

## FCC TEST REPORT

FOR

ShenZhen HIHTEK ELECTRONIC CO. LTD.

Microwave motion sensor

TEST Model No.: ED118DY

Additional Model NO.: Please refer to page 6

Prepared for : ShenZhen HIHTEK ELECTRONIC CO. LTD.  
Address : 6/F Fuyuan Industrial&commercial Building, Hangcheng Industrial Park,  
Baoan District, Shenzhen City, Guangdong PR.China

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd  
Address : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an  
District, Shenzhen, Guangdong, China

Tel : (+86)755-82591330  
Fax : (+86)755-82591332  
Web : [www.LCS-cert.com](http://www.LCS-cert.com)  
Mail : [webmaster@LCS-cert.com](mailto:webmaster@LCS-cert.com)

Date of receipt of test sample : April 06, 2018  
Number of tested samples : 1  
Sample number : Prototype  
Date of Test : May 01, 2018 ~ May 15, 2018  
Date of Report : May17, 2018

**FCC TEST REPORT**

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

**Report Reference No.** ..... : LCS180406009AEA

Date of Issue..... : May17, 2018

**Testing Laboratory Name** ..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address..... : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China

Testing Location/ Procedure ..... :  Full application of Harmonised standards  Partial application of Harmonised standards  Other standard testing method

**Applicant's Name** ..... : ShenZhen HIITEK ELECTRONIC CO. LTD.

Address..... : 6/F Fuyuan Industrial&commercial Building, Hangcheng Industrial Park, Baoan District, Shenzhen City, Guangdong PR.China

**Test Specification**

Standard ..... : FCC CFR 47 PART 15 C(15.249) / ANSI C63.10: 2013

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** ..... : Microwave motion sensor

Trade Mark ..... : EasyDetek

Test Model..... : ED118DY

Ratings..... : DC 12V

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

Compiled by:



Supervised by:



Approved by:



Peter Xiao / File administrators

Dick Su/ Technique principal

Gavin Liang/ Manager

## FCC -- TEST REPORT

<b>Test Report No. :</b>	<b>LCS180406009AEA</b>	<u>May17, 2018</u>
		Date of issue

Test Model.....	: ED118DY
EUT.....	: Microwave motion sensor
<b>Applicant.....</b>	<b>: ShenZhen HIHTEK ELECTRONIC CO. LTD.</b>
Address.....	: 6/F Fuyuan Industrial&commercial Building, Hangcheng Industrial Park, Baoan District, Shenzhen City, Guangdong PR.China
Telephone.....	: /
Fax.....	: /
<b>Manufacturer.....</b>	<b>: ShenZhen HIHTEK ELECTRONIC CO. LTD.</b>
Address.....	: 6/F Fuyuan Industrial&commercial Building, Hangcheng Industrial Park, Baoan District, Shenzhen City, Guangdong PR.China
Telephone.....	: /
Fax.....	: /
<b>Factory.....</b>	<b>: ShenZhen HIHTEK ELECTRONIC CO. LTD.</b>
Address.....	: 6/F Fuyuan Industrial&commercial Building, Hangcheng Industrial Park, Baoan District, Shenzhen City, Guangdong PR.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
00	May17, 2018	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.....	6
1.5 Statement of the Measurement Uncertainty .....	7
1.6 Measurement Uncertainty.....	7
1.7 Description of Test Modes .....	7
<b>2. TEST METHODOLOGY .....</b>	<b>8</b>
2.1 EUT Configuration .....	8
2.2 EUT Exercise .....	8
2.3 General Test Procedures.....	8
2.3.1 Conducted Emissions .....	8
2.3.2 Radiated Emissions.....	8
<b>3. SYSTEM TEST CONFIGURATION .....</b>	<b>9</b>
3.1 Justification.....	9
3.2 EUT Exercise Software .....	9
3.3. Special Accessories.....	9
3.4 Block Diagram/Schematics.....	9
3.5 Equipment Modifications .....	9
3.6 Test Setup .....	9
<b>4. SUMMARY OF TEST RESULT .....</b>	<b>10</b>
<b>5. SUMMARY OF TEST EQUIPMENT.....</b>	<b>11</b>
<b>6. ANTENNA REQUIREMENT .....</b>	<b>12</b>
6.1. Standard Applicable.....	12
6.2. Antenna Connected Construction .....	12
6.3. Result: Compliance.....	12
<b>7. RADIATED EMISSION MEASUREMENT.....</b>	<b>13</b>
7.1. Standard Applicable.....	13
7.2. Instruments Setting.....	13
7.3. Test Procedure.....	14
7.4. Block Diagram of Test Setup .....	18
7.5. Test Results .....	19
<b>8. 20 DB BANDWIDTH MEASUREMENT.....</b>	<b>22</b>
8.1. Standard Applicable.....	22
8.2. Block Diagram of Test Setup .....	22
8.3. Test Procedure.....	22
8.4. Test Results .....	22
<b>9. AC POWER LINE CONDUCTED EMISSIONS .....</b>	<b>24</b>
9.1 Standard Applicable.....	24
9.2 Block Diagram of Test Setup .....	24
9.3 Test Results .....	24
<b>10. TEST SETUP PHOTOGRAPHS.....</b>	<b>25</b>
<b>11. EXTERIOR PHOTOGRAPHS OF THE EUT.....</b>	<b>25</b>
<b>12. INTERIOR PHOTOGRAPHS OF THE EUT .....</b>	<b>25</b>

## 1. GENERAL INFORMATION

### 1.1 Description of Device (EUT)

EUT : Microwave motion sensor  
Test Model : ED118DY  
List Model No. : ED118DY-15S-2S-R1,ED118DY-30S-2S-R1,ED118DY-60S-2S-R1,E  
D118DY-15S-2S-R2,ED118DY-30S-2S-R2,ED118DY-60S-2S-R2,ED1  
8DY-30S-2S-R3,ED118DY-60S-2S-R3,ED118DN-60S-2S-R1,ED118  
DN-30S-2S-R1  
Model Declaration : PCB board, structure and internal of these model(s) are the same, In  
addition to the size of the shell, So no additional models were tested.  
Power Supply : DC 12V  
Hardware Version : V2.0  
Software Version : V1.0  
5G :  
Frequency Range : 5800 MHz  
Modulation Type : ASK  
Antenna Description : Internal Antenna, 4dBi (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

FCC Registration Number. is 254912.

Industry Canada Registration Number. is 9642A-1.

ESMD Registration Number. is ARCB0108.

UL Registration Number. is 100571-492.

TUV SUD Registration Number. is SCN1081.

TUV RH Registration Number. is UA 50296516-001

NVLAP Registration Code is 600167-0

The 3m-Semi anechoic test site fulfills 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)
	5800
For Conducted Emission	
Test Mode	TX Mode
For Radiated Emission	
Test Mode	TX Mode

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

Channel List & Frequency:

Test Mode	Channel	Frequency Range (MHz)
TX	1	5800
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 MP-5 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. 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.

The EUT After the power is switched on, the hand is placed over the microwave module, and the continuous transmit signal.

#### **3.2 EUT Exercise Software**

N/A.

#### **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
§15.205	Band Edges Measurement	Compliant
§15.249, §15.215	20 dB Bandwidth	Compliant

Remark:

N/A\* - Not applicable, the modular will only install host powered by DC.

## 5. SUMMARY OF TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Power Meter	R&S	NRVS	100444	2017-06-17	2018-06-16
2	Power Sensor	R&S	NRV-Z81	100458	2017-06-17	2018-06-16
3	Power Sensor	R&S	NRV-Z32	10057	2017-06-17	2018-06-16
4	EPM Series Power Meter	Agilent	E4419B	MY45104493	2017-06-17	2018-06-16
5	E-SERIES AVG POWER SENSOR	Agilent	E9301H	MY41495234	2017-06-17	2018-06-16
6	ESA-E SERIES SPECTRUM ANALYZER	Agilent	E4407B	MY41440754	2017-11-18	2018-11-17
7	MXA Signal Analyzer	Agilent	N9020A	MY49100040	2017-06-17	2018-06-16
8	SPECTRUM ANALYZER	R&S	FSP40	100503	2017-06-17	2018-06-16
9	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2017-06-17	2018-06-16
10	Positioning Controller	MF	MF-7082	/	2017-06-17	2018-06-16
11	EMI Test Software	AUDIX	E3	N/A	2017-06-17	2018-06-16
12	EMI Test Receiver	R&S	ESR 7	101181	2017-06-17	2018-06-16
13	AMPLIFIER	QuieTek	QTK-A2525G	CHM10809065	2017-11-18	2018-11-17
14	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2017-06-23	2018-06-22
15	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2018-05-02	2019-05-01
16	Horn Antenna	EMCO	3115	6741	2017-06-23	2018-06-22
17	RF Cable-R03m	Jye Bao	RG142	CB021	2017-06-17	2018-06-16
18	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2017-06-17	2018-06-16
19	TEST RECEIVER	R&S	ESCI	101142	2017-06-17	2018-06-16
20	RF Cable-CON	UTIFLEX	3102-26886-4	CB049	2017-06-17	2018-06-16
21	10dB Attenuator	SCHWARZBECK	MTS-IMP136	261115-001-0032	2017-06-17	2018-06-16
22	Artificial Mains	R&S	ENV216	101288	2017-06-17	2018-06-16
23	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2017-09-21	2018-09-20

## **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 antenna used for transmitting is 4.0dBi, 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/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B 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.

##### **Premasurement:**

- 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.

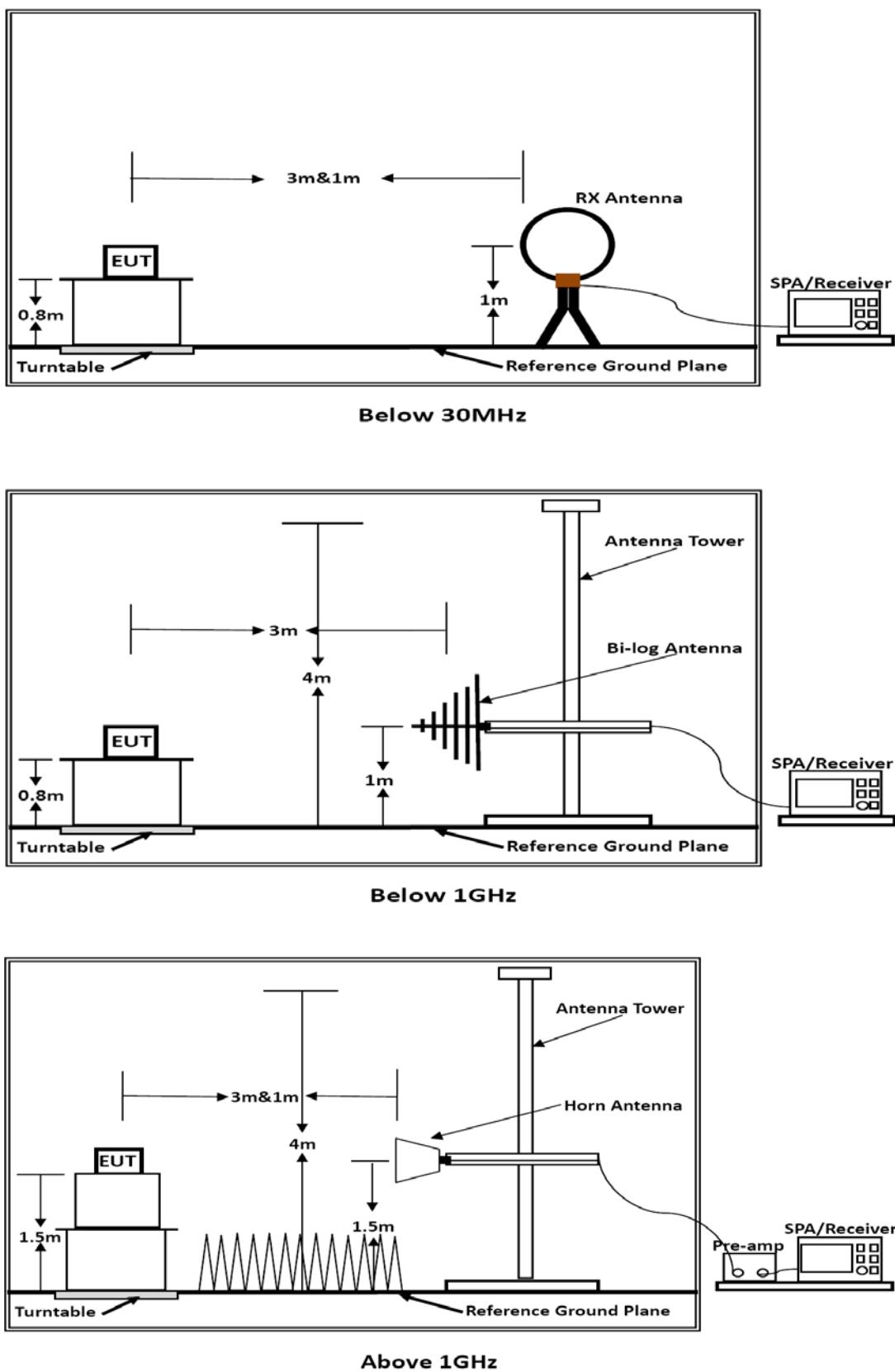
##### **Premeasurement:**

- 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



## 7.5. Test Results

### Results of Radiated Emissions (9 KHz – 30 MHz)

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.

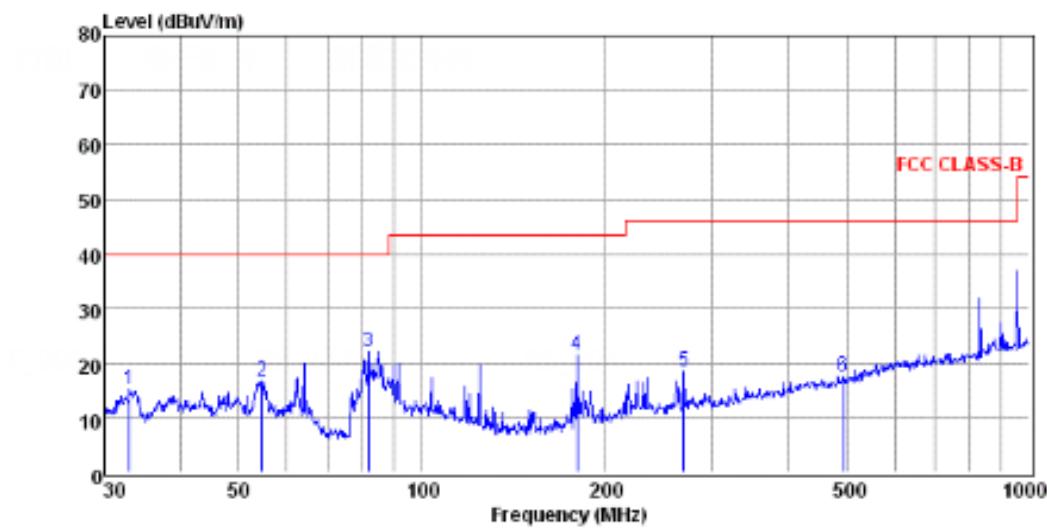
Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB);

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

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

Temperature	23.5°C	Humidity	52.9%
Test Engineer	WangChuang	Test Mode	TX

#### Vertical

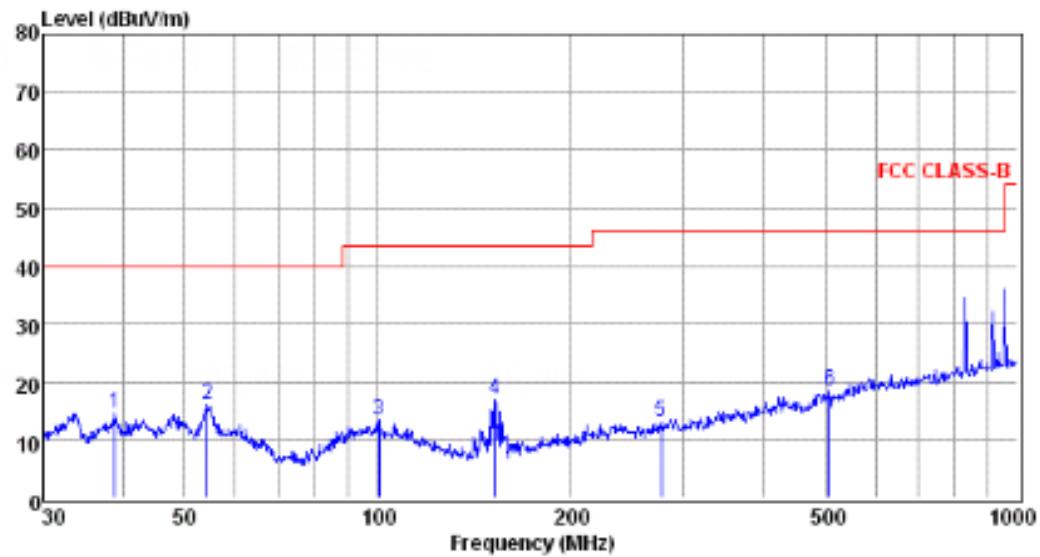


Env. / Ins: 23.6°C / 53.6%  
pol: VERTICAL

Freq	Reading	CabLos	Antfac	Measured		Limit	Over	Remark
				MHz	dBuV	dB	dB/m	dBuV/m
1	32.98	2.37	0.37	12.31	15.05	40.00	-24.95	QP
2	54.45	3.16	0.46	13.05	16.67	40.00	-23.33	QP
3	81.78	12.26	0.65	9.17	22.08	40.00	-17.92	QP
4	180.02	10.76	0.89	9.68	21.33	43.50	-22.17	QP
5	270.37	5.02	0.99	12.37	18.38	46.00	-27.62	QP
6	494.20	-0.26	1.50	16.43	17.67	46.00	-28.33	QP

Note: 1. All readings are Quasi-peak values.  
2. Measured = Reading + Antenna Factor + Cable Loss  
3. The emission that are 20db below the official limit are not reported

## Horizontal



Env./Ins: 23.6°C/53.6%  
pol: HORIZONTAL

	Freq MHz	Reading dBuV	CabLoss dB	Antfac dB/m	Measured dBuV/m	Limit dBuV/m	Over dB	Remark
1	38.89	0.98	0.38	13.30	14.66	40.00	-25.34	QP
2	54.26	2.58	0.46	13.05	16.09	40.00	-23.91	QP
3	100.58	-0.40	0.60	13.11	13.31	43.50	-30.19	QP
4	152.66	7.87	0.73	8.37	16.97	43.50	-26.53	QP
5	278.07	-0.64	1.01	12.61	12.98	46.00	-33.02	QP
6	508.26	0.23	1.37	16.73	18.33	46.00	-27.67	QP

Note: 1. All readings are Quasi-peak values.  
2. Measured = Reading + Antenna Factor + Cable Loss  
3. The emission that are 20db below the official limit are not reported

## 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). Corrected Reading: Antenna Factor + Cable Loss + Read Level = Level.

## Results for Radiated Emissions (Above 1GHz)

Field Strength of Fundamental (TX-5800MHz)						
Frequency (MHz)	Pol.	Measure Result (PK, dBuV/m)	Measure Result (AVG, dBuV/m)	Peak Limit (dBuV/m)	AVG Limit (dBuV/m)	Result
5794.00	H	88.26	78.35	114.00	94.00	PASS
5794.00	V	85.05	74.61	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.
11600	48.48	33.06	35.04	3.94	50.44	74.00	-23.56	Peak	Horizontal
11600	31.97	33.06	35.04	3.94	33.93	54.00	-20.07	Average	Horizontal
11600	49.04	33.06	35.04	3.94	51.00	74.00	-23.00	Peak	Vertical
11600	34.32	33.06	35.04	3.94	36.28	54.00	-17.72	Average	Vertical

## Notes:

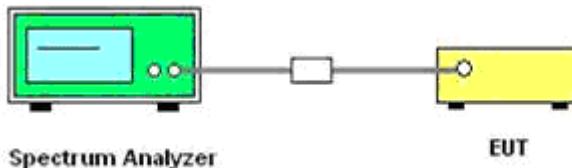
- 1). Measuring frequencies from 9 KHz - 10<sup>th</sup> harmonic (ex. 40GHz), No emission found between lowest internal used/generated frequency to 30 MHz.
- 2). Radiated emissions measured in frequency range from 9 KHz - 10<sup>th</sup> harmonic (ex. 40GHz) were made with an instrument using Peak detector mode.
- 3). 18~40GHz at least have 20dB margin. No recording in the test report.

## 8. 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 = 3 MHz

RBW = 100 KHz

VBW = 300 KHz

Sweep = auto

Detector function = peak

Trace = max hold

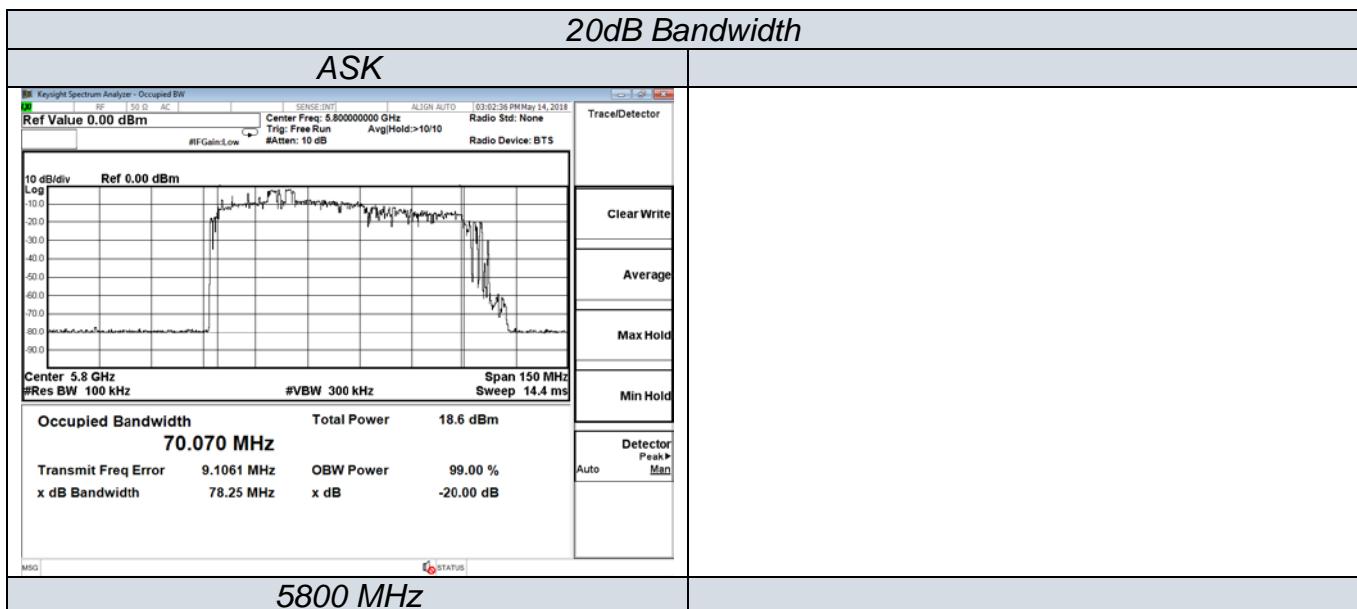
The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the 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

Test Result of 20dB Bandwidth Measurement				
Test Mode	Frequency (MHz)	20dB Bandwidth Measurement (MHz)	Limits (MHz)	Verdict
ASK	5800	78.25	/	

*Remark:*

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



## 9. AC POWER LINE CONDUCTED EMISSIONS

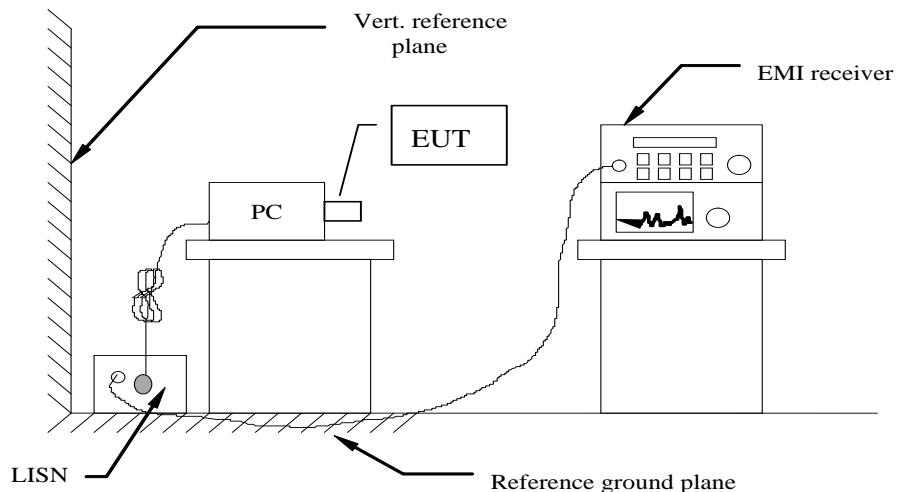
### 9.1 Standard Applicable

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 (dB $\mu$ V)	
	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!!!*

*The modular will only install host powered by DC.*

## **10. TEST SETUP PHOTOGRAPHS**

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

## **11. EXTERIOR PHOTOGRAPHS OF THE EUT**

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

## **12. INTERIOR PHOTOGRAPHS OF THE EUT**

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

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