

FCC TEST REPORT  
FOR

Shenzhen Merrytek Technology Co., Ltd  
Lighting Control Switch(Motion Sensor)  
Test Model No.: MC606V

Prepared for : Shenzhen Merrytek Technology Co., Ltd  
Address : 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian,  
Yanluo, Baoan, Shenzhen, China

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd  
Address : 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Shajing Street, Baoan  
District, Shenzhen, China  
Tel : (+86)755-82591330  
Fax : (+86)755-82591332  
Web : www.LCS-cert.com  
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : September 07, 2020  
Number of tested samples : 1  
Sample number : 200827130A  
Date of Test : September 07, 2020 ~ September 11, 2020  
Date of Report : September 15, 2020

**FCC TEST REPORT**  
**FCC CFR 47 PART 15 C (15.249)**

**Report Reference No.** ..... : **LCS200827130AEA**

**Date of Issue**..... : September 15, 2020

**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 Merrytek Technology Co., Ltd**

**Address**..... : 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian, Yanluo, Baoan, 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

**Shenzhen LCS Compliance Testing Laboratory Ltd. All rights reserved.**

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen LCS Compliance Testing Laboratory Ltd. is acknowledged as copyright owner and source of the material. Shenzhen LCS Compliance Testing Laboratory Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

**Test Item Description**..... : Lighting Control Switch(Motion Sensor)

**Trade Mark** ..... : 

**Test Model**..... : MC606V

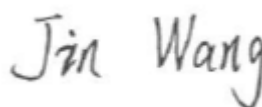
**Ratings**..... : Input:120/277/347Vac 50/60Hz  
Output: 120Vac 50/60Hz 3.6A Ballast  
277Vac 50/60Hz 3.4A Ballast  
347Vac 50/60Hz 3.3A Ballast

**Result** ..... : **Positive**

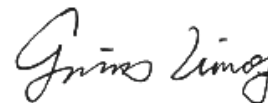
**Compiled by:**



**Supervised by:**



**Approved by:**



Linda He/ File administrators

Jin Wang/ Technique principal

Gavin Liang/ Manager

*This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.*

### FCC -- TEST REPORT

<b>Test Report No. :</b> LCS200827130AEA	<u>September 15, 2020</u> Date of issue
--	--

Test Model.....	: MC606V
EUT.....	: Lighting Control Switch(Motion Sensor)
<b>Applicant.....</b>	<b>: Shenzhen Merrytek Technology Co., Ltd</b>
Address.....	: 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian, Yanluo, Baoan, Shenzhen, China
Telephone.....	: /
Fax.....	: /
<b>Manufacturer.....</b>	<b>: Shenzhen Merrytek Technology Co., Ltd</b>
Address.....	: 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian, Yanluo, Baoan, Shenzhen, China
Telephone.....	: /
Fax.....	: /
<b>Factory.....</b>	<b>: Shenzhen Merrytek Technology Co., Ltd</b>
Address.....	: 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian, Yanluo, Baoan, Shenzhen, China
Telephone.....	: /
Fax.....	: /

<b>Test Result</b>	<b>Positive</b>
--------------------	-----------------

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	September 15, 2020	Initial Issue	Gavin Liang

## TABLE OF CONTENTS

<b>1. GENERAL INFORMATION .....</b>	<b>6</b>
1.1 Description of Device (EUT) .....	6
1.2 Support equipment List .....	6
1.3 External I/O Cable .....	6
1.4 Description of Test Facility .....	7
1.5 Statement of the Measurement Uncertainty .....	7
1.6 Measurement Uncertainty .....	7
1.7 Description of Test Modes .....	8
1.8. Channel List and Frequency: .....	8
<b>2. TEST METHODOLOGY .....</b>	<b>9</b>
2.1 EUT Configuration .....	9
2.2 EUT Exercise .....	9
2.3 General Test Procedures .....	9
2.3.1 Conducted Emissions .....	9
2.3.2 Radiated Emissions .....	9
<b>3. SYSTEM TEST CONFIGURATION .....</b>	<b>10</b>
3.1 Justification .....	10
3.2 EUT Exercise Software .....	10
3.3. Special Accessories .....	10
3.4 Block Diagram/Schematics .....	10
3.5 Equipment Modifications .....	10
3.6 Test Setup .....	10
<b>4. SUMMARY OF TEST RESULT .....</b>	<b>11</b>
<b>5. SUMMARY OF TEST EQUIPMENT .....</b>	<b>12</b>
<b>6. ANTENNA REQUIREMENT .....</b>	<b>13</b>
6.1. Standard Applicable .....	13
6.2. Antenna Connected Construction .....	13
6.3. Result .....	13
<b>7. RADIATED EMISSION MEASUREMENT .....</b>	<b>14</b>
7.1. Standard Applicable .....	14
7.2. Instruments Setting .....	14
7.3. Test Procedure .....	15
7.4. Block Diagram of Test Setup .....	19
7.5. Test Results of Radiated Emissions (9 KHz~30MHz) .....	20
7.6. Results of Radiated Emissions (30 MHz – 1000 MHz) .....	20
7.7. Results for Radiated Emissions (1 – 26 GHz) .....	22
<b>8. 99% AND 20 DB BANDWIDTH MEASUREMENT .....</b>	<b>23</b>
8.1. Standard Applicable .....	23
8.2. Block Diagram of Test Setup .....	23
8.3. Test Procedure .....	23
8.4. Test Results .....	23
<b>9. AC POWER LINE CONDUCTED EMISSIONS .....</b>	<b>25</b>
9.1 Standard Applicable .....	25
9.2 Block Diagram of Test Setup .....	25
9.3 Test Results .....	25
<b>10. TEST SETUP PHOTOGRAPHS OF EUT .....</b>	<b>28</b>
<b>11. EXTERIOR PHOTOGRAPHS OF THE EUT .....</b>	<b>28</b>
<b>12. INTERIOR PHOTOGRAPHS OF THE EUT .....</b>	<b>28</b>

# 1. GENERAL INFORMATION

## 1.1 Description of Device (EUT)

EUT : Lighting Control Switch(Motion Sensor)  
 Test Model : MC606V  
 Input:120/277/347Vac 50/60Hz  
 Power Supply : Output: 120Vac 50/60Hz 3.6A Ballast  
 277Vac 50/60Hz 3.4A Ballast  
 347Vac 50/60Hz 3.3A Ballast  
 Hardware Version : A1  
 Software Version : REV01  
 SRD :   
 Frequency Range : 5800MHz ( ±75 MHz)  
 Channel number : 1 channels  
 Modulation Type : ASK  
 Antenna Description : Internal Antenna, 0dBi(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	5785
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-5725MHz.

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:

Test Mode	Channel	Frequency Range (MHz)
TX	1	5785
Standby	--	--



## 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 ground 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 hand is placed over the microwave module, and the 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	Compliant
§15.205(a), §15.209(a), §15.249(a), §15.249(c)	Radiated Emissions Measurement	Compliant
§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	Power Meter	R&S	NRVS	100444	2020-06-22	2021-06-21
2	Power Sensor	R&S	NRV-Z81	100458	2020-06-22	2021-06-21
3	Power Sensor	R&S	NRV-Z32	10057	2020-06-22	2021-06-21
4	Test Software	Tonscend	JS1120-2	/	N/A	N/A
5	RF Control Unit	Tonscend	JS0806-2	N/A	2020-06-22	2021-06-21
6	MXA Signal Analyzer	Agilent	N9020A	MY50510140	2019-11-22	2020-11-21
7	DC Power Supply	Agilent	E3642A	N/A	2019-11-14	2020-11-13
8	EMI Test Software	EZ	EZ-EMC	/	N/A	N/A
9	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2020-06-22	2021-06-21
10	Positioning Controller	MF	MF7082	MF78020803	2020-06-22	2021-06-21
11	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2018-07-26	2021-07-25
12	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2018-07-26	2021-07-25
13	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2018-07-02	2021-07-01
14	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2017-09-21	2020-09-20
15	Broadband Preamplifier	SCHWARZBECK	BBV9745	9719-025	2020-06-22	2021-06-21
16	EMI Test Receiver	R&S	ESR 7	101181	2020-06-22	2021-06-21
17	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2019-11-14	2020-11-13
18	Broadband Preamplifier	/	BP-01M18G	P190501	2020-06-22	2021-06-21
19	RF Cable-R03m	Jye Bao	RG142	CB021	2020-06-22	2021-06-21
20	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2020-06-22	2021-06-21
21	6dB Attenuator	/	100W/6dB	1172040	2020-06-22	2021-06-21
22	3dB Attenuator	/	2N-3dB	/	2020-06-22	2021-06-21
23	EMI Test Receiver	R&S	ESPI	101840	2020-06-22	2021-06-21
24	Artificial Mains	R&S	ENV216	101288	2020-06-22	2021-06-21
25	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-0032	2020-06-22	2021-06-21

Note: All equipment is calibrated through CHINA CEPREI LABORATORY and GUANGZHOU LISAI CALIBRATION AND TEST CO., LTD.

## 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 internal antenna used for transmitting is 0dBi, 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 <sup>th</sup> 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 0.8 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 ( $\pm 45^\circ$ ) 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 ( $\pm 45^\circ$ ) 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.

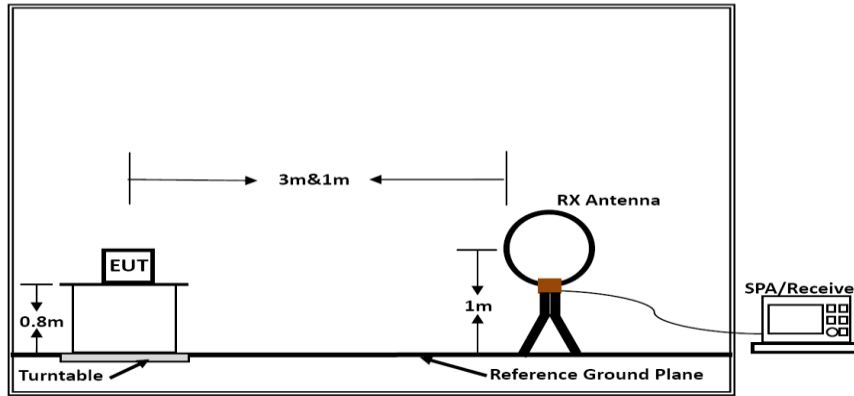
**Premeasurement:**

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

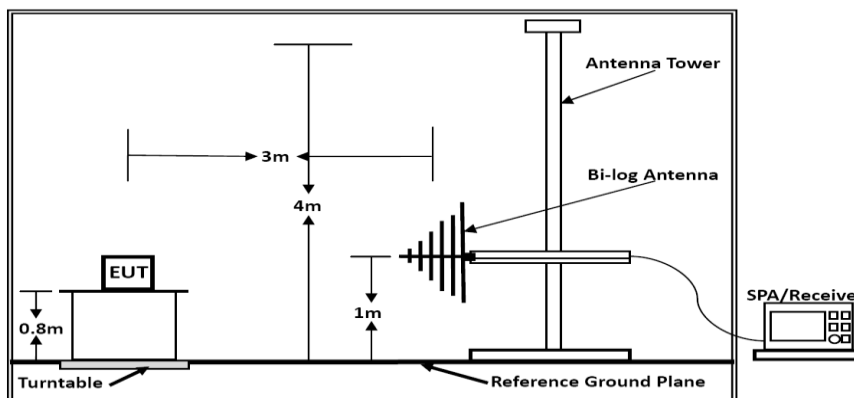
**Final measurement:**

- 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.

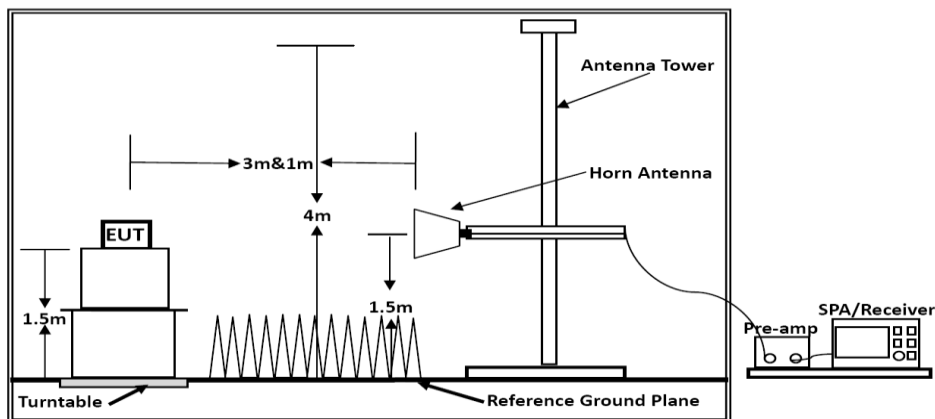
### 7.4. Block Diagram of Test Setup



Below 30MHz



Below 1GHz



Above 1GHz

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

Distance extrapolation factor =  $20 \log (\text{specific distance [3m]} / \text{test distance [1m]})$  (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.

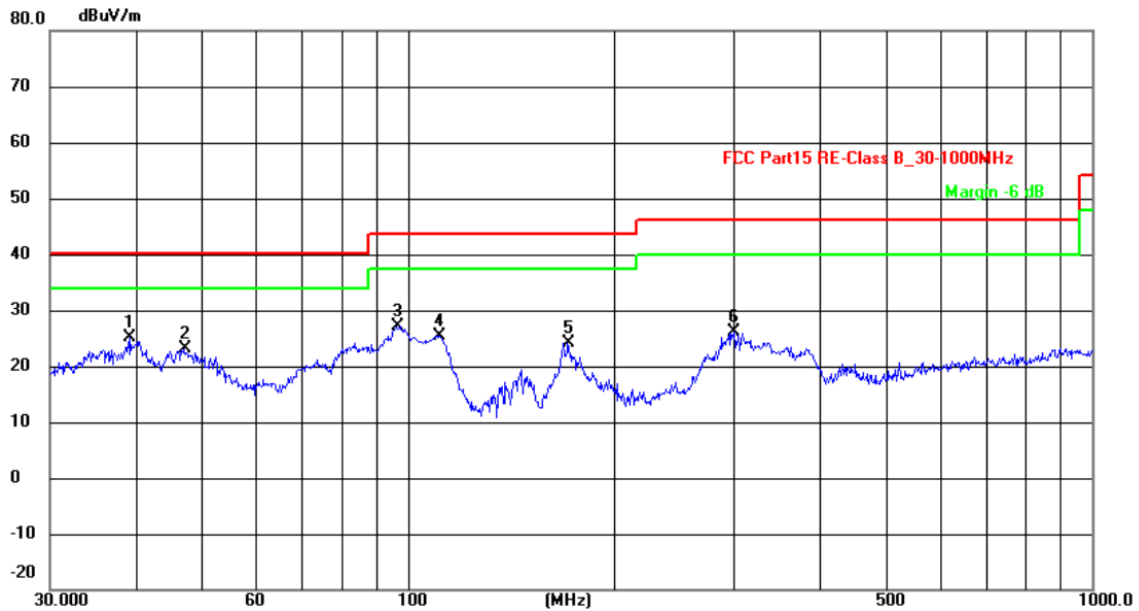
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

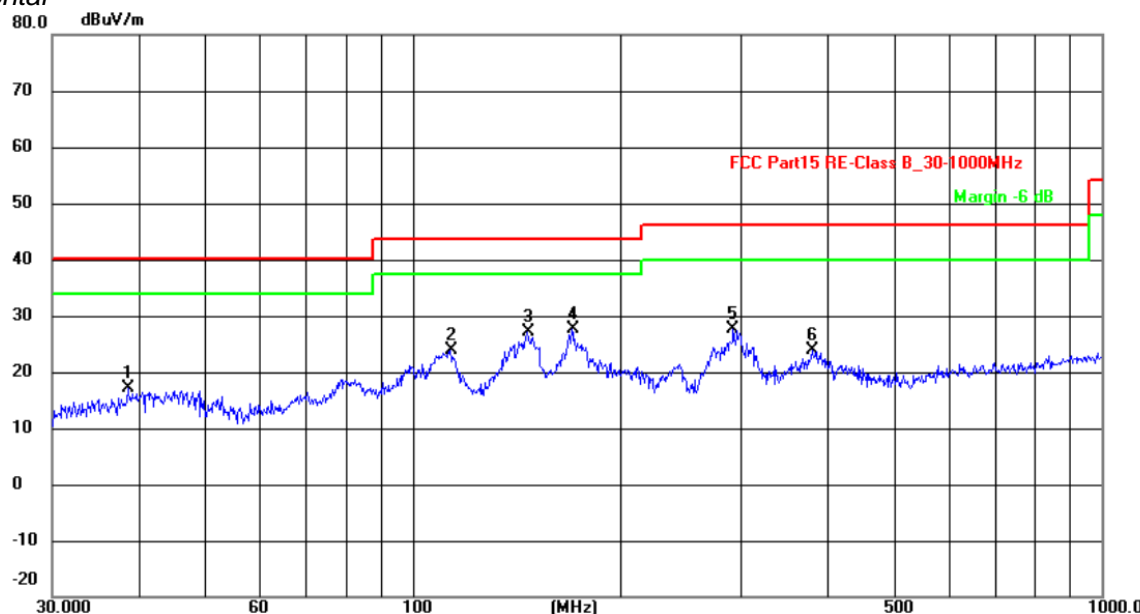
Temperature	24.6°C	Humidity	54.1%
Test Engineer	Diamond Lu	Test Mode	TX

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	39.2991	41.27	-16.23	25.04	40.00	-14.96	QP
2	47.1599	38.28	-15.13	23.15	40.00	-16.85	QP
3	96.4362	45.17	-17.98	27.19	43.50	-16.31	QP
4	110.9571	42.93	-17.43	25.50	43.50	-18.00	QP
5	171.3926	44.21	-19.96	24.25	43.50	-19.25	QP
6	299.3158	40.83	-14.61	26.22	46.00	-19.78	QP

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	38.6160	33.59	-16.45	17.14	40.00	-22.86	QP
2	113.3163	41.78	-17.99	23.79	43.50	-19.71	QP
3	146.8877	48.55	-21.33	27.22	43.50	-16.28	QP
4	170.1948	47.65	-20.02	27.63	43.50	-15.87	QP
5	292.0583	42.48	-14.76	27.72	46.00	-18.28	QP
6	379.9141	36.48	-12.68	23.80	46.00	-22.20	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-5785MHz)						
Frequency (MHz)	Pol.	Measure Result (PK, dBuV/m)	Measure Result (AVG, dBuV/m)	Peak Limit (dBuV/m)	AVG Limit (dBuV/m)	Result
5785.00	H	89.61	77.16	114.00	94.00	PASS
5785.00	V	87.57	75.08	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.
11570	54.33	33.26	35.14	3.98	56.43	74.00	-17.57	Peak	Horizontal
11570	45.42	33.26	35.14	3.98	47.52	54.00	-6.48	Average	Horizontal
11570	60.29	33.26	35.14	3.98	62.39	74.00	-11.61	Peak	Vertical
11570	41.33	33.26	35.14	3.98	43.43	54.00	-10.57	Average	Vertical

## Notes:

- 1). Measuring frequencies from 9 KHz - 10<sup>th</sup> 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 - 10<sup>th</sup> 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

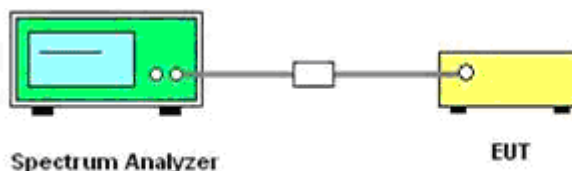
Margin=measured - limited

## 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 = 40 MHz

RBW = 1 MHz

VBW = 3 MHz

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).

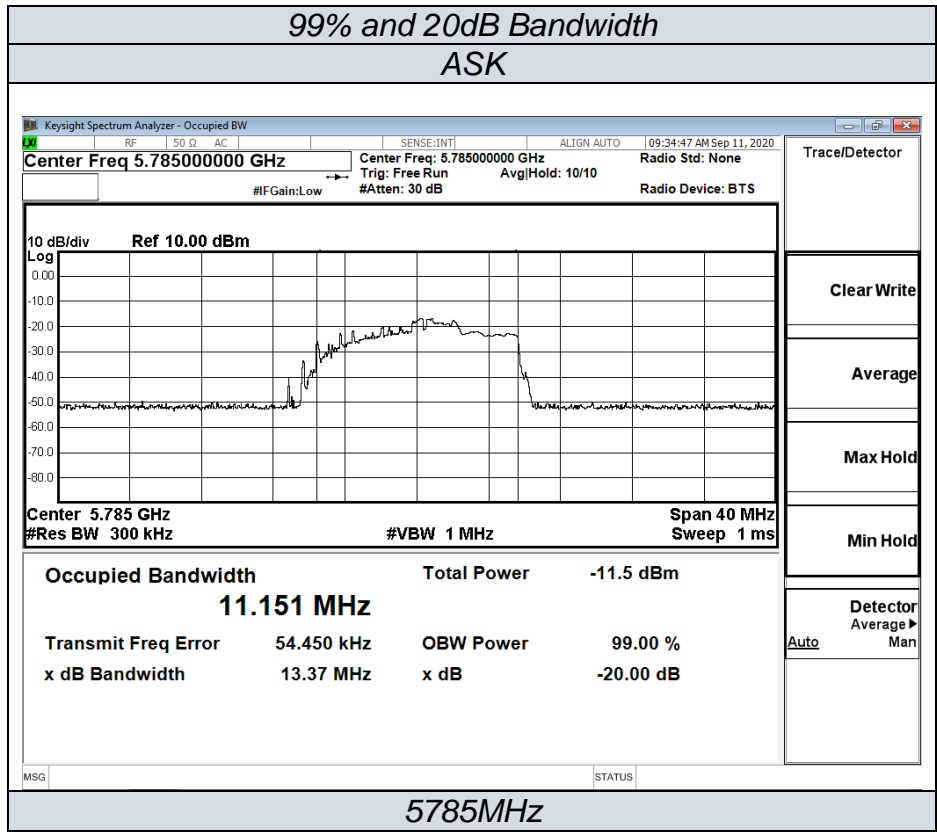
### 8.4. Test Results

Temperature	23.3°C	Humidity	53.7%
Test Engineer	Diamond Lu	Test Mode	TX

99% and 20dB Bandwidth			
Test Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
5785	11.151	13.37	Non-Specified

Remark:

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





## 9. AC POWER LINE CONDUCTED EMISSIONS

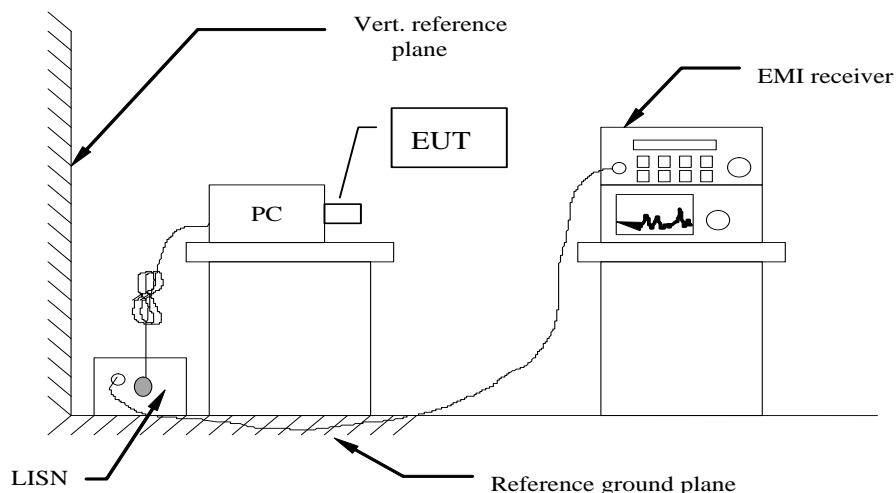
### 9.1 Standard Applicable

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



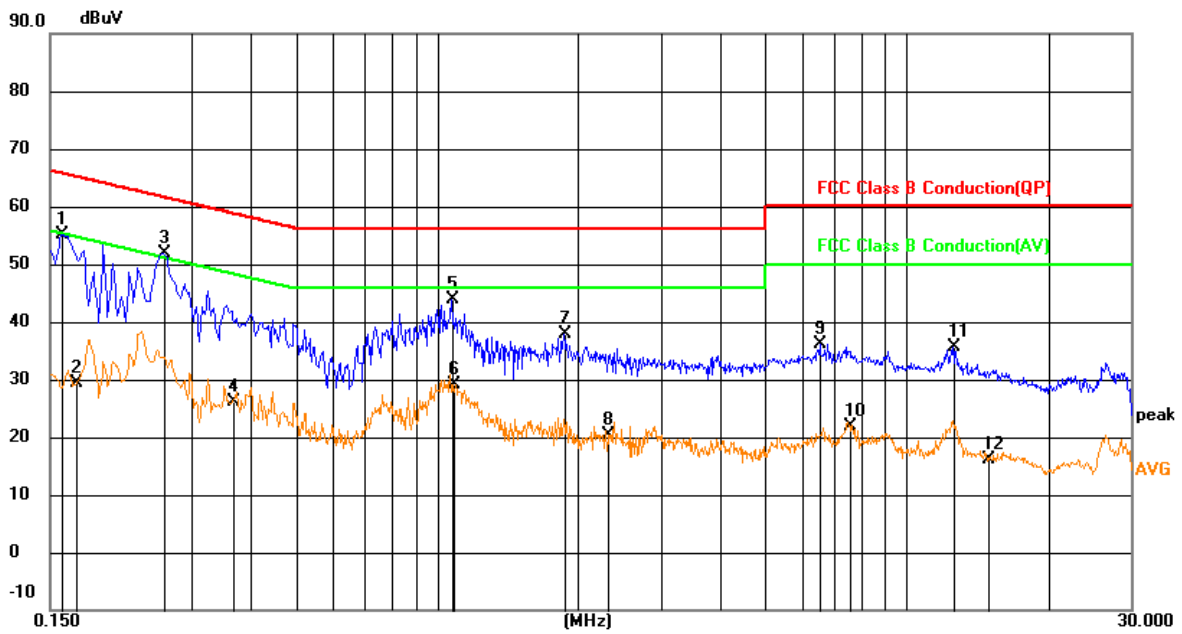
### 9.3 Test Results

**PASS.**

The test data please refer to following page.

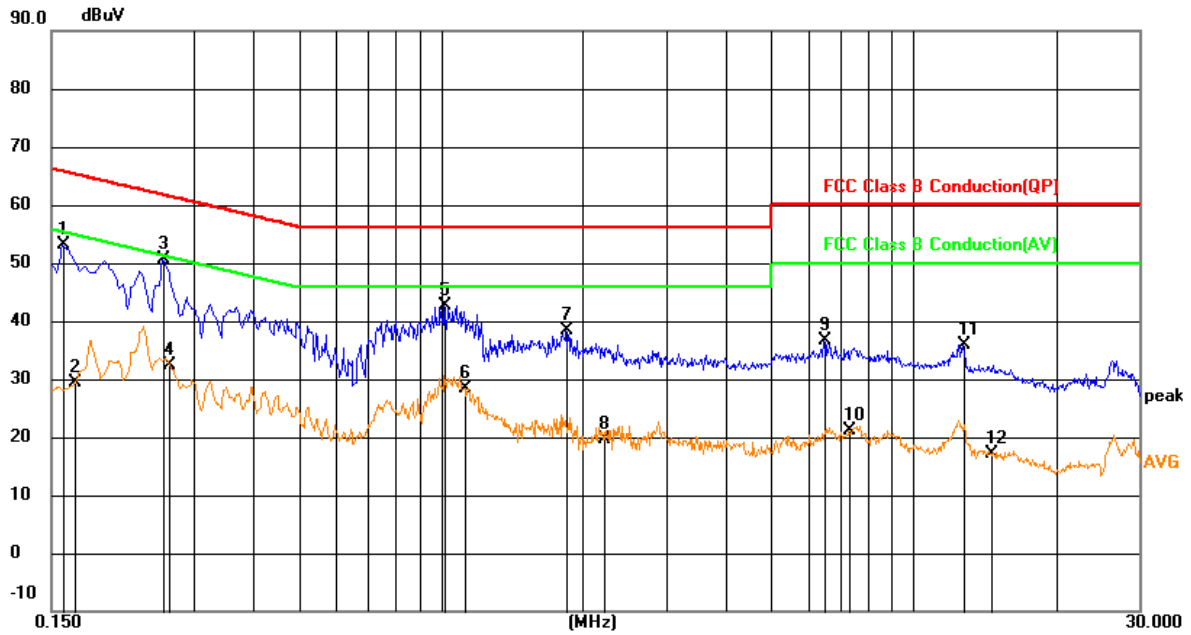
Temperature	23.3°C	Humidity	53.7%
Test Engineer	Diamond Lu	Test Mode	TX

Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1590	35.97	19.15	55.12	65.52	-10.40	QP	
2		0.1703	10.27	19.16	29.43	54.95	-25.52	AVG	
3	*	0.2625	32.60	19.24	51.84	61.35	-9.51	QP	
4		0.3673	6.94	19.31	26.25	48.56	-22.31	AVG	
5		1.0725	24.65	19.27	43.92	56.00	-12.08	QP	
6		1.0859	9.74	19.27	29.01	46.00	-16.99	AVG	
7		1.8645	18.39	19.39	37.78	56.00	-18.22	QP	
8		2.3190	0.91	19.43	20.34	46.00	-25.66	AVG	
9		6.5400	16.63	19.56	36.19	60.00	-23.81	QP	
10		7.5795	2.16	19.61	21.77	50.00	-28.23	AVG	
11		12.5790	15.79	19.92	35.71	60.00	-24.29	QP	
12		14.9145	-4.01	20.14	16.13	50.00	-33.87	AVG	

Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1590	33.88	19.15	53.03	65.52	-12.49	QP	
2		0.1680	10.10	19.16	29.26	55.06	-25.80	AVG	
3	*	0.2580	31.49	19.24	50.73	61.50	-10.77	QP	
4		0.2672	13.09	19.24	32.33	51.20	-18.87	AVG	
5		1.0184	23.39	19.25	42.64	56.00	-13.36	QP	
6		1.1174	9.22	19.27	28.49	46.00	-17.51	AVG	
7		1.8420	18.90	19.38	38.28	56.00	-17.72	QP	
8		2.2110	0.20	19.41	19.61	46.00	-26.39	AVG	
9		6.4635	17.16	19.55	36.71	60.00	-23.29	QP	
10		7.3185	1.59	19.59	21.18	50.00	-28.82	AVG	
11		12.7185	16.04	19.93	35.97	60.00	-24.03	QP	
12		14.5455	-3.07	20.11	17.04	50.00	-32.96	AVG	

\*\*\*Note: 1. Pre-scan all modes and recorded the worst case results in this report.  
 2. Measure= Reading level + Correct factor  
 Margin= Measure - Limit

## 10. TEST SETUP PHOTOGRAPHS OF EUT

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

## 11. EXTERIOR PHOTOGRAPHS OF EUT

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

## 12. INTERIOR PHOTOGRAPHS OF EUT

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

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