



47 CFR PART 15 SUBPART B

TEST REPORT

of

USB MODEM

Model Name: DWM-162R
Brand Name: D-Link Corporation
Report No.: SH10030026E01
FCC ID: KA2DWM162R

prepared for

D-link Corporation
#36 North Third Ring East Road, World Trade Center, Block B Room 26F02-O5,
Dongcheng District, Beijing, China



**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



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1. TEST CERTIFICATION

Equipment under Test: USB MODEM

Brand Name: D-Link Corporation

Model Name: DWM-162R

FCC ID: KA2DWM162R

Applicant: D-Link Corporation

#36 North Third Ring East Road, World Trade Center, Block B
Room 26F02-O5. Dongcheng District, Beijing, China

Manufacturer: AsiaTelco Technologies Co.

#289 Bisheng Road, Building-8, 3F. Zhangjiang Hi-Tech
Park, Pudong, Shanghai China 201204

Test Standards: 47 CFR Part 15 Subpart B

Test Date(s): Apr, 13, 2010 – Apr, 19, 2010

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:

Huangyulong
Huangyulong

Dated:

2010.4.21

Reviewed by:

Zhang Jun
Zhang Jun

Dated:

2010.4.21

Approved by:

Wei Bei
Wei Bei

Dated:

2010.4.21





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 CDMA Test Mode

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

(1) Traffic operating CDMA 1xRTT mode

The EUT configuration of the emission tests is EUT + PC

A communication link was established between the EUT and a System Simulator (SS). The EUT operated at CDMA Cellular mid ARFCN (384) and maximum output power (All up bit). The EUT operated at CDMA PCS mid ARFCN (600) and maximum output power (All up bit).

(2) Traffic operating CDMA 1xEVDO Rev A mode

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

A communication link was established between the EUT and a System Simulator (SS); data was transmitted between EUT and System Simulator (SS), and maintained during the measurement. the EUT operated at CDMA Cellular mid ARFCN (384) and maximum output power (All up bit) . The EUT operated at CDMA PCS mid ARFCN (600) and maximum output power (All up bit).

(3) Idle operating mode

The EUT configuration of the emission tests is EUT + PC

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.

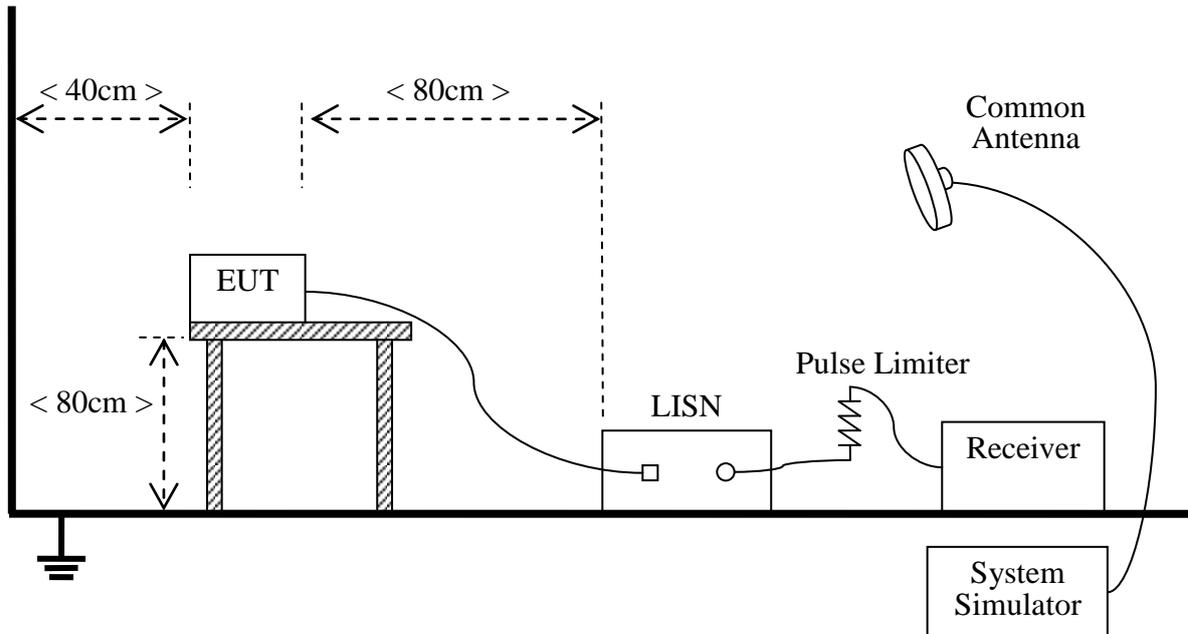
Note: In the Conducted Emission, the worst cases are operated at CDMA 1xRTT Cellular

Note: In the Radiated Emission, the worst cases are operated at CDMA 1xEvdo Cellular

3.2 Test Setup and Equipments List

3.2.1 Conducted Emission

A. Test Setup:



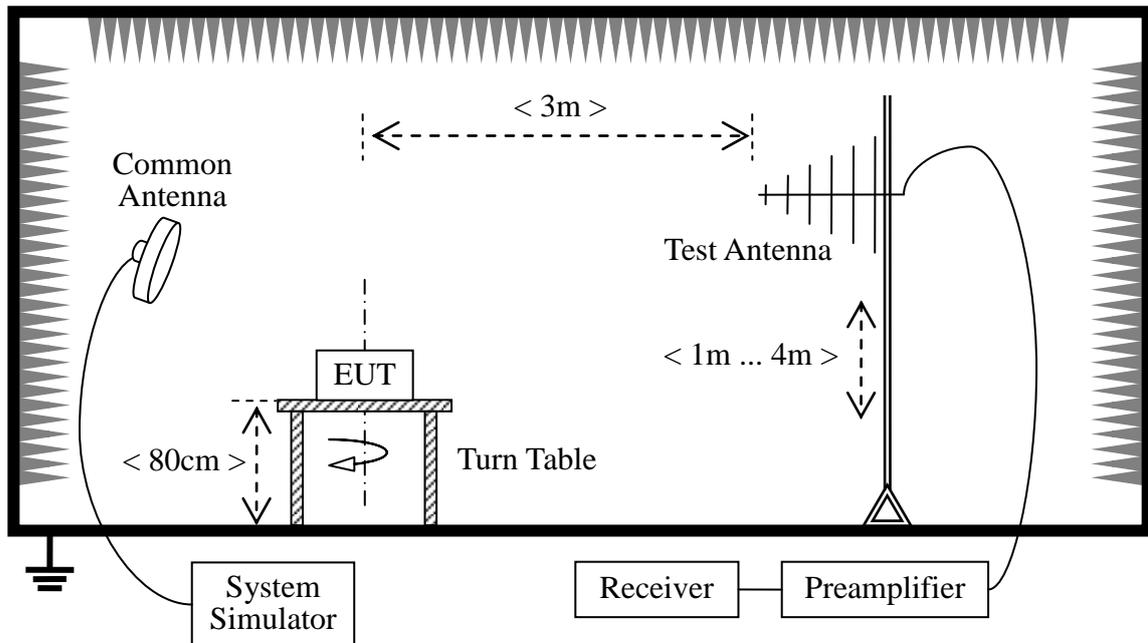
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides $50\Omega/50\mu\text{H}$ of coupling impedance for the measuring instrument. The 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	2009.11	1year
LISN	Rohde&Schwarz	ENV216	812744	2009.11	1year
System Simulator	Rohde&Schwarz	CMU200	105571	2009.12.	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	2009.10	1year
Full-Anechoic Chamber	ETS • LINDGREN	9m*6m*6m	(n.a.)	2009.10	1year
Test Antenna - Bi-Log	Rohde&Schwarz	HL562	100385	2009.10	1year
System Simulator	Rohde&Schwarz	CMU200	105571	2009.10	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
0.50 - 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 2.3.1 of this report.

4.1.3 Test Result

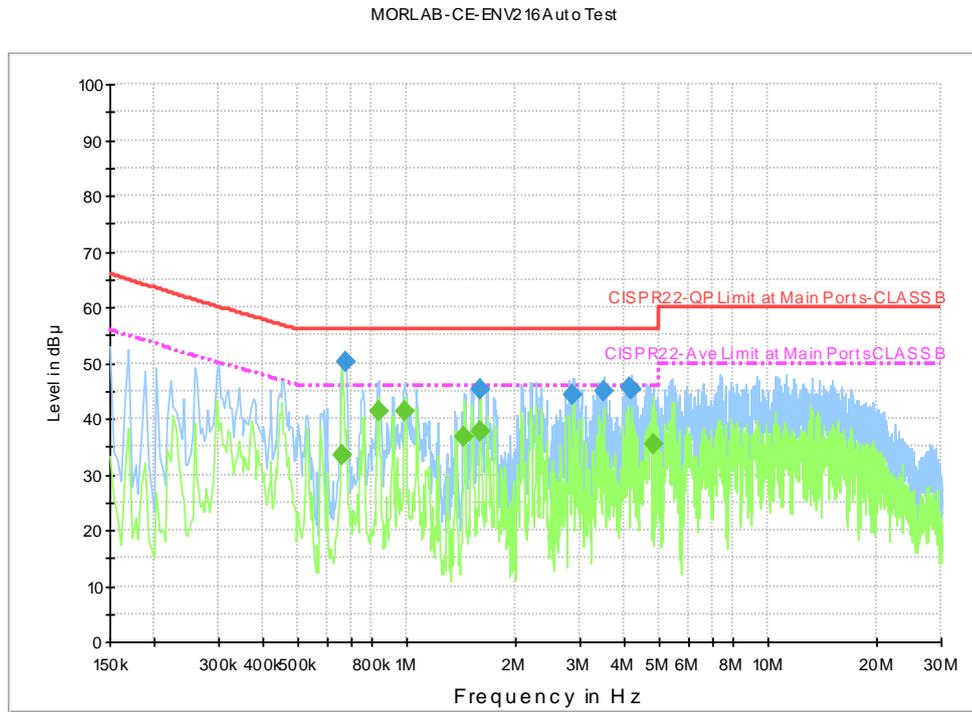
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines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

A. Test Verdict Recorded for Suspicious Points:

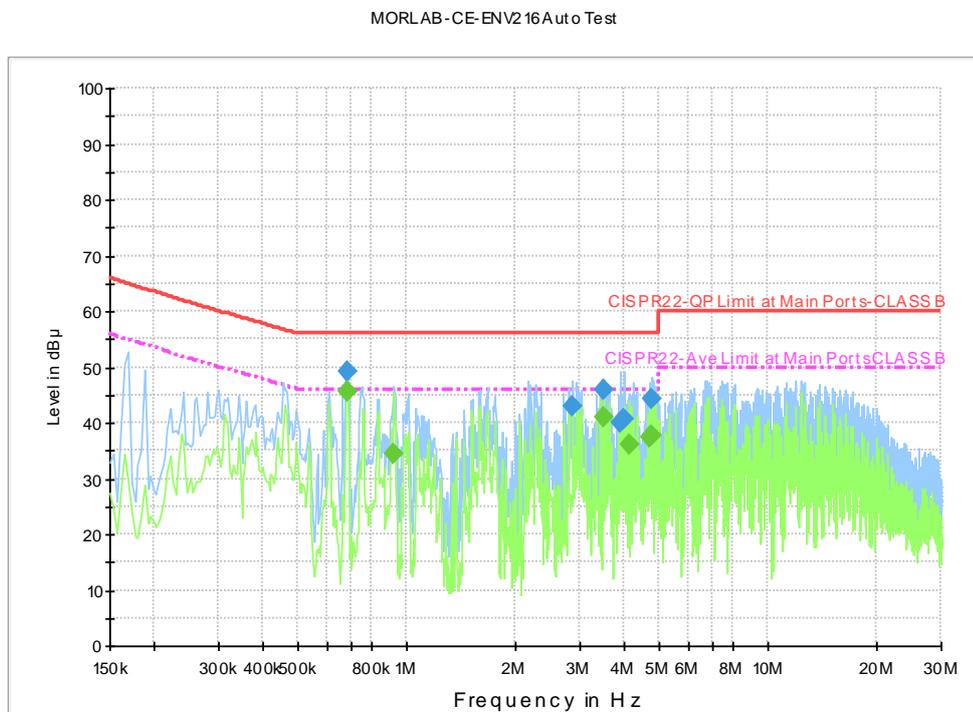
Frequency (MHz)	QuasiPeak (dBμ V)	Meas. Time (ms)	Band width (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.679838	49.2	1000.000	9.000	N	9.7	6.8	56.0	PASS
2.858888	42.9	1000.000	9.000	N	9.8	13.1	56.0	PASS
3.482006	45.8	1000.000	9.000	N	9.8	10.2	56.0	PASS
3.899906	40.0	1000.000	9.000	N	9.9	16.0	56.0	PASS
3.978262	40.8	1000.000	9.000	N	9.9	15.2	56.0	PASS
4.769288	44.3	1000.000	9.000	N	9.9	11.7	56.0	PASS
0.676106	50.2	1000.000	9.000	L1	9.7	5.8	56.0	PASS
1.593994	45.4	1000.000	9.000	L1	9.8	10.6	56.0	PASS
2.877544	44.4	1000.000	9.000	L1	9.8	11.6	56.0	PASS
3.485738	44.8	1000.000	9.000	L1	9.8	11.2	56.0	PASS
4.097662	45.5	1000.000	9.000	L1	9.9	10.5	56.0	PASS
4.172288	45.4	1000.000	9.000	L1	9.9	10.6	56.0	PASS

Frequency (MHz)	Average (dBμ V)	Meas. Time (ms)	Band width (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.679838	45.6	1000.000	9.000	N	9.7	0.4	46.0	PASS
0.914906	34.5	1000.000	9.000	N	9.7	11.6	46.0	PASS
3.482006	40.9	1000.000	9.000	N	9.8	5.1	46.0	PASS
4.097662	36.0	1000.000	9.000	N	9.9	10.0	46.0	PASS
4.694662	37.4	1000.000	9.000	N	9.9	8.6	46.0	PASS
4.769288	37.6	1000.000	9.000	N	9.9	8.4	46.0	PASS
0.661181	33.3	1000.000	9.000	L1	9.7	12.7	46.0	PASS
0.829088	41.4	1000.000	9.000	L1	9.7	4.6	46.0	PASS
0.982069	41.4	1000.000	9.000	L1	9.7	4.6	46.0	PASS
1.437281	36.8	1000.000	9.000	L1	9.8	9.2	46.0	PASS
1.593994	37.8	1000.000	9.000	L1	9.8	8.2	46.0	PASS
4.791675	35.4	1000.000	9.000	L1	9.9	10.6	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	
	$\mu\text{V/m}$	$\text{dB } \mu\text{V/m}$
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 2.3.2 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.

CDMA 1xEVDO mode

(1) Traffic operating mode

The EUT configuration of the emission tests is EUT + PC

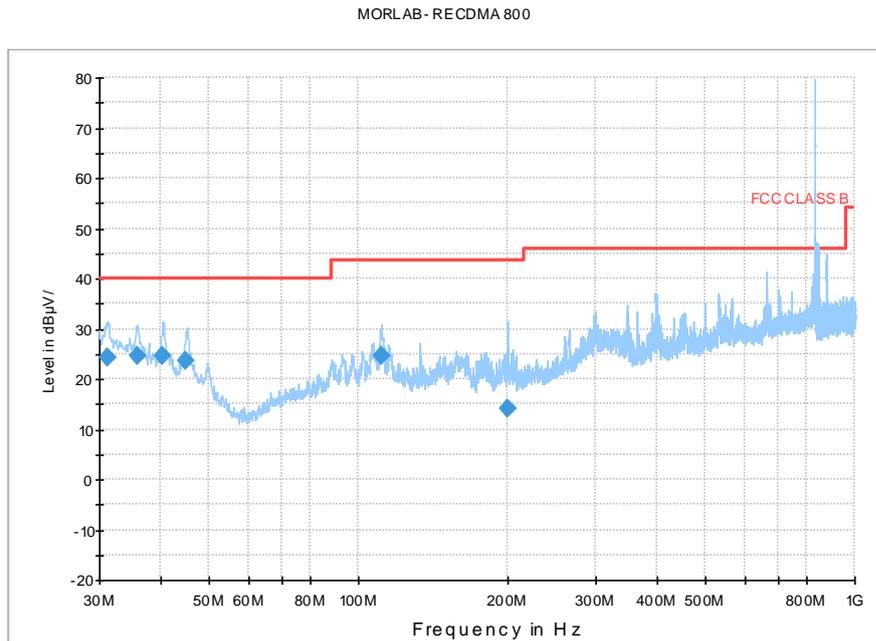
A communication link was established between the EUT and a System Simulator (SS). The EUT operated at CDMA EVDO Cellular mid ARFCN (384) and maximum output power (All up bit).

A. Test Verdict Recorded for Suspicious Points:

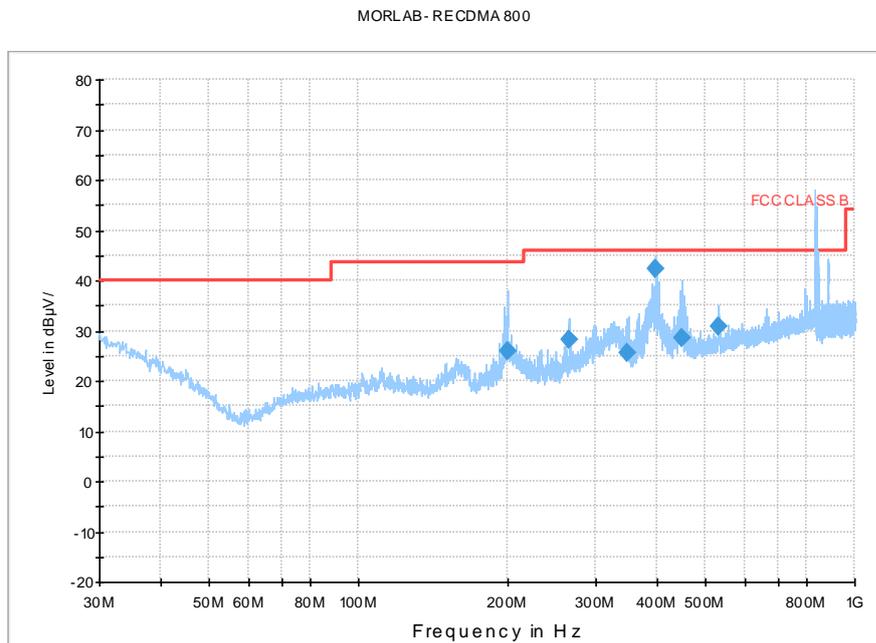
No.	@Frequency (MHz)	Emission Level (dB μ V/m)			Quasi-Peak Limit (dB μ V/m)	Result
		QP	PK	Antenna Polarization		
1	31.206000	24.4	32.1	Vertical	40.0	PASS
2	35.728500	24.6	31.8	Vertical	40.0	PASS
3	40.251000	24.4	33.2	Vertical	40.0	PASS
4	44.874000	23.6	30.7	Vertical	40.0	PASS
5	111.003000	24.7	30.5	Vertical	43.5	PASS
6	200.146500	14.1	33.8	Vertical	43.5	PASS
4	200.247000	25.7	38.5	Horizontal	43.5	PASS
5	265.170000	28.1	34.4	Horizontal	46.0	PASS
6	348.384000	25.4	34.3	Horizontal	46.0	PASS
7	397.830000	42.4	45.1	Horizontal	46.0	PASS
8	450.190500	28.5	40.2	Horizontal	46.0	PASS
9	533.002500	31.0	35.0	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)

** END OF REPORT **