

Test Report

From

Kyocera Wireless Corp

FCC Part 24 Certification IC RSS-133	
FCC ID:	OVFKWC-KE4X3
Model:	KE413

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>	
Test performed by:	Kyocera Wireless Corp 10300 Campus Point Drive CA 92121
Report Prepared by:	C. K. Li Engineer, Staff
Tests that required an OATS site were performed by TUV Product Services.	

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1 General Information

Applicant:	Kyocera Wireless Corp 10300 Campus Point Drive San Diego CA 92121
FCC ID:	OVFKWC-KE4X3
Product:	Single-mode CDMA PCS Phone
Model Number:	KE413
EUT Serial Number:	51X0BR9J8
Type:	<input type="checkbox"/> Prototype, <input checked="" type="checkbox"/> Pre-Production, <input type="checkbox"/> Production
Device Category:	Portable
RF Exposure Environment:	General Population / Uncontrolled
Antenna:	Fixed Helix
Detachable Antenna:	Yes
External Input:	Audio/Digital Data
Quantity:	Quantity production is planned
FCC Rule Parts:	§24H
Modes:	1900 CDMA
Multiple Access Scheme:	CDMA
TX Frequency :	1850 – 1910 MHz
Emission Designators:	1M25F9W
Max. Output Power:	0.436W (26.4dBm) EIRP

2 Product Description

The phone is a single board single-mode 1XRTP product that integrates Assisted GPS capability to meet the emergency location requirements of the FCC's E911 Phase II mandate. The single-mode architecture is defined as 1900MHz (PCS CDMA). The phone will support certain CDMA2000 radio-configurations (RC) as describes in Operation Description (Exhibit 1).

3 Electronic Serial Numbers (ESN) Protection

The Single-mode Phones, FCC ID: OVFKWC-KE4X3 uses ESN. The ESN is a unique identification number to each phone which is contained in the Numeric Assignment Module and is automatically transmitted to the base station whenever a call is placed. The ESN is stored in an EPROM and is isolated from fraudulent contact and tampering. Any attempt to change the ESN will render the portable phone inoperative.

The phone complies with all requirements for ESN under Part 22.919.

4 FCC Compliance Emergency 911

FCC § 22.921

When an emergency 911 call is originated by the user, the mobile will attempt to acquire any available system and originate the emergency call on that system, disregarding restrictions set by the roaming list. The FCC NPRM WT99-13, CC94-102 automatic analog A/B roaming option has been implemented for 911 emergency calls. Note that the KE413 has Global Positioning System (GPS) support.

5 TTY compliance

FCC § 255 of the Telecom Act

KE413 has been designed for TTY Compliance with Cellular Compatibility Standard.

6 Transmitter RF Power Output

6.1 Conducted Power

FCC: § 2.1046

IC: RSS-129 §7.1, RSS-133 §6.2

Measurement Procedures:

The RF output power was measured using a Giga-tronics 8541C Universal Power Meter and HP 8594E Spectrum Analyzer that has the CDMA personality option. Terminated to a resistive coaxial load of 50 ohms.

Mode	Frequency (MHz)	Channel	Power (dBm)
CDMA 1900	1851.25	25	23.13
	1880.00	600	23.16
	1908.75	1175	23.11

6.2 Radiated Power

FCC: § 22.913, § 24.232	IC: RSS-129 §7.1 and §9.1, RSS-133 §6.2
Measurement Procedures:	
<p>The EUT was positioned on a 2-axis non-conductive positioner inside a 10 meter anechoic chamber.</p> <p>The EUT conducted power was set by the phone control software. During tests, the phone was rotated 360 degree in azimuth and elevation by an automated antenna measurement workstation. Maximum radiated power was recorded using a Giga-tronics 8541C Universal Power Meter. All measurement results are EIRP in dBm.</p>	
<p style="text-align: center;">Anechonic Chamber</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p style="text-align: center;">Horn Ant. EUT</p> <p style="text-align: center;">← 2.5 Meters →</p> </div> <p style="text-align: center;">GPIB</p> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">Giga-tronics 8541C Universal Power meter</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">PC</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Positioner controller</div> </div>	

Mode	Frequency (MHz)	Channel	Max. Power (dBm)	Ref.
CDMA 1900	1851.25	25	25.1	EIRP
	1880.00	600	25.7	
	1908.75	1175	26.4	

7 Occupied Bandwidth

FCC: § 2.1049, § 22.917(b)(d), § 24.238	IC: RSS-129 §6.3, §8.1
Measurement Procedures: The RF output of the EUT was connected to the input of the spectrum analyzer with sufficient attenuation. The spectrum with no modulation was recorded. For Digital: Modulate with full rate.	

List of Figures

Figure	Mode	Description
7-1	CDMA 1900	CDMA at RC1
7-2		CDMA 1X, F/R-FCH at RC3
7-3		CDMA 1X, F/R-FCH + F/R-SCH at RC3
7-4		Lower Band Edge @ CH25
7-5		Upper Band Edge @ CH1175

Figure 7-1 CDMA 1900 at RC1

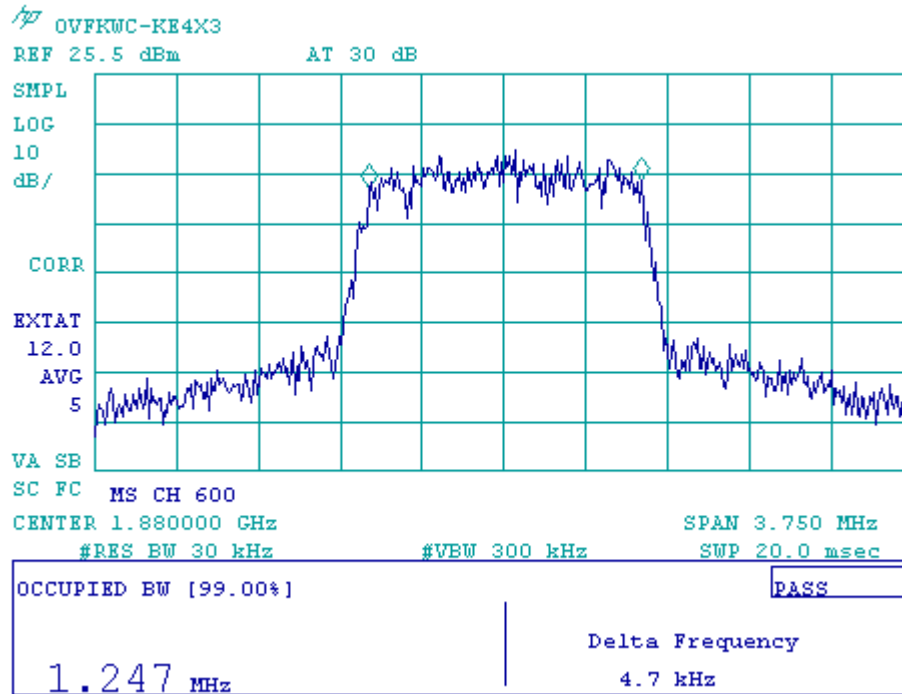


Figure 7-2a CDMA 1900 1X at RC3 (F/R-FCH)

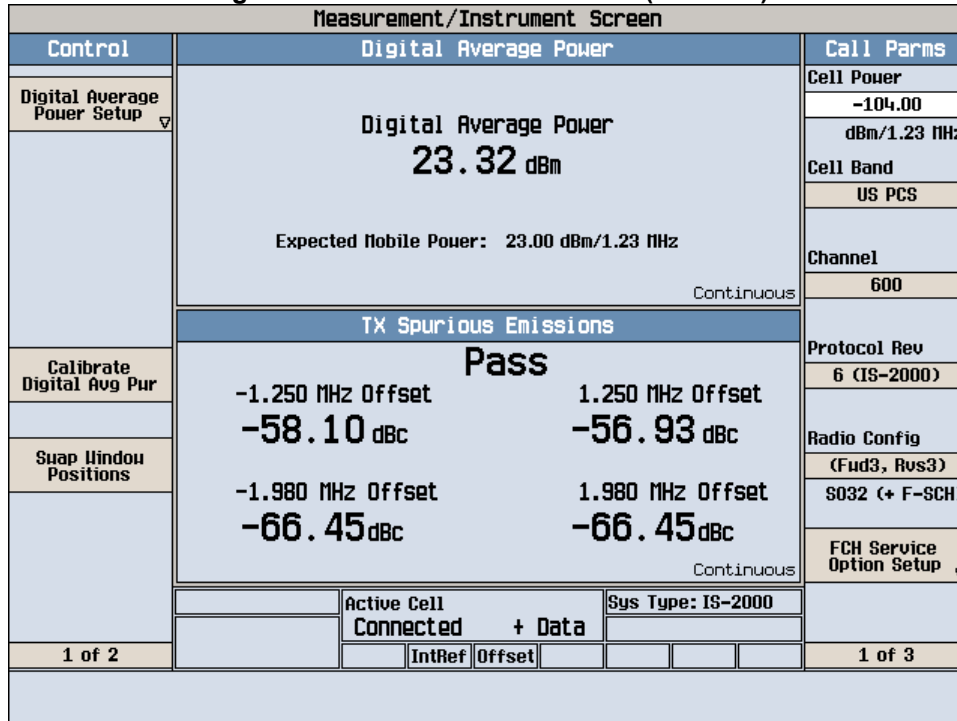


Figure 7-2b CDMA 1900 1X at RC3 (F/R-FCH)

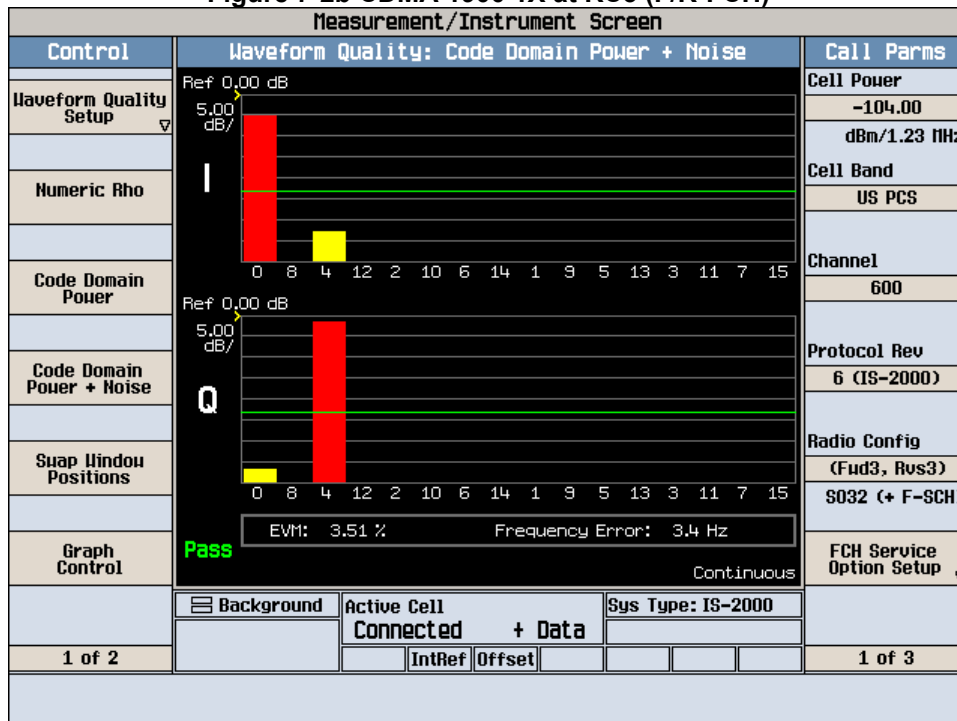


Figure 7-2c CDMA 1900 1X at RC3 (F/R-FCH)

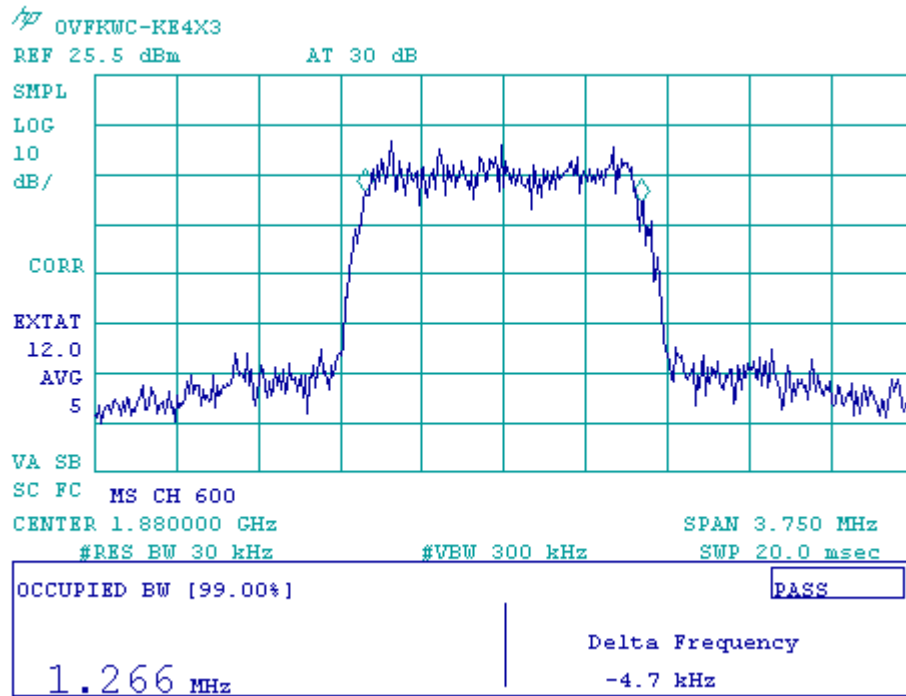


Figure 7-3a CDMA 1900 1X at RC3 (F/R-FCH + F/R-SCH)

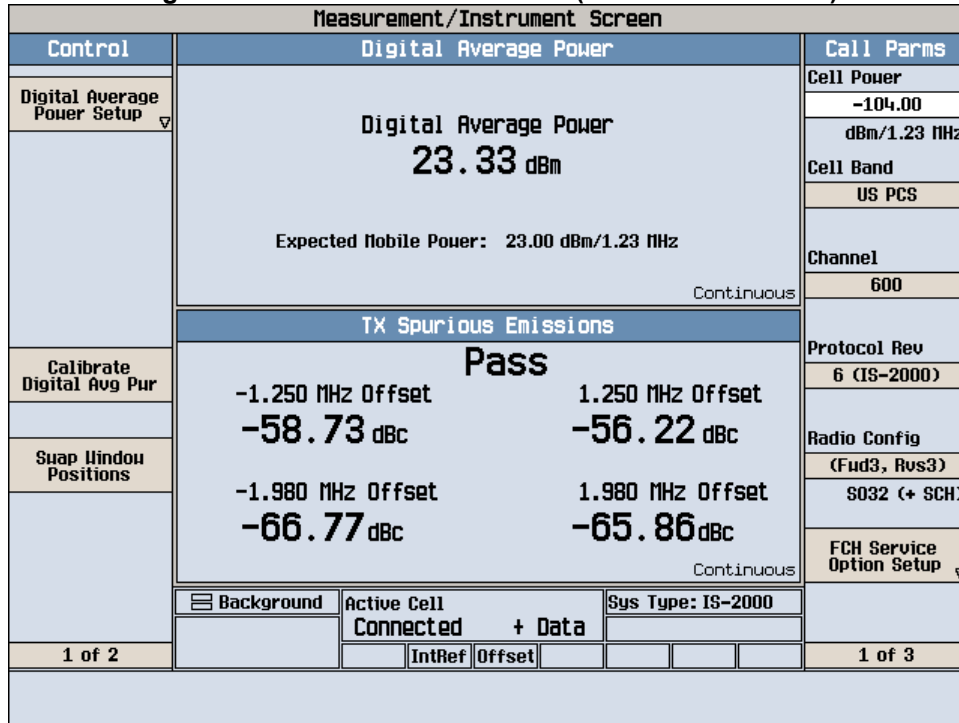


Figure 7-3b CDMA 1900 1X at RC3 (F/R-FCH + F/R-SCH)

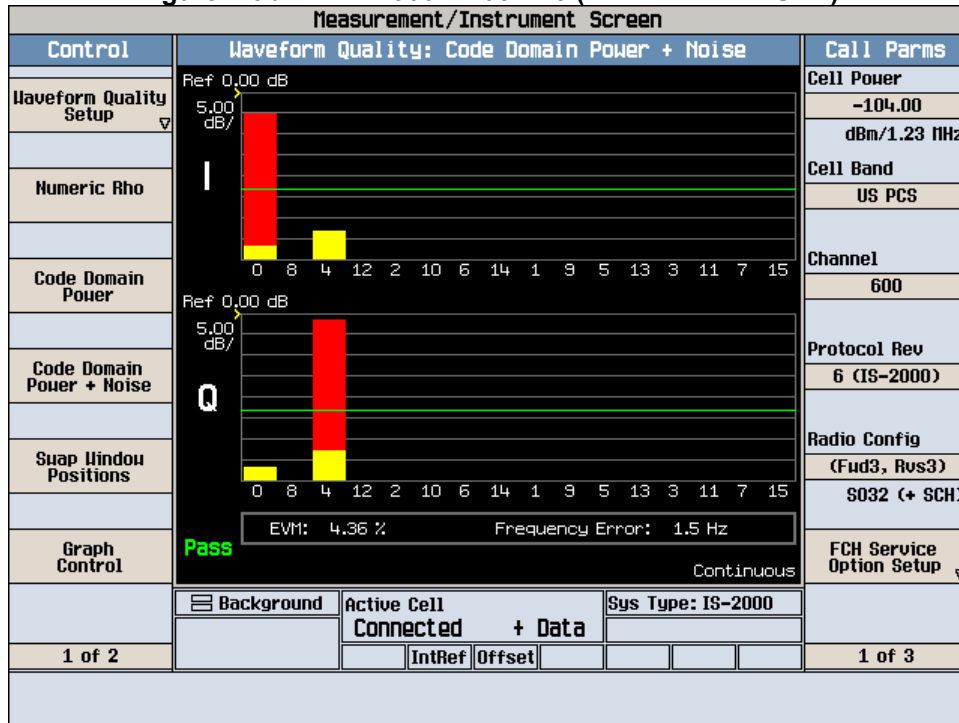


Figure 7-3c CDMA 1900 1X at RC3 (F/R-FCH + F/R-SCH)

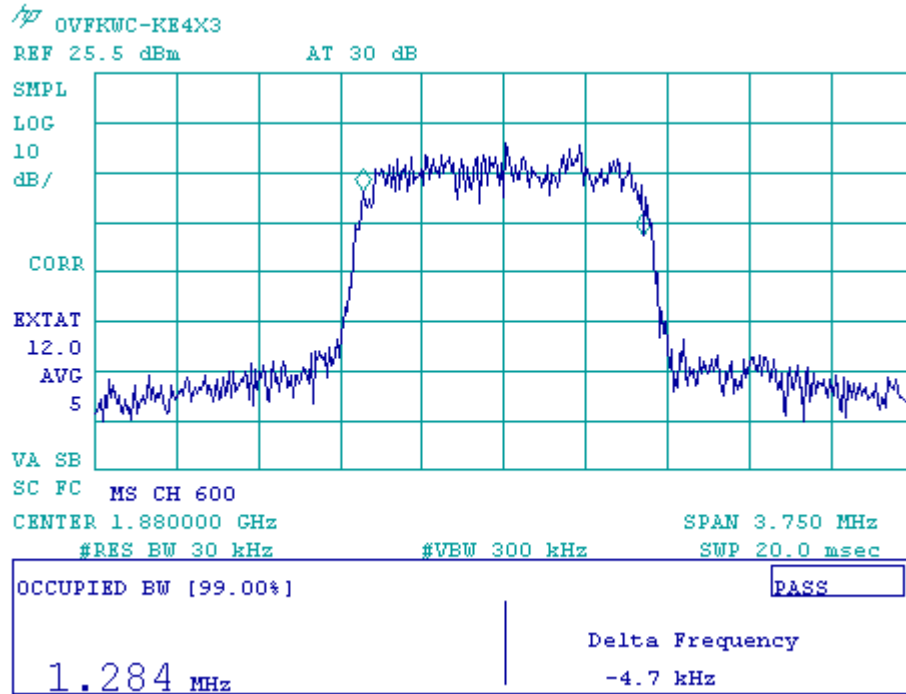


Figure 7-4 CDMA 1900 Lower Band Edge

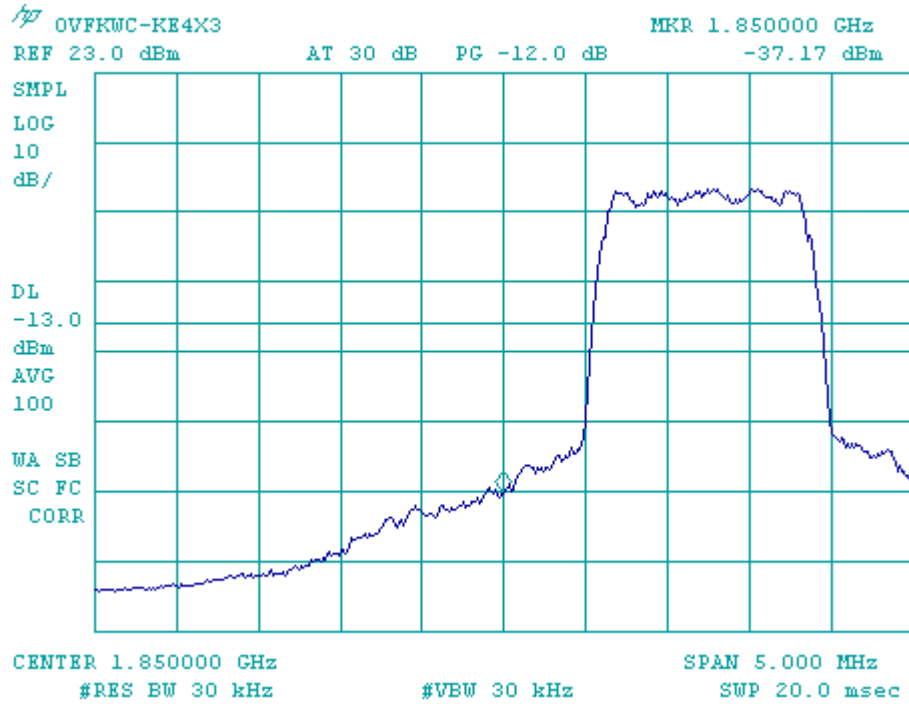
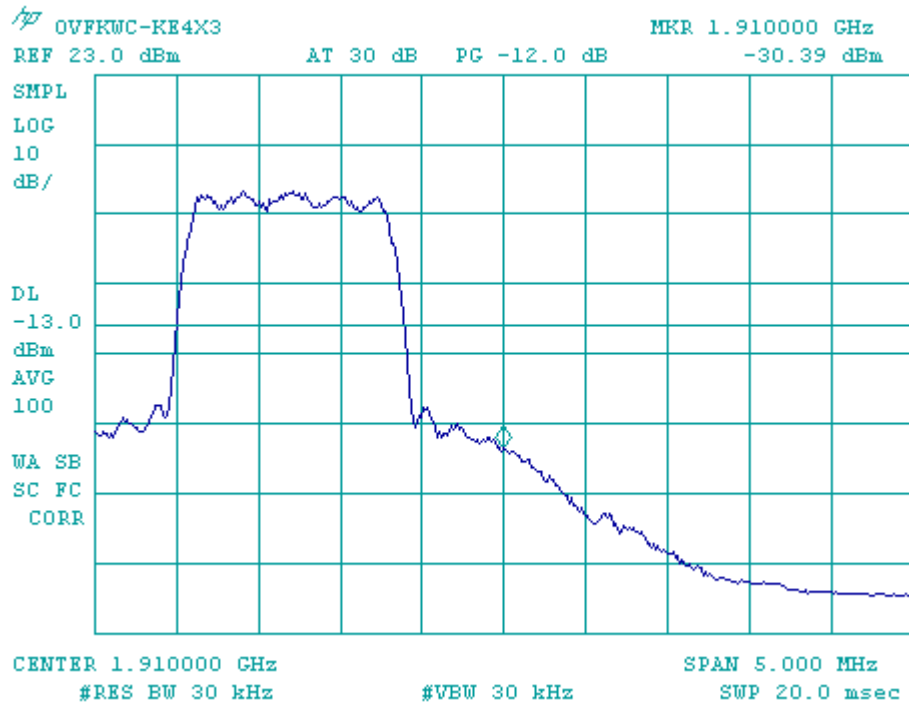


Figure 7-5 CDMA 1900 Upper Band Edge



8 Spurious Emissions At Antenna Terminals

FCC: § 2.1051, § 24.238	IC: RSS-133 §6.3
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 audio modulating signal was applied as in Section 5.0. The frequency spectrum was investigated from the lowest frequency signal generated up to at least the tenth harmonic of the fundamental.</p> <p><u>Base Band:</u> Spectrum was investigated from 869-894 MHz for Cellular.</p>	

List of Figures

Figure	Mode	Channel	Plot Description
8-1a	CDMA 1900	25	Conducted spurious emissions, 9kHz to 2.7GHz
8-1b			Conducted spurious emissions, 2.7GHz to 20GHz
8-2a		600	Conducted spurious emissions, 9kHz to 2.7GHz
8-2b			Conducted spurious emissions, 2.7GHz to 20GHz
8-3a		1175	Conducted spurious emissions, 9kHz to 2.7GHz
8-3b			Conducted spurious emissions, 2.7GHz to 20GHz

Figure 8-1a CDMA 1900 - Conducted Spurious Emission (CH 25)

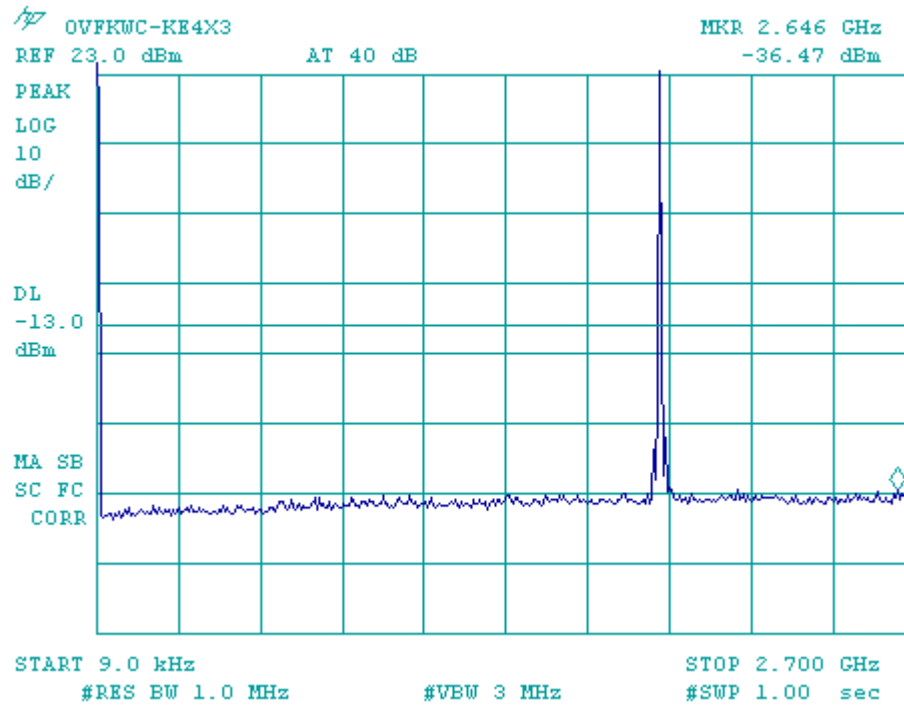


Figure 8-1b CDMA 1900 - Conducted Spurious Emission (CH 25)

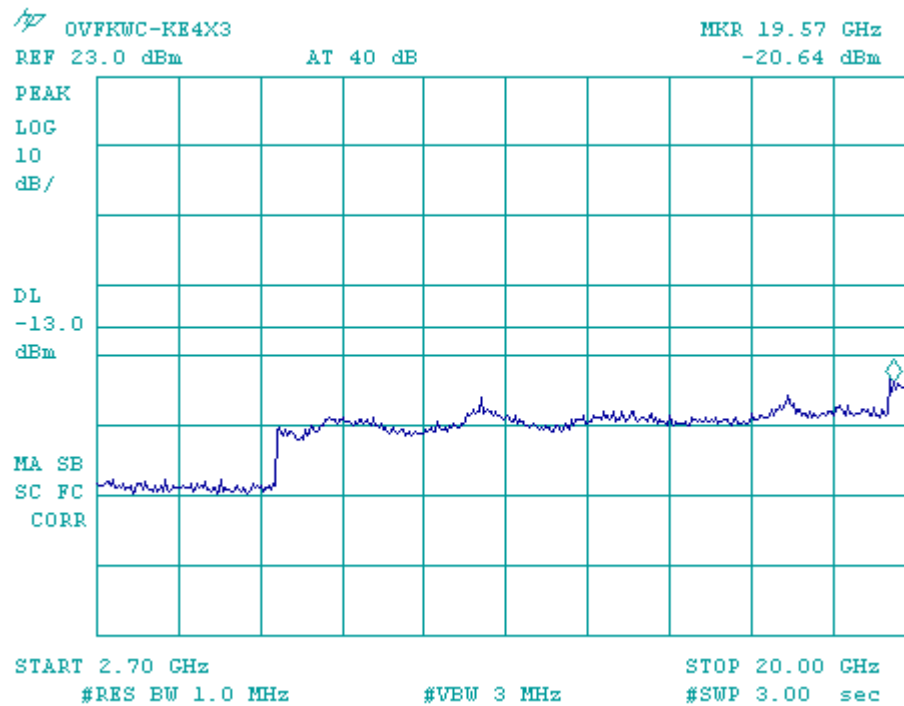


Figure 8-2a CDMA 1900 - Conducted Spurious Emission (CH 600)

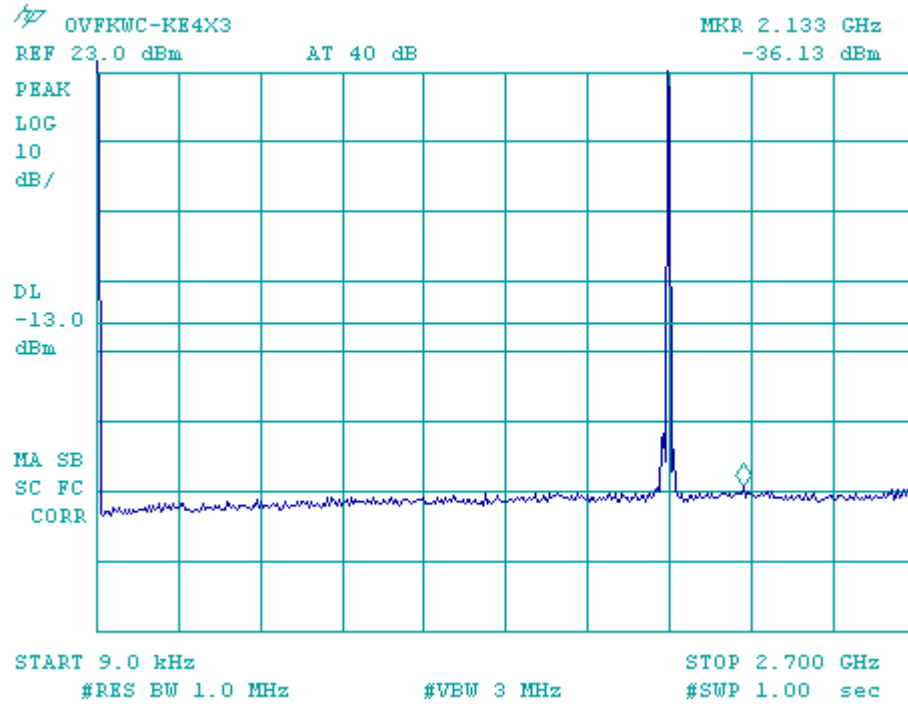


Figure 8-2b CDMA 1900 - Conducted Spurious Emission (CH 600)

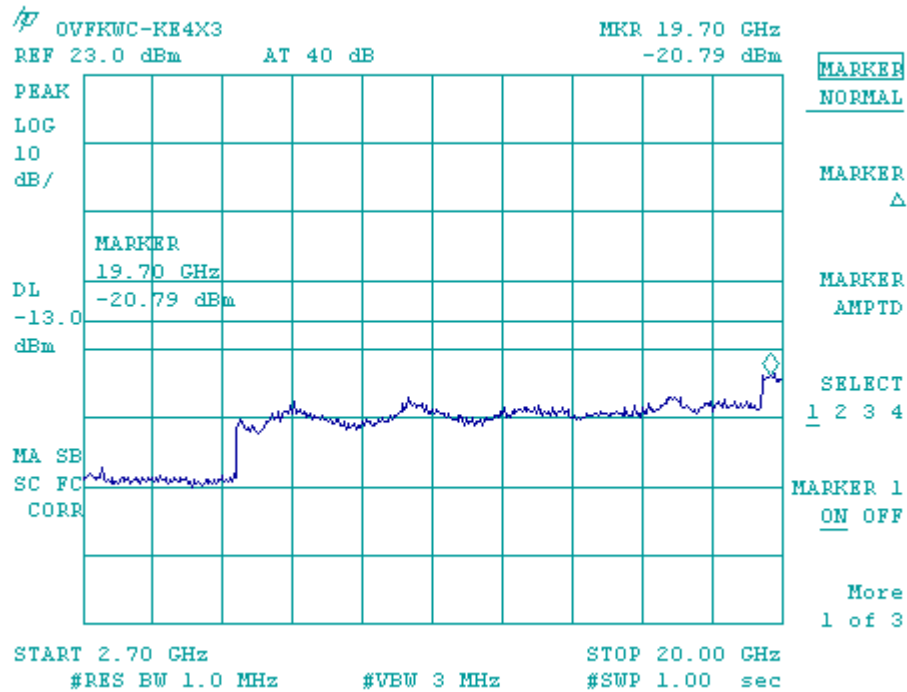


Figure 8-3a CDMA 1900 - Conducted Spurious Emission (CH 1175)

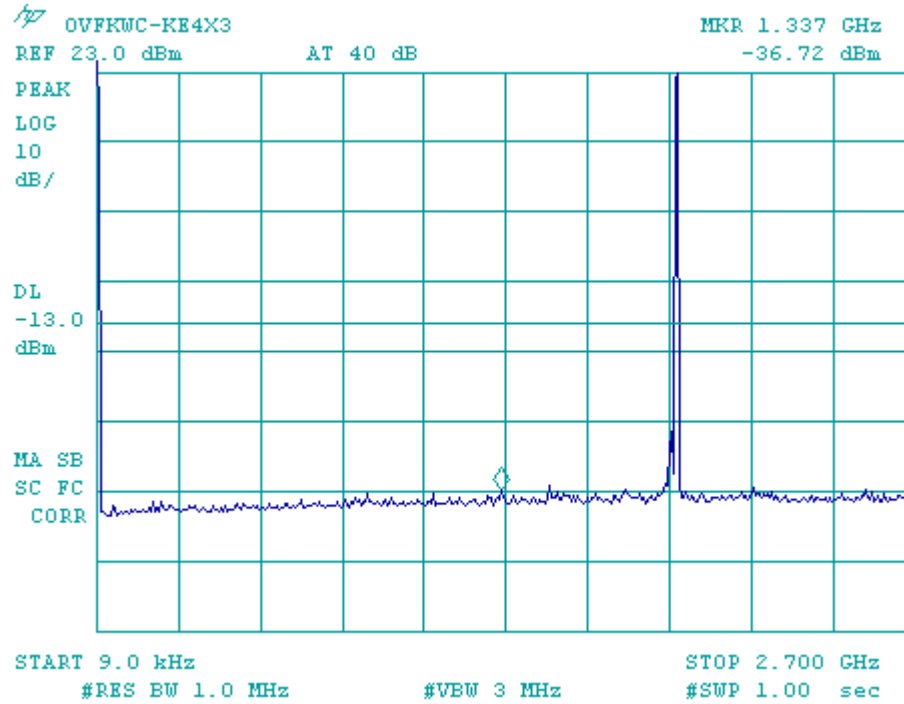
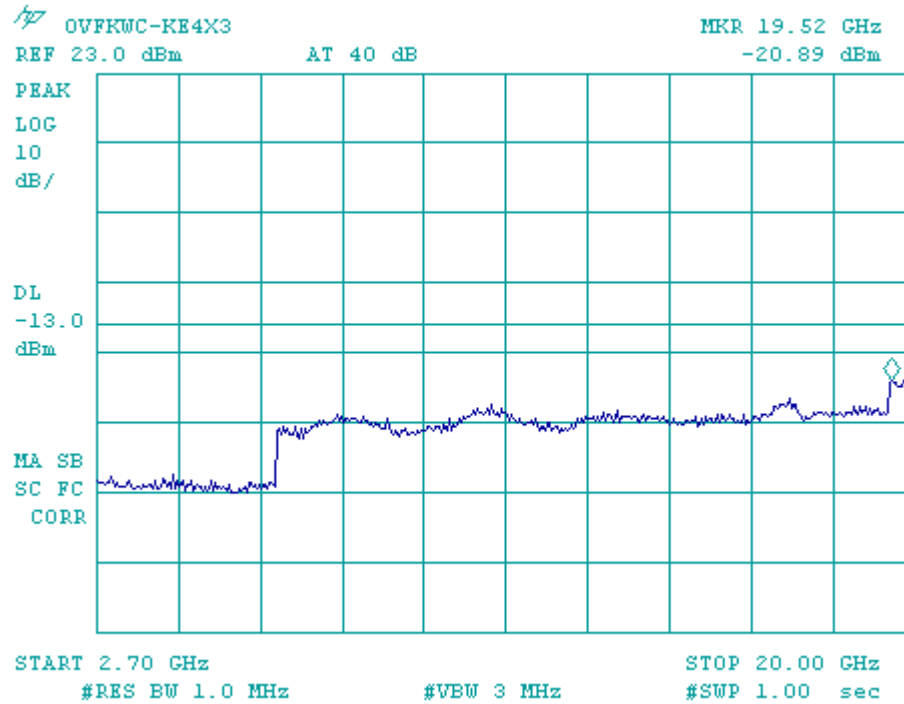


Figure 8-3b CDMA 1900 - Conducted Spurious Emission (CH 1175)



9 Transmitter Radiated Spurious Emissions Measured Data

FCC: § 2.1053, § 24.238	IC: RSS-133 §6.3
Measurement Procedures: The radiated spurious emission test was performed at TUV in San Diego, California. The test report is attached in a separate attachment.	

10 Receiver Spurious Emissions

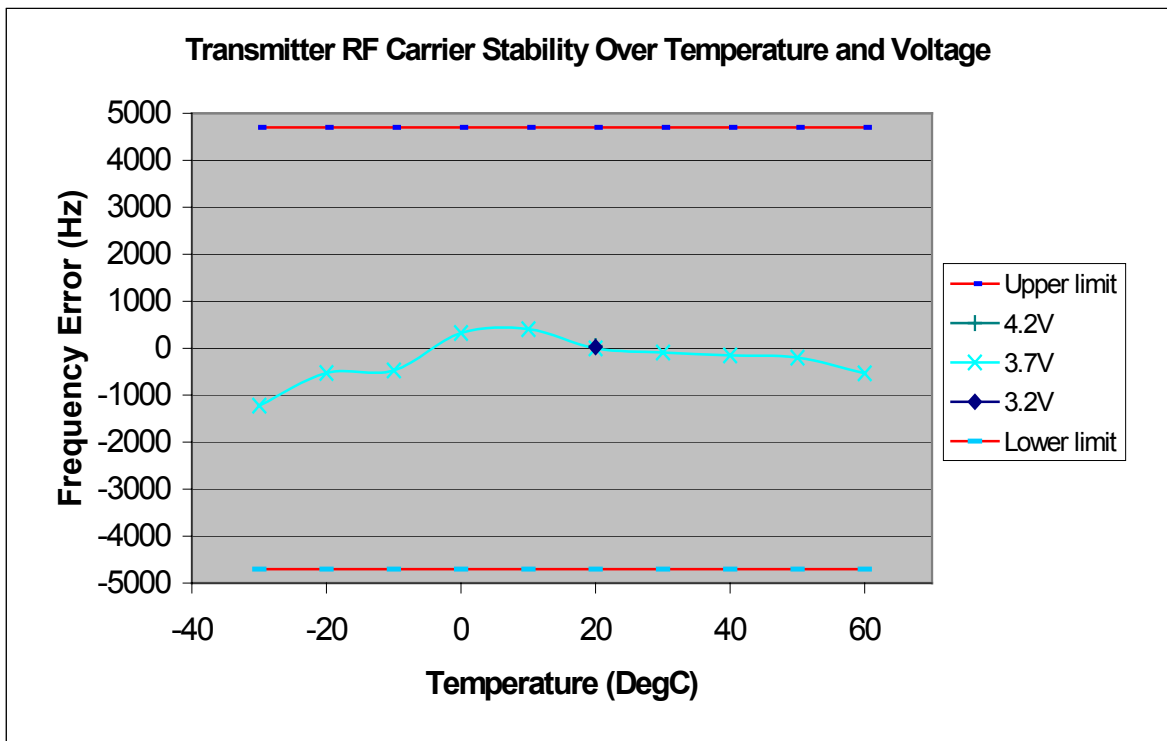
FCC: § 15.109	IC: RSS-133 §9
Measurement Procedures: The receiver radiated spurious emission test was performed at TUV in San Diego, California. The test report is attached in a separate attachment.	

11 Transmitter RF Carrier Frequency Stability

FCC: § 2.1055, § 24.235	IC: RSS-133 §7
Measurement Procedures:	
The EUT was placed in an environmental chamber. The RF output of the EUT was connected to a frequency counter via attenuator. A power supplier was connected as primary voltage supply.	

Tx Frequency: 1880.00 MHz	Voltage : 3.7V
Tolerance: +/- 2.5 Ppm (+/-4700 Hz)	Ch: 600

Temperature (°C)	Deviation of Carrier (Hz)			Specification (Hz)	
	3.2V (Battery endpoint)	3.7V	4.26V (115%)	Lower limit	Upper limit
-30		-1225		-4700	4700
-20		-525		-4700	4700
-10		-475		-4700	4700
0		325		-4700	4700
10		408		-4700	4700
20	25	0	41	-4700	4700
30		-92		-4700	4700
40		-150		-4700	4700
50		-200		-4700	4700
60		-534		-4700	4700



12 Exposure of Humans to RF Fields (SAR)

The SAR Test Report is showed in a separate attachment as Exhibit 8.

13 Test Equipment

Description	Manufacturer	Model Number	Serial Number	Cal Due Date
Power Meter	Giga-tronics	8541C	1835203	01/04/04
Spectrum Analyzer	Hewlett Packard	8593EM	3710A00203	04/15/03
Spectrum Analyzer	Hewlett Packard	8594E	3810A06429	11/19/03
Wireless Communications Test Set	Agilent	8960	GB41251014	11/15/03
RF communication test set	Hewlett Packard	8920B	US35320824	12/21/03
Temperature Chamber	CSZ	Z2033	Z9343034	02/14/03