FCC RF Test Report

APPLICANT	:	Casa Systems, Inc.
EQUIPMENT	:	Apex Enterprise Femto cell (E-Femto) (B4/B13/B66 with LAA)
BRAND NAME	:	APEX 4G LTE Femto for Enterprose (eFemto)
MODEL NAME	:	LTE-2004-04
FCC ID	:	2AO38LTE2004-04
STANDARD	:	47 CFR Part 15 Subpart E §15.407
CLASSIFICATION	:	(NII) Unlicensed National Information Infrastructure

The product was received on Aug. 27, 2020 and testing was completed on Nov. 20, 2020. We, Sporton International (Kunshan) 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 of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Jason Jia

Reviewed by: Jason Jia / Supervisor

James Huang

Approved by: James Huang / Manager

ACCREDITED
Cert #5145.02

Sporton International (Kunshan) Inc.
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR082710C	Rev. 01	Initial issue of report	Nov. 23, 2020

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	2.1049 15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	15.407(a)(1)(i) 15.407(a)(3)	Pass	-
3.3	15.407(a)	Power Spectral Density	15.407(a)(1)(i) 15.407(a)(3)	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) &15.209(a)	Pass	Under limit 0.10 dB at 5136.64 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 11.47 dB at 0.415 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.7	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Applicant

Casa Systems, Inc.
100 Old River Road Suite 100 Andover, Massachusetts 01810 United States

1.2 Manufacturer

Casa Systems, Inc.
100 Old River Road Suite 100 Andover, Massachusetts 01810 United States

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Apex Enterprise Femto cell (E-Femto) (B4/B13/B66 with LAA)
Brand Name	APEX 4G LTE Femto for Enterprose (eFemto)
Model Name	LTE-2004-04
FCC ID	2AO38LTE2004-04
EUT supports Radios application	LTE/GPS WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80
HW Version	V01
SW Version	V01
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	LTE Band 46: 5160 MHz ~ 5240 MHz 5745 MHz ~ 5825 MHz
Maximum Output Power to Antenna	**<MIMO Ant.1+2>** **<5160 MHz ~ 5240 MHz>** 20M: 26.55 dBm / 0.4519 W 40M: 20.15 dBm / 0.1035 W **<5745 MHz ~ 5825 MHz>** 20M: 27.73 dBm / 0.5929 W 40M: 24.70 dBm / 0.2951 W
99% Occupied Bandwidth	**<5160 MHz ~ 5240 MHz>** 20M : 18.63 MHz 40M : 37.76 MHz **<5745 MHz ~ 5825 MHz>** 20M : 18.58 MHz 40M : 37.96 MHz
Support Bandwidth	20MHz / 40MHz
Type of Modulation	QPSK / 16QAM / 64QAM
Antenna Type / Gain	**<5160 MHz ~ 5240 MHz>** Ant.1 / Ant. 2: PIFA Antenna / 6.0 dBi **<5745 MHz ~ 5825 MHz>** Ant.1 / Ant. 2: PIFA Antenna / 6.0 dBi

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. Only full RB is tested by manufacturer request.
3. For SISO & MIMO mode, the RSE testing has assessed only MIMO mode by referring to their higher conducted power.
4. The maximum ERP/EIRP is calculated from max output power and max antenna gain, only the maximum ERP/EIRP is shown on the report for MIMO mode.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH06-KS CO01-KS TH01-KS	CN1257	314309

1.7 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH06-KS	AUDIX	E3	6.2009-8-24al
2.	CO01-KS	AUDIX	E3	6.2009-8-24

1.8 Applicable Standards

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

- 47 CFR Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
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

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: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

2.1 Carrier Frequency and Channel

Band	BW [MHz]	Channel	Freq. (MHz)	Channel	Freq. (MHz)
LTE Band 46 UNII-1	20	46890	5160	47490	5220
		47090	5180	47690	5240
	40	47090-47290	5190	47490-47690	5230

Band	BW [MHz]	Channel	Freq. (MHz)	Channel	Freq. (MHz)
LTE Band 46 UNII-3	20	52740	5745	53540	5825
		53140	5785	-	-
	40	52740-52940	5755	53140-53340	5795

2.2 Test Mode

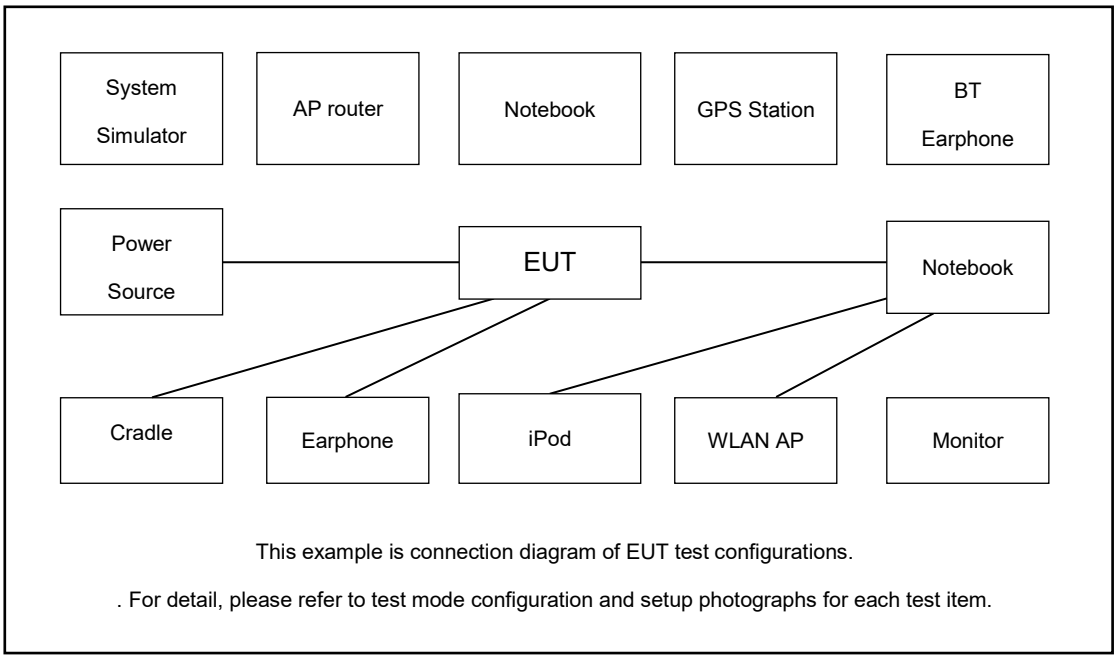
<For RSE and Conducted test items>

Ch. / Freq. (MHz)		UNII-1 : 5160 MHz ~ 5240 MHz		UNII-3 : 5745 MHz ~ 5825 MHz	
		20M	40M	20M	40M
L	Low	5160	5190	5745	5755
M	Middle	5180 / 5220	-	5785	-
H	High	5240	5230	5825	5795

<For AC Conducted Emission>

AC Conducted Emission	Mode 1 : LTE Band 46 Link + WAN Link + Adaptor

2.3 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritus	MT8821C	N/A	N/A	Unshielded, 1.8m
2.	Notebook	Lenovo	V130-15IKB005	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
3.	Hard Disk	WD	C6B	N/A	N/A	N/A
4.	Earphone	Lenovo	P121	N/A	N/A	Unshielded, 1.2m

2.5 EUT Operation Test Setup

The EUT was link with Base station and set to maximum transmit power during the testing.

At the same time, the EUT was attached to notebook for AC conduction mode.

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 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.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 6.2 dB.

Offset(dB) = RF cable loss(dB).

= 6.2 (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

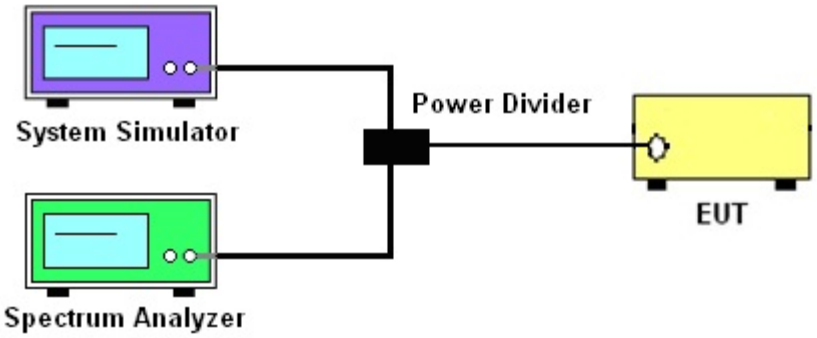
The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.

☒	Section C) Bandwidth Measurement 1. Emission Bandwidth (EBW)
	1. Set RBW = approximately 1% of the emission bandwidth. **2.** Set the VBW > RBW. **3.** Detector = Peak. **4.** Trace mode = max hold **5.** Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%. **6.** For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW) ≥ 3 * RBW. **7.** Measure and record the results in the test report.
☒	Section C) Bandwidth Measurement 2. Minimum Emission Bandwidth for the band 5.725 - 5.85 GHz
	1. Set RBW = 100kHz. **2.** Set the VBW ≥ 3 x RBW. **3.** Detector = Peak. **4.** Trace mode = max hold **5.** Measure the maximum width of the emission that is 6 dB down from the peak of the emission. **6.** Measure and record the results in the test report.

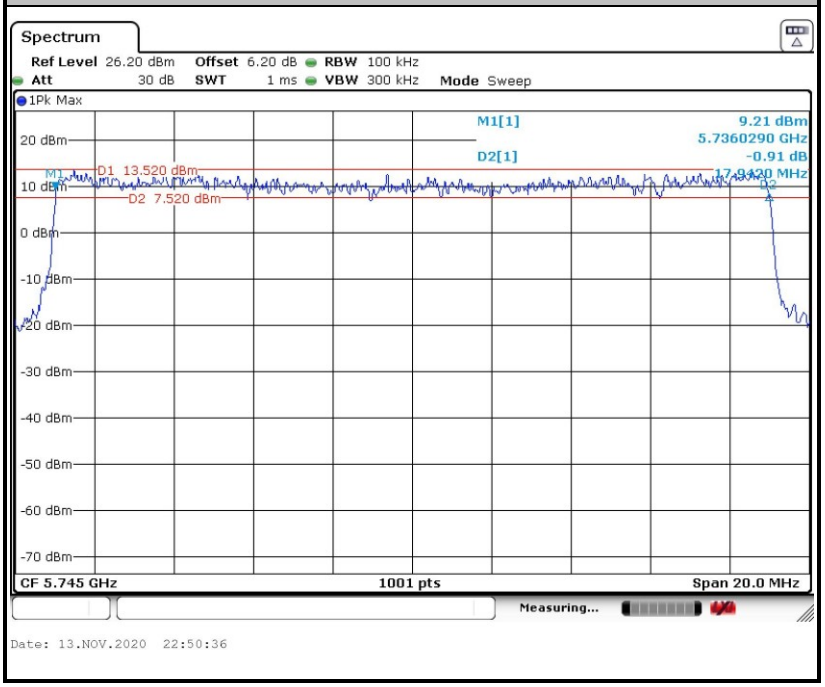
3.1.4 Test Setup



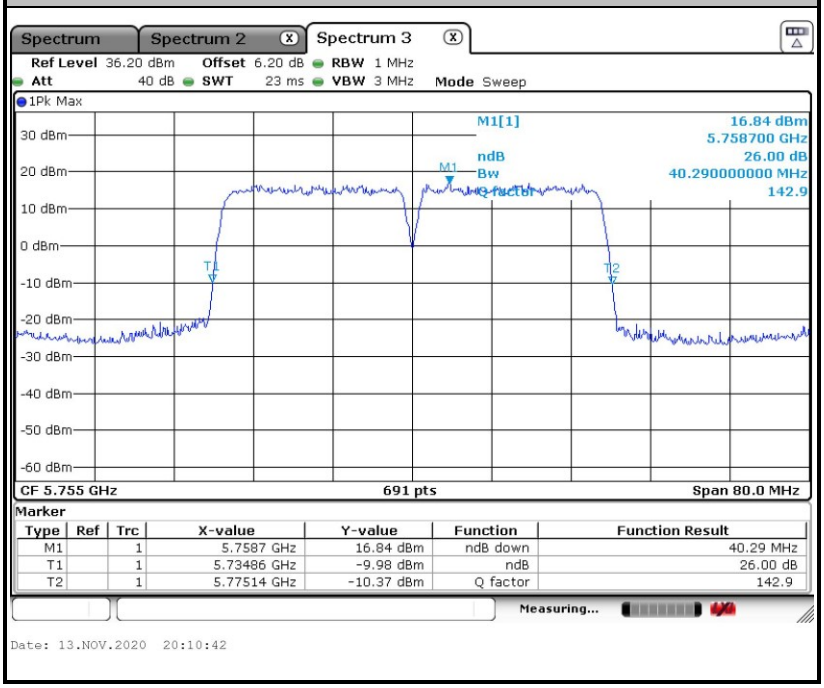
3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

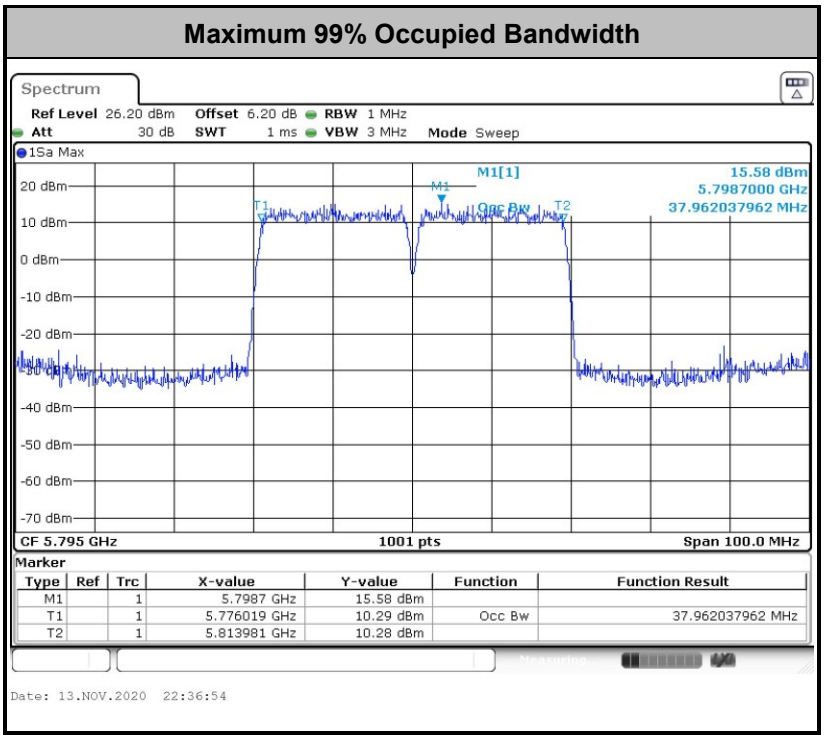
Minimum 6dB Bandwidth



Maximum 26dB Bandwidth



Maximum 99% Occupied Bandwidth



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

<FCC 14-30 CFR 15.407>

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

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

The measuring equipment is listed in the section 4 of this test report.

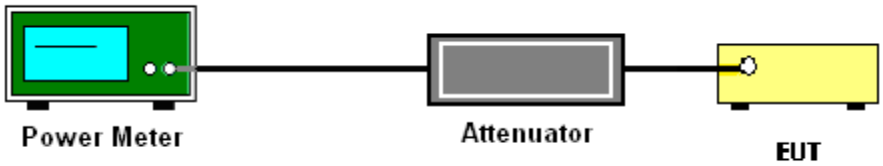
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rulesv02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

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

<FCC 14-30 CFR 15.407>

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

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

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rulesv02r01.
Section F) Maximum power spectral density.

For devices operating in the bands 5.15 - 5.25 GHz

1. The RF output of EUT was 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. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
   Method (a): Measure and sum the spectra across the outputs.
   The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

 # 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 = 1 MHz.
- Set VBW ≥ 3 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.

For devices operating in the band 5.725 - 5.85 GHz

1. The RF output of EUT was 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. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

   Method (c): Measure and add 10 log(N_{ANT}) dB.

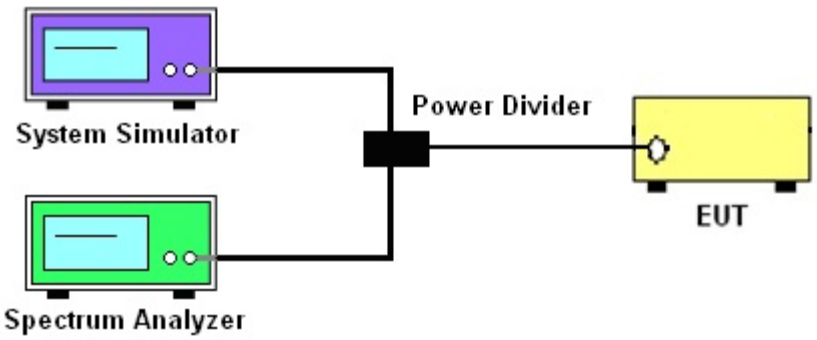
   With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity 10 log(N_{ANT}) dB is added to each spectrum value before comparing to the emission limit. The addition of 10 log(N_{ANT}) dB serves to apportion the emission limit among the N_{ANT} outputs so that each output is permitted to contribute no more than $1/N_{ANT}$ th of the PSD limit.

 # 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 = 300 kHz.
- 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(500kHz/RBW) to the test result.
- 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.

3.3.4 Test Setup

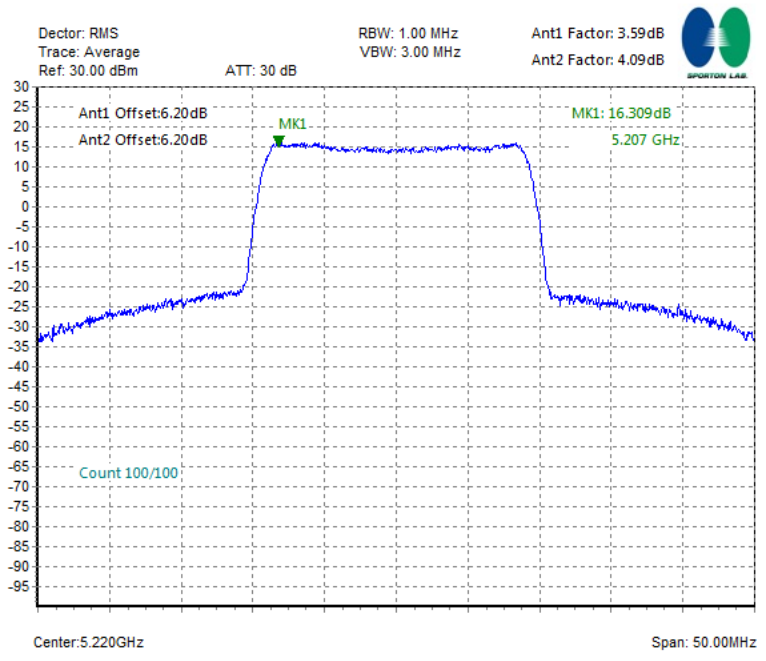


3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

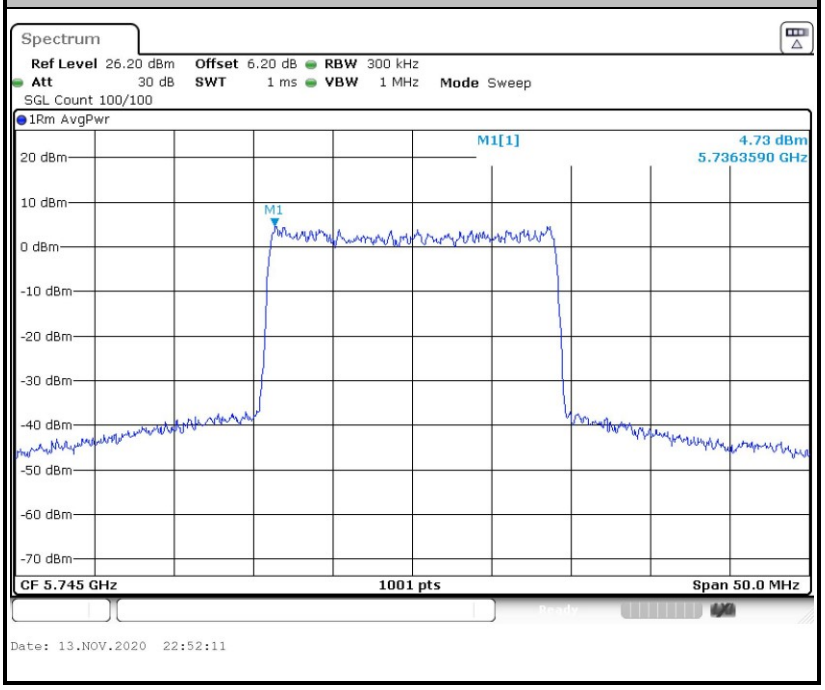
For devices operating in the bands 5.15 - 5.25 GHz

Worst Case Power Density (dBm/MHz)

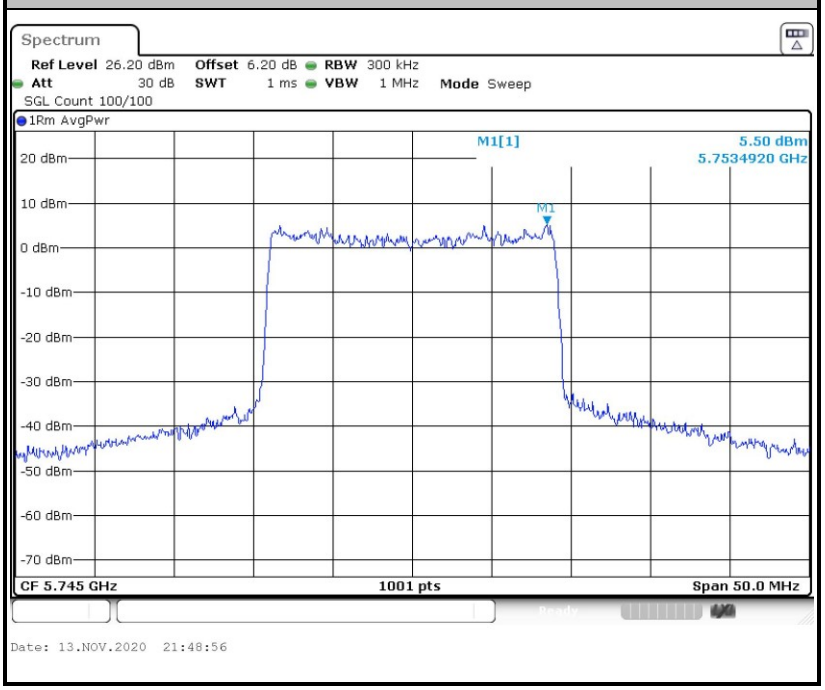


For devices operating in the band 5.725 - 5.85 GHz

Worst Case Power Density (dBm/300kHz) for MOMO Ant.1



Worst Case Power Density (dBm/300kHz) for MOMO Ant.2



Note: Average Power Density (dB) = Measured value+ Duty Factor

3.4 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of –27dBm/MHz.

(2) 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.

(3) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

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

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

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

$$EIRP = E_{Meas} + 20\log(d_{Meas}) - 104.8$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m

d_{Meas} is the measurement distance, in m

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

   - 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 1000MHz

   - 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.

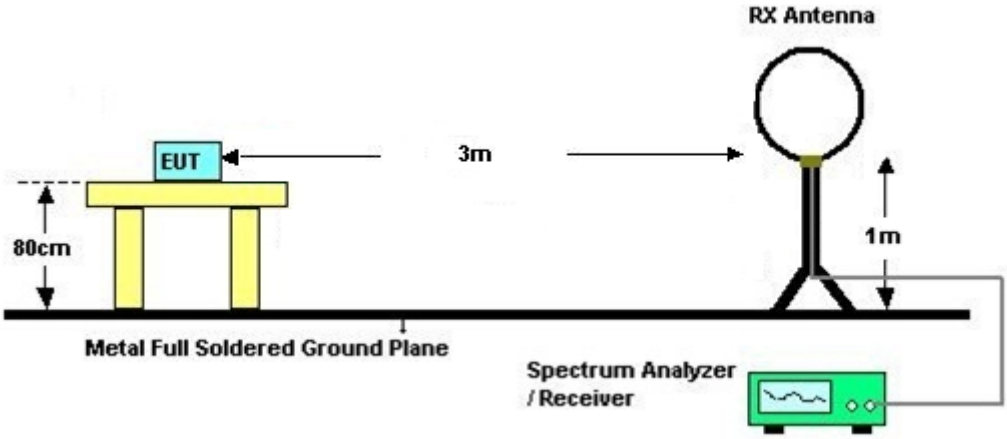
(4) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 3 MHz
- Detector = power averaging (rms), set span/(# of points in sweep) ≥ RBW/2.
- Averaging type = power averaging(RMS)
- The correction factor shall be offset is 10 log (1/x), where x is the duty cycle.
-

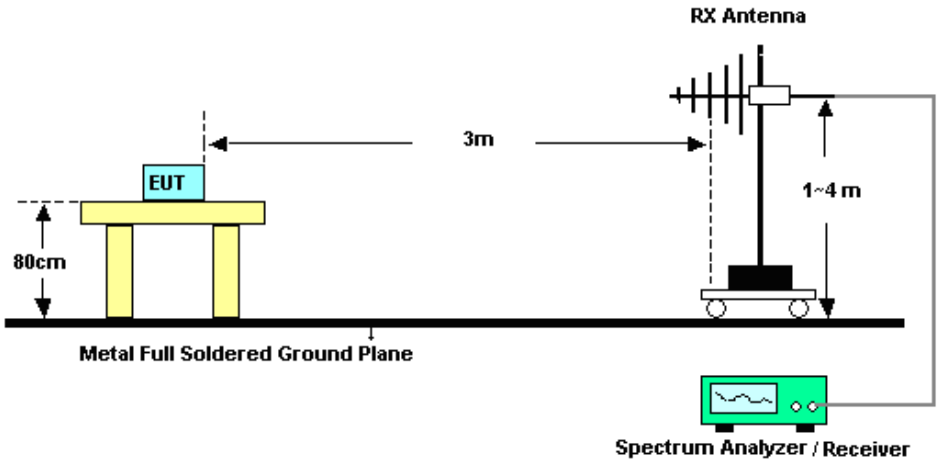
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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 was 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. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

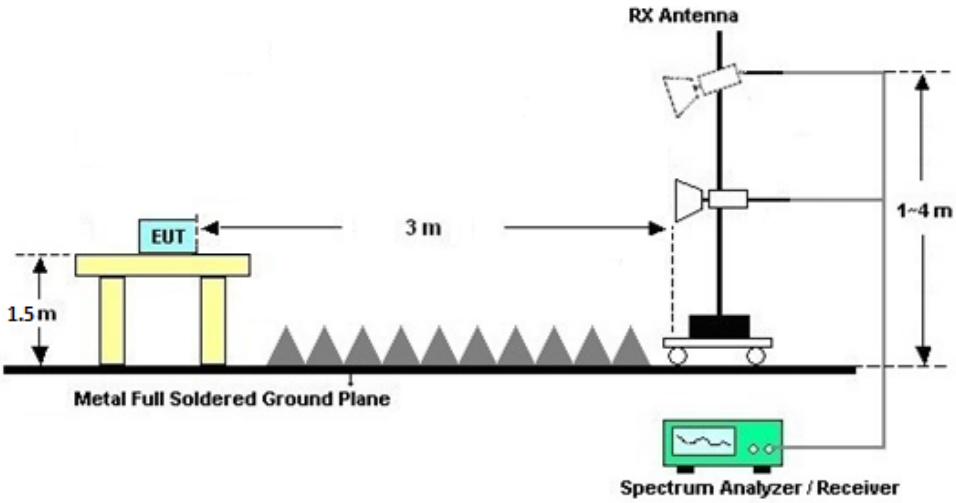
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

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.

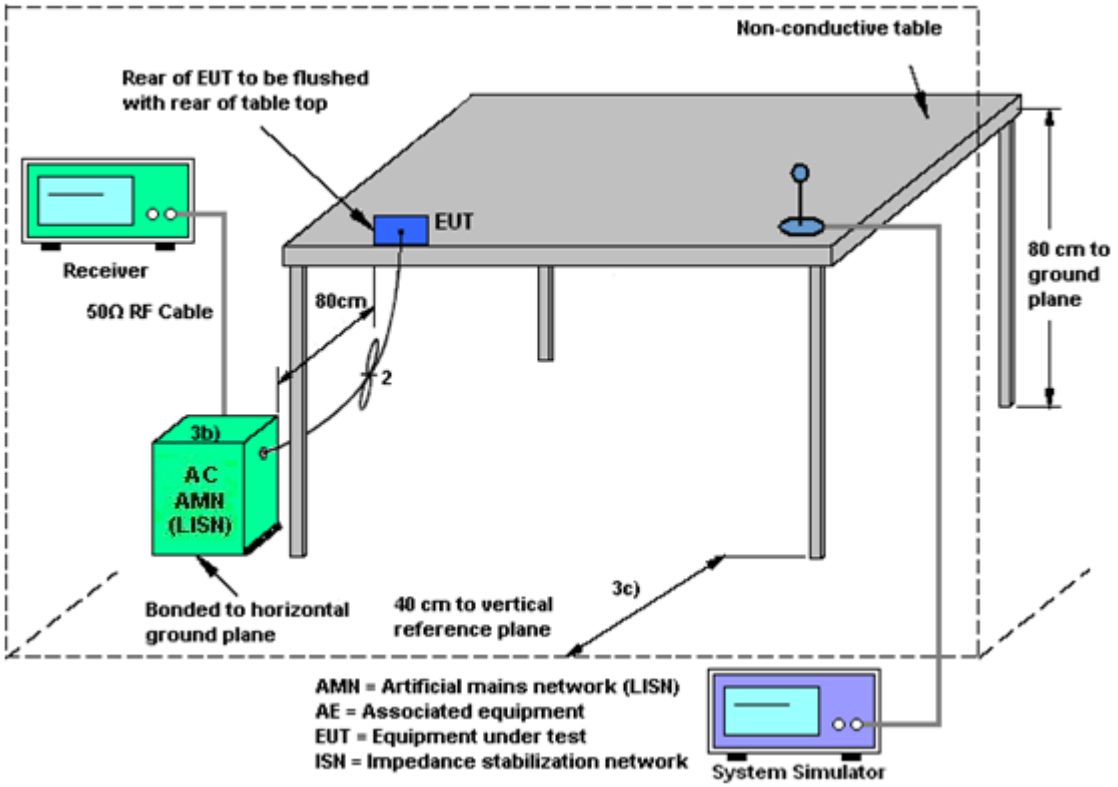
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was 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 should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
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 Automatically Discontinue Transmission

3.6.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.7 Antenna Requirements

3.7.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

	Ant. 1 (dBi)	Ant. 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
Band I	6.00	6.00	6.00	6.00	0.00	0.00
Band IV	6.00	6.00	6.00	6.00	0.00	0.00

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV30	101338	10Hz~30GHz	Apr. 14, 2020	Nov. 13, 2020	Apr. 13, 2021	Conducted (TH01-KS)
System Simulator	R&S	CMW500	139342	2G/3G/4G	Apr. 17, 2020	Nov. 13, 2020	Apr. 16, 2021	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz;Max 30dBm	Oct. 17, 2020	Nov. 20, 2020	Oct. 16, 2021	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz-44GHz	Apr. 14, 2020	Nov. 20, 2020	Apr. 13, 2021	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 09, 2020	Nov. 20, 2020	Nov. 08, 2021	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	49921	30MHz-1GHz	May 29, 2020	Nov. 20, 2020	May 28, 2021	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 27, 2020	Nov. 20, 2020	Apr. 26, 2021	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 09, 2020	Nov. 20, 2020	Nov. 08, 2021	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	187289	9KHz ~1GHZ	Apr. 14, 2020	Nov. 20, 2020	Apr. 13, 2021	Radiation (03CH06-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 08, 2020	Nov. 20, 2020	Jan. 07, 2021	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2025788	1Ghz-18Ghz	Jan. 03, 2020	Nov. 20, 2020	Jan. 02, 2021	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270203	500MHz~26.5GHz	Apr. 15, 2020	Nov. 20, 2020	Apr. 14, 2021	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Nov. 20, 2020	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Nov. 20, 2020	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Nov. 20, 2020	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 14, 2020	Oct. 13, 2020	Apr. 13, 2021	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 18, 2019	Oct. 13, 2020	Oct. 17, 2020	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Oct. 28, 2019	Oct. 13, 2020	Oct. 27, 2020	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 18, 2019	Oct. 13, 2020	Oct. 17, 2020	Conduction (CO01-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.94dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0dB**

Appendix A. Conducted Test Results

Test Engineer:	Kib Shi	Temperature:	21~25	°C
Test Date:	2020/11/13	Relative Humidity:	51~54	%

TEST RESULTS DATA
26dB and 99% OBW

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)			Note
					Ant 1	Ant 2	Ant 1	Ant 2		
20M	QPSK	2	CH 46890	5160	18.53	18.53	20.26	20.26		PASS
20M	16Q	2	CH 46890	5160	18.58	18.48	20.26	20.26		PASS
20M	64Q	2	CH 46890	5160	18.53	18.48	20.32	20.32		PASS
20M	QPSK	2	CH 47090	5180	18.53	18.48	20.26	20.32		PASS
20M	16Q	2	CH 47090	5180	18.58	18.58	20.26	20.26		PASS
20M	64Q	2	CH 47090	5180	18.53	18.58	20.32	20.26		PASS
20M	QPSK	2	CH 47490	5220	18.58	18.43	20.38	20.32		PASS
20M	16Q	2	CH 47490	5220	18.53	18.48	20.20	20.26		PASS
20M	64Q	2	CH 47490	5220	18.53	18.48	20.26	20.20		PASS
20M	QPSK	2	CH 47690	5240	18.58	18.48	20.38	20.32		PASS
20M	16Q	2	CH 47690	5240	18.63	18.53	20.32	20.32		PASS
20M	64Q	2	CH 47690	5240	18.53	18.53	20.20	20.26		PASS
40M	QPSK	2	CH 47190	5190	37.66	37.76	40.06	40.17		PASS
40M	16Q	2	CH 47190	5190	37.76	37.76	40.17	40.29		PASS
40M	64Q	2	CH 47190	5190	37.76	37.76	40.06	40.17		PASS
40M	QPSK	2	CH 47590	5230	37.76	37.76	40.06	40.06		PASS
40M	16Q	2	CH 47590	5230	37.66	37.76	40.29	40.17		PASS
40M	64Q	2	CH 47590	5230	37.76	37.66	40.06	40.17		PASS

TEST RESULTS DATA
Average Power Table

FCC Band I									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)		
					Ant 1	Ant 2	Ant 1	Ant 2	SUM
20M	QPSK	2	CH 46890	5160	3.59	4.12	16.51	15.66	19.12
20M	16Q	2	CH 46890	5160	3.59	4.09	16.26	15.30	18.82
20M	64Q	2	CH 46890	5160	3.61	4.09	16.22	15.52	18.90
20M	QPSK	2	CH 47090	5180	3.59	4.12	21.12	20.73	23.94
20M	16Q	2	CH 47090	5180	3.59	4.09	21.60	20.31	24.01
20M	64Q	2	CH 47090	5180	3.61	4.09	21.12	20.37	23.77
20M	QPSK	2	CH 47490	5220	3.59	4.12	15.66	23.04	26.46
20M	16Q	2	CH 47490	5220	3.59	4.09	24.15	22.83	26.55
20M	64Q	2	CH 47490	5220	3.61	4.09	24.04	22.87	26.51
20M	QPSK	2	CH 47690	5240	3.59	4.12	23.31	22.95	26.14
20M	16Q	2	CH 47690	5240	3.59	4.09	23.27	23.07	26.18
20M	64Q	2	CH 47690	5240	3.61	4.09	23.45	22.94	26.21
40M	QPSK	2	CH 47190	5190	3.61	4.09	13.72	12.28	16.07
40M	16Q	2	CH 47190	5190	3.59	4.09	13.27	12.68	16.00
40M	64Q	2	CH 47190	5190	3.59	4.09	13.35	12.76	16.08
40M	QPSK	2	CH 47590	5230	3.61	4.09	17.06	16.90	19.99
40M	16Q	2	CH 47590	5230	3.59	4.09	17.43	16.83	20.15
40M	64Q	2	CH 47590	5230	3.59	4.09	17.07	16.42	19.77

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TEST RESULTS DATA
Power Spectral Density

FCC Band I																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)				Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2			
20M	QPSK	2	CH 46890	5160	3.59	4.12			8.72	17.00		6.00				Pass
20M	16Q	2	CH 46890	5160	3.59	4.09			8.57	17.00		6.00				Pass
20M	64Q	2	CH 46890	5160	3.61	4.09			8.06	17.00		6.00				Pass
20M	QPSK	2	CH 47090	5180	3.59	4.12			13.98	17.00		6.00				Pass
20M	16Q	2	CH 47090	5180	3.59	4.09			13.42	17.00		6.00				Pass
20M	64Q	2	CH 47090	5180	3.61	4.09			13.40	17.00		6.00				Pass
20M	QPSK	2	CH 47490	5220	3.59	4.12			16.20	17.00		6.00				Pass
20M	16Q	2	CH 47490	5220	3.59	4.09			16.31	17.00		6.00				Pass
20M	64Q	2	CH 47490	5220	3.61	4.09			15.86	17.00		6.00				Pass
20M	QPSK	2	CH 47690	5240	3.59	4.12			16.06	17.00		6.00				Pass
20M	16Q	2	CH 47690	5240	3.59	4.09			16.13	17.00		6.00				Pass
20M	64Q	2	CH 47690	5240	3.61	4.09			15.85	17.00		6.00				Pass
40M	QPSK	2	CH 47190	5190	3.61	4.09			2.85	17.00		6.00				Pass
40M	16Q	2	CH 47190	5190	3.59	4.09			2.08	17.00		6.00				Pass
40M	64Q	2	CH 47190	5190	3.59	4.09			1.86	17.00		6.00				Pass
40M	QPSK	2	CH 47590	5230	3.61	4.09			6.75	17.00		6.00				Pass
40M	16Q	2	CH 47590	5230	3.59	4.09			6.29	17.00		6.00				Pass
40M	64Q	2	CH 47590	5230	3.59	4.09			5.94	17.00		6.00				Pass

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

Band IV														
Mod.	Data Rate	N_{TX}	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
20M	QPSK	2	CH 52740	5745	18.58	18.53	20.43	20.32	18.00	18.00	0.5		Pass
20M	16Q	2	CH 52740	5745	18.53	18.48	20.55	20.38	17.94	17.96	0.5		Pass
20M	64Q	2	CH 52740	5745	18.53	18.48	20.43	20.26	17.94	17.98	0.5		Pass
20M	QPSK	2	CH 53140	5785	18.58	18.53	20.32	20.32	18.00	17.96	0.5		Pass
20M	16Q	2	CH 53140	5785	18.58	18.53	20.20	20.32	17.98	17.96	0.5		Pass
20M	64Q	2	CH 53140	5785	18.53	18.48	20.26	20.26	18.00	17.94	0.5		Pass
20M	QPSK	2	CH 53540	5825	18.48	18.48	20.38	20.32	17.96	18.00	0.5		Pass
20M	16Q	2	CH 53540	5825	18.53	18.48	20.43	20.38	17.98	17.98	0.5		Pass
20M	64Q	2	CH 53540	5825	18.48	18.48	20.55	20.32	18.00	17.96	0.5		Pass
40M	QPSK	2	CH 52840	5755	37.76	37.76	40.17	40.06	37.92	37.88	0.5		Pass
40M	16Q	2	CH 52840	5755	37.76	37.86	40.17	40.06	37.80	37.88	0.5		Pass
40M	64Q	2	CH 52840	5755	37.66	37.76	40.06	40.29	37.72	37.80	0.5		Pass
40M	QPSK	2	CH 53240	5795	37.76	37.76	40.06	40.17	37.72	37.68	0.5		Pass
40M	16Q	2	CH 53240	5795	37.76	37.86	40.06	40.06	37.68	37.76	0.5		Pass
40M	64Q	2	CH 53240	5795	37.66	37.96	40.17	40.06	37.76	37.88	0.5		Pass

TEST RESULTS DATA
Average Power Table

Band IV																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)				Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2			
20M	QPSK	2	CH 52740	5745	3.61	4.12	24.40	24.76	27.60	30.00		6.00				Pass
20M	16Q	2	CH 52740	5745	3.61	4.12	24.52	24.76	27.65	30.00		6.00				Pass
20M	64Q	2	CH 52740	5745	3.59	4.12	24.55	24.48	27.52	30.00		6.00				Pass
20M	QPSK	2	CH 53140	5785	3.61	4.12	24.83	24.52	27.69	30.00		6.00				Pass
20M	16Q	2	CH 53140	5785	3.61	4.12	24.15	24.65	27.42	30.00		6.00				Pass
20M	64Q	2	CH 53140	5785	3.59	4.12	24.37	24.46	27.43	30.00		6.00				Pass
20M	QPSK	2	CH 53540	5825	3.61	4.12	25.00	24.41	27.73	30.00		6.00				Pass
20M	16Q	2	CH 53540	5825	3.61	4.12	24.62	24.27	27.46	30.00		6.00				Pass
20M	64Q	2	CH 53540	5825	3.59	4.12	24.71	24.73	27.73	30.00		6.00				Pass
40M	QPSK	2	CH 52840	5755	3.59	4.09	20.26	20.37	23.33	30.00		6.00				Pass
40M	16Q	2	CH 52840	5755	3.59	4.09	20.45	20.70	23.59	30.00		6.00				Pass
40M	64Q	2	CH 52840	5755	3.59	4.12	20.30	21.62	23.50	30.00		6.00				Pass
40M	QPSK	2	CH 53240	5795	3.59	4.09	22.03	21.31	24.70	30.00		6.00				Pass
40M	16Q	2	CH 53240	5795	3.59	4.09	21.84	21.22	24.55	30.00		6.00				Pass
40M	64Q	2	CH 53240	5795	3.59	4.12	21.60	21.62	24.62	30.00		6.00				Pass

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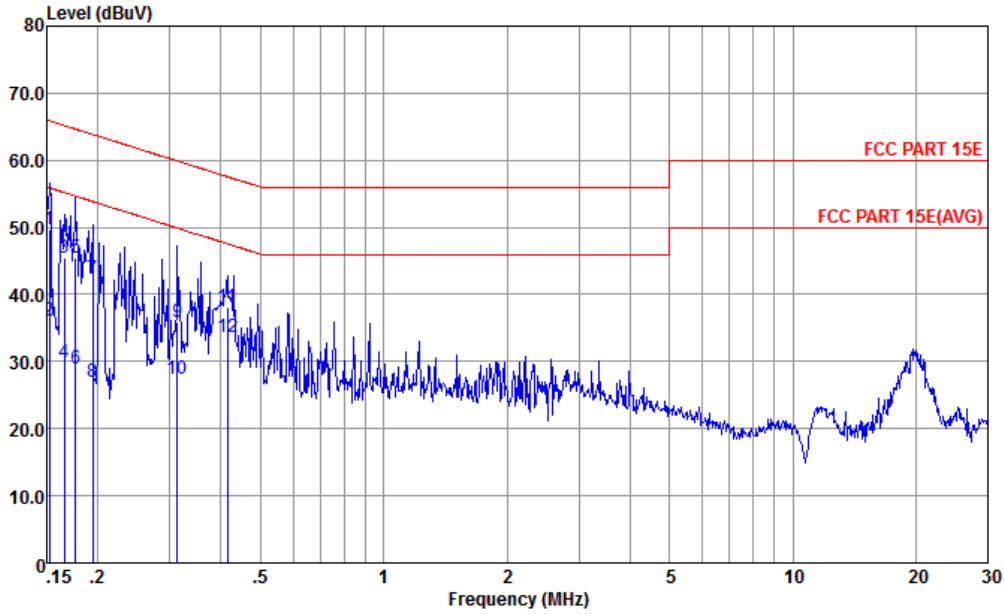
TEST RESULTS DATA
Power Spectral Density

Band IV																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
20M	QPSK	2	CH 52740	5745	3.61	4.12	2.22				14.85	30.00		6.00		Pass
20M	16Q	2	CH 52740	5745	3.61	4.12	2.22				14.22	30.00		6.00		Pass
20M	64Q	2	CH 52740	5745	3.59	4.12	2.22				14.34	30.00		6.00		Pass
20M	QPSK	2	CH 53140	5785	3.61	4.12	2.22				13.83	30.00		6.00		Pass
20M	16Q	2	CH 53140	5785	3.61	4.12	2.22				14.48	30.00		6.00		Pass
20M	64Q	2	CH 53140	5785	3.59	4.12	2.22				14.17	30.00		6.00		Pass
20M	QPSK	2	CH 53540	5825	3.61	4.12	2.22				14.46	30.00		6.00		Pass
20M	16Q	2	CH 53540	5825	3.61	4.12	2.22				14.70	30.00		6.00		Pass
20M	64Q	2	CH 53540	5825	3.59	4.12	2.22				13.58	30.00		6.00		Pass
40M	QPSK	2	CH 52840	5755	3.59	4.09	2.22				7.24	30.00		6.00		Pass
40M	16Q	2	CH 52840	5755	3.59	4.09	2.22				7.16	30.00		6.00		Pass
40M	64Q	2	CH 52840	5755	3.59	4.12	2.22				7.45	30.00		6.00		Pass
40M	QPSK	2	CH 53240	5795	3.59	4.09	2.22				6.92	30.00		6.00		Pass
40M	16Q	2	CH 53240	5795	3.59	4.09	2.22				7.27	30.00		6.00		Pass
40M	64Q	2	CH 53240	5795	3.59	4.12	2.22				7.57	30.00		6.00		Pass

Appendix B. AC Conducted Emission Test Results

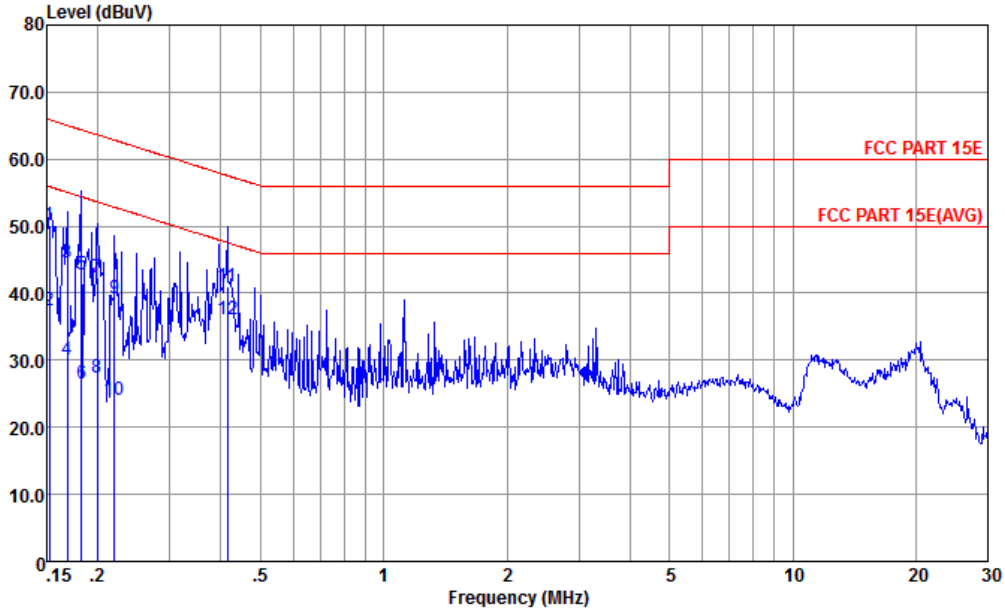
Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line



Site : CO01-KS
Condition : FCC PART 15E LISN-L-191028-CN02 LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.152	49.74	-16.13	65.87	39.20	0.07	10.47	QP
2	0.152	36.14	-19.73	55.87	25.60	0.07	10.47	Average
3	0.166	45.42	-19.74	65.16	34.90	0.08	10.44	QP
4	0.166	29.82	-25.34	55.16	19.30	0.08	10.44	Average
5	0.177	45.39	-19.25	64.64	34.90	0.08	10.41	QP
6	0.177	28.99	-25.65	54.64	18.50	0.08	10.41	Average
7	0.194	42.36	-21.48	63.84	31.90	0.09	10.37	QP
8	0.194	27.06	-26.78	53.84	16.60	0.09	10.37	Average
9	0.313	35.91	-23.97	59.88	25.50	0.11	10.30	QP
10	0.313	27.31	-22.57	49.88	16.90	0.11	10.30	Average
11	0.415	38.18	-19.37	57.55	27.80	0.12	10.26	QP
12 *	0.415	33.58	-13.97	47.55	23.20	0.12	10.26	Average

Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral



Site : CO01-KS
Condition : FCC PART 15E LISN-N-191028-CN02 NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.152	50.22	-15.65	65.87	39.60	0.15	10.47	QP
2	0.152	37.42	-18.45	55.87	26.80	0.15	10.47	Average
3	0.169	44.49	-20.54	65.03	33.90	0.16	10.43	QP
4	0.169	30.19	-24.84	55.03	19.60	0.16	10.43	Average
5	0.182	42.76	-21.61	64.37	32.20	0.16	10.40	QP
6	0.182	26.46	-27.91	54.37	15.90	0.16	10.40	Average
7	0.200	42.33	-21.29	63.62	31.80	0.17	10.36	QP
8	0.200	27.43	-26.19	53.62	16.90	0.17	10.36	Average
9	0.220	39.33	-23.50	62.83	28.81	0.17	10.35	QP
10	0.220	24.13	-28.70	52.83	13.61	0.17	10.35	Average
11	0.415	40.98	-16.57	57.55	30.50	0.22	10.26	QP
12 *	0.415	36.08	-11.47	47.55	25.60	0.22	10.26	Average

Appendix C. Radiated Spurious Emission

Band 46 - 5150~5250MHz

Band 46 (Band Edge @ 3m)

Ant. 1	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 20M Low 5160MHz		5149.98	-28.8	-7.6	-21.2	-38.84	6	1.03	P
		5149.98	-42.29	-1.09	-41.2	-52.33	6	1.03	A
		5152	18.47	-	-	8.43	6	1.03	P
		5152	9.48	-	-	-0.56	6	1.03	A
Ant. 2	**Note**	**Frequency (MHz)**	**Level (dBm)**	**Over Limit (dB)**	**Limit Line (dBm)**	**Read Level (dBm)**	**Antenna Gain (dBi)**	**Cable Loss (dB)**	**Peak Avg. (P/A)**
Band 46 20M Low 5160MHz		5149.98	-26.65	-5.45	-21.2	-36.69	6	1.03	P
		5149.98	-41.62	-0.42	-41.2	-51.66	6	1.03	A
		5152	18.19	-	-	8.15	6	1.03	P
		5152	9.62	-	-	-0.42	6	1.03	A

Ant. 1	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 20M Low 5180MHz		5148.64	-23.45	-2.25	-21.2	-33.49	6	1.03	P
		5147.04	-41.76	-0.56	-41.2	-51.8	6	1.03	A
	*	5188	28.19	-	-	18.15	6	1.03	P
		5188	16.54	-	-	6.5	6	1.03	A
Ant. 2	**Note**	**Frequency (MHz)**	**Level (dBm)**	**Over Limit (dB)**	**Limit Line (dBm)**	**Read Level (dBm)**	**Antenna Gain (dBi)**	**Cable Loss (dB)**	**Peak Avg. (P/A)**
Band 46 20M Low 5180MHz		5148.32	-28.4	-7.2	-21.2	-38.44	6	1.03	P
		5146.56	-41.48	-0.28	-41.2	-51.52	6	1.03	A
	*	5188	27.12	-	-	17.08	6	1.03	P
		5188	21.1	-	-	11.06	6	1.03	A

Ant. 1	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 20M Mid 5220MHz		5149.92	-23.41	-2.21	-21.2	-33.45	6	1.03	P
		5148.16	-41.44	-0.24	-41.2	-51.48	6	1.03	A
	*	5212	31	-	-	20.96	6	1.03	P
		5212	22.36	-	-	12.32	6	1.03	A
Ant. 2	**Note**	**Frequency (MHz)**	**Level (dBm)**	**Over Limit (dB)**	**Limit Line (dBm)**	**Read Level (dBm)**	**Antenna Gain (dBi)**	**Cable Loss (dB)**	**Peak Avg. (P/A)**
Band 46 20M Mid 5220MHz		5142.24	-28.08	-6.88	-21.2	-38.12	6	1.03	P
		5149.6	-42.02	-0.82	-41.2	-52.06	6	1.03	A
	*	5218	29.77	-	-	19.73	6	1.03	P
		5218	19.71	-	-	9.67	6	1.03	A

Ant. 1	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 20M High 5240MHz		5148.8	-26.96	-5.76	-21.2	-37	6	1.03	P
		5149.12	-43.05	-1.85	-41.2	-53.09	6	1.03	A
	*	5236	32.01	-	-	21.97	6	1.03	P
		5236	21	-	-	10.96	6	1.03	A
		5389.38	-32.45	-11.25	-21.2	-42.49	6	1.03	P
		5385.42	-44.04	-2.84	-41.2	-54.08	6	1.03	A
Ant. 2	**Note**	**Frequency (MHz)**	**Level (dBm)**	**Over Limit (dB)**	**Limit Line (dBm)**	**Read Level (dBm)**	**Antenna Gain (dBi)**	**Cable Loss (dB)**	**Peak Avg. (P/A)**
Band 46 20M High 5240MHz		5146.08	-31.62	-10.42	-21.2	-41.66	6	1.03	P
		5150	-43.8	-2.6	-41.2	-53.84	6	1.03	A
	*	5242	34.25	-	-	24.21	6	1.03	P
		5242	20.88	-	-	10.84	6	1.03	A
		5397.48	-32.8	-11.6	-21.2	-42.84	6	1.03	P
		5385.24	-44.42	-3.22	-41.2	-54.46	6	1.03	A

Ant. 1	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 40M Low 5190MHz		5138.08	-27.73	-6.53	-21.2	-37.77	6	1.03	P
		5136.64	-41.3	-0.1	-41.2	-51.34	6	1.03	A
	*	5399.64	-37.11	-15.91	-21.2	-47.15	6	1.03	P
		5373.18	-48.99	-7.79	-41.2	-59.03	6	1.03	A
		5194	18.07	-	-	8.03	6	1.03	P
		5194	5.52	-	-	-4.52	6	1.03	A
Ant. 2	**Note**	**Frequency (MHz)**	**Level (dBm)**	**Over Limit (dB)**	**Limit Line (dBm)**	**Read Level (dBm)**	**Antenna Gain (dBi)**	**Cable Loss (dB)**	**Peak Avg. (P/A)**
Band 46 40M Low 5190MHz		5125.92	-29.16	-7.96	-21.2	-39.2	6	1.03	P
		5136.64	-41.85	-0.65	-41.2	-51.89	6	1.03	A
	*	5388.48	-37.36	-16.16	-21.2	-47.4	6	1.03	P
		5373.36	-54.79	-13.59	-41.2	-64.83	6	1.03	A
		5188	16.44	-	-	6.4	6	1.03	P
		5188	4.18	-	-	-5.86	6	1.03	A

Ant. 1	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 40M High 5230MHz		5147.2	-28.29	-7.09	-21.2	-38.33	6	1.03	P
		5149.76	-42.38	-1.18	-41.2	-52.42	6	1.03	A
	*	5369.94	-37.14	-15.94	-21.2	-47.18	6	1.03	P
		5373	-48.6	-7.4	-41.2	-58.64	6	1.03	A
		5236	22.16	-	-	12.12	6	1.03	P
		5236	8.59	-	-	-1.45	6	1.03	A
Ant. 2	**Note**	**Frequency (MHz)**	**Level (dBm)**	**Over Limit (dB)**	**Limit Line (dBm)**	**Read Level (dBm)**	**Antenna Gain (dBi)**	**Cable Loss (dB)**	**Peak Avg. (P/A)**
Band 46 40M High 5230MHz		5146.4	-27.91	-6.71	-21.2	-37.95	6	1.03	P
		5149.92	-41.82	-0.62	-41.2	-51.86	6	1.03	A
	*	5388.48	-36.17	-14.97	-21.2	-46.21	6	1.03	P
		5373	-48.78	-7.58	-41.2	-58.82	6	1.03	A
		5224	20.64	-	-	10.6	6	1.03	P
		5224	8.66	-	-	-1.38	6	1.03	A

Remark：

1. EIRP Limit = Field strength – 95.2 = 74 / 54 (dBμV/m) – 95.2 = -21.2 / -41.2 (dBm)
2. Over Limit = Level (dBm) – Limit Line (dBm)
3. Level (dBm) = Read Level (dBm) + Antenna Gain (dBi) + Cable Loss (dB) + array gain (3.01dBi)

Band 46 5150~5250MHz

Band 46 (Harmonic @ 3m)

Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Band 46 20M Low 5160MHz		10318.32	46.26	-22.04	68.3	52.96	39.57	15.83	62.1	300	0	P	H
		13758	57.78	-10.52	68.3	59.95	41.25	18.59	62.01	300	360	P	H
		10318.32	46.43	-21.87	68.3	53.13	39.57	15.83	62.1	100	360	P	V
		13758	56.21	-12.09	68.3	58.38	41.25	18.59	62.01	100	0	P	V
Band 46 20M Low 5180MHz		10358.36	45.34	-22.96	68.3	51.98	39.59	15.86	62.09	300	0	P	H
		13812	58.04	-10.26	68.3	60.21	41.18	18.64	61.99	300	360	P	H
		10358.36	45.84	-22.46	68.3	52.48	39.59	15.86	62.09	100	360	P	V
		13812	57.87	-10.43	68.3	60.04	41.18	18.64	61.99	100	0	P	V
Band 46 20M Mid 5220MH		10438.44	46.36	-21.94	68.3	52.84	39.63	15.94	62.05	300	0	P	H
		13920	56.22	-12.08	68.3	58.38	41.08	18.72	61.96	300	360	P	H
		15666	58	-16	74	58.35	42.53	19.86	62.74	305	25	P	H
		15666	46.93	-7.07	54	47.28	42.53	19.86	62.74	305	25	A	H
		10438.44	47.43	-20.87	68.3	53.91	39.63	15.94	62.05	100	360	P	V
		13920	56.66	-11.64	68.3	58.82	41.08	18.72	61.96	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Band 46 20M High 5240MHz		10480	45.3	-23	68.3	51.68	39.66	15.98	62.02	300	0	P	H
		13974	56.71	-11.59	68.3	58.87	41.03	18.75	61.94	300	360	P	H
		15720	59.2	-14.8	74	59.55	42.54	19.88	62.77	361	356	P	H
		15720	50.34	-3.66	54	50.69	42.54	19.88	62.77	361	356	A	H
		10478.47	47.04	-21.26	68.3	53.42	39.66	15.98	62.02	100	360	P	V
		13974	55.67	-12.63	68.3	57.83	41.03	18.75	61.94	100	0	P	V
		15720	63.85	-10.15	74	64.2	42.54	19.88	62.77	377	340	P	V
		15720	53.64	-0.36	54	53.99	42.54	19.88	62.77	377	340	A	V
Band 46 40M Low 5190MHz		10378.38	46.61	-21.69	68.3	53.18	39.61	15.89	62.07	300	0	P	H
		13842	57.82	-10.48	68.3	59.98	41.17	18.65	61.98	300	360	P	H
		8531.53	50.71	-17.59	68.3	60.87	37.74	14.43	62.33	100	360	P	V
		10378.38	47.38	-20.92	68.3	53.95	39.61	15.89	62.07	100	360	P	V
		13842	56.14	-12.16	68.3	58.3	41.17	18.65	61.98	100	0	P	V
Band 46 20M High 5230MHz		10638.63	45.28	-28.72	74	51.38	39.74	16.11	61.95	300	0	P	H
		13944	57.3	-11	68.3	59.45	41.07	18.73	61.95	300	360	P	H
		8531.53	50.29	-18.01	68.3	60.45	37.74	14.43	62.33	100	360	P	V
		10458.46	45.74	-22.56	68.3	52.19	39.64	15.95	62.04	100	360	P	V
		13944	55.8	-12.5	68.3	57.95	41.07	18.73	61.95	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 46 - 5725~5850MHz

Band 46 (Band Edge @ 3m) (Conducted)

	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Peak
Ant.				Limit	Line	Level	Gain	Loss	Avg.
1		(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dBi)	(dB)	(P/A)
Band 46 20M Low 5745MHz		5640	-31.91	-5.01	-26.9	-41.96	6	1.04	P
		5697.6	-14.84	-23.17	8.33	-24.89	6	1.04	P
		5716	-6.56	-21.14	14.58	-16.61	6	1.04	P
		5723.6	-3.61	-27.52	23.91	-13.67	6	1.05	P
		5752	30.9	-	-	20.84	6	1.05	P
		5752	21.04	-	-	10.98	6	1.05	A

	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Peak
Ant.				Limit	Line	Level	Gain	Loss	Avg.
2		(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dBi)	(dB)	(P/A)
Band 46 20M Low 5745MHz		5630.8	-31.8	-4.9	-26.9	-41.85	6	1.04	P
		5685.6	-16.52	-16	-0.52	-26.57	6	1.04	P
		5715.6	-8.29	-22.76	14.47	-18.34	6	1.04	P
		5723.6	-4.79	-28.7	23.91	-14.85	6	1.05	P
		5740	29.5	-	-	19.44	6	1.05	P
		5740	19.31	-	-	9.25	6	1.05	A

Ant. 1	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 20M Mid 5785MHz		5600	-32.26	-5.36	-26.9	-42.3	6	1.03	P
		5695.6	-31.2	-38.06	6.86	-41.25	6	1.04	P
		5714	-22.01	-36.03	14.02	-32.06	6	1.04	P
		5723.2	-20.96	-43.96	23	-31.02	6	1.05	P
		5853.2	-21.29	-41.09	19.8	-31.36	6	1.06	P
		5856.4	-24.4	-39.71	15.31	-34.48	6	1.07	P
		5880.8	-29.56	-35.35	5.79	-39.64	6	1.07	P
		5935.6	-31.84	-4.94	-26.9	-41.93	6	1.08	P
		5794	30.6	-	-	20.53	6	1.06	P
		5794	20.34	-	-	10.27	6	1.06	A

Ant. 2	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 20M Mid 5785MHz		5626	-32.66	-5.76	-26.9	-42.71	6	1.04	P
		5688.4	-30.14	-31.69	1.55	-40.19	6	1.04	P
		5718.8	-24.49	-39.85	15.36	-34.54	6	1.04	P
		5723.6	-21.18	-45.09	23.91	-31.24	6	1.05	P
		5852.8	-22.11	-42.83	20.72	-32.18	6	1.06	P
		5855.6	-21.21	-36.74	15.53	-31.29	6	1.07	P
		5900	-29.63	-21.19	-8.44	-39.71	6	1.07	P
		5972	-31.91	-5.01	-26.9	-42	6	1.08	P
		5782	30	-	-	19.93	6	1.06	P
		5782	20.28	-	-	10.21	6	1.06	A

Ant. 1	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 20M High 5825MHz		5852.8	-6.83	-27.55	20.72	-16.9	6	1.06	P
		5858	-9.55	-24.41	14.86	-19.63	6	1.07	P
		5876.8	-13.64	-22.4	8.76	-23.72	6	1.07	P
		5927.2	-29.83	-2.93	-26.9	-39.92	6	1.08	P
		5818	32.7	-	-	22.63	6	1.06	P
		5818	21.28	-	-	11.21	6	1.06	A

Ant. 2	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 20M High 5825MHz		5850	-9.61	-36.71	27.1	-19.68	6	1.06	P
		5854.8	-15.59	-31.75	16.16	-25.67	6	1.07	P
		5879.6	-18.37	-25.05	6.68	-28.45	6	1.07	P
		5938.4	-30.47	-3.57	-26.9	-40.56	6	1.08	P
		5836	29.78	-	-	19.71	6	1.06	P
		5836	19.62	-	-	9.55	6	1.06	A

Ant. 1	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 40M Low 5755MHz		5650	-27.3	-0.4	-26.9	-37.35	6	1.04	P
		5697.2	-13.39	-21.43	8.04	-23.44	6	1.04	P
		5701.2	-14.42	-24.86	10.44	-24.47	6	1.04	P
		5723.2	-21.58	-44.58	23	-31.64	6	1.05	P
		5850.8	-24.67	-49.95	25.28	-34.74	6	1.06	P
		5857.2	-27.95	-43.03	15.08	-38.03	6	1.07	P
		5881.2	-31.58	-37.08	5.5	-41.66	6	1.07	P
		5968	-38.13	-11.23	-26.9	-48.22	6	1.08	P
		5752	25.24	-	-	15.18	6	1.05	A
		5752	13.27	-	-	3.21	6	1.05	P

Ant. 2	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 40M Low 5755MHz		5650	-28.51	-1.61	-26.9	-38.56	6	1.04	P
		5699.6	-11.92	-21.73	9.81	-21.97	6	1.04	P
		5702.4	-13.48	-24.25	10.77	-23.53	6	1.04	P
		5721.6	-14.88	-34.23	19.35	-24.94	6	1.05	P
		5853.2	-22.23	-42.03	19.8	-32.3	6	1.06	P
		5856.8	-24.15	-39.35	15.2	-34.23	6	1.07	P
		5875.6	-33.74	-43.39	9.65	-43.82	6	1.07	P
		5926	-38.66	-11.76	-26.9	-48.75	6	1.08	P
		5740	26.16	-	-	16.1	6	1.05	A
		5740	13.05	-	-	2.99	6	1.05	P

Ant. 1	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 40M High 5795MHz		5650	-32.3	-5.4	-26.9	-42.35	6	1.04	P
		5690	-19.02	-21.75	2.73	-29.07	6	1.04	P
		5719.2	-15.4	-30.88	15.48	-25.45	6	1.04	P
		5852.4	-12.99	-34.62	21.63	-23.06	6	1.06	P
		5860.4	-12.32	-26.51	14.19	-22.4	6	1.07	P
		5875.6	-18.13	-27.78	9.65	-28.21	6	1.07	P
		5932	-27.69	-0.79	-26.9	-37.78	6	1.08	P
		5782	26.13	-	-	16.06	6	1.06	P
		5782	18.28	-	-	8.21	6	1.06	A

Ant. 2	Note	Frequency (MHz)	Level (dBm)	Over Limit (dB)	Limit Line (dBm)	Read Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Peak Avg. (P/A)
Band 46 40M High 5795MHz		5649.2	-32.18	-5.28	-26.9	-42.23	6	1.04	P
		5697.2	-22.36	-30.4	8.04	-32.41	6	1.04	P
		5718.4	-14.59	-29.84	15.25	-24.64	6	1.04	P
		5722.8	-14.38	-36.47	22.09	-24.44	6	1.05	P
		5853.6	-13.16	-32.05	18.89	-23.23	6	1.06	P
		5856.8	-12.77	-27.97	15.2	-22.85	6	1.07	P
		5883.6	-18.85	-22.56	3.71	-28.93	6	1.07	P
		5925.6	-28.15	-1.25	-26.9	-38.24	6	1.08	P
		5800	26.74	-	-	16.67	6	1.06	P
		5800	18.61	-	-	8.54	6	1.06	A

Remark：

4. EIRP Limit = Field strength – 95.2 = 74 / 54 (dBμV/m) – 95.2 = -21.2 / -41.2 (dBm)
5. Over Limit = Level (dBm) – Limit Line (dBm)
6. Level (dBm) = Read Level (dBm) + Antenna Gain (dBi) + Cable Loss (dB) + array gain (3.01dBi)

Band 46 - 5725~5850MHz

Band 46 (Harmonic @ 3m) (Radiated)

Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Band 46 20M Low 5745MHz		11490	46.78	-27.22	74	51.94	38.19	17.08	60.43	300	0	P	H
		17235	48.19	-20.11	68.3	42.89	42.18	21.03	57.91	100	0	P	H
		7020.02	47.82	-20.48	68.3	59.16	36	13.11	60.45	300	0	P	V
		8621.62	51.69	-16.61	68.3	61.96	36.15	14.63	61.05	300	0	P	V
		11490	55.52	-18.48	74	60.68	38.19	17.08	60.43	284	352	P	V
		11490	44.52	-9.48	54	49.68	38.19	17.08	60.43	284	352	A	V
		17235	56.21	-12.09	68.3	50.91	42.18	21.03	57.91	363	337	P	V
Band 46 20M Mid 5785MHz		11570	44.81	-29.19	74	49.74	38.3	17.15	60.38	300	0	P	H
		17355	48.62	-19.68	68.3	43.3	41.97	21.12	57.77	100	0	P	H
		7020.02	48.05	-20.25	68.3	59.39	36	13.11	60.45	300	0	P	V
		8621.62	52.16	-16.14	68.3	62.43	36.15	14.63	61.05	300	0	P	V
		11570	54.25	-19.75	74	59.18	38.3	17.15	60.38	307	336	P	V
		11570	42.94	-11.06	54	47.87	38.3	17.15	60.38	307	336	A	V
		17355	58.39	-9.91	68.3	53.07	41.97	21.12	57.77	361	353	P	V
Band 46 20M High 5825MHz		11650	45.21	-28.79	74	49.95	38.39	17.2	60.33	300	0	P	H
		17475	50.84	-17.46	68.3	45.49	41.76	21.21	57.62	100	0	P	H
		7020.02	47.54	-20.76	68.3	58.88	36	13.11	60.45	300	0	P	V
		8621.62	52.41	-15.89	68.3	62.68	36.15	14.63	61.05	300	0	P	V
		11650	54.04	-19.96	74	58.78	38.39	17.2	60.33	306	334	P	V
		11650	43.77	-10.23	54	48.51	38.39	17.2	60.33	306	334	A	V
		17475	61.06	-7.24	68.3	55.71	41.76	21.21	57.62	345	357	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Band 46 40M Low 5755MHz		10658.66	48.53	-25.47	74	54.99	37.76	16.4	60.62	300	0	P	H
		11510	44.88	-29.12	74	50.01	38.2	17.1	60.43	300	0	P	H
		14958	50.96	-17.34	68.3	51.57	39.96	19.45	60.02	100	0	P	H
		17265	49.18	-19.12	68.3	43.88	42.12	21.05	57.87	100	0	P	H
		8531.53	58.74	-9.56	68.3	69.07	36.11	14.56	61	300	0	P	V
		10638.63	55.56	-18.44	74	62.03	37.76	16.39	60.62	354	36	P	V
		10638.63	46.03	-7.97	54	52.5	37.76	16.39	60.62	354	36	A	V
		11510	50.32	-23.68	74	55.45	38.2	17.1	60.43	300	0	P	V
		14928	56.31	-11.99	68.3	56.97	39.93	19.43	60.02	100	0	P	V
		17268	51.34	-16.96	68.3	46.04	42.12	21.05	57.87	100	0	P	V
Band 46 40M High 5795MHz		8540	45.58	-22.72	68.3	55.9	36.12	14.57	61.01	300	0	P	H
		10674	48.1	-25.9	74	54.52	37.77	16.42	60.61	300	0	P	H
		11589.58	43.69	-30.31	74	48.58	38.32	17.16	60.37	300	0	P	H
		14942	51.04	-17.26	68.3	51.67	39.95	19.44	60.02	100	0	P	H
		8536.535	58.86	-9.44	68.3	69.19	36.11	14.56	61	300	0	P	V
		10658.66	54.02	-19.98	74	60.48	37.76	16.4	60.62	320	35	P	V
		10658.66	47.16	-6.84	54	53.62	37.76	16.4	60.62	320	35	A	V
		11589.58	48.8	-25.2	74	53.69	38.32	17.16	60.37	300	0	P	V
		14920	57.27	-11.03	68.3	57.93	39.93	19.43	60.02	100	0	P	V
		17384	52.49	-15.81	68.3	47.15	41.91	21.15	57.72	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

Band 46 (LF @ 3m)

	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
Band 46 LF BAND1		30	20.37	-19.63	40	26.42	25.1	1.05	32.2	-	-	p	H
		110.51	22.2	-21.3	43.5	35.46	17.05	1.87	32.18	-	-	p	H
		207.51	29.6	-13.9	43.5	44.01	15.18	2.52	32.11	100	0	p	H
		291.9	28.2	-17.8	46	38.06	19.24	3.02	32.12	-	-	p	H
		849.65	27.83	-18.17	46	25.85	29.3	5.08	32.4	-	-	p	H
		945.68	28.09	-17.91	46	24.11	30.85	5.33	32.2	-	-	p	H
		31.94	30.62	-9.38	40	37.72	24.04	1.06	32.2	100	0	p	V
		48.43	29.34	-10.66	40	44.89	15.38	1.27	32.2	-	-	p	V
		54.25	30.25	-9.75	40	47.72	13.4	1.33	32.2	-	-	p	V
		114.39	23.96	-19.54	43.5	36.96	17.27	1.9	32.17	-	-	p	V
		207.51	30.45	-13.05	43.5	44.86	15.18	2.52	32.11	-	-	p	V
		633.34	29.02	-16.98	46	30.57	26.27	4.41	32.23	-	-	p	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Emission below 1GHz

Band 46 (LF @ 3m) (Radiated)

	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
Band 46 LF BAND4		30.97	19	-21	40	25.58	24.57	1.05	32.2	-	-	p	H
		109.54	22.51	-20.99	43.5	35.83	17	1.86	32.18	-	-	p	H
		207.51	29.3	-14.2	43.5	43.71	15.18	2.52	32.11	100	0	p	H
		268.62	27.91	-18.09	46	37.33	19.8	2.94	32.16	-	-	p	H
		290.93	29.3	-16.7	46	39.19	19.22	3.01	32.12	-	-	p	H
		478.14	25.94	-20.06	46	30.81	23.6	3.84	32.31	-	-	p	H
		31.94	31.07	-8.93	40	38.17	24.04	1.06	32.2	100	0	p	V
		54.25	29.96	-10.04	40	47.43	13.4	1.33	32.2	-	-	p	V
		114.39	23.36	-20.14	43.5	36.36	17.27	1.9	32.17	-	-	p	V
		207.51	31.2	-12.3	43.5	45.61	15.18	2.52	32.11	-	-	p	V
		506.27	27.07	-18.93	46	31.37	24.16	3.93	32.39	-	-	p	V
		633.34	28.81	-17.19	46	30.36	26.27	4.41	32.23	-	-	p	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

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:

	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

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

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable 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) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

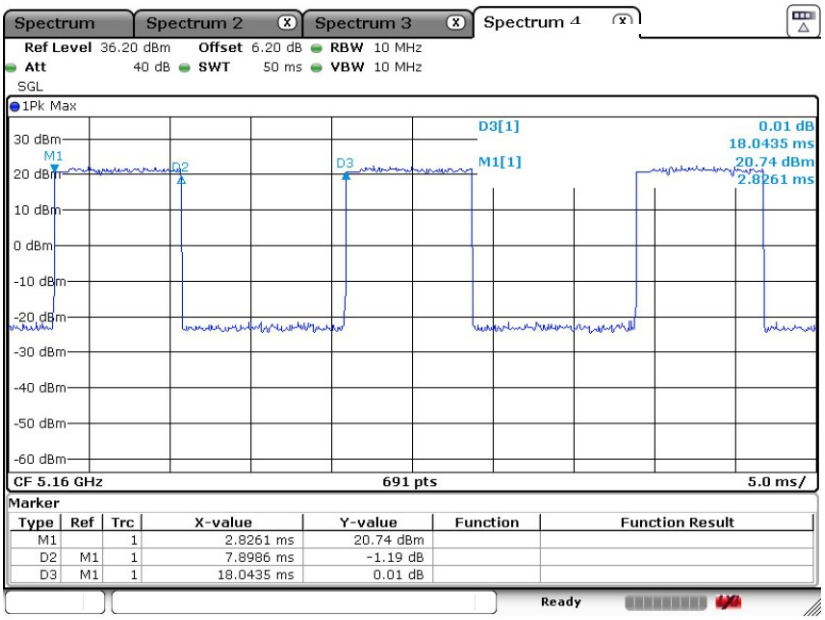
= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.

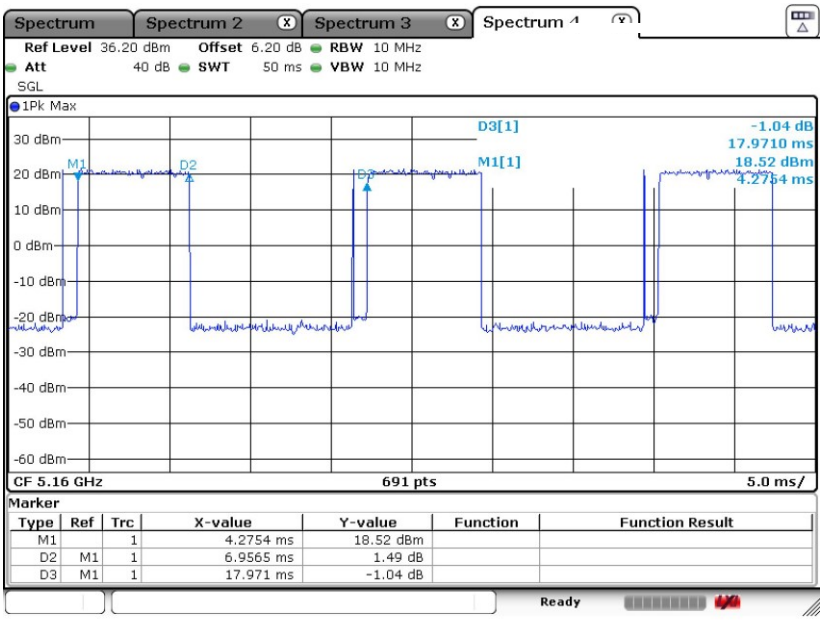
Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
Ant.1	20M 5160	43.78	7.8986	0.1266	0.2kHz
Ant.2	20M 5160	38.71	6.9565	0.1438	0.2kHz
Ant.1	40M 5190	43.55	7.8261	0.1278	0.2kHz
Ant.2	40M 5190	38.96	7.0290	0.1423	0.2kHz
Ant.1	20M 5745	43.55	7.8261	0.1278	0.2kHz
Ant.2	20M 5745	38.96	7.0290	0.1423	0.2kHz
Ant.1	40M 5755	43.78	7.8986	0.1266	0.2kHz
Ant.2	40M 5755	38.96	7.0290	0.1423	0.2kHz

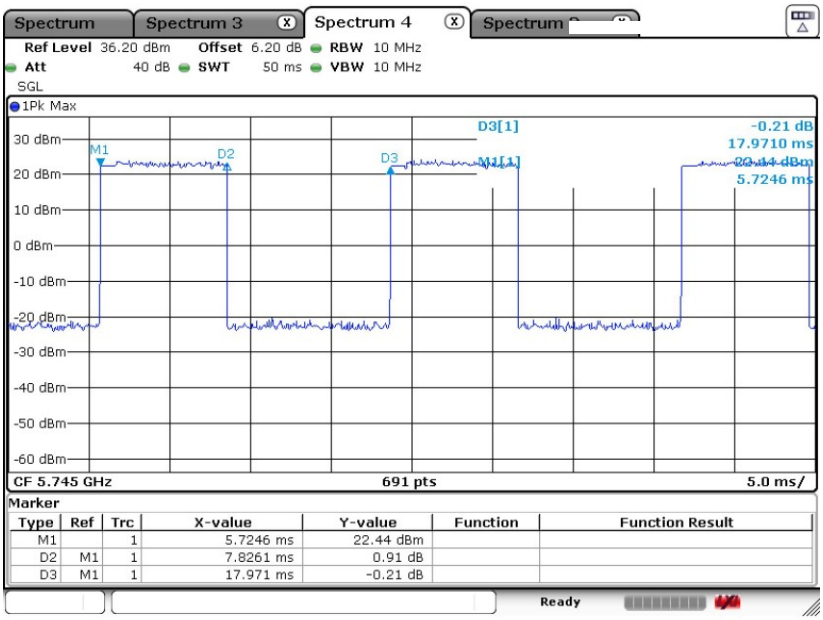
20M 5160 – Ant.1



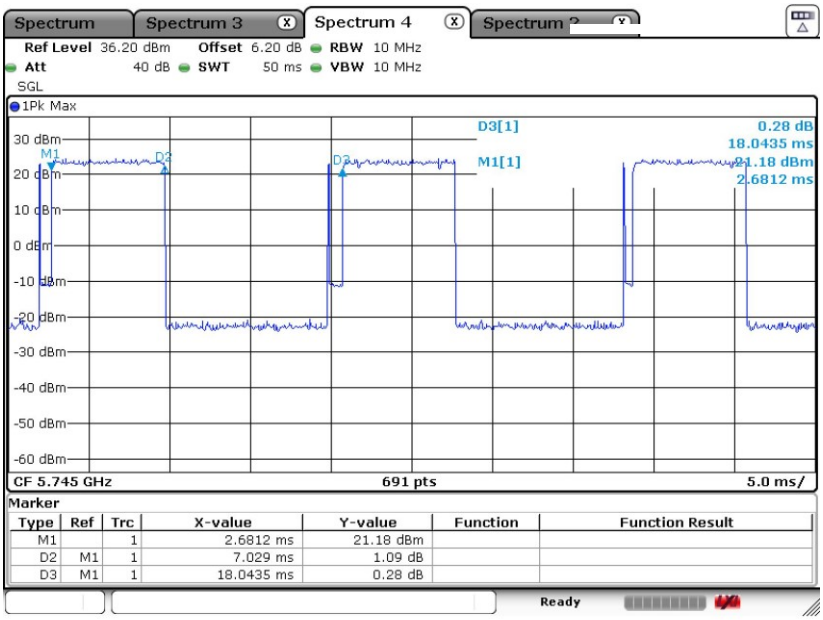
20M 5160 – Ant.2



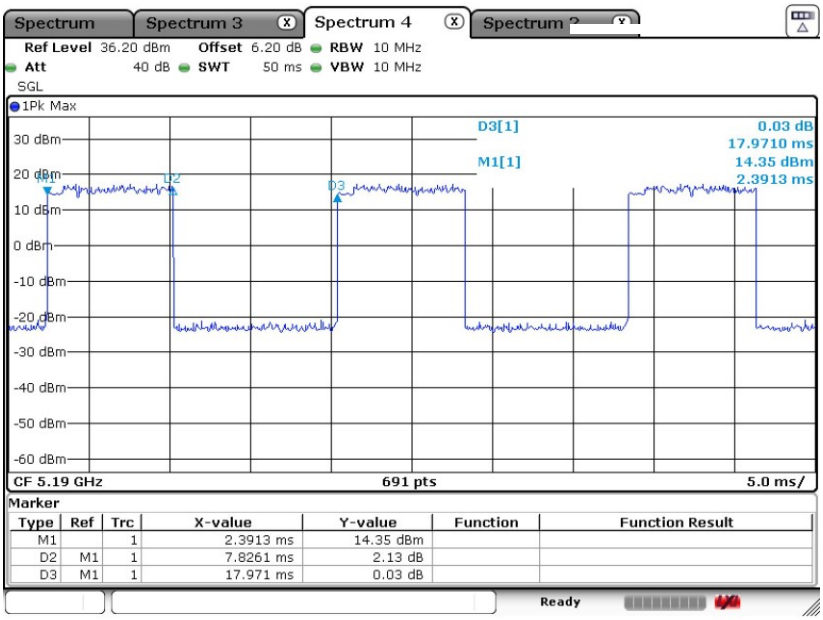
20M 5745 – Ant.1



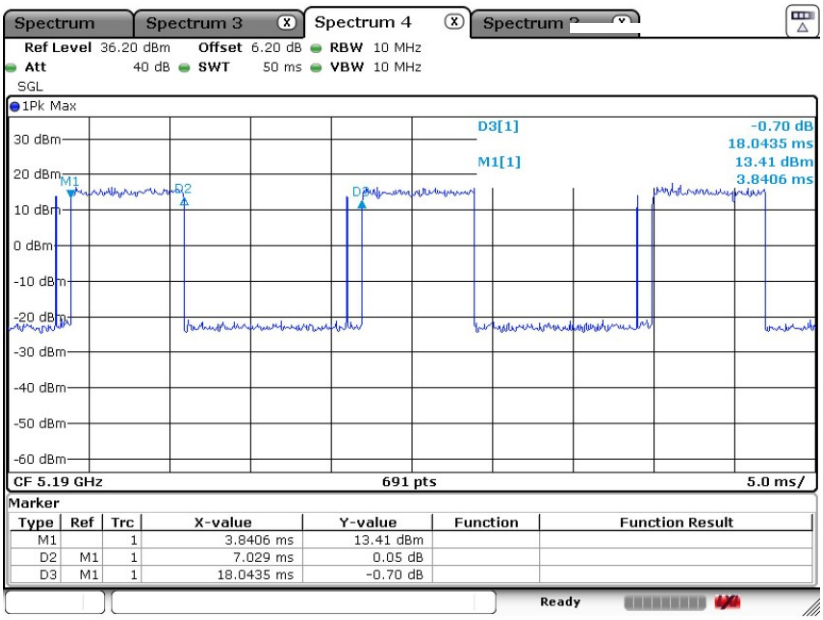
20M 5745 – Ant.2



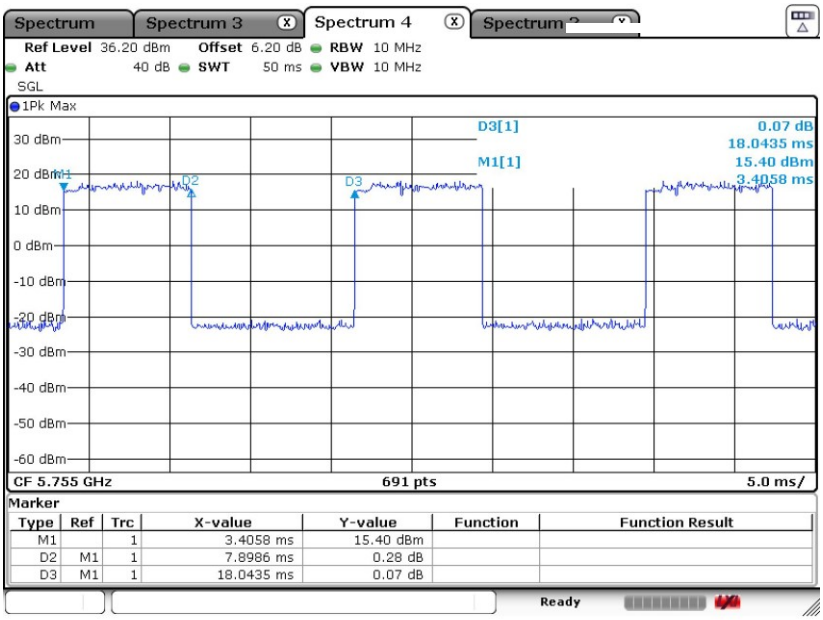
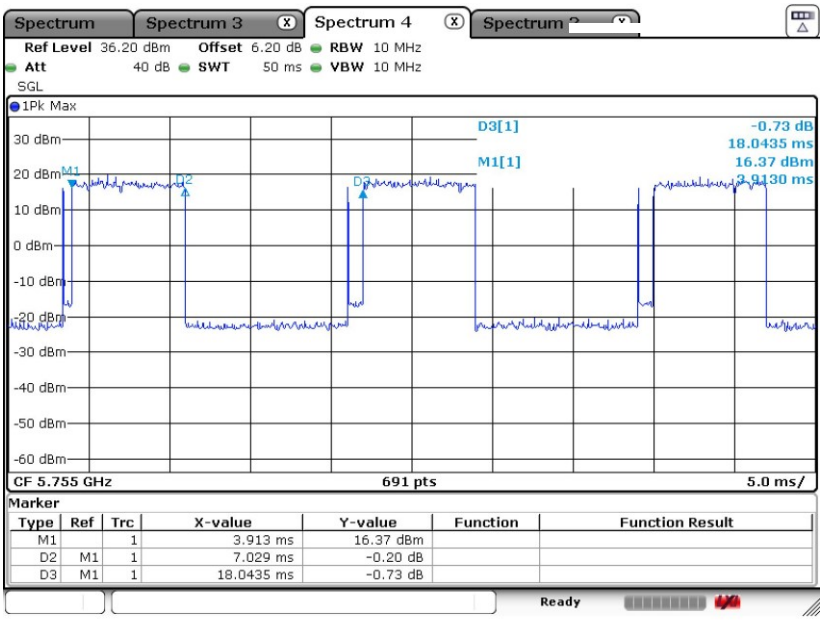
40M 5190 – Ant.1



40M 5190 – Ant.2



40M 5755 – Ant.1



40M 5755 – Ant.2