47 CFR PART 15 SUBPART B

TEST REPORT

of

USB MODEM

Model Name: DWM-162

Brand Name: D-Link Corporation

Report No.: SH10010072E01

FCC ID: KA2DWM162

prepared for

D-link Corporation

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

Dongcheng District, Beijing, China

prepared by

Shenzhen Electronic Product Quality Testing Center

Morlab Laboratory

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CTIA Authorized Test Lab

LAB CODE 20081223-00

TABLE OF CONTENTS

1. TEST CERTIFICATION

Equipment under Test:	USB MODEM
Brand Name:	D-Link Corporation
Model Name:	DWM-162
FCC ID:	KA2DWM162
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. #66 DongXin Road， BinJiang District，Hangzhou City.ZheJiang Province
Test Standards:	47 CFR Part 15 Subpart B
Test Date(s):	March,1, 2010 –March, 10, 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: Huang yun long Dated: 2010.3.11
Huangyunlong

Reviewed by: Zhang Jun Dated: 2010.3.11
Zhang Jun

Approved by: Dated: 2010.3.11
Su Feng

2. GENERAL INFORMATION

2.1 EUT Description

EUT Type	:	USB MODEM
Model Name	:	DWM-162
Serial No.	:	(n.a., marked #1 by test site)
Hardware Version	:	325-0091-001-2
Software Version	:	V1.0.3.6
Modulation Type	:	QPSK
Ancillary Equipment	:	1: Notebook PC
		Model Name: THINKPAD R40e
		Brand Name: IBM

Note 1: A communication link between the EUT and a System Simulator (SS) is 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 (℃):	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).
   (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); date 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)

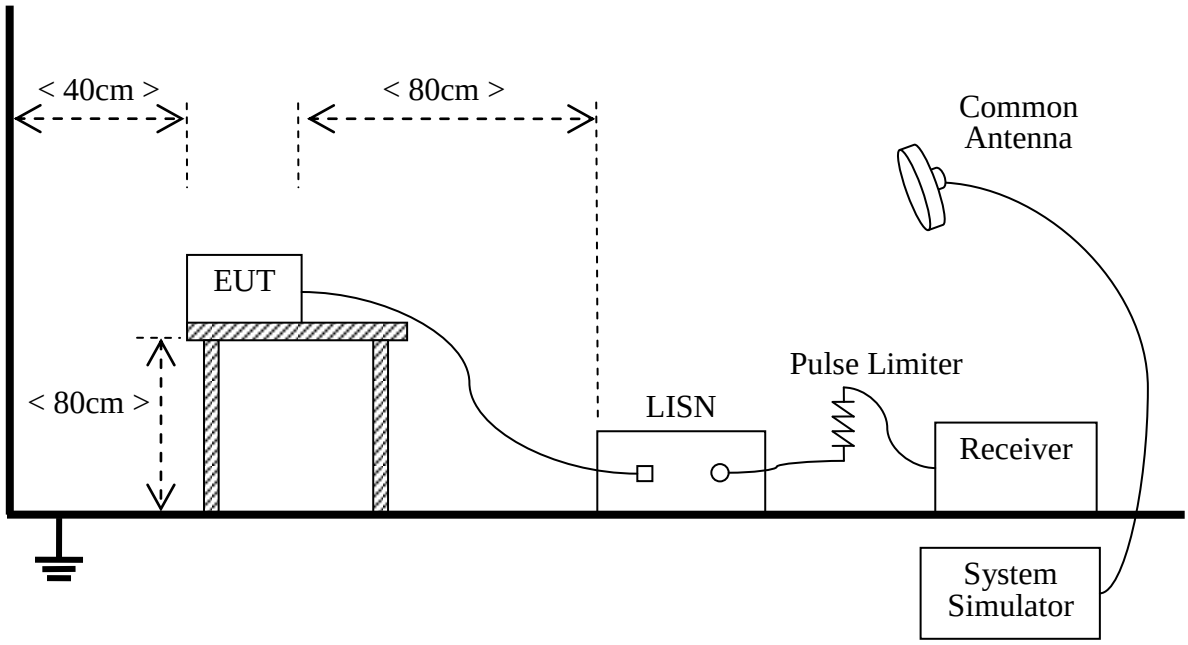
   (3) Idle operating mode
   The EUT configuration of the emission tests is EUT + PC
   The EUT was registered to the base station simulator but no call was set up.

Note: All test modes are performed, only the worst cases are recorded in this report.
Note: In the Radiated Emission, the worst cases are operated at CDMA 1xRTT

3.2 Test Setup and Equipments List

3.2.1 Conducted Emission

A. Test Setup:



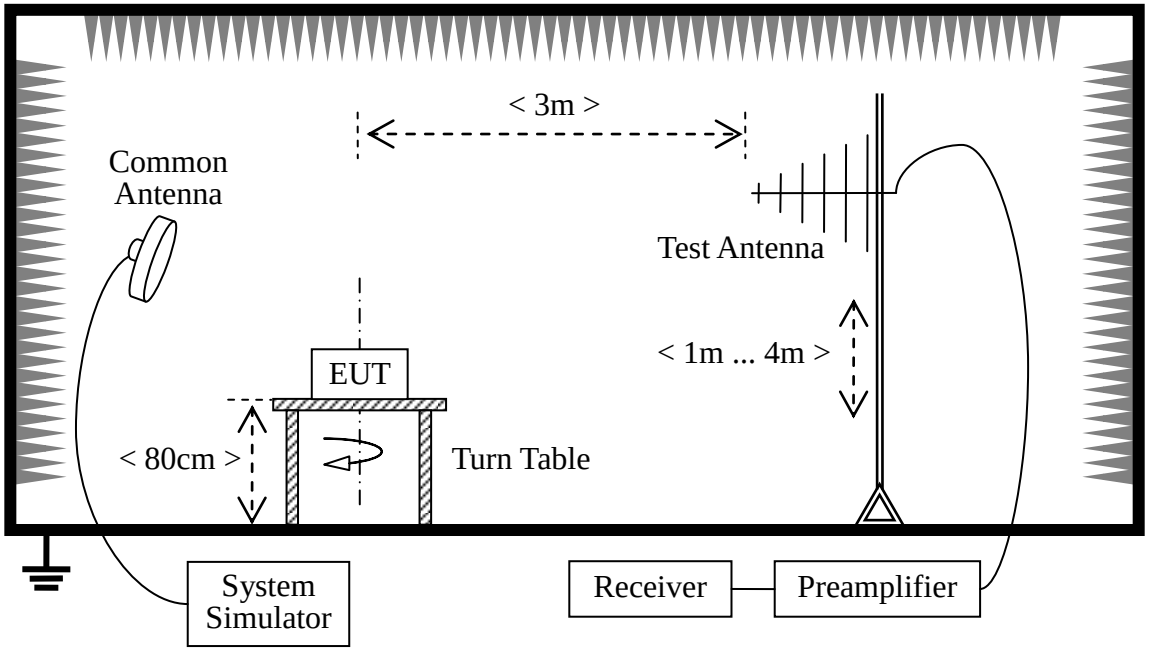
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. The Common Antenna 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	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 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-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 2.3.1 of this report.

4.1.3 Test Result

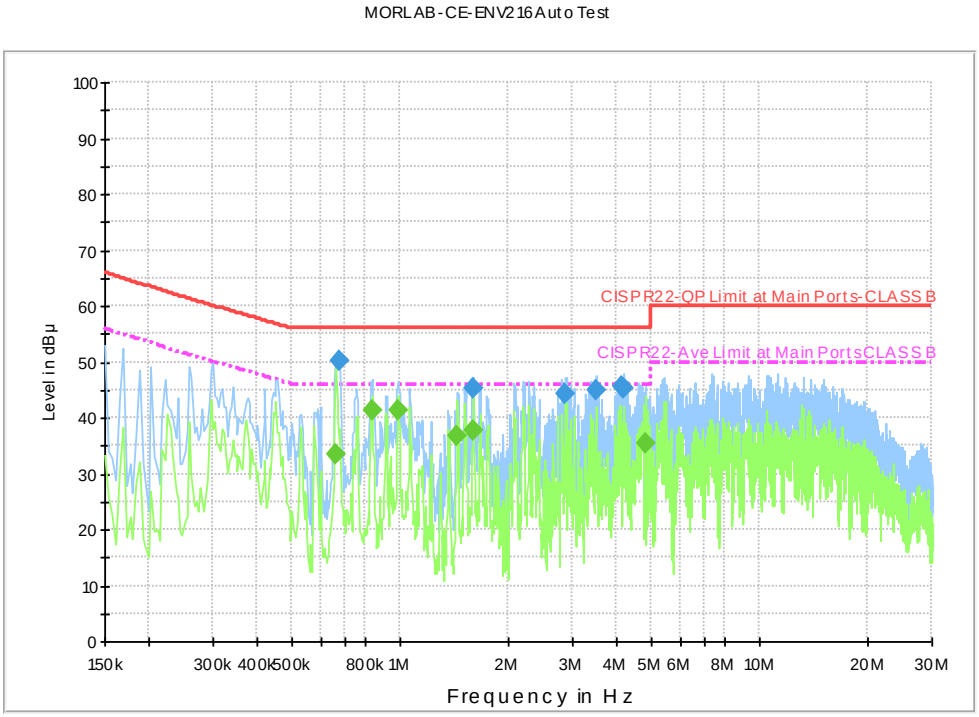
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines 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:

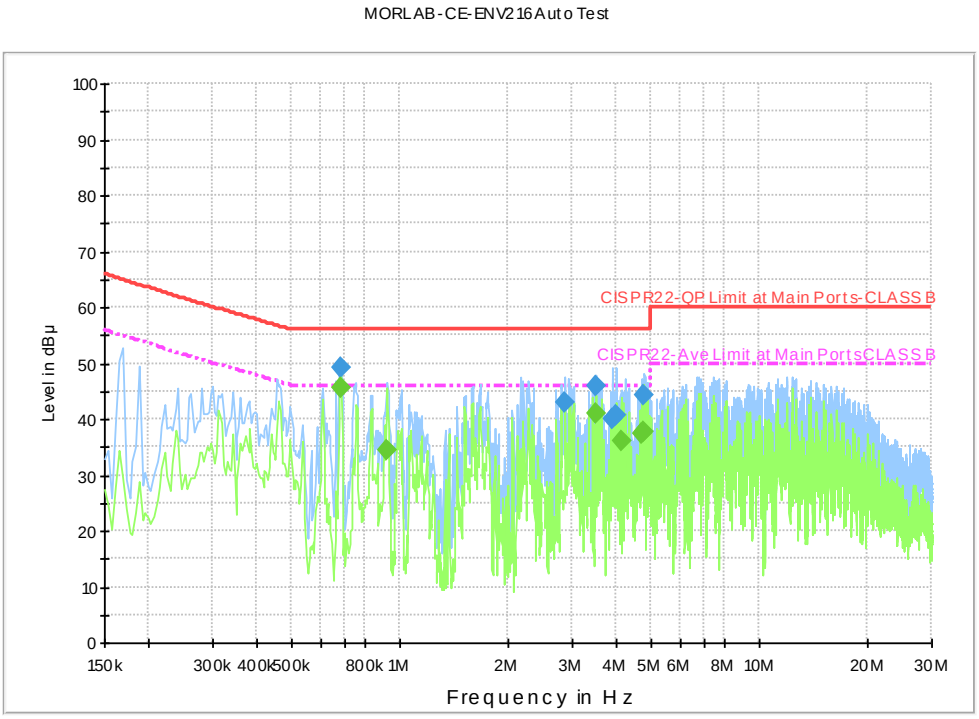
Frequency (MHz)	QuasiPeak (dBμ V)	Meas. Time (ms)	Band width (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμ V)	Comment
0.679838	49.2	1000.000	9.000	N	9.7	6.8	56.0	PASS
2.858888	42.9	1000.000	9.000	N	9.8	13.1	56.0	PASS
3.482006	45.8	1000.000	9.000	N	9.8	10.2	56.0	PASS
3.899906	40.0	1000.000	9.000	N	9.9	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)

Radiated Emission

4.2 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	
	μV/m	dBμV/m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE:

a) Field Strength (dBμV/m) = 20*log[Field Strength (μV/m)].

b) In the emission tables above, the tighter limit applies at the band edges.

4.2.1 Test Description

See section 2.3.2 of this report.

4.2.2 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 1xRTT mode

(1) Traffic operating mode

The EUT configuration of the emission tests is EUT + PC

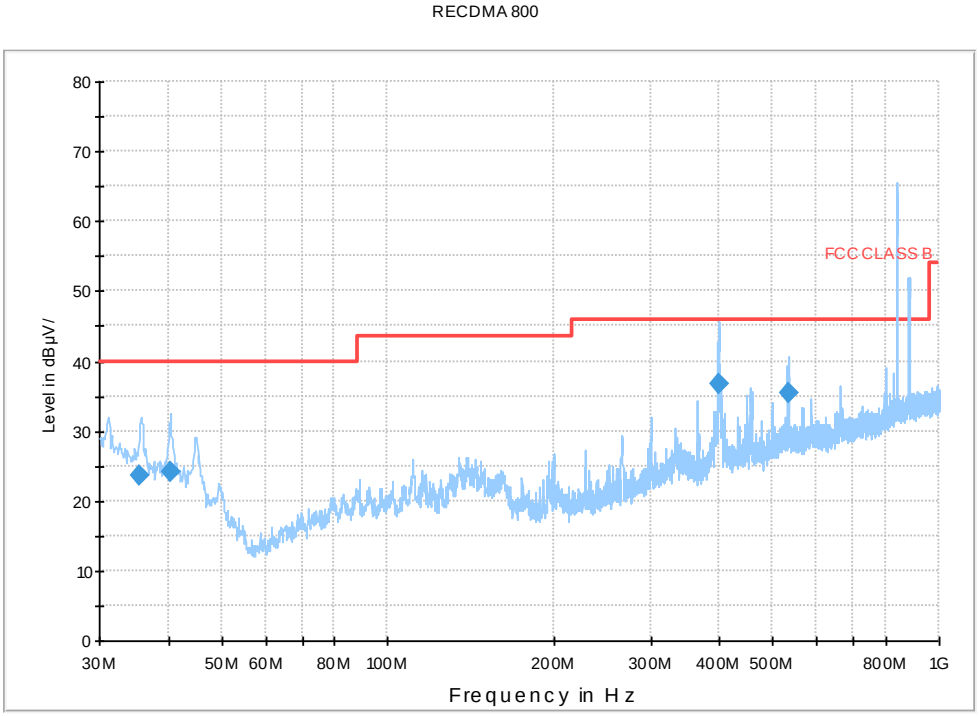
A communication link was established between the EUT and a System Simulator (SS). The EUT operated at CDMA Cellular mid ARFCN (384) and maximum output power (All up bit).

A. Test Verdict Recorded for Suspicious Points:

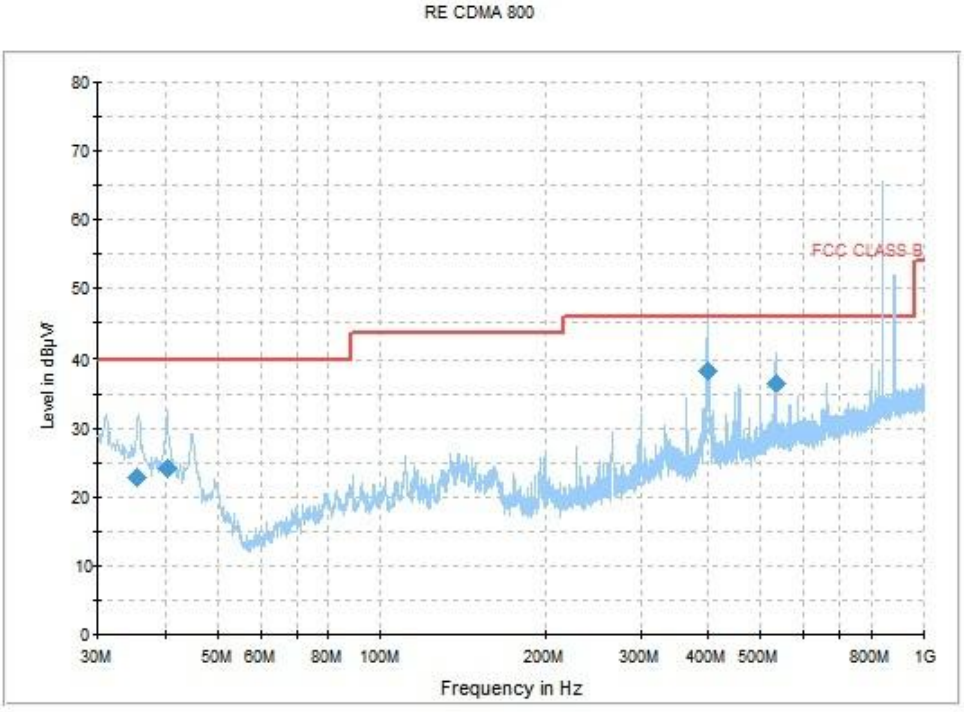
No.	@Frequency (MHz)	Emission Level (dBμV/m)			Quasi-Peak Limit (dBμV/m)	Result
		QP	PK	Antenna Polarization		
1	35.577500	23.7	33.4	Vertical	40.0	PASS
2	532.823750	35.4	42.6	Vertical	46.0	PASS
3	398.842500	36.7	40.3	Vertical	46.0	PASS
4	40.427500	24.1	33.7	Vertical	40.0	PASS
7	35.577500	22.5	32.8	Horizontal	40.0	PASS
8	532.823750	36.7	45.1	Horizontal	46.0	PASS
9	398.842500	38.7	42.2	Horizontal	46.0	PASS
10	40.427500	24.6	34.5	Horizontal	40.0	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)

CDMA 1xEVDO mode

(1) Traffic operating mode

The EUT configuration of the emission tests is EUT + PC

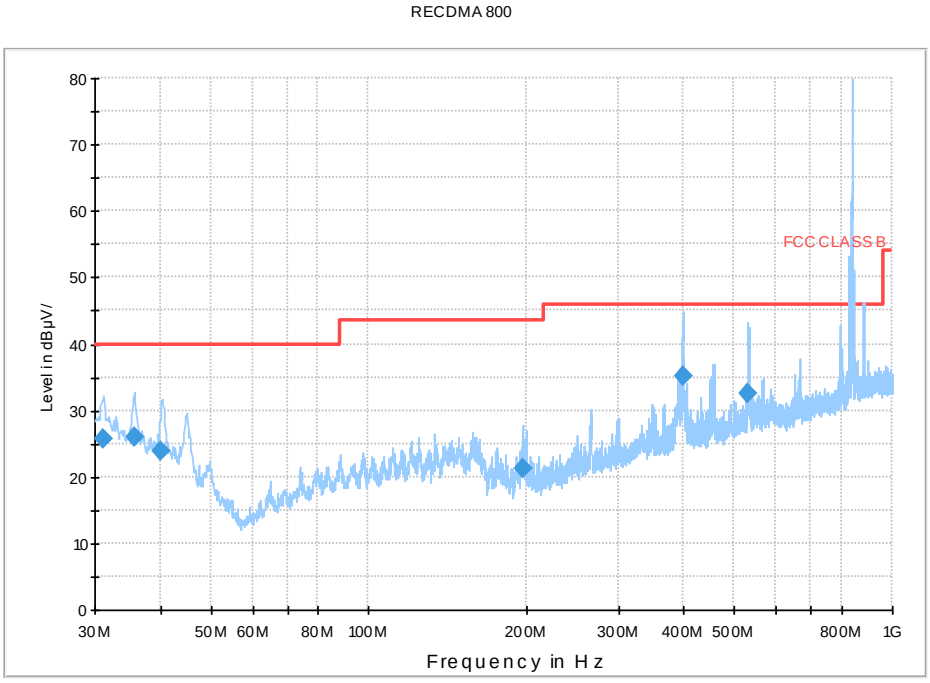
A communication link was established between the EUT and a System Simulator (SS). The EUT operated at CDMA EVDO Cellular mid ARFCN (384) and maximum output power (All up bit).

C. Test Verdict Recorded for Suspicious Points:

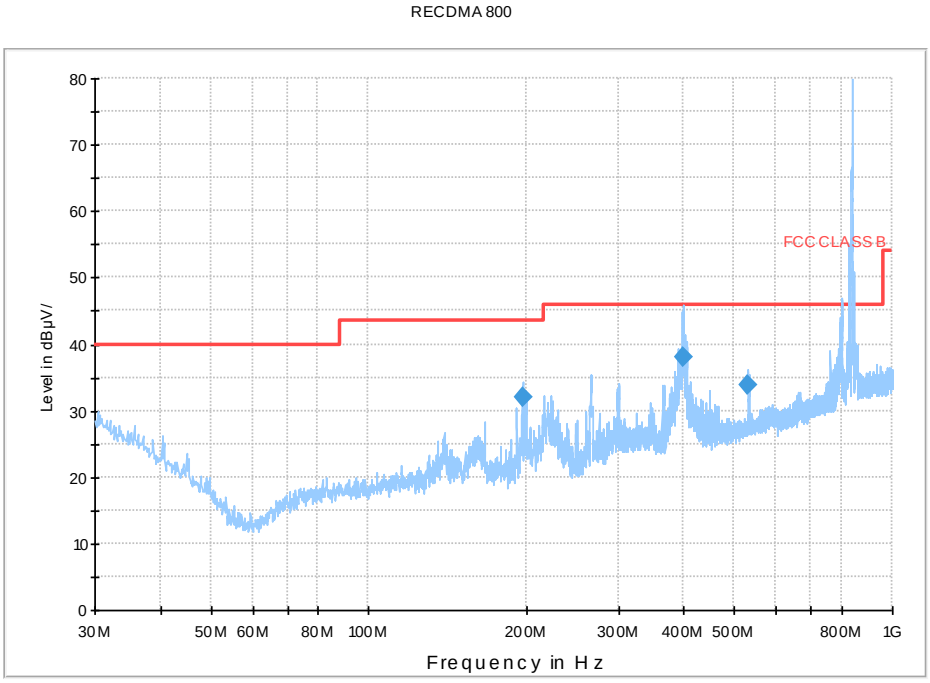
No.	@Frequency (MHz)	Emission Level (dBμV/m)			Quasi-Peak Limit (dBμV/m)	Result
		QP	PK	Antenna Polarization		
1	31.212500	25.7	33.8	Vertical	40.0	PASS
2	35.698750	26.1	34.4	Vertical	40.0	PASS
3	40.185000	23.8	33.1	Vertical	40.0	PASS
4	196.597500	21.2	27.2	Vertical	43.5	PASS
5	529.913750	32.6	44.6	Vertical	46.0	PASS
6	399.812500	35.1	42.3	Vertical	46.0	PASS
4	196.597500	32.1	34.7	Horizontal	43.5	PASS
5	530.520000	33.7	45.8	Horizontal	46.0	PASS
6	398.842500	38.1	36.3	Horizontal	46.0	PASS

D. 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 **