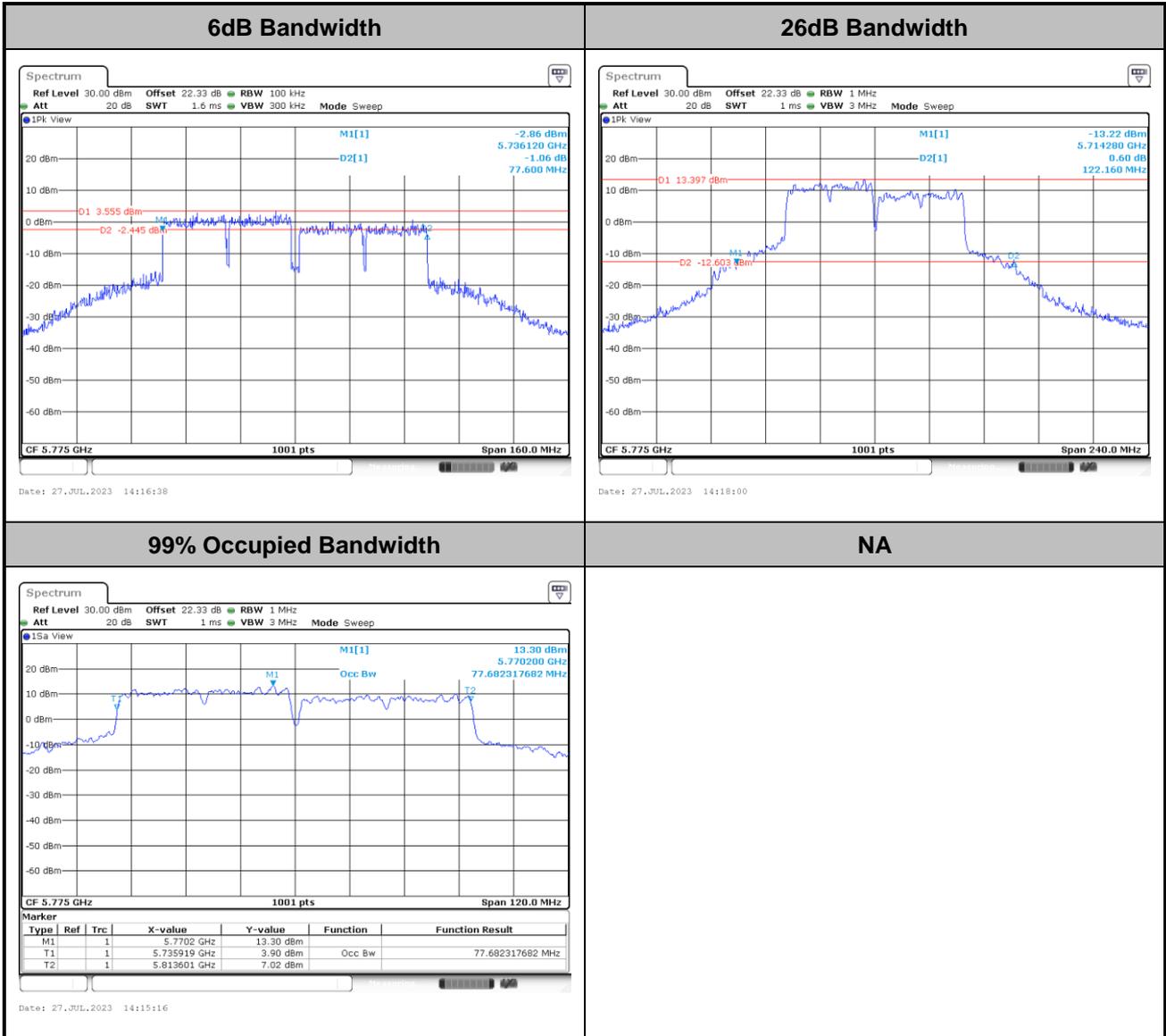


Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



<Multi Carrier (Contiguous)>

<40MHz + 40MHz>



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.

Fixed point-to-point U–NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

3.2.2 Measuring Instruments

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

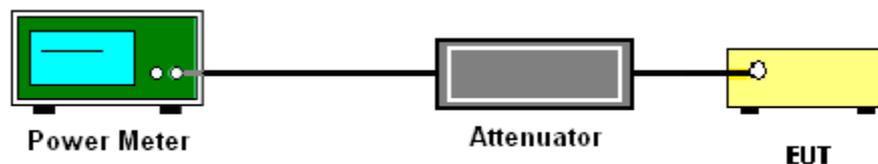
3.2.3 Test Procedures

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.

Fixed point-to-point U–NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

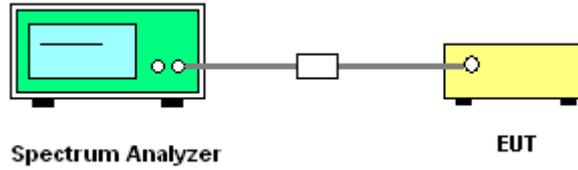
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section F) Maximum power spectral density.

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 = 500kHz.
 - Set VBW \geq 1 MHz.
 - Number of points in sweep \geq 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 PPSD and record it.

3.3.4 Test Setup

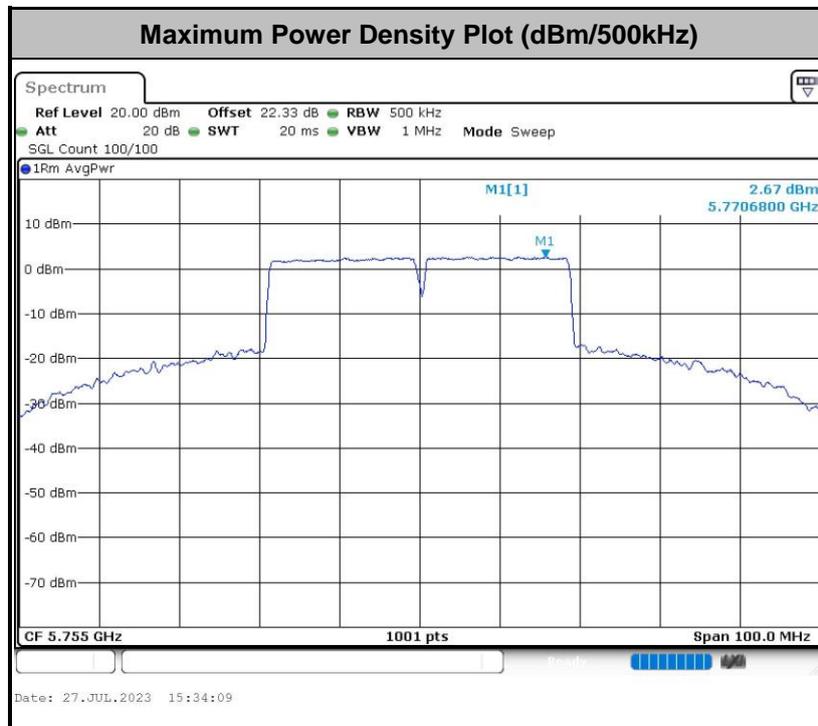


3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

<Single Carrier>

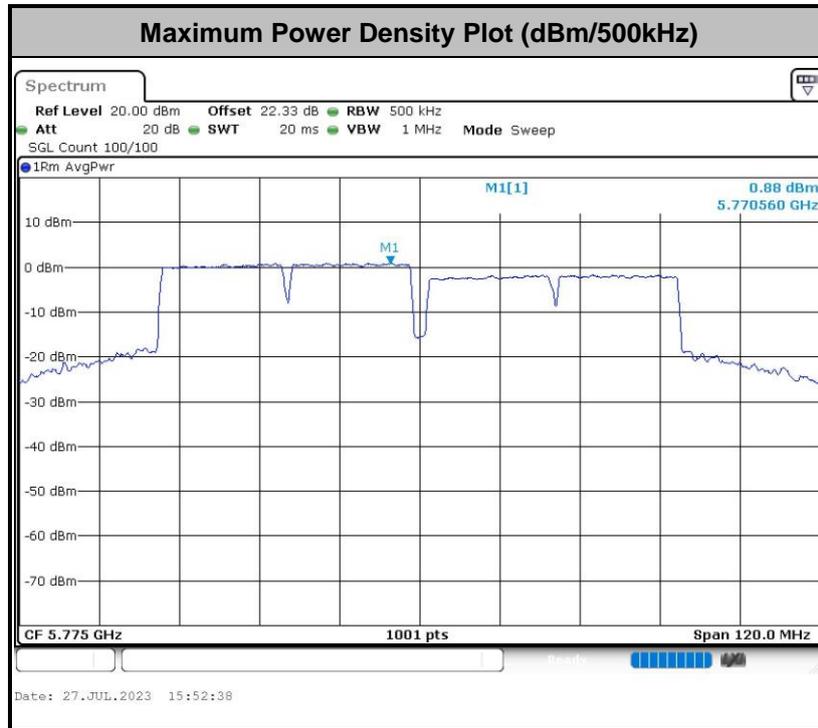
<40MHz>





<Multi Carrier (Contiguous)>

<40MHz + 40MHz>





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.

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

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.

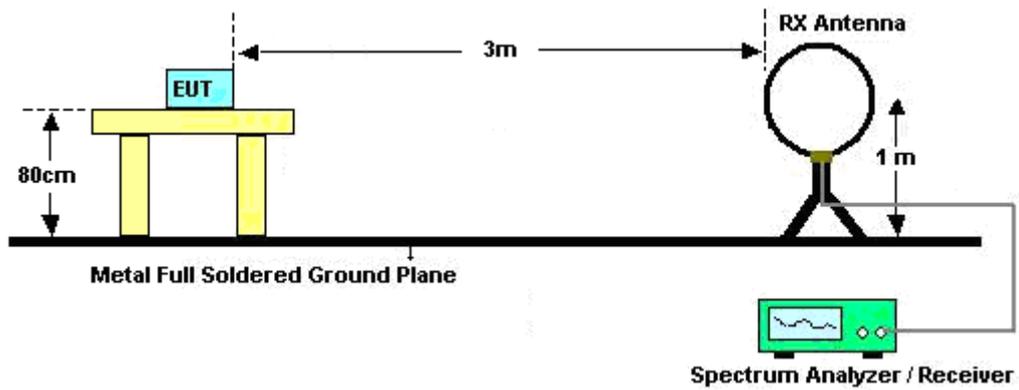
3.4.3 Test Procedures

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 \geq 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 \geq 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.

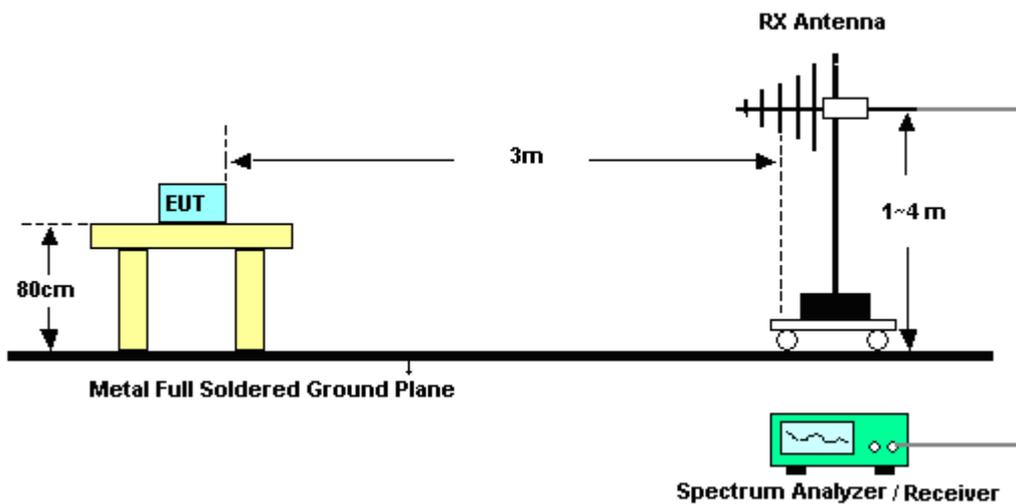
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit 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

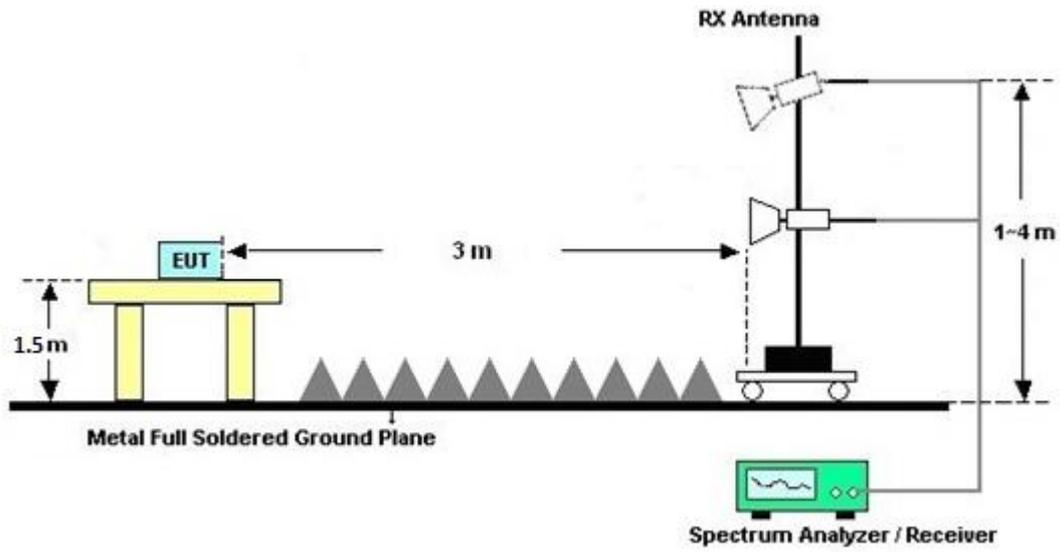
For radiated emissions below 30MHz



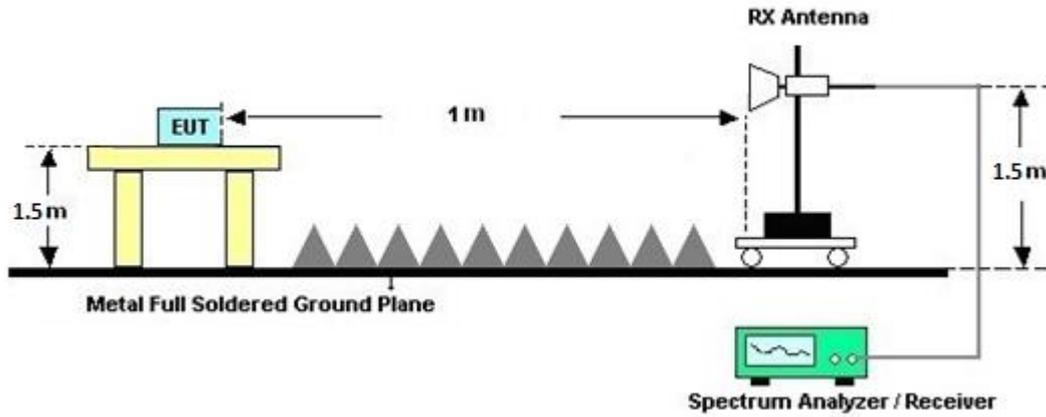
For radiated emissions from 30MHz to 1GHz



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 (dB μ V)	
	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.

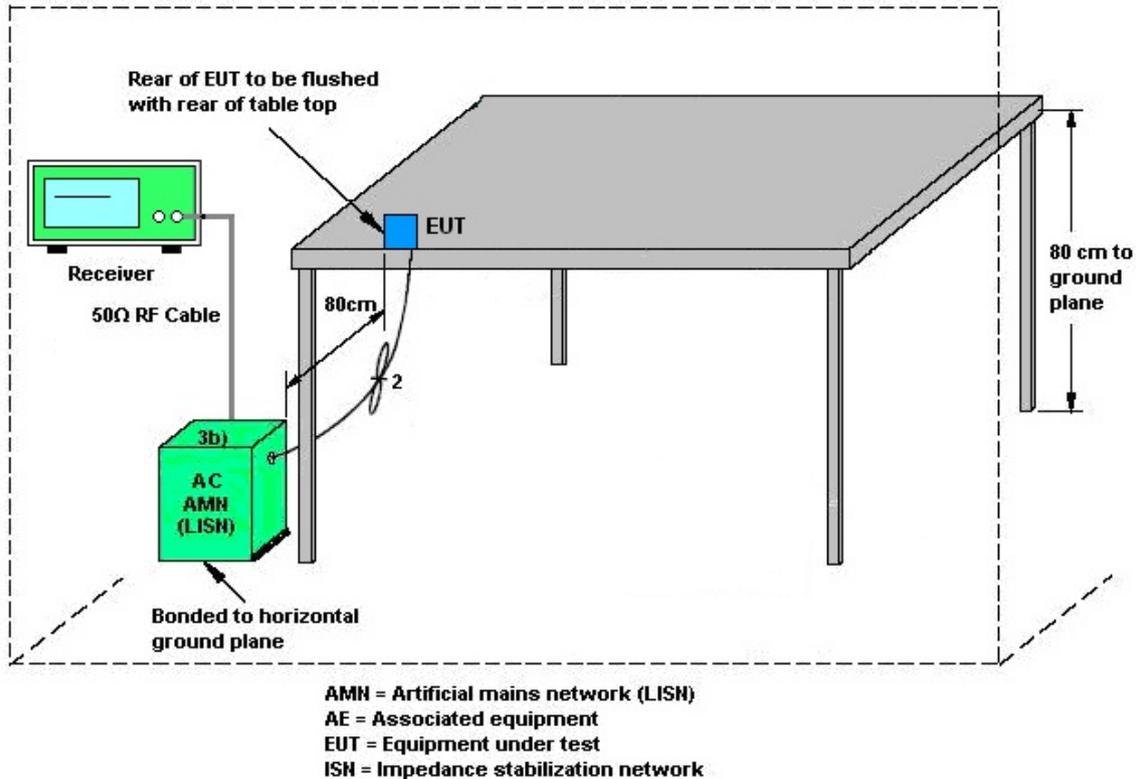
3.5.2 Measuring Instruments

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



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
Hygrometer	Testo	608-H1	45142559	N/A	Sep. 12, 2022	Jul. 27, 2023	Sep. 11, 2023	Conducted (TH01-CA)
Power Sensor	DARE!!	RPR3008W	RPR8W-230100 2	10MHz-8GHz	Feb. 08, 2023	Jul. 27, 2023	Feb. 07, 2024	Conducted (TH01-CA)
Switch Box	EM Electronics	EMSW26	1090304	N/A	Dec. 05, 2022	Jul. 27, 2023	Dec. 04, 2023	Conducted (TH01-CA)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101089	10Hz-40GHz	May 22, 2023	Jul. 27, 2023	May 21, 2024	Conducted (TH01-CA)
Bilog Antenna	TESEQ	6111D	54683	30MHz~1GHz	Nov. 01, 2022	Jul. 28, 2023	Oct. 31, 2023	Radiation (03CH02-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120D	02140	1GHz~18GHz	Jan. 09, 2023	Jul. 28, 2023	Jan. 08, 2024	Radiation (03CH02-CA)
Horn Antenna	SCHWARZBECK	BBHA 9170D	00841	18GHz~40GHz	Sep. 12, 2022	Jul. 28, 2023	Sep. 11, 2023	Radiation (03CH02-CA)
Amplifier	SONOMA	310N	372240	N/A	May 03, 2023	Jul. 28, 2023	May 02, 2024	Radiation (03CH02-CA)
Preamplifier	E-instrument	ERA-100M-18G -56-01-A70	EC1900252	1GHz~18GHz	May 23, 2023	Jul. 28, 2023	May 22, 2024	Radiation (03CH02-CA)
Preamplifier	EMEC	EMC18G40G	060725	18GHz-40GHz	May 04, 2023	Jul. 28, 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	Jul. 28, 2023	Nov. 13, 2023	Radiation (03CH02-CA)
High Pass Filter	WOKEN	WFIL-H6500-26 500F	WR67BWC4B1	6.5G-26.5G	Jun. 05, 2023	Jul. 28, 2023	Jun. 04, 2024	Radiation (03CH02-CA)
Filter	Wainwright	WLK12-1200-12 72-11000-40SS	SN2	1.2GHz Low Pass Filter	Jun. 05, 2023	Jul. 28, 2023	Jun. 04, 2024	Radiation (03CH02-CA)
Hygrometer	TESEO	608-H1	45142602	N/A	Sep. 12, 2022	Jul. 28, 2023	Sep. 11, 2023	Radiation (03CH02-CA)
Controller	ChainTek	EM-1000	060876	NA	N/A	Jul. 28, 2023	N/A	Radiation (03CH02-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jul. 28, 2023	N/A	Radiation (03CH02-CA)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jul. 28, 2023	N/A	Radiation (03CH02-CA)
Software	Audix	E3	N/A	N/A	N/A	Jul. 28, 2023	N/A	Radiation (03CH02-CA)
LISN	TESEQ	NNB51	47415	N/A	Jul. 31, 2023	Aug. 02, 2023	Jul. 30, 2024	Conduction (CO01-CA)
EMI Test Receiver	R&S	ESR7	102177	9kHz~7GHz	May 23, 2023	Aug. 02, 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	Aug. 02, 2023	Jun. 04, 2024	Conduction (CO01-CA)
LISN Cable	HUBER+SUHNER	RG-214/U	LISN cable -01	N/A	Jun. 05, 2023	Aug. 02, 2023	Jun. 04, 2024	Conduction (CO01-CA)
Test Software	R&S	EMC32 V10.30.0	N/A	N/A	N/A	Aug. 02, 2023	N/A	Conduction (CO01-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
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.9 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2 dB
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Liliana Gonzalez	Temperature:	22.2	°C
Test Date:	2023/7/27	Relative Humidity:	51.4	%

TEST RESULTS DATA Average Power Table

BW	Freq	Condcuted Average Power (dBm)	MIMO Factor	Directional Gain (dBi)	Total Conducted Power (dBm)	Conducted power limit (dBm)
40MHz	5755	20.89	9.03	17.11	29.92	30
	5795	20.89	9.03	17.11	29.92	30
	5825	20.9	9.03	17.11	29.93	30
40 + 40MHz	5755+5795	20.9	9.03	17.11	29.93	30
	5785+5825	20.61	9.03	17.11	29.64	30

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/500kHz)
40MHz	5755	2.67	9.03	17.11	11.70	30
	5795	2.59	9.03	17.11	11.62	30
	5825	2.57	9.03	17.11	11.60	30
40 + 40MHz	5755+5795	0.88	9.03	17.11	9.91	30
	5785+5825	0.74	9.03	17.11	9.77	30

Note:

Antenna Gain = 14.1dBi

The device is driving cross-polarized antenna, which has 4 horizontal polarization antenna and 4 vertical polarization antenna

Directional Gain (4H/4V) = 14.1dBi + 10log(Ntx = 4 / Nss = 2) = 17.11dBi

The device is fixed point-to-point operation.

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



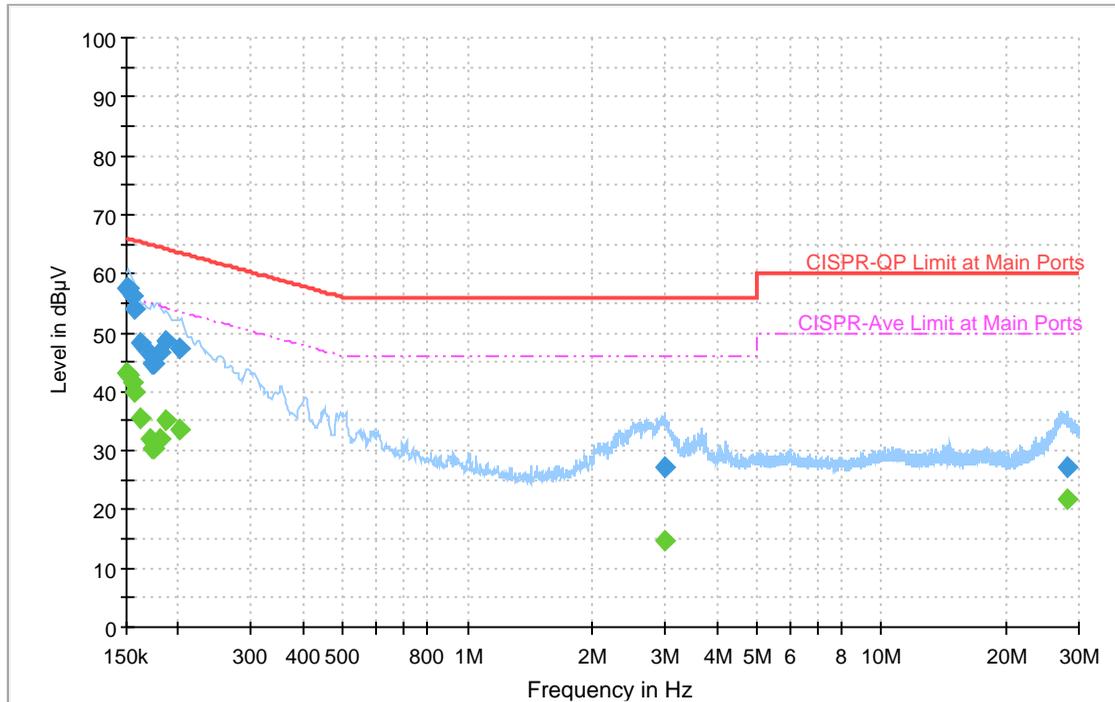
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Fu Chen	Temperature :	22.1~24.5°C
		Relative Humidity :	41.5~50.5%

EUT Information

Site: CO01-CA
 Power: 120Vac/60Hz
 Project: 230713001
 L1

Full Spectrum



Final Result

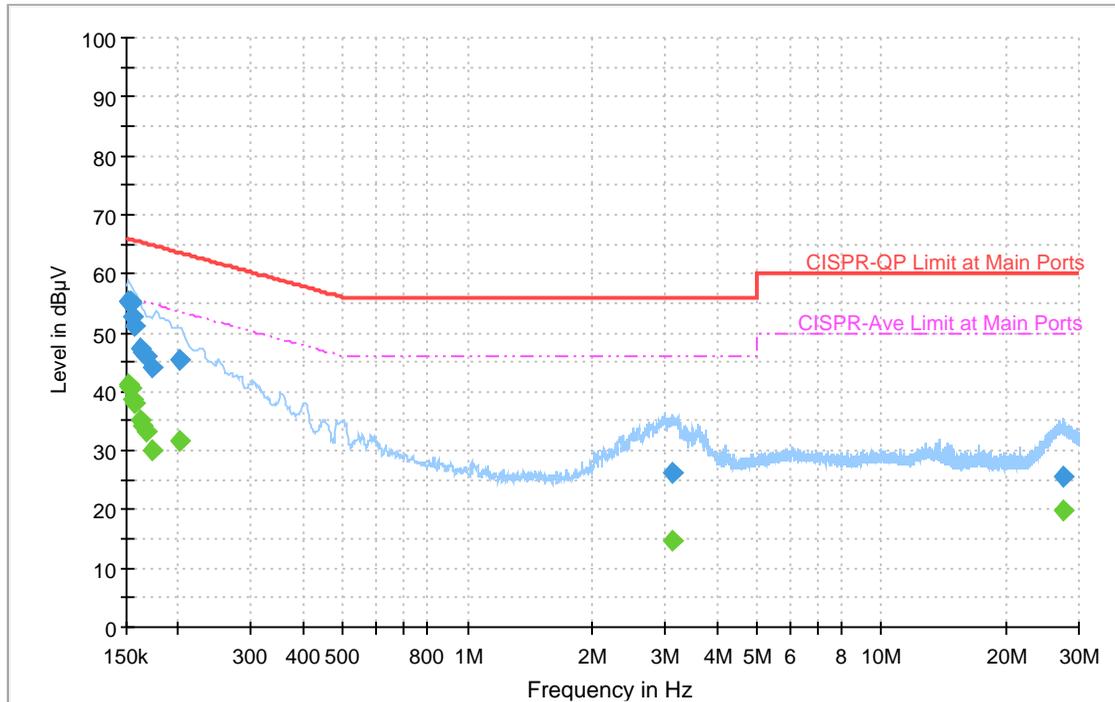
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150095	---	43.04	56.00	12.95	L1	OFF	20.2
0.150095	57.43	---	66.00	8.56	L1	OFF	20.2
0.150558	---	43.26	55.97	12.71	L1	OFF	20.2
0.150558	57.42	---	65.97	8.55	L1	OFF	20.2
0.152367	57.39	---	65.87	8.48	L1	OFF	20.2
0.152367	---	42.70	55.87	13.17	L1	OFF	20.2
0.154707	56.38	---	65.74	9.36	L1	OFF	20.2
0.154707	---	41.69	55.74	14.05	L1	OFF	20.2
0.156804	53.90	---	65.63	11.73	L1	OFF	20.2
0.156804	---	39.88	55.63	15.75	L1	OFF	20.2
0.162393	---	35.62	55.34	19.72	L1	OFF	20.2
0.162393	48.40	---	65.34	16.94	L1	OFF	20.2
0.170898	---	31.95	54.92	22.97	L1	OFF	20.2
0.170898	46.32	---	64.92	18.60	L1	OFF	20.2
0.173760	---	30.47	54.78	24.31	L1	OFF	20.2
0.173760	44.86	---	64.78	19.92	L1	OFF	20.2
0.174750	---	30.25	54.73	24.48	L1	OFF	20.2
0.174750	44.70	---	64.73	20.03	L1	OFF	20.2
0.180411	46.51	---	64.47	17.96	L1	OFF	20.2
0.180411	---	31.79	54.47	22.68	L1	OFF	20.2
0.187161	---	35.24	54.16	18.92	L1	OFF	20.2

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.187161	48.52	---	64.16	15.64	L1	OFF	20.2
0.201957	---	33.54	53.53	19.99	L1	OFF	20.2
0.201957	47.36	---	63.53	16.17	L1	OFF	20.2
2.991777	27.28	---	56.00	28.72	L1	OFF	20.3
2.991777	---	14.79	46.00	31.21	L1	OFF	20.3
27.999870	27.21	---	60.00	32.79	L1	OFF	20.7
27.999870	---	21.77	50.00	28.23	L1	OFF	20.7

EUT Information

Site: CO01-CA
 Power: 120Vac/60Hz
 Project: 230713001
 N

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.151600	55.30	---	65.91	10.61	N	OFF	20.2
0.151600	---	41.06	55.91	14.85	N	OFF	20.2
0.152322	55.31	---	65.87	10.56	N	OFF	20.2
0.152322	---	40.83	55.87	15.04	N	OFF	20.2
0.152511	55.16	---	65.86	10.70	N	OFF	20.2
0.152511	---	40.66	55.86	15.20	N	OFF	20.2
0.153294	55.03	---	65.82	10.79	N	OFF	20.2
0.153294	---	40.43	55.82	15.39	N	OFF	20.2
0.155688	---	38.74	55.69	16.95	N	OFF	20.2
0.155688	52.74	---	65.69	12.95	N	OFF	20.2
0.156804	---	38.02	55.63	17.61	N	OFF	20.2
0.156804	51.12	---	65.63	14.51	N	OFF	20.2
0.161052	---	35.21	55.41	20.20	N	OFF	20.2
0.161052	47.24	---	65.41	18.17	N	OFF	20.2
0.164481	---	34.14	55.24	21.09	N	OFF	20.2
0.164481	46.61	---	65.24	18.62	N	OFF	20.2
0.166632	---	33.18	55.13	21.95	N	OFF	20.2
0.166632	46.05	---	65.13	19.08	N	OFF	20.2
0.173085	---	29.91	54.81	24.90	N	OFF	20.2
0.173085	43.95	---	64.81	20.86	N	OFF	20.2
0.200544	---	31.75	53.59	21.84	N	OFF	20.2

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.200544	45.40	---	63.59	18.19	N	OFF	20.2
3.143247	---	14.68	46.00	31.32	N	OFF	20.3
3.143247	26.16	---	56.00	29.84	N	OFF	20.3
27.432411	---	19.79	50.00	30.21	N	OFF	20.7
27.432411	25.47	---	60.00	34.53	N	OFF	20.7



Appendix C. Radiated Spurious Emission

Test Engineer :	Thinh Hoang and Jin Peng	Temperature :	20.9~22.7°C
		Relative Humidity :	47.3~54.1%

UNII-3 - 5725~5850MHz

Single carrier_40M (Band Edge @ 3m)

Ant.	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		5647	61.59	-6.61	68.2	45.74	33.13	12.44	29.72	182	188	P	H
		5650.4	60.08	-8.42	68.5	44.21	33.14	12.45	29.72	182	188	P	H
		5719.4	100.99	-9.64	110.63	84.58	33.57	12.54	29.7	182	188	P	H
		5724.8	102.76	-18.98	121.74	86.31	33.61	12.54	29.7	182	188	P	H
	*	5755	124.81	-	-	108.12	33.8	12.58	29.69	182	188	P	H
	*	5755	118	-	-	101.31	33.8	12.58	29.69	182	188	A	H
		5854.2	66.75	-45.87	112.62	49.52	34.22	12.7	29.69	191	182	P	H
		5873	68.77	-36.99	105.76	51.51	34.24	12.72	29.7	191	182	P	H
		5922.2	67.61	-2.65	70.26	50.32	34.25	12.77	29.73	191	182	P	H
		5944	66.75	-1.45	68.2	49.47	34.23	12.8	29.75	191	182	P	H
		5647.6	59.09	-9.11	68.2	43.24	33.13	12.44	29.72	200	164	P	V
		5653.4	60.78	-9.95	70.73	44.88	33.16	12.45	29.71	200	164	P	V
		5719.4	97.32	-13.31	110.63	80.91	33.57	12.54	29.7	200	164	P	V
		5724.8	98.24	-23.5	121.74	81.79	33.61	12.54	29.7	200	164	P	V
	*	5755	122.53	-	-	105.84	33.8	12.58	29.69	200	164	P	V
	*	5755	114.3	-	-	97.61	33.8	12.58	29.69	200	164	A	V
		5853.8	65.54	-48	113.54	48.31	34.22	12.7	29.69	185	181	P	V
		5873	65.27	-40.49	105.76	48.01	34.24	12.72	29.7	185	181	P	V
		5923.8	65.56	-3.52	69.08	48.27	34.25	12.78	29.74	185	181	P	V
		5946.4	66.27	-1.93	68.2	49	34.22	12.8	29.75	185	181	P	V



Ant. 8Tx	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		5648.45	61.01	-7.19	68.2	45.15	33.14	12.44	29.72	192	190	P	H
		5652.725	60.04	-10.18	70.22	44.14	33.16	12.45	29.71	192	190	P	H
		5719.13	71.2	-39.36	110.56	54.8	33.57	12.53	29.7	192	190	P	H
		5723.405	73.12	-45.44	118.56	56.68	33.6	12.54	29.7	192	190	P	H
	*	5795	126.31	-	-	109.37	34	12.63	29.69	192	190	P	H
	*	5795	119.15	-	-	102.21	34	12.63	29.69	192	190	A	H
		5851.2	86.55	-32.91	119.46	69.32	34.22	12.7	29.69	192	190	P	H
		5855	83.97	-26.83	110.8	66.73	34.23	12.7	29.69	192	190	P	H
		5923.2	65.25	-4.28	69.53	47.96	34.25	12.78	29.74	192	190	P	H
		5942.8	65.7	-2.5	68.2	48.42	34.23	12.8	29.75	192	190	P	H
		5631.92	59.31	-8.89	68.2	43.52	33.09	12.42	29.72	198	164	P	V
		5650.73	58.41	-10.33	68.74	42.54	33.14	12.45	29.72	198	164	P	V
		5719.13	67.09	-43.47	110.56	50.69	33.57	12.53	29.7	198	164	P	V
		5723.975	69.21	-50.65	119.86	52.77	33.6	12.54	29.7	198	164	P	V
	*	5795	124.42	-	-	107.48	34	12.63	29.69	198	164	P	V
	*	5795	115.51	-	-	98.57	34	12.63	29.69	198	164	A	V
		5851	82.52	-37.4	119.92	65.29	34.22	12.7	29.69	198	164	P	V
		5855.2	79.44	-31.3	110.74	62.2	34.23	12.7	29.69	198	164	P	V
		5924.4	61.02	-7.62	68.64	43.73	34.25	12.78	29.74	198	164	P	V
		5929.8	62.58	-5.62	68.2	45.3	34.24	12.78	29.74	198	164	P	V



Ant. 8Tx	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		5645.315	59.68	-8.52	68.2	43.83	33.13	12.44	29.72	183	191	P	H
		5652.44	59.26	-10.75	70.01	43.37	33.15	12.45	29.71	183	191	P	H
		5704.025	60.6	-45.73	106.33	44.31	33.47	12.52	29.7	183	191	P	H
		5724.83	62.28	-59.53	121.81	45.83	33.61	12.54	29.7	183	191	P	H
	*	5825	126.46	-	-	109.36	34.12	12.67	29.69	183	191	P	H
	*	5825	118.83	-	-	101.73	34.12	12.67	29.69	183	191	A	H
		5853.2	104.12	-10.78	114.9	86.89	34.22	12.7	29.69	183	191	P	H
		5856.6	102.77	-7.58	110.35	85.53	34.23	12.7	29.69	183	191	P	H
		5923.6	64.85	-4.38	69.23	47.56	34.25	12.78	29.74	183	191	P	H
		5928.8	66.58	-1.62	68.2	49.3	34.24	12.78	29.74	183	191	P	H
		5607.695	58.82	-9.38	68.2	43.14	33.02	12.39	29.73	200	164	P	V
		5651.585	57.67	-11.71	69.38	41.79	33.15	12.45	29.72	200	164	P	V
		5710.865	58.86	-49.38	108.24	42.53	33.51	12.52	29.7	200	164	P	V
		5722.55	59.1	-57.52	116.62	42.67	33.59	12.54	29.7	200	164	P	V
	*	5825	123.83	-	-	106.73	34.12	12.67	29.69	200	164	P	V
	*	5825	116.01	-	-	98.91	34.12	12.67	29.69	200	164	A	V
		5853.4	99.28	-15.17	114.45	82.05	34.22	12.7	29.69	200	164	P	V
		5856.6	97.9	-12.45	110.35	80.66	34.23	12.7	29.69	200	164	P	V
	5875.6	84.94	-19.81	104.75	67.67	34.25	12.72	29.7	200	164	P	V	
	5936	62.84	-5.36	68.2	45.56	34.23	12.79	29.74	200	164	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. 8Tx	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		7011	55.07	-13.13	68.2	70.09	36	13.89	65.44	187	176	P	H
		11510	47.44	-26.56	74	57.17	38.93	17.91	66.66	-	-	P	H
		17265	48.36	-19.84	68.2	54.79	38.47	22.49	67.44	-	-	P	H
		7000	55.62	-12.58	68.2	70.81	35.96	13.88	65.57	188	186	P	V
		11510	47.52	-26.48	74	57.25	38.93	17.91	66.66	-	-	P	V
		17265	48.24	-19.96	68.2	54.67	38.47	22.49	67.44	-	-	P	V
single carrier 40M 5795MHz		7000	54.6	-13.6	68.2	69.79	35.96	13.88	65.57	184	188	P	H
		11590	46.96	-27.04	74	56.77	38.84	17.98	66.72	-	-	P	H
		17385	50.55	-17.65	68.2	57.13	38.9	22.6	68.13	-	-	P	H
		7066	56.39	-11.81	68.2	70.59	36.19	13.95	64.83	188	173	P	V
		11590	47.22	-26.78	74	57.03	38.84	17.98	66.72	-	-	P	V
		17385	51.34	-16.86	68.2	57.92	38.9	22.6	68.13	-	-	P	V
single carrier 40M 5825MHz		7011	54.01	-14.19	68.2	69.03	36	13.89	65.44	186	177	P	H
		11650	46.99	-27.01	74	56.88	38.77	18.03	66.77	-	-	P	H
		17475	49.51	-18.69	68.2	56.18	39.19	22.68	68.59	-	-	P	H
		7044	55.61	-12.59	68.2	70.12	36.1	13.92	65.04	188	172	P	V
		11650	47.03	-26.97	74	56.92	38.77	18.03	66.77	-	-	P	V
		17475	49.39	-18.81	68.2	56.06	39.19	22.68	68.59	-	-	P	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 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. 8Tx	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)
		5646.155	64.35	-3.85	68.2	48.5	33.13	12.44	29.72	194	206	P	H
		5650.745	64.37	-4.38	68.75	48.5	33.14	12.45	29.72	194	206	P	H
		5719.595	94	-16.69	110.69	77.59	33.57	12.54	29.7	194	206	P	H
		5724.695	95.32	-26.18	121.5	78.87	33.61	12.54	29.7	194	206	P	H
	*	5755	121.99	-	-	105.3	33.8	12.58	29.69	194	206	P	H
	*	5795	115.9	-	-	98.96	34	12.63	29.69	194	206	P	H
	*	5755	113.49	-	-	96.8	33.8	12.58	29.69	194	206	A	H
	*	5795	107.35	-	-	90.41	34	12.63	29.69	194	206	P	H
		5850.295	81.73	-39.8	121.53	64.5	34.22	12.7	29.69	194	206	P	H
		5856.16	80.23	-30.24	110.47	62.99	34.23	12.7	29.69	194	206	P	H
		5918.38	67.75	-5.33	73.08	50.46	34.25	12.77	29.73	194	206	P	H
		5933.935	64.23	-3.97	68.2	46.94	34.24	12.79	29.74	194	206	P	H
		5646.92	60.91	-7.29	68.2	45.06	33.13	12.44	29.72	200	224	P	V
		5651	60.31	-8.63	68.94	44.43	33.15	12.45	29.72	200	224	P	V
		5720.105	82.98	-28.06	111.04	66.56	33.58	12.54	29.7	200	224	P	V
		5724.95	83.22	-38.87	122.09	66.77	33.61	12.54	29.7	200	224	P	V
	*	5755	112.67	-	-	95.98	33.8	12.58	29.69	200	224	P	V
	*	5795	100.51	-	-	83.57	34	12.63	29.69	200	224	P	V
	*	5755	104.27	-	-	87.58	33.8	12.58	29.69	200	224	P	V
	*	5795	97.93	-	-	80.99	34	12.63	29.69	200	224	A	V
		5852.08	71.18	-46.28	117.46	53.95	34.22	12.7	29.69	200	224	P	V
		5855.65	70.35	-40.27	110.62	53.11	34.23	12.7	29.69	200	224	P	V
		5921.44	60.59	-10.23	70.82	43.3	34.25	12.77	29.73	200	224	P	V
		5925.01	60.35	-7.85	68.2	43.07	34.24	12.78	29.74	200	224	P	V



Ant. 8Tx	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_continuous 40M+40M 5785MHz +5825MHz		5633.06	59.35	-8.85	68.2	43.56	33.09	12.42	29.72	192	156	P	H
		5650.445	60.12	-8.41	68.53	44.25	33.14	12.45	29.72	192	156	P	H
		5719.7	74.42	-36.3	110.72	58.01	33.57	12.54	29.7	192	156	P	H
		5724.545	77.22	-43.94	121.16	60.77	33.61	12.54	29.7	192	156	P	H
	*	5785	116.37	-	-	99.49	33.95	12.62	29.69	192	156	P	H
	*	5825	124.67	-	-	107.57	34.12	12.67	29.69	192	156	P	H
	*	5785	108	-	-	91.12	33.95	12.62	29.69	192	156	A	H
	*	5825	116.71	-	-	99.61	34.12	12.67	29.69	192	156	P	H
		5853.25	102.66	-12.13	114.79	85.43	34.22	12.7	29.69	192	156	P	H
		5855.05	101.5	-9.29	110.79	84.26	34.23	12.7	29.69	192	156	P	H
		5924.125	66.79	-2.05	68.84	49.5	34.25	12.78	29.74	192	156	P	H
		5926.825	67.42	-0.78	68.2	50.14	34.24	12.78	29.74	192	156	P	H
		5637.335	59.53	-8.67	68.2	43.72	33.1	12.43	29.72	200	159	P	V
		5651.3	59.33	-9.84	69.17	43.45	33.15	12.45	29.72	200	159	P	V
		5719.7	70.09	-40.63	110.72	53.68	33.57	12.54	29.7	200	159	P	V
		5724.545	72.61	-48.55	121.16	56.16	33.61	12.54	29.7	200	159	P	V
	*	5785	123.55	-	-	106.67	33.95	12.62	29.69	200	159	P	V
	*	5825	111.36	-	-	94.26	34.12	12.67	29.69	200	159	P	V
	*	5785	114.34	-	-	97.46	33.95	12.62	29.69	200	159	A	V
	*	5825	102.37	-	-	85.27	34.12	12.67	29.69	200	159	P	V
	5853.475	91.3	-22.98	114.28	74.07	34.22	12.7	29.69	200	159	P	V	
	5855.05	91.17	-19.62	110.79	73.93	34.23	12.7	29.69	200	159	P	V	
	5921.65	64.82	-5.85	70.67	47.53	34.25	12.77	29.73	200	159	P	V	
	5926.375	65.2	-3	68.2	47.92	34.24	12.78	29.74	200	159	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. 8Tx	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		7000	54.69	-13.51	68.2	69.88	35.96	13.88	65.57	186	189	P	H
		11510	47.83	-26.17	74	57.56	38.93	17.91	66.66	-	-	P	H
		11590	47.24	-26.76	74	57.05	38.84	17.98	66.72	-	-	P	H
		17265	49.25	-18.95	68.2	55.68	38.47	22.49	67.44	-	-	P	H
		17385	49.7	-18.5	68.2	56.28	38.9	22.6	68.13	-	-	P	H
		7011	55.55	-12.65	68.2	70.57	36	13.89	65.44	189	171	P	V
		11510	47.14	-26.86	74	56.87	38.93	17.91	66.66	-	-	P	V
		11590	46.64	-27.36	74	56.45	38.84	17.98	66.72	-	-	P	V
		17265	48.56	-19.64	68.2	54.99	38.47	22.49	67.44	-	-	P	V
		17385	49.85	-18.35	68.2	56.43	38.9	22.6	68.13	-	-	P	V
Multiple carrier_contiguous 40M+40M 5785MHz +5825MHz		7022	55.09	-13.11	68.2	69.95	36.03	13.9	65.31	186	188	P	H
		11570	47.97	-26.03	74	57.72	38.87	17.96	66.67	-	-	P	H
		11650	47.85	-26.15	74	57.74	38.77	18.03	66.77	-	-	P	H
		17355	49.3	-18.9	68.2	55.7	38.81	22.58	67.84	-	-	P	H
		17475	49.71	-18.49	68.2	56.38	39.19	22.68	68.59	-	-	P	H
		7033	56.01	-12.19	68.2	70.68	36.07	13.91	65.17	187	168	P	V
		11570	47.18	-26.82	74	56.93	38.87	17.96	66.67	-	-	P	V
		11650	47.46	-26.54	74	57.35	38.77	18.03	66.77	-	-	P	V
		17355	49.88	-18.32	68.2	56.28	38.81	22.58	67.84	-	-	P	V
	17475	49.48	-18.72	68.2	56.15	39.19	22.68	68.59	-	-	P	V	
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 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)

Ant.	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
8Tx		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
SHF		39803.86	55.52	-18.48	74	37.32	43.53	35.8	51.59	-	-	P	H
		39803.86	45.17	-8.83	54	26.97	43.53	35.8	51.59	-	-	A	H
		39299.5	56.1	-17.9	74	38.47	44.6	35.34	52.77	-	-	P	V
		39299.5	44.75	-9.25	54	27.12	44.6	35.34	52.77	-	-	A	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against limit line. 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)

Ant.	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
8Tx		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
LF		87.23	31.72	-8.28	40	48.2	14.32	1.54	32.46	185	300	Q	H
		87.23	38.42	-1.58	40	54.9	14.32	1.54	32.46	185	300	P	H
		125.06	37.72	-5.78	43.5	50.89	17.39	1.85	32.47	149	308	Q	H
		125.06	39.62	-3.88	43.5	52.79	17.39	1.85	32.47	149	308	P	H
		210.42	35.34	-8.16	43.5	50.38	14.98	2.39	32.49	-	-	P	H
		296.75	36.96	-9.04	46	47.18	19.2	2.84	32.41	-	-	P	H
		624.61	39.76	-6.24	46	42.17	25.88	4.1	32.56	-	-	P	H
		985.45	45.23	-8.77	54	39.87	30.48	5.13	30.71	-	-	P	H
		33.88	32.24	-7.76	40	40.8	22.86	0.95	32.45	100	334	Q	V
		33.88	38.24	-1.76	40	46.8	22.86	0.95	32.45	100	334	P	V
		83.35	30.54	-9.46	40	47.41	14	1.5	32.46	100	37	Q	V
		83.35	37.74	-2.26	40	54.61	14	1.5	32.46	100	37	P	V
		112.45	32.19	-11.31	43.5	45.5	17.3	1.75	32.47	117	0	Q	V
		112.45	37.9	-5.6	43.5	51.21	17.3	1.75	32.47	117	0	P	V
		125.06	40.52	-2.98	43.5	53.69	17.39	1.85	32.47	100	11	Q	V
		125.06	41.42	-2.08	43.5	54.59	17.39	1.85	32.47	100	11	P	V
		581.93	37.82	-8.18	46	40.2	26	3.96	32.51	100	107	Q	V
		581.93	40.22	-5.78	46	42.6	26	3.96	32.51	100	107	P	V
	985.45	45.45	-8.55	54	40.09	30.48	5.13	30.71	-	-	P	V	
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against limit line. 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 Margin line.
P/A	Peak or Average
H/V	Horizontal or Vertical



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

Ant.	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
8Tx		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 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. Margin(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. Margin(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 :	Thinh Hoang and Jin Peng	Temperature :	20.9~22.7°C
		Relative Humidity :	47.3~54.1%

UNII-3 - 5725~5850MHz

Single carrier_40M (Band Edge @ 3m)

		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5755MHz		
8Tx	Horizontal	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	<p>Site : 03CH02-CA Condition : PEAK(LINB) 3m HORN_02140_230109 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	
Avg	Left blank	<p>Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p>	



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5755MHz		
8Tx	Horizontal	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 HORIZONTAL</p>	Left blank	



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5755MHz		
8Tx	Vertical	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 VERTICAL</p>	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL</p>	
Avg	Left blank	<p>Site : 03CH02-CA Condition : AV6 54 3m HORN_02140_230109 VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5755MHz		
8Tx	Vertical	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 VERTICAL</p>	Left blank	



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5795MHz		
8Tx	Horizontal	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(BA)_16-24 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH02-CA Condition : PEAK(LINE) 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	
Avg	Left blank	<p>Site : 03CH02-CA Condition : AV6 54 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5795MHz		
8Tx	Horizontal	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BC(B4)_16-24 3m HORN_02140_230109 HORIZONTAL : RBW:10000000kHz VBW:30000000kHz SWF:Auto</p>	Left blank	



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5795MHz		
8Tx	Vertical	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(BA)_16-24 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH02-CA Condition : PEAK(UNIT) 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	
Avg	Left blank	<p>Site : 03CH02-CA Condition : AV6 54 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	

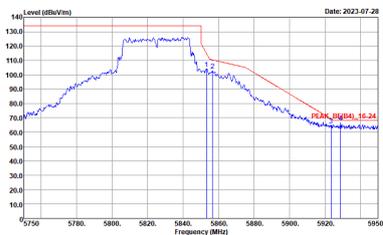


		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5795MHz		
8Tx	Vertical	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 VERTICAL : RBW:10000000kHz VBW:3000000kHz SWF:Auto</p>	Left blank	



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5825MHz		
8Tx	Horizontal	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL</p>	
Avg	Left blank	<p>Site : 03CH02-CA Condition : AV6 54 3m HORN_02140_230109 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	

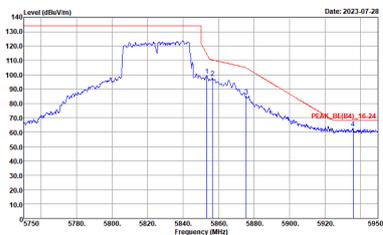


		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5825MHz		
8Tx	Horizontal	Fundamental	
Peak	 <p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 HORIZONTAL</p>	Left blank	



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5825MHz		
8Tx	Vertical	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 VERTICAL</p>	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL</p>	
Avg	Left blank	<p>Site : 03CH02-CA Condition : AV6 54 3m HORN_02140_230109 VERTICAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	single carrier 40M 5825MHz		
8Tx	Vertical	Fundamental	
Peak	 <p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 VERTICAL</p>	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	
8Tx	Horizontal	Fundamental
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH02-CA Condition : PEAK(UWB) 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Avg	Left blank	<p>Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>



UNII-3 5725~5850MHz Band Edge @ 3m		
ANT	Multiple carrier_contiguous 40M+40M 5755MHz+5795MHz	
8Tx	Horizontal	Fundamental
Peak	<p>Site : 03CH02-CA Condition : PEAK_BC(B4)_16-24 3m HORN_02140_230109 HORIZONTAL : RBW:1000000kHz VBW:3000000kHz SWF:Auto</p>	Left blank



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5755MHz+5795MHz		
8Tx	Vertical	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH02-CA Condition : PEAK(LNB) 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	
Avg	Left blank	<p>Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	



UNII-3 5725~5850MHz Band Edge @ 3m		
ANT	Multiple carrier_contiguous 40M+40M 5755MHz+5795MHz	
8Tx	Vertical	Fundamental
Peak	<p>Site : 03CH02-CA Condition : PEAK_BC(B4)_16-24 3m HORN_02140_230109 VERTICAL : RBW:10000000kHz VBW:30000000kHz SWF:Auto</p>	Left blank



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz		
8Tx	Horizontal	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_8E(B4)_16-24 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH02-CA Condition : PEAK(LINB) 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	
Avg	Left blank	<p>Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	

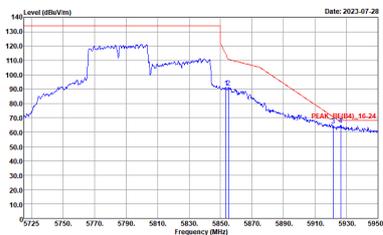


		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz		
8Tx	Horizontal	Fundamental	
Peak	<p>Level (dBm/100kHz)</p> <p>Date: 2023-07-28</p> <p>140.0 130.0 120.0 110.0 100.0 90.0 80.0 70.0 60.0 50.0 40.0 30.0 20.0 10.0</p> <p>5725 5750 5770 5790 5810 5830 5850 5870 5890 5910 5930 5950</p> <p>Frequency (MHz)</p> <p>Site : 03CH02-CA Condition : PEAK_BC(BA)_16-24 3m HORN_02140_230109 HORIZONTAL RBW:10000000kHz VBW:30000000kHz SWF:Auto</p>	Left blank	



		UNII-3 5725~5850MHz Band Edge @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz		
8Tx	Vertical	Fundamental	
Peak	<p>Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH02-CA Condition : PEAK(LNB) 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	
Avg	Left blank	<p>Site : 03CH02-CA Condition : AVG 54 3m HORN_02140_230109 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>	



UNII-3 5725~5850MHz Band Edge @ 3m		
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz	
8Tx	Vertical	Fundamental
Peak	 <p>Site : 03CH02-CA Condition : PEAK_BE(BA)_16-24 3m HORN_02140_230109 VERTICAL : RBW:1000000KHz VBW:3000000KHz SWF:Auto</p>	Left blank



UNII-3 - 5725~5850MHz
Single carrier_40M (Harmonic @ 3m)

UNII-3 5725~5850MHz Harmonic @ 3m		
ANT	single carrier 40M 5755MHz	
8Tx	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL</p>



		UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5755MHz		
8Tx	Horizontal	Vertical	
10.6G ~18G Avg	<p>Site : 03CH02-CA Condition : AV6_54 3m HORN_02140_230109 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : AV6_54 3m HORN_02140_230109 VERTICAL</p>	



		UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5795MHz		
8Tx	Horizontal	Vertical	
<p>Peak</p> <p>Avg.</p>	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL</p>	



		UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5795MHz		
8Tx	Horizontal	Vertical	
10.6G ~18G Avg	<p>Site : 03CH02-CA Condition : AV6_54 3m HORN_02140_230109 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : AV6_54 3m HORN_02140_230109 VERTICAL</p>	



		UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5825MHz		
8Tx	Horizontal	Vertical	
Peak Avg.	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL</p>	



		UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	single carrier 40M 5825MHz		
8Tx	Horizontal	Vertical	
10.6G ~18G Avg	<p>Site : 03CH02-CA Condition : AV6_54 3m HORN_02140_230109 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : AV6_54 3m HORN_02140_230109 VERTICAL</p>	



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	
8Tx	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL :</p>	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL :</p>



		UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5755MHz+5795MHz		
8Tx	Horizontal	Vertical	
10.6G ~18G Avg	<p>Site : 03CH02-CA Condition : AV6_54 3m HORN_02140_230109 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : AV6_54 3m HORN_02140_230109 VERTICAL</p>	



		UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz		
8Tx	Horizontal	Vertical	
Peak Avg.	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN_02140_230109 VERTICAL</p>	



		UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	Multiple carrier_contiguous 40M+40M 5785MHz+5825MHz		
8Tx	Horizontal	Vertical	
10.6G ~18G Avg	<p>Site : 03CH02-CA Condition : AV6_54 3m HORN_02140_230109 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : AV6_54 3m HORN_02140_230109 VERTICAL</p>	



Emission above 18GHz
5GHz (SHF @ 1m)

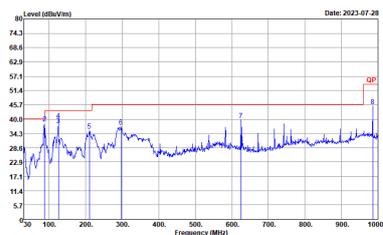
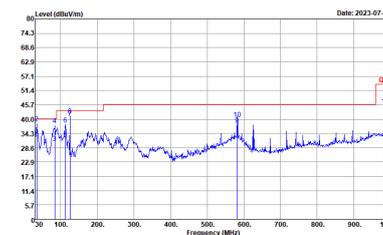
	5GHz	
ANT	SHF	
8Tx	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	<p>Site : 03CH02-CA Condition : PEAK(LIM) 1m SHF_HORN_841_220912 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : PEAK(LIM) 1m SHF_HORN_841_220912 VERTICAL</p>



		UNII-3 5725~5850MHz Harmonic @ 3m	
ANT	SHF		
8Tx	Horizontal	Vertical	
39.6G ~40G Avg	<p>Site : 03CH02-CA Condition : AV6_54 1m SHF_HORN_841_220912 HORIZONTAL</p>	<p>Site : 03CH02-CA Condition : AV6_54 1m SHF_HORN_841_220912 VERTICAL</p>	



Emission below 1GHz
5GHz (LF @ 3m)

	5GHz	
ANT	LF	
8Tx	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH02-CA Condition : QP 3m BIL06_54683_221101 HORIZONTAL</p>	 <p>Site : 03CH02-CA Condition : QP 3m BIL06_54683_221101 VERTICAL</p>



Appendix E. Duty Cycle Plots

<Single Carrier>

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
8Tx	40MHz	100%	-	-	10Hz

