

Test Report On
Dual-Band CDMA 1xRTT Digital Wireless Module

FCC Part 22 & 24 Certification IC RSS-129 & 133	
FCC ID:	OVFKWC-M300
IC #:	3572A-M300
Models:	M300
Date:	Aug. 25, 2008

STATEMENT OF CERTIFICATION	
<i>The data, data evaluation and equipment configuration represented herein are a true and accurate representation of the measurements of the sample's radio frequency interference emissions characteristics as of the dates and at the times of the test under the conditions herein specified.</i>	
STATEMENT OF COMPLIANCE	
<i>This product has been shown to be capable of compliance with the applicable technical standards as indicted in the measurement report and was tested in accordance with the measurement procedures specified in §2.947.</i>	
Date of Test:	Aug. 15 - Aug. 25, 2008
Test performed by:	Kyocera Wireless Corp. 10300 Campus Point Drive San Diego, CA 92121
Report Prepared by:	Binh Thai, Test Technician
Report Reviewed by:	C.K. Li, Director of Regulatory Engineering
Compliance Certification Services (CCS) performed the tests that required an OATS site.	

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1 General Information

Applicant:	Kyocera Wireless Corp 10300 Campus Point Drive San Diego CA 92121	
FCC ID:	OVFKWC-M300	
Product:	Dual-Band 1xRTT CDMA Cellular Phone	
Model Numbers:	M300	
EUT Serial Number:	FFM30000001559	
Type:	<input type="checkbox"/> Identical Prototype, <input type="checkbox"/> Pre-Production, <input checked="" type="checkbox"/> Production	
Device Category:	Portable	
RF Exposure Environment:	General Population / Uncontrolled	
Antenna:	External Antenna	
External Input:	Digital Data	
Quantity:	Quantity production is planned	
FCC Rule Parts:	§22H	§24E
Modes:	800 CDMA	1900 CDMA
Multiple Access Scheme:	CDMA	CDMA
TX Frequency (MHz):	824 – 849	1850 - 1910
Emission Designators:	1M25F9W	1M25F9W
Rated Conducted Output Power (dBm):	24.5	24.0

2 Product Description

The OVFKWC-M300 is a Dual-Band 1XRTT wireless transceiver module. The devices have assisted GPS software feature enabled to meet the emergency location requirements of the FCC's E911 Phase II mandate. The dual-band architecture is defined as 1900MHz (PCS CDMA) and 800MHz (cellular CDMA).

The device is designed in compliance with the technical specifications for compatibility of mobile and base stations in the Cellular Radio telephone service contained in "Cellular System Mobile Station -Land Station Compatibility Specification" as specified in OET Bulletin 53 and TIA Standards.

Station -Land Station Compatibility Specification" as specified in OET Bulletin 53 and TIA Standards

3 Measurement Conditions for CDMA2000

The device supports CDMA2000 in 1X (Phase I, Protocol revision 6). CDMA2000 1X includes TIA/EIA-95B as a subset and was approved for publishing in July 1999. It provides voice and data capabilities within a standard 1.25 MHz CDMA channel. This RF bandwidth is identical to the legacy IS-95 B system standard.

For Part 22 and 24, all measurements were conducted with Agilent 8960 as a base station simulator. The base station simulator establishes a CDMA link with the test device:

1xRTT	Protocol Rev :	6
	Data rate :	Full
	TDSO F-SCH :	153.6 kpps
	TDSO R-SCH :	153.6 kbps
	Power Control :	All up bits

The device was pre-tested under all RC/SO configuration to determine the worst case scenario:

CDMA 800 CONFIGURATION (Full Rate)		CONDUCTED POWER (dBm)					
		Ch 1013		Ch 383		Ch 777	
		Ave	Peak	Ave	Peak	Ave	Peak
SO2	RC1	24.59	29.16	25.02	29.68	24.31	29.35
	RC3	24.68	28.98	25.07	29.16	24.46	28.55
SO55	RC1	24.57	29.13	25.05	29.57	24.43	28.97
	RC3	24.46	28.74	24.82	28.83	24.18	28.22
TDSO	RC3 (FCH)	24.79	28.07	25.15	29.32	24.46	28.65
SO32	RC3 (FCH+SCH)	24.70	28.92	25.14	29.45	24.74	28.83

CDMA 1900 CONFIGURATION (Full Rate)		CONDUCTED POWER (dBm)					
		Ch 25		Ch 600		Ch 1175	
		Ave	Peak	Ave	Peak	Ave	Peak
SO2	RC1	23.88	26.91	24.25	27.82	24.48	27.43
	RC3	24.34	27.08	24.26	27.85	24.71	27.35
SO55	RC1	24.30	27.26	24.16	28.03	24.60	27.58
	RC3	24.33	27.13	24.19	27.85	24.45	27.27
TDSO	RC3 (FCH)	24.41	27.29	24.34	28.06	24.76	27.65
SO32	RC3 (FCH+SCH)	24.30	27.16	24.29	27.92	24.71	27.53

Summary of Results

FCC CFR 47	IC	Test	Results	Reference
Transmitter Section				
§2.1046(a), 22.913(a), 24.238(a)	RSS-GEN 4.9	Conducted RF output power	Pass	Section 4
§22.913(a)(2), 24.232(c)	RSS-132 RSS-133 (6.4)	Radiated RF output Power	Pass	Section 4
§2.1049(h), 22.917(a), 24.238(a)	N/A	Occupied Bandwidth	Pass	Section 5
§2.1051, 22.917(a), 24.238(a)	RSS-132 (4.5) RSS-133 (6.5)	Spurious emissions at antenna terminals	Pass	Section 6
§2.1053 22.917(a), 24.238(a)	RSS-132, RSS-133 (6.3)	Spurious radiated emissions	Pass	Section 7
§2.1055, 22.355, 24.235	RSS-132 (4.3), RSS-133 (6.3)	Frequency stability	Pass	Section 9
Receiver/Digital Section				
§ 15.107	RSS-GEN (7.2.2)	AC Line Conducted Emissions	Pass	Section 8
§ 15.109	RSS-132 RSS-133 (6.7) RSS-GEN	Radiated Emissions	Pass	Section 8
RF Exposure				
§2.1091/2.1093	RSS-102	SAR	Pass	Section 10
§2.1091/2.1093	RSS-102	MPE	Pass	Section 11

4 Transmitter RF Power Output

4.1 Conducted Power

FCC: § 2.1046	IC: RSS-132, RSS-133
<p>Measurement Procedures:</p> <p>The Peak and Average RF output power was measured using a Giga-tronics 8541C Universal Power Meter. Terminated to a resistive coaxial load of 50 ohms.</p>	

Mode	Frequency (MHz)	Channel	Max. Power (dBm)	
			Average	Peak
CDMA 800	824.70	1013	24.79	28.07
	836.52	383	25.15	29.32
	848.31	777	24.46	28.65
CDMA 1900	1851.25	25	24.41	27.29
	1880.00	600	24.34	28.06
	1908.75	1175	24.76	27.65

4.2 Radiated Power

FCC: § 22.913, § 24.232	IC: RSS-132, RSS-133 (6.4)
<p>Measurement Procedures:</p> <p>Tests were performed in OATS using substitution method. See separated radiated emission report for details.</p>	

Mode	Frequency (MHz)	Channel	Max. Power (dBm)	Ref.
CDMA 800	824.70	1013	27.3	ERP
	836.52	383	29.8	
	848.31	777	29.7	
CDMA 1900	1851.25	25	29.6	EIRP
	1880.00	600	31.2	
	1908.75	1175	31.1	

5 Occupied Bandwidth

FCC: § 2.1049, § 22.917(b)(d), § 24.238	IC: N/A
<p>Measurement Procedures:</p> <p>The RF output of the EUT was connected to the input of the spectrum analyzer (S.A.) with sufficient attenuation.</p> <p>S.A. Setting: RBW=30kHz, VBW=100kHz</p>	

List of Figures

Figure	Mode	Description
5-1	CDMA 800	CDMA @ Ch383
5-2	CDMA 1900	CDMA @ CH600

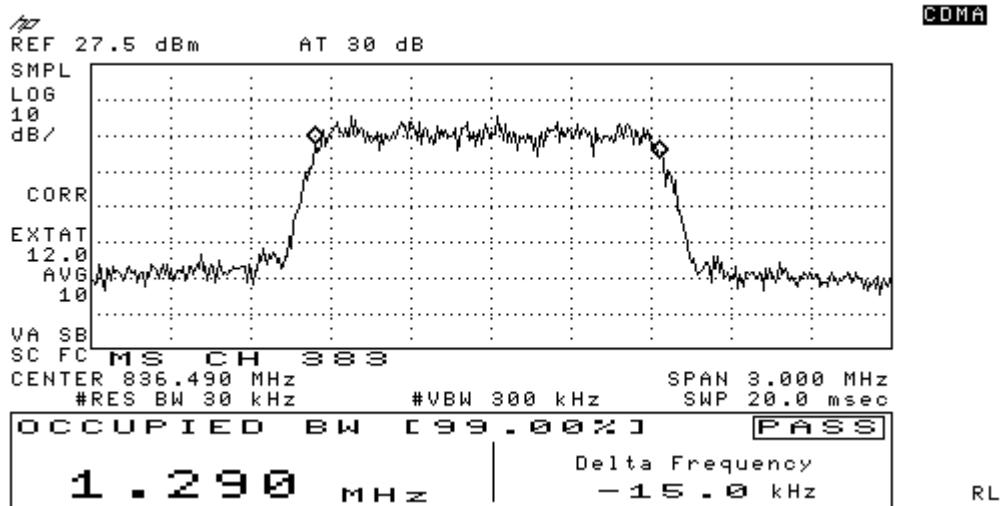


Figure 5-1 CDMA 800 @ CH 383

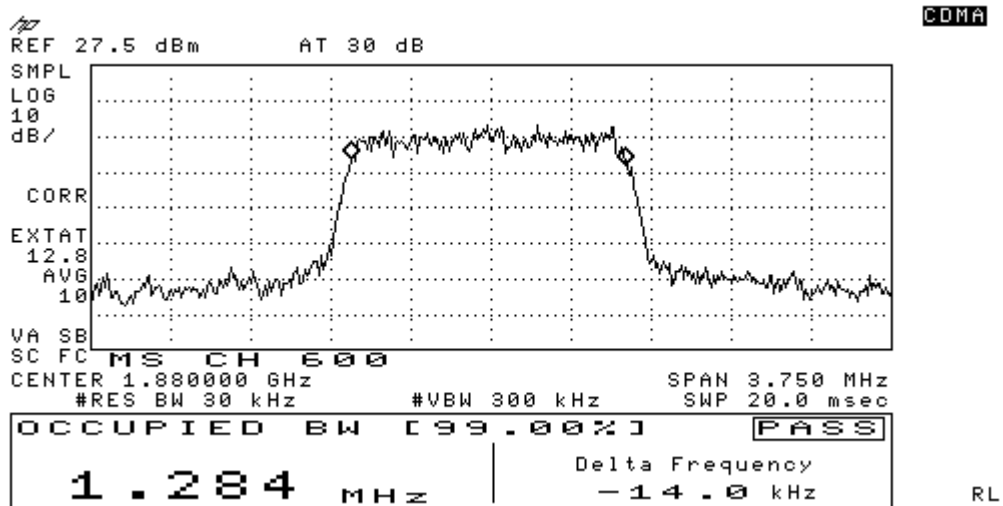


Figure 5-2 CDMA 1900 @ CH 600

6 Spurious Emissions At Antenna Terminals

FCC:	§ 2.1051, § 22.917(e)(f), § 24.238	IC:	RSS-132 (4.5), RSS-133 §6.5
Measurement Procedures:			
<p><u>Out of Band:</u> The RF output of the EUT was connected to the input of the spectrum analyzer with sufficient attenuation. The modulating signal was applied accordingly. The frequency spectrum was investigated from the lowest frequency signal generated up to at least the tenth harmonic of the fundamental.</p> <p>S.A. Setting: RBW=1MHz, VBW=1MHz</p> <p><u>Band-Edge:</u> @ ch 25 and 1175</p> <p>S.A. Setting: RBW=30kHz, VBW=30kHz</p> <p><u>Base Band:</u> Spectrum was investigated from 869-894 MHz for Cellular.</p> <p>S.A. Setting: RBW=10kHz, VBW=10kHz</p>			

List of Figures:

Figure	Mode	Channel	Plot Description
6-1	CDM A 800	1013	Emissions in base station frequency range, 869 - 894 MHz
6-2			Conducted spurious emissions, 9kHz to 10GHz
6-3		383	Emissions in base station frequency range, 869 - 894 MHz
6-4			Conducted spurious emissions, 9kHz to 10GHz
6-5		777	Emissions in base station frequency range, 869 - 894 MHz
6-6			Conducted spurious emissions, 9kHz to 10GHz
6-7	CDM A 1900	25	Conducted spurious emissions, 9kHz to 20GHz
6-8			Lower Band Edge @ CH 25
6-9		600	Conducted spurious emissions, 9kHz to 20GHz
6-10		1175	Conducted spurious emissions, 9kHz to 20GHz
6-11			Upper Band Edge @ CH 1175

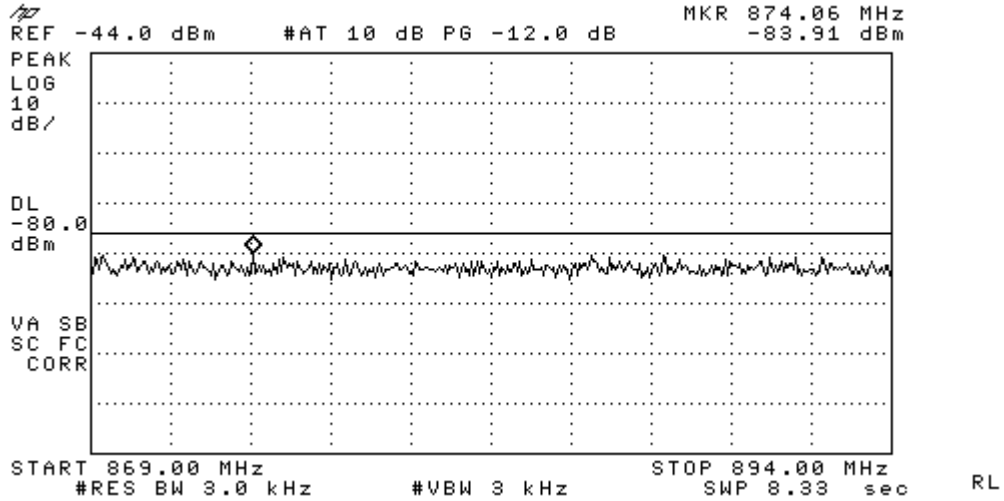


Figure 6-1 CDMA 800 - Emissions in base station frequency range (CH 1013)

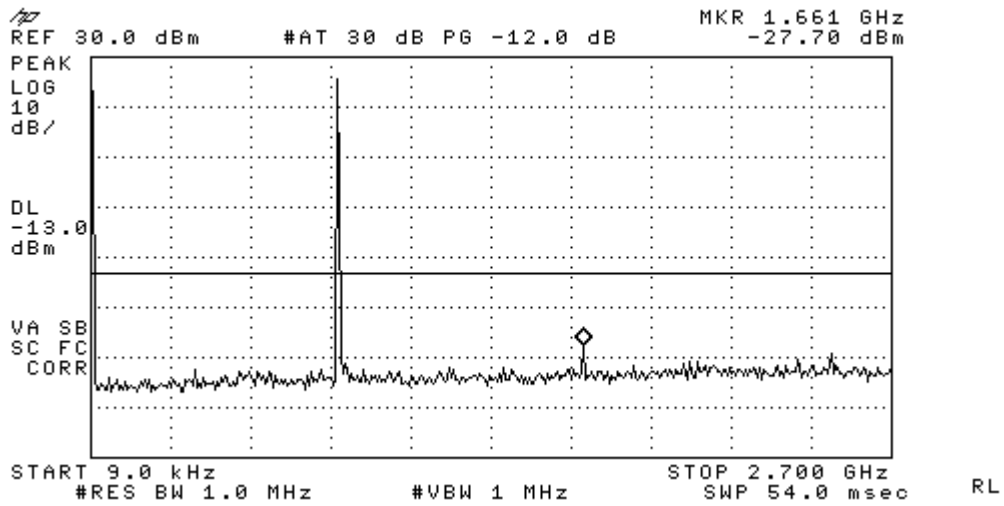


Figure 6-2a CDMA 800 – Conducted Spurious Emission (CH 1013)

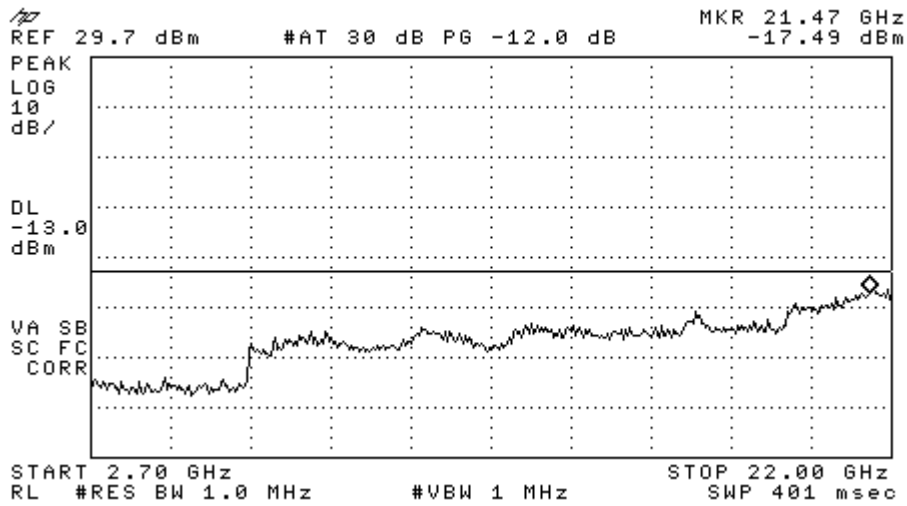


Figure 6-2b CDMA 800 – Conducted Spurious Emission (CH 1013)

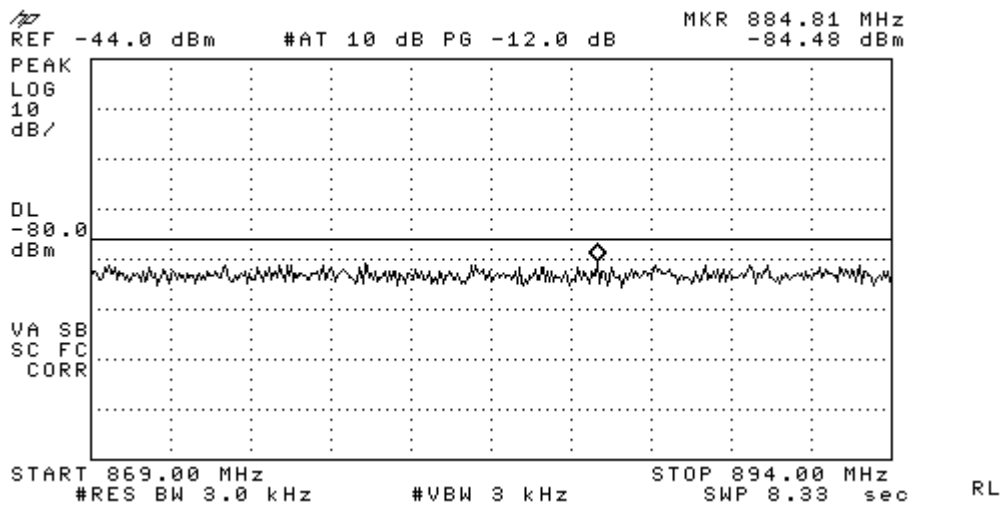


Figure 6-3 CDMA 800 - Emissions in base station frequency range (CH 383)

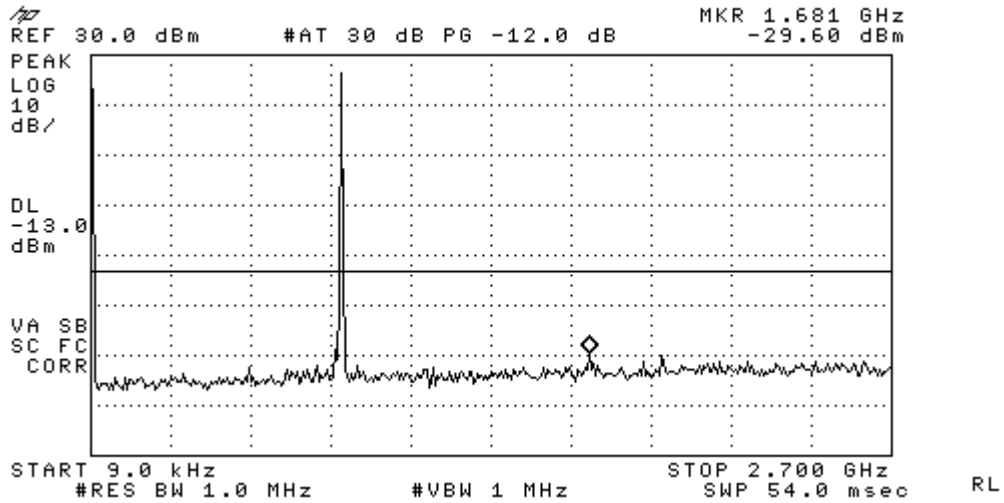


Figure 6-4a CDMA 800 – Conducted Spurious Emission (CH 383)

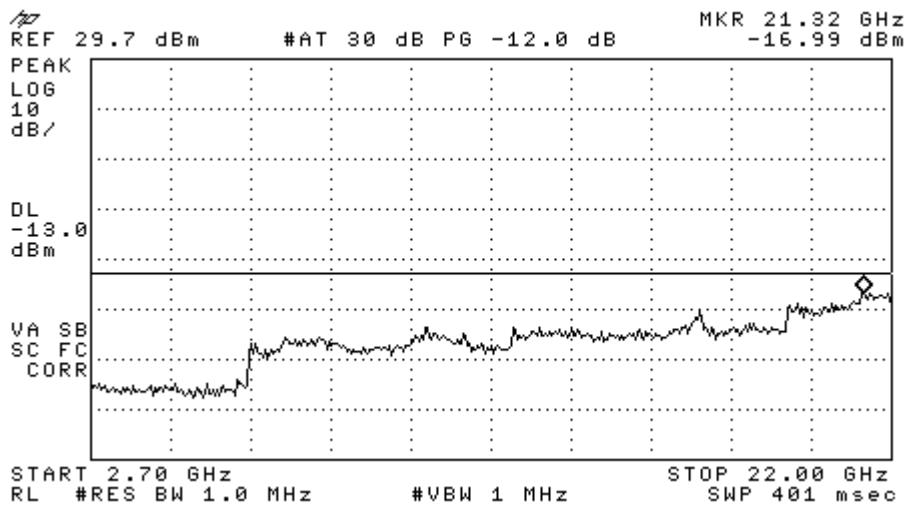


Figure 6-4b CDMA 800 – Conducted Spurious Emission (CH 383)

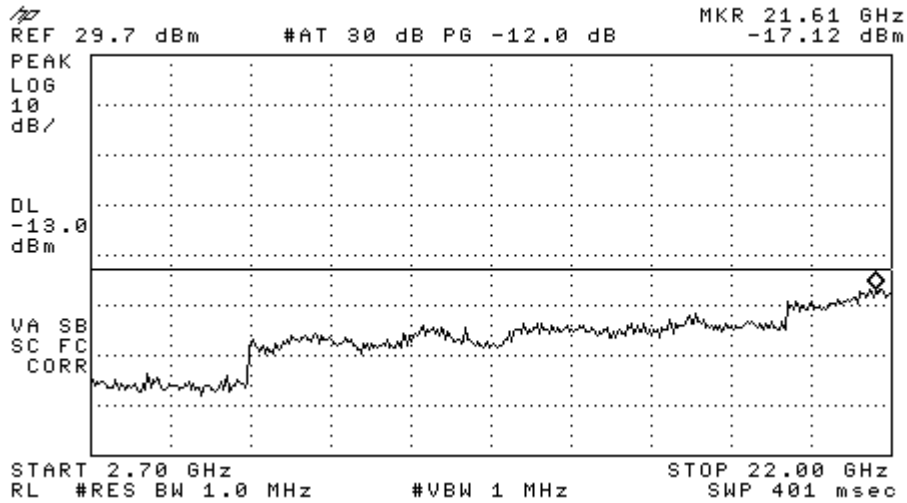


Figure 6-6b CDMA 800 – Conducted Spurious Emission (CH 777)

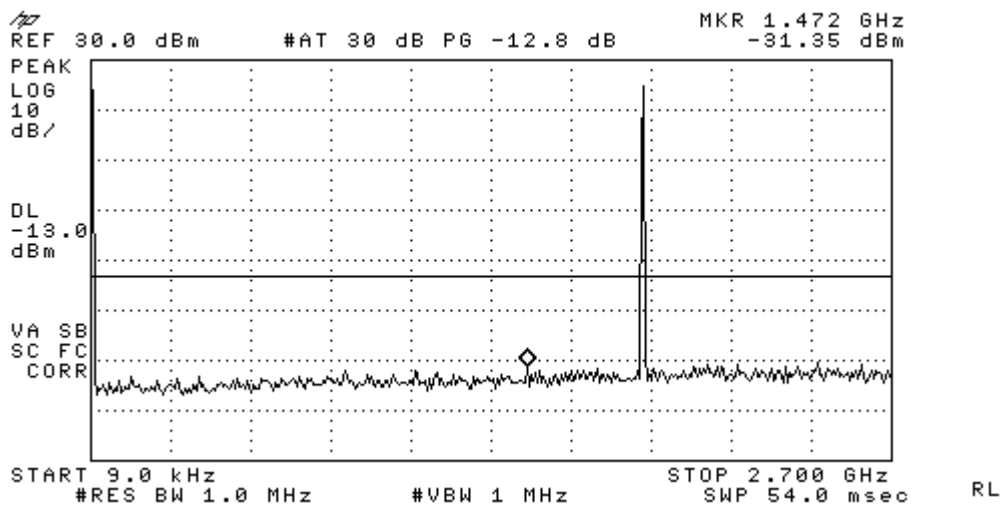


Figure 6-7a CDMA 1900 - Conducted Spurious Emission (CH 25)

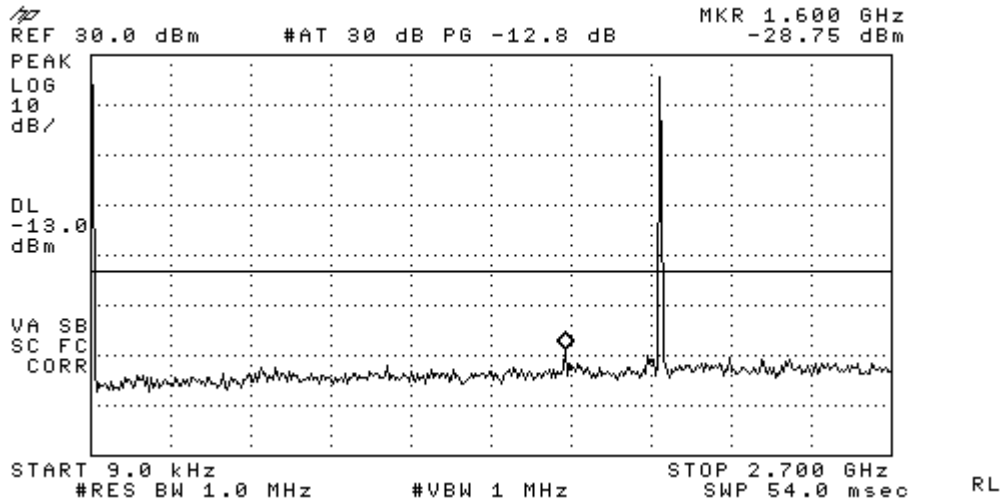


Figure 6-10a CDMA 1900 - Conducted Spurious Emission (CH 1175)

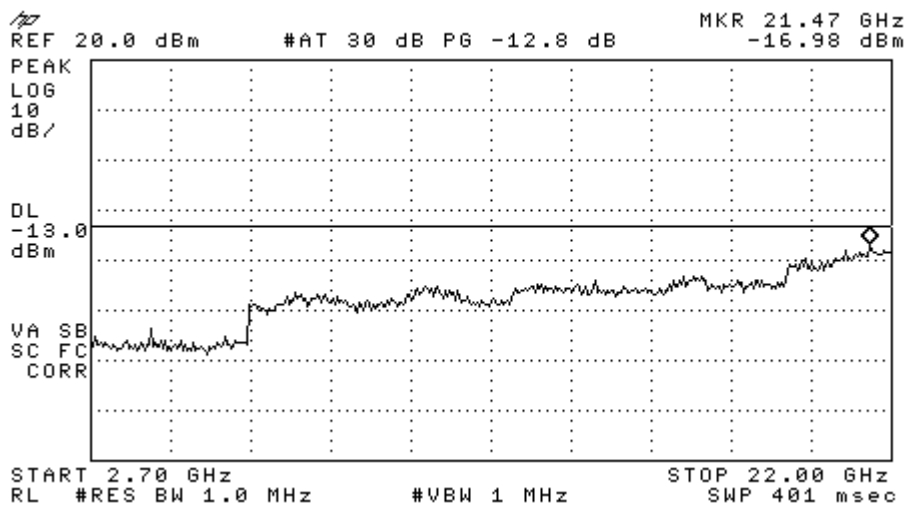


Figure 6-10b CDMA 1900 - Conducted Spurious Emission (CH 1175)

7 Transmitter Radiated Spurious Emissions Measured Data

FCC: § 2.1053, § 22.91, § 24.238	IC: RSS-132, RSS-133 §6.3
<p>Measurement Procedures:</p> <p>To determine the applicable configurations on CDMA system, the EUT were put in varies R.C./S.O. operation modes. Worst case configurations for Radiated Emissions were determined by peak conducted power as in section 3.</p> <p>The worst case configurations found were fully tested on a 3-meter site at CCS, California. The test report is attached in a separate attachment.</p>	

8 Receiver Spurious Emissions

FCC: § 15.109	IC: RSS-132 (4.6), RSS-133 §9
<p>Measurement Procedures:</p> <p>The receiver radiated spurious emission test was performed at CCS, California. The test report is attached in a separate attachment.</p>	

9 Transmitter RF Carrier Frequency Stability

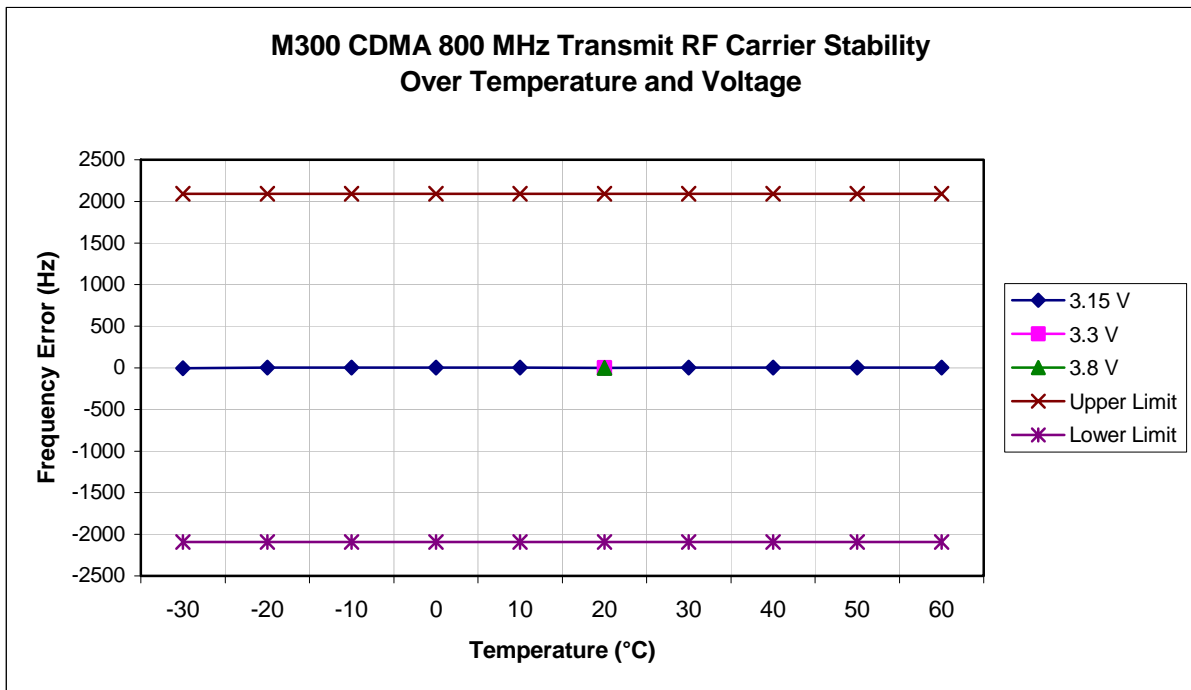
FCC: § 2.1055, § 22.355, § 24.235	IC: RSS-132 (4.3), RSS-133 (6.3)
<p>Measurement Procedures:</p> <p>The EUT was placed in an environmental chamber. The RF output of the EUT was connected to Agilent 8960 Series 10 E5515C. A power supplier was connected as primary voltage supply.</p>	

9.1 CDMA 800 Mode

Tx Frequency:	836.49 MHz	Voltage :	3.3V
Tolerance:	+/- 2.5 Ppm (+/- 2091 Hz)	Ch:	383

Temperature (°C)	Deviation of Carrier (Hz)			Specification (Hz)	
	3.15V*	3.3V	3.8V (115%)	Lower limit	Upper limit
-30		-10.72		-2091	2091
-20		17.32		-2091	2091
-10		5.57		-2091	2091
0		7.51		-2091	2091
10		-15.68		-2091	2091
20	-9.15	8.52	11.73	-2091	2091
30		-12.43		-2091	2091
40		9.35		-2091	2091
50		-15.12		-2091	2091
60		7.92		-2091	2091

Note: * Lowest Operating Voltage

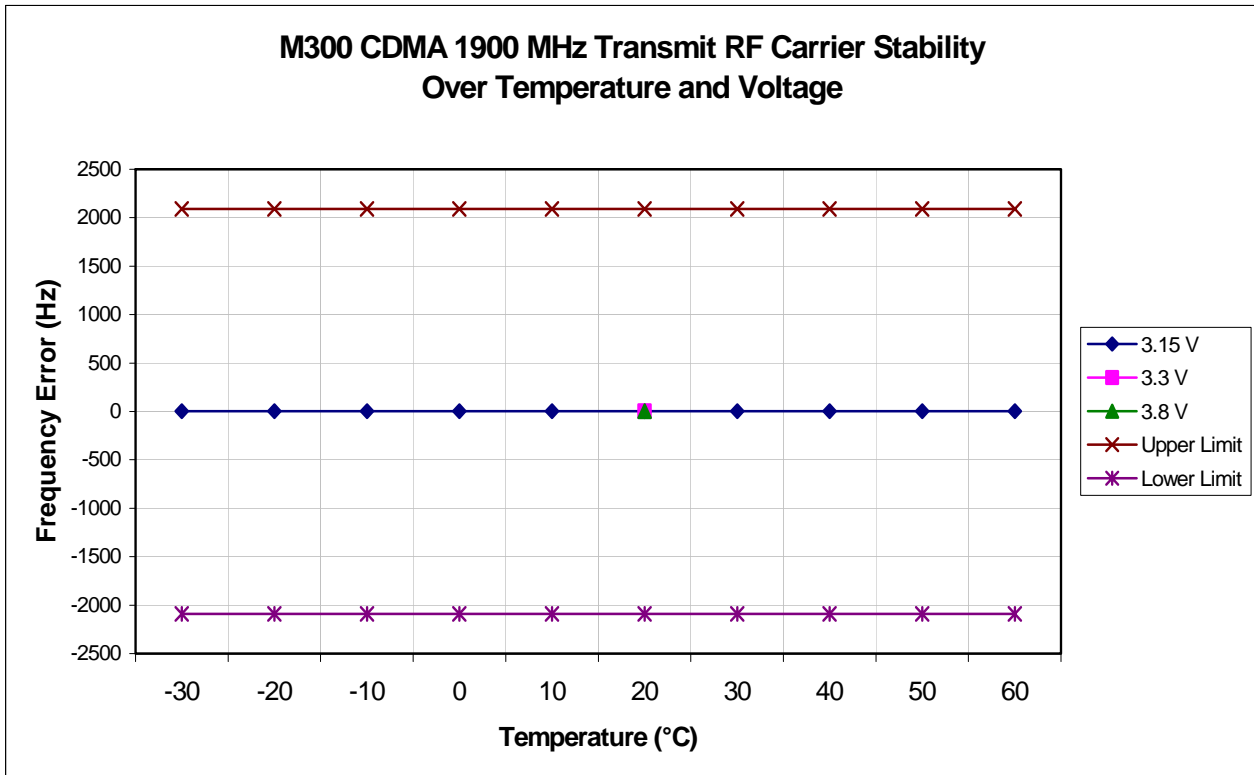


9.2 CDMA 1900 Mode

Tx Frequency:	1880.00 MHz	Voltage :	3.3V
Tolerance:	+/- 2.5 Ppm (+/-4700 Hz)	Ch:	600

Temperature (°C)	Deviation of Carrier (Hz)			Specification (Hz)	
	3.15V*	3.3V	3.8V (115%)	Lower limit	Upper limit
-30		15.41		-4700	4700
-20		-12.71		-4700	4700
-10		18.47		-4700	4700
0		-12.17		-4700	4700
10		-19.75		-4700	4700
20	13.25	-12.43	-17.42	-4700	4700
30		-11.82		-4700	4700
40		-16.51		-4700	4700
50		-15.69		-4700	4700
60		12.32		-4700	4700

Note: * Lowest Operating Voltage



10 Exposure of Humans to RF Fields (SAR)

FCC: § 2.1091, 2.1093	IC: RSS-102
Not Applicable – Mobile Devices	

11 Maximum Permissible Exposure (MPE)

FCC: § 2.1091, 2.1093	IC: RSS-102
The MPE evaluation report is showed in a separated attachment.	

12 Test Equipment

Description	Manufacturer	Model Number	Serial Number	Cal Due Date
Power Meter	Giga-tronics	8541C	1832048	07/23/09
Spectrum Analyzer	Hewlett Packard	8593EM	3710A00203	03/04/10
Spectrum Analyzer	Hewlett Packard	8595E	3911A03899	04/03/10
Wireless Communications Test Set	Agilent	8960	GB44052789	05/19/10
Temperature Chamber	CSZ	ZH2-033-033-H/AC	ZZ9622421	02/20/09