FCC TEST REPORT

FOR

Shenzhen Baida Moxing Co., Ltd.

Beta Cetus Pro

Test Model No.: Cetus Pro

Prepared for	:	Shenzhen Baida Moxing Co., Ltd.
Address	:	2007 Building 11, Tianan Yungu Phase II, Bantian Street, Longgang District, Shenzhen, China
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd
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Date of receipt of test sample	:	March 24, 2021
Number of tested samples	:	1
Date of Test	:	March 24, 2021 ~ May 14, 2021
Date of Report	:	May 17, 2021

FCC TEST REPORT

FCC CFR 47 PART 15 C (15.249)

Report Reference No.	**:**	**LCS210324093AEB**
Date of Issue.....	:	May 17, 2021
Testing Laboratory Name	**:**	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address.....	:	101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Shajing Street, Baoan District, Shenzhen, China
Testing Location/ Procedure	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name	**:**	**Shenzhen Baida Moxing Co., Ltd.**
Address.....	:	2007 Building 11, Tianan Yungu Phase II, Bantian Street, Longgang District, Shenzhen, China
Test Specification		
Standard	:	FCC CFR 47 PART 15 C (15.249) / ANSI C63.10
Test Report Form No.....	:	LCSEMC-1.0
TRF Originator.....	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF.....	:	Dated 2011-03

Test Item Description.	**:**	Beta Cetus Pro
Trade Mark	:	BETAFPV
Test Model.....	:	Cetus Pro
Ratings.....	:	DC 3.8V by battery 450mAh
Result	**:**	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Linda He/ File administrators	Jin Wang/ Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : **LCS210324093AEB**	May 17, 2021 Date of issue

Test Model.....	: Cetus Pro
EUT.....	: Beta Cetus Pro
Applicant.....	**: Shenzhen Baida Moxing Co., Ltd.**
Address.....	: 2007 Building 11, Tianan Yungu Phase II, Bantian Street, Longgang District, Shenzhen, China
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: Shenzhen Baida Moxing Co., Ltd.**
Address.....	: 2007 Building 11, Tianan Yungu Phase II, Bantian Street, Longgang District, Shenzhen, China
Telephone.....	: /
Fax.....	: /
Factory.....	**: /**
Address.....	: /
Telephone.....	: /
Fax.....	: /

Test Result	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	May 17, 2021	Initial Issue	Gavin Liang

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1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	Beta Cetus Pro
Test Model	:	Cetus Pro
Power Supply	:	DC 3.8V by battery 450mAh
Hardware Version	:	/
Software Version	:	/
2.4G		
Frequency Range	:	2404MHz, 2439MHz, 2474MHz
Channel Number	:	3
Modulation Type	:	GFSK
Antenna Description	:	Monopole Antenna, 1.77dBi(Max.)
5.8G		
Frequency Range	:	5733MHz, 5752MHz, 5771MHz, 5790MHz, 5809MHz, 5828MHz, 5847MHz, 5866MHz
Channel number		8
Modulation Type	:	ASK
Antenna Description	:	Monopole Antenna, 0.5dBi(Max.)

1.2 Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
--	--	--	--	--

1.3 External I/O Cable

I/O Port Description	Quantity	Cable
--	--	--

1.4 Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.5 Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6 Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	3.10dB	(1)
		30MHz~200MHz	2.96dB	(1)
		200MHz~1000MHz	3.10dB	(1)
		1GHz~26.5GHz	3.80dB	(1)
		26.5GHz~40GHz	3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	1.63dB	(1)
Power disturbance	:	30MHz~300MHz	1.60dB	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.7 Description of Test Modes

The EUT operates in the unlicensed ISM band at 5.8GHz. The following operating modes were applied for the related test items.

All test modes were tested, only the result of the worst case was recorded in the report.

The EUT is considered a portable unit and was set to transmit at 100% duty cycle. It was pre-tested on the positioned of each 3 axis. The worst case was found positioned on X-plane.

Mode of operations	Transmitting frequency (MHz)
ASK	5733, 5790, 5866
For Conducted Emission	
Test Mode	TX Mode
For Radiated Emission	
Test Mode	TX Mode

Worst-case mode and channel used for 150 KHz-30 MHz power line conducted emissions was the mode and channel with the highest output power that was determined to be TX.

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, which was determined to be TX-5761MHz.

Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded worst case.

***Note: Using a temporary antenna connector for the EUT when the conducted measurements are performed.

1.8. Channel List and Frequency:

Channel	Frequency Range (MHz)	Channel	Frequency Range (MHz)
1	5733	5	5809
2	5752	6	5828
3	5771	7	5847
4	5790	8	5866

2. TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.10: 2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.249 under the FCC Rules Part 15 Subpart C.

2.3 General Test Procedures

2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in FCC ANSI C63.10 for Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz and 1.5 m above grou nd plane above 1GHz. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in FCC MP-5 for radiated emission.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a continuous transmit condition. Continuous transmitting.

3.2 EUT Exercise Software

The EUT After the power is switched on, the microwave module will continuous transmit signal.

3.3. Special Accessories

N/A.

3.4 Block Diagram/Schematics

Please refer to the related document.

3.5 Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6 Test Setup

Please refer to the test setup photo.

4. SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.203	Antenna Requirement	Compliant
§15.207(a)	Power Line Conducted Emissions	N/A
§15.205(a), §15.209(a), §15.249(a), §15.249(c)	Radiated Emissions Measurement	Compliant
§15.249(d),§15.205	Band Edges Measurement	Compliant
§15.249, §15.215	20 dB Bandwidth	Compliant

Remark;

*** - Restricted bands far away from fundamental frequency, results within radiated emission;*

5. SUMMARY OF TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2020-11-17	2021-11-16
2	DC Power Supply	Agilent	E3642A	N/A	2020-11-13	2021-11-12
3	Temperature & Humidity Chamber	GUANGZHOU GOGNWEN	GDS-100	70932	2020-10-08	2021-10-07
4	EMI Test Software	Farad	EZ	/	N/A	N/A
5	3m Full Anechoic Chamber	MRDIANZI	FAC-3M	MR009	2020-09-26	2021-09-25
6	Positioning Controller	MF	MF7082	MF78020803	2020-06-22	2021-06-21
7	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2018-07-26	2021-07-25
8	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2018-07-26	2021-07-25
9	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2018-07-02	2021-07-01
10	EMI Test Receiver	R&S	ESR 7	101181	2020-06-22	2021-06-21
11	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2020-11-17	2021-11-16
12	Broadband Preamplifier	/	BP-01M18G	P190501	2020-06-22	2021-06-21
13	RF Cable-R03m	Jye Bao	RG142	CB021	2020-06-22	2021-06-21
14	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2020-06-22	2021-06-21
15	EMI Test Receiver	R&S	ESPI	101840	2020-06-22	2021-06-21
16	Artificial Mains	R&S	ENV216	101288	2020-06-22	2021-06-21
17	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-0032	2020-06-22	2021-06-21

6. ANTENNA REQUIREMENT

6.1. Standard Applicable

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

6.2. Antenna Connected Construction

The directional gains of Monopole Antenna used for transmitting is 0.5dBi, and the antenna is connect to PCB board and no consideration of replacement, meet FCC §15.203 antenna requirement.

6.3. Result

Compliance.

7. RADIATED EMISSION MEASUREMENT

7.1. Standard Applicable

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.
20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) and 15.249 limit in the table below has to be followed.

Fundamental Frequency	Field Strength of fundamental (millivolts/meter)	Field Strength of harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

Frequencies (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

7.2. Instruments Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10^{th} carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/T kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/T kHz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

7.3. Test Procedure

1) Sequence of testing 9 kHz to 30 MHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna height is 1.0 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

--- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 18 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height scan range is 1 meter to 2.5 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 1 meter.

--- The EUT was set into operation.

Premeasurement:

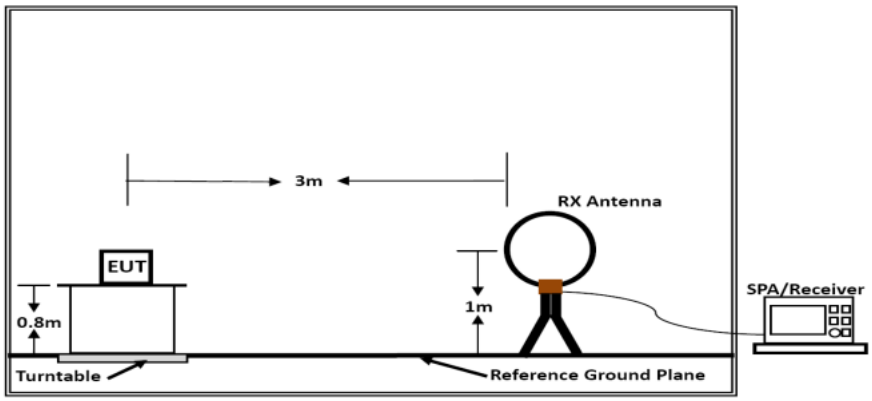
--- The antenna is moved spherical over the EUT in different polarizations of the antenna.

Final measurement:

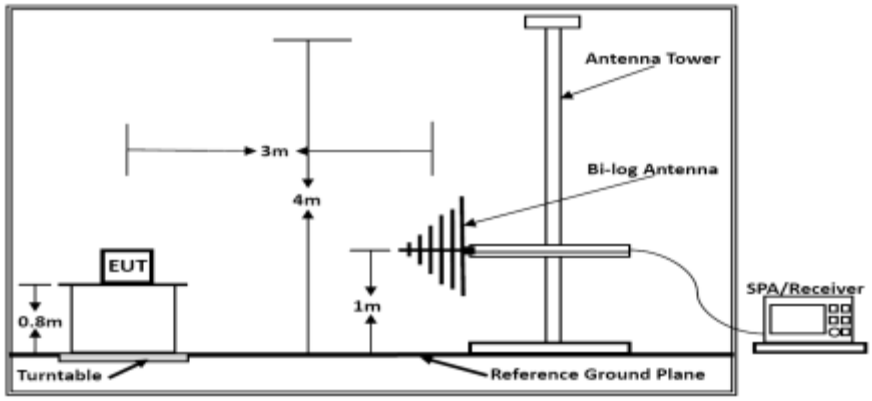
--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

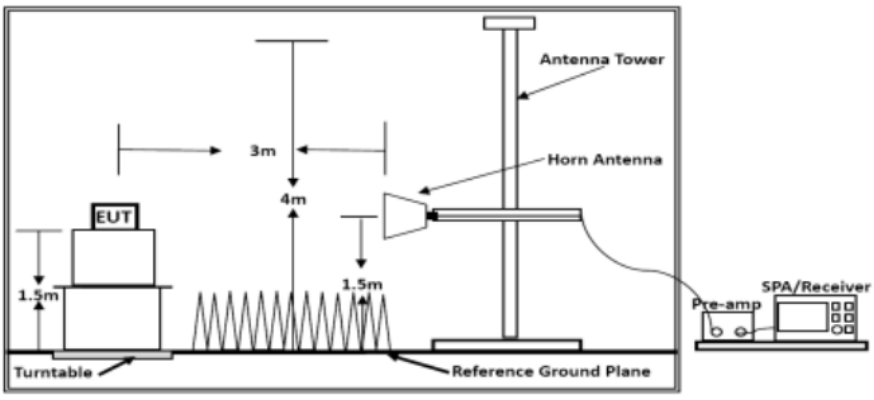
7.4. Block Diagram of Test Setup



Below 30MHz



Below 1GHz



Above 1GHz

Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

7.5. Test Results of Radiated Emissions (9 KHz~30MHz)

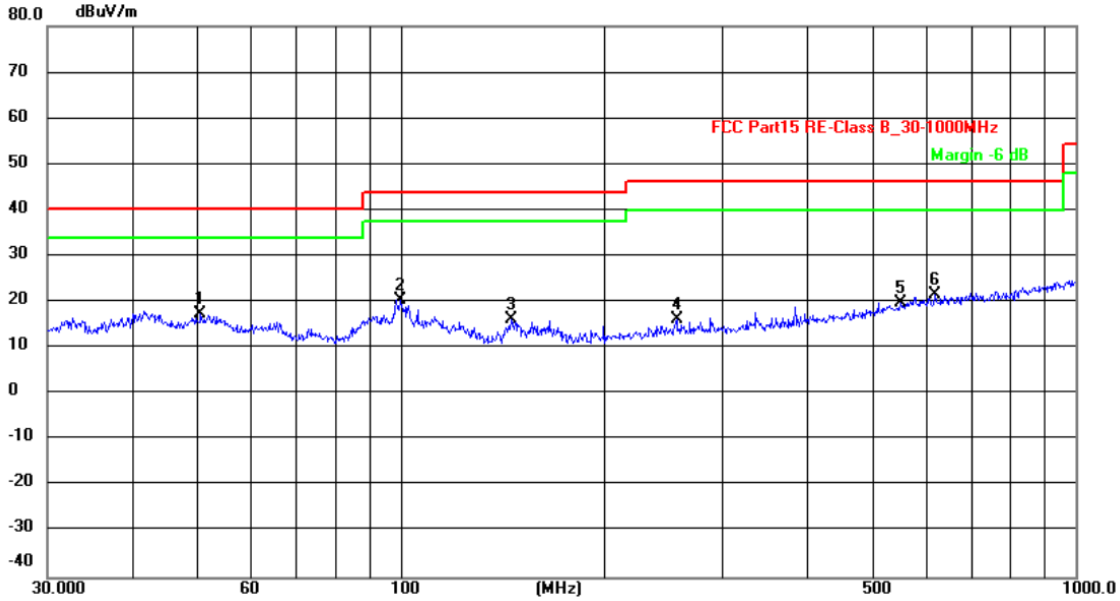
Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Over Limit (dBuV)	Remark
-	-	-	-	See Note

Note:
The radiated emissions from 9 KHz to 30 MHz are at least 20dB below the official limit and no need to report.
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.

7.6. Results of Radiated Emissions (30 MHz – 1000 MHz)

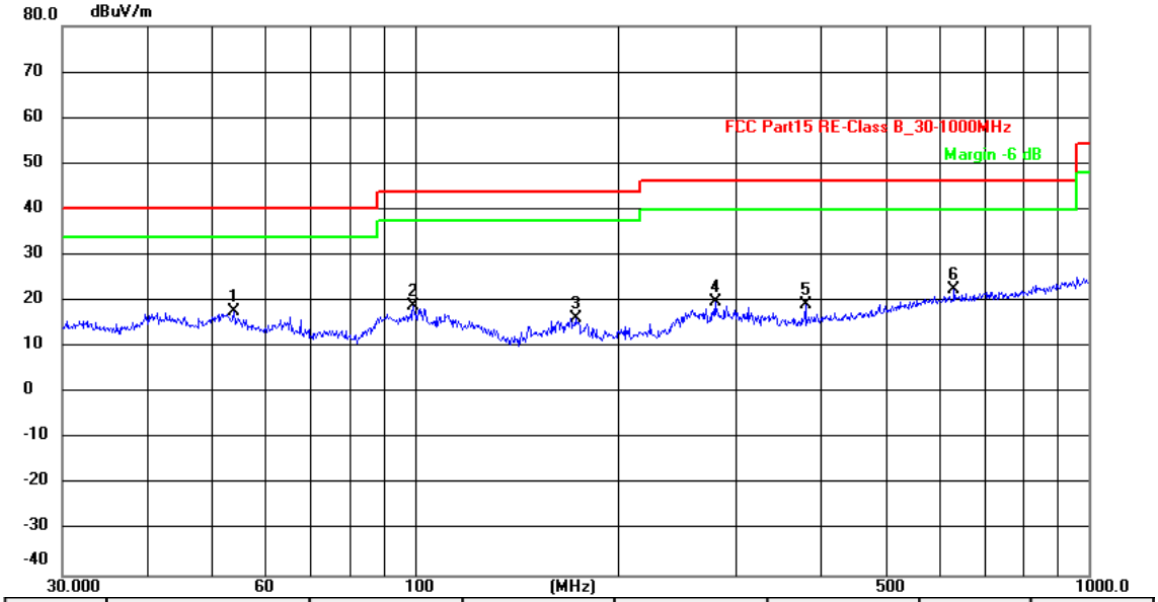
Temperature	24.6℃	Humidity	54.1%
Test Engineer	Kay Hu	Test Mode	TX

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	50.5859	46.39	-28.86	17.53	40.00	-22.47	QP
2	99.8777	47.89	-27.43	20.46	43.50	-23.04	QP
3	145.8608	49.31	-33.15	16.16	43.50	-27.34	QP
4	256.5210	45.28	-29.17	16.11	46.00	-29.89	QP
5	550.9479	42.67	-22.85	19.82	46.00	-26.18	QP
6	618.5366	43.32	-21.60	21.72	46.00	-24.28	QP

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	53.8817	47.06	-29.31	17.75	40.00	-22.25	QP
2	99.5279	46.42	-27.49	18.93	43.50	-24.57	QP
3	173.2050	48.79	-32.41	16.38	43.50	-27.12	QP
4	279.0436	48.40	-28.67	19.73	46.00	-26.27	QP
5	379.9141	45.50	-26.33	19.17	46.00	-26.83	QP
6	631.6883	43.94	-21.48	22.46	46.00	-23.54	QP

Note:

1). Pre-scan all modes and recorded the worst case results in this report.
2). Emission level (dBuV/m) = 20 log Emission level (uV/m).
3). Level=Reading level + Factor
Margin=Level - Limit

7.7. Results for Radiated Emissions (1 – 26 GHz)

Field Strength of Fundamental (TX-5733 MHz)						
Frequency (MHz)	Pol.	Measure Result (PK, dBuV/m)	Measure Result (AVG, dBuV/m)	Peak Limit (dBuV/m)	AVG Limit (dBuV/m)	Result
5733.00	H	99.33	88.97	114.00	94.00	PASS
5733.00	V	100.83	91.47	114.00	94.00	PASS

Freq. MHz	Reading dBuV	Ant. Fac dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
11466	57.00	33.06	35.04	3.94	58.96	74.00	-15.04	Peak	Horizontal
11466	41.14	33.06	35.04	3.94	43.10	54.00	-10.90	Average	Horizontal
11466	55.50	33.06	35.04	3.94	57.46	74.00	-16.54	Peak	Vertical
11466	43.94	33.06	35.04	3.94	45.90	54.00	-8.10	Average	Vertical

Field Strength of Fundamental (TX-5790 MHz)						
Frequency (MHz)	Pol.	Measure Result (PK, dBuV/m)	Measure Result (AVG, dBuV/m)	Peak Limit (dBuV/m)	AVG Limit (dBuV/m)	Result
5790.00	H	99.86	89.14	114.00	94.00	PASS
5790.00	V	100.05	90.86	114.00	94.00	PASS

Freq. MHz	Reading dBuV	Ant. Fac dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
11580	56.82	33.16	35.15	3.96	58.79	74.00	-15.21	Peak	Horizontal
11580	42.62	33.16	35.15	3.96	44.59	54.00	-9.41	Average	Horizontal
11580	55.26	33.16	35.15	3.96	57.23	74.00	-16.77	Peak	Vertical
11580	43.80	33.16	35.15	3.96	45.77	54.00	-8.23	Average	Vertical

Field Strength of Fundamental (TX-5866 MHz)						
Frequency (MHz)	Pol.	Measure Result (PK, dBuV/m)	Measure Result (AVG, dBuV/m)	Peak Limit (dBuV/m)	AVG Limit (dBuV/m)	Result
5866.00	H	100.50	91.59	114.00	94.00	PASS
5866.00	V	100.56	91.49	114.00	94.00	PASS

Freq. MHz	Reading dBuV	Ant. Fac dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
11732	57.77	33.26	35.14	3.98	59.87	74.00	-14.13	Peak	Horizontal
11732	42.58	33.26	35.14	3.98	44.68	54.00	-9.32	Average	Horizontal
11732	56.01	33.26	35.14	3.98	58.11	74.00	-15.89	Peak	Vertical
11732	42.39	33.26	35.14	3.98	44.49	54.00	-9.51	Average	Vertical

Notes:

1). Measuring frequencies from 9 KHz - 10th harmonic (ex. 40GHz), No emission found between lowest internal used/generated frequency to 30 MHz.

2). Radiated emissions measured in frequency range from 9 KHz - 10th harmonic (ex. 40GHz) were made with an instrument using Peak detector mode.

3). 18~40GHz at least have 20dB margin. No recording in the test report.

Measured=Reading level - Pre.factor + Ant. Factor + cable loss

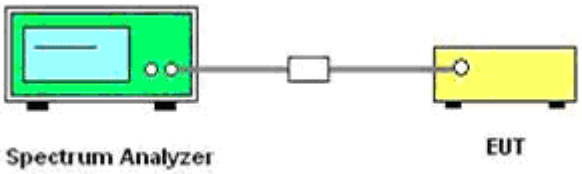
Margin=measured - limited

8. 99% AND 20 DB BANDWIDTH MEASUREMENT

8.1. Standard Applicable

No Limit

8.2. Block Diagram of Test Setup



8.3. Test Procedure

Use the following spectrum analyzer settings:

Span = 20 MHz

RBW = 100 KHz

VBW = 300 KHz

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

8.4. Test Results

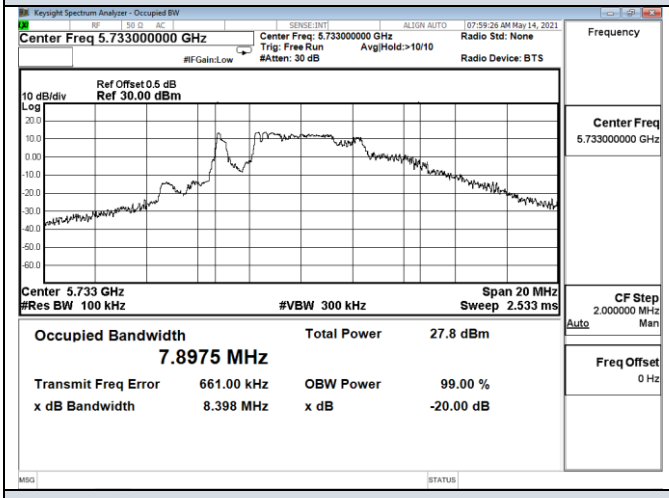
Temperature	24.6℃	Humidity	54.1%
Test Engineer	Kay Hu	Test Mode	TX

99% and 20dB Bandwidth			
Test Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
5733	7.8975	8.398	Non-Specified
5790	7.7357	8.779	Non-Specified
5866	7.2149	7.858	Non-Specified

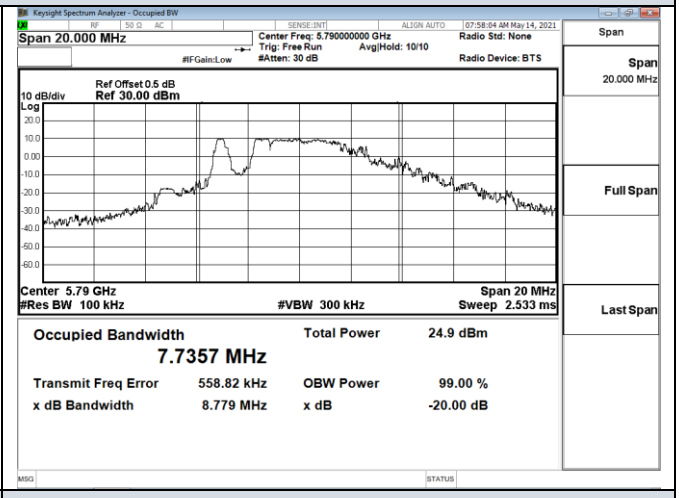
Remark:

1. *Test results including cable loss;*
2. *Please refer to following plots;*

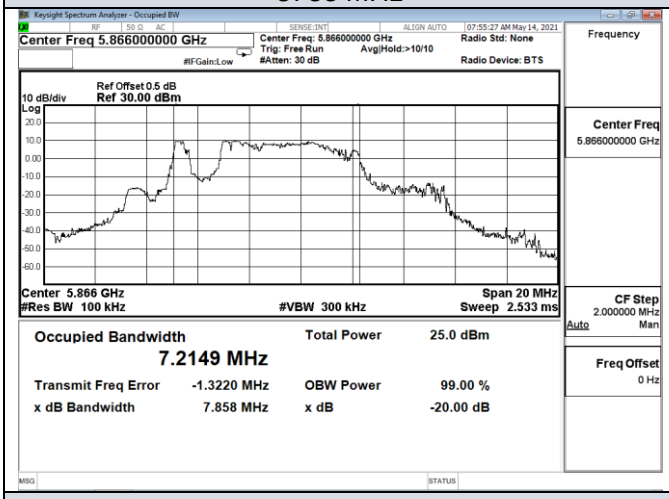
99% and 20dB Bandwidth



5733 MHz



5790 MHz



5866 MHz

9. AC POWER LINE CONDUCTED EMISSIONS

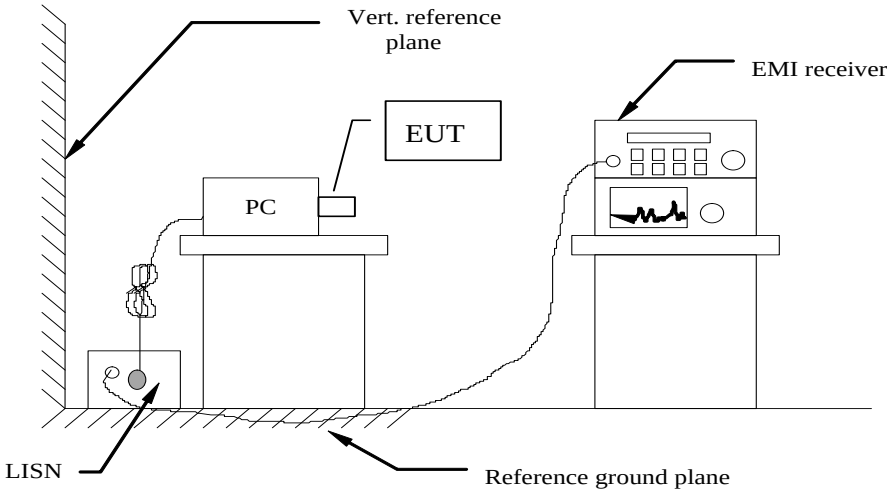
9.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which 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 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

* Decreasing linearly with the logarithm of the frequency

9.2 Block Diagram of Test Setup



9.3 Test Results

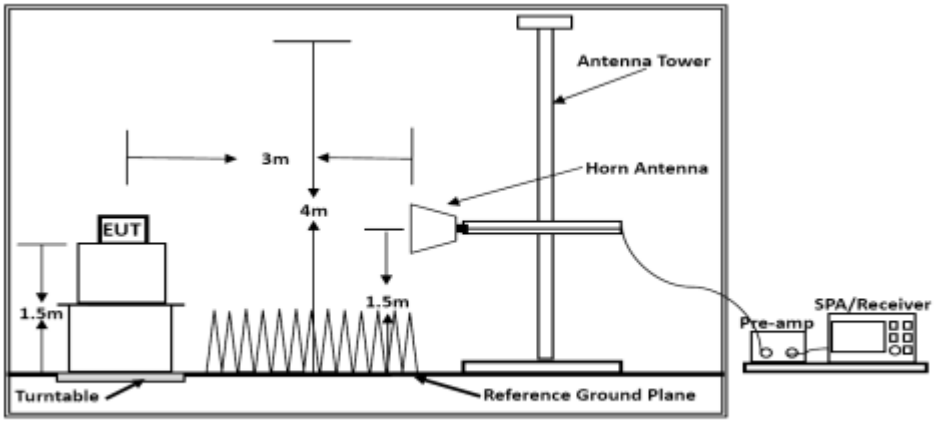
Not applicable.

10. BANDEDGES MEASUREMENT

10.1. Standard Applicable

According to FCC §15.249 (d): Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

10.2. Block Diagram of Test Setup



Above 1GHz

10.3. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

10.4. Test Procedures

1) Sequence of testing 1 GHz to 18 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height scan range is 1 meter to 2.5 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

10.4. Test Results

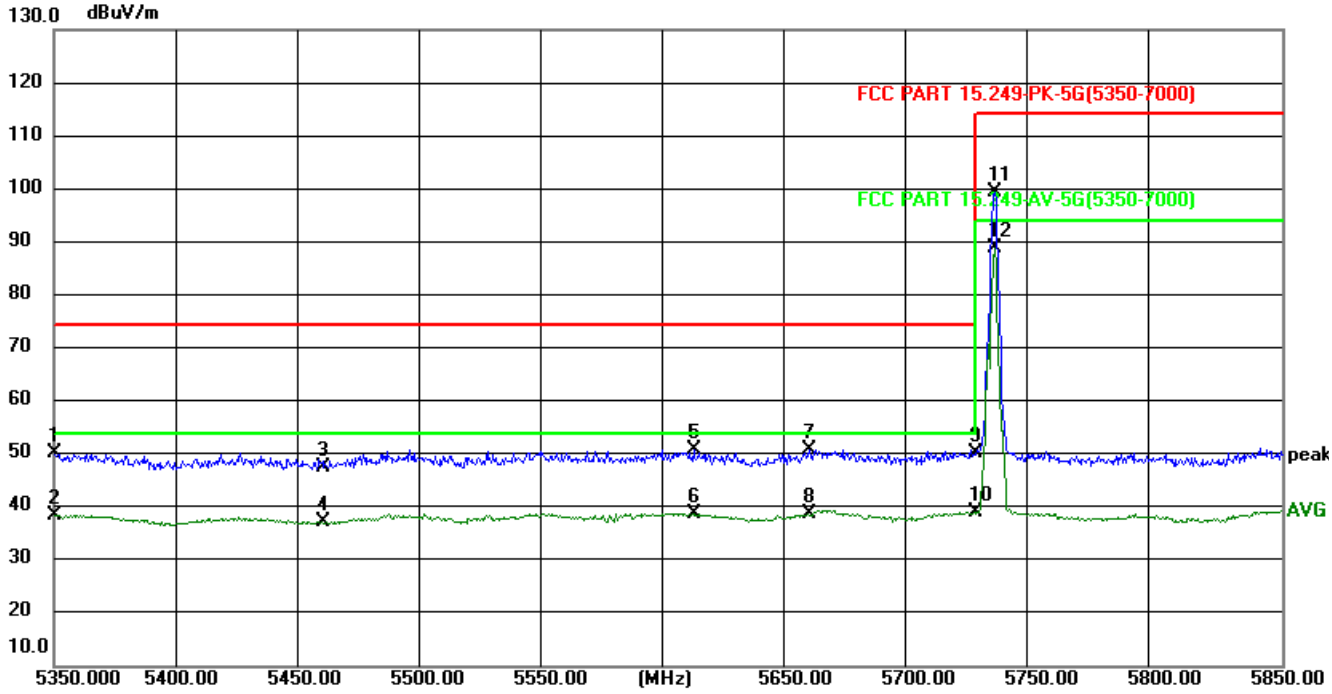
PASS.

The test data please refer to following page.

Temperature	24.6℃	Humidity	54.1%
Test Engineer	Kay Hu	Test Mode	TX

Channel 1 / 5733 MHz

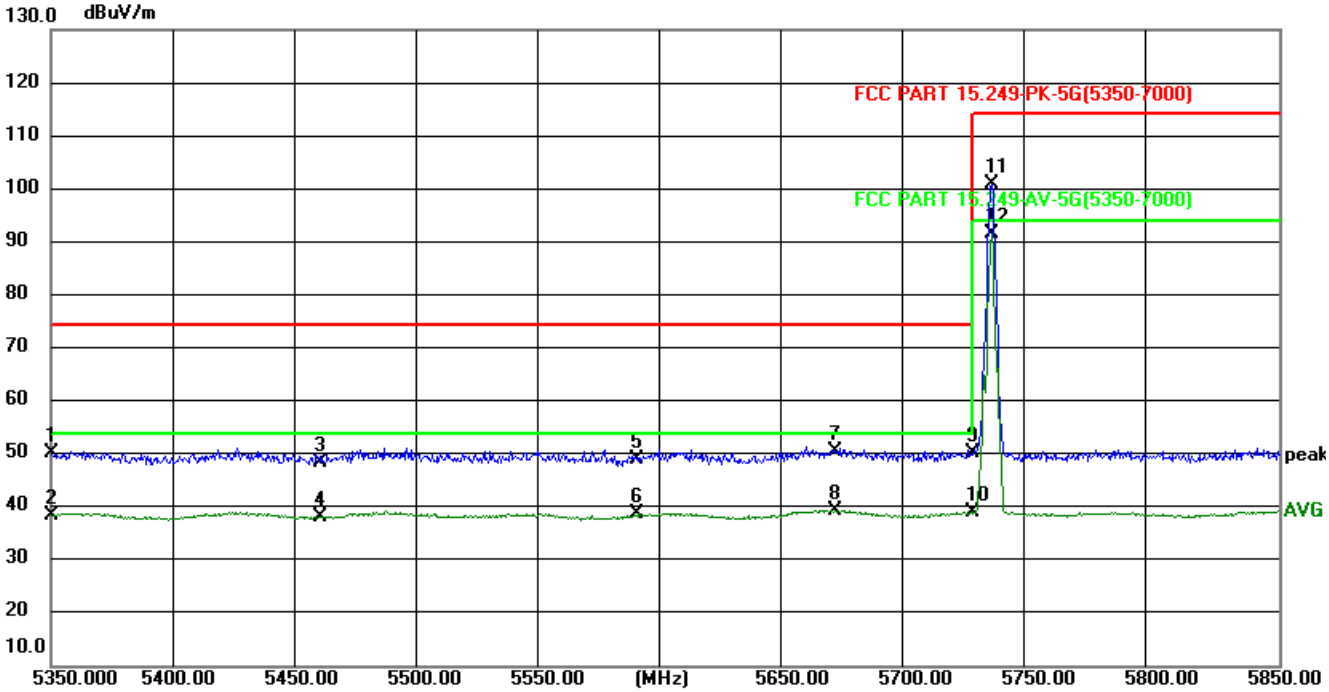
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5350.000	51.96	-1.81	50.15	74.00	-23.85	peak
2	5350.000	40.26	-1.81	38.45	54.00	-15.55	AVG
3	5460.000	48.79	-1.29	47.50	74.00	-26.50	peak
4	5460.000	38.50	-1.29	37.21	54.00	-16.79	AVG
5	5610.500	51.83	-0.83	51.00	74.00	-23.00	peak
6	5610.500	39.56	-0.83	38.73	54.00	-15.27	AVG
7	5657.500	51.70	-0.84	50.86	74.00	-23.14	peak
8	5657.500	39.50	-0.84	38.66	54.00	-15.34	AVG
9	5725.000	51.06	-0.85	50.21	74.00	-23.79	peak
10	5725.000	39.97	-0.85	39.12	54.00	-14.88	AVG
11	5733.000	100.18	-0.85	99.33	114.00	-14.67	peak
12	5733.000	89.82	-0.85	88.97	94.00	-5.03	AVG

Channel 1 / 5733 MHz

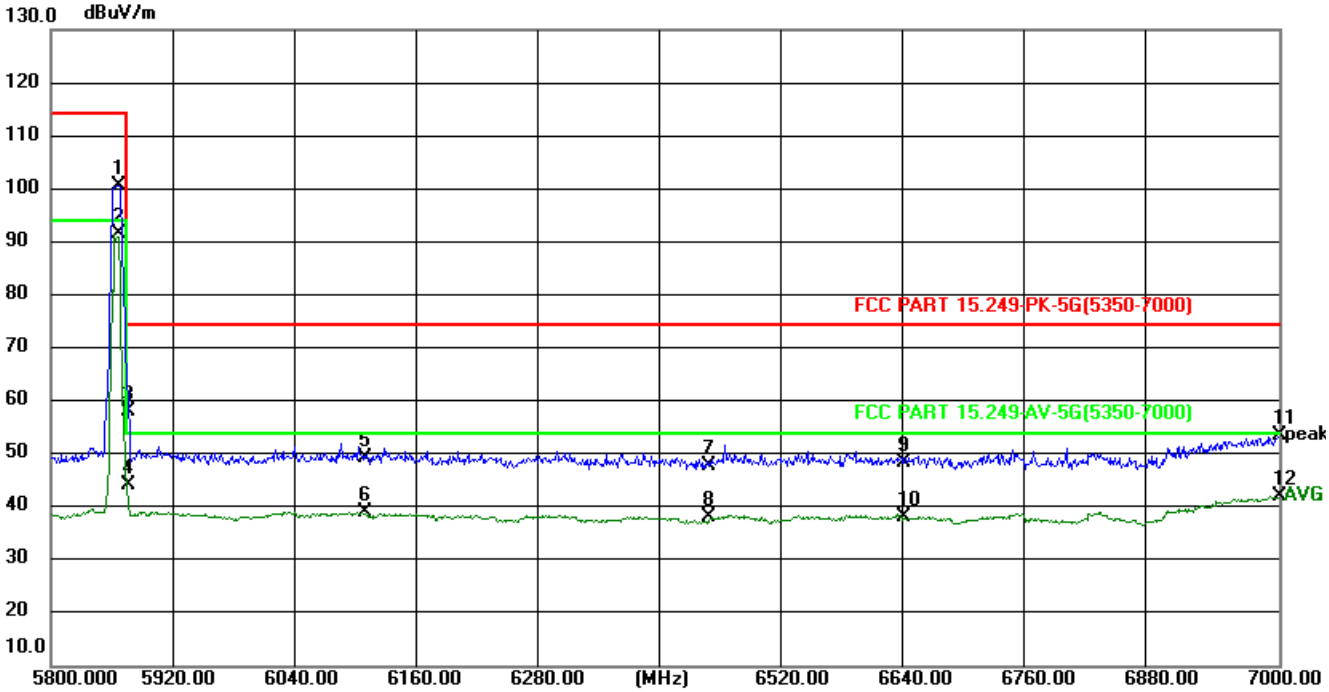
Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5350.000	51.96	-1.81	50.15	74.00	-23.85	peak
2	5350.000	40.23	-1.81	38.42	54.00	-15.58	AVG
3	5460.000	49.79	-1.29	48.50	74.00	-25.50	peak
4	5460.000	39.50	-1.29	38.21	54.00	-15.79	AVG
5	5588.500	49.94	-0.83	49.11	74.00	-24.89	peak
6	5588.500	39.55	-0.83	38.72	54.00	-15.28	AVG
7	5669.500	51.28	-0.84	50.44	74.00	-23.56	peak
8	5669.500	40.29	-0.84	39.45	54.00	-14.55	AVG
9	5725.000	51.06	-0.85	50.21	74.00	-23.79	peak
10	5725.000	39.97	-0.85	39.12	54.00	-14.88	AVG
11	5733.000	101.68	-0.85	100.83	114.00	-13.17	peak
12	5733.000	92.32	-0.85	91.47	94.00	-2.53	AVG

Channel 8 / 5866MHz

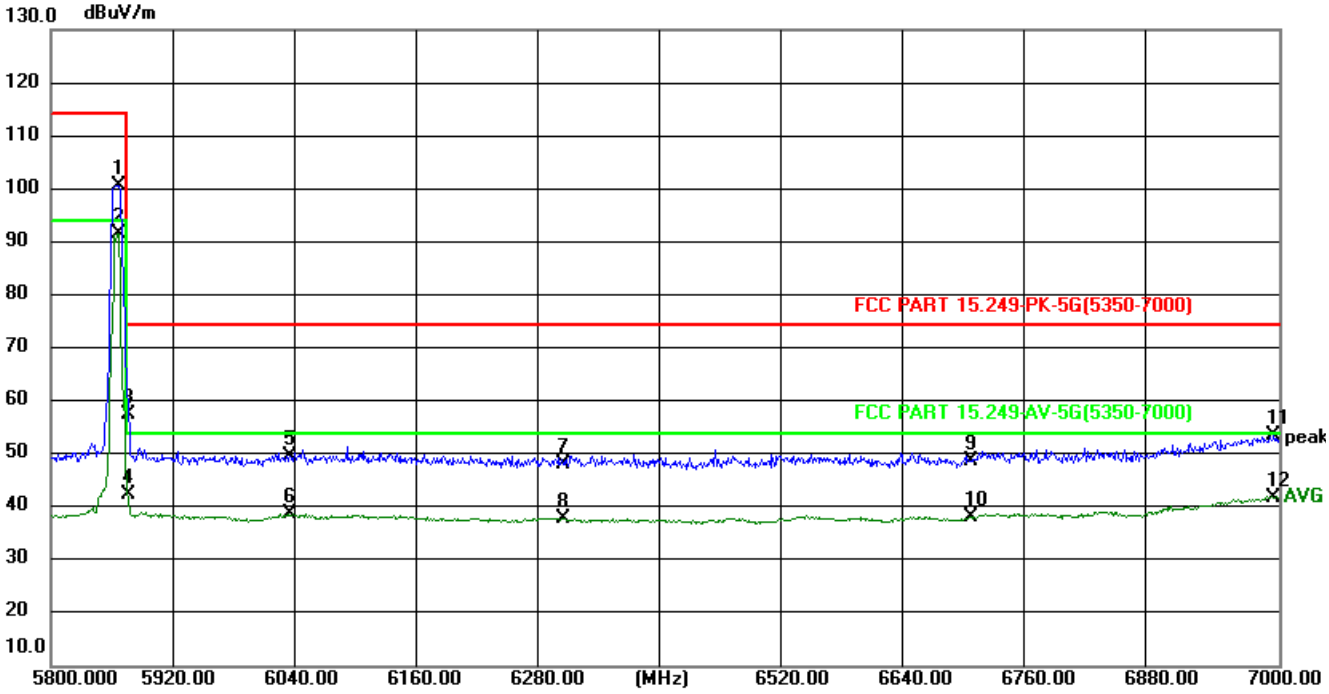
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5865.800	101.38	-0.88	100.50	114.00	-13.50	peak
2 *	5865.800	92.47	-0.88	91.59	94.00	-2.41	AVG
3	5875.000	58.83	-0.87	57.96	74.00	-16.04	peak
4	5875.000	45.17	-0.87	44.30	54.00	-9.70	AVG
5	6107.200	50.42	-1.08	49.34	74.00	-24.66	peak
6	6107.200	40.08	-1.08	39.00	54.00	-15.00	AVG
7	6443.200	48.66	-0.86	47.80	74.00	-26.20	peak
8	6443.200	38.92	-0.86	38.06	54.00	-15.94	AVG
9	6634.000	48.84	-0.50	48.34	74.00	-25.66	peak
10	6634.000	38.81	-0.50	38.31	54.00	-15.69	AVG
11	7000.000	50.12	3.55	53.67	74.00	-20.33	peak
12	7000.000	38.49	3.55	42.04	54.00	-11.96	AVG

Channel 8 / 5866MHz

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5865.800	101.44	-0.88	100.56	114.00	-13.44	peak
2 *	5865.800	92.37	-0.88	91.49	94.00	-2.51	AVG
3	5875.000	58.33	-0.87	57.46	74.00	-16.54	peak
4	5875.000	43.22	-0.87	42.35	54.00	-11.65	AVG
5	6034.000	50.62	-0.95	49.67	74.00	-24.33	peak
6	6034.000	39.70	-0.95	38.75	54.00	-15.25	AVG
7	6300.400	49.22	-0.97	48.25	74.00	-25.75	peak
8	6300.400	38.97	-0.97	38.00	54.00	-16.00	AVG
9	6698.800	49.04	-0.36	48.68	74.00	-25.32	peak
10	6698.800	38.54	-0.36	38.18	54.00	-15.82	AVG
11	6995.200	50.06	3.44	53.50	74.00	-20.50	peak
12	6995.200	38.33	3.44	41.77	54.00	-12.23	AVG

11. TEST SETUP PHOTOGRAPHS OF EUT

Please refer to separated files for Test Setup Photos of the EUT.

12. EXTERIOR PHOTOGRAPHS OF EUT

Please refer to separated files for External Photos of the EUT.

13. INTERIOR PHOTOGRAPHS OF EUT

Please refer to separated files for Internal Photos of the EUT.

----------THE END OF TEST REPORT----------