



47 CFR PART 15 SUBPART B

TEST REPORT

of

GPS Module

Model Name: L10
Brand Name: Quectel
Report No.: SH09070021CE02
FCC ID: XMR-16182009003

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: GPS Module

Brand Name: Quectel
Model Name: M10
FCC ID: XMR-16182009003
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 7, 2009 –Aug 14, 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



The seal is an octagonal logo with a blue border. Inside the border, the text 'MORLAB' is written in large, bold, blue letters. Below 'MORLAB', the word 'Certification' is written in a smaller font. The seal also contains the phrases 'Products Quality Certification', 'Services Certification', and 'GLOBAL SERVICE' around its perimeter. The seal is stamped over the signature lines.

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. GPS Test Mode

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

- (1) Receiver mode

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

A communication link was established between the EUT and a System Simulator (SS). The EUT operated at 1575.42MHz

- (2) Idle mode

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

The EUT was registered to the base station simulator.

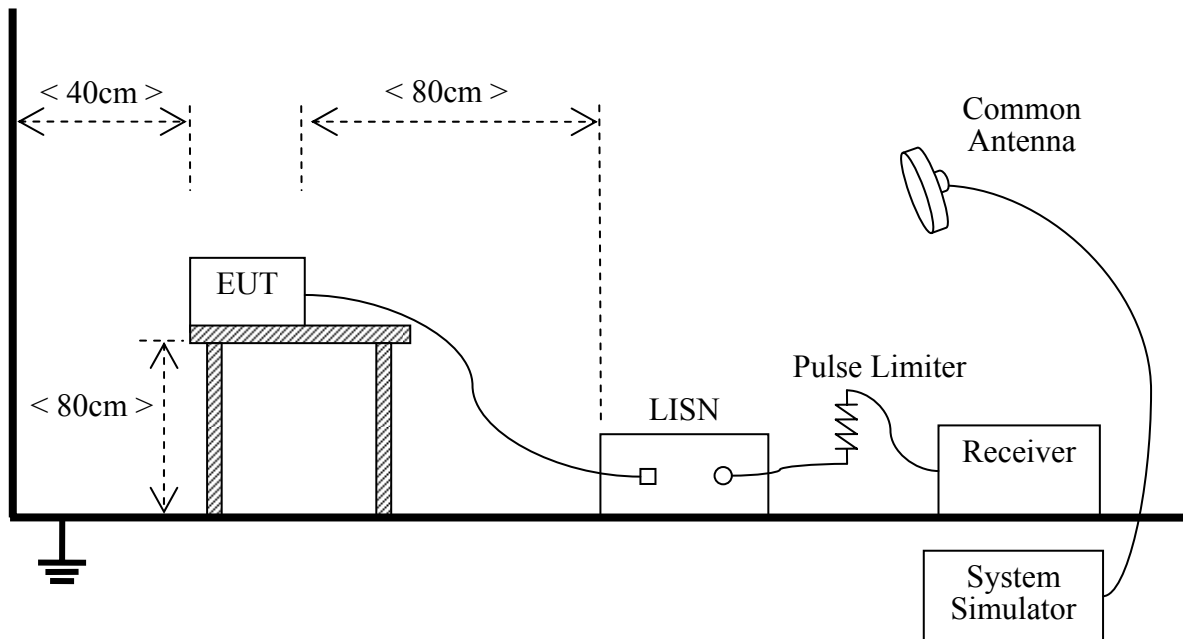
NOTE:

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:



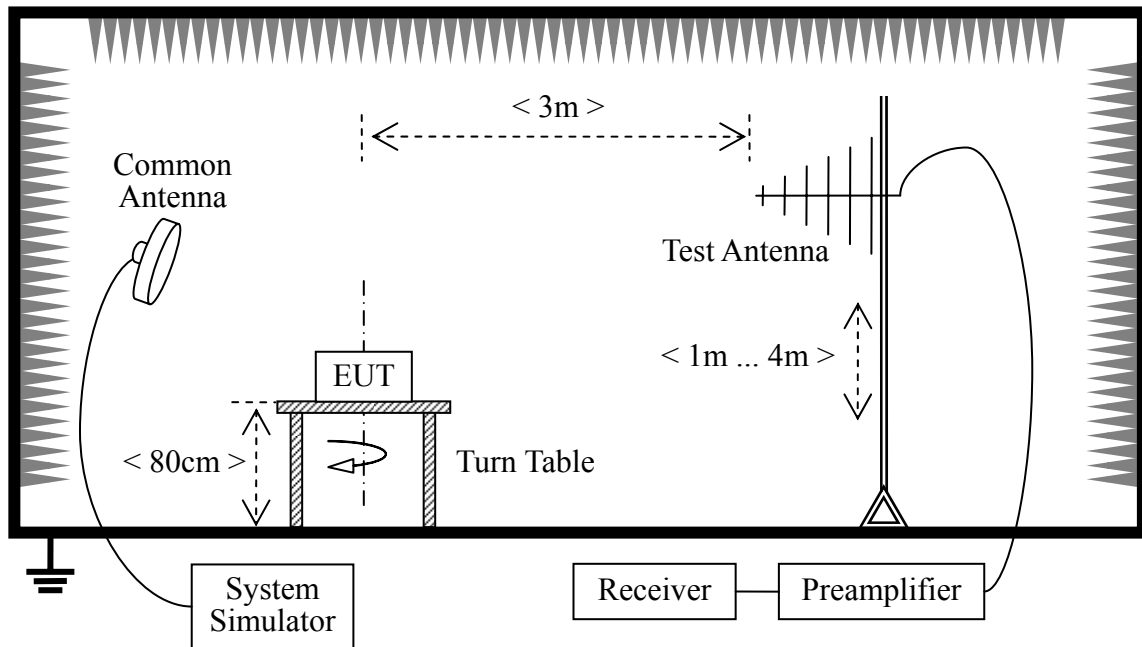
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides $50\Omega/50\mu\text{H}$ of coupling impedance for the measuring instrument. The 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)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5- 30	60	50

NOTE:

- The limit subjects to the Class B digital device.
- The lower limit shall apply at the band edges.
- 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.

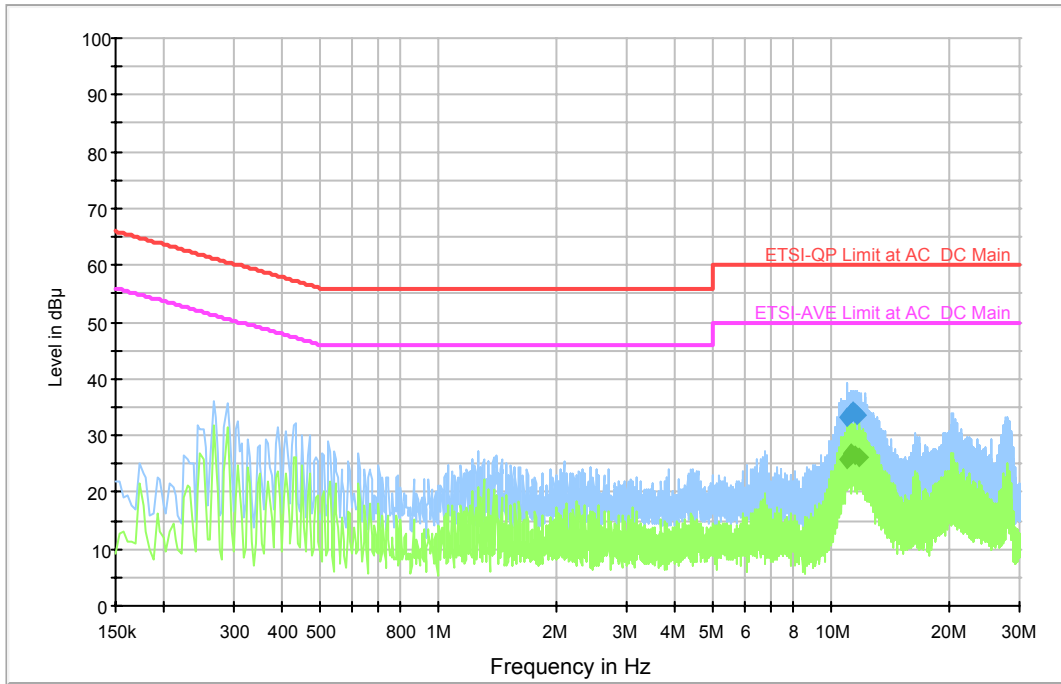
GPS Test mode

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

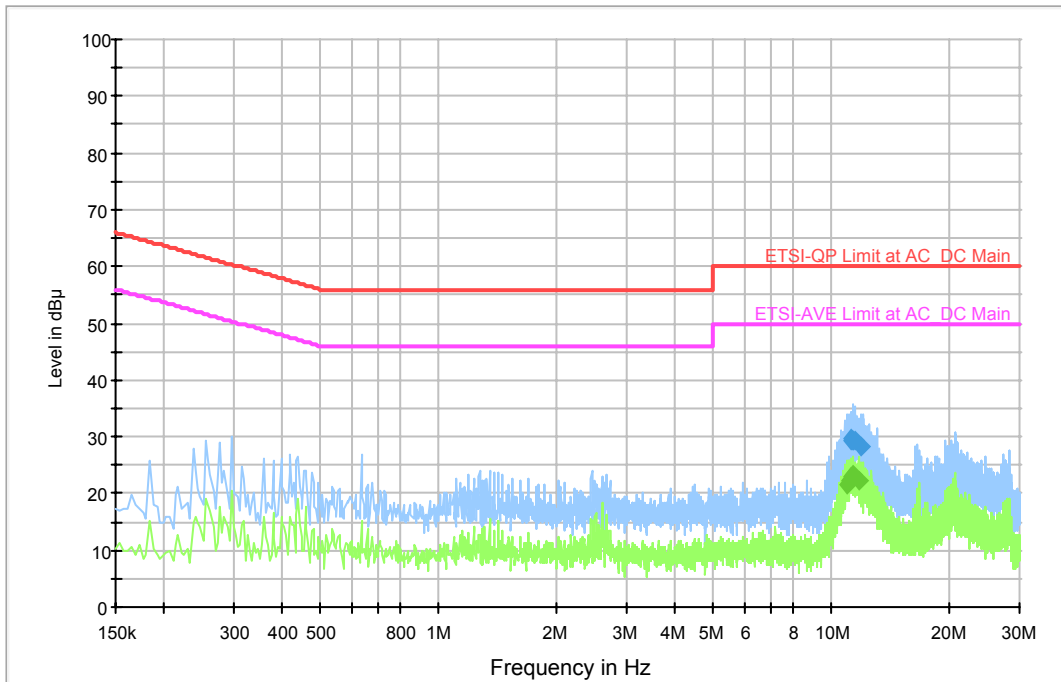
A. Test Verdict Recorded for Suspicious Points:

No.	@Frequency (MHz)	Measured Emission Level (dB μ V)				Limit (dB μ V)		Verdict
		PK	QP	AV	Phase	QP	AV	
1	10.974356	37	33.4	25.9	L	60	50	PASS
2	11.131069	36.2	33.9	26.4	L	60	50	PASS
3	11.209425	36.8	33.9	26.7	L	60	50	PASS
4	11.287781	39.1	34.3	26.9	L	60	50	PASS
5	11.481806	38.6	34.1	26.5	L	60	50	PASS
6	11.522850	37	33.7	26.0	L	60	50	PASS
7	11.149725	31.2	29.3	21.5	N	60	50	PASS
8	11.190769	36.1	29.5	22.3	N	60	50	PASS
9	11.269125	31.7	29.3	22.9	N	60	50	PASS
10	11.343750	34.3	29.4	23.2	N	60	50	PASS
11	11.384794	31	29.2	22.9	N	60	50	PASS
12	11.892244	30	28.3	22.3	N	60	50	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	
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE:

- Field Strength ($\text{dB}\mu\text{V/m}$) = $20 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$.
- 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.

GPS test mode

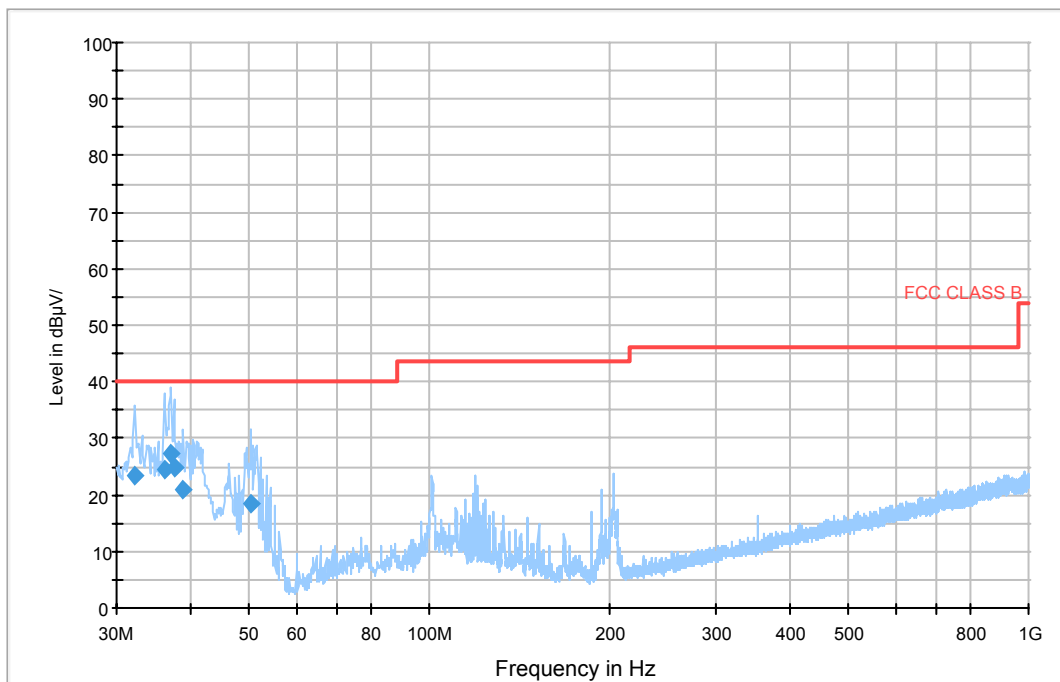
The EUT configuration of the emission tests is EUT+Adapter.

A. Test Verdict Recorded for Suspicious Points:

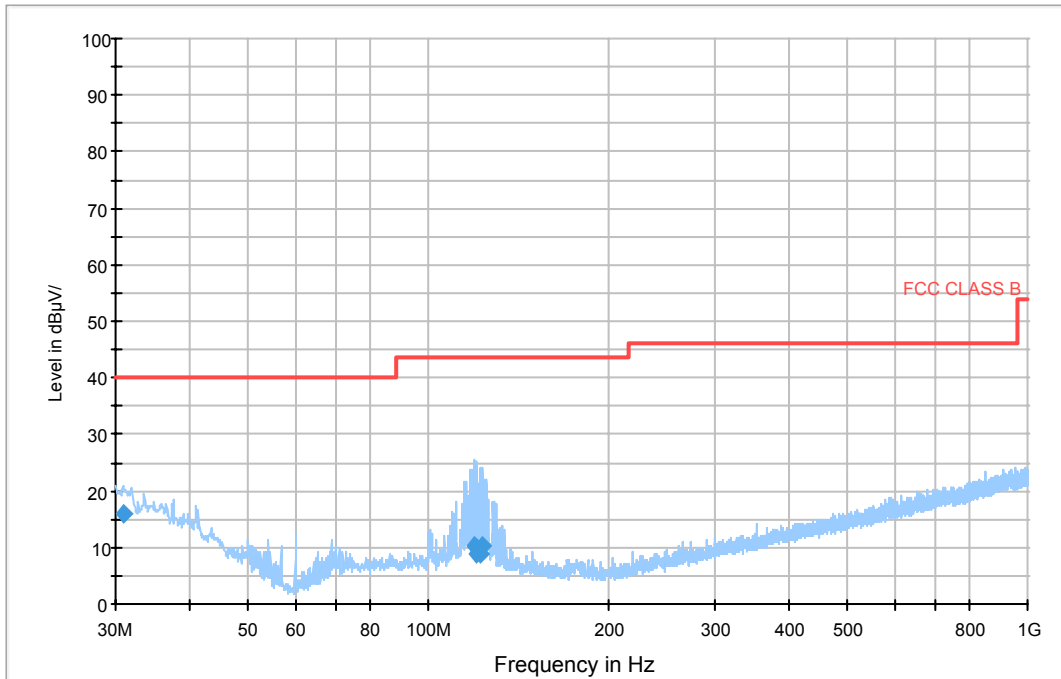
No.	@Frequency (MHz)	Emission Level (dB μ V/m)			Quasi-Peak Limit (dB μ V/m)	Result
		PK	QP	Antenna Polarization		
1	32.182500	36.2	23.4	Vertical	40.0	PASS
2	36.062500	37.8	24.3	Vertical	40.0	PASS
3	37.032500	38.9	27.2	Vertical	40.0	PASS
4	37.396250	36.8	24.8	Vertical	40.0	PASS
5	38.730000	32.3	20.8	Vertical	40.0	PASS
6	50.248750	32.8	18.5	Vertical	40.0	PASS
7	30.848750	21.6	15.9	Horizontal	40.0	PASS
8	119.603750	25.3	10.3	Horizontal	43.5	PASS
9	119.967500	24.3	8.8	Horizontal	43.5	PASS
10	120.331250	24.7	9.9	Horizontal	43.5	PASS
11	121.543750	24.4	8.8	Horizontal	43.5	PASS
12	123.362500	25.2	10.4	Horizontal	43.5	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.



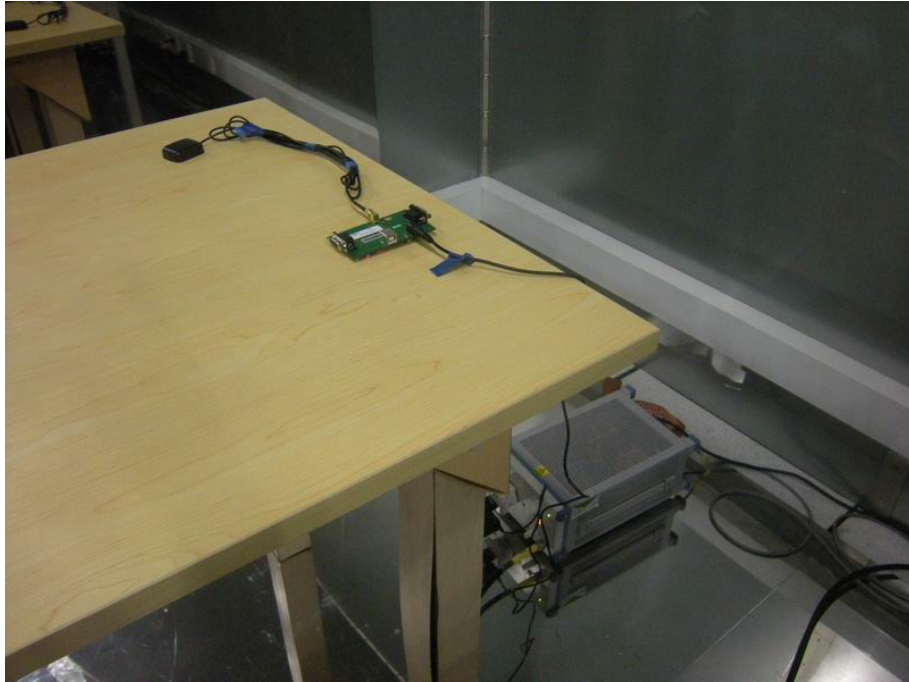
(Plot A: Test Antenna Vertical)



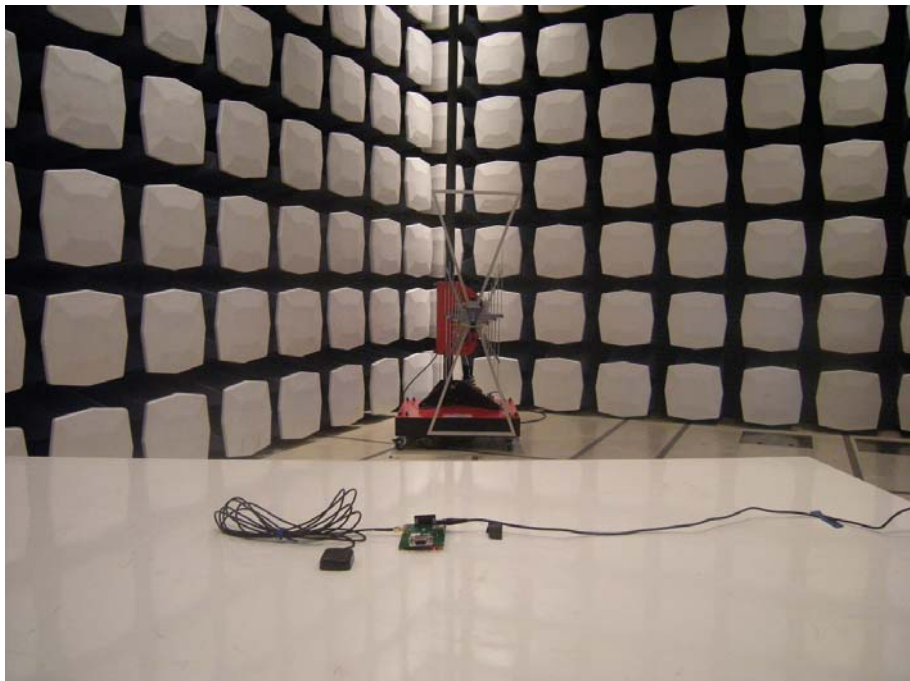
(Plot B: Test Antenna Horizontal)

I. PHOTOGRAPH OF THE TEST SETUP

1. CONDUCTED EMISSION TEST

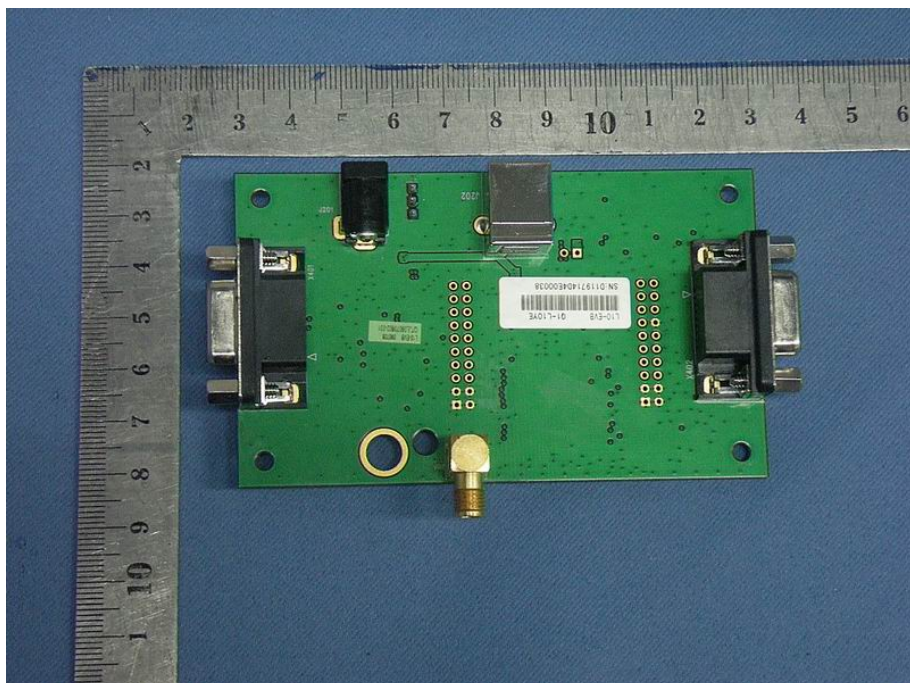
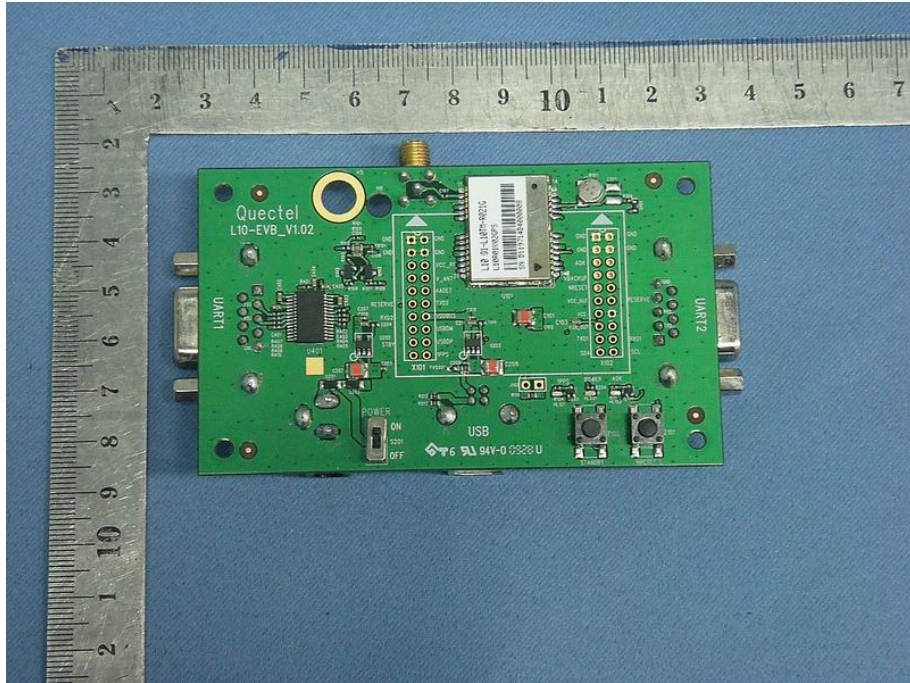


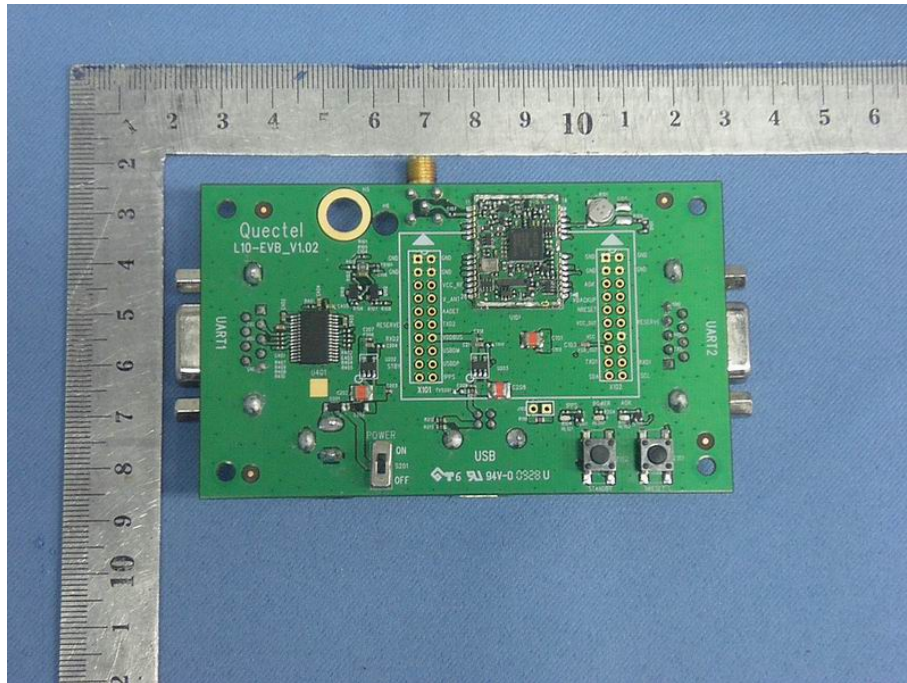
2. RADIATED EMISSION TEST



II. PHOTOGRAPH OF THE EUT

1. Appearance of the MS module





2. Accessory Equipment





**** END OF REPORT ****