

FCC CFR47 PART 22 SUBPART H FCC CFR47 PART 24 SUBPART E INDUSTRY CANADA RSS-132 ISSUE 2 INDUSTRY CANADA RSS-133 ISSUE 5

CERTIFICATION TEST REPORT FOR

802.11BG, BT, WWAN COMBO MODULE

MODEL NUMBER: FENWAY

FCC ID: J9CFENWAY-1 IC: 2723A-FENWAY1

REPORT NUMBER: 09U12627-1, Revision C ISSUE DATE: August 5, 2009

Prepared for

QUALCOMM 5775 MOREHOUSE DRIVE SAN DIEGAO, CA 92121, U.S.A.

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

	Issue		
Rev.	Date	Revisions	Revised By
	07/20/09	Initial Issue	T. Chan
В	07/21/09	Updated to RSS-133 Issue 5, The Peak Output Power Were Measured Under This Report	T. Chan
В	07/27/09	Updated EUT description	A. Zaffar
С	08/05/09	Updated RF conducted power for 1XRTT on page 13 and 14, EVDO REV 0 on page 15 and EVDO REV A on page 16	C. Lin

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	QUALCOMM CORPORATE
	5775 MOREHOUSE DRIVE
	SAN DIEGO, CA 92121, U.S.A.

EUT DESCRIPTION: 802.11bg, BT, WWAN Combo Module

MODEL: FENWAY

SERIAL NUMBER: FDSOAUY

DATE TESTED: JULY 15-18, 2009

APPLICABLE STANDARDS						
STANDARD	TEST RESULTS					
CFR 47 Part 22 Subpart H	Pass					
CFR 47 Part 24 Subpart E	Pass					
INDUSTRY CANADA RSS-132 Issue 2	Pass					
INDUSTRY CANADA RSS-133 Issue 5	Pass					

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

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Tested By:

Chin Pany

CHIN PANG EMC ENGINEER COMPLIANCE CERTIFICATION SERVICES

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, FCC CFR Part 24, RSS-132 Issue 2, and RSS-133 Issue 5.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <u>http://www.ccsemc.com</u>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11bg, BT, WWAN Combo Module.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Magnetic Mount triple-frequency Mobile antenna with a maximum gain of 0 dBi.

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5.3. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST							
Description	Description Manufacturer Model Serial Number FCC ID						
Laptop	HP	Compaq6910p	CND8153FTV	DoC			
AC Adapter	HP	PA-1131-08HC	7500329102	DoC			
Horn	EMCO	3115	6717	NA			
AC Adapter	QUALCOMM	GWC-1700	CV90-C6024	DoC			
Qualcomm Miniposer	QUALCOMM	NA	NA	NA			

I/O CABLES (CONDUCTED TEST)

	I/O CABLE LIST								
Cable	Port	# of	Connector	Cable	Cable	Remarks			
No.		Identical	Туре	Туре	Length				
		Ports							
1	AC	2	US 115V	Un-shielded	2m	No			
2	DC	2	DC	Un-shielded	2m	No			
3	USB	1	USB	Un-shielded	2m	Yes			
4	RF In/Out	1	Directional Coupler	Un-shielded	1m	Yes			
5	RF In/Out	1	Communication Test Set	Un-shielded	2m	Yes			
6	RF In/Out	1	Spectrum Analyzer	Un-shielded	1m	Yes			

I/O CABLES (RADIATED TEST)

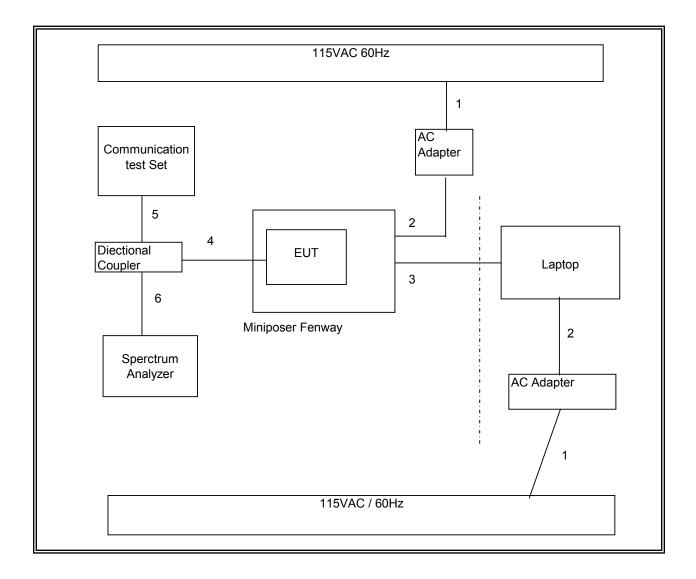
	I/O CABLE LIST								
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks			
1	AC	2	US 115V	Un-shielded	2m	No			
2	DC	2	DC	Un-shielded	2m	No			
3	USB	1	USB	Un-shielded	2m	Yes			
4	RF In/Out	1	Horn	Un-shielded	1m	Yes			

TEST SETUP

The EUT is installed in a test fixture during the tests. A link is established between the EUT and the Agilent 8960 communications test set.

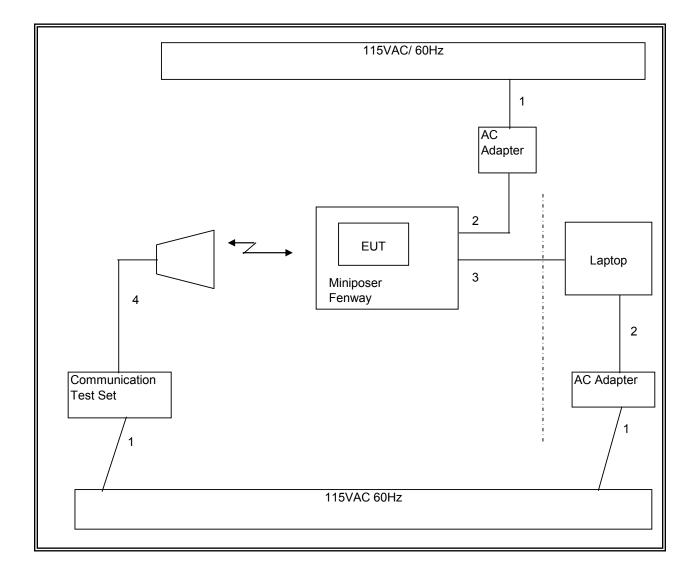
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SETUP DIAGRAM FOR CONDUCTED TESTS



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SETUP DIAGRAM FOR RADIATED TESTS



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6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST									
Description	Description Manufacturer Model Asset Cal Due								
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	02/03/10					
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	01/14/10					
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	02/04/10					
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00778	12/16/09					
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	04/06/10					
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/06/09					
Communications Test Set	Agilent / HP	E5515C	C01086	06/12/10					
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	10/29/09					
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689`	CNR					
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR					
Directional Coupler, 18 GHz	Krytar	1817	N02656	CNR					
Signal Generator, 20 GHz	Agilent / HP	83732B	C00774	07/03/10					
Antenna, Tuned Dipole 400~1000 MHz	ETS	3121C DB4	C00993	06/28/10					

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7. TEST SUMMARY

7.1. LIST OF TEST ITEMS

Description of test			Rule part		
	Description of test	FCC	IC	Results	
1.	RF Power Output	§2.1046	RSS-132, 4.4; RSS-133, 6.4;	Complies	
2.	Occupied Bandwidth	§2.1049	RSS-Gen, 4.6		
3.	Block Edge (Band Edge)	§22.359, §24.238	RSS-132, 4.5; RSS-133, 6.5	Complies	
4.	Out of Band Emissions	§2.1051, §22.917, §24.238	RSS-132, 4.5; RSS-133, 6.5	Complies	
5.	Frequency Stability	§2.1055, §22.355, §24.235	RSS-132, 4.3; RSS-133, 6.3	Complies	
6.	Radiated Power (ERP & EIRP)	§2.1046, §22.913, §24.232	RSS-132; 4.4, RSS-133, 6.4	Complies	
7.	Field Strength of Spurious Radiation	§2.1053, §22.917, §24.238	RSS-132, 4.5; RSS-233, 6.5	Complies	
8.	Receiver Spurious Emissions (IC only)	n/a	RSS-132, 4.6; RSS-133, 6.6, RSS-Gen	Complies	

7.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak output power as follows:

Part 22	Cellular	Band
	Ochulai	Dana

Frequency range (MHz)	Modulation	Conducted		ERP	
Frequency range (IMTZ)	Wouldton	dBm	mW	dBm	mW
824.7 – 848.31	1xRTT (RC1, SO55)	29.33	857.0	28.00	631.0
824.7 - 848.31	EV-DO - REV A	29.61	914.1	28.40	691.8

Part 24 PCS Band

Frequency range (MHz) Modulation		Cond	ucted	EIRP		
Frequency range (MHz)	wouldtion	dBm	mW	dBm	mW	
1851.25 – 1908.8	1xRTT (RC1, SO55)	29.38	867.0	28.00	631.0	
1851.25 – 1908.8	EV-DO - REV A	29.77	948.4	28.30	676.1	

8. RF POWER OUTPUT VERIFICATION

Maximum output power is verified on the Low, Middle and High channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E for 1xRTT, section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rel. 0 and section 4.3.4 of 3GPP2 C.S0033-A for Rev. A

8.1. RF POWER OUTPUT FOR 1xRTT

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

ApplicationRev. LicenseCDMA2000 Mobile TestB.13.08, L

- Call Setup > Shift & Preset
- Cell Info > Cell Parameters > System ID (SID) > 8
 - > Network ID (NID) > 65535
- Protocol Rev > 6 (IS-2000-0)
- Radio Config (RC) > Please see following table or details
- FCH Service Option (SO) Setup > Please see following table or details
- Traffic Data Rate > Full
- TDSO SCH Info > F-SCH Parameters > F-SCH Data Rate > 153.6 kbps
 - > R-SCH Parameters > R-SCH Data Rate > 153.6 kbps
- Rvs Power Ctrl > Active bits o Rvs Power Ctrl > All Up bits (Maximum TxPout)

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RF Power Output Results for 1XRTT

RF Power Output for 1xRTT - Cell Band							
Radio				nducted Outp	1	, ,	
Configuration	Service Option		824.7MHz	Ch. 384/8	36.52MHz	Ch. 777/8-	48.31MHz
(RC)	(SO)	Average	Peak	Average	Peak	Average	Peak
	1 (Voice)	NA	NA	NA	NA	NA	NA
RC1	2 (Loopback)	25.17	29.30	25.21	29.18	24.52	29.04
(Fwd1, Rvs1)	3 (Voice)	25.13	29.15	25.20	29.17	24.51	29.27
	55 (Loopback)	25.23	29.32	25.24	29.33	24.59	29.15
	68 (Voice)	NA	NA	NA	NA	NA	NA
	9 (Loopback)	25.26	29.19	25.27	29.27	24.57	29.19
RC2	17 (Voice)	25.20	29.13	25.19	29.06	24.50	29.08
(Fwd2, Rvs2)	55 (Loopback)	25.21	29.30	25.18	29.09	24.51	29.07
	32768 (Voice)	25.18	29.01	25.20	29.04	24.50	29.05
	1 (Voice)	NA	NA	NA	NA	NA	NA
	2 (Loopback)	25.31	28.87	25.28	28.90	24.61	28.50
RC3	3 (Voice)	25.25	28.74	25.21	28.63	24.55	28.97
(Fwd3, Rvs3)	55 (Loopback)	25.28	28.80	25.24	28.67	24.64	28.35
	32 (+ F-SCH)	25.32	29.01	25.27	28.78	24.63	28.44
	32 (+ SCH)	25.26	28.54	25.22	28.86	24.65	28.90
	1 (Voice)	NA	NA	NA	NA	NA	NA
	2 (Loopback)	25.30	28.86	25.32	28.91	24.63	28.45
RC4	3 (Voice)	25.29	28.80	25.19	28.95	24.50	28.49
(Fwd4, Rvs3)	55 (Loopback)	25.25	28.84	25.26	28.75	24.51	28.46
	32 (+ F-SCH)	25.24	28.91	25.21	28.66	24.50	28.38
	32 (+ SCH)	25.29	28.72	25.25	28.71	24.55	28.40
	9 (Loopback)	25.30	28.77	25.28	28.91	24.59	28.48
RC5	17 (Voice)	25.22	28.78	25.23	28.69	24.52	28.71
(Fwd5, Rvs4)	55 (Loopback)	25.30	28.76	25.30	28.64	24.60	28.43
	32768 (Voice)	25.21	28.80	25.21	28.73	24.50	28.58

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RF Power Output Results for 1XRTT

RF Power Output fo	or 1xRTT - PCS Band						
Radio				nducted Outp			
Configuration	Service Option		51.25MHz		1880MHz		908.75 MHz
(RC)	(SO)	Average	Peak	Average	Peak	Average	Peak
	1 (Voice)	NA	NA	NA	NA	NA	NA
D04	2 (Loopback)	24.61	28.63	24.60	28.89	23.92	28.00
RC1 (Fwd1, Rvs1)	3 (Voice)	24.55	28.55	24.54	28.87	23.91	28.05
(55 (Loopback)	24.65	28.86	24.65	29.38	23.95	28.60
	68 (Voice)	23.52	28.70	24.52	29.23	23.90	28.45
	9 (Loopback)	24.55	28.60	24.62	28.93	23.95	27.90
RC2	17 (Voice)	24.50	28.95	24.61	28.99	23.88	28.23
(Fwd2, Rvs2)	55 (Loopback)	24.54	28.58	24.67	28.98	23.90	27.95
	32768 (Voice)	24.45	28.66	24.55	29.27	23.90	28.61
	1 (Voice)	NA	NA	NA	NA	NA	NA
	2 (Loopback)	24.59	28.20	24.65	28.48	23.88	27.47
RC3	3 (Voice)	24.45	27.97	24.60	28.34	23.71	27.79
(Fwd3, Rvs3)	55 (Loopback)	24.52	28.01	24.65	28.54	23.95	27.51
	32 (+ F-SCH)	24.54	28.22	24.65	28.48	23.72	27.54
	32 (+ SCH)	24.55	27.88	24.62	28.35	23.75	27.62
	1 (Voice)	NA	NA	NA	NA	NA	NA
	2 (Loopback)	24.50	28.07	24.58	28.28	23.98	27.43
RC4	3 (Voice)	24.47	28.04	24.50	28.35	23.91	27.44
(Fwd4, Rvs3)	55 (Loopback)	24.51	27.94	24.55	28.23	23.97	27.44
	32 (+ F-SCH)	24.55	28.15	24.52	28.45	24.00	27.49
	32 (+ SCH)	24.57	27.90	24.55	28.45	23.97	27.35
	9 (Loopback)	24.72	28.11	24.61	28.18	24.21	27.46
RC5	17 (Voice)	24.45	28.01	24.52	28.48	24.14	27.35
(Fwd5, Rvs4)	55 (Loopback)	24.56	28.13	24.60	28.32	24.22	27.47
	32768 (Voice)	24.48	28.13	24.58	28.36	24.15	27.17

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8.2. RF POWER OUTPUT FOR EVDO REV 0

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

ApplicationRev, License1xEV-DO Terminal TestA.09.13

EVDO Release 0 - RTAP

- Call Setup > Shift & Preset
- Call Control:
 - Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Parms:
 - Cell Power > -105.5 dBm/1.23 MHz
 - Cell Band > (Select US Cellular or US PCS)
 - Channel > (Enter channel number)
 - Application Config > Enhanced Test Application Protocol > RTAP
 - RTAP Rate > 153.6 kbps
 - Rvs Power Ctrl > Active bits
 - Protocol Rel > 0 (1xEV-DO)
- Press "Start Data Connection" when "Session Open" appear in "Active Cell"
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

EVDO Release 0 - FTAP

- Call Setup > Shift & Preset
- Call Control:
 - Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Parms:
 - Cell Power > -105.5 dBm/1.23 MHz
 - Cell Band > (Select US Cellular or US PCS)
 - Channel > (Enter channel number)
 - Application Config > Enhanced Test Application Protocol > FTAP (default)
 - FTAP Rate > 307.2 kbps (2 Slot, QPSK)
 - Rvs Power Ctrl > Active bits
 - Protocol Rel > 0 (1xEV-DO)
- Press "Start Data Connection" when "Session Open" appear in "Active Cell"
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

RF Power Output for EV-DO Rel 0

Cell Band

				Conducted power (dBm)	
FTAP Rate	RTAP Rate	Channel	f (MHz)	Average	Peak
207 2 khoa		1013	824.70	24.91	28.81
307.2 kbps (2 slot, QPSK)	153.6 kbps	384	836.52	24.77	28.90
(2 310t, QI 01t)		777	848.31	24.25	28.83

PCS Band

				Conducted power (dBm)	
FTAP Rate	RTAP Rate	Channel	f (MHz)	Average	Peak
207 0 khra		25	1851.25	23.99	28.50
307.2 kbps (2 slot, QPSK)	153.6 kbps	600	1880.00	24.12	29.00
(2 3101, Q1 517)		1175	1908.75	23.55	27.99

8.3. RF POWER OUTPUT FOR EVDO REV A

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

Application	Rev, License
1xEV-DO Terminal Test	A.09.13

EVDO Release A – RETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
- > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots
 > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Release A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2

> PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)

- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots
 > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

RF Power Output Results for EV-DO Rev A

Cell Band

	RETAP-Data Payload			Conducte (dE	
FETAP-Traffic Format	Size	Channel	f (MHz)	Average	Peak
307.2k, QPSK/ ACK		1013	824.70	24.11	29.05
channel is transmitted	4096	384	836.52	24.65	29.61
at all the slots		777	848.31	24.30	29.19

PCS Band

	RETAP-Data Payload			Conducte (dE	
FETAP-Traffic Format	Size	Channel	f (MHz)	Average	Peak
307.2k, QPSK/ ACK		25	1851.25	23.88	29.77
channel is transmitted	4096	600	1880.00	23.92	29.72
at all the slots		1175	1908.75	23.68	28.62

9. WORST-CASE CONFIGURATION AND MODE

Based on the following investigation results, see Section 6. RF POWER OUTPUT VERIFCATION. The highest peak power and enhanced data rate is the worst-case scenario for all measurements.

Worst case modes:

- For Cellular and PCS band: 1xRTT (RC1 SO55)
- For Cellular and PCS band: EVDO-Rev A

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10. CONDUCTED TEST RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049 IC: RSS-Gen, 4.6

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

MODES TESTED

- 1xRTT RC1, SO55
- EV-DO REV A

RESULTS

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW MHz)
		1013	824.70	1.2724	1.389
	1xRTT	384	836.52	1.2678	1.393
Cellular		777	848.31	1.2705	1.411
Cellulai		1013	824.70	1.2714	1.398
	EV-DO REV	384	836.52	1.2794	1.423
		777	848.31	1.2700	1.404
		25	1851.25	1.2797	1.406
	1xRTT	600	1880.0	1.2745	1.389
PCS		1175	1908.75	1.2724	1.405
FC3	EV-DO REV	25	1851.25	1.2726	1.390
		600	1880.0	1.2753	1.393
		1175	1908.75	1.2725	1.397

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Presel Center

Presel Adjust [3-26 GHz] 0.000 Hz

More

1 of 3

Span 3 MHz

99.00 % -26.00 dB

Sweep 10.04 ms (601 pts)

x dB

Occ BW % Pwr

Plots for 1xRTT Mode (Cellular Band)

Center 836.520 MHz

Transmit Freq Error

x dB Bandwidth

Occupied Bandwidth

opyright 2000-2008 Agilent Technologies

#Res BW 30 kHz

	1015
🔆 Agilent 10:07:03 Jul 2, 2009	R L Sweep
	Sweep Tin
Ch Freq 824.7 MHz	Trig Free 10.04 r
Occupied Bandwidth	
	Swee
	Single Co
tef 30 dBm Atten 30 dB	
Samp	Auto Swee
og	Norm Ac
B/	Ga
6.5 WHAT WANT AND A CONTRACT OF A CONTRACT O	On <u>o</u>
B	
	Gate Setur
Center 824.700 MHz	Span 3 MHz
Res BW 30 kHz #VBW 100 kHz Sv	weep 10.04 ms (601 pts)
Occupied Bandwidth Occ	Poin BW % Pwr 99.00 %
1.2724 MHz	x dB -26.00 dB
Transmit Freq Error -2.041 kHz x dB Bandwidth 1.389 MHz*	
Copyright 2000-2008 Agilent Technologies <u>1xRTT, Ch</u>	384
🎋 Agilent 10:06:18 Jul 2, 2009	R L Amplitude
	Ref Leve
Ch Freq 836.52 MHz	Trig Free 30.00 dB
Occupied Bandwidth	
	Attenuation
	30.00 d Auto N
ef 30 dBm Atten 30 dB	nato II
Samp	Scale/Di
	10.00 d
IB/	Scale Typ
6.5	

1xRTT Ch 1013

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#VBW 100 kHz

1.2678 MHz

2.493 kHz

1.393 MHz*

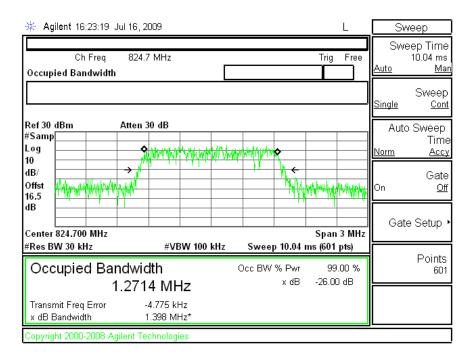
<u>1xrii Ch ///</u>			
₩ Agilent 10:07:26 Jul 2, 2009	RL	S٧	/eep
Ch Freq 848.31 MHz Occupied Bandwidth	Trig Free	Swe <u>Auto</u>	ep Time 10.04 ms <u>Mar</u>
		<u>Single</u>	Sweep <u>Cont</u>
Ref 30 dBm Atten 30 dB #Samp Log 10		Auto <u>Norm</u>) Sweep Time <u>Accy</u>
dB/ Offst 16.5	non and a state	On	Gate <u>Off</u>
dB Center 848.310 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 10.04 n	Span 3 MHz	Gate	e Setup '
#Res BW 30 kHz #VBW 100 kHz Sweep 10.04 n Occupied Bandwidth Occ BW % Pwr 1.2705 MHz × dB	99.00 % -26.00 dB		Points 601
Transmit Freq Error -86.412 Hz x dB Bandwidth 1.411 MHz*			
Copyright 2000-2008 Agilent Technologies			

1vDTT Ch 777

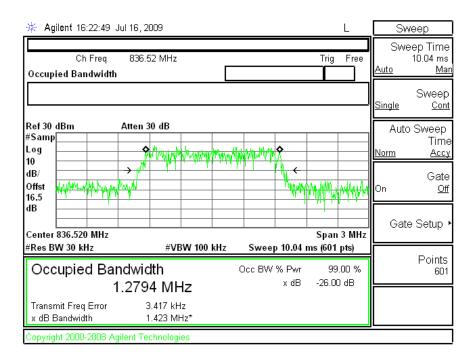
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Plots for EVDO-REV A Mode (Cellular Band)

EVDO-REV A, Ch 1013

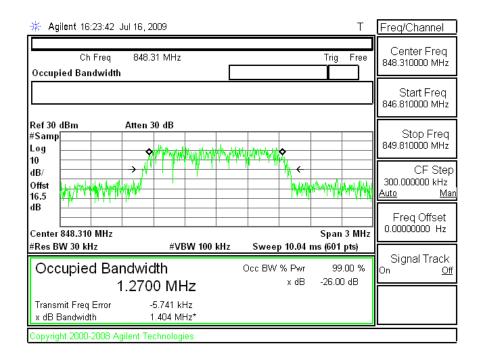


EVDO-REV A, Ch 384



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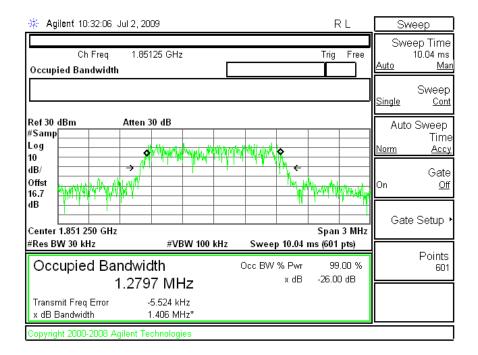
EVDO-REV A Ch 777



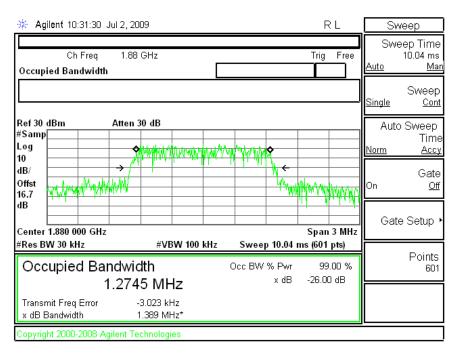
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Plots for 1xRTT Mode (PCS Band)

<u>1xRTT, Ch 25</u>



1xRTT, Ch 600



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1xRTT, Ch 1175

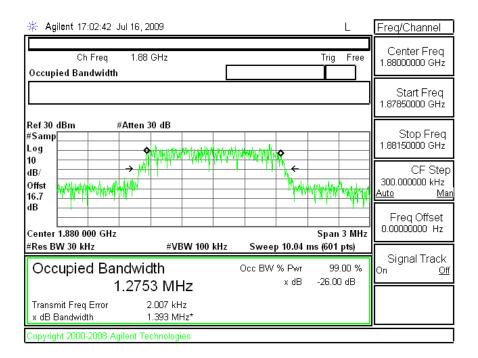
☆ Agilent 10:30:58 Jul 2, 2009	Sweep
Ch Freq 1.90875 GHz Trig Free Occupied Bandwidth	Sweep Time 10.04 ms <u>Auto Man</u>
	Sweep <u>Single Cont</u>
Ref 30 dBm Atten 30 dB #Samp Log 10	Auto Sweep Time <u>Norm Accy</u>
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Gate On <u>Off</u>
dB	Gate Setup 🕨
#Res BW 30 kHz #VBW 100 kHz Sweep 10.04 ms (601 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % 1.2724 MHz x dB -26.00 dB	Points 601
Transmit Freq Error 7.838 kHz x dB Bandwidth 1.405 MHz*	
Copyright 2000-2008 Agilent Technologies	

Plots for EVDO, REV A Mode (PCS Band)

EVDO-REV A, Ch 25

₩ Agilent 17:00:46 Jul 16, 2009	Sweep
Ch Freq 1.85125 GHz Trig Free Occupied Bandwidth	Sweep Time 10.04 ms <u>Auto Man</u>
Sweep Time 10.04 ms	Sweep <u>Single Cont</u>
Ref 30 dBm #Atten 30 dB #Samp Log	Auto Sweep Time <u>Norm Accy</u>
dB/ Offst 16.7	Gate On <u>Off</u>
dB	Gate Setup 🔸
Occupied Bandwidth Occ BW % Pwr 99.00 % 1.2726 MHz x dB -26.00 dB	Points 601
Transmit Freq Error -2.702 kHz x dB Bandwidth 1.390 MHz*	
Copyright 2000-2008 Agilent Technologies	

EVDO-REV A, Ch 600



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EVDO-REV A, Ch 1175

₩ Agilent 17:03:41 Jul 16, 2009	Sweep
Ch Freq 1.90875 GHz Trig Free Occupied Bandwidth	Sweep Time 10.04 ms <u>Auto Man</u>
	Sweep <u>Single Cont</u>
Ref 30 dBm #Atten 30 dB #Samp Log 10	Auto Sweep Time <u>Norm Accy</u>
dB/ Offst 16.7	Gate On <u>Off</u>
dB	Gate Setup 🔸
#Res BW 30 kHz #VBW 100 kHz Sweep 10.04 ms (601 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % 1.2725 MHz x dB -26.00 dB	Points 601
Transmit Freq Error 374.684 Hz x dB Bandwidth 1.397 MHz*	
Copyright 2000-2008 Agilent Technologies	

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10.2. BAND EDGE

RULE PART(S)

FCC: §22.359, 24.238 IC: RSS-132, 4.5; RSS-133, 6.5

LIMITS

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 + 10 log (P) dB.

TEST PROCEDURE

The transmitter output was connected to a Agilent 8960 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

- Set the spectrum analyzer span to include the block edge frequency (824, 848, 1850, 1910MHz)
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

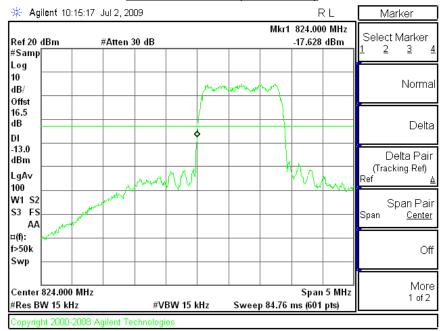
MODES TESTED

- 1xRTT RC1, SO55
- EV-DO REV A

RESULTS

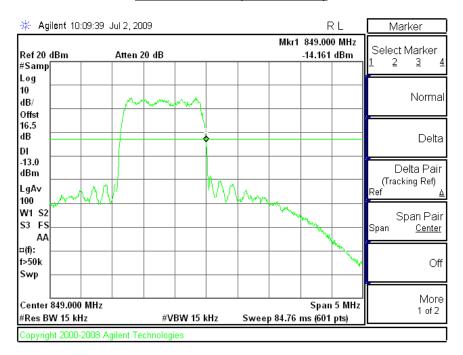
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Plots for 1xRTT mode (Cellular Band)



<u>1xRTT, Ch 1013 (824.7 MHz)</u>

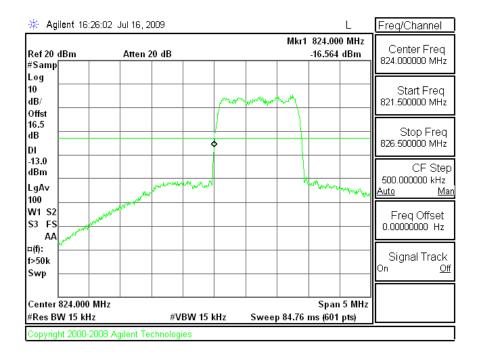
1xRTT, Ch 777 (848.75 MHz)



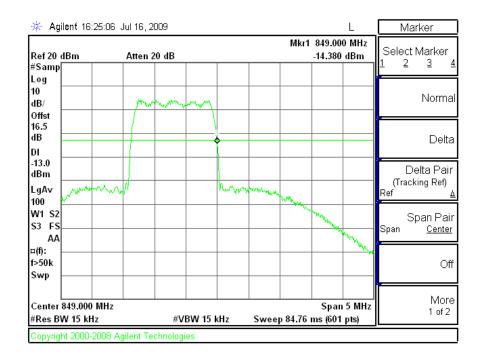
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Plots for EVDO-REV A mode (Cellular Band)

EVDO-REV A Ch 1013 (824.7 MHz)



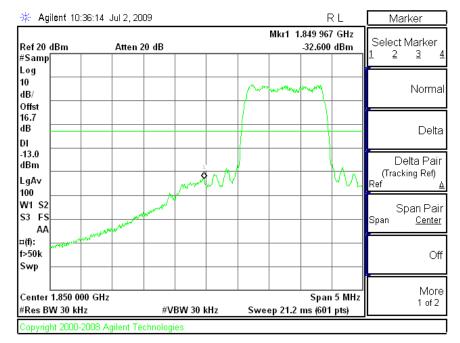
EVDO-REV A, Ch 777 (848.75 MHz)



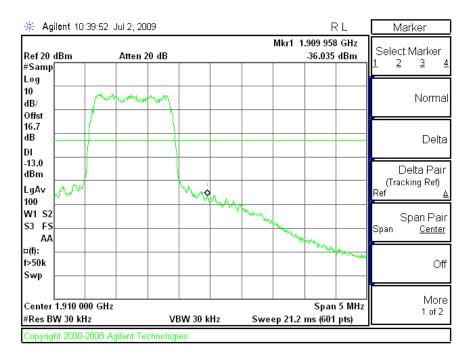
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Plots for 1xRTT mode (PCS Band)

1xRTT, Ch 25 (1851.25 MHz)



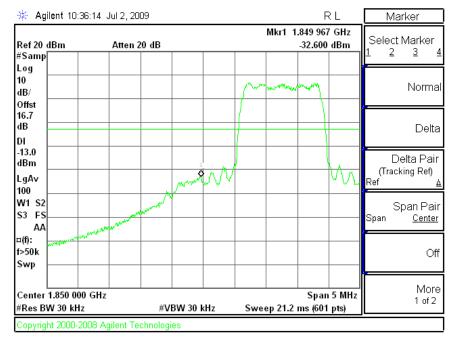
1xRTT Ch 1175 (1908.75 MHz)



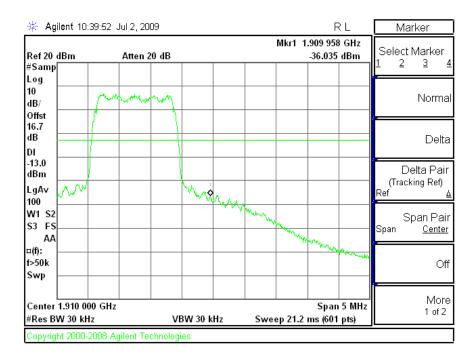
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Plots for EVDO-REV A mode (PCS Band)

EVDO-REV A Ch 25(1851.25 MHz)



EVDO-REV A Ch 1175(1908.75 MHz)



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10.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 IC: RSS-132, 4.5; RSS-133, 6.5

LIMITS

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 $43 + 10 \log (P) dB$.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

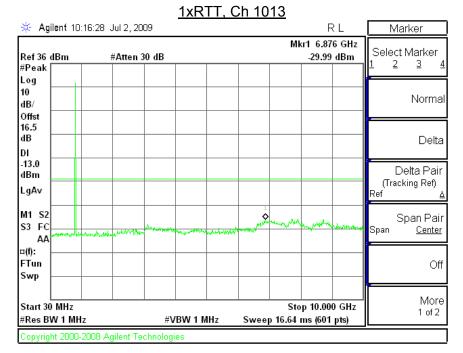
MODES TESTED

- 1xRTT RC1, SO55
- EV-DO Rev A

RESULTS

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Plots for 1xRTT Mode (Cellular Band)



1xRTT, Ch 384

🔆 Agilent 10:14	RL	Marker			
Ref 36 dBm	#Atten 30 dB		M	kr1 7.574 GHz -29.45 dBm	Select Marker
#Peak Log					
10 dB/					Norma
Offst 16.5 dB					Delta
DI					Delta Pair (Tracking Ref)
			1		Ref
M1 S2 S3 FC AA	the man when when when when when when when whe	And warmer warmer and where the	have porten for	may where wounder	Span Pair Span <u>Center</u>
¤(f): FTun Swp					Ofi
Start 30 MHz #Res BW 1 MHz		/BW 1 MHz	Steep 16.64	op 10.000 GHz	More 1 of 2

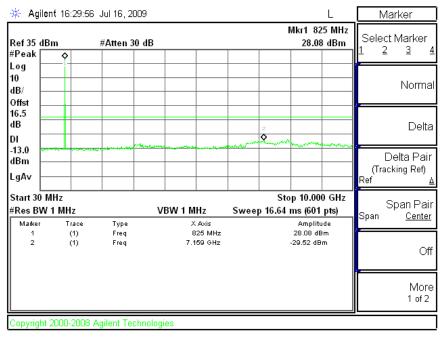
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<u>1xRTT, Ch 777</u>

✤ Agilent 10:12:26 Jul 2, 2009							₹ L	Ma	arker	
Ref 36 dBm	#Atten 3		Mkr1 7.125 GHz -29.21 dBm				Marke 3	۶r		
#Peak								1 2	J	
Log 10 dB/									Norn	na
Offst 16.5 dB									De	elta
DI -13.0 dBm									elta Pa	
LgAv								(Trac Ref	king Ref	t)
V1 S2 S3 FC	Marianaltant	Anna Color Marage		atter all	2 may 1m	and the second	- William - Marine	S Span	ipan Pa <u>Cent</u>	
⊐(f): FTun Swp									(01
Start 30 MHz #Res BW 1 MHz		#VBV	Swee	Sto p 16.64	p 10.00		Mo 1 of			

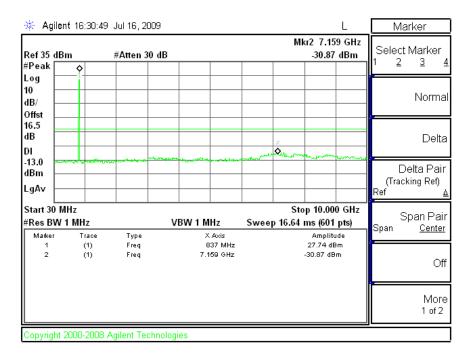
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Plots for EVDO-REV A Mode (Cellular Band)



EVDO-REV A, Ch 1013

EVDO-REV A, Ch 384



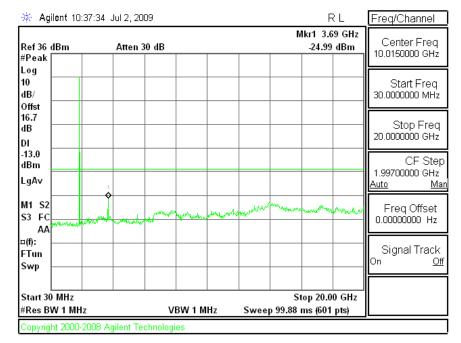
EVDO-REV A, Ch 777

🗱 Agilent 07:55:07 Jul 16, 2009 🛛 🛛 🛛 🔍 R L								Marker				
ef 35 <u>d</u> Bn	n	#Atten 3	0 dB						26 GHz) dBm	Select Mark		
Peak	◊									1 <u>2</u>	<u>3</u>	
og 0 B/											Norr	n
6.5 B						N N	man	-			De	∍lt
I3.0 Bm)elta Pa king Re	
tart 30 Mł Res BW 1			#V	BW 1 M	Hz	Swee)p 10.00 ms (601			opan P Cen	
Marker	Trace	Туре			Axis		Amplitude			Opun	<u>-0011</u>	
1 (1) 2 (1)		Freq Freq			48 MHz 26 GHz			28.31 d -30.39 df			(0
											Mc 1 of	

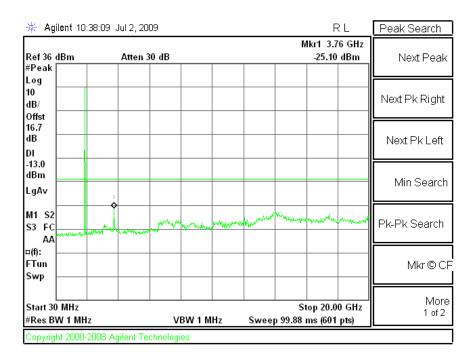
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Plots for 1xRTT Mode (PCS Band)

1xRTT Ch 25



1xRTT Ch 600



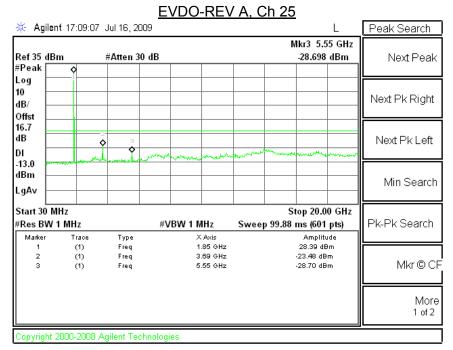
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1xRTT Ch 1175

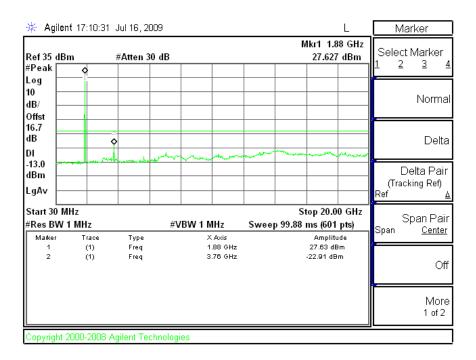
33 Jul 2, 2009		R	Ľ	Peak Search
Atten 30 d	B			Next Peak
				Next Pk Right
				Next Pk Left
1				Min Search
nul norman and	m manual and	and the some work the	mono	Pk-Pk Search
				Mkr © C
	VBW 1 MHz			Mor 1 of 2
	Atten 30 dl		Mkr1 3.8 Atten 30 dB .21.87	Mkr1 3.82 GHz -21.87 dBm -21.87 d

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Plots for EVDO-REV A Mode (PCS Band)



EVDO-REV A, Ch 600



EVDO-REV A, Ch 1175

	≠Atten 30) dB				IV	1kr2 3.8 -18.241		Trace
2									Clear Write
And the		مىسىر	~~~~	, ways a start for		· · · · · · · · · · · · · · · · · · ·	August, Parage		Max Hold
									Min Hol
1H7		#V	BW 1 M	IHz	Sweer		•		Viev
Trace	Туре		X	Axis	0.000		Amplit	Jde	
(1) (1)	Freq Freq								Blanl
									More 1 of 2
	Hz Trace (1) (1)	HZ Trace Type (1) Freq (1) Freq	Hz #V Trace Type (1) Freq (1) Freq	Hz #VBW1N Trace Type X (1) Freq 1	IHz #VBW 1 MHz Trace Type X Axis (1) Freq 1.91 GHz (1) Freq 3.82 GHz	IHZ #VBW 1 MHz Sweep Trace Type X Axis (1) Freq 1.91 GHz (1) Freq 3.82 GHz	Image: State of the state o	Image: Non-State State Image: Non-State State Image: Non-State Image: Non-State Image: Non-State #VBW 1 MHz Sweep 99.88 ms (601 Image: Non-State Image: Non-State <td< td=""><td>Image: Stop 20.00 GHz Hz #VBW 1 MHz Sweep 99.88 ms (601 pts) Trace Type X Axis Amplitude (1) Freq 1.91 GHz 25.81 dBm (1) Freq 3.82 GHz -18.24 dBm</td></td<>	Image: Stop 20.00 GHz Hz #VBW 1 MHz Sweep 99.88 ms (601 pts) Trace Type X Axis Amplitude (1) Freq 1.91 GHz 25.81 dBm (1) Freq 3.82 GHz -18.24 dBm

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10.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235 IC: RSS-132, 4.3; RSS-133, 6.3

<u>LIMITS</u>

- §22.355 & RSS-132 4.3 The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.
- RSS-133 6.3 The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.
- §24.235 The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

TEST PROCEDURE

Use Agilent 8960 with Frequency Error measurement capability.

- Temp. = −20° to +50°C
- Voltage = 115 Vdc (85% 115%)

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

MODES TESTED

• EV-DO – Rev A

RESULTS

See the following pages.

Page 41 of 57

CELL, EVDO Rev A – MID CHANNEL

Refei	Reference Frequency: Cellular Mid Channel 835.838330MHz @ 20°C											
	Limit: to stay +- 2.5 ppm = 2089.596 Hz											
DC Power Supply	C Power Supply Environment Frequency Deviation Measureed with Time Elapse											
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)								
115.00	50	835.838326	0.005	2.5								
115.00	40	835.838325	0.006	2.5								
115.00	30	835.838328	0.002	2.5								
115.00	20	835.838330	0	2.5								
115.00	10	835.838332	-0.002	2.5								
115.00	0	835.838337	-0.008	2.5								
115.00	-10	835.838335	-0.006	2.5								
115.00	-20	835.838342	-0.014	2.5								
115.00	-30	835.838338	-0.010	2.5								

Refei	Reference Frequency: Cellular Mid Channel 835.838330MHz @ 20°C										
Limit: to stay +- 2.5 ppm = 2089.596 Hz											
DC Power Supply	Supply Environment Frequency Deviation Measureed with Time Elapse										
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)							
100%	20	835.838330	0	2.5							
85%	20	835.838327	0.004	2.5							
115%	20	835.838326	0.005	2.5							

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PCS, EVDO-REV A – MID CHANNEL

	Reference Frequency: PCS Mid Channel 1879.316833MHz @ 20°C Limit: within the authorized block or +- 2.5 ppm = 4698.292 Hz										
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse									
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)							
115.00	50	1879.316809	0.013	2.5							
115.00	40	1879.316816	0.009	2.5							
115.00	30	1879.316822	0.006	2.5							
115.00	20	1879.31683	0	2.5							
115.00	10	1879.316840	-0.004	2.5							
115.00	0	1879.316838	-0.003	2.5							
115.00	-10	1879.316840	-0.004	2.5							
115.00	-20	1879.316843	-0.005	2.5							
115.00	-30	1879.316812	0.011	2.5							

Reference Frequency: PCS Mid Channel 1879.316833MHz @ 20°C										
Limit: within the authorized block or +- 2.5 ppm = 4698.292 Hz										
Power Supply	Environment	Environment Frequency Deviation Measureed with Time Elapse								
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)						
100%	20	1879.316833	0	2.5						
85%	20	1879.316848	-0.008	2.5						
115%	20	1879.316850	-0.009	2.5						

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11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232 IC: RSS-132; 4.4, RSS-133, 6.4

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) & RSS-133 § 6.4 - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

RSS-132 4.4, SRSP503 5.1.3 - The maximum ERP shall be 11.5 Watts for mobile stations.

TEST PROCEDURE

ANSI / TIA / EIA 603C RSS-132; RSS-133

MODES TESTED

- 1xRTT RC1, SO55
- Ev-DO Rev A

RESULTS for Cellular Band (ERP)

			EF	RP
Mode	Channel	f (MHz)	dBm	mW
1xRTT (RC1, SO55)	1013	824.70	28.00	630.96
	384	836.52	27.90	616.60
(RC1, 3055)	777	848.75	26.00	398.11
	1013	824.70	27.20	524.81
EVDO-REV A	384	836.52	28.40	691.83
	777	848.75	27.50	562.34

RESULTS for PCS Band (EIRP)

			EI	RP
Mode	Channel	f (MHz)	dBm	mW
1xRTT	25	1851.25	27.50	562.34
(RC1, SO55)	600	1880.00	28.00	630.96
(101, 3000)	1175	1908.75	27.70	588.84
	25	1851.25	26.40	436.52
EVDO-REV A	600	1880.00	27.90	616.60
	1175	1908.75	28.30	676.08

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ERP for 1xRTT Mode (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services Chamber B

Compliance Certification Services Chamber B
Company: Qualcomm
Project #: 09U12627
Date: 7/2/2009
Test Engineer: Chin Pang
Configuration:EUT with Magnetic Dipole Antenna
Mode:Cell, 1xRTT CDMA200
Test Equipment:
Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f	SA reading	Ant. Pol.	Path Loss	ERP	Limit	Margin	Notes
MHz	(dBm)	(H/∨)	(dBm)	(dBm)	(dBm)	(dB)	
Low Ch							
824.70	-4.6	v	32.6	28.0	38.5	-10.4	
824.70	-8.2	Н	30.4	22.1	38.5	-16.3	
Mid Ch							
836.52	-4.8	V	32.7	27.9	38.5	-10.6	
836.52	-9.4	Н	30.7	21.4	38.5	-17.1	
High Ch							
848.31	-6.0	v	32.0	26.0	38.5	-12.5	
848.31	-10.6	Н	30.8	20.2	38.5	-18.3	

ERP for EVDO-REV A Mode (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services 3m Chamber

Company:Qualcomm Project #:09U12627 Date: 7/15/2009 Test Engineer: Chin Pang Configuration:EUT Only Mode:TX, Cell, EV-DO, Rev A <u>Test Equipment:</u>

Receiving: Sunol T185, and 3m Chamber N-type Cable (Setup this one for testing EUT) Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f	SA reading	Ant. Pol.	Path Loss	ERP	Limit	Margin	Notes
MHz	(dBm)	(H/V)	(dBm)	(dBm)	(dBm)	(dB)	
ow Ch							
824.70	-3.6	V	30.8	27.2	38.5	-11.3	
824.70	-10.1	Н	28.9	18.8	38.5	-19.7	
Mid Ch							
836.52	-3.5	V	31.8	28.4	38.5	-10.1	
836.52	-11.8	Н	28.8	17.0	38.5	-21.4	
High Ch							
848.31	-5.3	V	32.8	27.5	38.5	-10.9	
848.31	-14.0	Н	29.6	15.6	38.5	-22.8	

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EIRP for 1xRTT Mode (PCS Band)

High Frequency Fundamental Measurement

Compliance Certification Services 3m Chamber

Company:Qualcomm Project #:09U12627 Date: 7/2/2009 Test Engineer: Chin Pang Configuration:EUT/Magnetic Antenna Mode:PCS, 1xRTT CDMA2000

Test Equipment:

Receiving: Horn T60, and 3m Camber SMA Cables Substitution: Horn T72 Substitution, 6ft SMA Cable (SN # 208947003) Warehouse

f	SA reading	Ant. Pol.	Path Loss	EIRP	Limit	Delta	Notes
GHz	(dBm)	(H/∨)	(dBm)	(dBm)	(dBm)	(dB)	
Low Ch							
1.851	-11.2	V	38.7	27.5	33.0	-5.5	
1.850	-18.0	H	37.8	19.8	33.0	-13.2	
Mid Ch							
1.880	-11.9	v	39.9	28.0	33.0	-5.0	
1.880	-18.6	H	38.8	20.3	33.0	-12.7	
High Ch							
1.909	-12.2	V	39.9	27.7	33.0	-5.3	
1.909	-20.3	Н	38.6	18.3	33.0	-14.7	

EIRP for EVDO-REV A Mode (PCS Band)

High Frequency Fundamental Measurement Compliance Certification Services 3m Chamber

Company:Qualcomm Project #:09U12627 Date: 7/15/2009 Test Engineer: Chin Pang Configuration:EUT Only Mode:TX, PCS EV-DO, Rev A <u>Test Equipment:</u> Receiving: Horn T60, and 3m Camber SMA Cables Substitution: Horn T72 Substitution, 6ft SMA Cable (SN # 208947003) Warehouse

f	SA reading	Ant. Pol.	Path Loss	EIRP	Limit	Delta	Notes
GHz	(dBm)	(H/∨)	(dBm)	(dBm)	(dBm)	(dB)	
Low Ch							
1.851	-12.3	v	38.7	26.4	33.0	-6.6	
1.851	-19.5	Н	36.8	17.3	33.0	-15.7	
Mid Ch							
1.880	-12.0	V	39.9	27.9	33.0	-5.1	
1.880	-21.4	H	38.8	17.4	33.0	-15.6	
High Ch							
1.909	-12.7	v	40.9	28.3	33.0	4.7	
1.909	-20.0	Н	37.6	17.6	33.0	-15.4	

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11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238 IC: RSS-132, 4.5; RSS-233, 6.5

<u>LIMIT</u>

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 $43 + 10 \log (P) dB$.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

- 1xRTT RC1, SO55
- Ev-DO Rev A

RESULTS

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1xRTT Mode (Cellular Band)

			Co Above 1GH	mpliance C			Мерециен	ment				
			ADOVE IGF		quency Su	bsiltution	Weasure	nent				
Company	Qualcomm:											
Project #	:09U12627											
Date:7/2/2	2009											
Test Eng	ineer:Chin Pa	ing										
Configura	ation:EUT and	d Magnetic D	ipole Antenr	na								
Node:TX	, Cell 1xRTT	CDMA2000										
	Chambe	r	P	re-amplifer			Filter			Limit		
	o ob anala a r		T34.8	T34 8449B 🗸			1	-	TX Pa	rt 22 🚽		
3r	n Chamber	-	1040	400	•		•	·		· · · · ·		
							,	· · · ·				
f	SA reading		Distance	Path Loss	Preamp	Filter	ERP	Limit	Delta	Notes		
GHz	(dBm)	(H/∨)	(m)	(dB)	(dB)	(dB)	(dBm)	(dBm)	(dB)			
_ow Ch, 8												
1.649	-58.1	H	3.0	36.6	37.4	1.0	-60.0	-13.0	-47.0			
1.649	-57.5	V	3.0	36.9	37.4	1.0	-59.1	-13.0	-46.1			
2.474	-55.0	V	3.0	41.6	36.4	1.0	-50.9	-13.0	-37.9			
Mid Ch. 83	6 52MHz											
1.673	-57.0	Н	3.0	36.9	37.3	1.0	-58.6	-13.0	-45.6			
1.673	-53.2	v	3.0	37.1	37.3	1.0	-54.5	-13.0	41.5			
2.510	-63.0	v	3.0	41.8	36.4	1.0	-58.7	-13.0	-45.7			
	····		1	·		,	7					
	48.31MHz											
1.696	-58.3	Н	3.0	37.1	37.3	1.0	-59.6	-13.0	-46.6			
	-51.5	V	3.0	37.4	37.3	1.0	-52.5	-13.0	-39.5			
1.696	-51.5	v	3.0	41.9	36.3	1.0	-54.8	-13.0	-41.8			

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EVDO-REV A Mode (Cellular Band)

ualcomm U12627 09									
	l Magnetic D)ipole Antenr	าล						
Chamber	r	P	re-amplifer			Filter			Limit
3m Chamber -		T34 8	-	Filter 1			TX Par	t 22 -	
A reading	Ant. Pol.	Distance	Path Loss	Preamp	Filter	ERP	Limit	Delta	Notes
(dBm)	(H/∨)		(dB)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
· / ;			·/	·/	11		<u>,</u> /		
	Н	3.0	36.6	37.4	1.0	-62.9	-13.0	49.9	
-50.1	H	3.0	40.0	36.4	1.0	47.6	-13.0	-34.6	
-58.0	V	3.0	36.9	37.4	1.0	-59.6	-13.0	-46.6	
49.8	v	3.0	41.6	36.4	1.0	45.7	-13.0	-32.7	
		1	1			<u> </u>	1		
2MHz									
-60.0	Н	3.0	36.9	37.3	1.0	-61.6	-13.0	-48.6	
-50.0	Н	3.0	40.2	36.4	1.0	47.3	-13.0	-34.3	
-53.2	V	3.0	37.1	37.3	1.0	-54.5	-13.0	-41.5	
-51.0	V	3.0	41.8	36.4	1.0	-46.7	-13.0	-33.7	
31MHz		[ļ						
	Н	3.0	37.1	37.3	1.0	-59.3	-13.0	46.3	
		· · · · · · · · · · · · · · · · · · ·					¢i,	,	
						- <u>au</u>			
2	Chamber hamber A reading (dBm) MHz -50.1 -50.1 -58.0 -49.8 2MHz -60.0 -50.0 -53.2	A reading Ant. Pol. (dBm) (H/V) MHz -61.0 H -50.1 H -58.0 V -49.8 V 2MHz -60.0 H -53.2 V -51.0 V -51.0 V -51.0 V -53.5 H -53.5 H	Chamber P hamber T34 8 A reading Ant. Pol. Distance (dBm) (H/V) (m) MHz	Chamber Pre-amplifer hamber T34 8449B A reading Ant. Pol. (dBm) Distance Path Loss (dBm) MHz (dB) 61.0 H 50.1 H 58.0 V 3.0 36.6 58.0 V 60.0 H 50.0 H 50.0 H 50.0 H 50.0 H 51.0 V 53.2 V 3.0 41.8 61MHz	Chamber Pre-amplifer hamber T34 8449B A reading Ant. Pol. Distance Path Loss Preamp (dBm) (H/V) (m) (dB) (dB) MHz 61.0 H 3.0 36.6 37.4 50.1 H 3.0 40.0 36.4 58.0 V 3.0 36.9 37.4 49.8 V 3.0 41.6 36.4 50.0 H 3.0 40.2 36.4 53.2 V 3.0 37.1 37.3 51.0 V 3.0 41.8 36.4 63.2 V 3.0 41.8 36.4 53.2 V 3.0 37.1 37.3 51.0 V 3.0 37.1 37.3 58.0 H 3.0 37.4 36.3 53.5 H 3.0 37.4 37.3	Pre-amplifer Filter hamber - Filter A reading Ant. Pol. (H/V) Distance Path Loss Preamp (dB) Filter A reading Ant. Pol. (H/V) Distance Path Loss Preamp (dB) Filter 61.0 H 3.0 36.6 37.4 1.0 50.1 H 3.0 40.0 36.4 1.0 58.0 V 3.0 36.9 37.4 1.0 58.0 V 3.0 41.6 36.4 1.0 50.0 H 3.0 36.9 37.3 1.0 50.0 H 3.0 36.9 37.3 1.0 53.2 V 3.0 37.1 37.3 1.0 51.0 V 3.0 37.1 37.3 1.0 53.2 V 3.0 37.1 37.3 1.0 53.0 H 3.0 37.1 37.3 1.0 53.5 H 3.0 37.4 36.3 1.0	Chamber Pre-amplifer Filter hamber - T34 8449B - A reading Ant. Pol. Distance Path Loss Preamp Filter A reading Ant. Pol. Distance Path Loss Preamp Filter ERP (dBm) (H/V) (m) (dB) (dB) (dBm) (dBm) MHz - - - - - - - 50.1 H 3.0 36.6 37.4 1.0 - 62.9 50.1 H 3.0 36.9 37.4 1.0 - 59.6 49.8 V 3.0 41.6 36.4 1.0 - 45.7 2MHz - - - - - - - 60.0 H 3.0 36.9 37.3 1.0 - 54.5 51.0 V 3.0 37.1 37.3 1.0 - 54.5	Chamber Pre-amplifer Filter hamber - T34 8449B - Filter 1 A reading Ant. Pol. (dBm) Distance Path Loss Preamp (dBm) Filter (dBm) ERP (dBm) Limit (dBm) MHz - - - - - - 61.0 H 3.0 36.6 37.4 1.0 62.9 - 50.1 H 3.0 36.9 37.4 1.0 47.6 - 13.0 58.0 V 3.0 36.9 37.4 1.0 45.7 - 13.0 60.0 H 3.0 40.2 36.4 1.0 47.3 - - 60.0 H 3.0 36.9 37.3 1.0 61.6 - 13.0 53.2 V 3.0 37.1 37.3 1.0 46.7 - 13.0 51.0 V 3.0 37.1 37.3 1.0 54.6 - 13.0 53	Chamber Pre-amplifer Filter TX Part hamber - T34 8449B - Filter 1 - TX Part A reading Ant. Pol. (dBm) Distance Path Loss Preamp Filter 1 - TX Part A reading Ant. Pol. (dBm) Distance Path Loss Preamp Filter (dBm) (dBm)<

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1xRTT Mode (PCS Band)

				mpliance C Iz High Free			Measurei	ment		
Project #: Date:7/2/2 Fest Engi Configura	:Qualcomm 09U12627 :009 ineer:Chin Pa ation:EUT and . PCS 1xRTT	l Magnetic D	Dipole Antenn	na						
	Chambe		Р	re-amplifer			Filter			Limit
	Chambe									
Зm	n Chamber	-	T34 8	449B	•	Filter	1	•	TX Pa	rt 24 🚽
f	SA reading	Ant. Pol.	Distance	Path Loss	Preamp	Filter	EIRP	Limit	Delta	Notes
GHz	(dBm)	(H/∨)	(m)	(dB)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
.ow Ch,18	51.25MHz									
3.703	-48.2	Н	3.0	44.7	35.4	1.0	-37.9	-13.0	-24.9	
5.554	-62.6	Н	3.0	49.7	34.7	1.0	46.6	-13.0	-33.6	
3.703	-48.5	V	3.0	44.9	35.4	1.0	-38.0	-13.0	-25.0	
5.554	-58.8	٧	3.0	49.2	34.7	1.0	43.4	-13.0	-30.4	
Mid Ch, 18	олмц						[
3.760	48.5	Н	3.0	44.8	35.3	1.0	-38.0	-13.0	-25.0	
5.640	-40.5	п Н	3.0	44.0	33.3 34.7	1.0	-30.0	-13.0	-23.0	
3.760	-62.6	V N	3.0	45.1	35.3	1.0	-40.4	-13.0	-33.4	
5.640	-58.5	V	3.0	49.3	34.7	1.0	-37.7	-13.0	-24.1	
wat of the	000.751111-		1				[
High Ch, 19			2.0	45.0	25.2	10	24.0	12.0	40.0	
3.818	42.5	H	3.0	45.0	35.3	1.0	-31.8	-13.0	-18.8	
5.726	-58.7	H	3.0	50.1	34.7	1.0	42.4	-13.0	-29.4	
3.818 5.726	-40.5 -56.0	V V	3.0	45.3	35.3	1.0	-29.5	-13.0	-16.5	
2.770	U.ØC-	V	3.0	49.5	34.7	1.0	40.3	-13.0	-27.3	
	1 1									

Note: No other emissions were detected above the system noise floor.

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EVDO-REV A Mode (PCS Band)

			Co Above 1GH	mpliance C Iz High Free			Measure	ment				
Project Date:7/1 Test En Configu	y:Qualcomm #:09U12627 5/2009 gineer:Chin Pa ration:EUT and X, PCS, EV-DO	l Magnetic D	Dipole Antenr	na								
	Chambe	r	P	re-amplifer			Filter			Limit		
3m Chamber -			Т34 8	449B	Ŧ	Filter 1				TX Part 24 -		
f	SA reading			Path Loss		Filter	EIRP	Limit	Delta	Notes		
GHz	(dBm) 1851.25MHz	(H/∨)	(m)	(dB)	(dB)	(dB)	(dBm)	(dBm)	(dB)			
Low Ch,1 3.703	47.8	Н	3.0	44.7	35.4	1.0	-37.5	-13.0	-24.5			
5.554	-47.0	H	3.0	49.7	34.7	1.0	45.5	-13.0	-24.5			
11.107	-64.0	H	3.0	56.2	34.8	1.0	41.6	-13.0	-28.6			
3.703	-46.5	٧	3.0	44.9	35.4	1.0	-36.0	-13.0	-23.0			
5.554	-57.5	٧	3.0	49.2	34.7	1.0	42.1	-13.0	-29.1			
9.256	-63.0	٧	3.0	54.5	35.2	1.0	42.8	-13.0	-29.8			
11.108	-58.8	V	3.0	56.2	34.8	1.0	-36.4	-13.0	-23.4			
Mid Ch, 1	1880MHz											
3.760	45.5	Н	3.0	44.8	35.3	1.0	-35.0	-13.0	-22.0			
5.640	-59.3	Н	3.0	49.9	34.7	1.0	43.1	-13.0	-30.1			
3.760	47.1	٧	3.0	45.1	35.3	1.0	-36.3	-13.0	-23.3			
5.640	-60.0	٧	3.0	49.3	34.7	1.0	_44.4	-13.0	-31.4			
11.280	-60.5	۷	3.0	56.4	34.7	1.0	-37.9	-13.0	-24.9			
High Ch.	1908.75MHz											
3.818	42.1	Н	3.0	45.0	35.3	1.0	-31.4	-13.0	-18.4			
5.726	-59.0	Н	3.0	50.1	34.7	1.0	42.7	-13.0	-29.7			
3.818	-42.0	V	3.0	45.3	35.3	1.0	-31.0	-13.0	-18.0			
5.726	-60.0	٧	3.0	49.5	34.7	1.0	44.3	-13.0	-31.3			
	-64.4	V	3.0	54.8	35.3	1.0	43.8	-13.0	-30.8			
9.544	••••••											

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11.3. RECEIVER SPURIOUS EMISSIONS

RULE PART(S)

FCC: N/A IC: RSS-132, 4.6; RSS-133, 6.6, RSS-Gen

<u>LIMIT</u>

RSS-Gen 6 (a) - If a radiated measurement is made, all spurious emissions shall comply with the limits of Table 1.

Table 1 - Spurious Emission Limits for Receivers:

Spurious Frequency (MHz)	Field Strength(microvolt/m at 3 meters)
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	500

TEST PROCEDURE

RSS-Gen 4.10 - The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is the higher, to at least 3 times the highest tuneable or local oscillator frequency, whichever is the higher, without exceeding 40 GHz.

RESULTS

See the following pages.

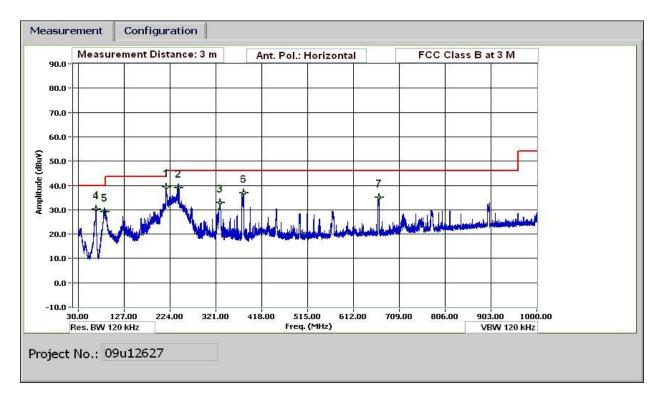
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RECEIVER SPURIOUS EMISSIONS FOR 30 TO 1000 MHz

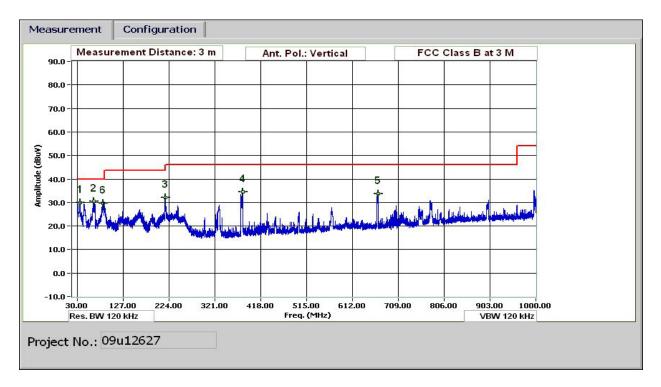
Fest Engr: Date: Project #: Company: EUT Descri EUT M/N: Fest Target Mode Open	:	Chin Par 07/17/09 09U12627 Qualcom Fenway, 4 FENWAY FCC Clas Normal	- m 802.11bg,	, BT, V	WAN C	'ombo Mu	ıdule						
	f Dist Read AF CL	Measurem Distance t Analyzer I Antenna F Cable Loss	o Antenn Reading Factor		Amp D Corr Filter Corr. Limit	Preamp (Distance Filter Ins Calculate Field Stre	Correct ert Loss d Field St	÷ .		Margin	Margin vs.	. Limit	
f	Dist	Read	AF	CL	Атр	D Corr		Corr.	Limit		Ant. Pol.		Notes
MHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
horiz data 67.442	3.0	49.8	8.2	0.7	28.3	0.0	0.0	30.3	40.0	-9.7	н	EP	
36.522	3.0	49.1	•. <u>-</u> 7.5	0.8	28.3	0.0	0.0	29.2	40.0	-10.8	H H	EP	
216.968	3.0	53.6	11.9	1.2	27.4	0.0	0.0	39.3	46.0	-10.0	H	EP	
242.889	3.0	53.3	11.3	1.2	27.4	0.0	0.0	39.0	46.0	-7.0	H	EP	
329.772	3.0	45.1	14.0	1.6	27.6	0.0	0.0	33.0	46.0	-13.0	H	EP	
379.814	3.0	48.4	14.7	1.7	27.9	0.0	0.0	36.9	46.0	-9.1	H	EP	
666.266	3.0	42.4	18.8	2.3	28.5	0.0	0.0	34.9	46.0	-11.1	H	EP	
35.520	3.0	40.6	17.1	0.5	28.4	0.0	0.0	29.9	40.0	-10.1	V	EP	
64.321	3.0	50.0	8.1	0.7	28.3	0.0	0.0	30.4	40.0	-9.6	V	EP	
84.602	3.0	49.5	7.7	0.8	28.3	0.0	0.0	29.7	40.0	-10.3	V	EP	
217.088	3.0	46.4	11.9	1.2	27.4	0.0	0.0	32.1	46.0	-13.9	V	EP	
379.814	3.0	46.1	14.7	1.7	27.9	0.0	0.0	34.6	46.0	-11.4	V	EP	
579.814 666.266	3.0	41.2	18.8	2.3	28.5	0.0	0.0	33.8	46.0	-12.2	v	EP	

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HORIZONTAL PLOT



VERTICAL PLOT



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RECEIVER SPURIOUS EMISSIONS FOR ABOVE 1GHz

Note: No emissions were found within above 1GHz of 20dB below the system noise floor.

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