

FCC Part 18

Measurement and Test Report

For

SMC Co., LTD.

**Rm. 632 The O' Valley 555-9 Hogue-Dong, Donang-Gu, Anyang-Si,
Gyeonggi-Do, Korea**

FCC ID: YME30WSTF48P1

Report Concerns: Original Report	Equipment Type: SMPS module
Model:	<u>ST-F48P1(30W)</u>
Report No.:	<u>STR10068132E-3</u>
Test Date:	<u>2010-06-13 to 2010-07-15</u>
Issue Date:	<u>2010-07-16</u>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: SMC Co., LTD.
Address of applicant: Rm. 632 The O' Valley 555-9 Hogue-Dong, Donang-Gu,
Anyang-Gu, Anyang-Si, Gyeonggi-Do, Korea

Manufacturer: WENDENG SUNGMOON ELECTRONICS CO., LTD.
Address of applicant: No.7 Of ShenZhen Road, Development Zone, Wendeng
City, Shandong, China

General Description of E.U.T

Items	Description
EUT Description:	SMPS module
Trade Name:	/
Model No.:	ST-F48P1(30W)
Adjusted Models:	ST-F48P2(24W), ST-F48P3(22W), ST-F48P4(20W), ST-F48P5(18W), ST-F48P6(15W), ST-F48P7(9W)
Operation Frequency:	43.9kHz
Rated Voltage:	120V/60Hz
Rated Power:	30W
Size:	17.7x2.8x2.2 cm

Note: The test data is gathered from a production sample, model is ST-F48P1(30W), provided by the manufacturer. The other models listed in the report have different appearance and power without electronic construction and circuit changed, declared by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of SMC Co., LTD. in accordance with FCC Part 18, Subpart C, and section 18.307 and 18.311 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 18, Subpart C, and section 18.307 and 18.311 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

1.4 Test Methodology

All measurements contained in this report were conducted with 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 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted with Low Power and High Power, accordingly in reference to the Operating Instructions.

1.5 Test Facility

FCC – Registration No.: **994117**

SEM.Test Compliance Services 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 and the Registration is 994117.

Industry Canada (IC) Registration No.: **7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

1.6 EUT Exercise Software

The EUT exercise program used is started while the EUT powered on.

1.7 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
AC Cable	1	Unshielded	Without Core

2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 18.307(c)	Conducted Emission	Compliant
§ 18.305(c)	Radiated Emission	Compliant

3. §18.307 (c)- CONDUCTED EMISSION

3.1 Standard Applicable

According to FCC 18.307(c), 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:

Frequency (MHz)	Maximum RF line voltage measured with a 50 uH/50 ohm LISN (uV)
Non-consumer equipment	
0.45 to 1.6	1,000
1.6 to 30	3,000
Consumer equipment:	
0.45 to 2.51	250
2.51 to 3.0	3,000
3.0 to 30	250

3.2 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

3.3 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2009-08-12	2010-08-11
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2009-08-12	2010-08-11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2009-08-12	2010-08-11
AMN	EMCO	3825/2	11967C	2009-08-12	2010-08-11
Power Divider	Weinschel	1506A	PM204	2010-01-21	2011-01-20
Current Probe	FCC	F-33-4	091684	2010-01-21	2011-01-20

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

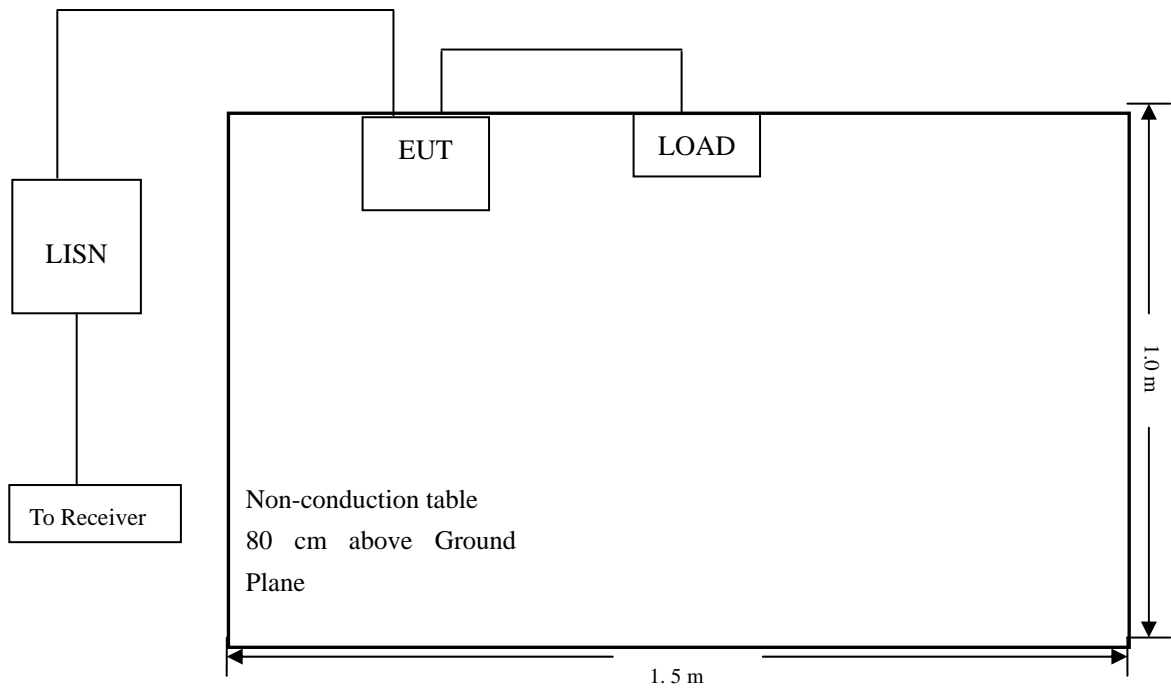
3.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 18.307 Limit.

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

The spacing between the peripherals was 10 cm.

3.5 Basic Test Setup Block Diagram



3.6 Environmental Conditions

Temperature:	25° C
Relative Humidity:	54%
ATM Pressure:	1016 mbar

3.7 Test Receiver Setup

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

- Start Frequency 450 kHz
- Stop Frequency..... 30 MHz
- Sweep Speed Auto
- IF Bandwidth..... 10 kHz
- Quasi-Peak Adapter Bandwidth 9 kHz
- Quasi-Peak Adapter Mode Normal

3.8 Summary of Test Results/Plots

According to the data in section 3.9, the EUT complied with the FCC Part 18.307 (c) Conducted margin for a RF lighting device, with the *worst* margin reading of:

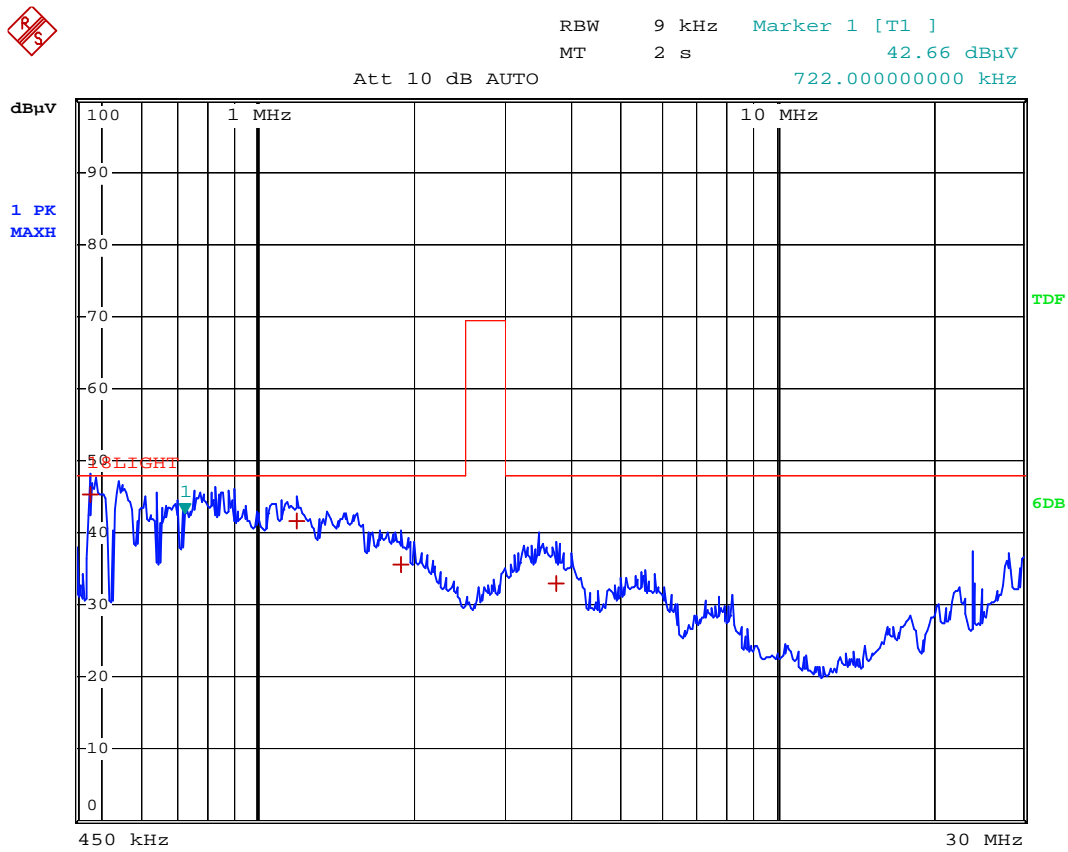
-2.75 dB μ V at 0.474MHz in the Neutral mode, 0.15-30MHz, Model: YN-11W

3.9 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC PART18 CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dB μ V	QP/Ave/Pk	Line/Neutral	dB μ V	dB
0.474	45.24	Pk	Neutral	48.00	-2.75
0.542	44.01	Pk	Line	48.00	-3.98
1.186	41.68	Pk	Neutral	48.00	-6.31
0.910	39.99	Pk	Line	48.00	-8.00
1.894	35.69	Pk	Neutral	48.00	-12.30
1.830	34.85	Pk	Line	48.00	-13.14
3.778	32.82	Pk	Neutral	48.00	-15.16

Plot of Conducted Emissions Test Data

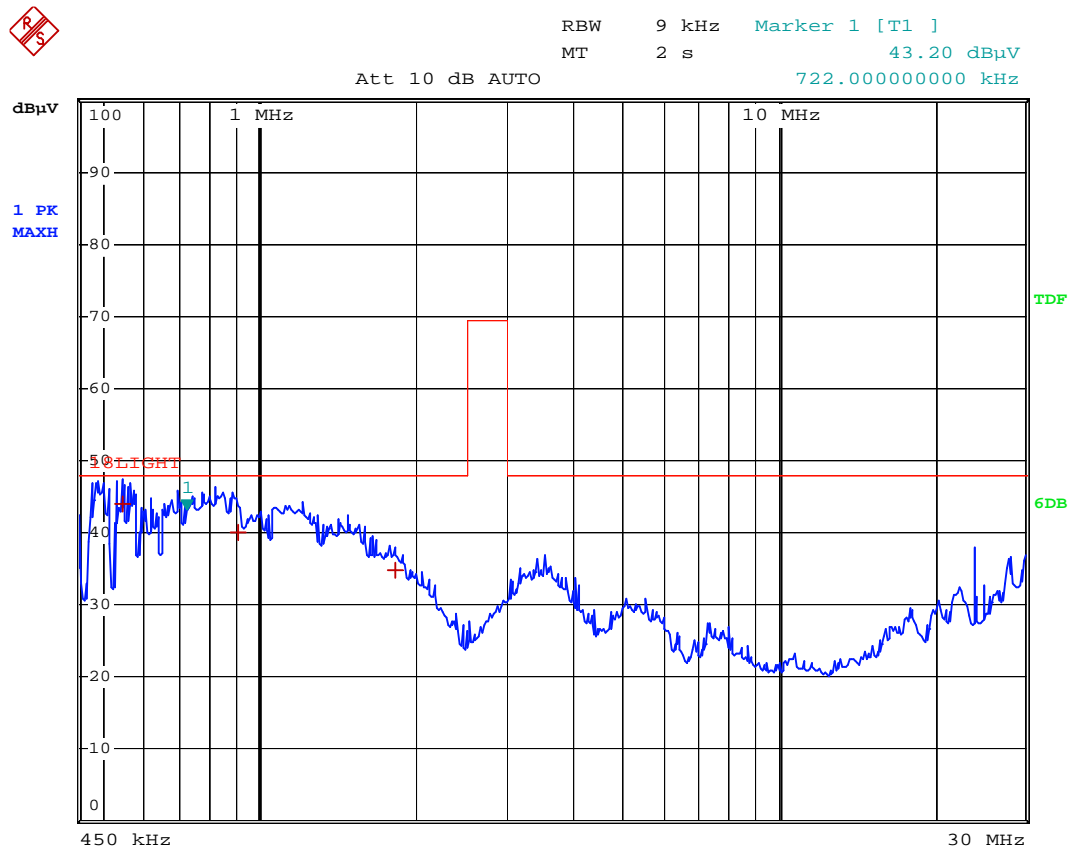
Conducted Disturbance
EUT: SMPS module
M/N: ST-F48P1(30W)
Operating Condition: On
Test Specification: N
Comment: AC120V/60Hz



Date: 13.JUL.2010 17:30:22

Plot of Conducted Emissions Test Data

Conducted Disturbance
EUT: SMPS module
M/N: ST-F48P1(30W)
Operating Condition: On
Test Specification: L
Comment: AC120V/60Hz



Date: 13.JUL.2010 17:27:54

4. §18.305(c)- RADIATED EMISSION

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

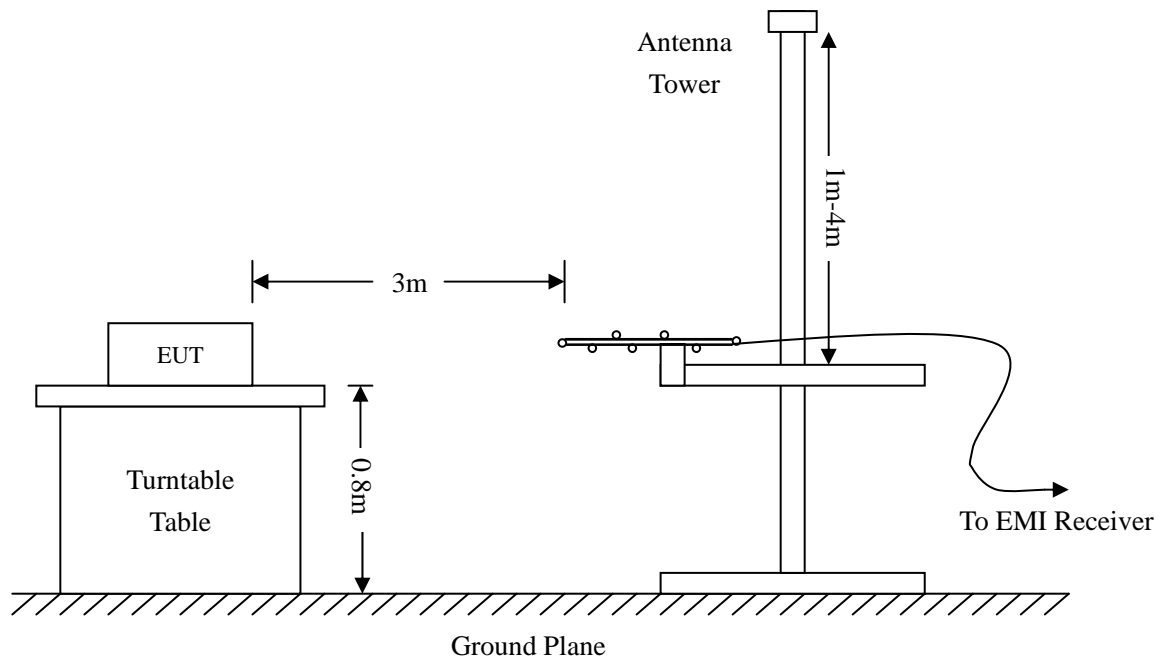
4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2009-08-12	2010-08-11
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2009-07-21	2010-07-20
Amplifier	Agilent	8447F	3113A06717	2009-08-12	2010-08-11
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2009-08-12	2010-08-11
Spectrum Analyzer	ROHDE&SCHWARZ	FSP	N/A	2010-04-16	2011-04-15

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 18.305 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.



4.4 Test Receiver Setup

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

Start Frequency 30 MHz
 Stop Frequency..... 1000 MHz
 Sweep Speed Auto
 Quasi-Peak Adapter Bandwidth 120 kHz
 Quasi-Peak Adapter Mode Normal

4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for a RF lighting device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 18.305 Limit}$$

4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

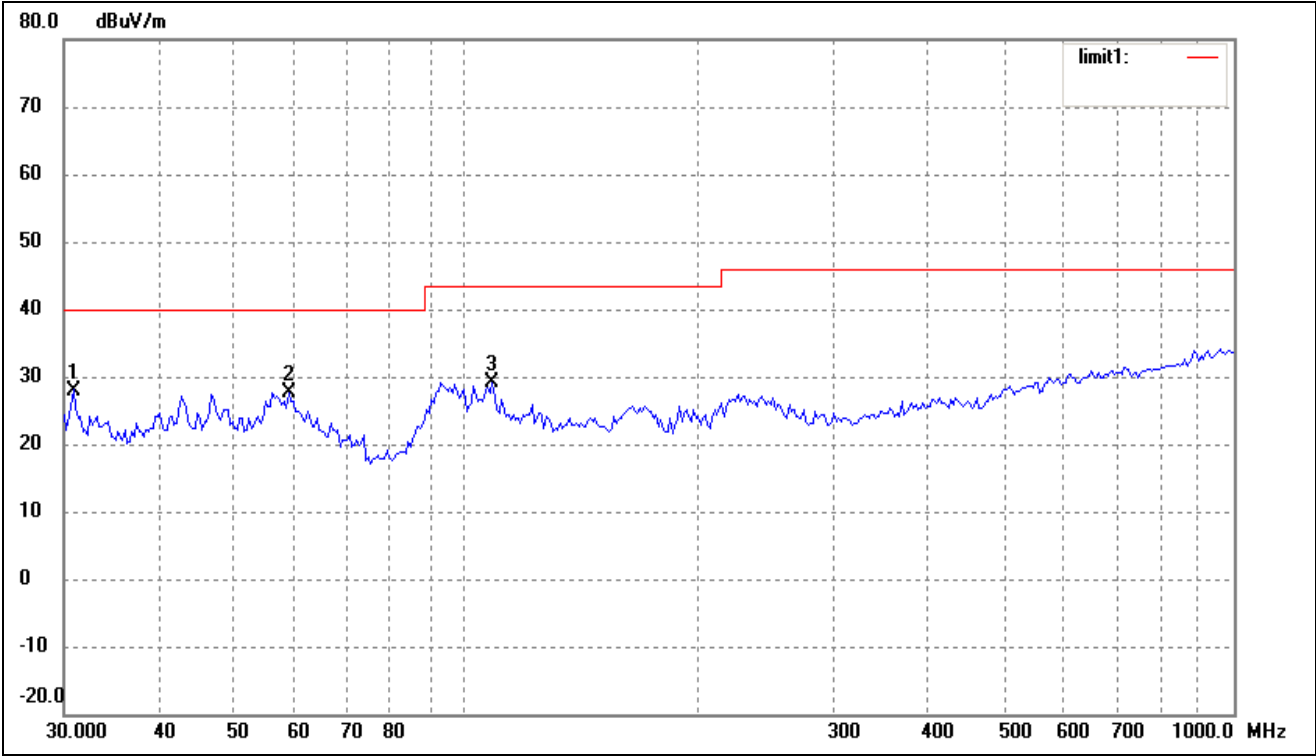
4.7 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 18.305 (c) standards, and had the worst margin of:

-2.16 dB μ V at 42.8998 MHz in the Vertical polarization, 30 MHz to 1 GHz, 3Meters

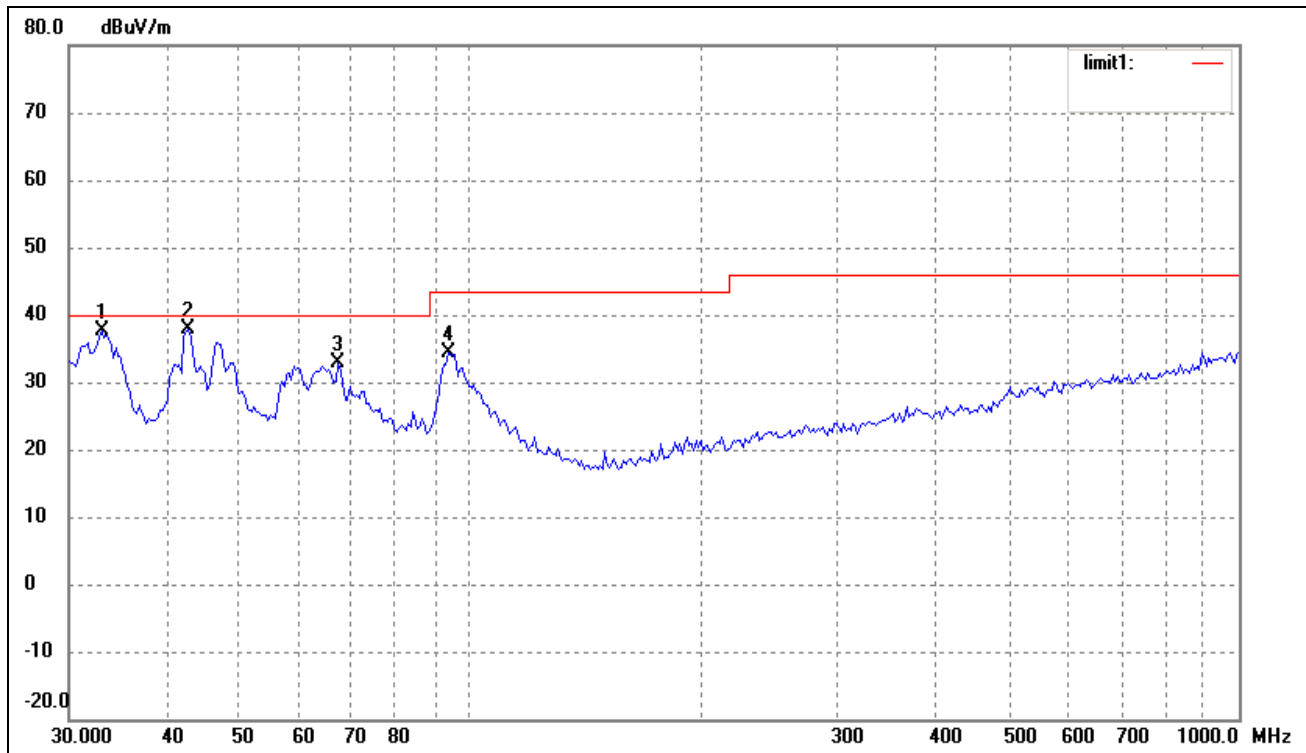
Field Strength Test Data

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	30.8535	21.38	6.62	28.00	40.00	-12.00	360	100	peak
2	58.8185	20.35	7.26	27.61	40.00	-12.39	360	100	peak
3	108.2667	21.96	7.09	29.05	43.50	-14.45	360	100	peak

Vertical:



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	33.0950	30.98	6.61	37.59	40.00	-2.41	360	100	peak
2	42.8998	29.87	7.97	37.84	40.00	-2.16	360	100	peak
3	67.2022	28.47	4.32	32.79	40.00	-7.21	360	100	peak
4	93.4402	27.09	7.18	34.27	43.50	-9.23	360	100	peak

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