



## FCC TEST REPORT

Report No:STS1707231W05

Issued for

BYROBOT Co., Ltd.

A-#1001, Bundang Suji U-Tower, Sinsu-ro 767, Suji-gu  
Yongin-si, Gyeonggi-do South Korea 16827

<b>Product Name:</b>	Lightrone
<b>Brand Name:</b>	BYROBOT
<b>Model Name:</b>	BRLT-F-RD0
<b>Series Model:</b>	N/A
<b>FCC ID:</b>	2ABMZBRLT-F-RD0
<b>Test Standard:</b>	FCC Part 15.249

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**TEST RESULT CERTIFICATION**

**Applicant's name :** BYROBOT Co., Ltd.  
**Address :** A-#1001, Bundang Suji U-Tower, Sinsu-ro 767, Suji-gu  
Yongin-si, Gyeonggi-do South Korea 16827

**Manufacture's Name :** BYROBOT Co., Ltd.  
**Address :** A-#1001, Bundang Suji U-Tower, Sinsu-ro 767, Suji-gu  
Yongin-si, Gyeonggi-do South Korea 16827

**Product description**

**Product name :** Lightrone  
**Brand name :** BYROBOT  
**Model and/or type reference :** BRLT-F-RD0

**Standards :** FCC Part15.249  
**Test procedure :** ANSI C63.10-2013

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.  
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**Date of Test :**  
**Date of performance of tests :** 12 Aug. 2017 ~18 Aug. 2017  
**Date of Issue :** 19 Aug. 2017  
**Test Result :** **Pass**

Testing Engineer :

(Sean she)

Technical Manager :

(Hakim.hou)

Authorized Signatory :

(Vita Li)





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**Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	19 Aug. 2017	STS1707231W05	ALL	Initial Issue





## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part 15.249 , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	
15.203	Antenna Requirement	Pass	
15.249	Radiated Spurious Emission	Pass	
	conduction Spurious Emission	N/A	
15.205	Radiated Band Edge Emission	Pass	
	conduction Band Edge Emission	N/A	
15.249	20dB Bandwidth	Pass	

### NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

(2) All tests are according to ANSI C63.10-2013



### 1.1 TEST FACTORY

Shenzhen STS Test Services Co., Ltd.

Add. : 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,  
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

CNAS Registration No.: L7649;

FCC Registration No.: 625569; IC Registration No.: 12108A

### 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	Conducted Emission (9KHz-150KHz)	$\pm 2.88$ dB
2	Conducted Emission (150KHz-30MHz)	$\pm 2.67$ dB
3	RF power,conducted	$\pm 0.71$ dB
4	Spurious emissions,conducted	$\pm 0.63$ dB
5	All emissions,radiated (9KHz-30MHz)	$\pm 3.02$ dB
6	All emissions,radiated (30MHz-200MHz)	$\pm 3.80$ dB
7	All emissions,radiated (200MHz-1000MHz)	$\pm 3.97$ dB



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	Lightrone
Trade Name	BYROBOT
Model Name	BRLT-F-RD0
Series Model	N/A
Model Difference	N/A
Product Description	The EUT is a Lightrone
	Operation Frequency: 5740-5860MHz
	Modulation Type: FM
	Antenna Designation: Whip antenna
	Antenna Gain(Peak): 2 dBi
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Adapter	Input: DC5V, 1A Output: DC4.2V, 400mA
Battery	Rated Voltage: 3.7V Charge Limit: 4.25V Capacity: 200mAh

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



2.

Operation Frequency of channel			
5.745GHz-5.825GHz			
Channel	Frequency		
01	5740		
02	5752		
03	5771		
04	5790		
05	5805		
06	5825		
07	5840		
08	5860		

3. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	BYROBOT	BRLT-F-RD0	Whip antenna	N/A	2dBi	Antenna

The EUT antenna is PCB Antenna. No antenna other than that furnished by the responsible party shall be used with the device.



## 2.2 DESCRIPTION OF TEST MODES

For conducted test items and radiated spurious emissions

Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively..

Pretest Mode	Description	Data/Modulation
Mode 1	TX CH01	1 MHz/FM
Mode 2	TX CH04	1 MHz/FM
Mode 3	TX CH08	1 MHz/FM

Note:

(1) All above mode have been measurement, only worst data was reported.

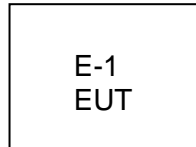




### 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters

Radiated Spurious Emission Test



NOTE: New battery is used during all test





## 2.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
E-1	Lightrone	BYROBOT	BRLT-F-RD0	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
N/A	N/A	N/A	N/A	N/A

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



## 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

## Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESW	101535	2017/06/01	2018/05/31
Bilog Antenna	TESEQ	CBL6111D	34678	2017/03/24	2018/03/23
Horn Antenna	Schwarzbeck	BBHA 9120D (1201)	9120D-1343	2017/03/06	2018/03/05
Operational Manual Passive Loop (9K--30MHz)	ETS	6512	00165355	2017/03/06	2018/03/05
Pre-mpifier (0.1M-3GHz)	EM	EM330	60538	2017/03/12	2018/03/11
PreAmplifier	Agilent	8449B	60538	2016/10/23	2017/10/22
USB RF power sensor	DARE	RPR3006W	15I00041SNO0 3	2016/10/23	2017/10/22
Semi-anechoic chamber	Changling	966	N/A	2016/10/23	2017/10/22

## Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2016/10/23	2017/10/22
LISN	R&S	ENV216	101242	2016/10/26	2017/10/25
conduction Cable	EM	C01	N/A	2017/03/12	2018/03/11
Temperature & Humidity	Mieo	HH660	N/A	2016/10/23	2017/10/22



### 3. EMC EMISSION TEST

#### 3.1 CONDUCTED EMISSION MEASUREMENT

##### 3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 15.249 limit in the table below has to be followed.

FREQUENCY (MHz)	Class B (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	56.00	46.00	CISPR
5.0 -30.0	60.00	50.00	CISPR

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

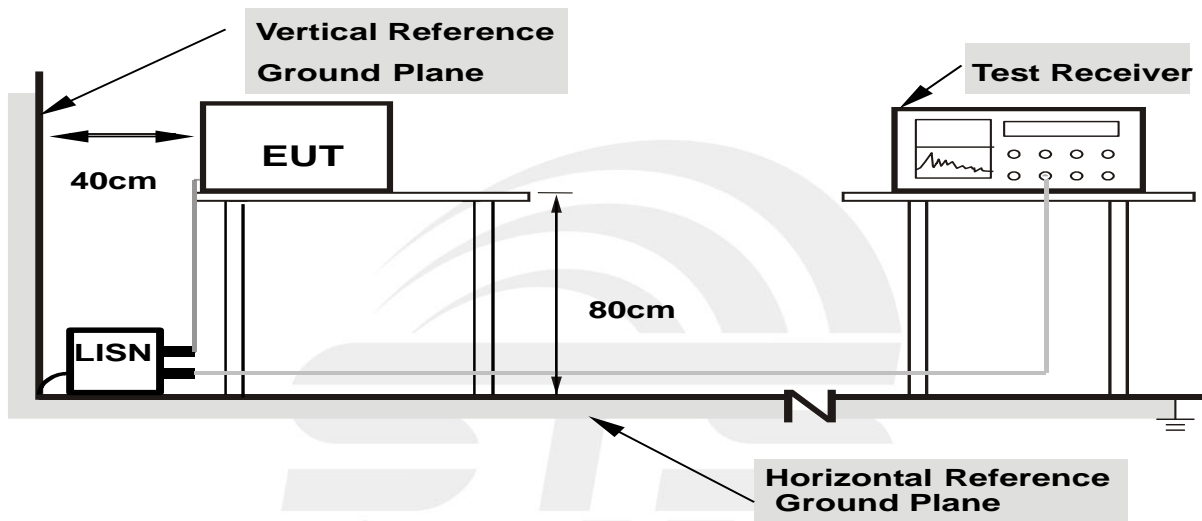
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

### 3.1.2 TEST PROCEDURE

- a. The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 3.1.3 TEST SETUP



- Note: 1.Support units were connected to second LISN.**  
**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

### 3.1.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



## 3.1.5 TEST RESULTS

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	L/N
Test Voltage:	DC 3.7V	Test Mode:	N/A

*Note: denotes test is not applicable in this test report.*





3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on Part 15.249 and the Part 15.209(a) limit in the table below has to be followed.

Standard FCC 15.209

Frequencies (MHz)	Field Strength (micovolts/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
960~1000	500	3
Above 1000	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	3

Standard FCC 15.249

Frequency of Emission (MHz)	Field Strength of fundamental (millivolts /meter)	Field Strength of Harmonics (microvolts/meter)
900~928	50	500
2400~2483.5	50	500
5725~5875	50	500
24000~242500	250	2500

Notes:

- (1) 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 Section 15.209, whichever is the lesser attenuation.

Spectrum Parameter	Setting
Detector	Peak/AV
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB (emission in restricted band)	>20BW
VB (emission in restricted band)	=3xRB





Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
	90kHz~110kHz / RB 200Hz for QP
	110kHz~490kHz / RB 200Hz for PK & AV
	490kHz~30MHz / RB 9kHz for QP
	30MHz~1000MHz / RB 120kHz for QP

### 3.2.2 TEST PROCEDURE

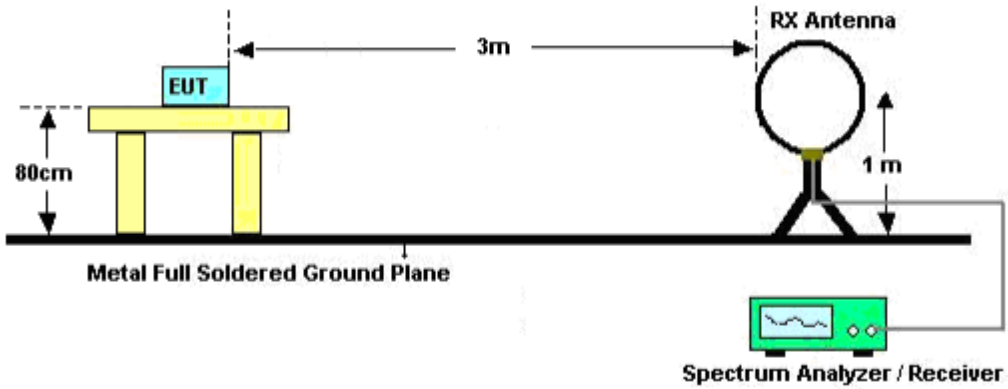
- a. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation (Below 1GHz)
- b. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation (Above 1GHz)
- c. The height of the test antenna shall vary between 1m to 4m. Both horizontal and vertical polarization of the antenna are set to make the measurement.
- d. The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform (Below 1GHz)
- f. All readings are Peak mode value unless otherwise stated AVG in column of Note. If the Peak mode measured value compliance with the Peak limits and lower than AVG Limits, the EUT shall be deemed to meet Peak & AVG limits and then only Peak mode was measured, but AVG mode didn't perform. (Above 1GHz)
- g. For the actual test configuration, please refer to the related Item –EUT Test Photos.  
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

### 3.2.3 DEVIATION FROM TEST STANDARD

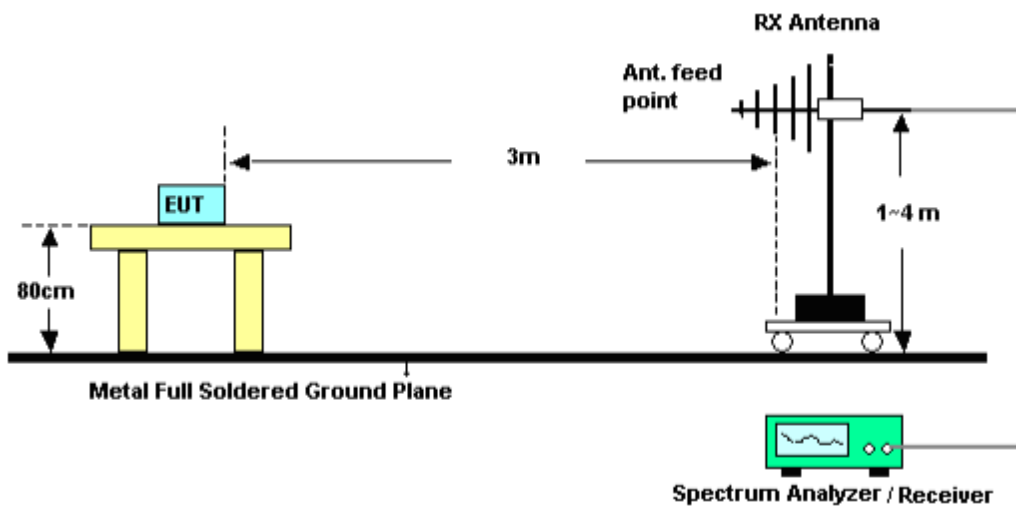
No deviation

### 3.2.4 TEST SETUP

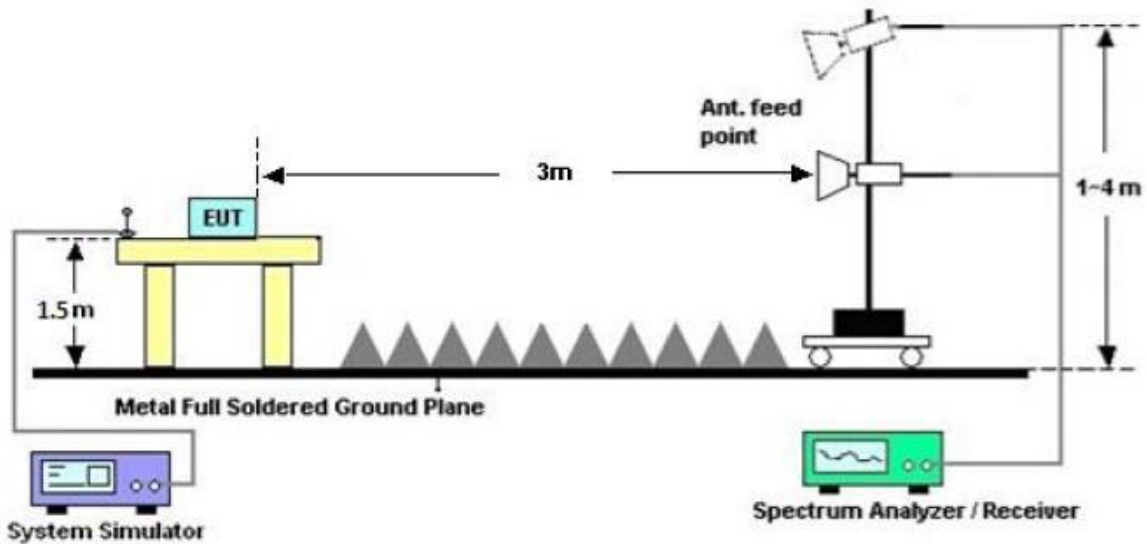
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz





### 3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

Below 30 MHz

Temperature:	23 °C	Relative Humidity:	50%
Pressure:	1010 hPa	Polarization:	---
Test Voltage:	DC 3.7V from Battery		
Test Mode:	--		

Freq. (MHz)	Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	State P/F
--	--	--	--	PASS
--	--	--	--	PASS

**NOTE:**

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log (\text{specific distance}/\text{test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.



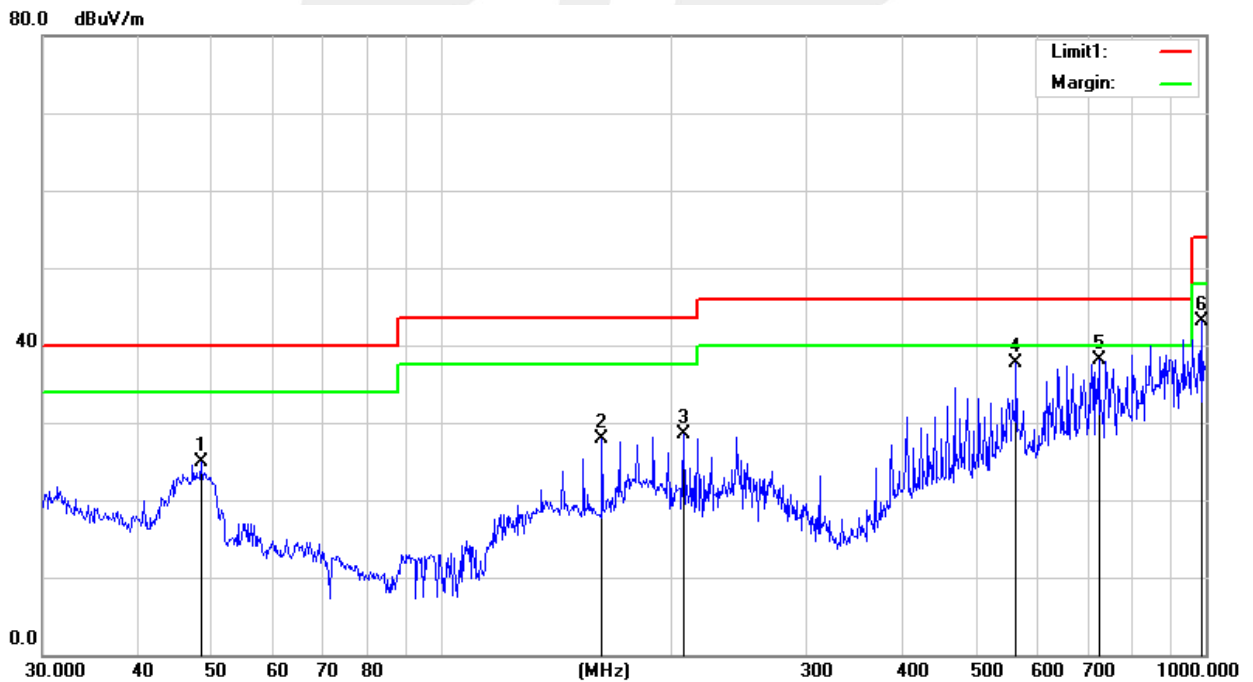
Between 30MHz – 1000 MHz Radiation Spurious

Temperature:	26 °C	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	Horizontal
Test Voltage:	DC 3.7V from Battery	Test Mode:	Mode 1/2/3(Model 1 worst)

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
48.3318	45.51	-20.62	24.89	40.00	-15.11	QP
162.0414	46.56	-18.67	27.89	43.50	-15.61	QP
207.1226	48.32	-19.87	28.45	43.50	-15.05	QP
564.6390	44.24	-6.59	37.65	46.00	-8.35	QP
724.2611	42.58	-4.40	38.18	46.00	-7.82	QP
986.0715	43.19	-0.12	43.07	54.00	-10.93	QP

Remark:

1. All readings are Quasi-Peak .
2. Margin = Result (Result =Reading + Factor )–Limit



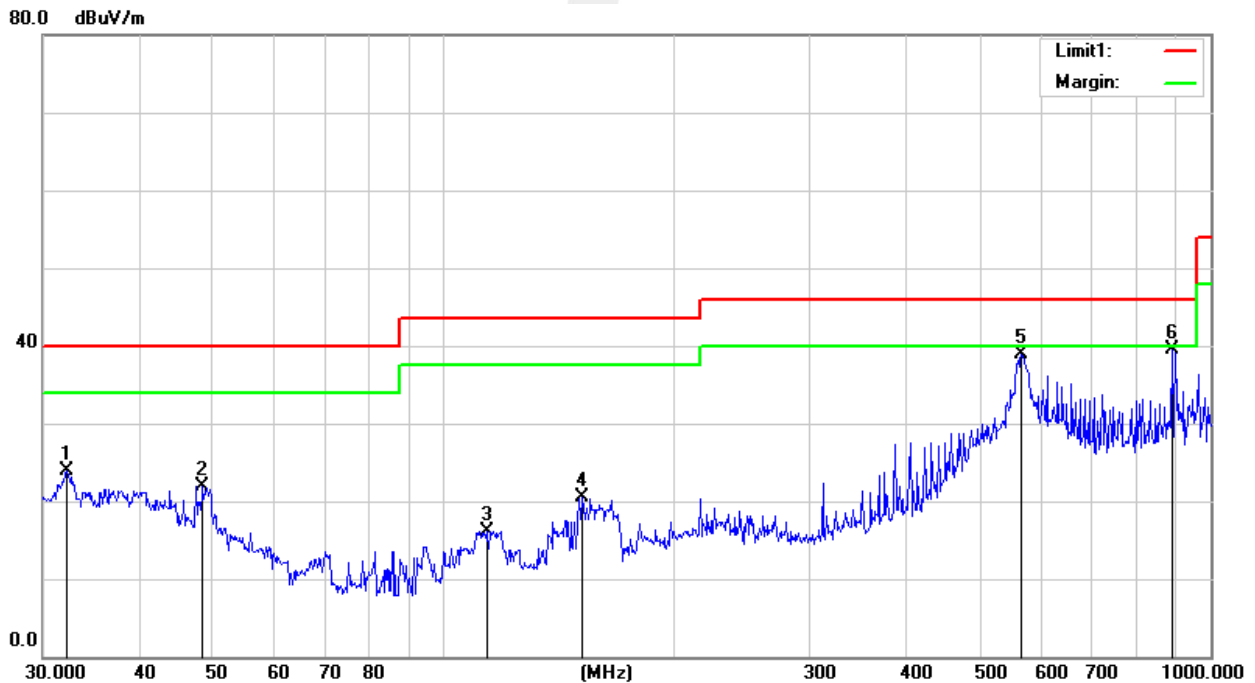


Temperature:	26 °C	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	Vertical
Test Voltage:	DC 3.7V from Battery	Test Mode:	Mode 1/2/3(Model 1 worst)

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
32.2924	36.25	-12.36	23.89	40.00	-16.11	QP
48.5016	42.59	-20.71	21.88	40.00	-18.12	QP
113.7142	34.31	-18.11	16.20	43.50	-27.30	QP
151.5971	38.48	-18.05	20.43	43.50	-23.07	QP
566.6221	45.45	-6.61	38.84	46.00	-7.16	QP
890.7278	41.80	-2.38	39.42	46.00	-6.58	QP

Remark:

1. All readings are Quasi-Peak.
2. Margin = Result (Result =Reading + Factor )–Limit





Fundamental frequency:

PK

Frequency (MHz)	Reading (dB $\mu$ V/m)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Factor(dB) Corr.	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin(dB)	Polarization
	PEAK					PEAK	PEAK		
5740	95.789	44.40	6.03	27.60	-10.77	85.02	114	-28.98	Vertical
5740	93.623	44.40	6.03	27.60	-10.77	82.86	114	-31.14	Horizontal
5790	87.162	44.40	6.04	27.63	-10.73	76.44	114	-37.56	Vertical
5790	85.275	44.40	6.04	27.63	-10.73	74.55	114	-39.45	Horizontal
5860	91.489	44.40	6.06	27.66	-10.68	80.81	114	-33.19	Vertical
5860	89.229	44.40	6.06	27.66	-10.68	78.55	114	-35.45	Horizontal

AV

Frequency (MHz)	Reading (dB $\mu$ V/m)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Factor(dB) Corr.	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin(dB)	Polarization
	AV					AV	PEAK	PEAK	
5740	75.468	44.40	6.03	27.60	-10.77	64.70	94	-29.30	Vertical
5740	74.662	44.40	6.03	27.60	-10.77	63.90	94	-30.10	Horizontal
5790	67.871	44.40	6.04	27.63	-10.73	57.14	94	-36.86	Vertical
5790	65.195	44.40	6.04	27.63	-10.73	54.47	94	-39.53	Horizontal
5860	71.816	44.40	6.06	27.66	-10.68	61.14	94	-32.86	Vertical
5860	89.137	44.40	6.06	27.66	-10.68	78.46	94	-15.54	Horizontal

Note: RBW>20BW; VBW=3xRBW



Above 1G Radiation Spurious

Frequency (MHz)	Reading (dBμV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
Low Channel (5740 MHz)										
3264.83	48.61	44.70	6.70	28.20	-9.80	38.81	74.00	-35.19	PK	Vertical
3264.83	39.32	44.70	6.70	28.20	-9.80	29.52	54.00	-24.48	AV	Vertical
3264.82	48.01	44.70	6.70	28.20	-9.80	38.21	74.00	-35.79	PK	Horizontal
3264.82	38.56	44.70	6.70	28.20	-9.80	28.76	54.00	-25.24	AV	Horizontal
11479.91	58.53	44.20	9.04	31.60	-3.56	54.97	74.00	-19.03	PK	Vertical
11479.91	39.34	44.20	9.04	31.60	-3.56	35.78	54.00	-18.22	AV	Vertical
11479.92	58.78	44.20	9.04	31.60	-3.56	55.22	74.00	-18.78	PK	Horizontal
11479.92	39.13	44.20	9.04	31.60	-3.56	35.57	54.00	-18.43	AV	Horizontal
5359.61	45.21	44.20	9.86	32.00	-2.34	42.87	74.00	-31.13	PK	Vertical
5359.61	37.59	44.20	9.86	32.00	-2.34	35.25	54.00	-18.75	AV	Vertical
5359.80	45.36	44.20	9.86	32.00	-2.34	43.02	74.00	-30.98	PK	Horizontal
5359.80	37.58	44.20	9.86	32.00	-2.34	35.24	54.00	-18.76	AV	Horizontal
17219.55	51.46	43.50	11.40	35.50	3.40	54.86	74.00	-19.14	PK	Vertical
17219.55	32.48	43.50	11.40	35.50	3.40	35.88	54.00	-18.12	AV	Vertical
17219.56	51.62	43.50	11.40	35.50	3.40	55.02	74.00	-18.98	PK	Horizontal
17219.56	33.19	43.50	11.40	35.50	3.40	36.59	54.00	-17.41	AV	Horizontal
11035.81	39.88	43.60	14.30	39.50	10.20	50.08	74.00	-23.92	PK	Vertical
11035.81	30.28	43.60	14.30	39.50	10.20	40.48	54.00	-13.52	AV	Vertical
11036.04	40.80	43.60	14.30	39.50	10.20	51.00	74.00	-23.00	PK	Horizontal
11036.04	30.20	43.60	14.30	39.50	10.20	40.40	54.00	-13.60	AV	Horizontal
13299.40	39.75	42.60	15.90	38.90	12.20	51.95	74.00	-22.05	PK	Vertical
13299.40	28.54	42.60	15.90	38.90	12.20	40.74	54.00	-13.26	AV	Vertical
13299.30	40.04	42.60	15.90	38.90	12.20	52.24	74.00	-21.76	PK	Horizontal
13299.30	28.61	42.60	15.90	38.90	12.20	40.81	54.00	-13.19	AV	Horizontal
15999.67	39.67	42.70	18.00	37.10	12.40	52.07	74.00	-21.93	PK	Vertical
15999.67	28.64	42.70	18.00	37.10	12.40	41.04	54.00	-12.96	AV	Vertical
15999.68	40.41	42.70	18.00	37.10	12.40	52.81	74.00	-21.19	PK	Horizontal
15999.68	30.05	42.70	18.00	37.10	12.40	42.45	54.00	-11.55	AV	Horizontal
17997.72	30.93	42.70	19.40	46.50	23.20	54.13	74.00	-19.87	PK	Vertical
17997.72	18.93	42.70	19.40	46.50	23.20	42.13	54.00	-11.87	AV	Vertical
17997.79	30.92	42.70	19.40	46.50	23.20	54.12	74.00	-19.88	PK	Horizontal
17997.79	18.58	42.70	19.40	46.50	23.20	41.78	54.00	-12.22	AV	Horizontal



23789.19	26.15	43.50	20.95	52.60	30.05	56.20	74.00	-17.80	PK	Vertical
23789.19	15.62	43.50	20.95	52.60	30.05	45.67	54.00	-8.33	AV	Vertical
23789.19	26.07	43.50	20.95	52.60	30.05	56.12	74.00	-17.88	PK	Horizontal
23789.19	15.57	43.50	20.95	52.60	30.05	45.62	54.00	-8.38	AV	Horizontal
36458.95	23.76	44.20	22.68	57.80	36.28	60.04	74.00	-13.96	PK	Vertical
36458.95	11.85	44.20	22.68	57.80	36.28	48.13	54.00	-5.87	AV	Vertical
36458.95	23.71	44.20	22.68	57.80	36.28	59.99	74.00	-14.01	PK	Horizontal
36458.95	11.78	44.20	22.68	57.80	36.28	48.06	54.00	-5.94	AV	Horizontal







Frequency (MHz)	Reading (dBμV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
Middle Channel (5790 MHz)										
3264.87	48.32	44.70	6.70	28.20	-9.80	38.52	74.00	-35.48	PK	Vertical
3264.87	39.81	44.70	6.70	28.20	-9.80	30.01	54.00	-23.99	AV	Vertical
3264.79	48.44	44.70	6.70	28.20	-9.80	38.64	74.00	-35.36	PK	Horizontal
3264.79	38.33	44.70	6.70	28.20	-9.80	28.53	54.00	-25.47	AV	Horizontal
11579.76	58.82	44.20	9.04	31.60	-3.56	55.26	74.00	-18.74	PK	Vertical
11579.76	39.04	44.20	9.04	31.60	-3.56	35.48	54.00	-18.52	AV	Vertical
11579.75	58.61	44.20	9.04	31.60	-3.56	55.05	74.00	-18.95	PK	Horizontal
11579.75	39.34	44.20	9.04	31.60	-3.56	35.78	54.00	-18.22	AV	Horizontal
5359.65	45.92	44.20	9.86	32.00	-2.34	43.58	74.00	-30.42	PK	Vertical
5359.65	37.63	44.20	9.86	32.00	-2.34	35.29	54.00	-18.71	AV	Vertical
5359.63	45.18	44.20	9.86	32.00	-2.34	42.84	74.00	-31.16	PK	Horizontal
5359.63	37.20	44.20	9.86	32.00	-2.34	34.86	54.00	-19.14	AV	Horizontal
17369.50	51.00	43.50	11.40	35.50	3.40	54.40	74.00	-19.60	PK	Vertical
17369.50	33.63	43.50	11.40	35.50	3.40	37.03	54.00	-16.97	AV	Vertical
17369.63	50.59	43.50	11.40	35.50	3.40	53.99	74.00	-20.01	PK	Horizontal
17369.63	33.88	43.50	11.40	35.50	3.40	37.28	54.00	-16.72	AV	Horizontal
9759.91	40.85	43.60	14.30	39.50	10.20	51.05	74.00	-22.95	PK	Vertical
9759.91	30.98	43.60	14.30	39.50	10.20	41.18	54.00	-12.82	AV	Vertical
9760.18	40.29	43.60	14.30	39.50	10.20	50.49	74.00	-23.51	PK	Horizontal
9760.18	29.76	43.60	14.30	39.50	10.20	39.96	54.00	-14.04	AV	Horizontal
13299.34	40.90	42.60	15.90	38.90	12.20	53.10	74.00	-20.90	PK	Vertical
13299.34	28.54	42.60	15.90	38.90	12.20	40.74	54.00	-13.26	AV	Vertical
13299.44	40.81	42.60	15.90	38.90	12.20	53.01	74.00	-20.99	Pk	Horizontal
13299.44	29.31	42.60	15.90	38.90	12.20	41.51	54.00	-12.49	AV	Horizontal
15999.93	39.87	42.70	18.00	37.10	12.40	52.27	74.00	-21.73	PK	Vertical
15999.93	28.64	42.70	18.00	37.10	12.40	41.04	54.00	-12.96	AV	Vertical
15999.73	40.68	42.70	18.00	37.10	12.40	53.08	74.00	-20.92	PK	Horizontal
15999.73	29.67	42.70	18.00	37.10	12.40	42.07	54.00	-11.93	AV	Horizontal
17997.79	29.94	42.70	19.40	46.50	23.20	53.14	74.00	-20.86	PK	Vertical
17997.79	19.84	42.70	19.40	46.50	23.20	43.04	54.00	-10.96	AV	Vertical
17997.58	30.90	42.70	19.40	46.50	23.20	54.10	74.00	-19.90	PK	Horizontal
17997.58	17.82	42.70	19.40	46.50	23.20	41.02	54.00	-12.98	AV	Horizontal
23789.19	26.57	43.50	20.95	52.60	30.05	56.62	74.00	-17.38	PK	Vertical
23789.19	15.84	43.50	20.95	52.60	30.05	45.89	54.00	-8.11	AV	Vertical



23789.19	26.39	43.50	20.95	52.60	30.05	56.44	74.00	-17.56	PK	Horizontal
23789.19	15.62	43.50	20.95	52.60	30.05	45.67	54.00	-8.33	AV	Horizontal
36458.95	23.38	44.20	22.68	57.80	36.28	59.66	74.00	-14.34	PK	Vertical
36458.95	11.57	44.20	22.68	57.80	36.28	47.85	54.00	-6.15	AV	Vertical
36458.95	23.29	44.20	22.68	57.80	36.28	59.57	74.00	-14.43	PK	Horizontal
36458.95	11.45	44.20	22.68	57.80	36.28	47.73	54.00	-6.27	AV	Horizontal





Frequency (MHz)	Reading (dBμV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
High Channel (5860 MHz)										
3264.60	49.12	44.70	6.70	28.20	-9.80	39.32	74.00	-34.68	PK	Vertical
3264.60	39.34	44.70	6.70	28.20	-9.80	29.54	54.00	-24.46	AV	Vertical
3264.79	47.84	44.70	6.70	28.20	-9.80	38.04	74.00	-35.96	PK	Horizontal
3264.79	38.77	44.70	6.70	28.20	-9.80	28.97	54.00	-25.03	AV	Horizontal
11719.71	59.32	44.20	9.04	31.60	-3.56	55.76	74.00	-18.24	PK	Vertical
11719.71	39.51	44.20	9.04	31.60	-3.56	35.95	54.00	-18.05	AV	Vertical
11719.71	58.53	44.20	9.04	31.60	-3.56	54.97	74.00	-19.03	PK	Horizontal
11719.71	38.21	44.20	9.04	31.60	-3.56	34.65	54.00	-19.35	AV	Horizontal
5359.80	45.05	44.20	9.86	32.00	-2.34	42.71	74.00	-31.29	PK	Vertical
5359.80	37.85	44.20	9.86	32.00	-2.34	35.51	54.00	-18.49	AV	Vertical
5359.75	45.65	44.20	9.86	32.00	-2.34	43.31	74.00	-30.69	PK	Horizontal
5359.75	37.57	44.20	9.86	32.00	-2.34	35.23	54.00	-18.77	AV	Horizontal
17579.74	51.04	43.50	11.40	35.50	3.40	54.44	74.00	-19.56	PK	Vertical
17579.74	33.27	43.50	11.40	35.50	3.40	36.67	54.00	-17.33	AV	Vertical
17579.50	51.50	43.50	11.40	35.50	3.40	54.90	74.00	-19.10	PK	Horizontal
17579.50	33.82	43.50	11.40	35.50	3.40	37.22	54.00	-16.78	AV	Horizontal
9895.76	39.97	43.60	14.30	39.50	10.20	50.17	74.00	-23.83	PK	Vertical
9895.76	30.38	43.60	14.30	39.50	10.20	40.58	54.00	-13.42	AV	Vertical
9896.04	40.46	43.60	14.30	39.50	10.20	50.66	74.00	-23.34	PK	Horizontal
9896.04	31.10	43.60	14.30	39.50	10.20	41.30	54.00	-12.70	AV	Horizontal
13299.26	40.45	42.70	18.00	37.10	12.40	52.85	74.00	-21.15	PK	Vertical
13299.26	28.54	42.70	18.00	37.10	12.40	40.94	54.00	-13.06	AV	Vertical
13299.40	39.81	42.70	18.00	37.10	12.40	52.21	74.00	-21.79	PK	Horizontal
13299.40	29.01	42.70	18.00	37.10	12.40	41.41	54.00	-12.59	AV	Horizontal
17997.77	29.96	42.70	19.40	46.50	23.20	53.16	74.00	-20.84	PK	Vertical
17997.77	19.58	42.70	19.40	46.50	23.20	42.78	54.00	-11.22	AV	Vertical
17997.79	30.73	42.70	19.40	46.50	23.20	53.93	74.00	-20.07	PK	Horizontal
17997.79	18.47	42.70	19.40	46.50	23.20	41.67	54.00	-12.33	AV	Horizontal
23789.19	25.98	43.50	20.95	52.60	30.05	56.03	74.00	-17.97	PK	Vertical
23789.19	15.35	43.50	20.95	52.60	30.05	45.40	54.00	-8.60	AV	Vertical
23789.19	25.92	43.50	20.95	52.60	30.05	55.97	74.00	-18.03	PK	Horizontal
23789.19	15.27	43.50	20.95	52.60	30.05	45.32	54.00	-8.68	AV	Horizontal
36458.95	23.25	44.20	22.68	57.80	36.28	59.53	74.00	-14.47	PK	Vertical
36458.95	11.36	44.20	22.68	57.80	36.28	47.64	54.00	-6.36	AV	Vertical
36458.95	23.17	44.20	22.68	57.80	36.28	59.45	74.00	-14.55	PK	Horizontal
36458.95	11.28	44.20	22.68	57.80	36.28	47.56	54.00	-6.44	AV	Horizontal

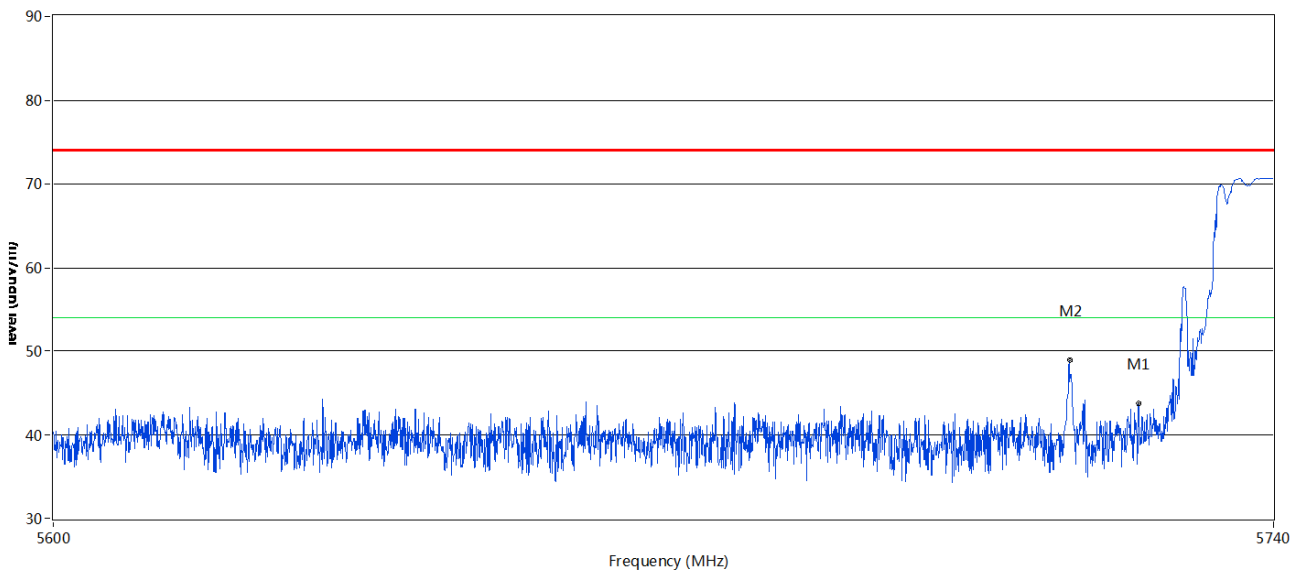


(Radiation Band edge)

Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	ANT
5725.00	43.61	74.0	-30.39	Peak	Horizontal
5725.00	33.45	54.0	-20.55	Average	Horizontal
5725.00	42.64	74.0	-31.36	Peak	Vertical
5725.00	32.37	54.0	-21.63	Average	Vertical

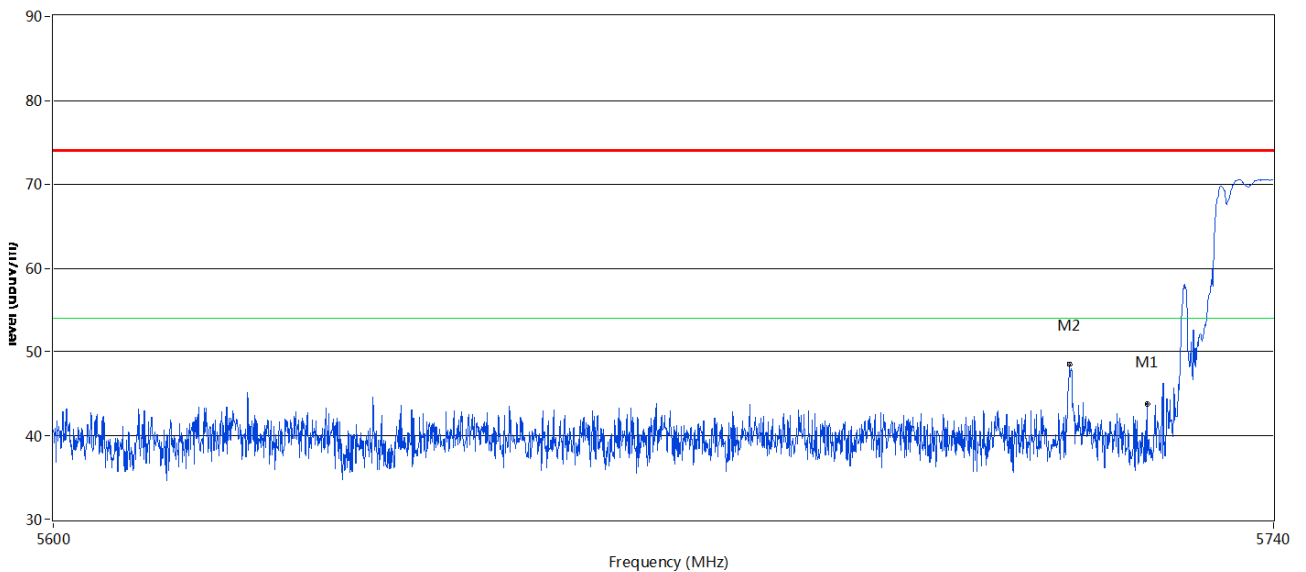
Low channel Horizontal

Radiated band-edge\_5.8G-Band-edge single-L



Low channel Vertical

Radiated band-edge\_5.8G-Band-edge single-L

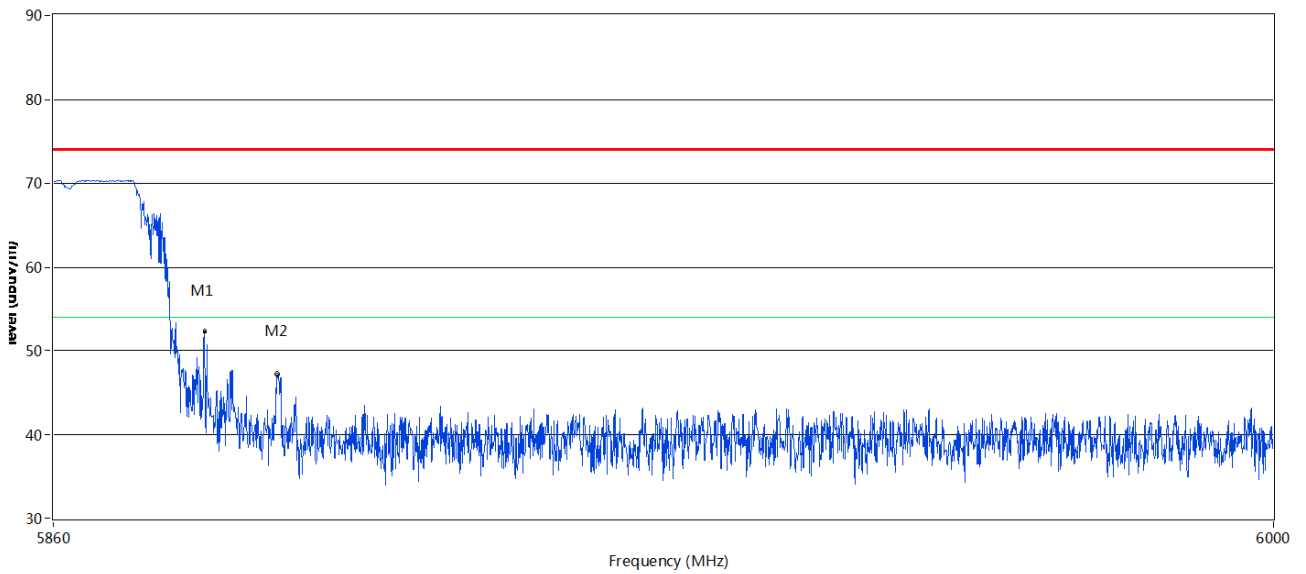




Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	ANT
5875.00	52.17	74.0	-21.83	Peak	Horizontal
5875.00	42.06	54.0	-11.94	Average	Horizontal
5875.00	51.93	74.0	-22.07	Peak	Vertical
5875.00	41.37	54.0	-12.63	Average	Vertical

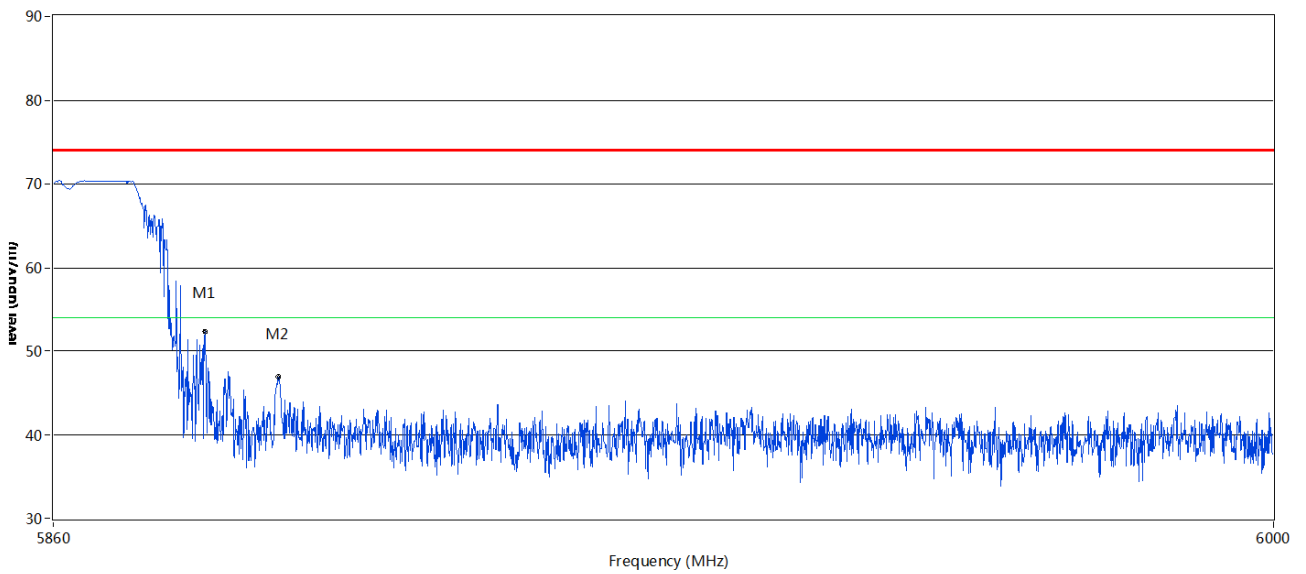
### High channel Horizontal

Radiated band-edge\_5.8G-Band-edge single-H



### High channel Vertical

Radiated band-edge\_5.8G-Band-edge single-H



#### 4. CONDUCTED SPURIOUS & BAND EDGE EMISSION

##### 4.1 REQUIREMENT

According to FCC section 15.249, in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 50dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

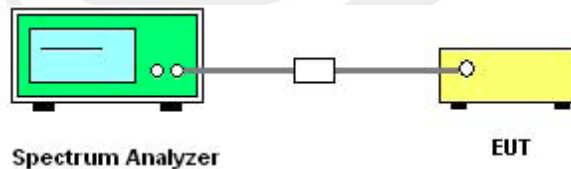
##### 4.2 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 5700 – 5725 MHz Upper Band Edge: 5850 – 5870 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

##### 4.3 TEST SETUP



The EUT which is powered by the Battery, is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading. Make the measurement with the spectrum analyzer's resolution bandwidth(RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

##### 4.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



## 4.5 TEST RESULTS

Temperature:	25 °C	Relative Humidity:	50%
Pressure:	1012 hPa	Test Voltage:	DC 3.7V
Test Mode:	N/A		

Note: denotes test is not applicable in this test report.





## 5. BANDWIDTH TEST

### 5.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW $\geq$ RBW, Sweep time = Auto.

### 5.2 TEST SETUP



### 5.3 EUT OPERATION CONDITIONS

TX mode.





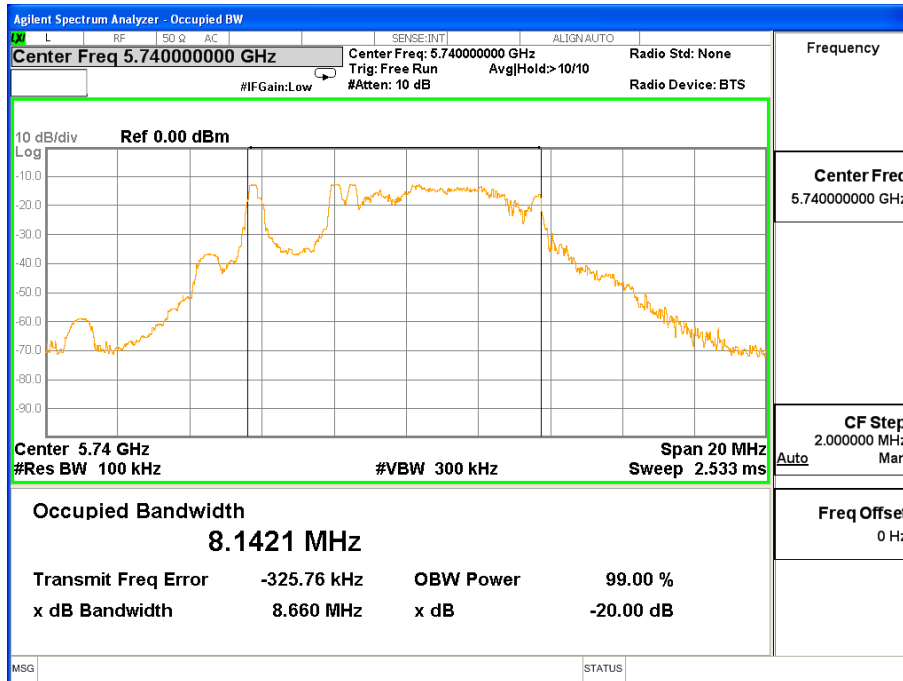


5.4 TEST RESULTS

Temperature:	25 °C	Relative Humidity:	50%
Pressure:	1012 hPa	Test Voltage:	DC 3.7V

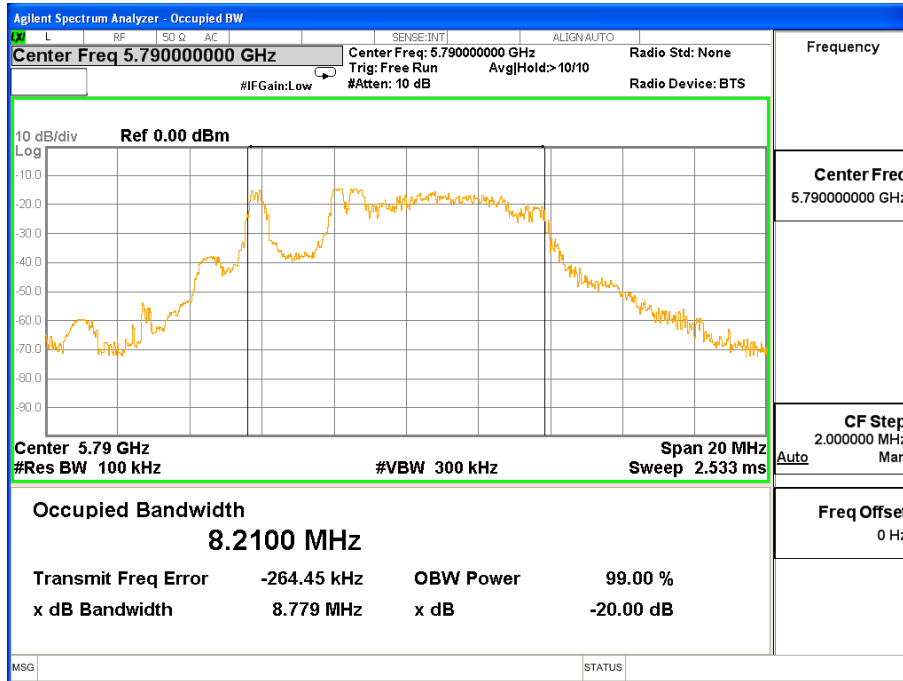
Test Channel	Frequency (MHz)	20 dBc Bandwidth (MHz)	99% Bandwidth (MHz)
CH01	5740	8.660	8.1421
CH01	5790	8.779	8.2100
CH08	5860	9.674	8.9284

The Lowest Channel:5740MHz

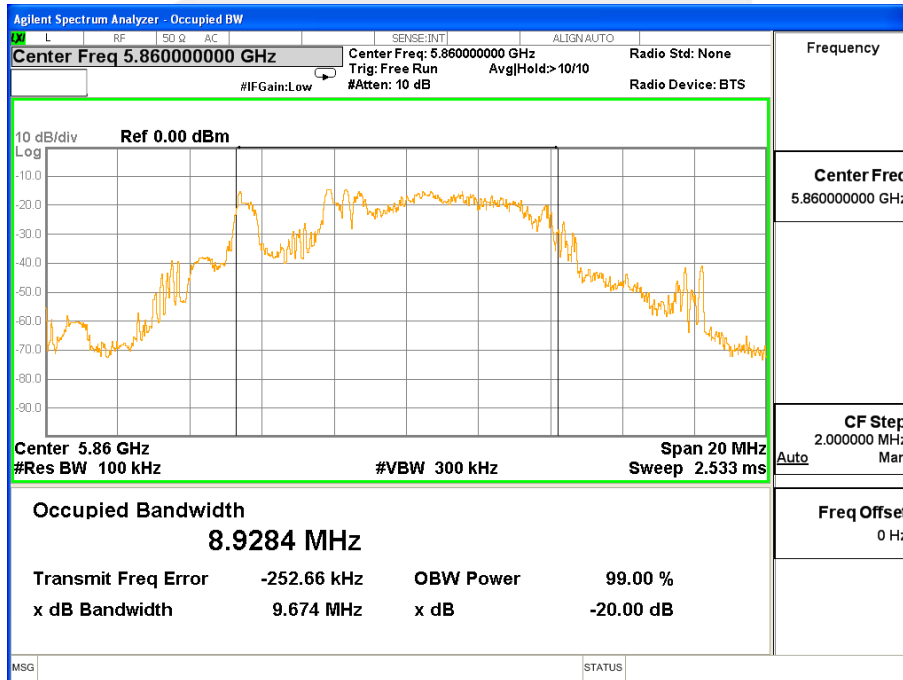




### The Middle Channel: 5790MHz



### The High Channel: 5860MHz





## 6. ANTENNA REQUIREMENT

### 6.1 STANDARD REQUIREMENT

According to the FCC Part 15 Paragraph 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.

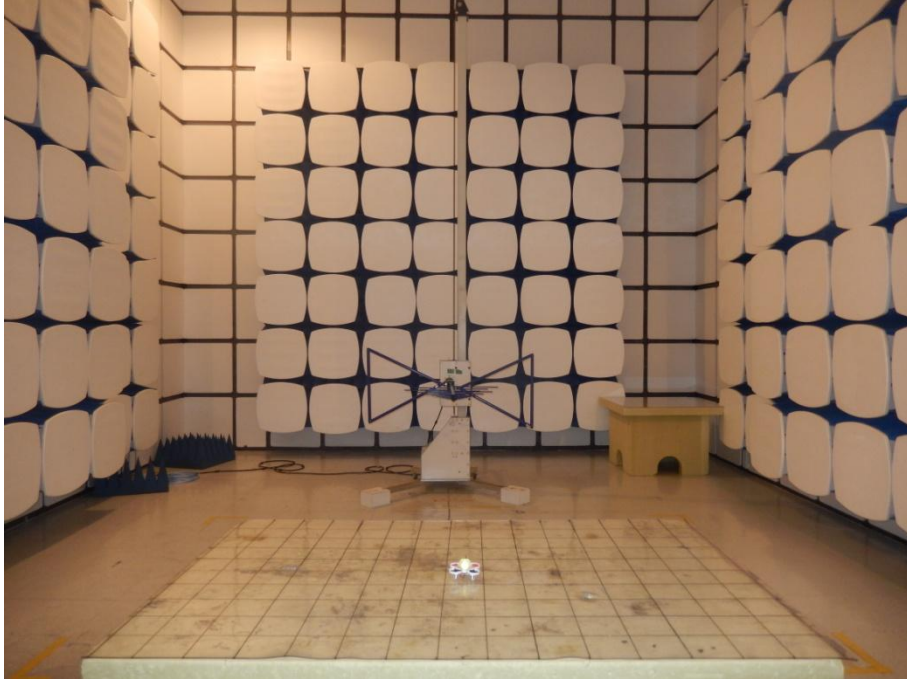
### 6.2 EUT ANTENNA

The EUT antenna is Whip antenna. It conforms to the standard requirements.



## APPENDIX- PHOTOS OF TEST SETUP

### Radiated Measurement Photos



\*\*\*\*\*END OF THE REPORT\*\*\*\*\*