TEST REPORT

No. 2014RFA0019

For

Client : D-Link Corporation

Production : EVDO Mobile Hotspot

Model Name : DWR-330

FCC ID: KA2WR330A1

Hardware Version: A1

Software Version: V1.00

Issued date: 2014-03-18

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of ECIT Shanghai.

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

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CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
Fax:	(+86)-021-63843301

1.2. Testing Environment

Normal Temperature:	15-35℃
Extreme Temperature:	-30/+50℃
Relative Humidity:	20-75%

1.3. Project data

Project Leader:	Gong Yujuan
Testing Start Date:	2014-02-20
Testing End Date:	2014-03-05

1.4. Signature

Wang Daming
(Prepared this test report)

Liu Jianquan
(Reviewed this test report)

Zheng Zhongbin
Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	D-Link Corporation
Address /Post:	No.289,Sinhu 3rd rd., Neihu District, Taipei City114, Taiwan
Telephone:	+886-2-66000123-5821
Postcode:	114

2.2. Manufacturer Information

Company Name:	D-Link Corporation
Address /Post:	No.289,Sinhu 3rd rd., Neihu District, Taipei City114, Taiwan
Country:	+886-2-66000123-5821
Telephone:	114

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	EVDO Mobile Hotspot
Model name	DWR-330
Frequency	CDMA 800MHz/1900MHz
Extreme Temperature	-30/+50℃
Nominal Voltage	3.7 V
Extreme High Voltage	4.1 V
Extreme Low Voltage	3.3 V

Note: Photographs of EUT are shown in ANNEX A of this test report.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N04	N/A	A1	v1.00	2014-02-20

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	RF cable	---
AE2	Dummy Battery	---

*AE ID: is used to identify the test sample in the lab internally.

3.4. Statements

The product DWR-330 , supporting CDMA, manufactured by D-Link Corporation is a new product for testing.

ECIT has verified that the compliance of the tested device specified in section 5 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 5 of this test report.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	2014
FCC Part 22	PUBLIC MOBILE SERVICES	2014
ANSI-TIA-603-C	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2004
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2009
KDB971168	Measurement Guidance for Certification of Licensed Digital Transmitters	v02r01

5. SUMMARY OF TEST RESULTS

Item	Test items	FCC rules	result
1	Peak Output Power	22.913(a)(2) and 2.1046	Pass
2	Modulation Characteristic	2.1047(d)	Pass
3	Occupied Bandwidth	2.1049	Pass
4	Spurious Emission At Antenna Terminals (+/- 1MHz)	22.917(a) and 2.1049	Pass
5	Spurious Emission	22.917(b) and 2.1051, 2.1053	Pass
6	Frequency stability	2.1055/22.355	Pass
7	Conducted Spurious mission	2.1057/22.917/24.238	Pass

6. Test Equipments Utilized

Climate chamber

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Climate chamber	SH-641	92012011	ESPEC	2014-08-30

Radiated emission test system

The test equipments and ancillaries used are as follows.

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Universal Radio Communication Tester	CMU200	123102	R&S	2014-08-30
2	Test Receiver	ESCI	101235	R&S	2014-08-30
3	Test Receiver	ESU40	100307	R&S	2014-10-29
4	Trilog Antenna	VULB9163	19-162515	Schwarzbeck	2014-11-11
5	Double Ridged Guide Antenna	ETS-3117	135885	ETS	2014-04-28
6	2-Line V-Network	ENV216	101380	R&S	2014-10-30
7	Single Phase Harmonic & Flicker	DPA500N	V1126109988	EM Test	2014-10-28

8	Multifunction AC/DC Power Source	Netwave7	V112610998 9	EM Test	2014-10-28
9	Ultra Compact Simulator	UCS 500N7	V112610998 3	EM Test	2014-07-22
10	Motorized Variac	MV 2616	V112610998 7	EM Test	2014-07-22
11	Telecom Surge Module	TSurge7	V090210458 2	EM Test	2014-07-22
12	Audio Analyzer	UPV	101950	R&S	2014-08-30
13	Power Meter	NRP2	101804	R&S	2014-08-30
14	Signal Generator	SMB 100A	105563	R&S	2014-08-30
15	ESD Test Simulator	Dito	V112610998 2	EM Test	2014-10-31

Conducted test system

No.	Name	Type	SN	Manufacture	Cal. Due Date
1	Spectrum Analyzer	FSQ26	101096	R&S	2014-08-30
2	Universal Radio Communication Tester	CMU200	123102	R&S	2014-08-30

3	DC Power Supply	ZUP60-14	LOC-220Z006-0007	TDL-Lambda	2014-08-30
4	Weinschel power spliter	1870A	10264	Weinschel	2014-08-30

7. Test Environment

Shielding Room1 (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber1 (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

Fully-anechoic chamber2 (Tapered Section: 8.75 meters×3.66 meters×3.66 meters, Rectangular Section: 7.32 meters×3.97 meters×3.66 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 30MHz to 40000MHz

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER (§ 22.913(a)(2) and 2.1046)

A.1.1 Limit:

For FCC Part 22.913(a)(2):

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

A.1.2 Uncertainty

Conducted	±1
Radiated	±2

A.1.3 Test Procedure

Conducted Power Measurement:

a) Place the EUT on a bench and set it in transmitting mode.

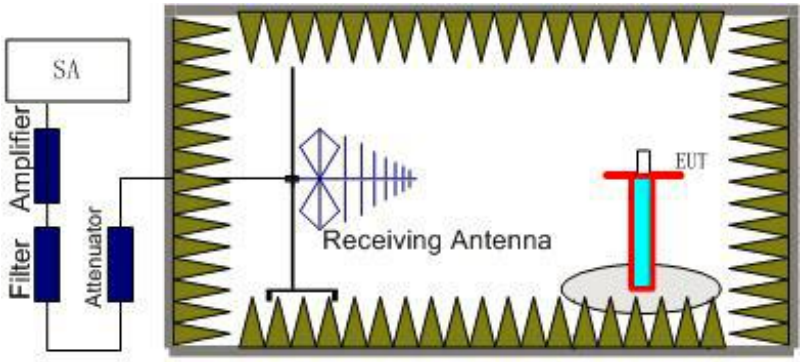
b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.

c) EUT Communicate with CMU200, then selects a channel for testing.

d) Add a correction factor to the display of spectrum, and then test.

Radiated Power Measurement:

e) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.



f) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter

g) The output of the test antenna shall be connected to the measuring receiver.

h) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.

i) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.

j) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

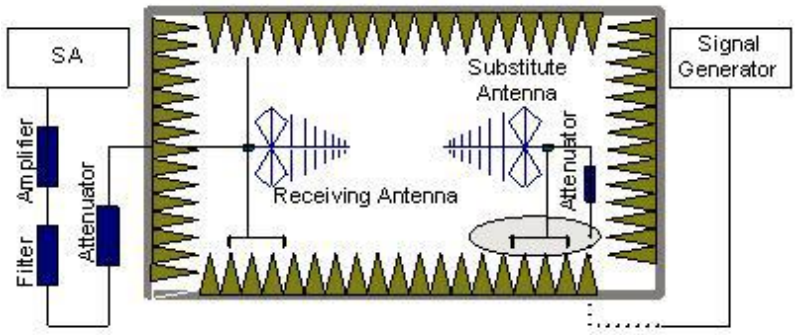
k) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.

l) The maximum signal level detected by the measuring receiver shall be noted.

m) The transmitter shall be replaced by a substitution antenna.

n) The substitution antenna shall be orientated for vertical polarization and the length of the

substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
o) The substitution antenna shall be connected to a calibrated signal generator.
p) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
q) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
r) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.



s) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
t) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
u) Test site anechoic chamber refer to ANSI C63.4: 2009.

Base station simulator settings for each test mode:

1. For 1xRTT

Use CDMA2000 Rev 6 protocol in R&S CMU200.

1) Test for Reverse/Forward TCH RC1, Reverse/Forward TCH RC2, and RC3 Reverse FCH and demodulation of RC 3, 4 and 5.

a. Set up a call using Fundamental Channel Test Mode 1 (RC1, SO 2) with 9600 bps data rate only.
b. As per C.S0011 or TIA/EIA-98-F Table 4.4.5.2-1, set the test parameters as shown in Table A.1.3-1.
c. Send continuously ‘0’ power control bits to the Gobi2000 Module.
d. Measure the output power at Gobi2000 Module antenna connector as recorded on the power meter with values corrected for cables losses.
e. Repeat step b through d for Fundamental Channel Test Mode:
i. RC1, SO55
ii. RC2, SO9
iii. RC2, SO55
iv. RC3, SO55

2) Test for RC 3 Reverse FCH, RC3 Reverse SCH0 and demodulation of RC 3, 4 and 5.
a. Set up a call using Supplemental Channel Test Mode 3 (RC 3, SO 32) with 9600 bps Fundamental Channel and 9600 bps SCH0 data rate.
b. As per C.S0011 or TIA/EIA-98-F Table 4.4.5.2-2, set the test parameters as shown in table A.1.3-2
c. Send alternating '0' and '1' power control bit to the Gobi2000 Module
d. Determine the active channel configuration. If the desired channel configuration is not the active channel configuration, increase Îor by 1 dB and repeat the verification. Repeat this step until the desired channel configuration becomes active.
e. Measure the output power at the Gobi2000 Module antenna connector.
f. Decrease Îor by 0.5 dB.
g. Determine the active channel configuration. If the active channel configuration is the desired channel configuration, measure the output power at the Gobi2000 Module antenna connector.
h. Repeat step f and g until the output power no longer increases or the desired channel configuration is no longer active. Record the highest output power achieved with the desired channel configuration active.
i. Repeat step a through h ten times and average the result.

A.1.2-1 Parameters for Max. Power with a single traffic code channel, SR1

Parameter	Units	Value
Îor	dBm/1.23 MHz	-104
(Pilot Ec) / Ior	dB	-7
(Traffic Ec) / Ior	dB	-7.4

A.1.2-2 Parameters for Max. Power with multiple traffic code channel, SR1

Parameter	Units	Value
(Pilot Ec) / Ior	dB	-7
(Traffic Ec) / Ior	dB	-7.4

A.1.4 Test Result

Conducted measurement

CDMA2000 1x BC0

Mode	Test case			BC0 (800MHz) Channel					
	No.	FWD RC/TAP	REV RC/TAP	Conducted Power (dBm)			ERP (dBm)		
				1013	384	777	1013	384	777
1x	1	RC1	RC1 (SO2)	22.05	22.45	22.34	/	/	/
	2	RC1	RC1 (SO55)	22.07	22.57	22.43	/	/	/
	3	RC2	RC2 (SO9)	22.08	22.58	22.39	/	/	/
	4	RC2	RC2 (SO55)	22.14	22.76	22.44	/	/	/
	5	RC3	RC3 (SO55)	22.14	22.77	22.43	21.22	21.03	21.08
	6	RC3	RC3 (SO32)	22.04	22.38	22.25	/	/	/
EV-DO(REV.0)				22.13	22.68	22.43	21.07	21.32	21.24
EV-DO(REV.A)				22.10	22.57	22.33	/	/	/

CDMA2000 1x BC1

Mode	Test case			BC1 (1900MHz) Channel					
	No.	FWD RC/TAP	REV RC/TAP	Conducted Power (dBm)			ERP (dBm)		
				25	600	1175	25	600	1175
1x	1	RC1	RC1 (SO2)	21.54	21.43	21.70	/	/	/
	2	RC1	RC1 (SO55)	21.54	21.61	21.80	/	/	/
	3	RC2	RC2 (SO9)	21.54	21.42	21.67	/	/	/
	4	RC2	RC2 (SO55)	21.58	21.58	21.77	/	/	/
	5	RC3	RC3 (SO55)	21.59	21.55	21.80	20.26	20.17	20.39
	6	RC3	RC3 (SO32)	21.53	21.49	21.79	/	/	/
EV-DO(REV.0)				21.55	21.47	21.77	20.24	20.20	20.44
EV-DO(REV.A)				21.44	21.38	21.75	/	/	/

Radiated measurement

CDMA2000 1X BC0

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a Antenna Gain(dBd)	Peak ERP (dBm)	Polarization
824.7	-48.24	3.05	-69.40	3.11	21.22	H
836.52	-48.43	3.05	-69.40	3.11	21.03	V
848.31	-48.38	3.05	-69.40	3.11	21.08	V

1X EVDO 1x BC0

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a Antenna Gain(dBd)	Peak ERP (dBm)	Polarization
824.7	-48.39	3.05	-69.40	3.11	21.07	V
836.52	-48.14	3.05	-69.40	3.11	21.32	V
848.31	-48.22	3.05	-69.40	3.11	21.24	V

CDMA2000 1X BC1

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a Antenna Gain(dBd)	Peak ERP (dBm)	Polarization
1851.25	-48.5	3.05	-69.40	3.11	20.26	V
1880	-48.59	3.05	-69.40	3.11	20.17	H
1908.75	-48.37	3.05	-69.40	3.11	20.39	V

1X EVDO BC1

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a Antenna Gain(dBd)	Peak ERP (dBm)	Polarization
1851.25	-48.52	3.05	-69.40	3.11	20.24	V
1880	-48.56	3.05	-69.40	3.11	20.2	V
1908.75	-48.32	3.05	-69.40	3.11	20.44	V

Note:

1. Regards to the frequency band operation: the lowest、middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. For the ERP/EIRP and radiated emission test, every axis (X, Y, Z) was verified, and show the worst result on this report.

A.2 Modulation characteristic

A.2.1 uncertainly

uncertainty	0.1%

A.2.2 Test Result

The modulation of CDMA was verified and confirmed compliance with requirement.

A.3 occupied Bandwidth

A.3.1 uncertainty

uncertainty	± 10 Hz

A.3.2 Limit

N/A

A.3.1 Test Procedure

Using Occupied Bandwidth measurement function of spectrum analyzer, and setting as follows:

For CDMA2000 1X BC0&1 test :RBW = 30 kHz and VBW = 100 kHz

A.3.2 Test Result

CDMA2000 1x BC0

Channel	Frequency	99% OBW (MHz)	Result	-26dBc OBW (MHz)	Result
1013	824.70	1.28	Fig.1	1.44	Fig.4
384	836.52	1.28	Fig.2	1.44	Fig.5
777	848.31	1.28	Fig.3	1.44	Fig.6

1x EVDO BC0

Channel	Frequency	-26dBc OBW (MHz)	Result	99% OBW (MHz)	Result
1013	824.70	1.44	Fig.7	1.28	Fig.10
384	836.52	1.45	Fig.8	1.28	Fig.11
777	848.31	1.44	Fig.9	1.28	Fig.12

CDMA2000 1x BC1

Channel	Frequency	99% OBW (MHz)	Result	-26dBc OBW (MHz)	Result
25	1851.25	1.28	Fig.13	1.45	Fig.16
600	1880	1.28	Fig.14	1.46	Fig.17
1175	1908.75	1.28	Fig.15	1.44	Fig.18

1x EVDO BC1

Channel	Frequency	-26dBc OBW (MHz)	Result	99% OBW (MHz)	Result
25	1851.25	1.44	Fig.19	1.28	Fig.22
600	1880	1.44	Fig.20	1.28	Fig.23
1175	1908.75	1.44	Fig.21	1.27	Fig.24

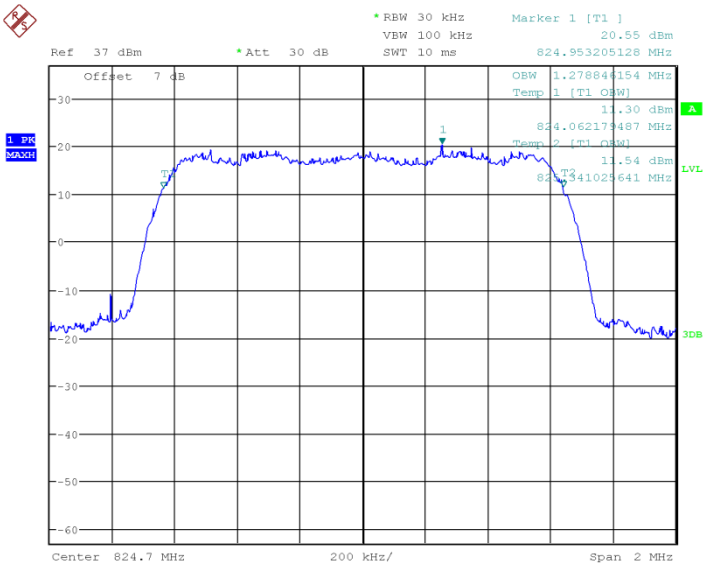


Fig.1 CDMA2000 1x, CH1013, 99% OBW

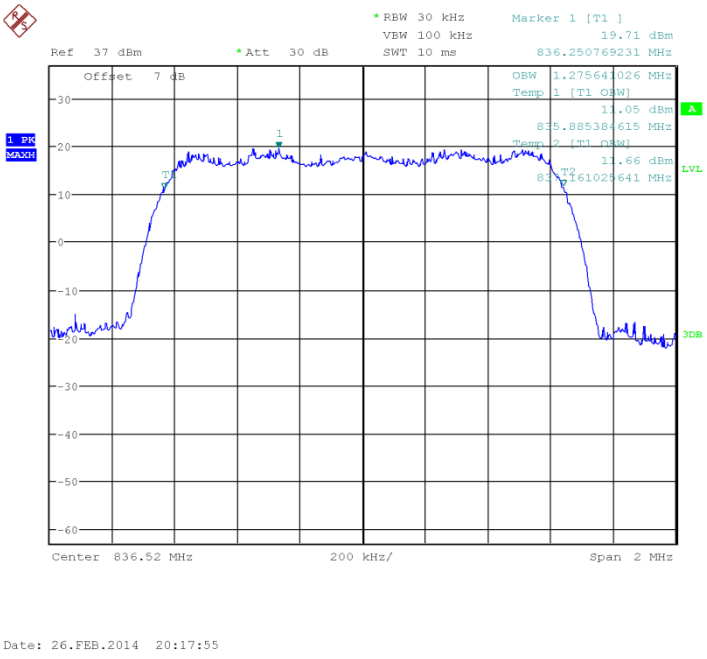


Fig.2 CDMA2000 1x, CH384, 99% OBW

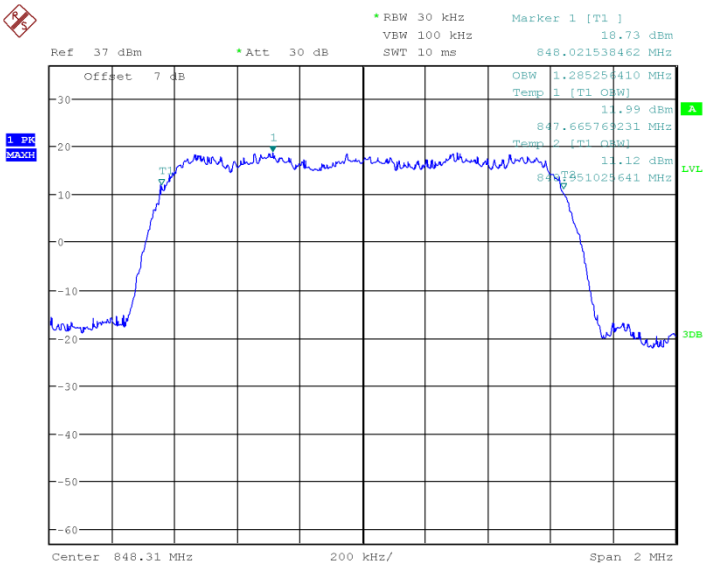


Fig.3 CDMA2000 1x, CH777, 99% OBW

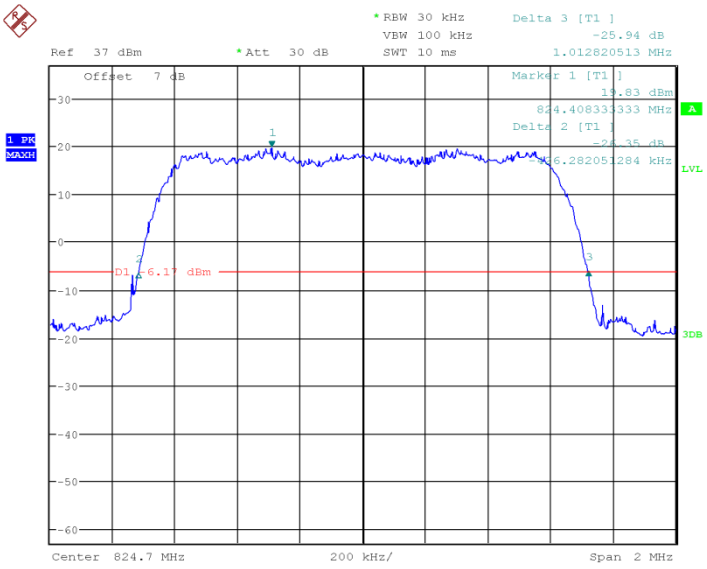


Fig.4 CDMA2000 1x, CH1013, -26dBc

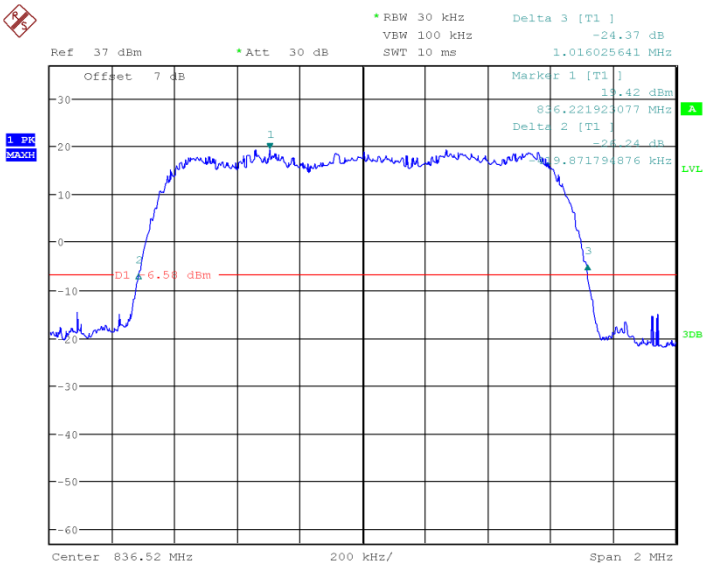


Fig.5 CDMA2000 1x, CH384, -26dBc

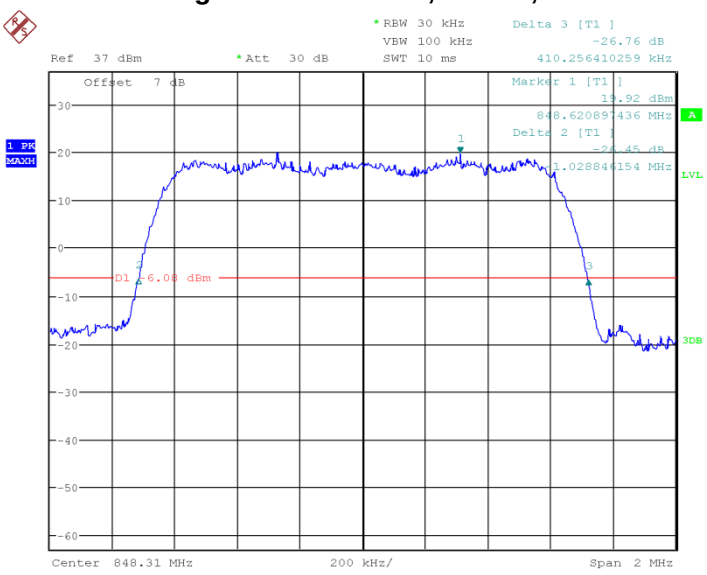


Fig.6 CDMA2000 1x, CH777, -26dBc

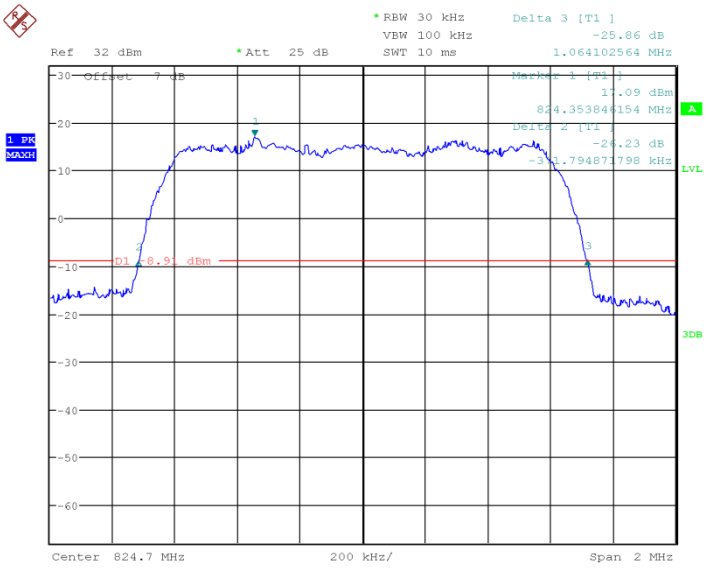


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Fig.7 1x EVDO, CH1013, -26dBc

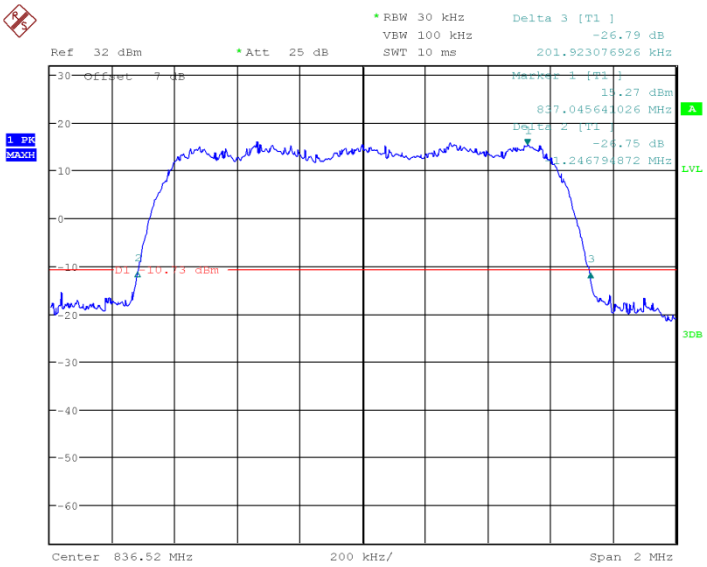

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Fig.8 1x EVDO, CH384, -26dBc

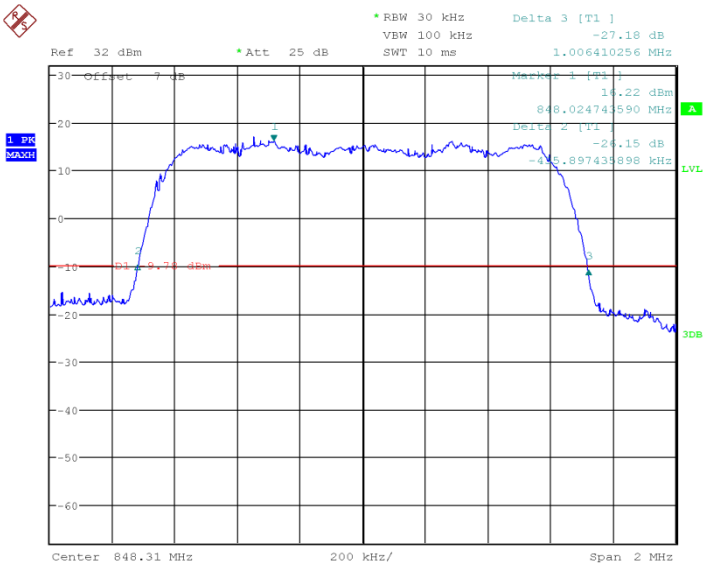


Fig.9 1x EVDO, CH777, -26dBc

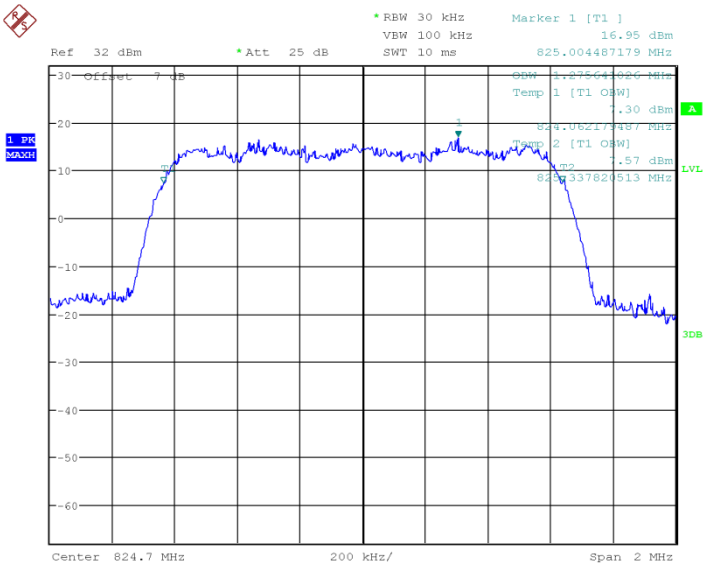


Fig.10 1x EVDO, CH1013, 99% OBW

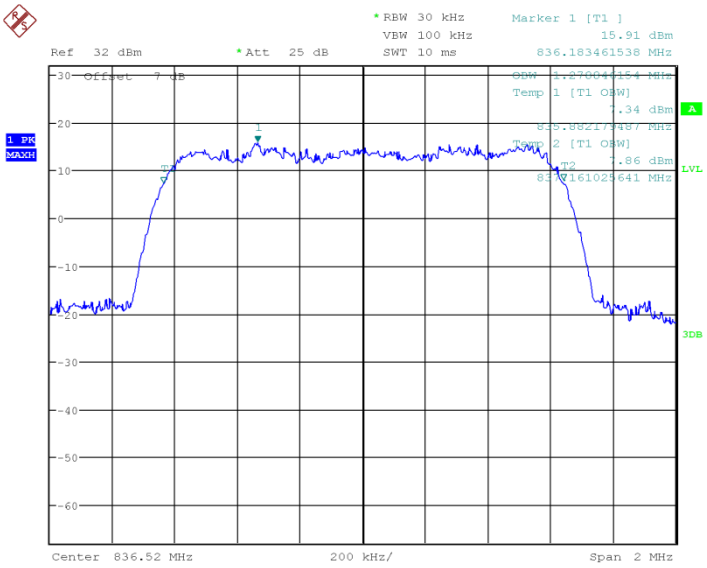


Fig.11 1x EVDO, CH384, 99% OBW

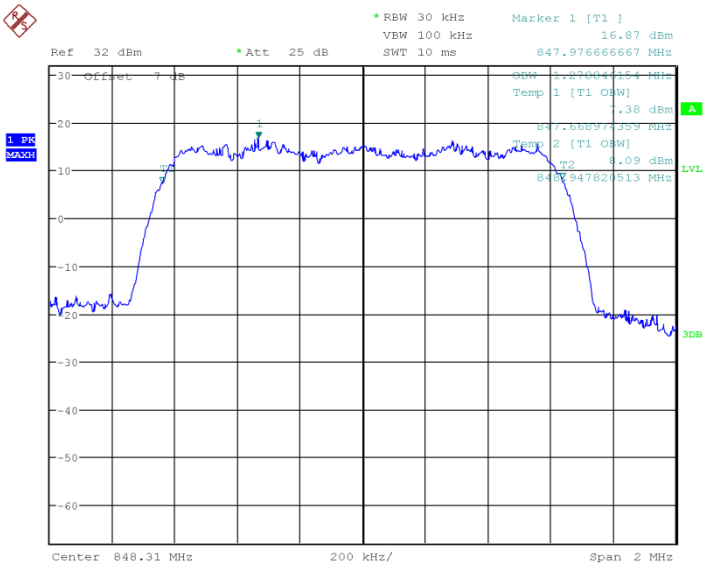


Fig.12 1x EVDO, CH777, 99% OBW

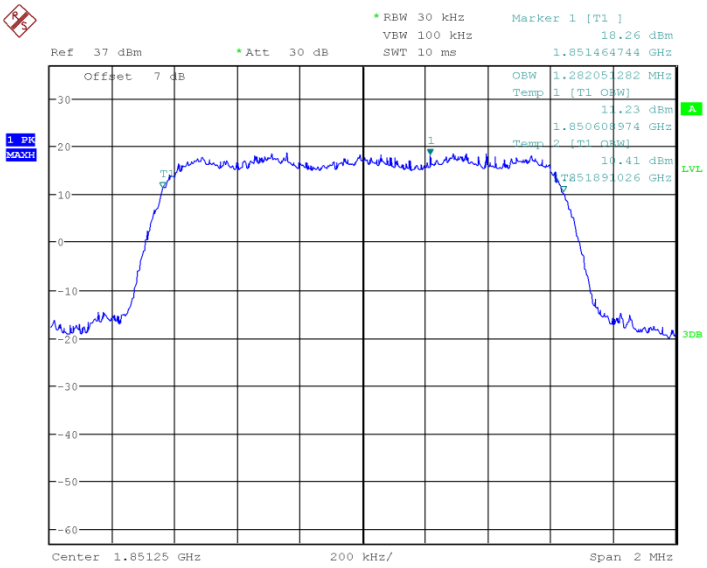


Fig.13 CDMA2000 1x, CH25, 99% OBW

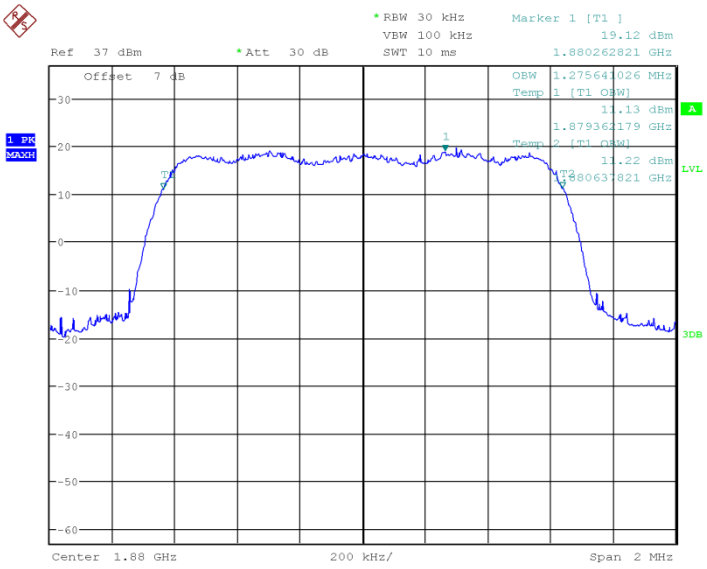


Fig.14 CDMA2000 1x, CH600, 99% OBW

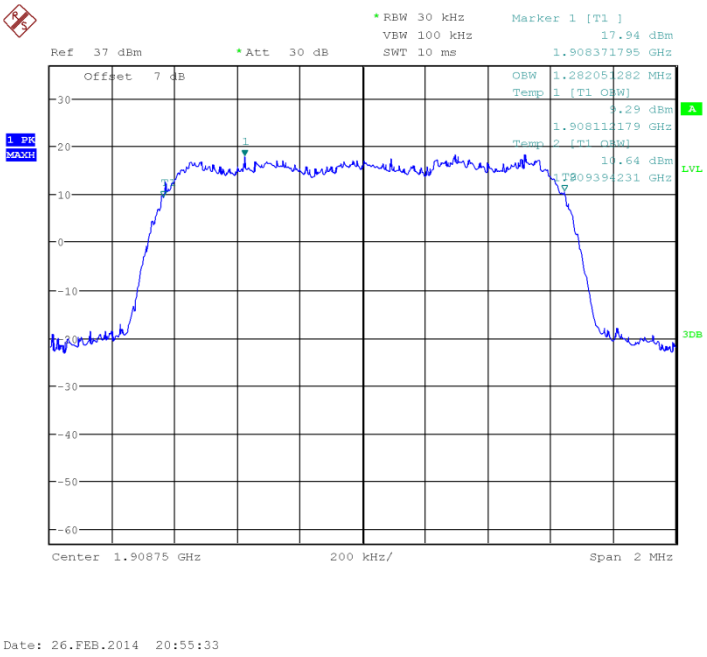


Fig.15 CDMA2000 1x, CH1175, 99% OBW

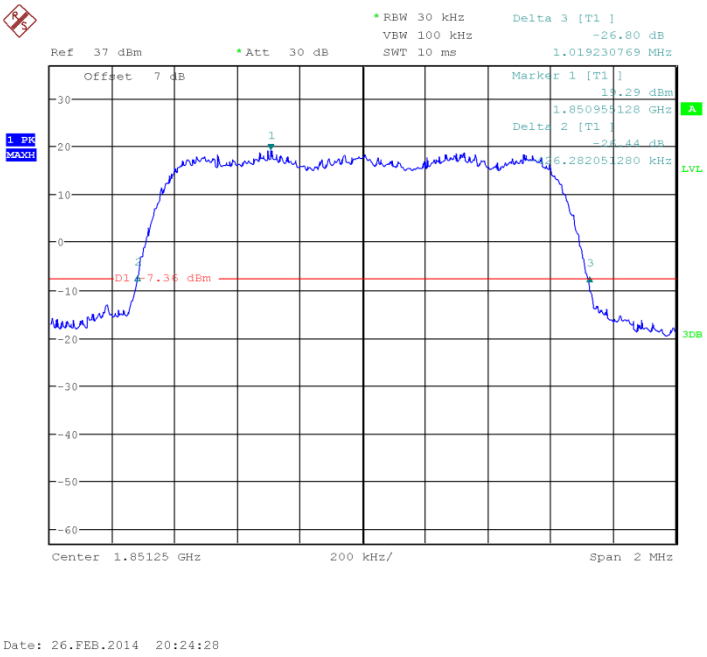


Fig.16 CDMA2000 1x, CH25, -26dBc

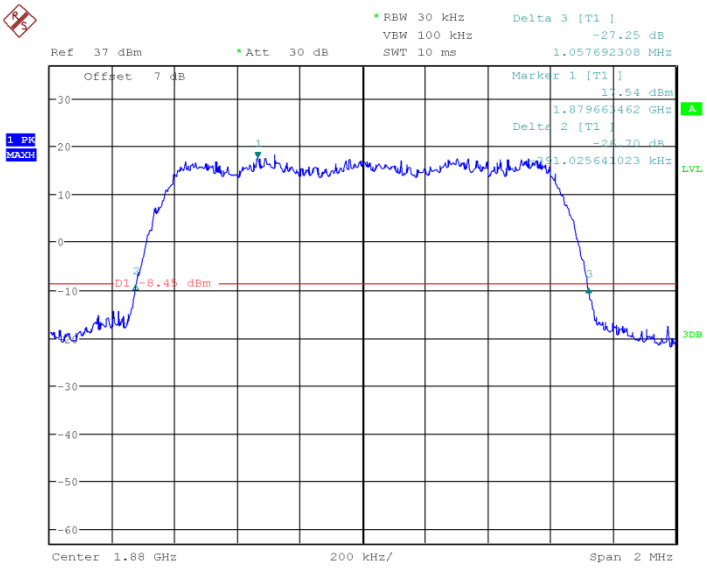


Fig.17 CDMA2000 1x, CH600, -26dBc

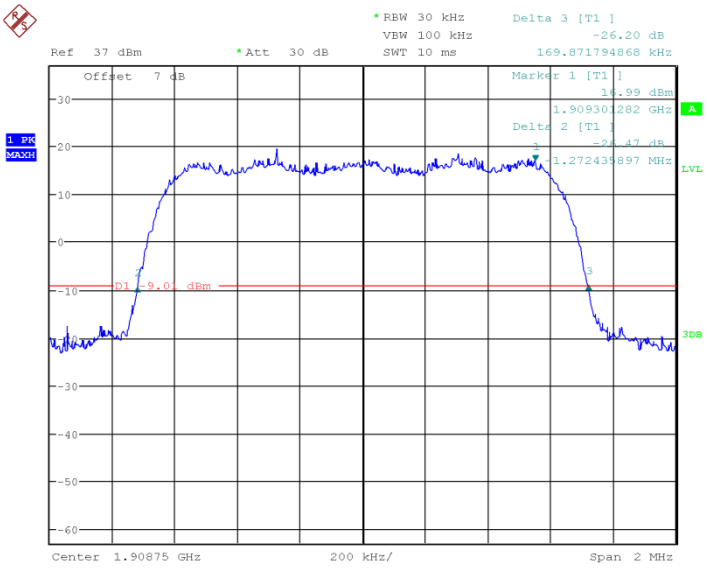


Fig.18 CDMA2000 1x, CH1175, -26dBc

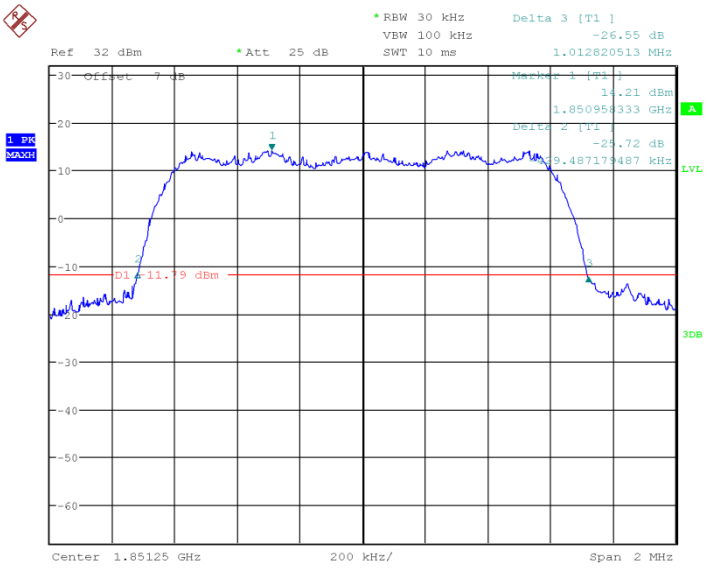


Fig.19 1x EVDO, CH25, -26dBc

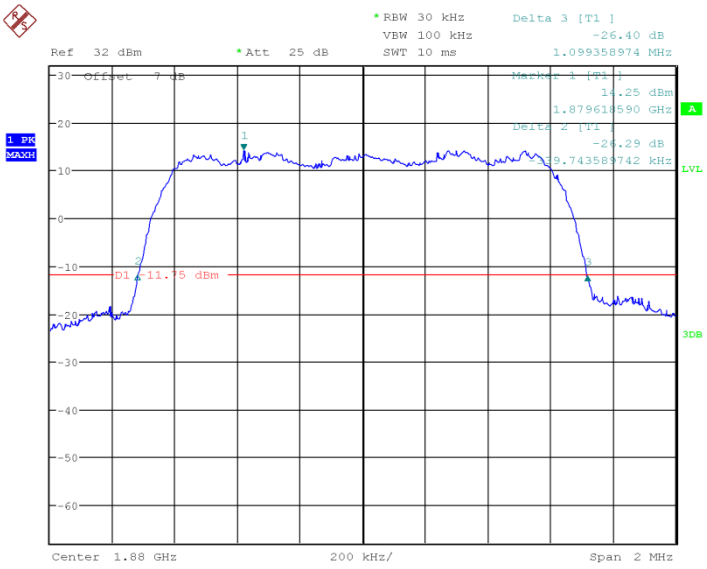


Fig.20 1x EVDO, CH600, -26dBc

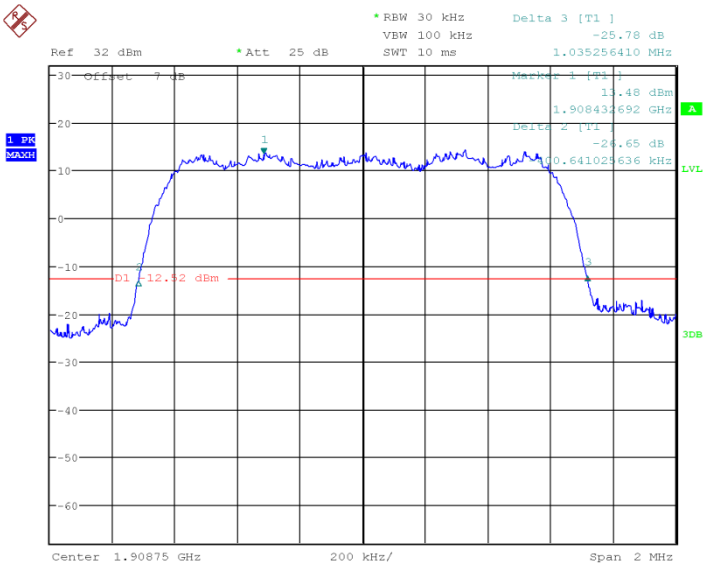


Fig.21 1x EVDO, CH1175, -26dBc

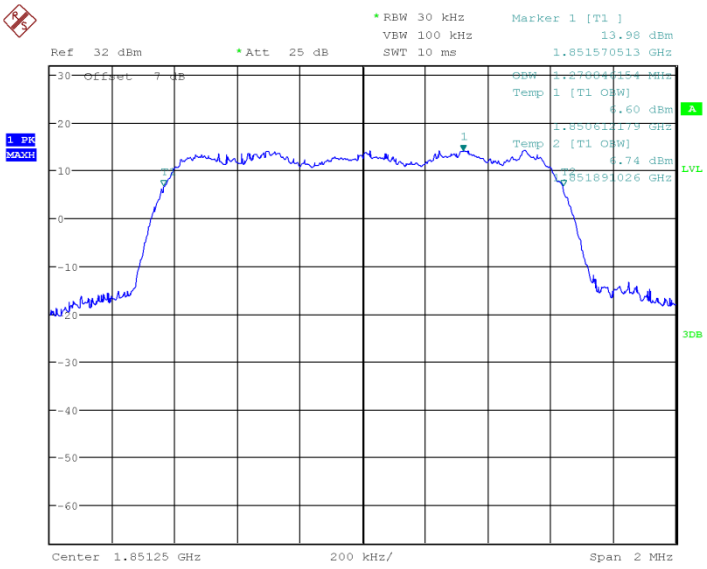


Fig.22 1x EVDO, CH25, 99% OBW

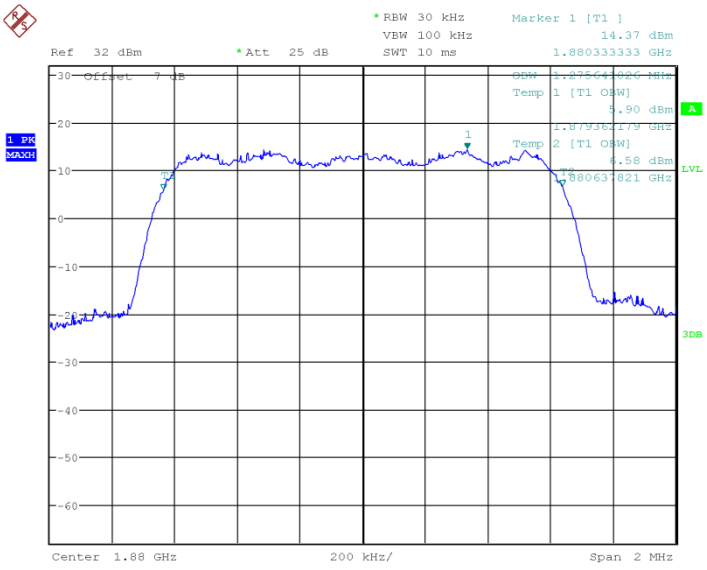


Fig.23 1x EVDO, CH600, 99% OBW

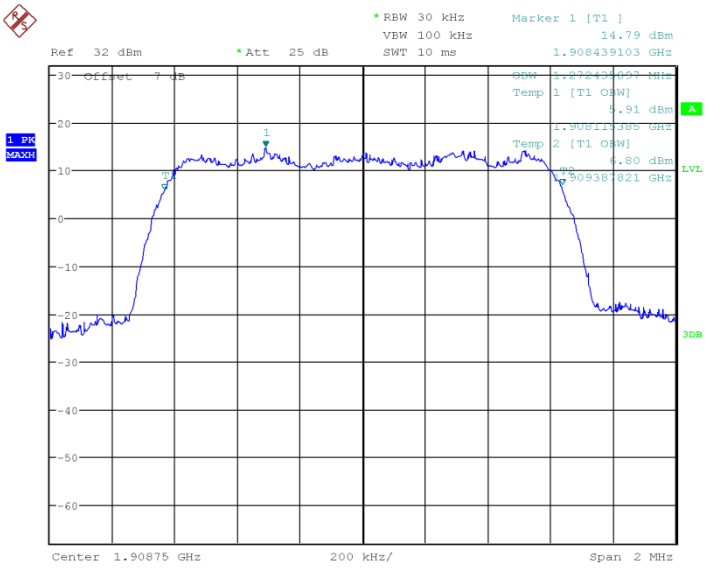


Fig.24 1x EVDO, CH1175, 99% OBW

A.4 Bandedge Compliance

A.4.1 Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

A.4.2 Uncertainty

uncertainty	**± 1.2dB**

A.4.3 Test procedure

In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
SPAN=2MHz,RBW=30KHz,VBW=300KHz for CDMA cellular.

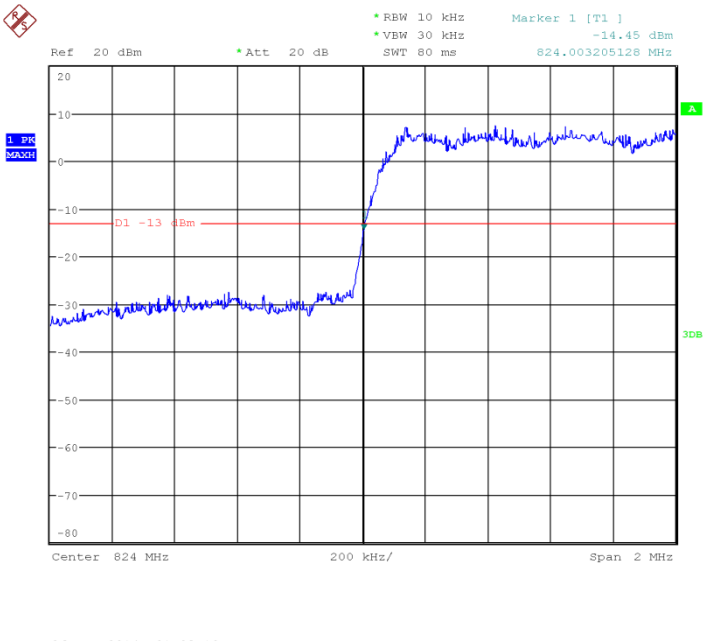


Fig.25 CDMA2000 1x, CH1013, bandedge

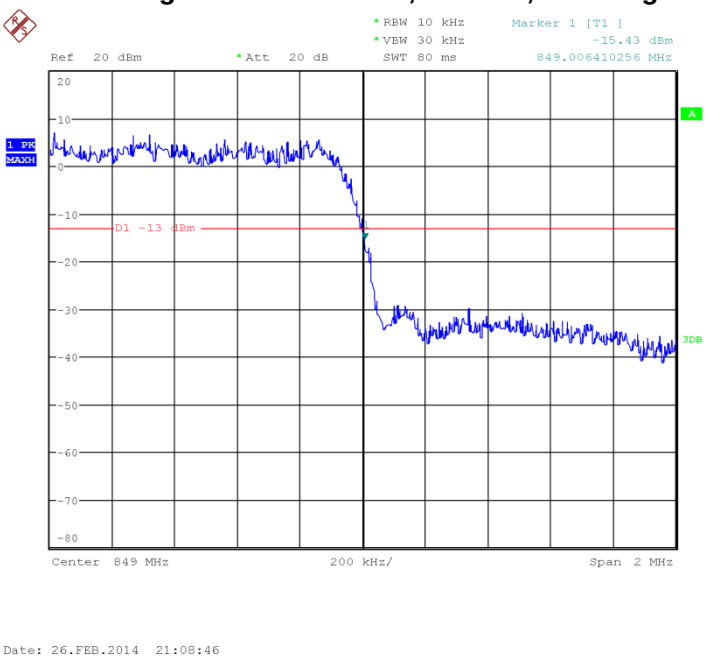


Fig.26 CDMA2000 1x, CH777, bandedge

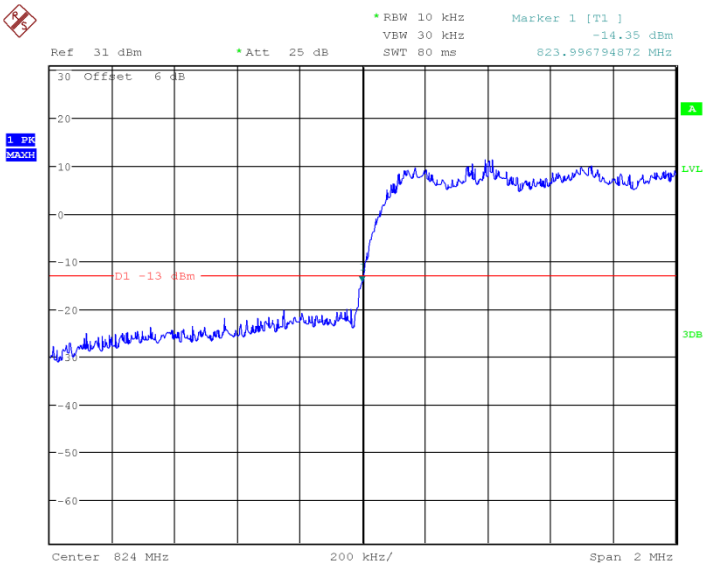


Fig.27 1x EVDO, CH1013, bandedge

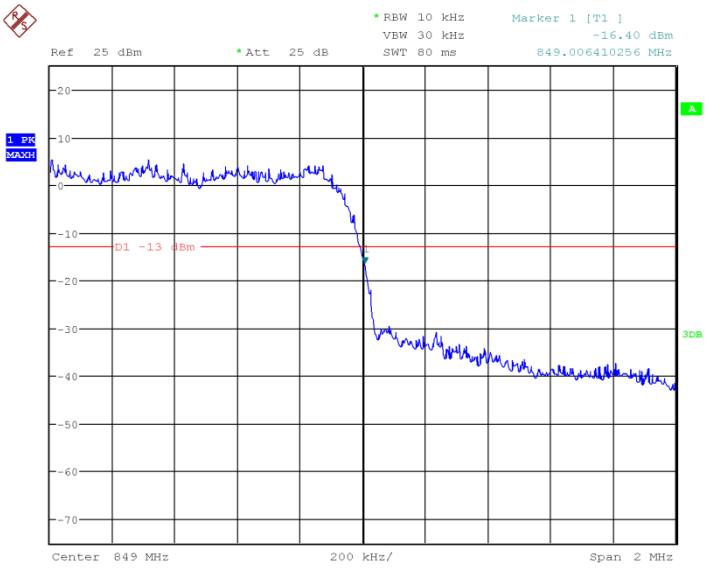


Fig.28 1x EVDO, CH777, bandedge

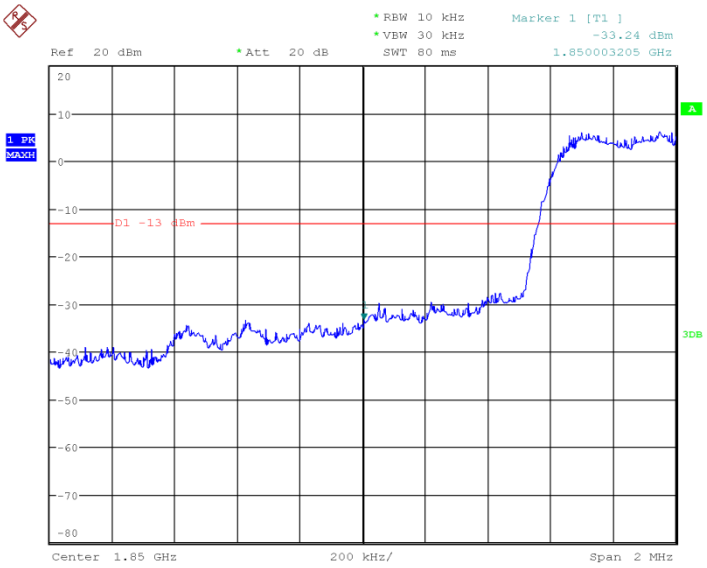


Fig.29 CDMA2000 1x, CH25, bandedge

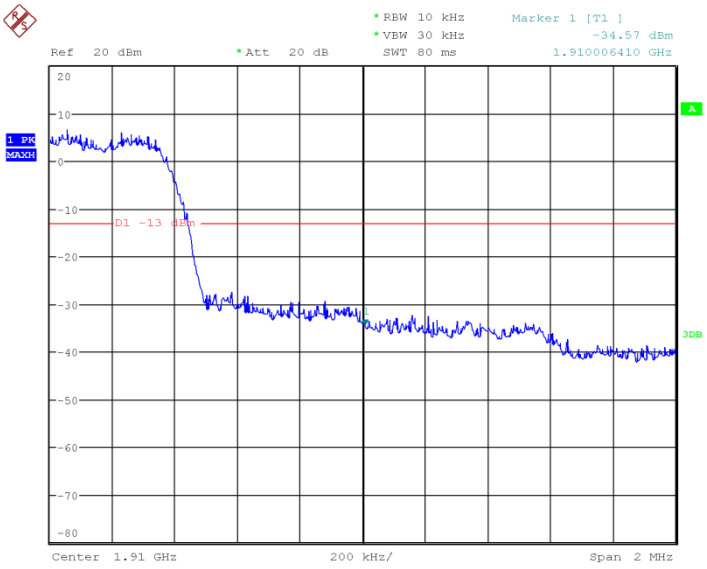


Fig.30 CDMA2000 1x, CH1175, bandedge

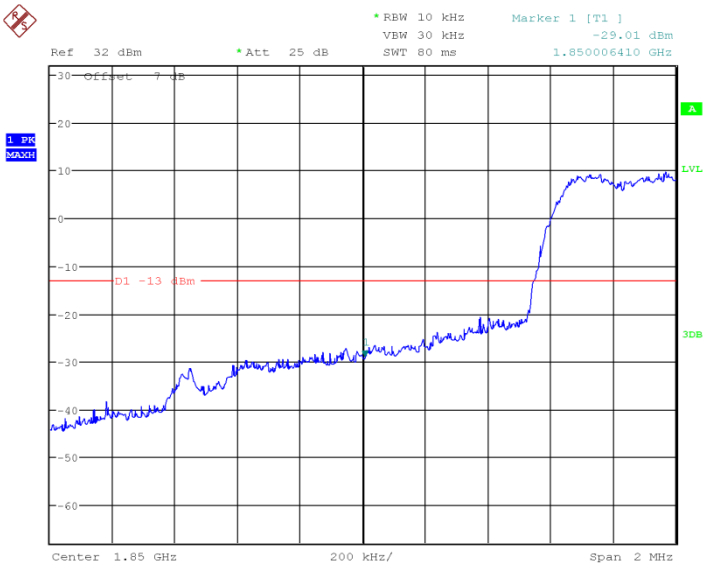


Fig.31 1x EVDO, CH25, bandedge

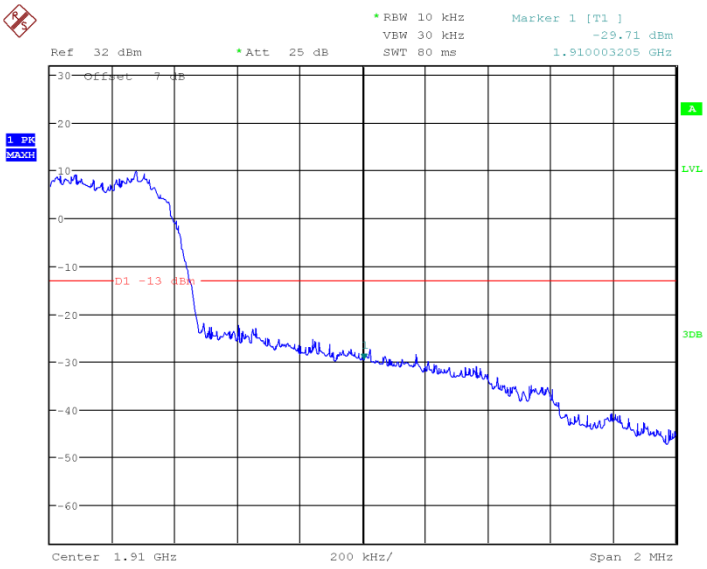


Fig.32 1x EVDO, CH1175, bandedge

A.5 Spurious Emission

A.5.1 Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

A.5.2 Uncertainty

The measurement uncertainty is defined as 3.2 dB for Radiated Power Measurement.

A.5.3 procedure

Conducted Spurious Measurement:

a) Place the EUT on a bench and set it in transmitting mode.

b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.

c) EUT Communicate with CMU200, then select a channel for testing.

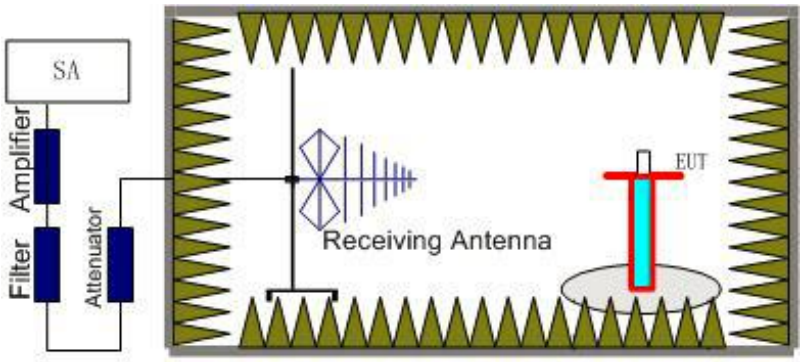
d) Add a correction factor to the display of spectrum, and then test.

e) The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

f) RBW=100KHz,VBW=300KHz.

Radiated Spurious Measurement:

a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.



b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter

c) The output of the test antenna shall be connected to the measuring receiver.

d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.

e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.

f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

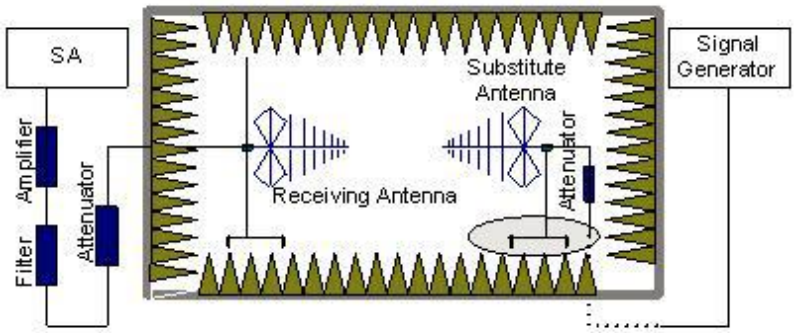
g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.

v) The maximum signal level detected by the measuring receiver shall be noted.

h) The transmitter shall be replaced by a substitution antenna.

i) The substitution antenna shall be orientated for vertical polarization and the length of the

substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
j) The substitution antenna shall be connected to a calibrated signal generator.
k) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
l) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
m) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.



n) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
o) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
p) The frequency range was checked up to 10th harmonic.
q) Test site anechoic chamber refer to ANSI C63.4: 2009
r) RBW=1MHz,VBW=3MHz.

A.5.4 Test Result

Conducted emission:

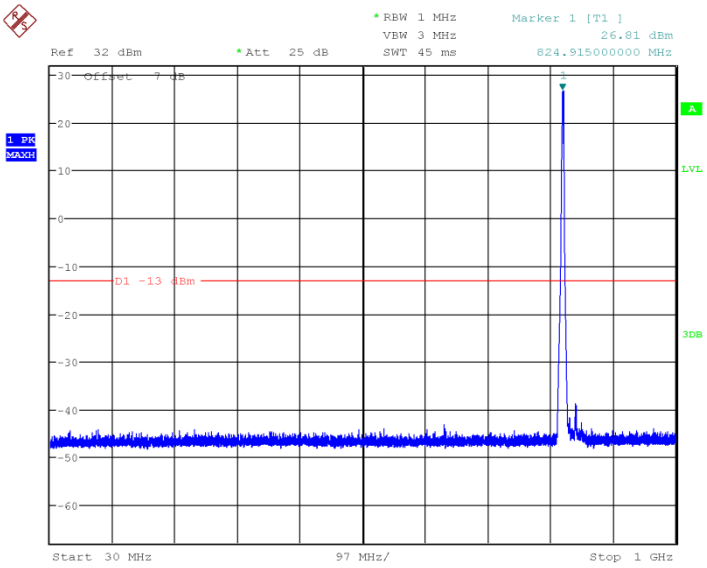


Fig.33 CDMA2000 1x CH1013,30MHz-1GHz

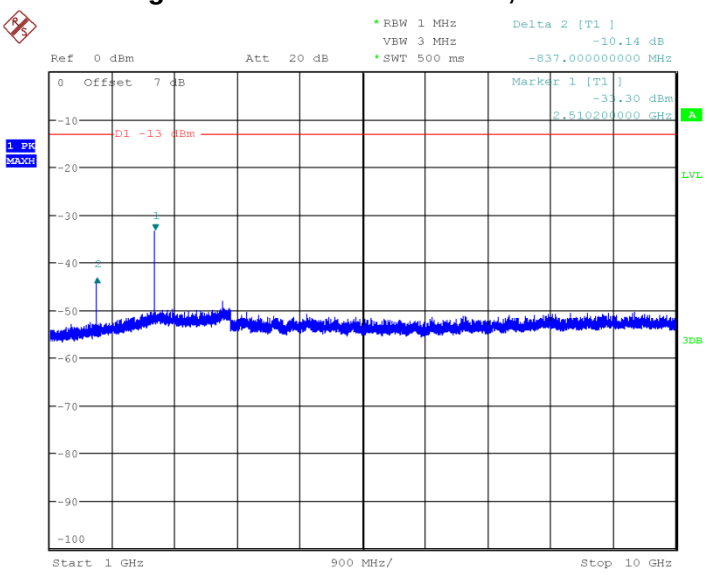


Fig.34 CDMA2000 1x CH1013,1GHz-10GHz

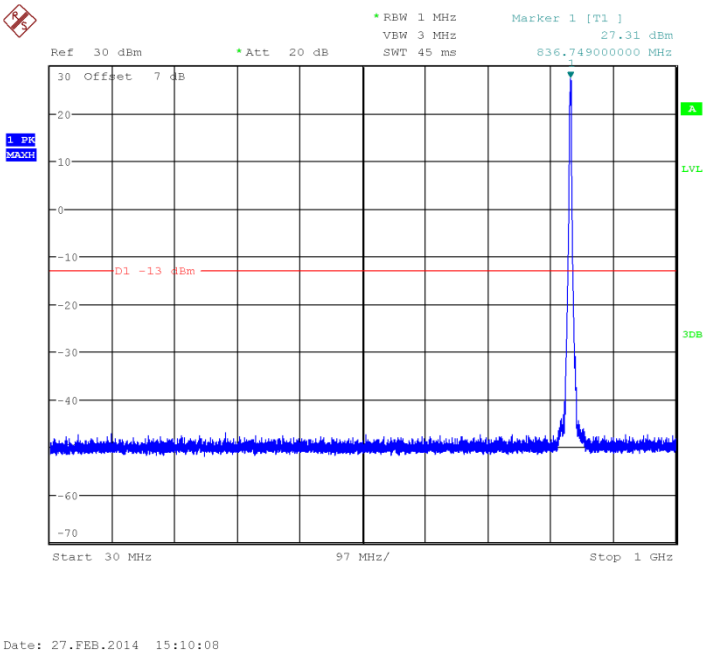


Fig.35 CDMA2000 1x CH384,30MHz-1GHz

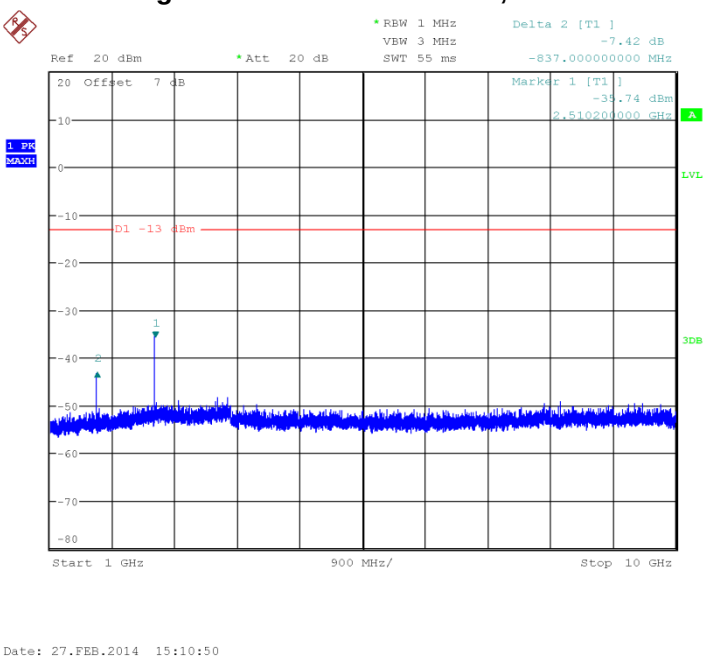


Fig.36 CDMA2000 1x CH384,1GHz-10GHz

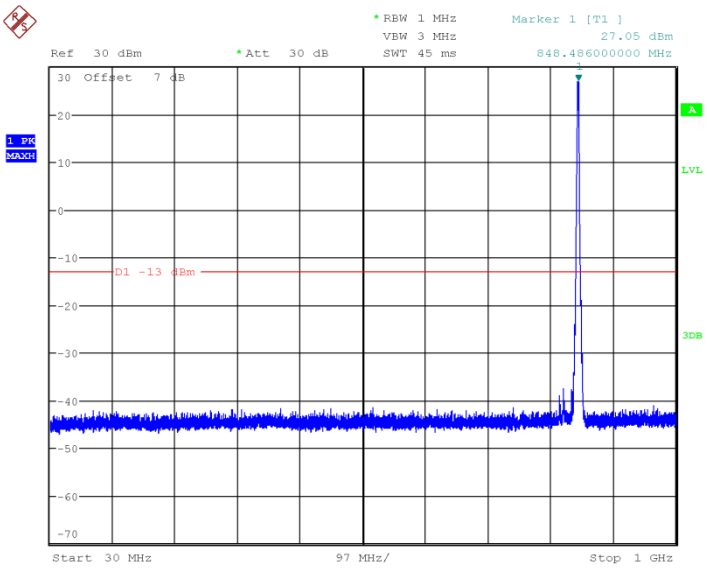


Fig.37 CDMA2000 1x CH777,30MHz-1GHz

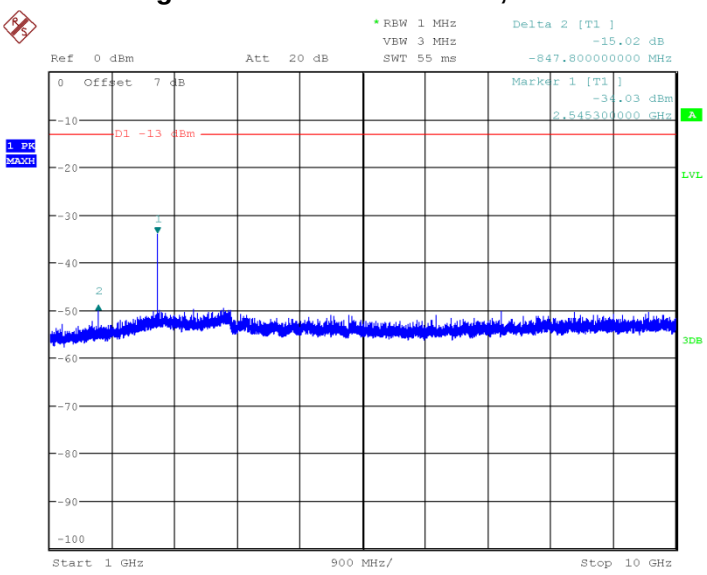


Fig.38 CDMA2000 1x CH777,1GHz-10GHz

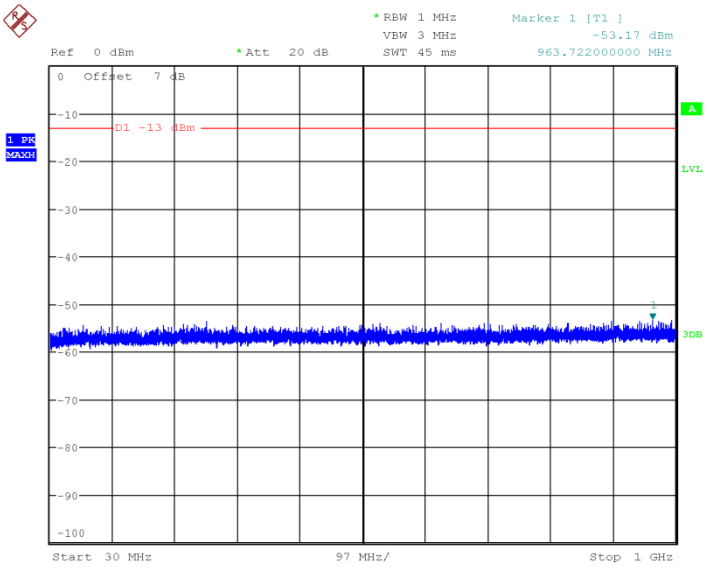


Fig.39 CDMA2000 1x CH25,30MHz-1GHz

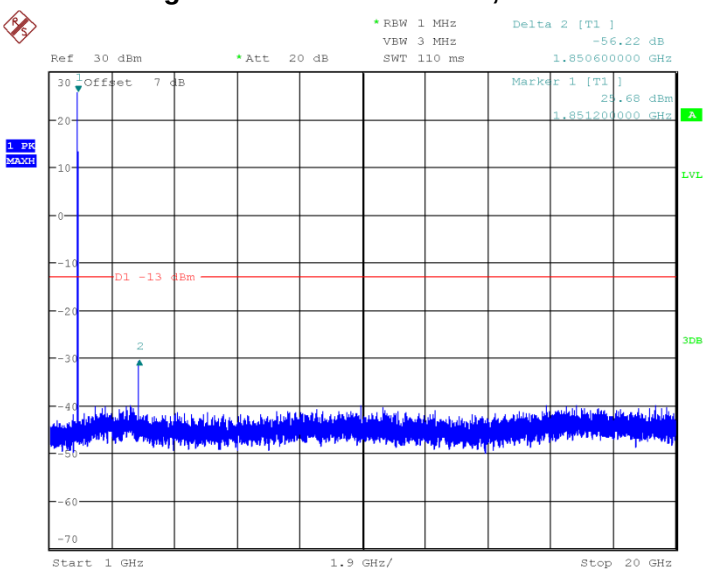


Fig.40 CDMA2000 1x CH25,1GHz-20GHz

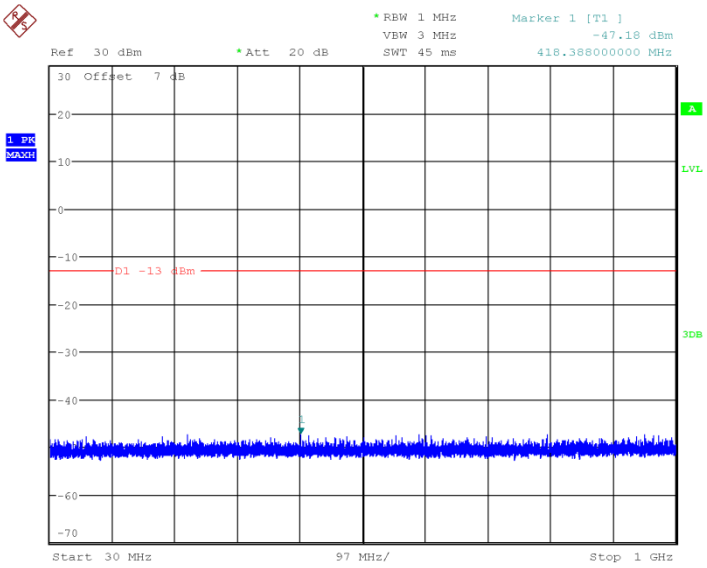


Fig.41 CDMA2000 1x CH600,30MHz-1GHz

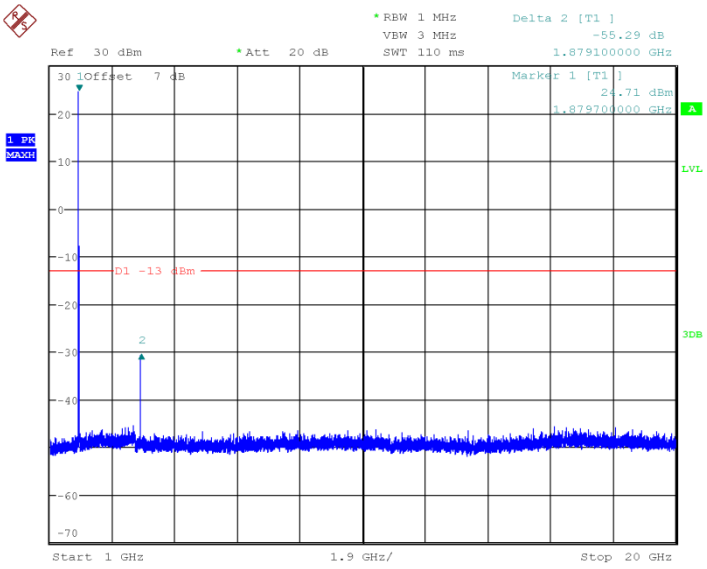


Fig.42 CDMA2000 1x CH600,1GHz-20GHz

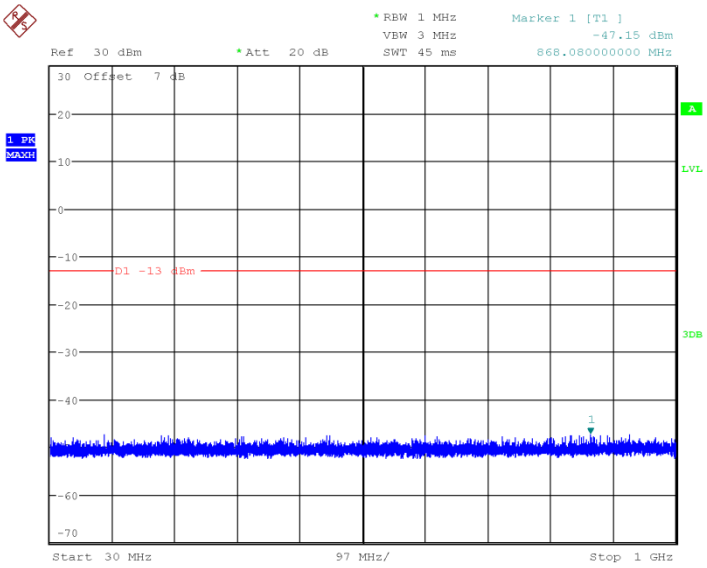


Fig.43 CDMA2000 1x CH1175,30MHz-1GHz

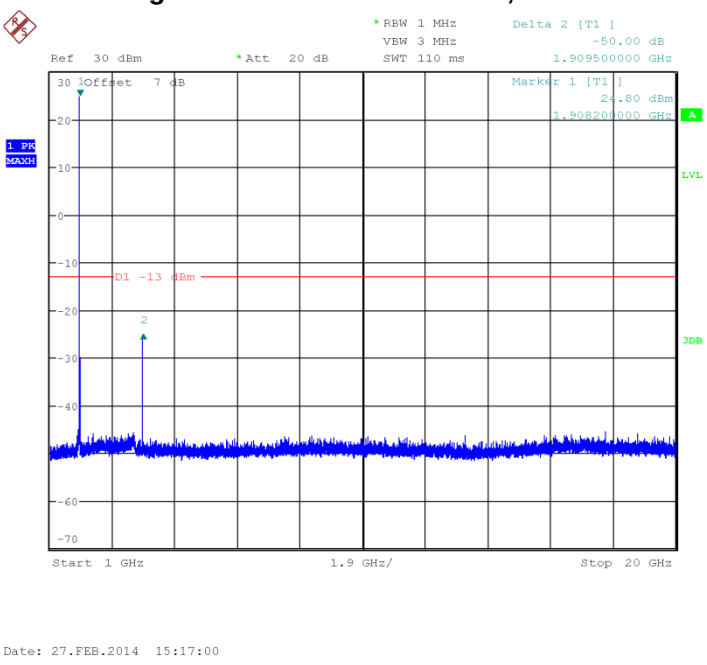


Fig.44 CDMA2000 1x CH1175,1GHz-20GHz

Radiated emission:

CDMA2000 1x CH1013

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization

101.46	-71.53	3.07	3.4	-71.2	-13	V
229.409	-80.24	4.26	3.7	-80.8	-13	H
326.325	-82.58	5.12	7.4	-80.3	-13	V
466.961	-79.89	4.21	4.9	-79.2	-13	V
589.848	-78.74	5.36	9	-75.1	-13	H
740.417	-81.33	3.67	11.5	-73.5	-13	H

CDMA2000 1x CH384

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization
58.3946	-68.83	3.07	3.4	-68.5	-13	V
101.673	-71.33	3.57	3.7	-71.2	-13	V
241.922	-82.64	4.26	7.4	-79.5	-13	H
333.005	-80.72	4.18	4.9	-80	-13	V
423.192	-82.81	4.59	9	-78.4	-13	H
3526.08	-58.13	5.37	11.5	-52	-13	V

CDMA2000 1x 777

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization
452.5	-71.63	3.07	-3.4	-78.1	-13	H
606.208	-66.83	3.57	-3.7	-74.1	-13	H
1697.15	-49.24	4.26	-7.4	-60.9	-13	V
2080.03	-49.82	4.18	-4.9	-58.9	-13	H
452.5	-71.63	3.07	-3.4	-78.1	-13	H
606.208	-66.83	3.57	-3.7	-74.1	-13	H

1X EVDO CH1013

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization

1287.06	-64.09	4.21	3.4	-64.9	-13	V
1506.62	-62.74	5.36	3.7	-64.4	-13	H
1944.32	-61.39	6.51	7.4	-60.5	-13	V
2215.96	-54.74	7.66	4.9	-57.5	-13	V
2370.01	-55.49	8.81	9	-55.3	-13	V

1X EVDO CH384

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization
58.5182	-67.73	3.07	3.4	-67.4	-13	V
97.6273	-71.03	3.57	3.7	-70.9	-13	V
202.863	-79.84	4.26	7.4	-76.7	-13	H
208.848	-76.52	4.18	4.9	-75.8	-13	V
2370.05	-59.71	4.59	9	-55.3	-13	H
2638.56	-59.53	5.37	11.5	-53.4	-13	V

1X EVDO 777

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization
55.6939	-61.53	3.07	-3.4	-68	-13	H
94.0739	-64.23	3.57	-3.7	-71.5	-13	H
1470.86	-52.24	4.26	-7.4	-63.9	-13	V
1910.94	-52.22	4.18	-4.9	-61.3	-13	H

CDMA2000 1x CH25

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization
611.56	-55.08	4.42	6.2	-53.3	-13	H
873.6	-63.36	5.24	9.5	-59.1	-13	V

3702.4	-78.77	6.13	10.6	-74.3	-13	H
5554	-77.23	6.97	11.5	-72.7	-13	H

CDMA2000 1x CH600

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization
3760	-47.58	4.42	6.2	-45.8	-13	H
9399.1	-55.86	5.24	9.5	-51.6	-13	V
7520.2	-58.87	6.13	10.6	-54.4	-13	V
5639.2	-60.48	7.82	12.7	-55.6	-13	V

CDMA2000 1x 1175

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization
1908.78	-33.58	4.42	6.2	-31.8	-13	V
3817.2	-40.36	5.24	8.7	-36.9	-13	V
5726.2	-38.87	6.13	10.6	-34.4	-13	V
7635.1	-55.83	6.97	11.5	-51.3	-13	H

1X EVDO CH25

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization
101.928	-70.42	8.68	6.2	-72.9	-13	H
613.12	-76.38	7.82	9.5	-74.7	-13	H
500.36	-81.44	6.96	10.6	-77.8	-13	V
781.52	-80.6	6.1	11.5	-75.2	-13	V

1X EVDO CH600

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization

687.60	-74.58	4.42	6.2	-72.8	-13	V
496.72	-80.86	5.24	9.5	-76.6	-13	V
211.411	-84.57	6.13	10.6	-80.1	-13	H
742.92	-77.18	7.82	12.7	-72.3	-13	H
856.021	-78.02	8.68	13.9	-72.8	-13	H

1X EVDO 1175

Frequency (MHz)	PMea (dBm)	Path Loss	Antenna Gain	Peak ERP (dBm)	Limit （dBm）	Polarization
500.8	-81.17	6.13	10.6	-76.7	-13	V
555.84	-80.43	6.97	11.5	-75.9	-13	H
371.288	-84.28	7.82	12.7	-79.4	-13	H
694.24	-74.28	4.42	6.2	-72.5	-13	V
899.40	-75.36	5.24	8.7	-71.9	-13	V

A.6 Frequency Stability Under Temperature & Voltage Variations

A.6.1 Limit

Limit

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Limit	< ± 2.5 ppm

A.6.2 Test procedure

Frequency Stability Under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20℃. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record

the maximum frequency change.

A.6.3 Uncertainty

The measurement uncertainty is defined as ± 10 Hz.

A.6.4 test result

CDMA2000 CH384 Frequency Error VS Temperature

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.7	-30	-32	± 2091
3.7	-20	30	± 2091
3.7	-10	27	± 2091
3.7	0	29	± 2091
3.7	10	-25	± 2091
3.7	20	26	± 2091
3.7	30	29	± 2091
3.7	40	31	± 2091
3.7	50	33	± 2091

CDMA2000 CH384 Frequency Error VS Voltage

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.3	25	28	± 2091
3.7	25	-26	± 2091
4.1	25	29	± 2091

1X EVDO CH384 Frequency Error VS Temperature

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.7	-30	33	± 2091
3.7	-20	34	± 2091
3.7	-10	30	± 2091
3.7	0	29	± 2091
3.7	10	26	± 2091
3.7	20	25	± 2091

3.7	30	29	± 2091
3.7	40	28	± 2091
3.7	50	30	± 2091

1X EVDO CH384 Frequency Error VS Voltage

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.3	25	29	± 2091
3.7	25	30	± 2091
4.1	25	25	± 2091

CDMA2000 CH600 Frequency Error VS Temperature

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.7	-30	44	±4700
3.7	-20	47	±4700
3.7	-10	28	±4700
3.7	0	-35	±4700
3.7	10	39	±4700
3.7	20	-26	±4700
3.7	30	33	±4700
3.7	40	39	±4700
3.7	50	41	±4700

CDMA2000 CH600 Frequency Error VS Voltage

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.3	25	35	±4700
3.7	25	40	±4700
4.1	25	46	±4700

1X EVDO CH600 Frequency Error VS Temperature

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.7	-30	45	±4700
3.7	-20	43	±4700
3.7	-10	39	±4700
3.7	0	34	±4700
3.7	10	37	±4700
3.7	20	35	±4700
3.7	30	-38	±4700
3.7	40	40	±4700
3.7	50	42	±4700

1X EVDO CH600 Frequency Error VS Voltage

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.3	25	37	±4700
3.7	25	38	±4700
4.1	25	-40	±4700

A.7 CONDUCTED EMISSION (§15.107§15.207)

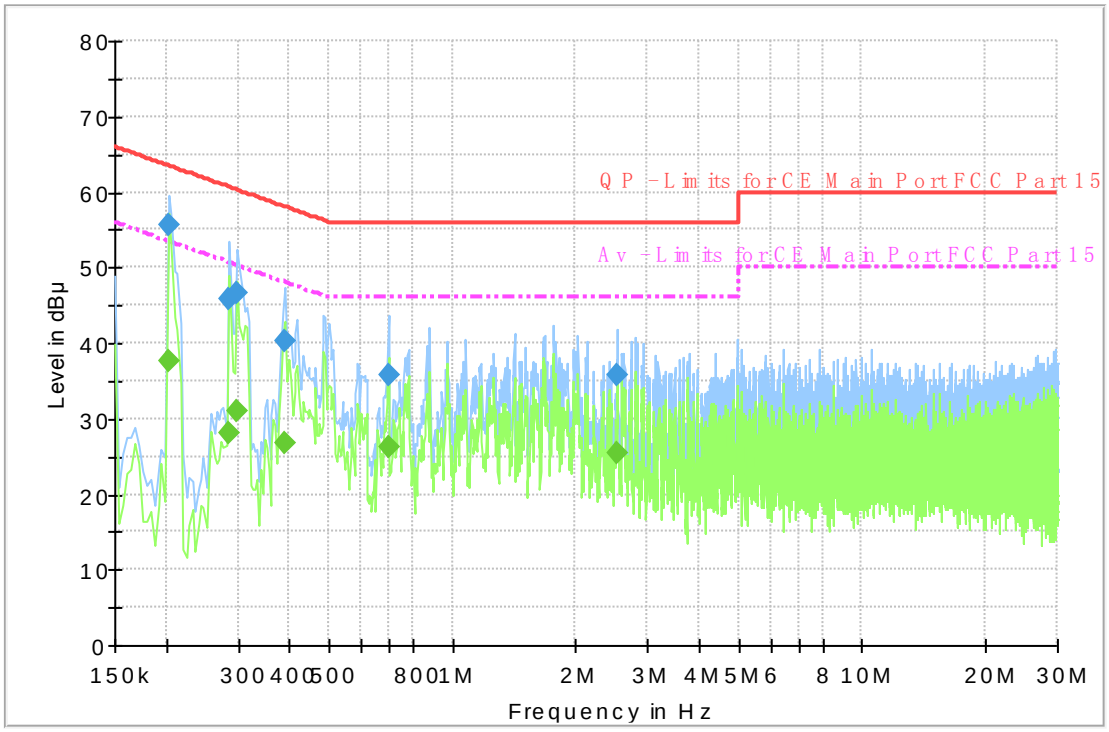
The measurement procedure in ANSI C63.4-1003 is used. Conducted Emission is measured with travel charger.

A.7.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with logarithm of the frequency		

A.7.2 Measurement result

CDMA2000 1x:



Final Result1

Frequency(MHz)	QuasiPeak (dBuV)	Meas. Time(ms)	Bandwidth(kHz)	Filter	Line	Corr.(dB)	Margin (dB)	Limit(dBuV)
0.202238	55.6	1000.0	9.000	On	L1	10.0	7.9	63.5
0.284325	45.7	1000.0	9.000	On	N	10.0	14.9	60.7
0.299250	46.5	1000.0	9.000	On	L1	10.0	13.8	60.3
0.388800	40.2	1000.0	9.000	On	N	10.1	17.9	58.1
0.698494	35.8	1000.0	9.000	On	L1	10.0	20.2	56.0
2.534269	35.8	1000.0	9.000	On	L1	9.8	20.2	56.0

Final Result2

Frequency(MHz)	Average (dBuV)	Meas. Time(ms)	Bandwidth(kHz)	Filter	Line	Corr.(dB)	Margin (dB)	Limit(dBuV)
0.202238	37.6	1000.0	9.000	On	L1	10.0	16.0	53.5
0.284325	28.2	1000.0	9.000	On	N	10.0	22.5	50.7
0.299250	31.0	1000.0	9.000	On	L1	10.0	19.3	50.3
0.388800	26.8	1000.0	9.000	On	N	10.1	21.3	48.1
0.698494	26.1	1000.0	9.000	On	L1	10.0	19.9	46.0
2.534269	25.5	1000.0	9.000	On	L1	9.8	20.5	46.0

ANNEX B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

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