



47 CFR PART 15 SUBPART B

TEST REPORT

of

EFT-POS

Model Name: PS400

Trade Name:



Brand Name: SAND

Report No.: SH10040042E01

FCC ID: XLHPS400-1101

prepared for

Shanghai Sand Information Technology System Co., Ltd
Building 22, Germs Park, NO. 487 Tianlin Road, Shanghai China

prepared by

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LAB CODE 20081223-00

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1 TEST CERTIFICATION

Equipment under Test: EFT-POS

Trade Name:



Brand Name: SAND

Model Name: PS400

FCC ID: XLHPS400-1101

Applicant: Shanghai Sand Information Technology System Co., Ltd

Applicant Address: Building 22, Germs Park, NO. 487 Tianlin Road, Shanghai China

Manufacturer: Shanghai Sand Information Technology System Co., Ltd

Manufacturer Address: Building 22, Germs Park, NO. 487 Tianlin Road, Shanghai China

Test Standards: 47 CFR Part 15 Subpart B

Test Date(s): 2011.02.28-2011.03.02

Test Result: PASS

* We Hereby Certify That:

The equipment under test was tested by Shenzhen Electronic Product Quality Testing Center Morlab Laboratory. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

The test results of this report only apply for the tested sample equipment identified above. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.

Tested by:

Zhang Wenjie

Zhang Wenjie

Dated:

2011.3.11

Reviewed by:

Zhang Jun

Zhang Jun

Dated:

2011.3.11

Approved by:

Wei Bei

Wei Bei

Dated:

2011.3.11



2 GENERAL INFORMATION

2.1 EUT Description

EUT Type.....: EFT-POS

Model Name: PS400

Hardware Version: V3.1

Software Version: 20101230

Modulation Type.....: GMSK

Power Supply.....: Battery

Brand name: NARADA

Mode Name.: NLB465082H-2S

Capacitance: 2000mAh

Rated voltage: 7.4V

Charge limited: 8.4V

Manufacturer: Narada Power Source Co., Ltd.

AC Adapter (Charger for Battery)

Brand name: HuntKey

Mode Name.: ADP036-094B

Rated Input: AC 100-240V, 1000mA, 60/50Hz

Rated Output: DC 9V,4000mA, 36W

Manufacturer: Shenzhen Huntkey Electronics Co., Ltd.

Note 1: The normal configuration for the Measurement is the EUT associated with ancillary equipments e.g.theBattery.

Note 2: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

2.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-05 Edition)	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	15.107	Conducted Emission	PASS
2	15.109	Radiated Emission	PASS
3	ANSI C63.4-2003	Radiated Emission	PASS

2.3 Facilities and Accreditations

2.3.1 Facilities

Shenzhen Electronic Product Quality Testing Center Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Laboratories (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen 518055 CHINA. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 741109.

2.3.2 Test Environment Conditions

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

Temperature (°C):	20 – 25
Relative Humidity (%):	40 – 60
Atmospheric Pressure (mbar):	1020

3 TEST CONDITIONS SETTING

3.1 Test Mode

The test modes of the EUT are showed as below:

Mode 1. EUT+PC Mode

The EUT configuration of the emission test is EUT + Battery + Charger+PC.

In this test mode, a connection was established between the EUT and a PC; data was transmitted between EUT and the PC, and maintained during the measurement.

NOTE:

All test modes are performed, only the worst cases Mode 1 are recorded in this report.

3.2 Description Of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

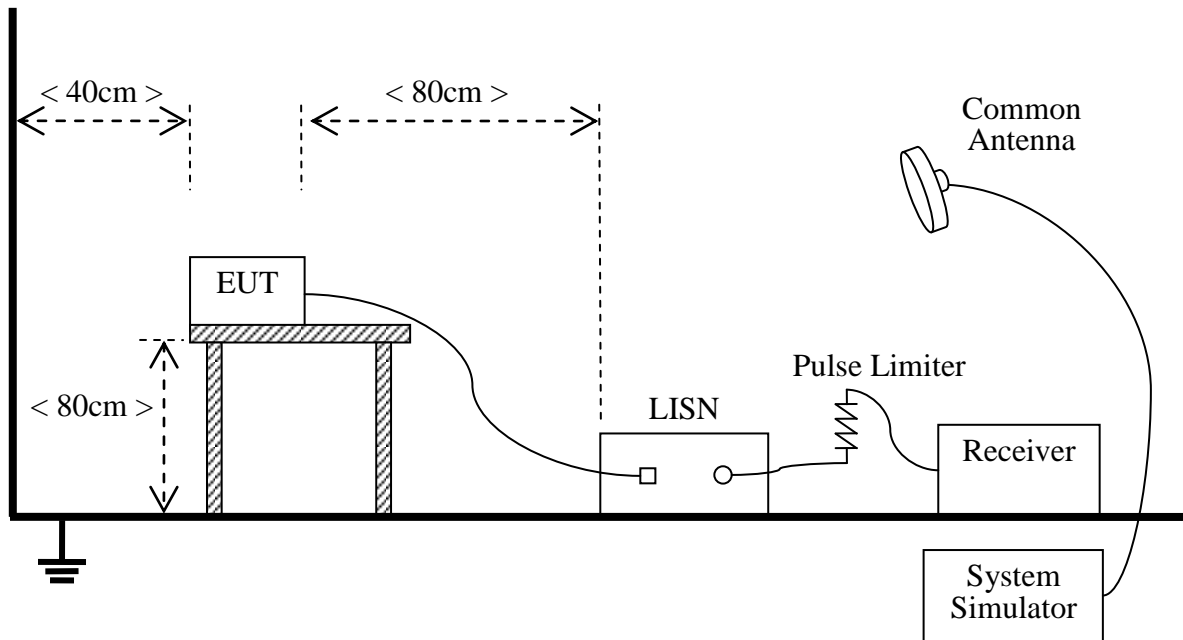
No.	Equipment	Model No.	Serial No.	Trade Name
1	Notebook	HP520	CDP745 OMTI	HP

Note: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

3.2 Test Setup and Equipments List

3.2.1 Conducted Emission

A. Test Setup:



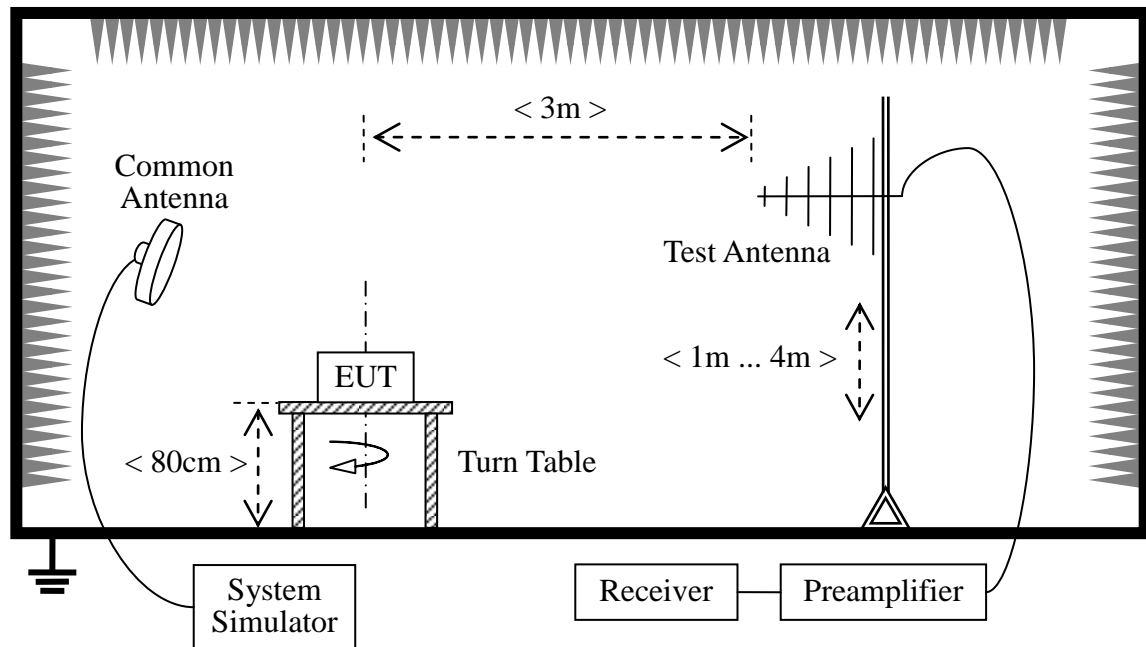
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. The Common Antenna is used for the call between the EUT and the System Simulator (SS). A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Receiver	Rohde&Schwarz	ESCI3	100666	2010.09	1year
LISN	Rohde&Schwarz	ENV216	812744	2010.09	1year
System Simulator	Rohde&Schwarz	CMU200	105571	2010.09	1year
Personal Computer	Lenovo	(n.a.)	(n.a.)	(n.a.)	(n.a.)

3.2.2 Radiated Emission

A. Test Setup:



The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower. The Common Antenna is used for the call between the EUT and the System Simulator (SS).

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Receiver	Rohde&Schwarz	ESCI3	100666	2010.09	1year
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2010.09	1year
Test Antenna - Bi-Log	Rohde&Schwarz	HL562	100385	2010.09	1year
System Simulator	Rohde&Schwarz	CMU200	105571	2010.09	1year
Personal Computer	Lenovo	(n.a.)	(n.a.)	(n.a.)	(n.a.)

47 CFR PART 15B REQUIREMENTS

4 Conducted Emission

4.1 Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5- 30	60	50

NOTE:

- a) The limit subjects to the Class B digital device.
- b) The lower limit shall apply at the band edges.
- c) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

4.2 Test Description

See section 3.2.1 of this report.

4.3 Test Result

The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

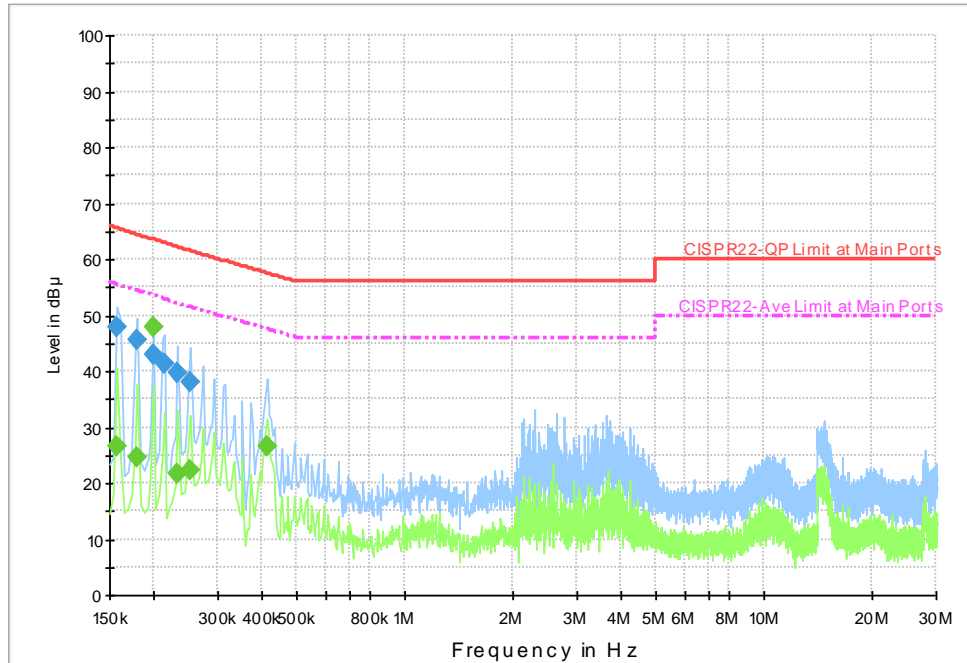
A. Test Verdict Recorded for Suspicious Points:

Frequency (MHz)	QuasiPeak (dBμ V)	Meas. Time (ms)	Band width (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.153731	48.7	150.000	9.000	N	9.7	17.1	65.8	PASS
0.176119	51.4	150.000	9.000	N	9.6	13.2	64.6	PASS
0.194775	58.0	150.000	9.000	N	9.6	5.7	63.7	PASS
0.205969	45.6	150.000	9.000	N	9.6	17.6	63.2	PASS
0.247012	50.8	150.000	9.000	N	9.6	10.9	61.7	PASS
0.321638	52.0	150.000	9.000	N	9.7	7.5	59.5	PASS
0.157462	47.9	150.000	9.000	L	9.5	17.7	65.6	PASS
0.179850	45.6	150.000	9.000	L	9.6	18.8	64.4	PASS
0.198506	43.0	150.000	9.000	L	9.6	20.5	63.5	PASS
0.213431	41.2	150.000	9.000	L	9.6	21.7	62.9	PASS
0.232088	39.5	150.000	9.000	L	9.6	22.7	62.2	PASS
0.250744	38.1	150.000	9.000	L	9.6	23.5	61.5	PASS

Frequency (MHz)	Average (dBμ V)	Meas. Time (ms)	Band width (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.191044	23.3	150.000	9.000	N	9.6	30.5	53.8	PASS
0.202238	24.2	150.000	9.000	N	9.6	29.1	53.3	PASS
0.247012	23.0	150.000	9.000	N	9.6	28.6	51.6	PASS
0.302981	22.3	150.000	9.000	N	9.6	27.6	49.9	PASS
0.325369	20.2	150.000	9.000	N	9.7	29.1	49.3	PASS
0.381338	18.3	150.000	9.000	N	9.7	29.8	48.1	PASS
0.157462	26.5	150.000	9.000	L	9.5	29.1	55.6	PASS
0.179850	24.6	150.000	9.000	L	9.6	29.8	54.4	PASS
0.198506	48.0	150.000	9.000	L	9.6	5.5	53.5	PASS
0.232088	21.7	150.000	9.000	L	9.6	30.4	52.1	PASS
0.250744	22.2	150.000	9.000	L	9.6	29.3	51.5	PASS
0.411188	26.5	150.000	9.000	L	9.7	21.0	47.5	PASS

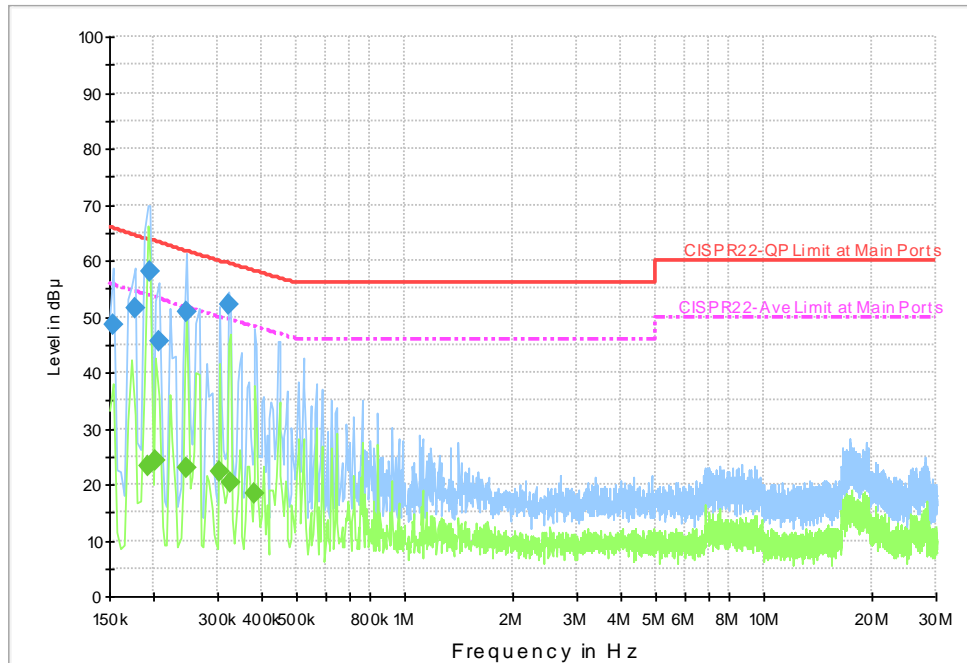
B. Test Plot:

EMI_ENV216 AutoTest - L CISPR22



(Plot: L Phase)

EMI_ENV216 AutoTest - N CISPR22



(Plot: N Phase)

5 Radiated Emission

5.1 Requirement

According to FCC section 15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength	
	$\mu\text{V/m}$	$\text{dB } \mu\text{V/m}$
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

NOTE:

- a) $\text{Field Strength (dB } \mu\text{V/m)} = 20 * \log[\text{Field Strength (} \mu\text{V/m)}]$.
- b) In the emission tables above, the tighter limit applies at the band edges.

5.2 Test Description

See section 3.2.2 of this report.

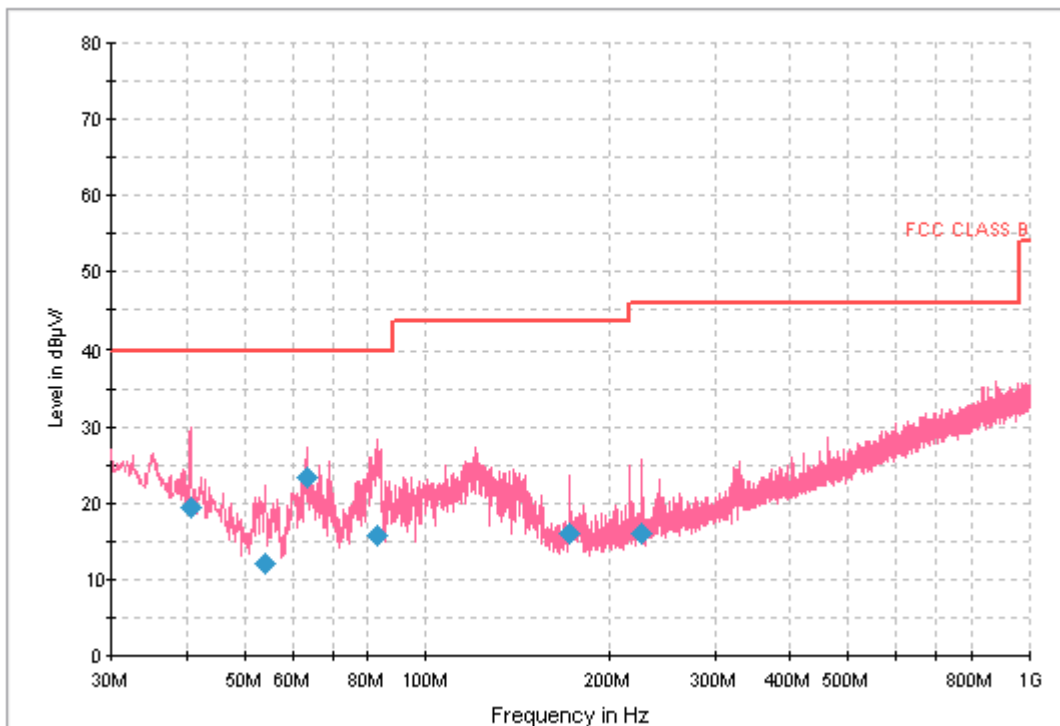
5.3 Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

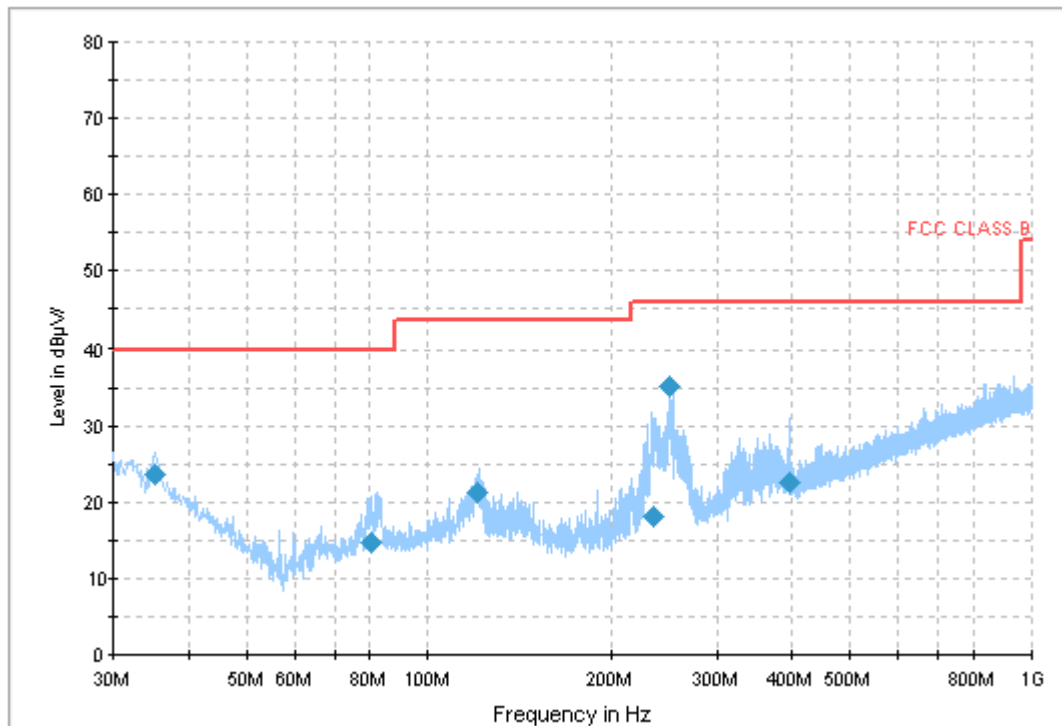
A. Test Verdict Recorded:

No.	@Frequency (MHz)	Measured Emission Level (dB μ V)		Limit (dB μ V)	Margin (dB)	Verdict
		QP	Polarity			
1	40.670000	19.5	V	40.0	20.5	PASS
2	54.250000	12.0	V	40.0	28.0	PASS
3	63.343750	23.3	V	40.0	16.7	PASS
4	82.986250	15.8	V	40.0	24.2	PASS
5	171.741250	16.0	V	43.5	27.5	PASS
6	226.182500	16.1	V	43.5	27.4	PASS
7	35.335000	23.7	H	40.0	16.3	PASS
8	80.561250	14.8	H	40.0	25.2	PASS
9	121.058750	21.2	H	43.5	22.3	PASS
10	235.397500	18.1	H	46.0	27.9	PASS
11	250.675000	35.3	H	46.0	10.7	PASS
12	395.447500	22.6	H	46.0	23.4	PASS

B. Test Plot:



(Plot: Test Antenna Vertical)



(Plot: Test Antenna Horizontal)

**** END OF REPORT ****