

FCC PART 18  
TEST REPORT

For

**ZHEJIANG PUYUAN HOLDINGS COMPANY LIMITED**

260 XINGPING WEST ROAD, DONGYANG, ZHEJIANG, CHINA

**FCC ID: RTV-ESP-T2-13W**

<b>Report Type:</b> Original Report	<b>Product Name:</b> CFL
<b>Test Engineer:</b> Andrew Shu	<i>Andrew Shu</i>
<b>Report Number:</b> RSZ130115551-00	
<b>Report Date:</b> 2013-03-18	
<b>Reviewed By:</b> EMC Leader	<i>Dick Zhang</i>
<b>Prepared By:</b>	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 <a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a>

**Note:** This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP\*, or any agency of the Federal Government.

\* This report may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk "★"

## **TABLE OF CONTENTS**

<b>GENERAL INFORMATION .....</b>	<b>3</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....	3
OBJECTIVE.....	3
RELATED SUBMITTAL(S)/GRANT(S) .....	3
TEST METHODOLOGY .....	3
TEST FACILITY .....	3
<b>SYSTEM TEST CONFIGURATION .....</b>	<b>5</b>
JUSTIFICATION.....	5
EUT EXERCISE SOFTWARE.....	5
SPECIAL ACCESSORIES .....	5
EQUIPMENT MODIFICATIONS.....	5
SUPPORT EQUIPMENT LIST AND DETAILS.....	5
EXTERNAL CABLE .....	5
BLOCK DIAGRAM OF TEST SETUP.....	6
<b>SUMMARY OF TEST RESULT .....</b>	<b>7</b>
<b>FCC §18.307 - AC LINE CONDUCTED EMISSIONS.....</b>	<b>8</b>
APPLICABLE STANDARD.....	8
EUT SETUP .....	8
EMI TEST RECEIVER SETUP .....	9
TEST PROCEDURE.....	9
TEST EQUIPMENT LIST AND DETAILS .....	9
TEST RESULTS SUMMARY .....	9
TEST DATA.....	10
<b>FCC §18.305 – FIELD STRENGTH .....</b>	<b>12</b>
APPLICABLE STANDARD.....	12
EUT SETUP .....	12
EMI TEST RECEIVER SETUP AND SPECTRUM ANALYZER SETUP .....	12
TEST PROCEDURE.....	13
CORRECTED AMPLITUDE CALCULATION .....	13
TEST EQUIPMENT LIST AND DETAILS .....	13
TEST RESULTS SUMMARY .....	13
TEST DATA.....	14

---

## GENERAL INFORMATION

---

### Product Description for Equipment under Test (EUT)

The ZHEJIANG PUYUAN HOLDINGS COMPANY LIMITED's model: ESP-T2 13W (FCC ID: RTV-ESP-T2-13W) (the "EUT") in this report was a CFL, which was measured approximately: 11.0 cm (L) x 5.0 cm (W) x 5.0 cm (H), the rated with input voltage: AC 120V/60Hz.

*\*All measurement and test data in this report was gathered from production sample serial number: 1301011 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2013-01-15.*

### Objective

This test report is prepared on behalf of ZHEJIANG PUYUAN HOLDINGS COMPANY LIMITED in accordance with Part 2-Subpart J and Part 18-Subparts A, B and C of the Federal Communication Commissions rules and regulations.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 18.

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

No related submittal(s).

### Test Methodology

All measurements contained in this report were conducted with MP-5, FCC Methods of Measurements of Radio Noise Emissions from ISM Equipment, February 1986. All measurement was performed at Bay Area Compliance Laboratories Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

### Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

## SYSTEM TEST CONFIGURATION

### Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

### EUT Exercise Software

No exercise software was used.

### Special Accessories

No special accessory was used.

### Equipment Modifications

No modification was made to the EUT tested.

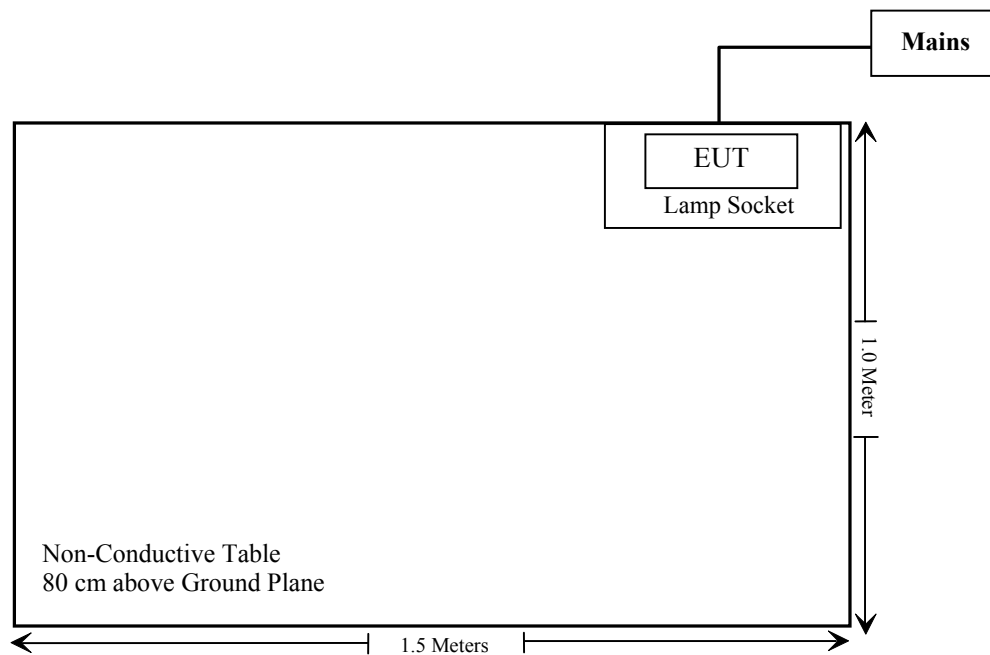
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
N/A	Lamp Socket	N/A	N/A

### External Cable

Cable Description	Length (m)	From Port	To
Unshielded Undetachable AC Cable	1.0	Mains	Lamp Socket

### Block Diagram of Test Setup



**SUMMARY OF TEST RESULT**

FCC Rules	Description of Test	Results
§18.307	AC Line Conducted Emissions	Compliance
§18.305	Field Strength	Compliance

## FCC §18.307 - AC LINE CONDUCTED EMISSIONS

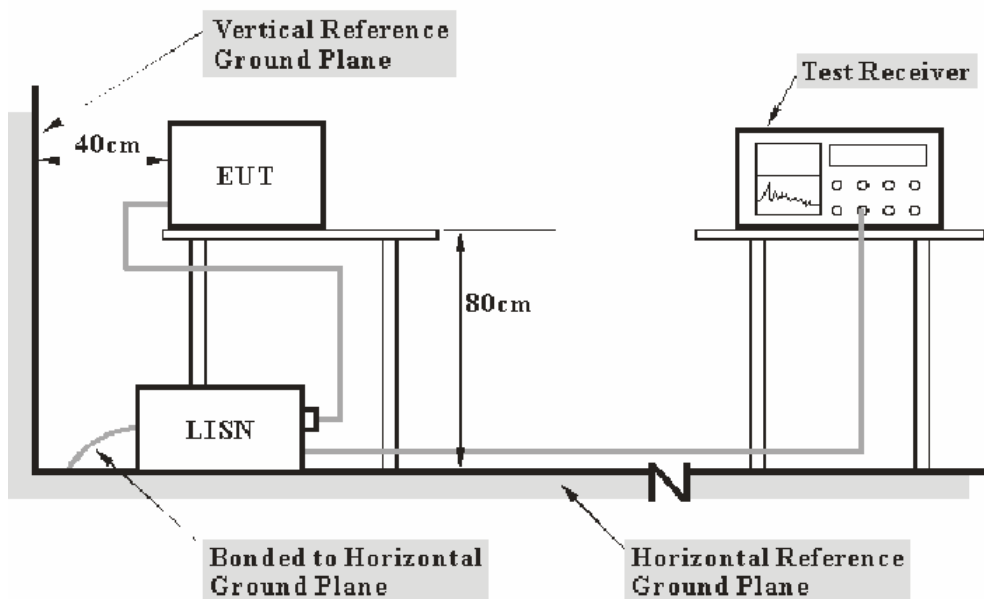
### Applicable Standard

Conduction limits. For the following equipment, when 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 shall not exceed the limits in the following tables. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN).

RF lighting devices

Frequency (MHz)	Maximum RF line voltage measured with a 50 $\mu$ H/50 ohm LISN ( $\mu$ V)
Non-consumer equipment	
0.45 to 1.6	1000
1.6 to 30	3000
Consumer equipment	
0.45 to 2.51	250
2.51 to 3.0	3000
3.0 to 30	250

### EUT Setup



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

The setup of EUT is according with MP-5: 1986 measurement procedure. Specification used was with the FCC Part 18 limits.



The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The lamp socket was connected to a 120 VAC/60 Hz power source.

### EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 450 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
450 kHz – 30 MHz	9 kHz

### Test Procedure

During the conducted emission test, the lamp socket was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-Peak detection and Average detection mode.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2012-11-24	2013-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2012-08-22	2013-08-21
Rohde & Schwarz	Pulse limiter	ESH3Z2	DE25985	2012-07-08	2013-07-07
BACL	CE Test software	BACL-CE	V1.0	-	-

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

### Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 18.307(a), with the worst margin reading of:

**1.99 dB at 0.470 MHz in the Neutral conducted mode**

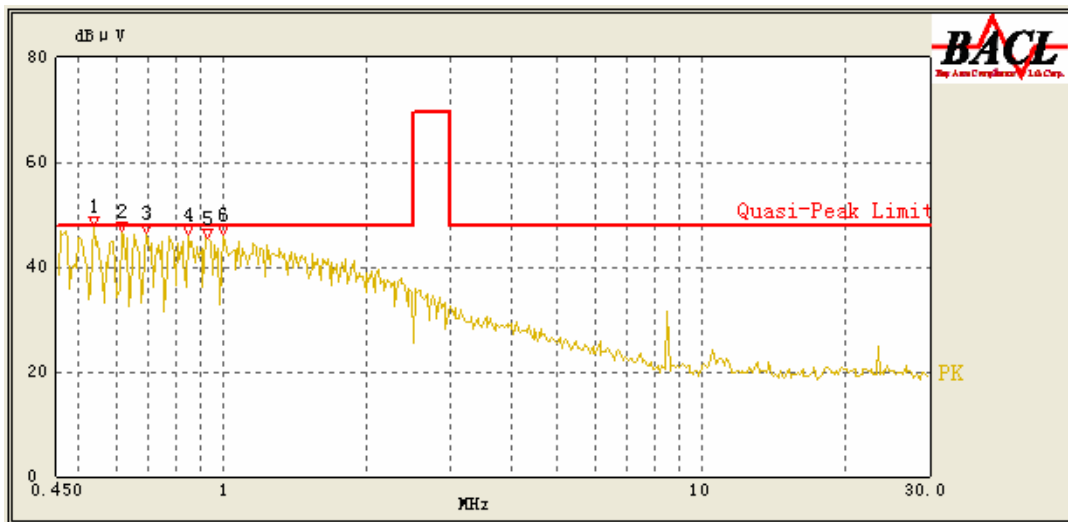
**Test Data****Environmental Conditions**

<b>Temperature:</b>	25°C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	100.0 kPa

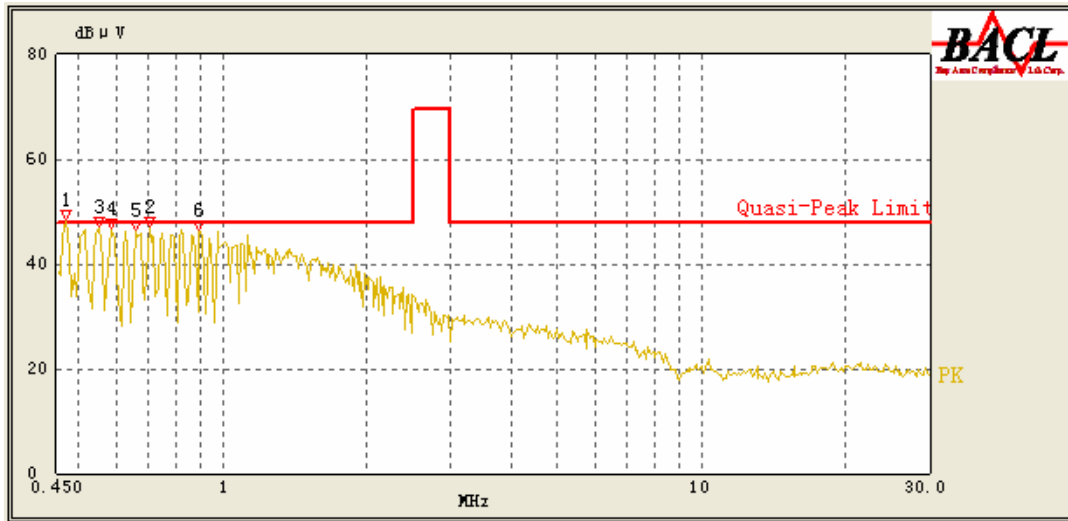
The testing was performed by Andrew Shu on 2013-01-18.

Test Mode: On

AC 120V/60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
1.005	45.01	10.17	48	2.99	QP
0.540	44.60	10.25	48	3.40	QP
0.930	41.55	10.18	48	6.45	QP
0.695	40.43	10.22	48	7.57	QP
0.615	37.78	10.23	48	10.22	QP
0.850	35.62	10.19	48	12.38	QP

**AC 120V/ 60 Hz, Neutral:**

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.470	46.01	10.25	48.00	1.99	QP
0.705	45.73	10.21	48.00	2.27	QP
0.585	44.61	10.23	48.00	3.39	QP
0.555	44.41	10.23	48.00	3.59	QP
0.660	40.34	10.22	48.00	7.66	QP
0.895	39.68	10.19	48.00	8.32	QP

**Note:**

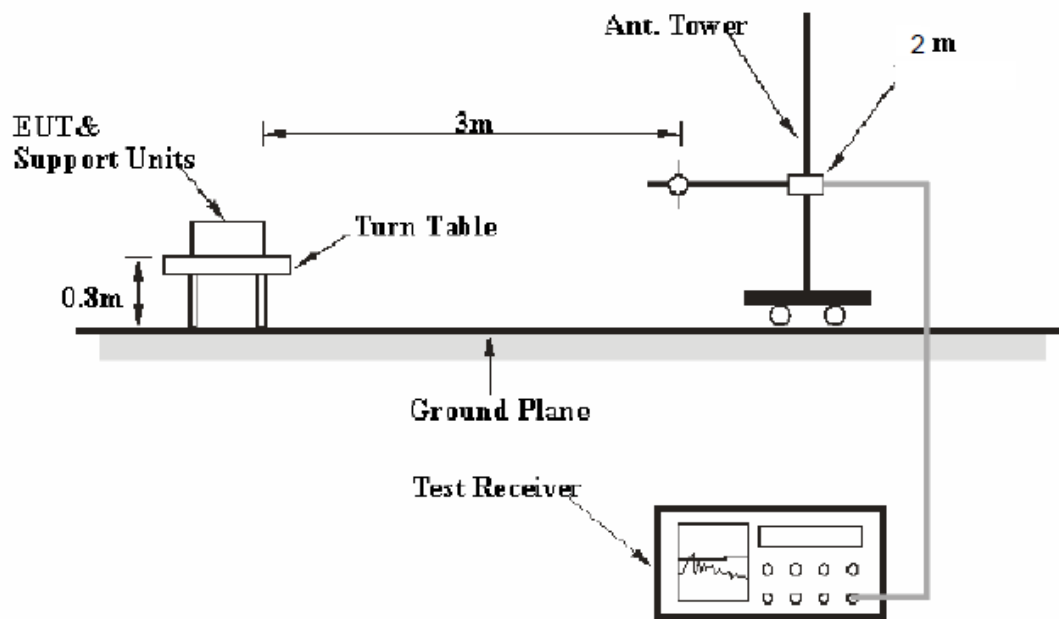
- 1) Corrected Amplitude = Reading + Correction Factor
- 2) Correction Factor = LISN/ISN VDF (Voltage Division Factor) + Cable Loss + Pulse Limiter Attenuation  
The corrected factor has been input into the transducer of the test software.
- 3) Margin = Limit – Corrected Amplitude

## FCC §18.305 – FIELD STRENGTH

### Applicable Standard

FCC §18.305(b)

### EUT Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the FCC MP - 5.

The lamp socket was connected to a 120 VAC/60 Hz power source.

### EMI Test Receiver Setup and Spectrum Analyzer Setup

The system was investigated from 9 kHz to 1000 MHz.

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
9 kHz – 150 kHz	100 Hz	300Hz	200 Hz	QP
150 kHz – 30 MHz	10 kHz	30 kHz	9 kHz	QP
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP

## Test Procedure

During the radiated emission test, the lamp socket was connected to the AC floor outlet.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-Peak detection mode.

## Corrected Amplitude Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ETS-LINDGREN	Passive Loop Antenna	6512	00029604	2011-11-30	2014-11-29
HP	Amplifier	8447E	1937A01046	2012-11-24	2013-11-23
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2012-08-08	2013-08-07
R&S	Auto test Software	EMC32	V6.30	-	-

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

## Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 18.305(b), with the worst margin reading of:

**17.66 dB at 0.019 MHz below 30 MHz**

## Test Data

### Environmental Conditions

Temperature:	23~25 °C
Relative Humidity:	50~52 %
ATM Pressure:	100.0 kPa

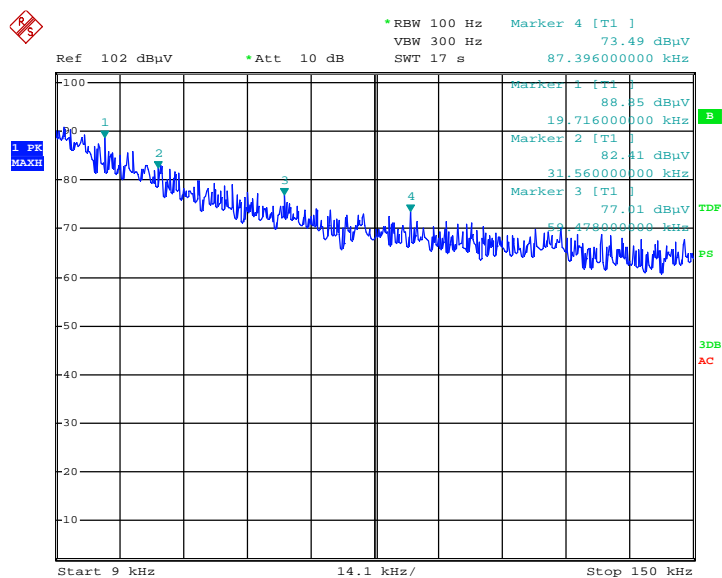
The testing was performed by Andrew Shu on 2013-01-17 and 2013-03-14.

Test Mode: On

9 kHz ~ 30 MHz:

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Detector (PK/QP/Ave.)	Direction (Degree)	Height (m)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
0.019	85.86	QP	78	2	83.62	103.52	17.66
0.031	82.01	QP	36	2	78.24	103.52	21.51
0.150	75.67	QP	47	2	63.48	103.52	27.85
0.059	72.44	QP	94	2	71.58	103.52	31.08
0.087	71.27	QP	165	2	67.07	103.52	32.25
0.134	68.35	QP	234	2	64.19	103.52	35.17

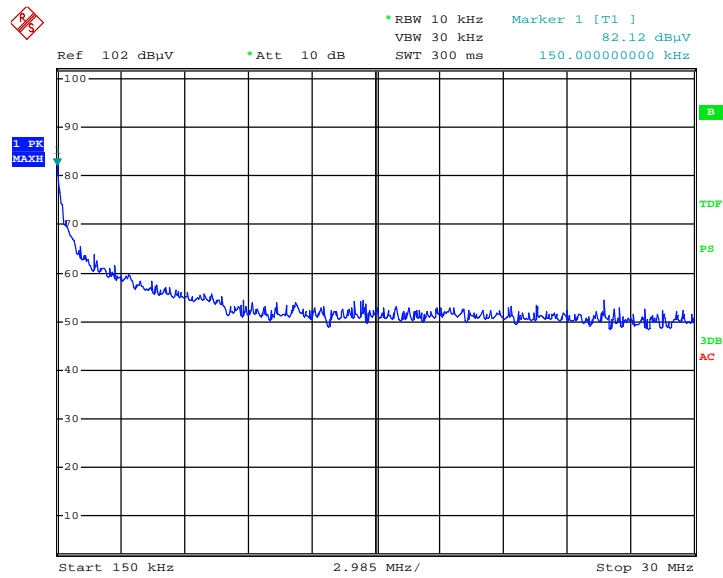
### 9 kHz-150 kHz



EUT

Date: 17.JAN.2013 10:27:52

# 150 kHz-30 MHz

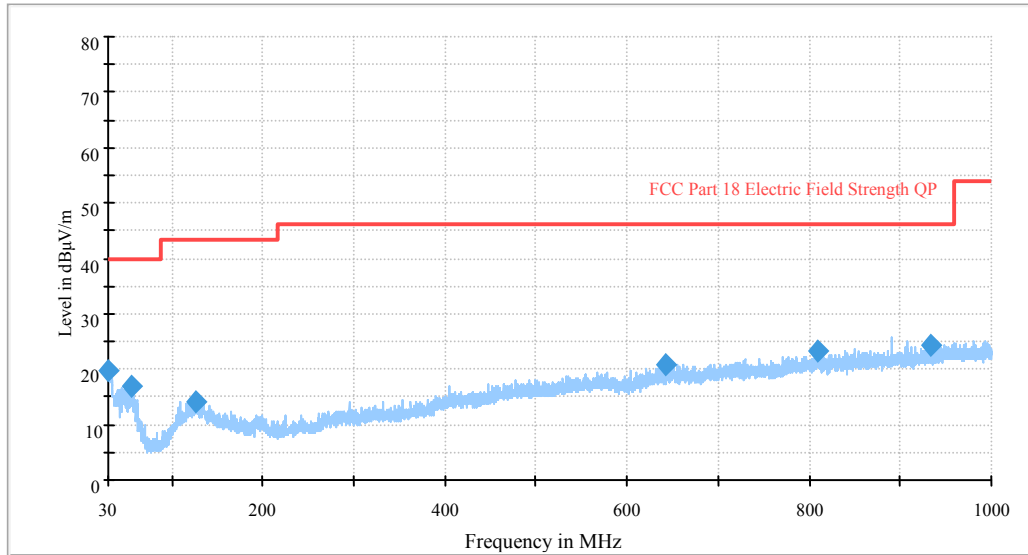


EUT

Date: 17.JAN.2013 10:32:44

30 MHz ~ 1000 MHz:

Auto Test (FCC part 18)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (deg)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
30.059818	19.7	100.0	V	0.0	-6.7	40.0	20.3
933.312500	24.3	100.0	V	0.0	-3.5	46.0	21.7
808.425000	23.3	100.0	V	0.0	-5.0	46.0	22.7
55.098750	16.8	100.0	V	0.0	-20.9	40.0	23.2
642.433750	20.8	100.0	V	0.0	-7.5	46.0	25.2
125.423750	14.2	100.0	V	0.0	-13.4	43.5	29.3

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