



47 CFR PART 15B

TEST REPORT

of

Mobile Payment Terminal

Trade Name: EXADIGM
Brand Name: EXADIGM
Model Name: XD2500
Report No.: SZ09040056E02
FCC ID.: XDQ2500EXA

prepared for

Shenzhen Xinguodu Technology CO., LTD

17A, Jinsong Bldg., Tairan Industry And Trading Area, Futian, Shenzhen, China

prepared by

Shenzhen Electronic Product Quality Testing Center

Morlab Laboratory

3/F, Electronic Testing Building, Shahe Road, Xili,
Nanshan District, Shenzhen, 518055 P. R. China
Tel: +86 755 86130398
Fax: +86 755 86130218



LAB CODE 20081223-00

NOTE: This test report can be duplicated completely for the legal use with the approval of the applicant; it shall not be reproduced except in full, without the written approval of Shenzhen Electronic Product Quality Testing Center Morlab Laboratory. Any objections should be raised to us within thirty workdays since the date of issue.



TABLE OF CONTENTS

1.	TEST RESULT CERTIFICATION	3
2.	GENERAL INFORMATION	4
2.1	Equipment under Test (EUT) Description	4
2.2	Test Standards and Results	5
2.3	Facilities and Accreditations	5
2.3.1	Facilities	5
2.3.2	Test Equipments	6
2.3.3	Test Environment Conditions	6
3.	47 CFR PART 15B REQUIREMENTS	7
3.1	General Information.....	7
3.1.1	Test Mode.....	7
3.1.2	Test Setup	8
3.2	Conducted Emission	10
3.2.1	Requirement	10
3.2.2	Test Procedure	10
3.2.3	Test Result	11
3.3	Radiated Emission	13
3.3.1	Requirement	13
3.3.2	Test Procedure	13
3.3.3	Test Result	14

1. Test Result Certification

Equipment under Test: Mobile Payment Terminal

Brand Name: EXADIGM
Model Name: XD2500
FCC ID: XDQ2500EXA

Applicant: Shenzhen Xinguodu Technology CO., LTD
17A, Jinsong Bldg., Tairan Industry And Trading Area, Futian, Shenzhen,
China

Manufacturer: Shenzhen Xinguodu Technology CO., LTD
17A, Jinsong Bldg., Tairan Industry And Trading Area, Futian, Shenzhen,
China

Emission Designator: 1M25F9W
Test Standards: 47 CFR Part 2
47 CFR Part 15 Subpart B
Test Result: PASS

* We Hereby Certify That:

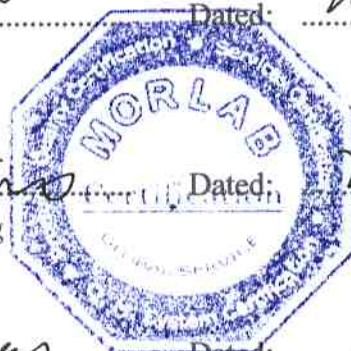
The equipment under test was tested by Shenzhen Morlab Communications Technology Co., Ltd. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

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: Luo Biao Dated: 2009.8.21
Luo Biao

Reviewed by: Liao Jianming Dated: 2009.8.21
Liao Jianming

Approved by: Shu Luan Dated: 2009.8.21
Shu Luan



2. General Information

2.1 Equipment under Test (EUT) Description

Description: Mobile Payment Terminal
Model Name: XD2500
Serial No.....: N/A
MEID.....: N/A
Hardware Version: v3.1
Software Version.....: v1.17
Emission Designator.....: 1M25F9W
Modulation: CDMA 1X
Frequency: Cellular: Tx: 824.7 – 848.31 MHz;
Rx: 869.7-893.31MHz
PCS : Tx: 1851.25 MHz -1908.75 MHz;
Rx: 1931.25 MHz-1988.75 MHz
Power Supply:: Battery
Brand name: Advanced Electronics Energy
Model Name: AE833436P4HR-2S
Capacitance: 1000mAh
Rated voltage: 7.4V
Charge limited: 8.4V
Manufacturer: Advanced Electronics Energy Limited
Accessory Equipment:..... AC Adapter (Charger for Battery)
Brand Name: Huntkey
Model Name: HKA02109520-8A
Rated Input: ~ 100V-240V, 0.8A, 50/60Hz
Rated Output: ≡ 9.0V, 2.0A, Max 19W
Manufacturer: Shenzhen Huntkey Power Electric Co., Ltd

NOTE:

1. The EUT is a model of CDMA Wireless Data Terminal, it supports the Cellular band and the PCS band.
2. During the measurement, a connecting between EUT and base station was established at the start of the test, and maintained during the all test in this report.
3. 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 tests according to 47 CFR Part 2, Part 15 Part 22 for FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2 (10-1-05 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 15 (10-1-05 Edition)	Radio Frequency Devices

Test detailed items and the results are as below:

No.	Rules	Test Type	Result	Date of Test
FCC Part 15 Requirement				
1	§15.107	Conducted Emissions	PASS	2009-08-05
2	§15.109	Radiated Emissions	PASS	2009-08-05

NOTE:

The tests were performed according to the method of measurements prescribed in ANSI C63.4 2003.

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 Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is CNAS L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, P. R. China. The site was 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 Equipments

No.	Description	Specification
1	System Simulator	Manufacturer: Rohde&Schwarz Model No.: CMU200 Serial No.: 100448
2	System Simulator	Manufacturer: Agilent Model No.: E5515C Serial No.: GB43130131
3	Spectrum Analyzer	Manufacturer: Agilent Model No.: E7405A Serial No.: US44210471
4	Telecommunication Antenna	Manufacturer: European Antennas Model No.: PSA-45010R/356 Serial No.: 403688-001
5	Trilogy Antenna	Manufacturer: Schwarzbeck Model No.: VULB 9163 Serial No.: 9163-274
6	Horn Antenna	Manufacturer: Schwarzbeck Model No.: BBHA 9120C Serial No.: 9120C-384
7	Power Splitter	Manufacturer: WEINSCHEL Model No.: 1506A Serial No.: NW521
8	Anechoic Chamber	Manufacturer: Albatross Projects GmbH

NOTE:

- Equipments listed above have been calibrated and are in the period of validation.

2.3.3 Test Environment Conditions

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

Temperature:	20 - 25°C
Relative Humidity:	40 - 60%
Atmospheric Pressure:	86-106kPa

3. 47 CFR Part 15B Requirements

3.1 General Information

3.1.1 Test Mode

The test modes of the EUT are showed as below:

(1) Call Mode:

The EUT configuration of the emission tests was EUT + Battery + Charger.

Before the measurement, the lithium battery was completely discharge.

During the measurement, the lithium battery was installed into the MS, and the charger was connected to the MS. A communication link was established between the MS and a System Simulator (SS).

(2) USB Test Mode

The EUT configuration of the emission tests was EUT + USB Cable + Battery + PC.

In this test mode, the EUT is connected with a PC via a special USB cable supplied by applicant. During the measurement, a communication link was established between the EUT and a System Simulator (SS), simultaneity, the data is transmitting between the PC and the EUT.

(3) Idle Mode:

The EUT configuration of the emission tests was EUT + USB Cable + Battery + PC.

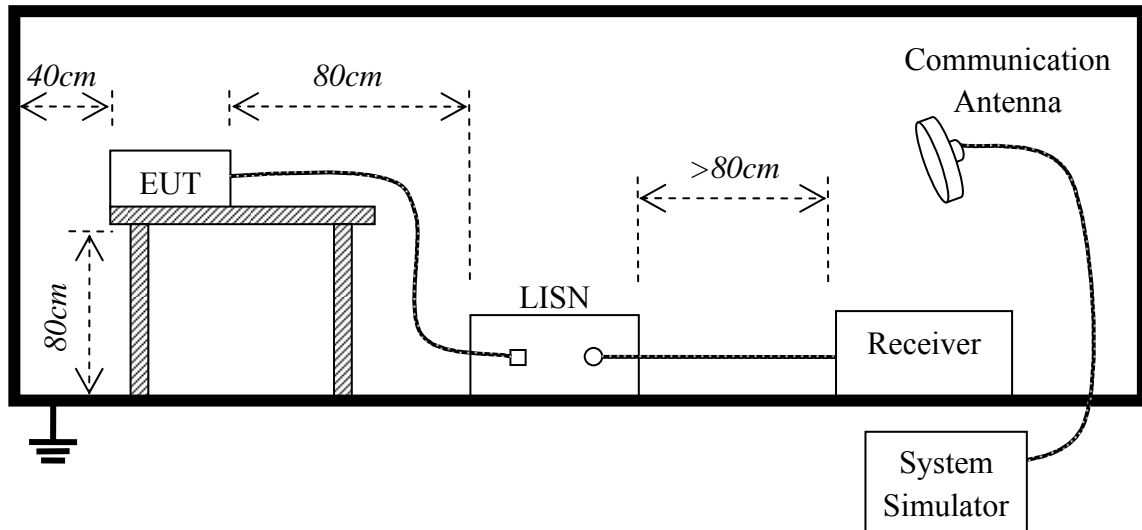
The EUT was registered to the base station simulator but no call was set up.

NOTE:

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

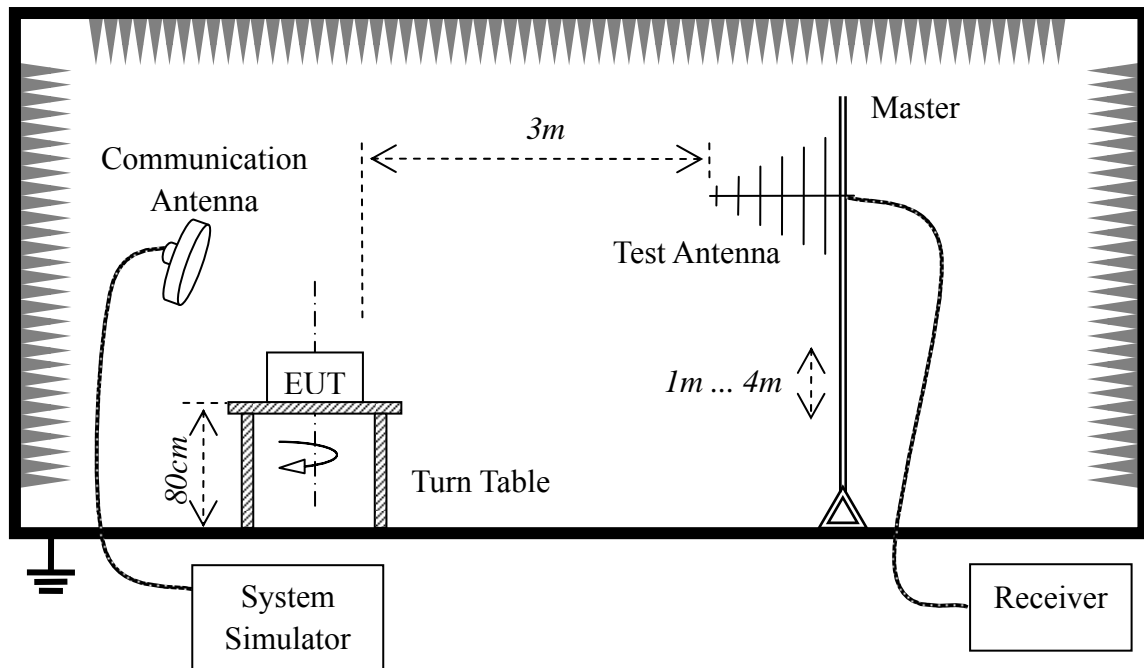
3.1.2 Test Setup

3.1.2.1 Conducted Emission Test



1. The test is performed in a Shield Room; the factors of the test system are calibrated to correct the reading.
2. The EUT is placed on a 0.8 meters high insulating table and keeps 0.4 meters away from the conducting wall of the Shield Room.
3. The EUT is connected to the power mains through a Line Impedance Stabilization Network (LISN). The LISN provides $50\Omega/50\mu\text{H}$ of coupling impedance for the measuring instrument.

3.1.2.2 Radiated Emission Test



1. The test is performed in a Semi-anechoic Chamber; the factors of the test system are calibrated to correct the reading.
2. The EUT is placed on a 0.8 meters high insulating table and keeps 3 meters away from the tri-axial Test Antenna, which is mounted on the top of a variable-height antenna Master tower.

NOTE:

1. The test method is the substitution method according to TIA-603-C.

3.2 Conducted Emission

3.2.1 Requirement

According to FCC §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)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

1. The limit subjects to the Class B digital device.
2. The lower limit shall apply at the band edges.
3. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.2.2 Test Procedure

1. Perform test setup as described in section 3.1.2.1.
2. Each test mode in section 3.1.1 should be applied. At each test mode, the frequency range from 150 kHz to 30MHz is searched using the CISPR Quasi-Peak and/or the Average detector of the Receiver. If the emission levels measured with Quasi-Peak detector are lower than the Average Limit, it's not necessary to measure with Average detector.
3. The emission levels at both L phase and N phase should be tested.
4. Record the test result plot and distinct points.
5. In the test report show the worst test data.

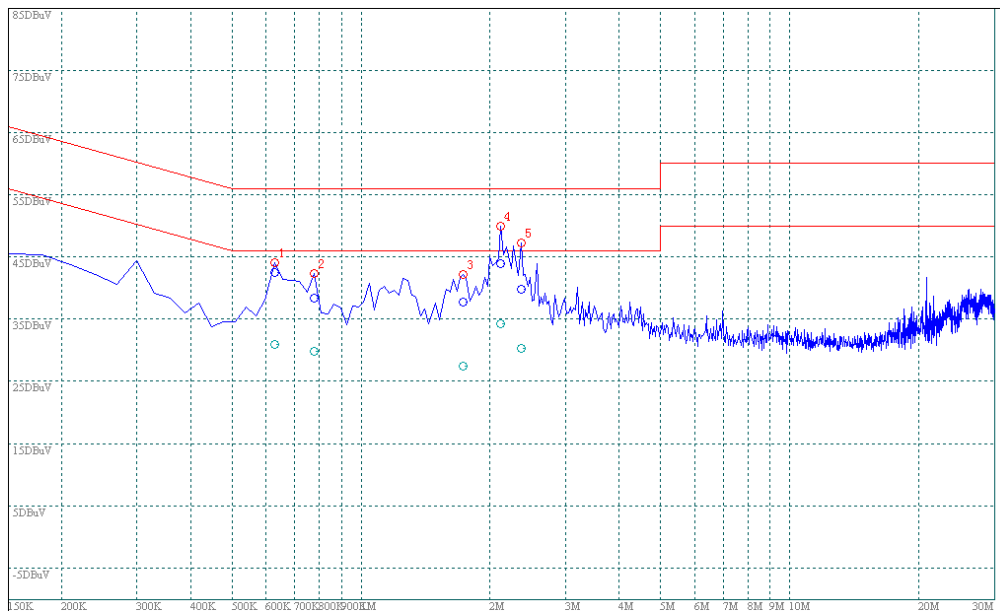
3.2.3 Test Result

According the test data, the worst test configuration of the EUT was USB Mode, and its test data was showed as the follow:

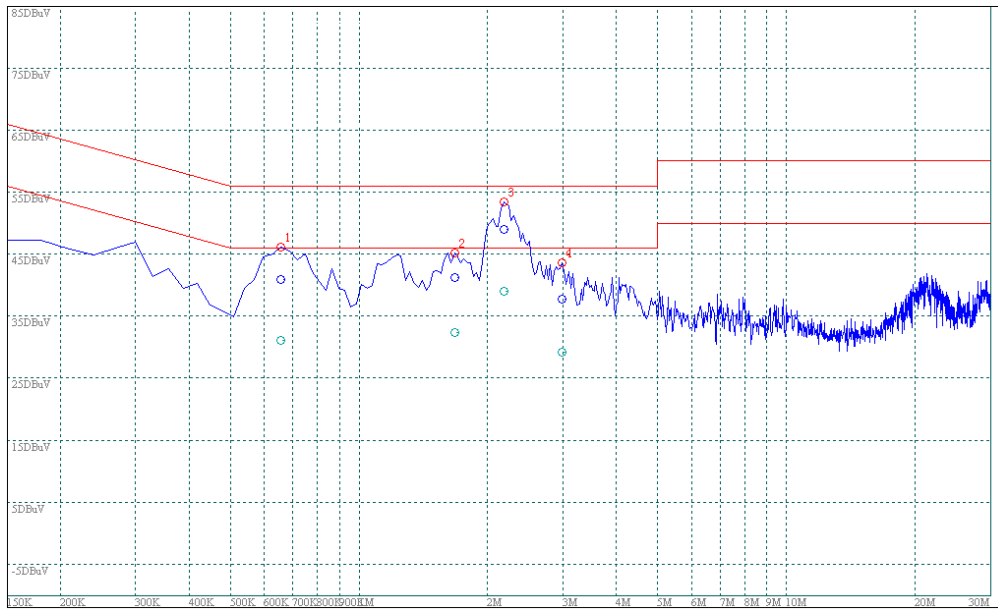
A. Test Verdict Recorded for Suspicious Points:

No.	@Frequency (MHz)	Measured Emission Level (dB μ V)				Limit (dB μ V)		Verdict
		PK	QP	AV	Phase	QP	AV	
1	0.628	44.10	42.49	30.96	L	56.0	46.0	PASS
2	0.777	42.36	38.32	29.78	L	56.0	46.0	PASS
3	1.73	42.11	37.66	27.40	L	56.0	46.0	PASS
4	2.12	49.94	43.86	34.19	L	56.0	46.0	PASS
5	2.36	47.16	39.87	30.28	L	56.0	46.0	PASS
7	(n.a.)	(n.a.)	(n.a.)	(n.a.)	L	(n.a.)	(n.a.)	(n.a.)
8	0.675	46.06	40.89	31.09	N	56.0	46.0	PASS
9	1.67	45.22	41.25	32.31	N	56.0	46.0	PASS
10	2.18	53.47	48.95	39.00	N	56.0	46.0	PASS
11	2.99	43.65	37.77	29.19	N	56.0	46.0	PASS

B. Test Plot



(Plot A: L Phase)



(Plot B: N Phase)

3.3 Radiated Emission

3.3.1 Requirement

According to FCC §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
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE:

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

3.3.2 Test Procedure

1. Perform test setup as described in section 3.1.2.2.
2. Each test mode in section 3.1.1 should be applied. At each test mode, the Turn Table turns from 0 degrees to 360 degrees to find the maximum reading; for the suspected points, the Test Antenna varies from 1 meter to 4 meters to determine the maximum value of the field strength.
3. The Receiver is set to Peak Detector function and specified bandwidth with maximum hold mode. If the emission level of the EUT in peak mode is 6dB lower than the limit specified, then testing could be stopped and the peak values would be reported; otherwise the emission less than 6dB margins would be retested one by one using the quasi-peak method.
4. The emission levels at both horizontal and vertical polarizations should be tested.
5. Record the test result plot and distinct points.
6. In the test report show the worst test data.

3.3.3 Test Result

According the test data, the worst test configuration of the EUT was USB Mode, and its test data was showed as the follow:

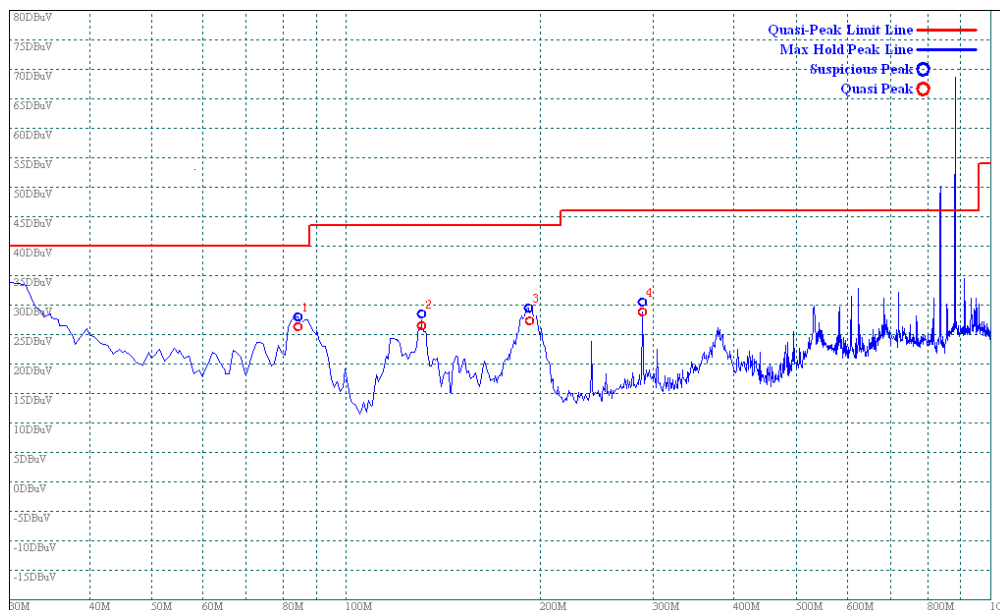
A. Test Verdict Recorded for Suspicious Points:

No.	Frequency (MHz)	Emission Level (dB μ V/m)			Quasi-Peak Limit (dB μ V/m)	Result
		Peak	Quasi-Peak	Antenna Polarization		
1	84.30	27.86	25.38	Vertical	40.0	PASS
2	130.90	27.73	25.19	Vertical	43.5	PASS
3	192.00	29.40	27.68	Vertical	43.5	PASS
4	289.00	30.45	28.78	Vertical	46.0	PASS
5	42.60	38.46	36.78	Horizontal	40.0	PASS
6	115.40	43.65	42.16	Horizontal	43.5	PASS
7	193.00	43.12	41.24	Horizontal	46.0	PASS
8	236.60	44.89	43.62	Horizontal	46.0	PASS
9	300.60	44.87	43.62	Horizontal	46.0	PASS

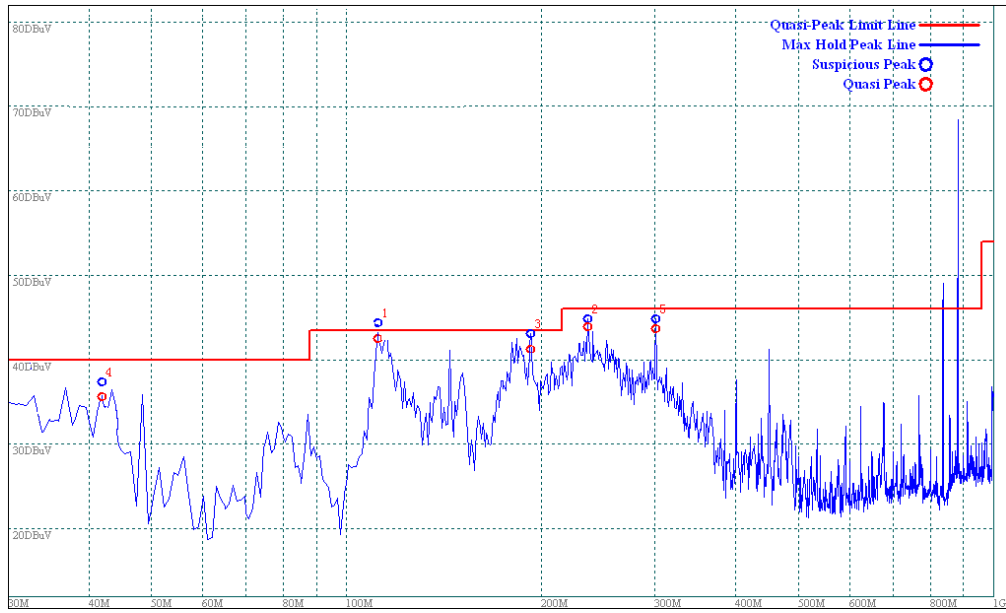
Note: "--" in the table above means that the emissions are too small to be measured and are at least 6 dB below the limit.

Following is the plots for emission measurement; please note that marked spikes with circle should be ignored because they are EUT and SS carrier frequency.

B. Test Plot



(Plot A: Test Antenna Vertical)



(Plot B: Test Antenna Horizontal)

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