Test Report On

Dual-Band Dual-mode CDMA Cellular Phone

FCC Part 22 & 24 Certification	
FCC ID:	**OVFKWC-K27**
Models:	**K132**
Date:	**August 15, 2006**

STATEMENT OF CERTIFICATION

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.

STATEMENT OF COMPLIANCE

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.

Date of Test:	August 14 – August 16, 2006
Test performed by:	Kyocera Wireless Corp. 10300 Campus Point Drive San Diego, CA 92121
Report Prepared by:	Thuy To, Regulatory Engineer
Report Reviewed by:	C.K. Li, Senior Staff Manager

Nemko USA, Inc. 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-K27	
Product:	K27 Dual-Band Dual mode Cellular Phone	
Model Numbers:	K132	
EUT Serial Number:	BCDX----1CYKL1	
Type:	[ ] Prototype, [**X**] Pre-Production, [ ] Production	
Device Category:	Portable	
RF Exposure Environment:	General Population / Uncontrolled	
Antenna:	Internal Monopole	
Detachable Antenna:	No	
External Input:	Audio/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
Max. Output Power (W):	0.251 ERP	0.247 EIRP

2 Product Description

The OVFKWC-K27 phones are Dual-mode Dual-Band 1XRTT products. The phones have assisted GPS software feature enabled to meet the emergency location requirements of the FCC's E911 Phase II mandate. The Tri-mode architecture is defined as 1900MHz (PCS CDMA) and 800MHz (cellular CDMA).

The phone 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

3 Electronic Serial Numbers (ESN) Protection

The Tri-mode Phone, FCC ID: OVFKWC-K27 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 models that contain the letter “L” have Global Positioning System (GPS) support.

5 TTY compliance

FCC § 255 of the Telecom Act
The OVFKWC-K27 phone models have been designed for TTY Compliance with Cellular Compatibility Standard.

6 Measurement Conditions for CDMA2000

As described in Exhibit 1 (operation description), OVFKWC-K27 can operate in the CDMA mode specified in IS-2000.2 standard, release 0. It can only invoke a Spreading Rate 1 (SR1) operational mode. SR1 is defined as a 1.2288 Mcps chip rate-based system using a direct-spread single carrier, which limits the bandwidth to the same 1.25MHz bandwidth occupied by the legacy IS-95/8-A/B system. Thus, for SR1 in IS-2000, the frequency response is identical to the legacy IS-95 B system standard.

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

Radio Configuration: RC1
Service Options: SO2
Code domain channels: R-FCH + R-PICH
Cell Power: -100 dBm/1.23MHz to –103 dBm/1.23MHz
Data Rate: full rate

7 Transmitter RF Power Output

7.1 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. Terminated to a resistive coaxial load of 50 ohms.

Mode	Frequency (MHz)	Channel	Power (dBm)
CDMA 800	824.70	1013	25.04
	836.52	384	25.04
	848.31	777	25.02
CDMA 1900	1851.25	25	22.73
	1880.00	600	22.76
	1908.75	1175	22.71

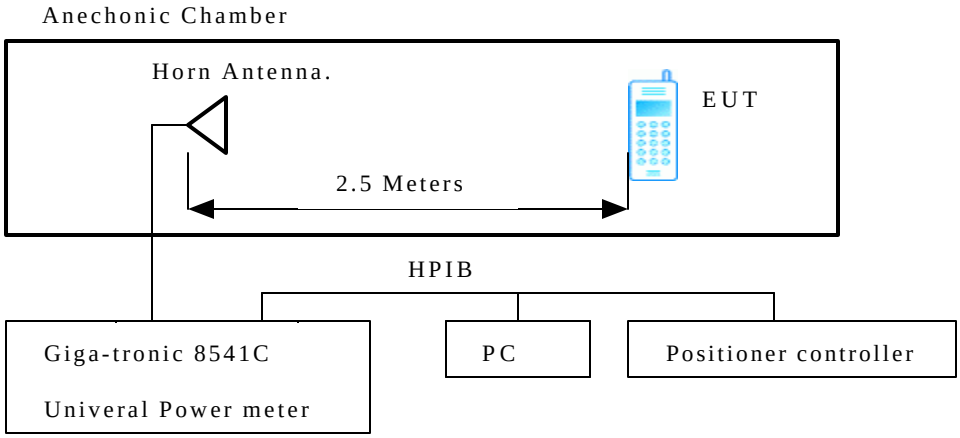
7.2 Radiated Power

FCC:	§ 22.913, § 24.232	IC:	RSS-129 §7.1 and §9.1, RSS-133 §6.2

Measurement Procedures:

The EUT was positioned on a 2-axis non-conductive positioner inside an anechoic chamber.

The phone control software set the EUT conducted power. 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. For ERP, subtract 2.1 dB from the EIRP data.



Mode	Frequency (MHz)	Channel	Max. Power (dBm)	Ref.
CDMA 800	824.70	1013	22.61	ERP
	836.52	384	23.32	
	848.31	777	24.01	
CDMA 1900	1851.25	25	22.46	EIRP
	1880.00	600	21.91	
	1908.75	1175	23.94	

8 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 Analog: The audio input signal was adjusted to as followings: (1) For combined voice and SAT, disable the compressor, modulate with a 2500 Hz sine wave 13.5 dB greater than that required to produce ± 8 kHz peak deviation at 1000 Hz and a 6000 Hz SAT with ± 2.0 kHz peak deviation. (2) For combined Signaling Tone and SAT, modulate with a 10 kHz ST with ± 8 kHz peak deviation and a 6000 Hz SAT with ± 2.0 kHz peak deviation. (3) For wideband data, modulate with a quasi-random 10 kbps data pattern with ± 8 kHz peak deviation. (4) For voice only, disable the compressor, modulate with a 2500 Hz sine wave 13.5 dB greater than that required to produce ± 8 kHz peak deviation at 1000 Hz. (5) For SAT only, modulate with a 6000 Hz SAT with ± 2.0 kHz peak deviation. (6) For ST only, modulate with a 10 kHz ST with ± 8 kHz peak deviation. (7) For combined SAT and DTMF, modulate with a 6000 Hz SAT with ± 2.0 kHz peak deviation and one of the DTMF tones. All measurements were performed on middle channel.

For Digital: Modulate with full rate.

To justify on the selection of applicable configurations, the EUT were put in varies R.C. and S.O. operation modes and the worst case is determined for final tests.

Mode	Ch/f (MHz)	EUT Configuration
CDMA-1900	600 (1880)	RC1 SO2
CDMA-1900	600 (1880)	RC3, SO2
CDMA-1900	600 (1880)	RC3, SO32 (+SCH)
CDMA-1900	600 (1880)	RC3, SO32 (+F-SCH)
CDMA-1900	600 (1880)	RC3, SO55
CDMA-1900	600 (1880)	RC4, SO55

List of Figures

Figure	Mode	Description
7-1	**CDMA 800**	CDMA @ Ch383
7-2	**CDMA 1900**	CDMA @ CH600
7-3		Lower Band Edge @ CH 25
7-4		Upper Band Edge @ CH 1175

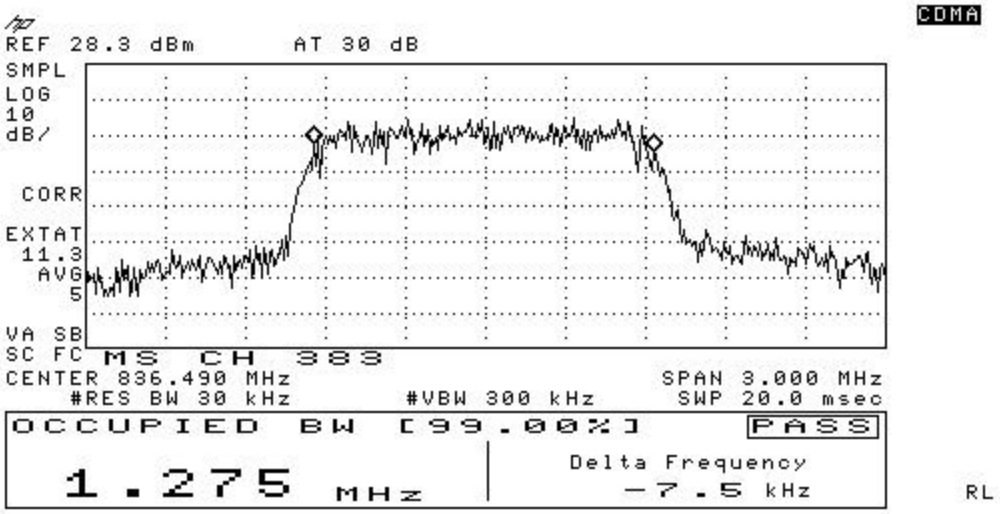


Figure 7-1 CDMA 800 @ CH 383

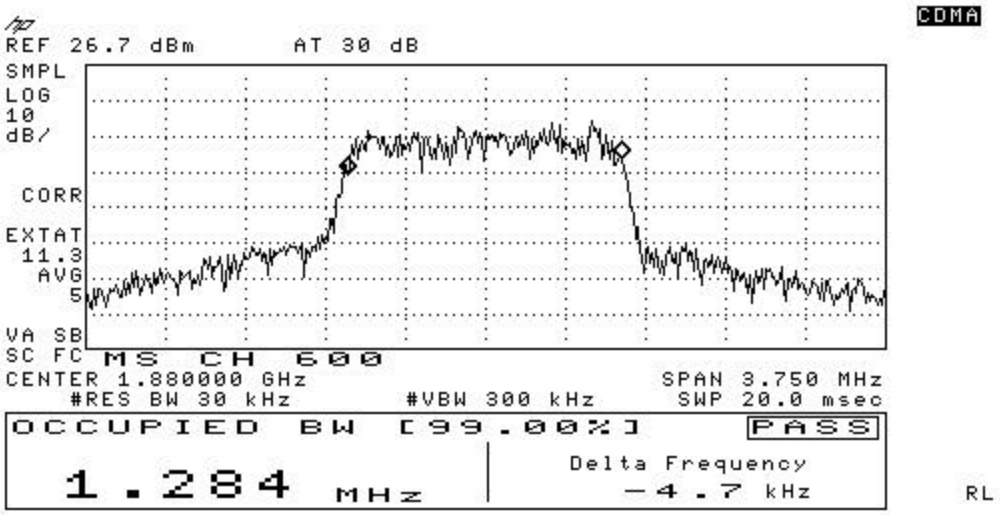


Figure 7-2 CDMA 1900 @ CH 600

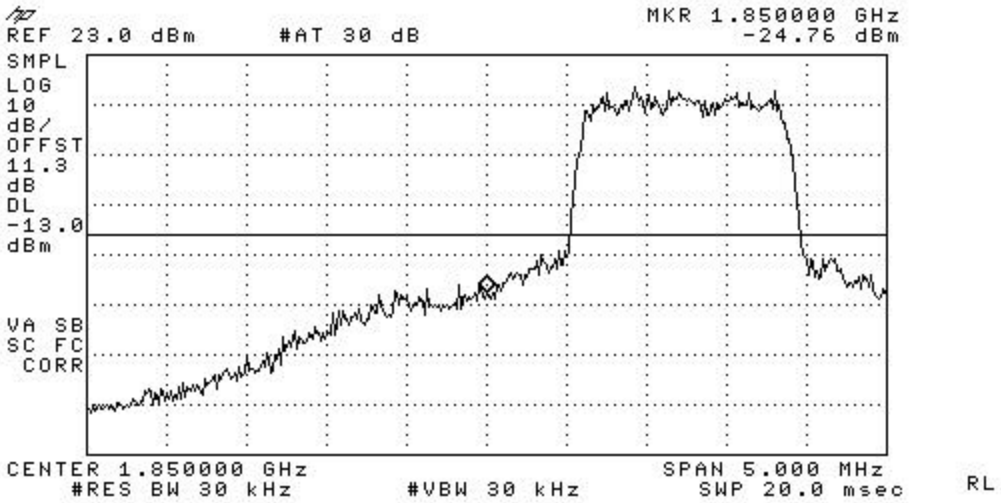


Figure 7-3 CDMA 1900 Lower Band Edge @ ch25

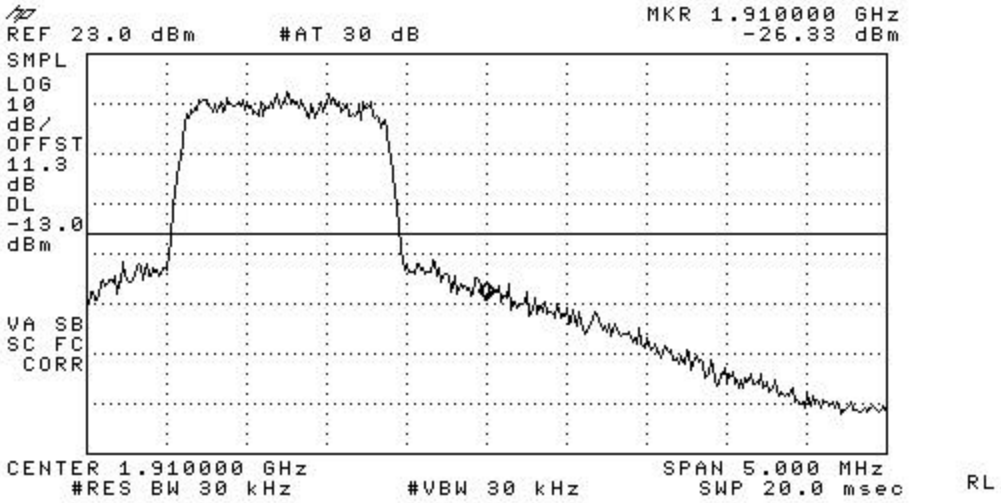


Figure 7-4 CDMA 1900 Upper Band Edge @ ch1175

9 Spurious Emissions At Antenna Terminals

FCC:	§ 2.1051, § 22.917(e)(f), § 24.238	IC:	RSS-129 §6.3, §8.1, RSS-133 §6.3

Measurement Procedures:

Out of Band: 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.

Base Band: Spectrum was investigated from 869-894 MHz for Cellular.

List of Figures:

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

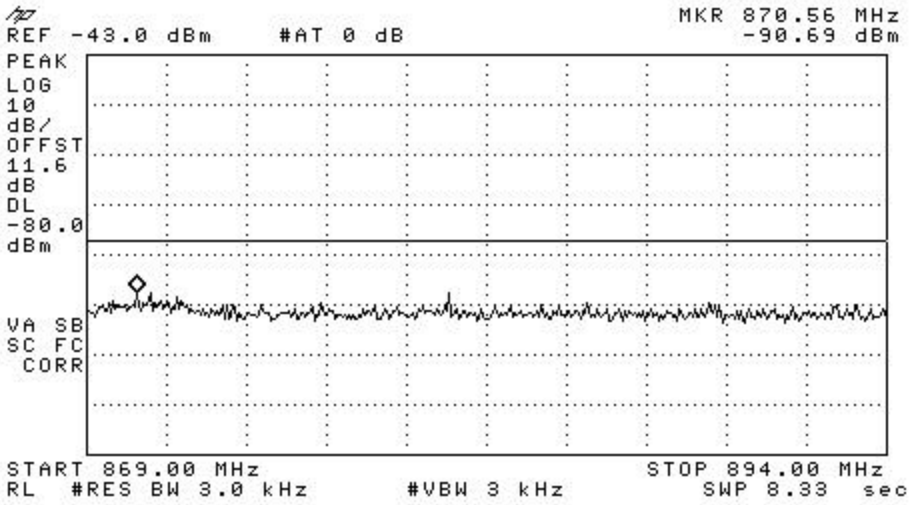


Figure 8-1 CDMA 800 - Emissions in base station frequency range (CH 1013)

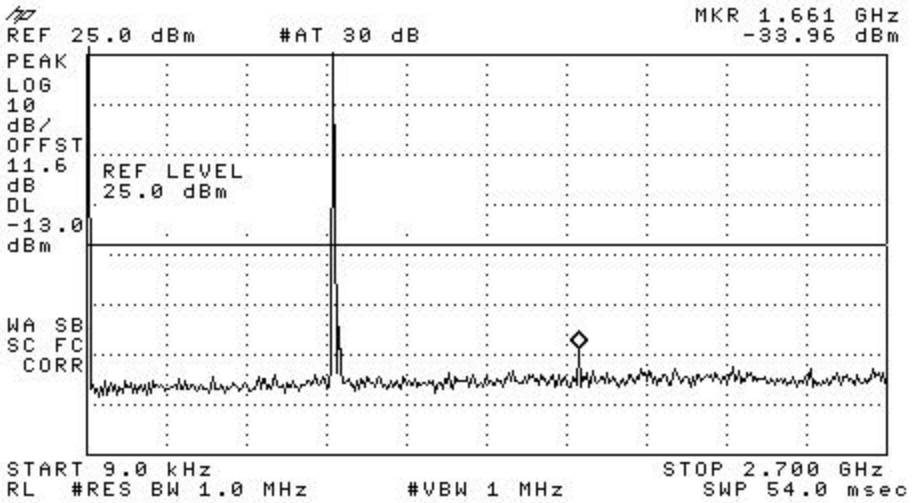


Figure 8-2a CDMA 800 – Conducted Spurious Emission (CH 1013)

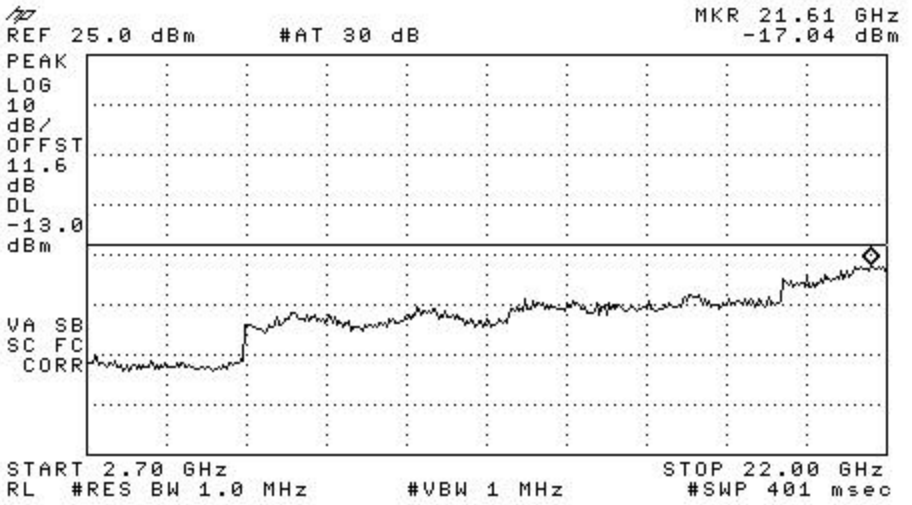


Figure 8-2b CDMA 800 – Conducted Spurious Emission (CH 1013)

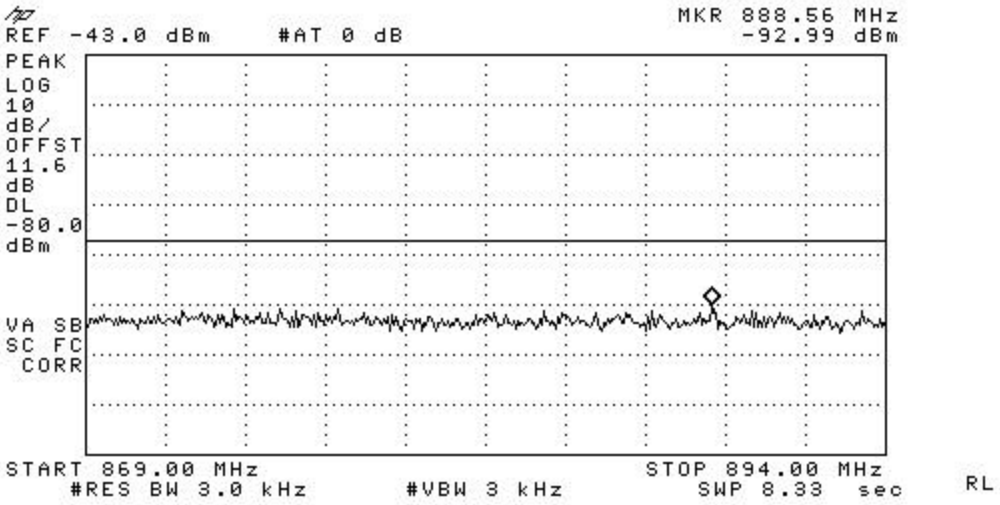


Figure 8-3 CDMA 800 - Emissions in base station frequency range (CH 383)

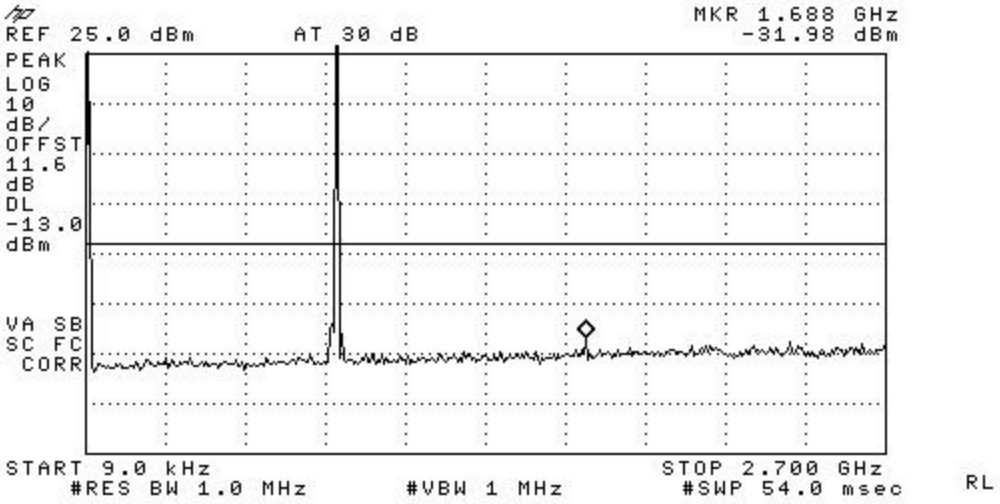


Figure 8-4a CDMA 800 – Conducted Spurious Emission (CH 383)

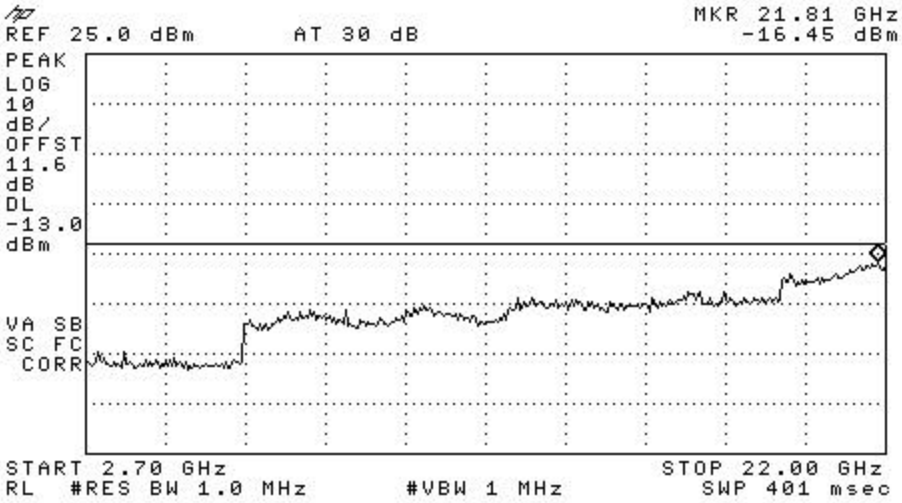


Figure 8-4b CDMA 800 – Conducted Spurious Emission (CH 383)

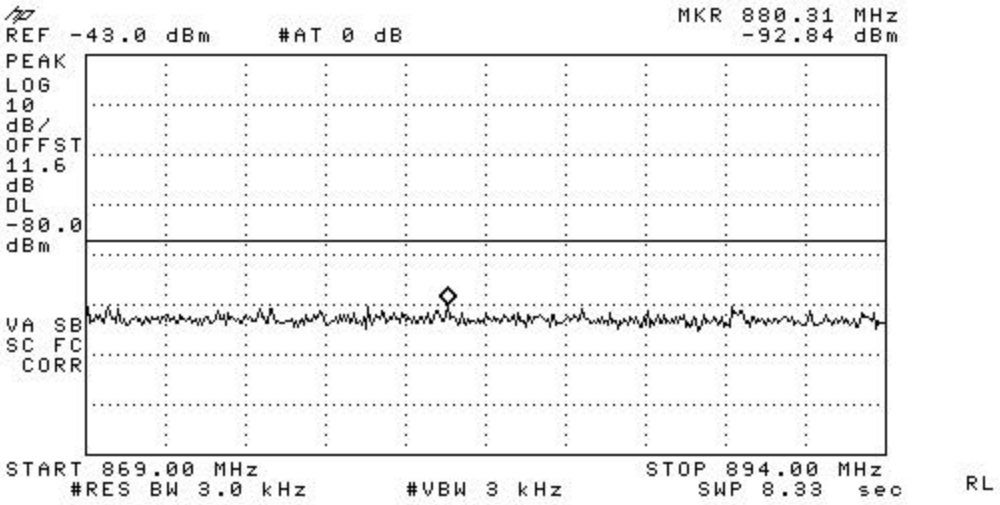


Figure 8-5 CDMA 800 - Emissions in base station frequency range (CH 777)

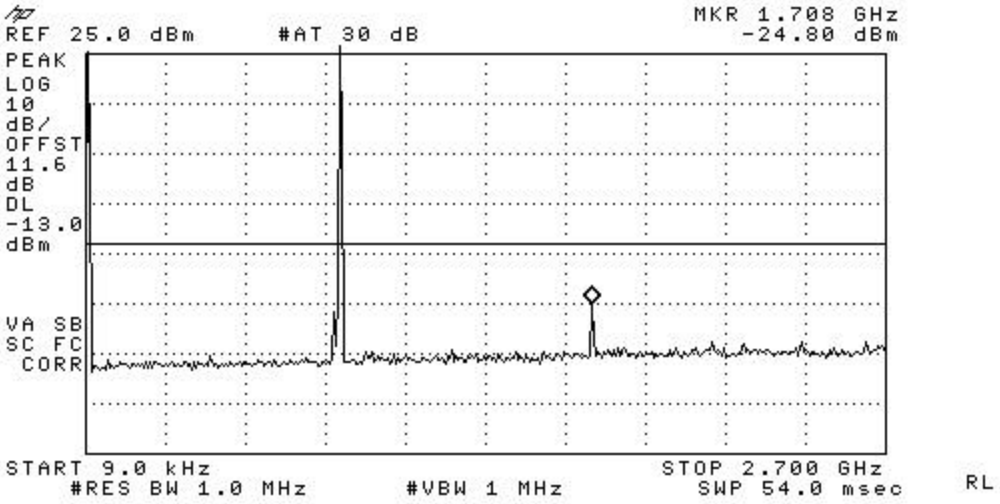


Figure 8-6a CDMA 800 – Conducted Spurious Emission (CH 777)

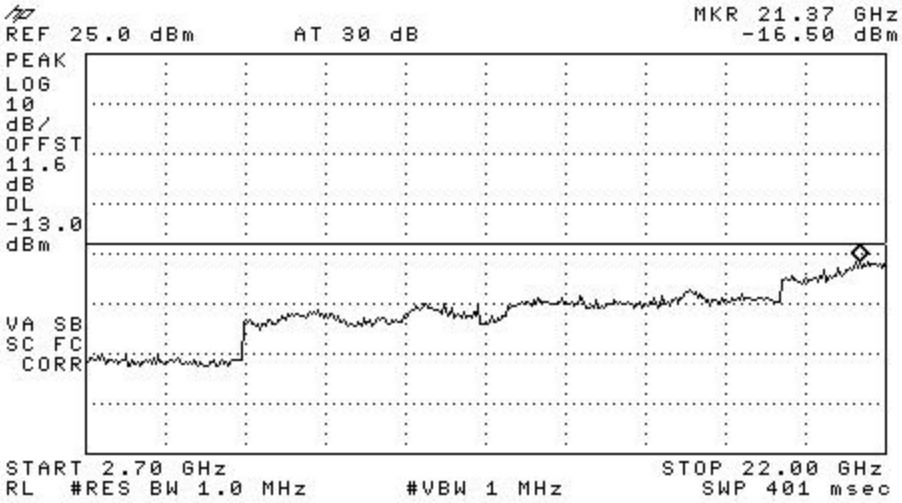


Figure 8-6b CDMA 800 – Conducted Spurious Emission (CH 777)

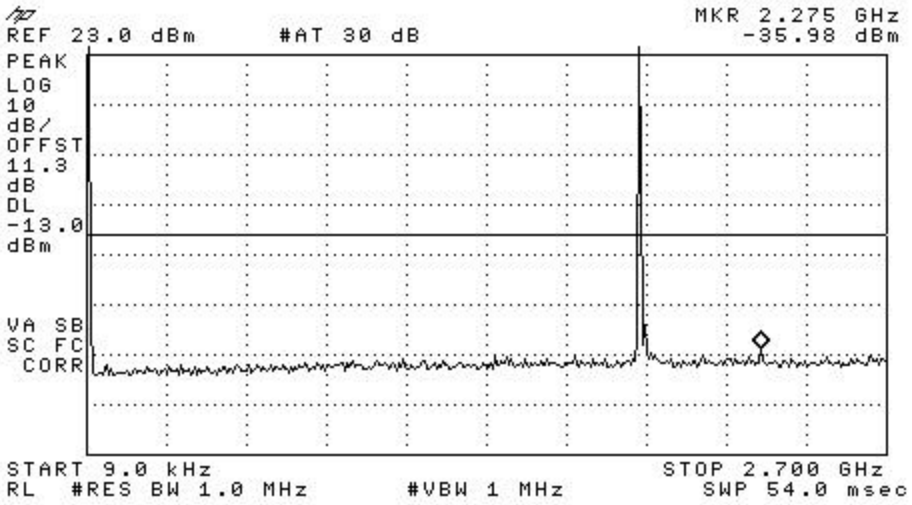


Figure 8-7a CDMA 1900 - Conducted Spurious Emission (CH 25)

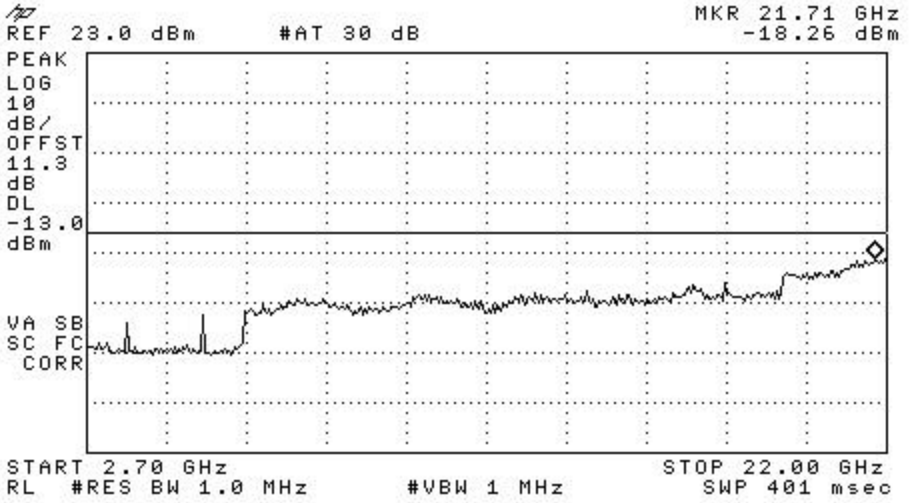


Figure 8-7b CDMA 1900 - Conducted Spurious Emission (CH 25)

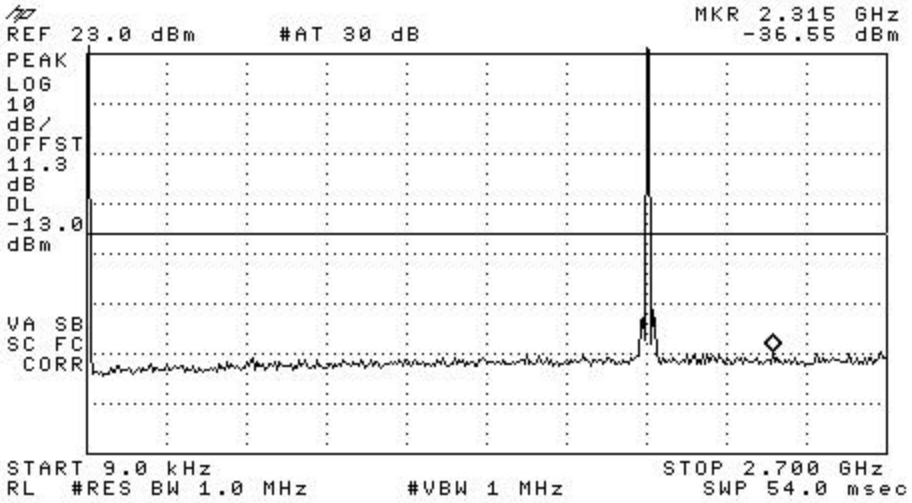


Figure 8-8a CDMA 1900 - Conducted Spurious Emission (CH 600)

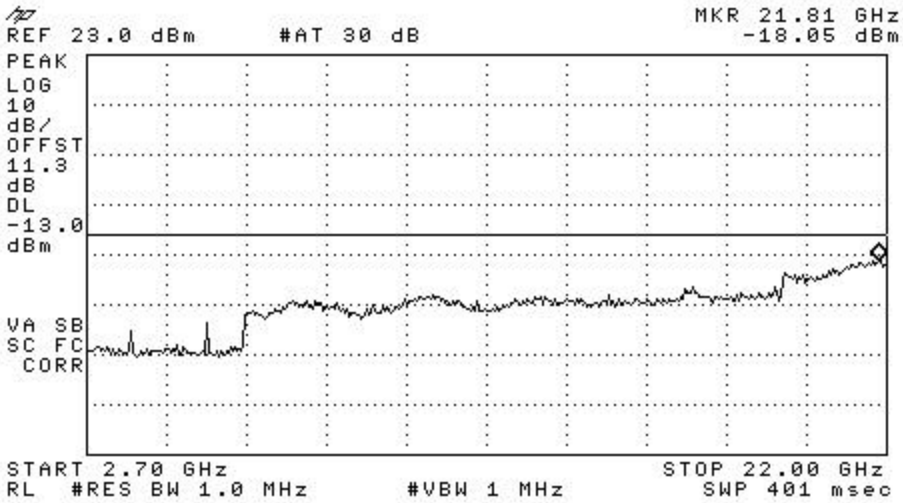


Figure 8-8b CDMA 1900 - Conducted Spurious Emission (CH 600)

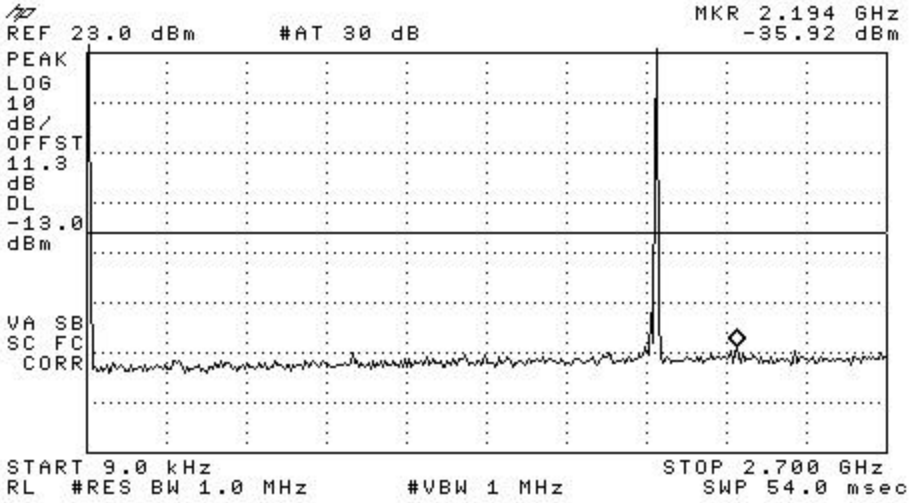


Figure 8-9a CDMA 1900 - Conducted Spurious Emission (CH 1175)

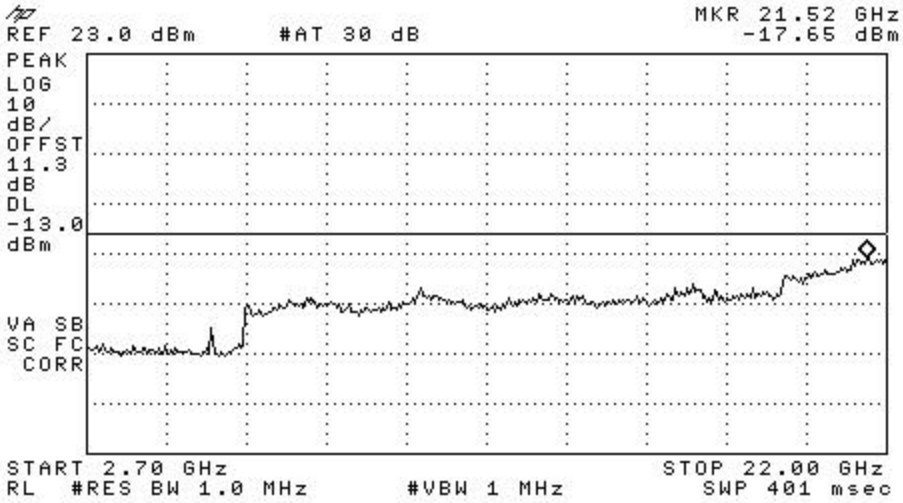


Figure 8-9b CDMA 1900 - Conducted Spurious Emission (CH 1175)

10 Transmitter Radiated Spurious Emissions Measured Data

FCC:	§ 2.1053, § 22.91, § 24.238	IC:	RSS-129 §8.1, RSS-133 §6.3

Measurement Procedures:

To determine the applicable configurations on CDMA system, the EUT were put in varies R.C. and S.O. operation modes. Radiated Emissions were pre-scanned with a GTEM system to determine the worst case configurations for final OATS tests.

The worst case configurations found from prescan were fully tested on a 3 meter site at Nemko in San Diego, California. The test report is attached in a separate attachment.

11 Receiver Spurious Emissions

FCC:	§ 15.109	IC:	RSS-129 §10, RSS-133 §9

Measurement Procedures:

The receiver radiated spurious emission test was performed at Nemko in San Diego, California. The test report is attached in a separate attachment.

12 Transmitter RF Carrier Frequency Stability

FCC:	§ 2.1055, § 22.355, § 24.235	IC:	RSS-129 §7.2 and §9.2, RSS-133 §7

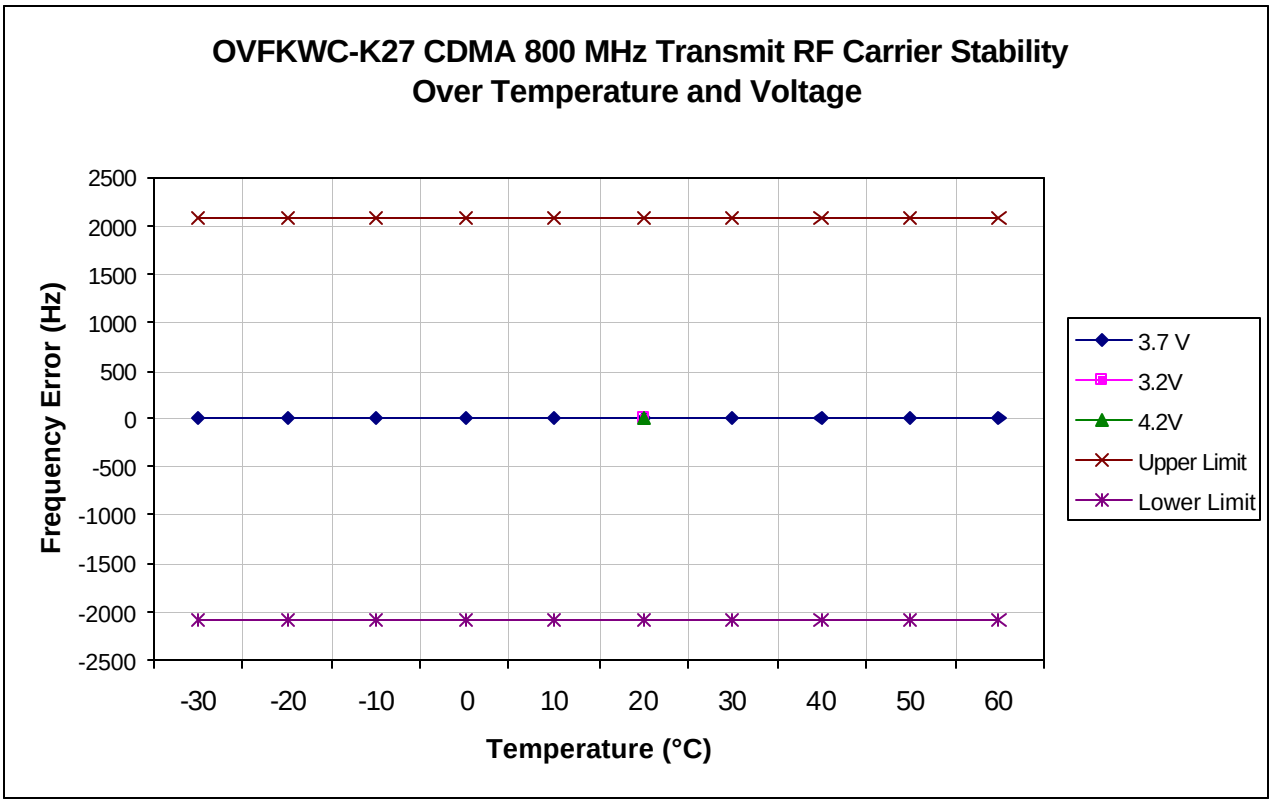
Measurement Procedures:

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.

12.1 CDMA 800 Mode

Tx Frequency:	836.49 MHz	**Voltage :**	3.7V
Tolerance:	+/- 2.5 Ppm (+/- 2091 Hz)	**Ch:**	383

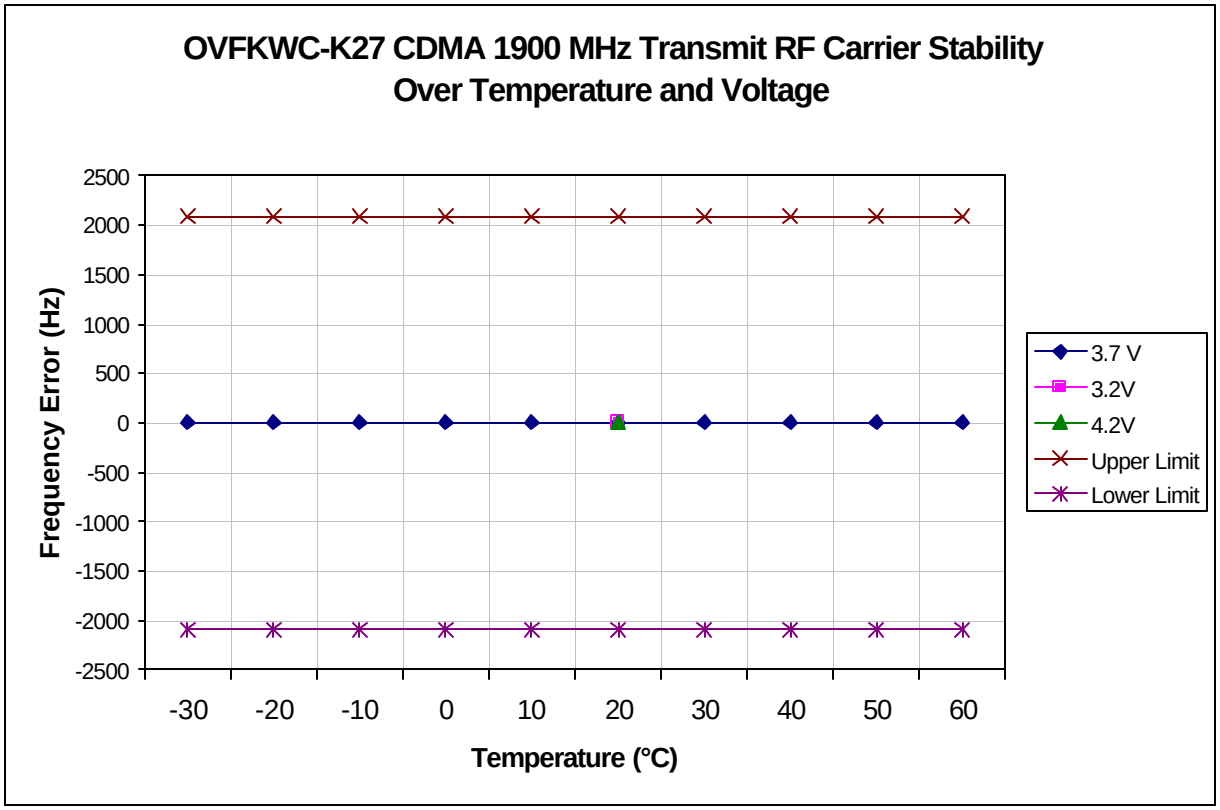
Temperature (°C)	Deviation of Carrier (Hz)			Specification (Hz)	
	3.2V (Battery endpoint)	3.7V	4.26V (115%)	Lower limit	Upper limit
-30		1.42		-2091	2091
-20		1.52		-2091	2091
-10		1.92		-2091	2091
0		2.14		-2091	2091
10		2.78		-2091	2091
20	**1.2**	**3.48**	**3.21**	-2091	2091
30		2.56		-2091	2091
40		2.04		-2091	2091
50		2.36		-2091	2091
60		2.26		-2091	2091



12.2 CDMA 1900 Mode

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		1.78		-4700	4700
-20		1.23		-4700	4700
-10		2.36		-4700	4700
0		1.85		-4700	4700
10		2.34		-4700	4700
20	**1.69**	**3.02**	**3.65**	-4700	4700
30		2.51		-4700	4700
40		2.32		-4700	4700
50		2.09		-4700	4700
60		2.22		-4700	4700



13 Exposure of Humans to RF Fields (SAR)

The SAR Test Report is showed in a separate attachment as Exhibit 9.

14 Test Equipment

Description	Manufacturer	Model Number	Serial Number	Cal Due Date
Power Meter	Giga-tronics	8541C	1831306	07/11/07
Spectrum Analyzer	Hewlett Packard	8593EM	3710A00203	03/23/07
Spectrum Analyzer	Hewlett Packard	8595E	3911A03899	07/11/07
Wireless Communications Test Set	Agilent	8960	US41070147	06/02/07
Temperature Chamber	Test Equity	105	0500507	09/02/06