



47 CFR PART 15 SUBPART B

TEST REPORT

of

GSM/GPRS 850/900/1800/1900 Module

Model Name: M10
Brand Name: Quectel
Report No.: SH09070021EA02
FCC ID: XMR-16182009002

prepared for

Quectel Wireless Solutions Co.,Ltd

Room 801, Building E, No 1618 Yishan Road, Shanghai, China, 201103

prepared by

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LAB CODE 20081223-00

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1. TEST CERTIFICATION

Equipment under Test: GSM/GPRS 850/900/1800/1900 Module

Brand Name: Quectel

Model Name: M10

FCC ID: XMR-16182009002

Applicant: Quectel Wireless Solutions Co.,Ltd

Room 801, Building E, No 1618 Yishan Road,
Shanghai, China, 201103

Manufacturer: Quectel Wireless Solutions Co.,Ltd

Room 801, Building E, No 1618 Yishan Road,
Shanghai, China, 201103

Test Standards: 47 CFR Part 15 Subpart B

Test Date(s): Aug 3, 2009 – Aug 7, 2009

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

2009.8.14

Zhang Wenjie

Reviewed by:

Zhang Jun

2009.8.14

Zhang Jun

Approved by:

Su Feng

2009.8.14

Su Feng



2. GENERAL INFORMATION

2.1. EUT Description

EUT Type: GSM/GPRS 850/900/1800/1900 Module
Model Name: M10
Serial No.: (n.a., marked #1 by test site)
Hardware Version: V1.01
Software Version: MTK0836
Modulation Type.....: GMSK
Ancillary Equipment 1: AC Adapter
Model Name: P-050B-B2152
Brand Name: SOMETHING HIGH
Serial No.: (n.a. marked #1 by test site)
Rated Input: AC 100-240V ,300mA, 50/60Hz
Rated Output: DC 5V, 2A
Manufacturer: Something High Electric (Xiamen) Co. Ltd.
Wire Length: (n.a.)

Note 1: A communication link between the EUT and a System Simulator (SS) are established at the start of the test, and maintained during the all test in this report.

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

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 (kPa):	960

3. TEST CONDITIONS SETTING

3.1. GSM Test Mode

1. During the measurement, the GSM radio is working. The test modes of the EUT are showed as below:

- (1) Traffic operating mode

The EUT configuration of the emission tests is MS+Adapter.

A communication link was established between the EUT and a System Simulator (SS). The EUT operated at GSM 850MHz mid ARFCN (190) and maximum output power (level 5).

- (2) Idle operating mode

The EUT configuration of the emission tests is MS+Adapter.

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

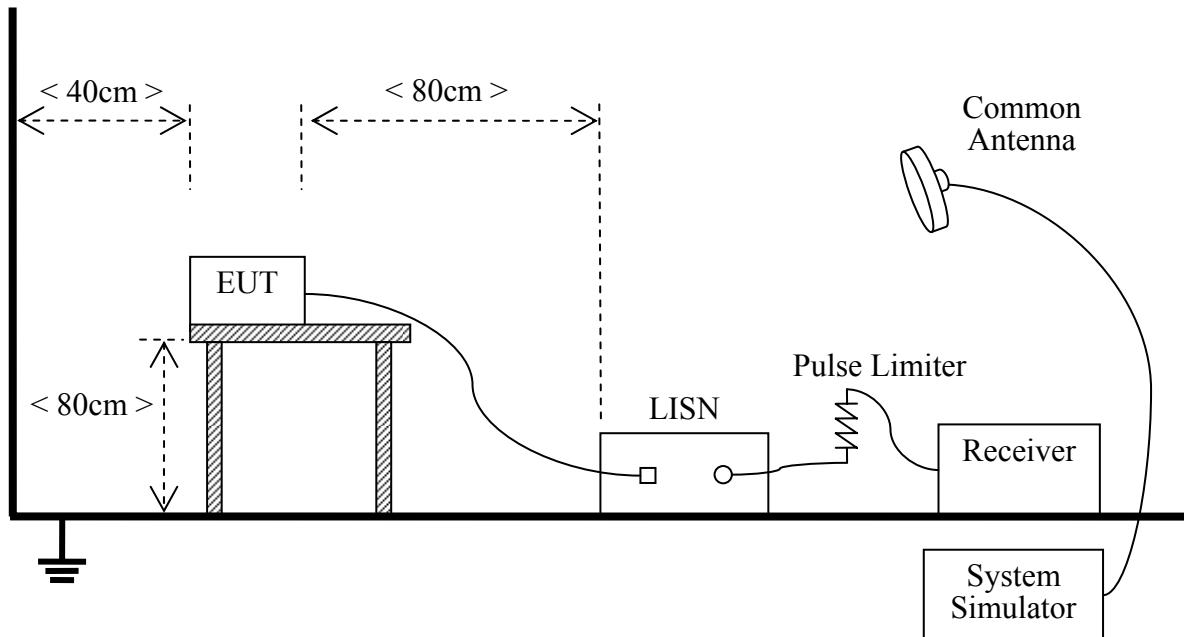
NOTE:

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

3.2. Test Setup and Equipments List

3.2.1. Conducted Emission

A. Test Setup:



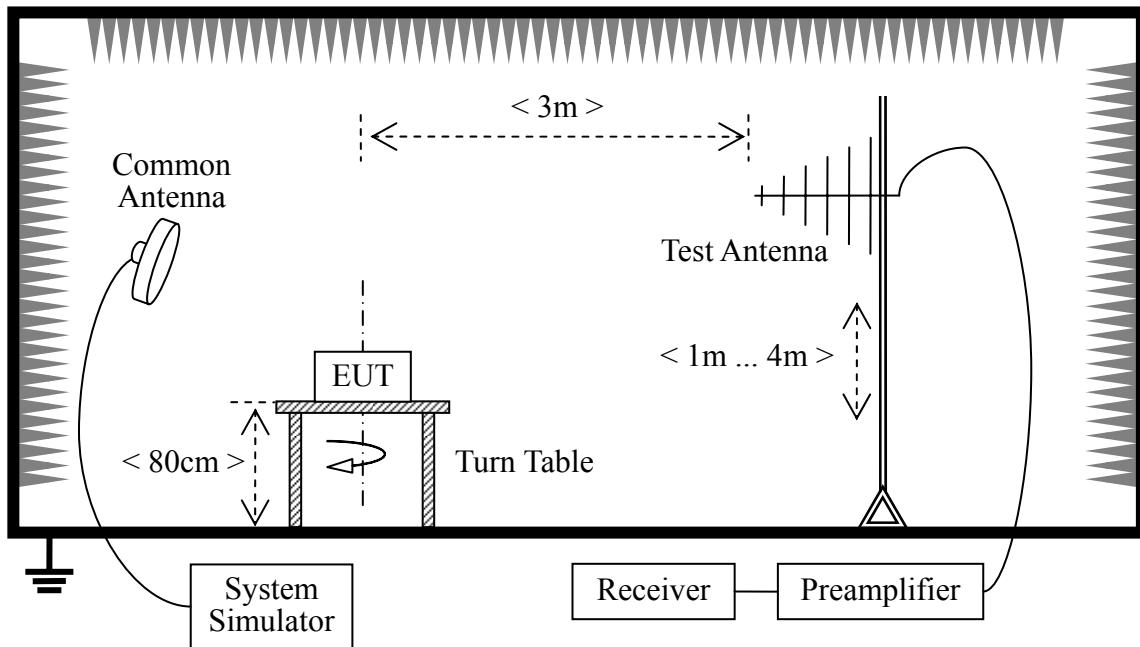
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides $50\Omega/50\mu\text{H}$ of coupling impedance for the measuring instrument. The 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	2008.11	1year
LISN	Rohde&Schwarz	ENV216	812744	2008.11	1year
System Simulator	Rohde&Schwarz	CMU200	105571	2008.12.	1year
Personal Computer	Lenovo	(n.a.)	(n.a.)	(n.a.)	(n.a.)

3.2.2. Radiated Emission

C. 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).

D. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Receiver	Rohde&Schwarz	ESCI3	100666	2008.11	1year
Full-Anechoic Chamber	ETS • LINDGREN	9m*6m*6m	(n.a.)	2008.10	1year
Test Antenna - Bi-Log	Rohde&Schwarz	HL562	100385	2008.10	1year
System Simulator	Rohde&Schwarz	CMU200	105571	2008.12	1year
Personal Computer	Lenovo	(n.a.)	(n.a.)	(n.a.)	(n.a.)

4. 47 CFR PART 15B REQUIREMENTS

4.1. Conducted Emission

4.1.1. 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)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 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.

4.1.2. Test Description

See section 3.2.1 of this report.

4.1.3. Test Result

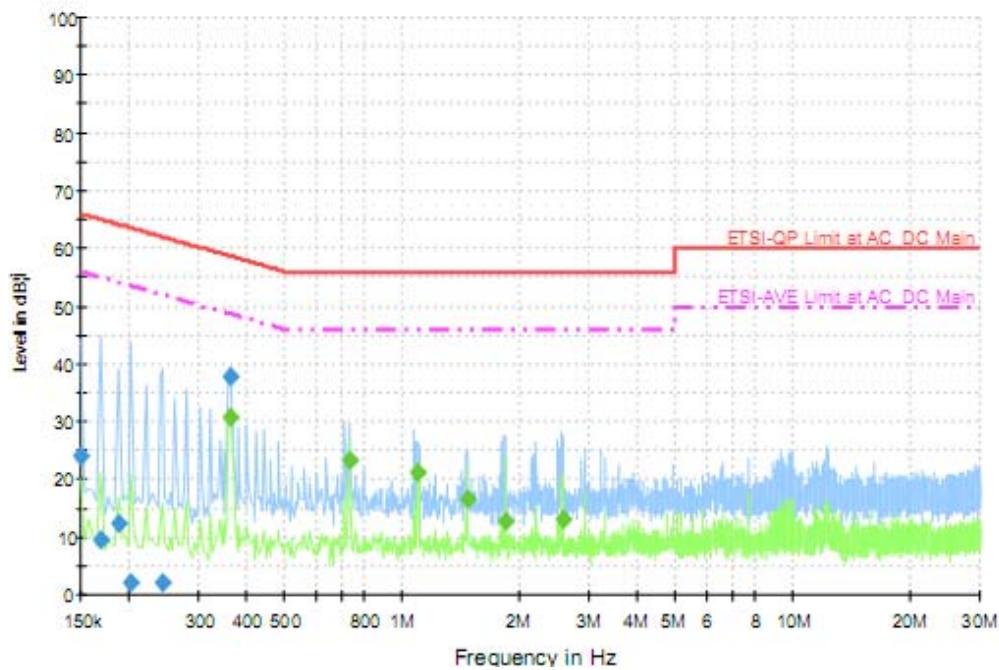
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines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

GSM Test mode

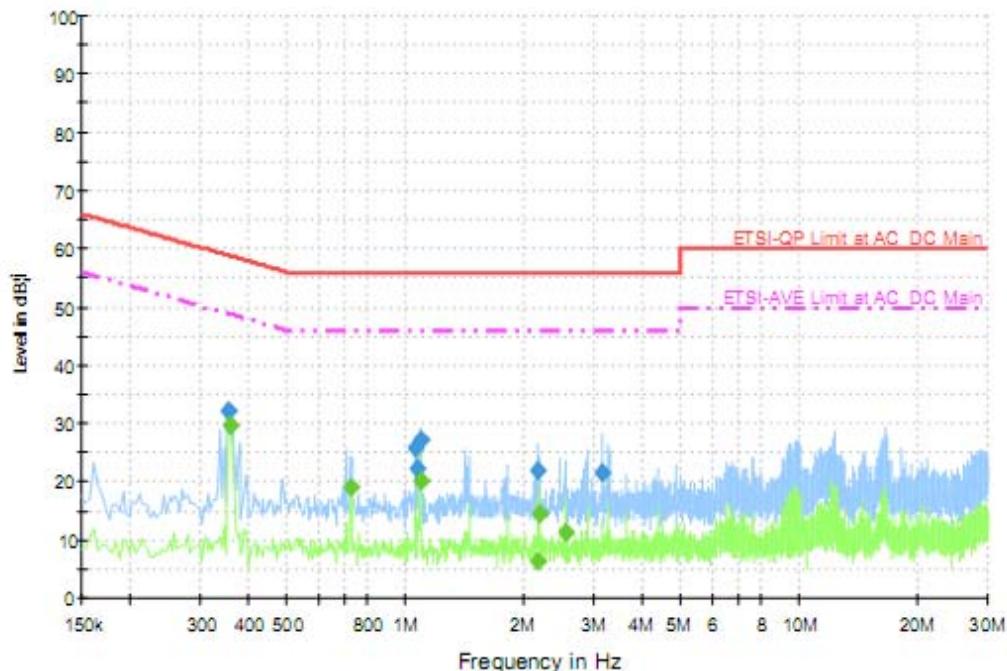
The EUT configuration of the emission tests is MS+Adapter.

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	0.362681	38.5	37.9	30.7	L	58.7	48.7	PASS
2	0.732075	30.0	27.1	23.4	L	56.0	46.0	PASS
3	1.097738	28.2	26.6	21.4	L	56.0	46.0	PASS
4	1.463400	24.8	20.3	16.7	L	56.0	46.0	PASS
5	1.829062	27.1	23.4	12.7	L	56.0	46.0	PASS
6	2.560388	27.8	20.3	13.2	L	56.0	46.0	PASS
7	0.355219	33.6	32.1	29.5	N	58.8	48.8	PASS
8	1.052962	27.3	25.7	14.1	N	56.0	46.0	PASS
9	1.071619	25.1	22.4	10.2	N	56.0	46.0	PASS
10	1.086544	29.1	27.4	12.1	N	56.0	46.0	PASS
11	2.161144	26.7	21.9	6.4	N	56.0	46.0	PASS
12	3.157388	27.2	21.4	8.5	N	56.0	46.0	PASS

B. Test Plot:

(Plot A: L Phase)



(Plot B: N Phase)

4.2. Radiated Emission

4.2.1. 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	
	μ V/m	dB μ V/m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE:

- Field Strength (dB μ V/m) = $20 \log_{10} [\text{Field Strength } (\mu\text{V/m})]$.
- In the emission tables above, the tighter limit applies at the band edges.

4.2.2. Test Description

See section 3.2.2 of this report.

4.2.3. 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.

GSM test mode

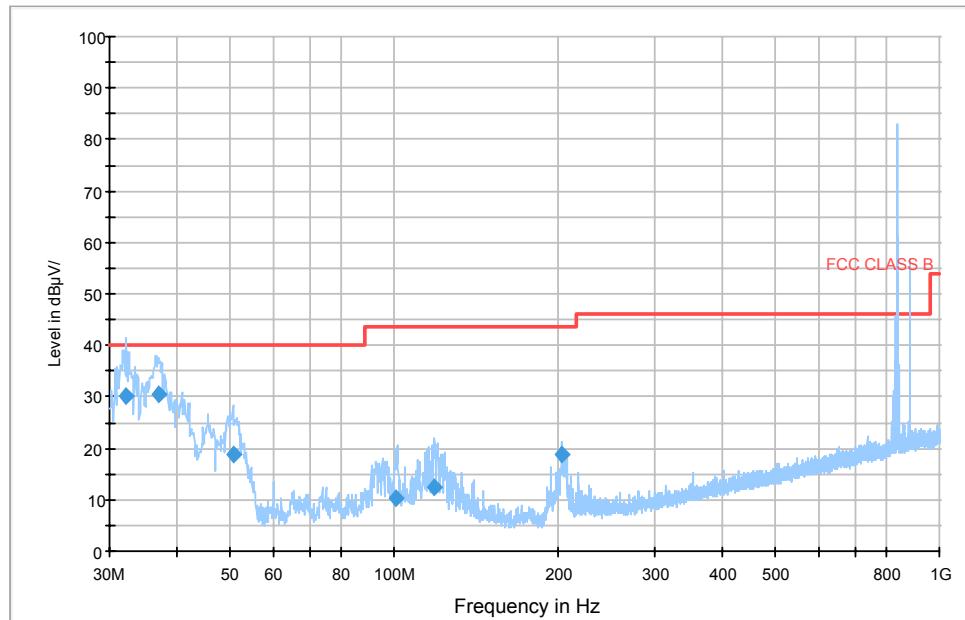
The EUT configuration of the emission tests is MS+Adapter.

**A. Test Verdict Recorded for Suspicious Points:**

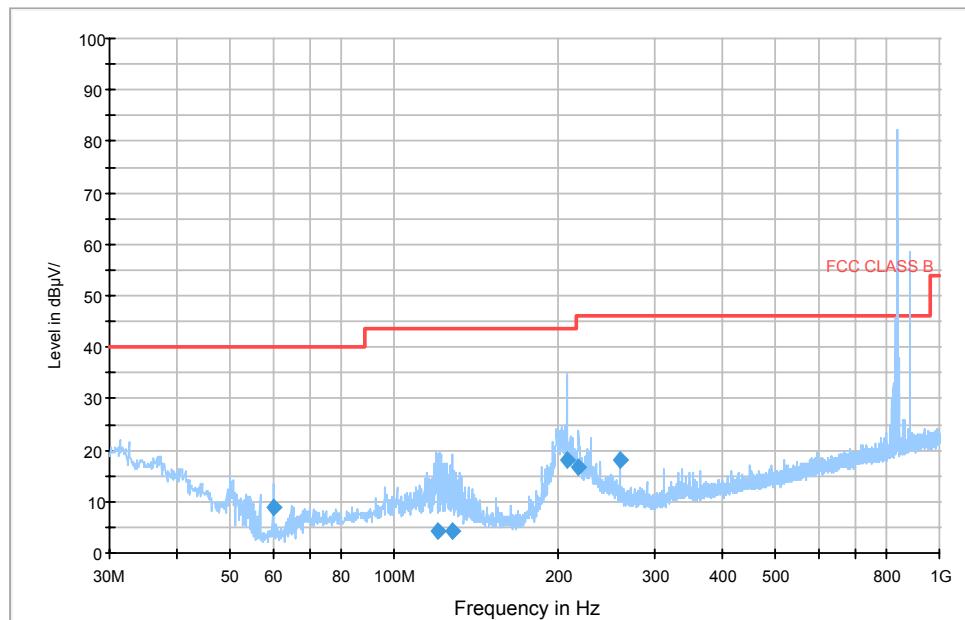
No.	@Frequency (MHz)	Emission Level (dB μ V/m)			Quasi-Peak Limit (dB μ V/m)	Result
		PK	QP	Antenna Polarization		
1	32.182500	40.5	30.1	Vertical	40.0	PASS
2	36.911250	37.6	30.5	Vertical	40.0	PASS
3	50.612500	28.2	18.9	Vertical	40.0	PASS
4	100.931250	20.3	10.1	Vertical	43.5	PASS
5	117.906250	22.4	12.5	Vertical	43.5	PASS
6	203.145000	22.1	18.7	Vertical	43.5	PASS
7	59.948750	14.2	8.7	Horizontal	40.0	PASS
8	120.210000	19.6	4.3	Horizontal	43.5	PASS
9	127.970000	19.2	4.2	Horizontal	43.5	PASS
10	207.873750	34.8	18.1	Horizontal	43.5	PASS
11	218.180000	24.1	16.6	Horizontal	46.0	PASS
12	260.011250	20.0	18.1	Horizontal	46.0	PASS

B. Test Plot:

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



(Plot A: Test Antenna Vertical)



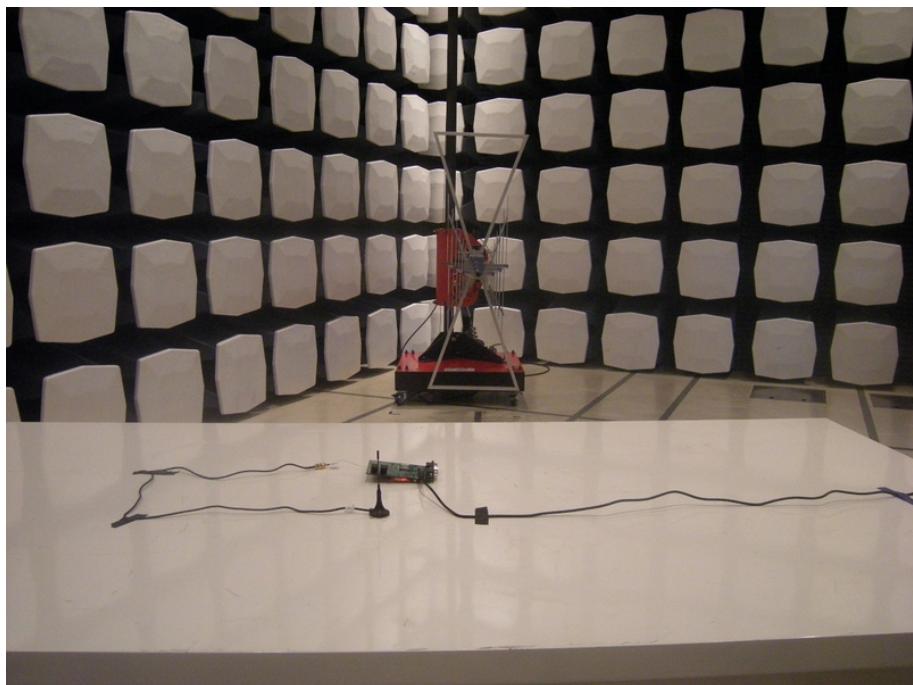
(Plot B: Test Antenna Horizontal)

I. PHOTOGRAPH OF THE TEST SETUP

1. CONDUCTED EMISSION TEST



2. RADIATED EMISSION TEST

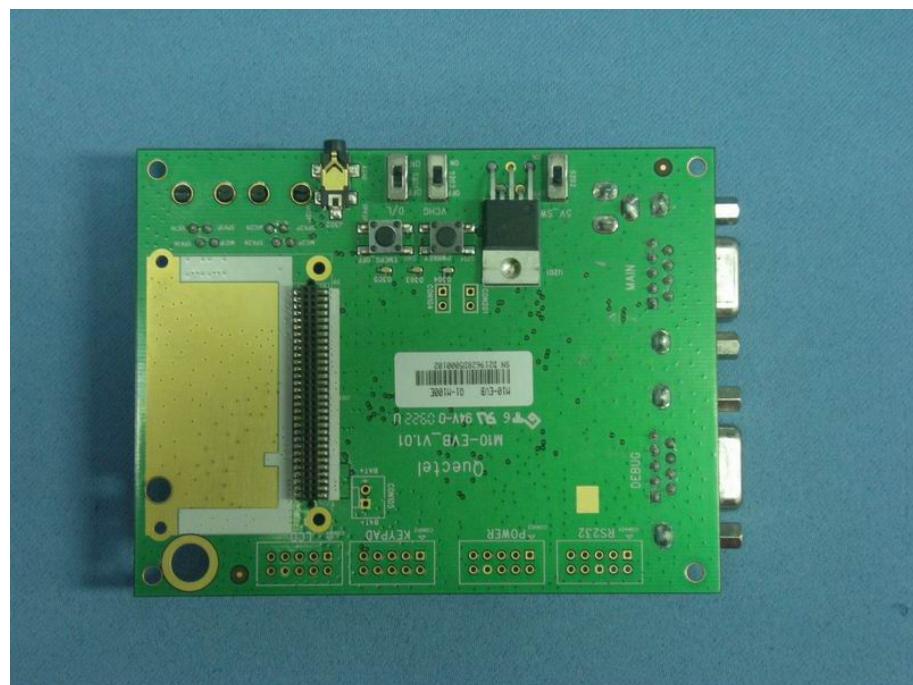
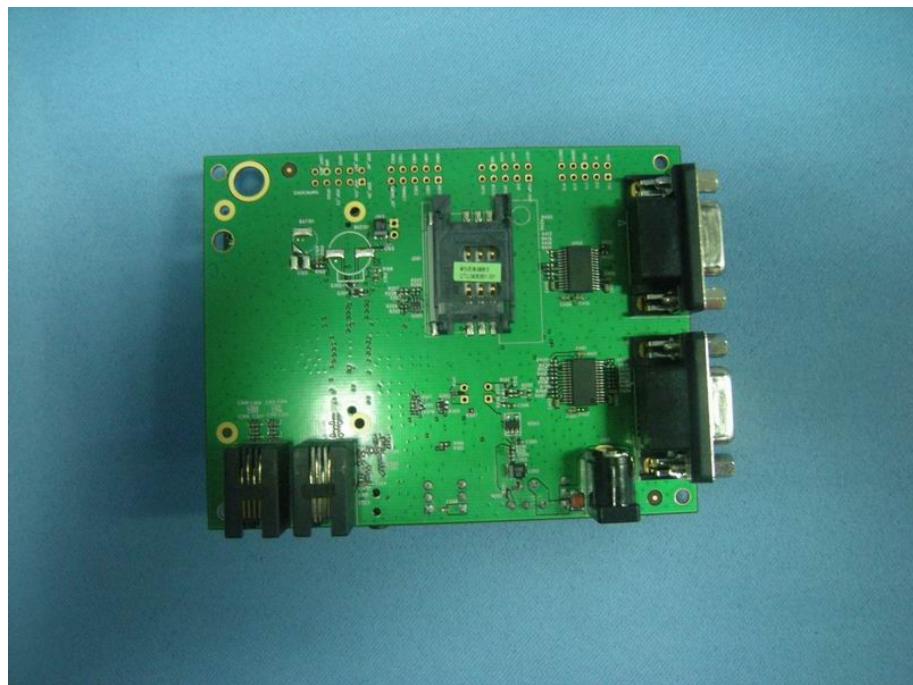


II. PHOTOGRAPH OF THE EUT

1. Appearance of the MS module



2. Accessory Equipment





** END OF REPORT **