



## FCC TEST REPORT

### 47 CFR FCC Part 15 Subpart B

**FCC ID**.....: **T37 PL7667-MST-ETH**

**Report Reference No.**.....: **TRE13090033 R/C:41211**

Compiled by

( position+printed name+signature)..: File administrators Jerome Luo

*Jerome Luo*

Supervised by

( position+printed name+signature)..: Test Engineer Yingchun Shan

*Yingchun Shan*

Approved by

( position+printed name+signature)..: Manager Wenliang Li

*Wenliang Li*

Date of issue.....: Sep 22, 2013

**Testing Laboratory Name** .....: **Shenzhen Huatongwei International Inspection Co., Ltd**

Address .....: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

**Applicant's name**.....: **Asoka USA Corporation**

Address .....: 2620 Augustine Drive Suite 230 Santa Clara, CA 95054 USA

**Test specification:**

Standard .....: **47 CFR FCC Part 15 Subpart B - Unintentional Radiators**

**ANSI C63.4: 2009**

TRF Originator.....: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF.....: Dated 2006-06

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**Test item description** .....: PlugLine Smart Energy AV Master/Ethernet

Trade Mark .....: /

Model/Type reference.....: PL7667-MST

Listed Model.....: PL7667- ETH

Operation Frequency.....: From 2MHz to 68MHz

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

# TEST REPORT

<b>Test Report No. :</b>	<b>TRE13090033</b>	Sep 22, 2013
		Date of issue

Equipment under Test : PlugLine Smart Energy AV Master/Ethernet

Model /Type : PL7667-MST

Listed Models : PL7667- ETH

Applicant : Asoka USA Corporation .

Address : 2620 Augustine Drive Suite 230 Santa Clara, CA 95054  
USA

Manufacturer : Asoka Shenzhen Limited

Address : Room 1701,17/F., Fiyta Hi Tech Building, Gao-Xin Rd,  
South, Shenzhen , P R China

<b>Test Result</b> according to the standards on page 4:	<b>Positive</b>
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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.

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## 1. TEST STANDARDS

The tests were performed according to following standards:

[47 CFR FCC Part 15 Subpart B](#) - Unintentional Radiators

[ANSI C63.4: 2009](#) – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

## 2. SUMMARY

### 2.1. General Remarks

Date of receipt of test sample	:	Sep 11, 2013
Testing commenced on	:	Sep 11, 2013
Testing concluded on	:	Sep 22, 2013

### 2.2. Equipment Under Test

#### Power supply system utilised

Power supply voltage	:	<input checked="" type="radio"/> 120V / 60 Hz	<input type="radio"/> 115V / 60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input type="radio"/> Other (specified in blank below)	

/

### 2.3. Short description of the Equipment under Test (EUT)

The PlugLine Smart Energy AV Master/Ethernet is an In-House BPL device.

For more details, refer to the user's manual of the EUT.

Sample Type: Prototype

### 2.4. EUT operation mode

The EUT has been tested under typical operating condition.

### 2.5. Related Submittal(s) / Grant (s)

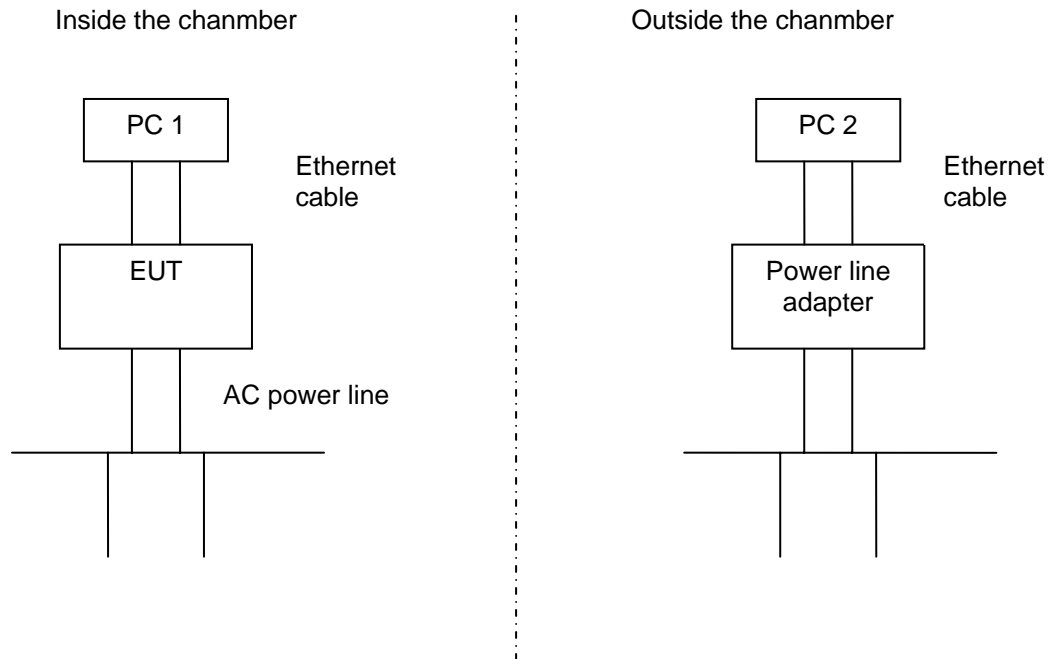
This submittal(s) (test report) is intended for FCC ID: **T37PL7667-MST-ETH** filing to comply with the FCC Part 15, Subpart B Rules.

### 2.6. Modifications

No modifications were implemented to meet testing criteria.

## 2.7. Configuration of Tested System

### Configuration of Tested System



### Equipment Used in Tested System

No.	Equipment	Manufacturer	Model No.	Serial No.	Notes
1	PC	DELL	DIMENSION E520	1RNN42X	
2	Keyboard	HP	SK-2885	434821-AA2	
3	Mouse	HP	SM-2020	537749-001	
4	Printer	EPSON	L101	NFVK023719	
5	Notebook PC	DELL	D600	CN-0X2034-48643-428-1379	
6	PlugLine Smart Energy AV Master/Ethernet	ASOKA	PL7667-MST PL7667-ETH	/	

## 2.8. Product Information

1. PL7667-MST and PL7667-ETH have the same schematic and PCB layouts, but are different from the setting which does not affect EMC. Unless otherwise indicated, all tests were conducted on PL7667-MST. Tests performed on PL7667-MST were considered to be representative of PL7667-ETH.

2. As the product operation frequency band from 2MHz to 68MHz, we choose two PL7667-MST products to test conducted emission for operation difference frequencies, the two products PCB layouts and hardware are the same and only software regulates the operating range. While use product 3 which operation frequency band from 2MHz to 68MHz for radiated emission.

### Product 1:

Series Number: SA1304080004  
Operation frequency: 2MHz-30MHz;

### Product 2:

Series Number: SA 1304080005  
Operation frequency: 30MHz-68MHz;

### Product 3:

Series Number: SA 1304080008  
Operation frequency: 2MHz-68MHz

### **3. TEST ENVIRONMENT**

#### **3.1. Address of the test laboratory**

Shenzhen Huatongwei International Inspection Co., Ltd  
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China  
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

#### **3.2. Test Facility**

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: Mar. 01, 2009. Valid time is until Feb. 28, 2015.

##### **A2LA-Lab Cert. No. 2243.01**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sep. 30, 2013.

##### **FCC-Registration No.: 662850**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date Jun. 01, 2012, valid time is until Jun. 01, 2015.

##### **IC-Registration No.: 5377A**

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Jan. 25, 2011, valid time is until Jan. 24, 2014.

##### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

##### **VCCI**

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2010. Valid time is until Dec. 23, 2013.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2009. Valid time is until Dec. 19, 2012.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2010. Valid time is until May 06, 2013.

##### **DNV**

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV

Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2016.

### 3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

### 3.4. 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 Shenzhen Huatongwei International Inspection Co., Ltd 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.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.35 dB	(1)

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



**3.5. Equipments Used during the Test**

Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100106	2012/10/27
2	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100028	2012/10/27
3	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100044	2012/10/27
4	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	N/A

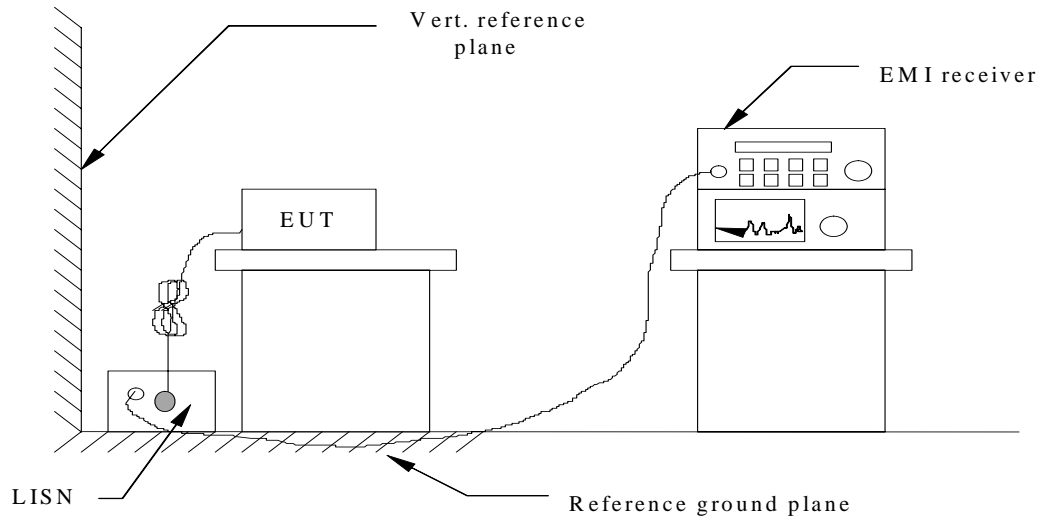
Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2012/10/27
2	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2012/10/27
3	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	N/A
4	TURNTABLE	ETS	2088	2149	N/A
5	ANTENNA MAST	ETS	2075	2346	N/A
6	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	N/A
7	HORN ANTENNA	ROHDE & SCHWARZ	HF906	100039	2012/10/27
8	Amplifier	Sonoma	310N	E009-13	2012/10/27
9	JS amplifier	ROHDE & SCHWARZ	JS4-00101800-28-5A	F201504	2012/10/27
10	High pass filter	Compliance Direction systems	BSU-6	34202	2012/10/27

The calibration interval was one year.

## 4. TEST CONDITIONS AND RESULTS

### 4.1. Conducted Emissions Test

#### TEST CONFIGURATION



#### TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2009.
- 2 Support equipment, if needed, was placed as per ANSI C63.4-2009.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2009.
- 4 The EUT received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

**CONDUCTED POWER LINE EMISSION LIMIT**

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following :

Frequency (MHz)	Maximum RF Line Voltage (dB $\mu$ V)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

For unintentional device, according to § 15.107(c) Line Conducted Emission Limits is as following :

Frequency (KHz)	Maximum RF Line Voltage	
535-1705	1000 $\mu$ V	60dB $\mu$ V

For In-House BPL devices operating as unintentional radiators below 30 MHz, the conducted emissions shall be measured in the 535 – 1705 kHz band as specified in Section 15.107(c). For In- House BPL devices operating as unintentional radiators above 30 MHz, the conducted emissions shall be measured as specified in Section 15.107(a).

**TEST CONDITION**

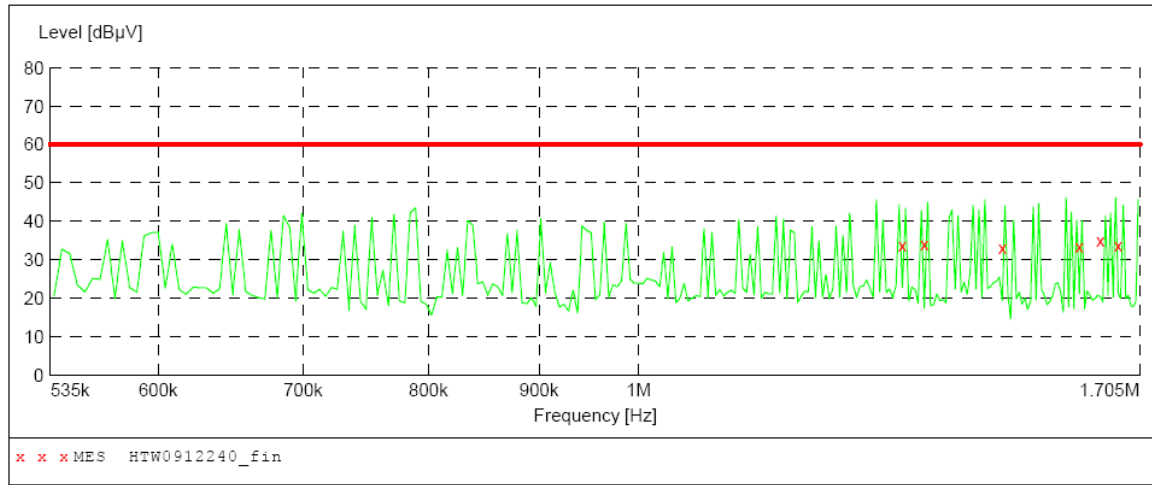
The data rate was set at the maximum rate used by the EUT, and the operating frequency of the EUT as unintentional radiator was divided into two frequency band, below 30MHz and above 30MHz.

**TEST RESULTS**

Operating frequency blow 30MHz

SCAN TABLE: "FCC-ASO(9K-30M)FIN"

Short Description: 150K-30M Voltage

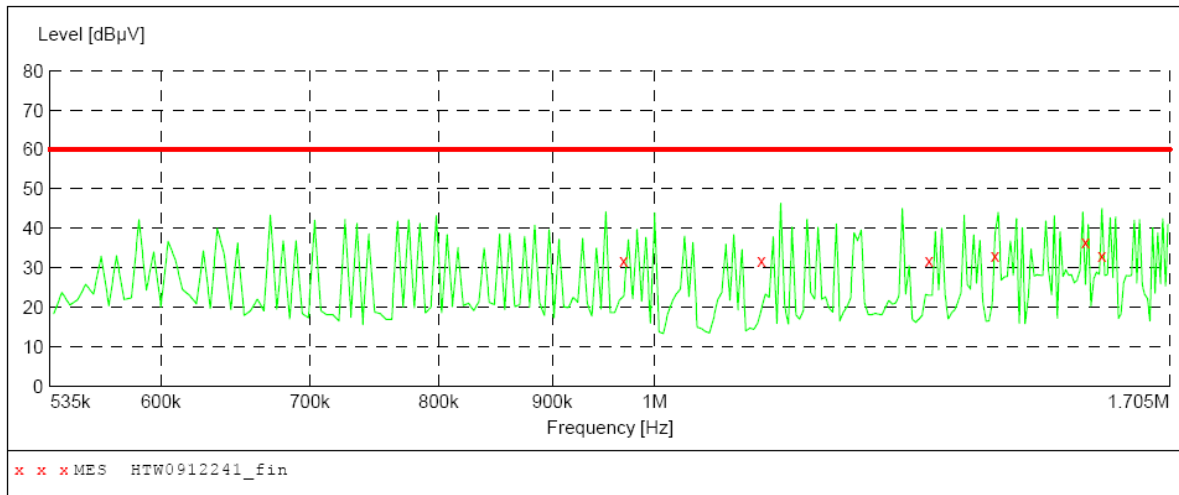


MEASUREMENT RESULT: "HTW0912240\_fin"

9/12/2013 4:17PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
1.324500	33.70	10.2	60	26.3	QP	N	GND
1.356000	34.00	10.2	60	26.0	QP	N	GND
1.473000	33.30	10.2	60	26.7	QP	N	GND
1.599000	33.40	10.2	60	26.6	QP	N	GND
1.635000	35.00	10.2	60	25.0	QP	N	GND
1.666500	33.90	10.2	60	26.1	QP	N	GND

**SCAN TABLE: "FCC-ASO (9K-30M) FIN"**  
 Short Description: 150K-30M Voltage



**MEASUREMENT RESULT: "HTW0912241\_fin"**

9/12/2013 4:20PM

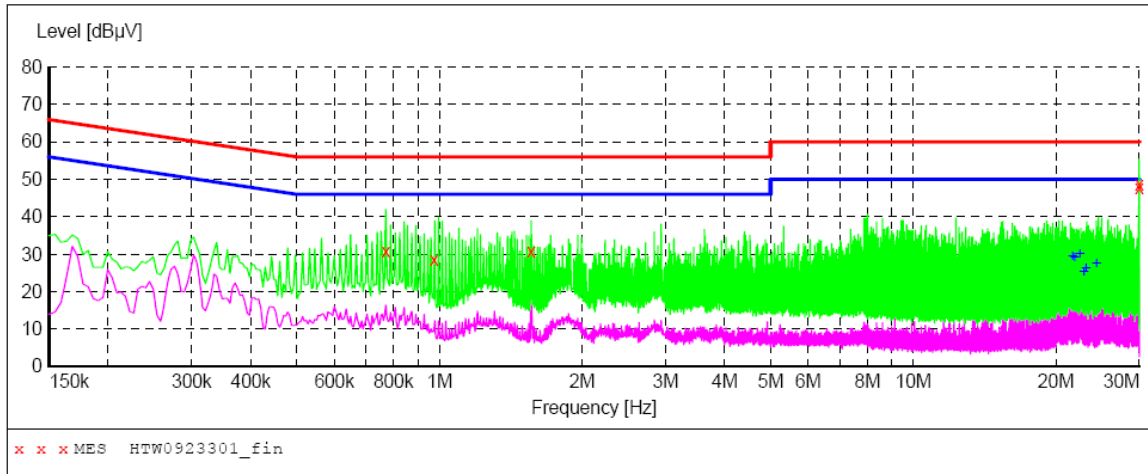
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.969000	32.00	10.2	60	28.0	QP	L1	GND
1.117500	31.80	10.2	60	28.2	QP	L1	GND
1.329000	31.90	10.2	60	28.1	QP	L1	GND
1.423500	33.10	10.2	60	26.9	QP	L1	GND
1.563000	36.50	10.2	60	23.5	QP	L1	GND
1.590000	33.00	10.2	60	27.0	QP	L1	GND

**Remark:**

- (1) Measuring frequencies from 0.15 MHz to the 30 MHz.
- (2) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) The IF bandwidth of EMI Test Receiver was 9KHz for measuring from 0.15 MHz to 30MHz

Operating frequency Above 30MHz

SCAN TABLE: "Voltage (9K-30M) FIN"  
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "HTW0923301\_fin"

9/23/2013 8:57AM

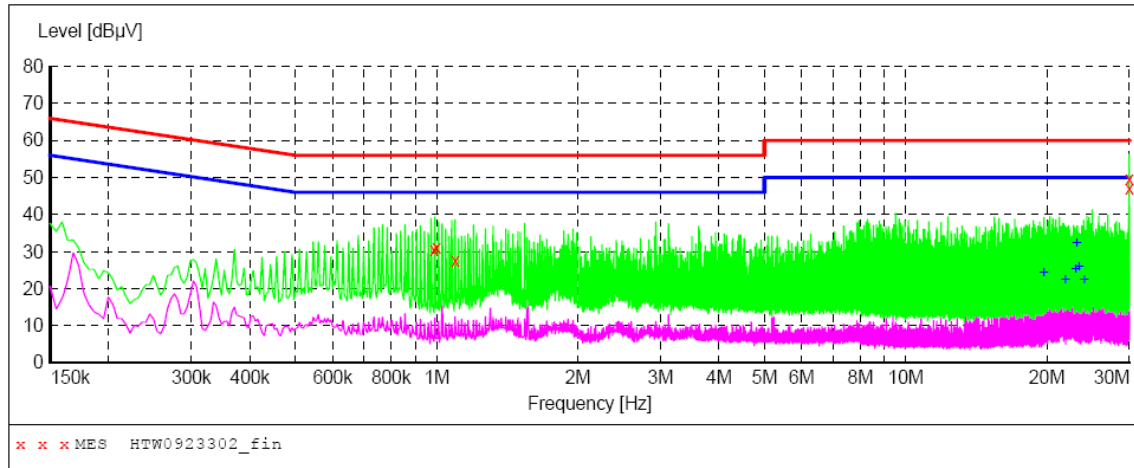
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.771000	30.90	10.2	56	25.1	QP	N	GND
0.973500	28.50	10.2	56	27.5	QP	N	GND
1.563000	30.70	10.3	56	25.3	QP	N	GND
29.980500	47.70	11.2	60	12.3	QP	N	GND
29.985000	48.80	11.2	60	11.2	QP	N	GND

MEASUREMENT RESULT: "HTW0923301\_fin2"

9/23/2013 8:57AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
21.664500	29.60	11.0	50	20.4	AV	N	GND
21.907500	29.10	11.0	50	20.9	AV	N	GND
22.456500	30.10	11.0	50	19.9	AV	N	GND
22.884000	25.20	11.0	50	24.8	AV	N	GND
23.131500	26.40	11.0	50	23.6	AV	N	GND
24.351000	27.70	11.0	50	22.3	AV	N	GND

**SCAN TABLE: "Voltage (9K-30M) FIN"**  
 Short Description: 150K-30M Voltage



**MEASUREMENT RESULT: "HTW0923302\_fin"**

9/23/2013 9:01AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.987000	30.60	10.3	56	25.4	QP	L1	GND
1.000500	31.20	10.3	56	24.8	QP	L1	GND
1.095000	27.70	10.3	56	28.3	QP	L1	GND
29.971500	47.00	11.2	60	13.0	QP	L1	GND
29.985000	49.60	11.2	60	10.4	QP	L1	GND

**MEASUREMENT RESULT: "HTW0923302\_fin2"**

9/23/2013 9:01AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
19.711500	24.50	10.9	50	25.5	AV	L1	GND
21.903000	22.40	11.0	50	27.6	AV	L1	GND
23.064000	25.50	11.0	50	24.5	AV	L1	GND
23.127000	32.50	11.0	50	17.5	AV	L1	GND
23.433000	25.90	11.0	50	24.1	AV	L1	GND
24.040500	22.40	11.0	50	27.6	AV	L1	GND

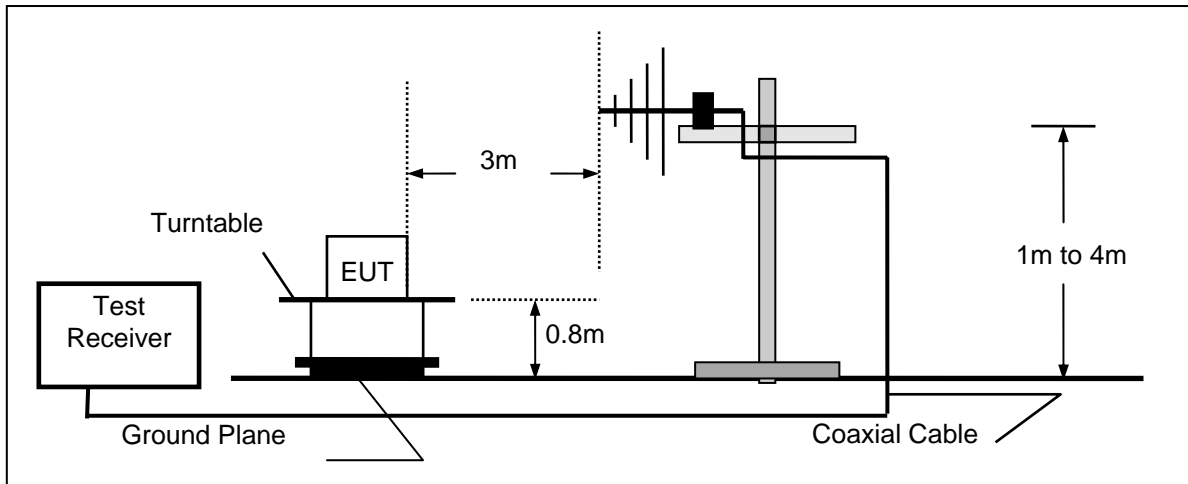
**Remark:**

- (1) Measuring frequencies from 0.15 MHz to the 30 MHz.
- (2) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) The IF bandwidth of EMI Test Receiver was 9KHz for measuring from 0.15 MHz to 30MHz

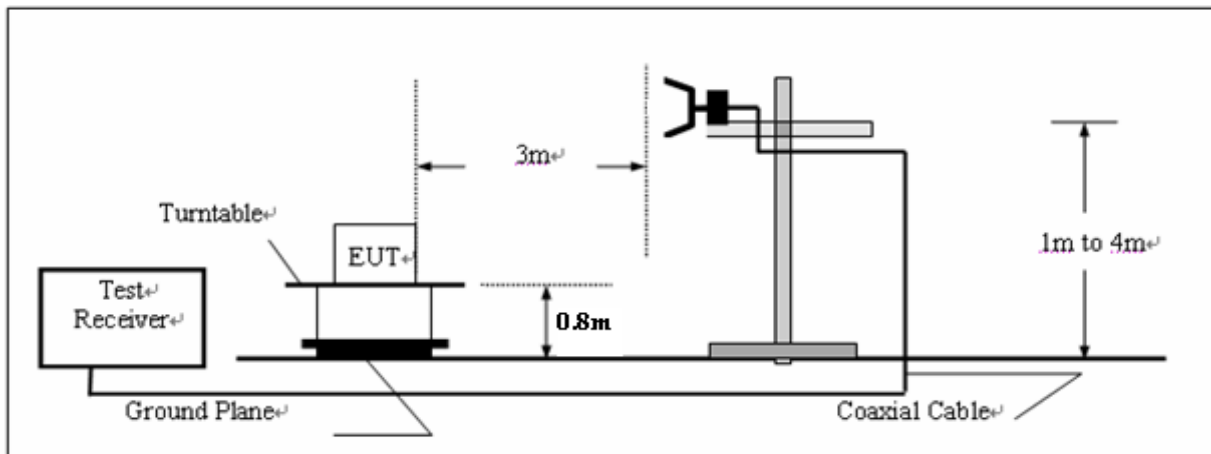
## 4.2. Radiated Emission Test

### TEST CONFIGURATION

- a) Radiated Emission Test Set-Up, Frequency below 1000MHz



- b) Radiated Emission Test Set-Up, Frequency above 1000MHz



### TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.



**FIELD STRENGTH CALCULATION**

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

For example

Frequency (MHz)	FS (dB $\mu$ V/m)	RA (dB $\mu$ V/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
300.00	40	58.1	12.2	1.6	31.90	-18.1

$$\text{Transd} = \text{AF} + \text{CL} - \text{AG}$$

**RADIATION LIMIT**

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dB $\mu$ V/m)	Radiated ( $\mu$ V/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

**TEST CONDITION**

The data rate was set at the maximum rate used by the EUT .

The highest fundamental frequency of the EUT is 150MHz, according to § 15.33(a), the radiated emission

test was performed within the frequency band 30MHz – 2000MHz. The unintentional operating frequency range is 2MHz – 30MHz.

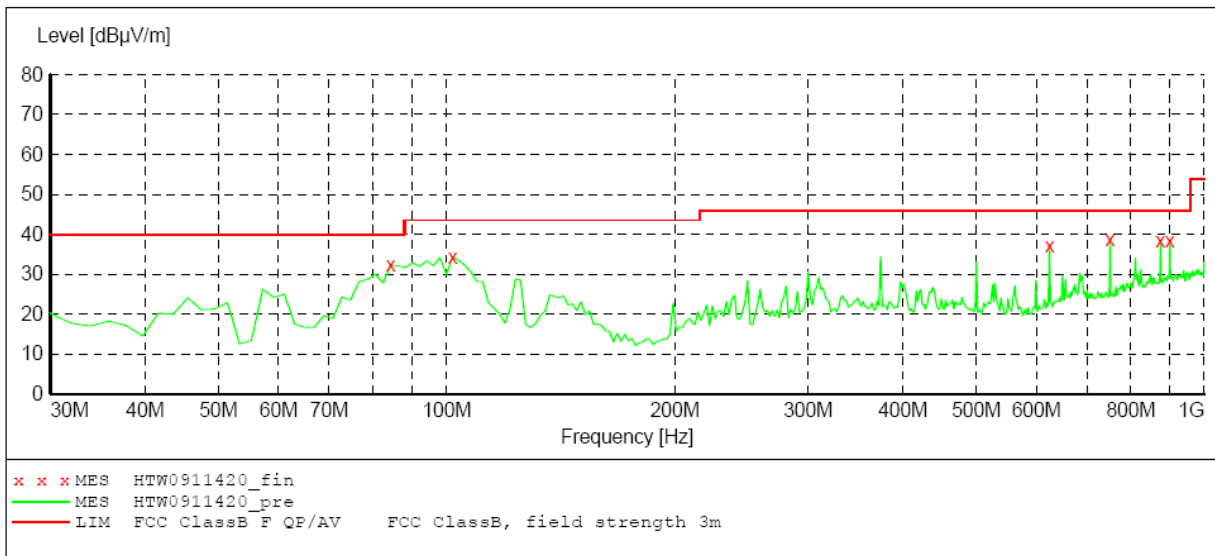
**TEST RESULTS**

**SCAN TABLE: "test Field(30M-1G)QP"**

Short Description:			Field Strength(30M-1G)			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562

**SWEEP TABLE: "test (30M-1G)"**

Short Description:		Field Strength				
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer	
Frequency	Frequency					
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 201106	



**MEASUREMENT RESULT: "HTW0911420\_fin"**

9/11/2013 4:18PM

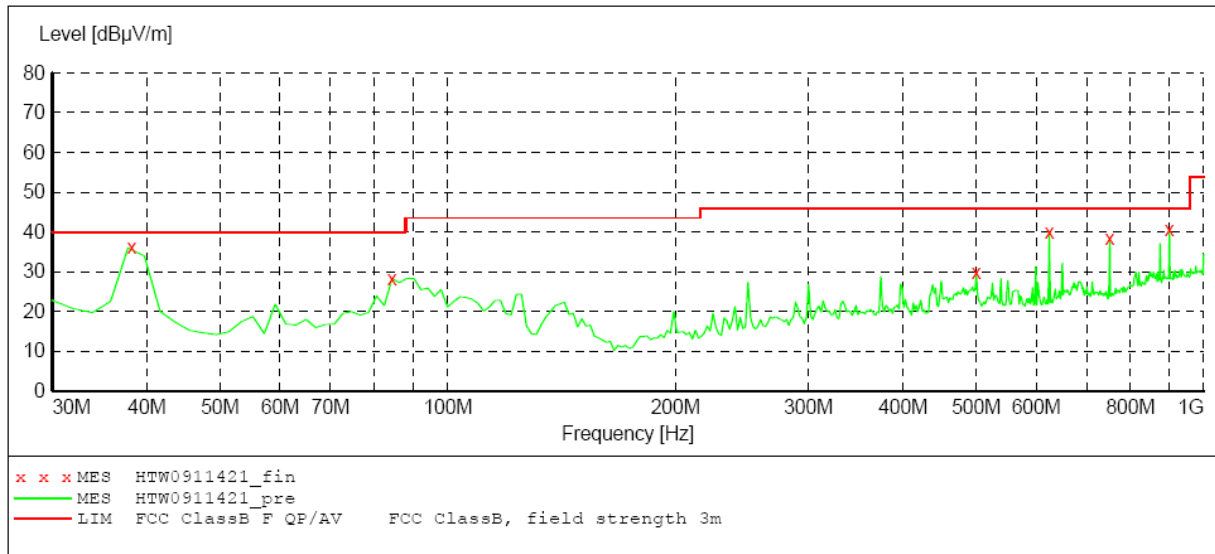
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
84.428858	32.30	-19.7	40.0	7.7	QP	300.0	188.00	HORIZONTAL
101.923848	34.30	-18.4	43.5	9.2	QP	300.0	188.00	HORIZONTAL
624.829659	37.20	-9.0	46.0	8.8	QP	100.0	181.00	HORIZONTAL
751.182365	38.80	-7.7	46.0	7.2	QP	100.0	181.00	HORIZONTAL
875.591182	38.20	-4.4	46.0	7.8	QP	100.0	145.00	HORIZONTAL
900.861723	38.40	-4.8	46.0	7.6	QP	100.0	145.00	HORIZONTAL

**SCAN TABLE: "test Field(30M-1G)QP"**

Short Description:		Field Strength(30M-1G)					
Start	Stop	Step	Detector	Meas.	IF	Transducer	
Frequency	Frequency	Width		Time	Bandw.		
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562	

**SWEEP TABLE: "test (30M-1G)"**

Short Description:		Field Strength				
Start	Stop	Detector	Meas.	IF	Transducer	
Frequency	Frequency		Time	Bandw.		
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562	201106



**MEASUREMENT RESULT: "HTW0911421\_fin"**

9/11/2013 4:20PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
37.775551	36.00	-13.9	40.0	4.0	QP	100.0	91.00	VERTICAL
84.428858	28.20	-19.7	40.0	11.8	QP	100.0	155.00	VERTICAL
500.420842	29.70	-11.7	46.0	16.3	QP	100.0	84.00	VERTICAL
624.829659	40.00	-9.0	46.0	6.0	QP	100.0	25.00	VERTICAL
751.182365	38.50	-7.7	46.0	7.5	QP	100.0	319.00	VERTICAL
900.861723	40.60	-4.8	46.0	5.4	QP	100.0	31.00	VERTICAL

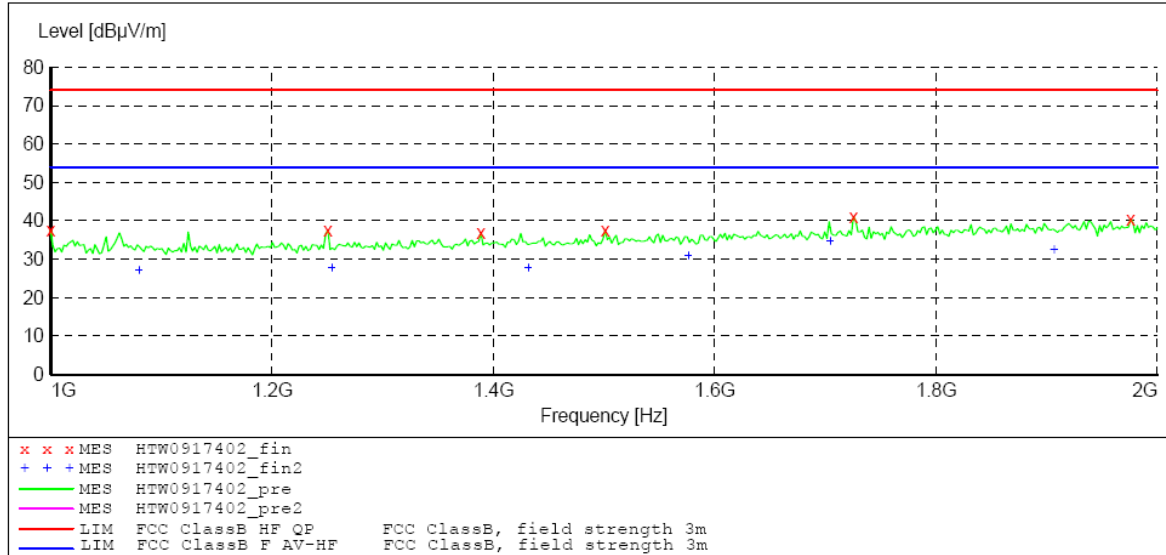
**Remark:**

- (1) Measuring frequencies from 30 MHz to the 1 GHz.
- (2) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz

Sweep TABLE: "test Field(1G-2G)QP"

Short Description: Field Strength(1G-2G)

Start Frequency	Stop Frequency	Detector	IF	Transducer
1.0 GHz	2.0 GHz	MaxPeak	1 MHz	HF906



MEASUREMENT RESULT: "HTW0917402\_fin"

9/17/2013 8:56AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1000.000000	37.50	-10.3	74.0	36.5	PK	100.0	245.00	VERTICAL
1250.501002	37.60	-8.4	74.0	36.4	PK	100.0	290.00	VERTICAL
1388.777555	36.90	-7.5	74.0	37.1	PK	100.0	348.00	VERTICAL
1501.002004	37.60	-7.1	74.0	36.4	PK	100.0	157.00	VERTICAL
1725.450902	41.20	-5.8	74.0	32.8	PK	100.0	14.00	VERTICAL
1975.951904	40.40	-3.8	74.0	33.6	PK	100.0	80.00	VERTICAL

MEASUREMENT RESULT: "HTW0917402\_fin2 "

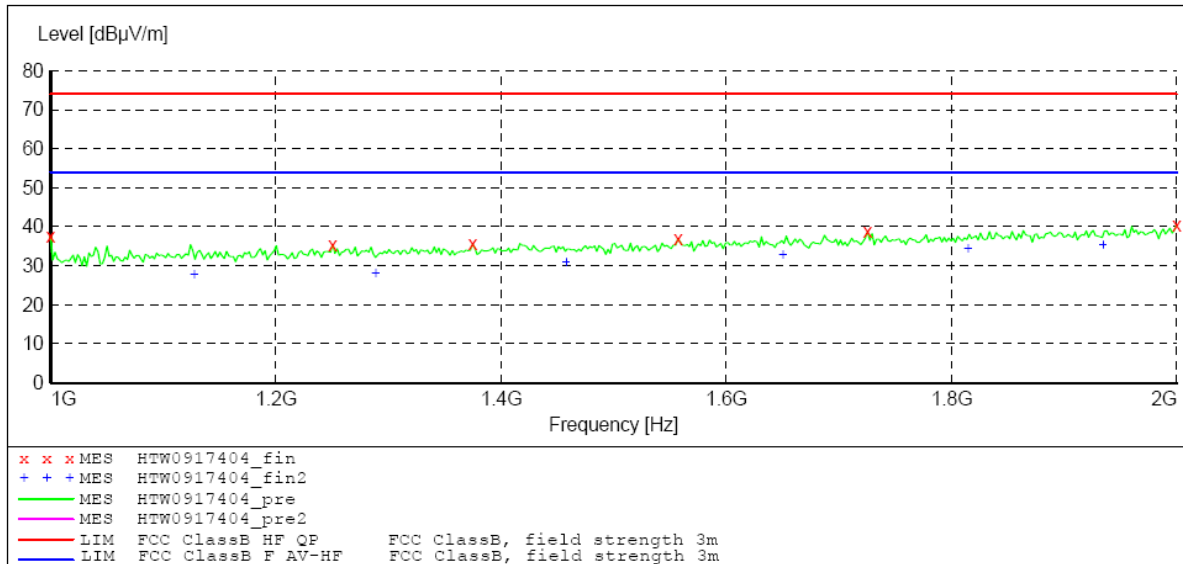
9/17/2013 8:56AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1150.220441	25.40	-9.5	54.0	28.6	AV	100.0	45.00	VERTICAL
1260.501002	28.50	-8.4	54.0	25.5	AV	100.0	45.00	VERTICAL
1436.673347	28.70	-7.8	54.0	25.3	AV	100.0	7.00	VERTICAL
1567.134269	30.70	-6.7	54.0	23.3	AV	100.0	166.00	VERTICAL
1715.511022	32.10	-5.5	54.0	21.9	AV	100.0	279.00	VERTICAL
1911.923848	30.80	-3.9	54.0	23.2	AV	100.0	0.00	VERTICAL

Sweep TABLE: "test Field(1G-2G)QP"

Short Description: Field Strength(1G-2G)

Start Stop Detector IF Transducer  
 Frequency Frequency Bandw.  
 1.0 GHz 2.0 GHz MaxPeak 1 MHz HF906



**MEASUREMENT RESULT: "HTW0917404\_fin"**

9/17/2013 9:00AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1000.000000	37.50	-10.3	74.0	36.5	PK	100.0	159.00	HORIZONTAL
1250.501002	35.50	-8.4	74.0	38.5	PK	100.0	203.00	HORIZONTAL
1374.749499	35.60	-7.6	74.0	38.4	PK	100.0	130.00	HORIZONTAL
1557.114228	37.00	-6.8	74.0	37.0	PK	100.0	339.00	HORIZONTAL
1725.450902	38.80	-5.8	74.0	35.2	PK	100.0	71.00	HORIZONTAL
2000.000000	40.50	-3.7	74.0	33.5	PK	100.0	195.00	HORIZONTAL

**MEASUREMENT RESULT: "HTW0917404\_fin2 "**

9/17/2013 9:00AM

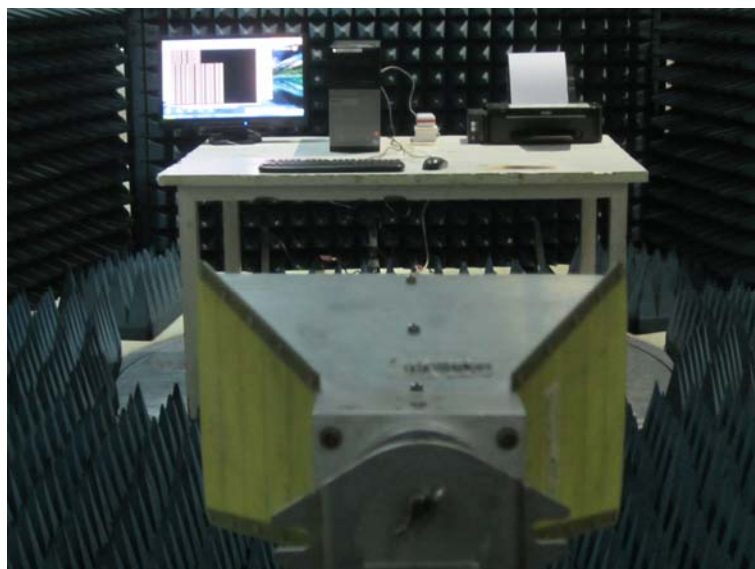
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1182.164329	28.80	-9.7	54.0	25.2	AV	100.0	239.00	HORIZONTAL
1286.513026	29.40	-8.4	54.0	24.6	AV	100.0	72.00	HORIZONTAL
1465.765531	30.90	-7.5	54.0	23.1	AV	100.0	13.00	HORIZONTAL
1685.170341	31.40	-6.6	54.0	22.6	AV	100.0	213.00	HORIZONTAL
1817.450879	32.30	-5.8	54.0	21.7	AV	100.0	53.00	HORIZONTAL
1935.931454	33.90	-3.9	54.0	20.1	AV	100.0	0.00	HORIZONTAL

Remark:

- (1) Measuring frequencies from 1 GHz to the 2 GHz.
- (2) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) The RBW of EMI Test Receiver was 1MHz and the VBW was 3MHz for measuring from 1 GHz to 2 GHz.

## 5. Test Setup Photos of the EUT





## 6. External and Internal Photos of the EUT

### EXternal Photos of PL7667-MST







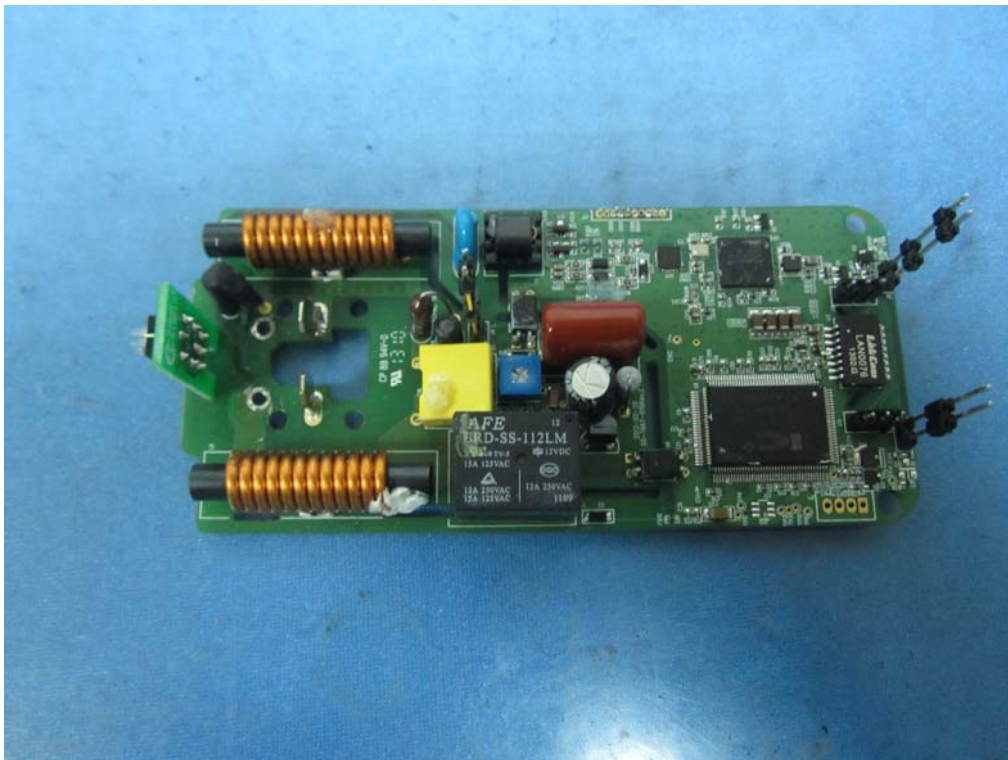
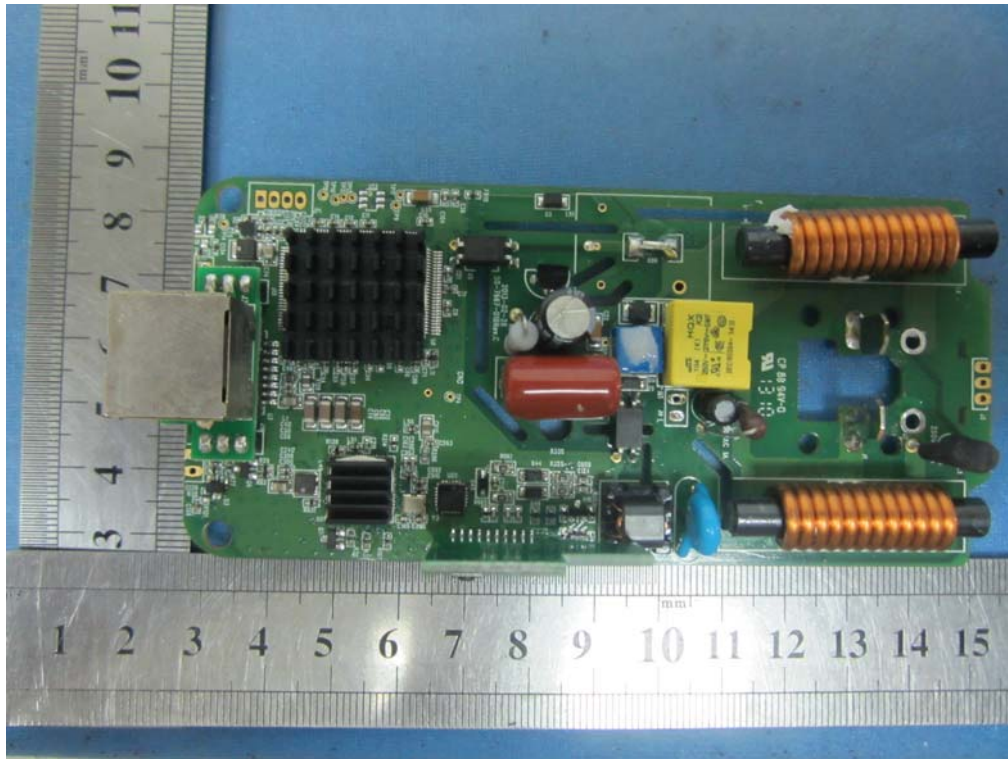
**External Photos of PL7667-ETH**

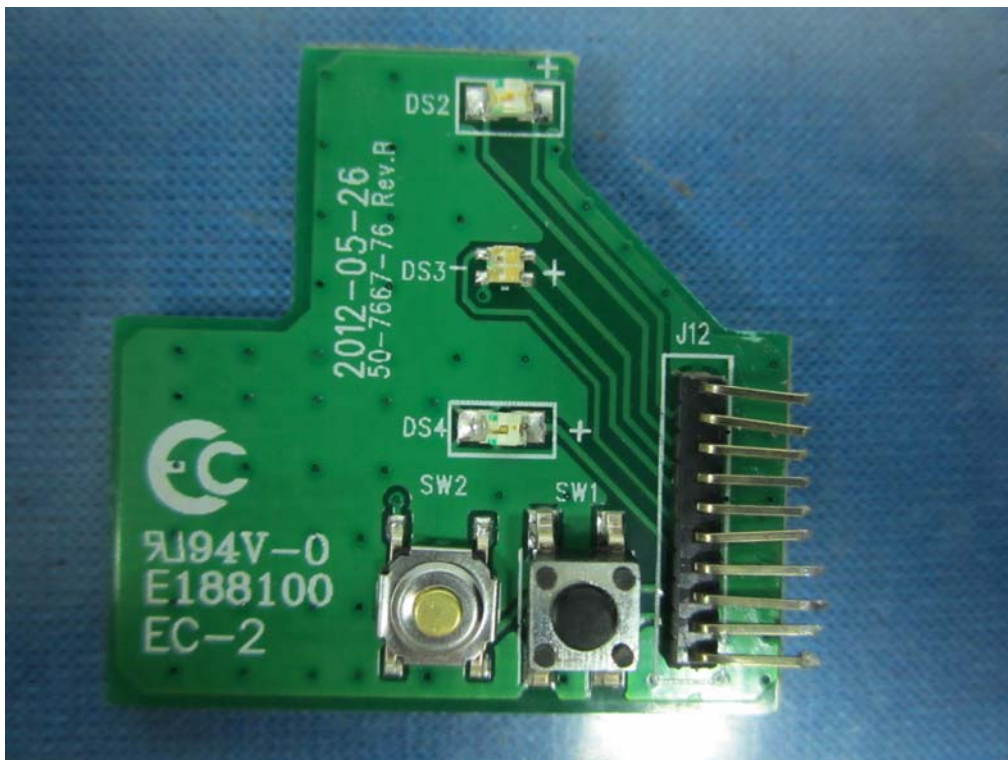


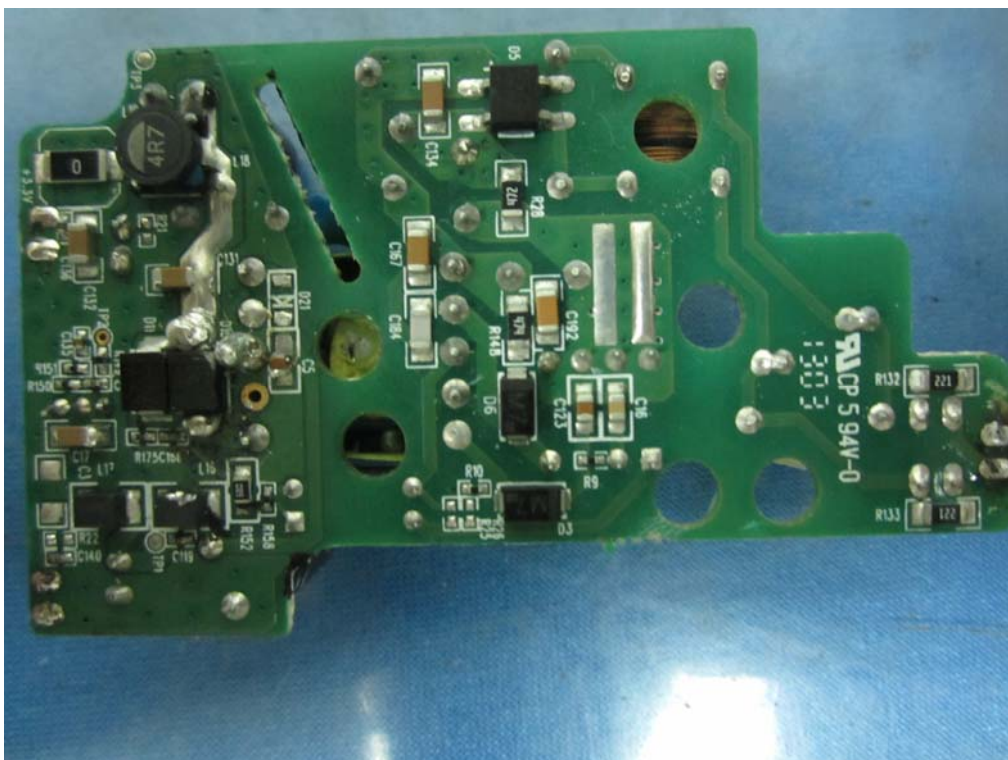
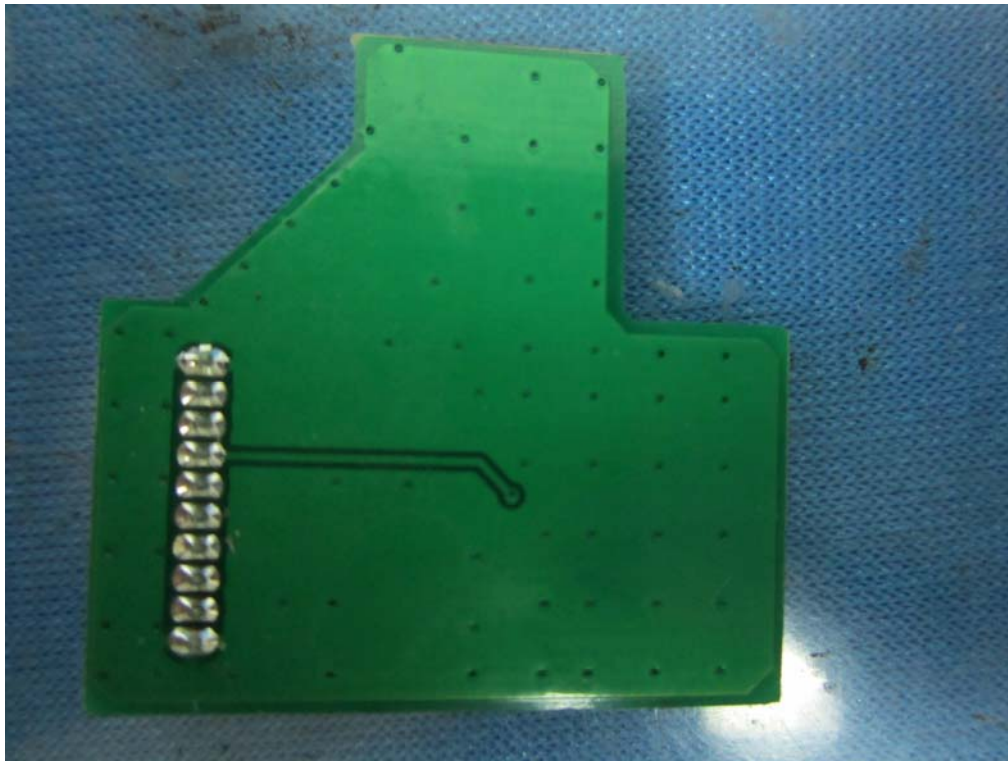


Internal Photos











.....End of Report.....