

## Test Report

From

**Kyocera Wireless Corp**

### Dual-Band CDMA Cellular Phone

<b>FCC Part 22 &amp; 24 Certification IC RSS-129 &amp; 133</b>	
FCC ID:	<b>OVFKWC-SE47</b>
Model:	<b>SE47</b>

#### 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.*

Test performed by:	Kyocera Wireless Corp 10300 Campus Point Drive CA 92121
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Report Prepared by:	Vijay Parpia Senior Engineer
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Tests that required an OATS site were performed by TUV Product Services.

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## 1 General Information

<b>Applicant:</b>	Kyocera Wireless Corp 10300 Campus Point Drive San Diego CA 92121		
<b>FCC ID:</b>	OVFKWC-SE47		
<b>Product:</b>	Dual-Band Dual-mode Cellular Phone		
<b>Model Number:</b>	SE47		
<b>EUT Serial Number:</b>	J705		
<b>Type:</b>	<input type="checkbox"/> Prototype, <input checked="" type="checkbox"/> Pre-Production, <input type="checkbox"/> Production		
<b>Device Category:</b>	Portable		
<b>RF Exposure Environment:</b>	General Population / Uncontrolled		
<b>Antenna:</b>	Top loaded Helix Whip		
<b>Detachable Antenna:</b>	Yes		
<b>External Input:</b>	Audio/Digital Data		
<b>Quantity:</b>	Quantity production is planned		
<b>FCC Rule Parts:</b>	§22H	§22.901(d)	§24E
<b>Modes:</b>	800 CDMA	800 CDMA1X	1900 CDMA
<b>Multiple Access Scheme:</b>	CDMA	CDMA	CDMA
<b>TX Frequency (MHz):</b>	824 – 849	824 – 849	1850 – 1910
<b>Emission Designators:</b>	1M25F9W		
<b>Max. Output Power (W)</b>	0.292 ERP		0.586 EIRP

## 2 Product Description

The phone is a Dual-band single-mode 1XRTT 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) and 800MHz (cellular CDMA). The phone will support certain CDMA2000 radio-configurations (RC) as describes in Exhibit 1 (operation description).

Model SE47 consists of a Color LCD display.

## 3 Electronic Serial Numbers (ESN) Protection

The Dual-mode Phone, FCC ID: OVFKWC-SE47 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**

<b>FCC § 22.921</b>
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 SE47 have Global Positioning System (GPS) support.

**5 TTY compliance**

<b>FCC § 255 of the Telecom Act</b>
SE47 have been designed for TTY Compliance with Cellular Compatibility Standard.

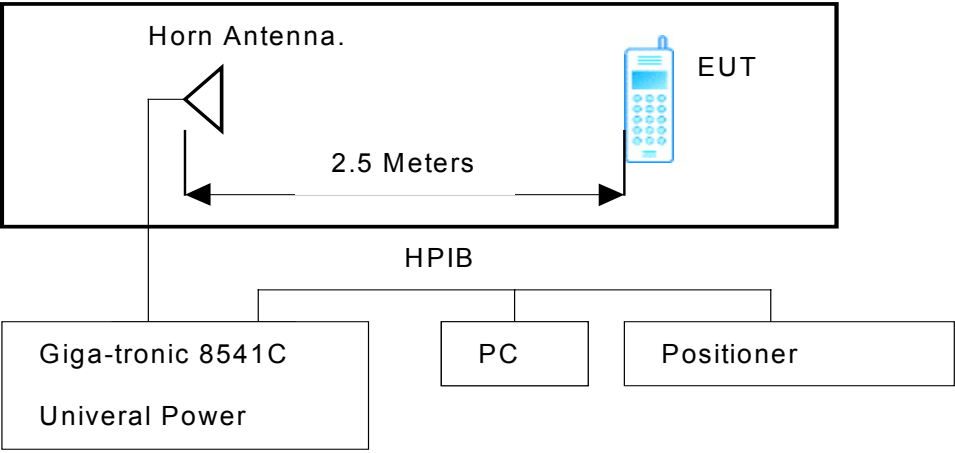
**6 Transmitter RF Power Output**

**6.1 Conducted Power**

<b>FCC: § 2.1046</b>	<b>IC: RSS-129 §7.1, RSS-133 §6.2</b>
<b>Measurement Procedures:</b>	
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 800	824.70	1013	24.50
	836.52	384	24.54
	848.31	777	24.51
CDMA 1900	1851.25	25	23.25
	1880.00	600	23.26
	1908.75	1175	23.22

## 6.2 Radiated Power

<b>FCC:</b> § 22.913, § 24.232	<b>IC:</b> RSS-129 §7.1 and §9.1, RSS-133 §6.2
<b>Measurement Procedures:</b>	
<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. For ERP, subtract 2.1 dB from the EIRP data.</p>	
<p><b>Anechonic Chamber</b></p> 	

Mode	Frequency (MHz)	Channel	Max. Power (dBm)	Ref.
CDMA 800	824.70	1013	23.75	ERP
	836.52	384	24.10	
	848.31	777	24.64	
CDMA 1900	1851.25	25	26.90	EIRP
	1880.00	600	27.46	
	1908.75	1175	27.68	

**7 Occupied Bandwidth**

<b>FCC:</b> § 2.1049, § 22.917(b)(d), § 24.238	<b>IC:</b> RSS-129 §6.3, §8.1
<b>Measurement Procedures:</b> 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.  <u>For Digital:</u> Modulate with full rate.	

**List of Figures**

Figure	Mode	Description
7-1	CDMA 800	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	CDMA 1900	CDMA at RC1
7-5		CDMA 1X, F/R-FCH at RC3
7-6		CDMA 1X, F/R-FCH + F/R-SCH at RC3

Figure 7-1 CDMA 800 at RC1

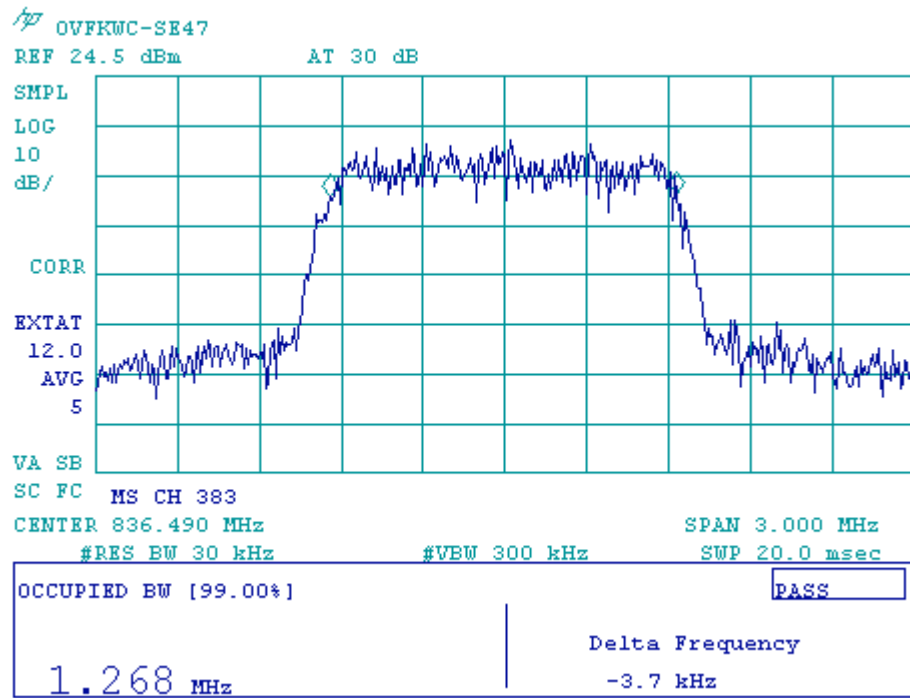


Figure 7-2a CDMA 800 1X at RC3 (F/R-FCH)

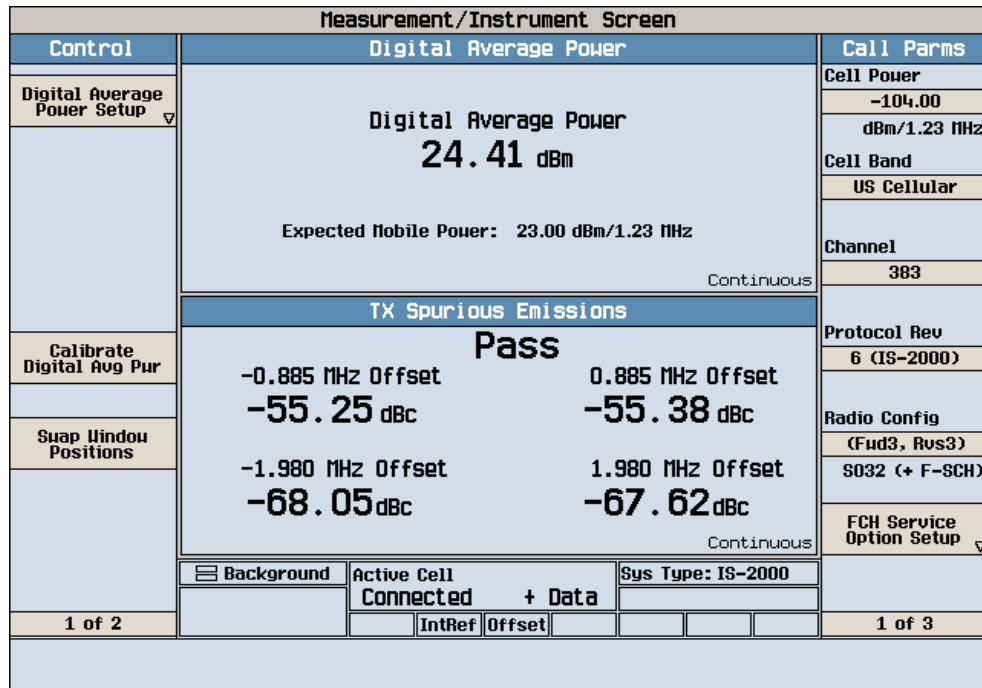


Figure 7-2b CDMA 800 1X at RC3 (F/R-FCH)

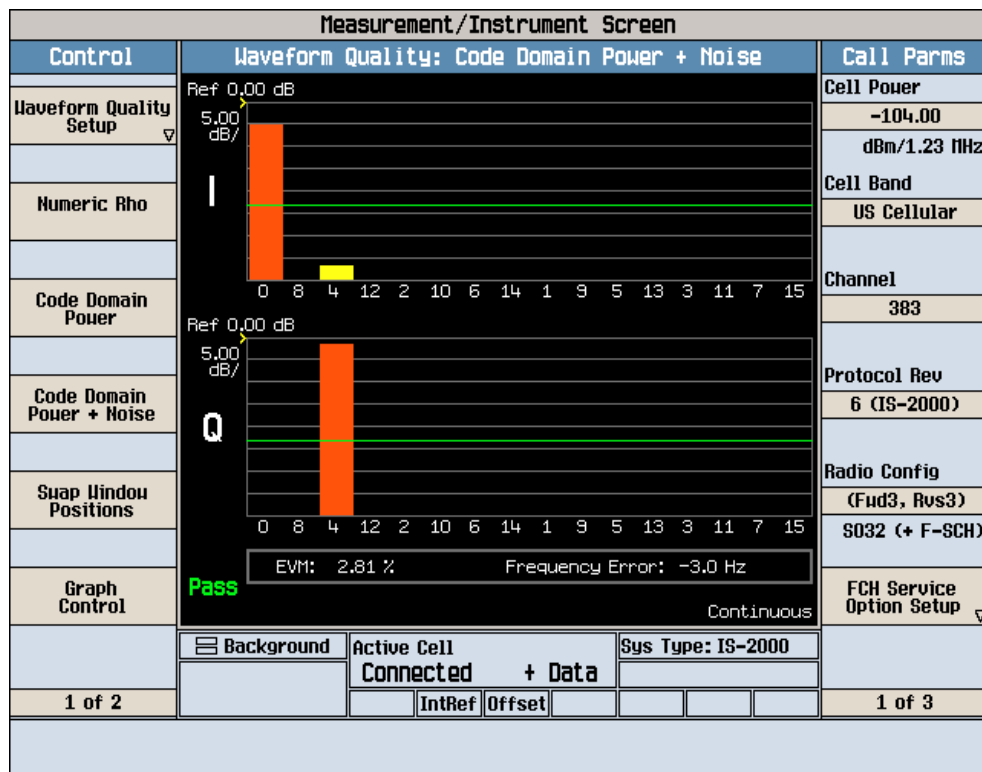




Figure 7-2c CDMA 800 1X at RC3 (F/R-FCH)

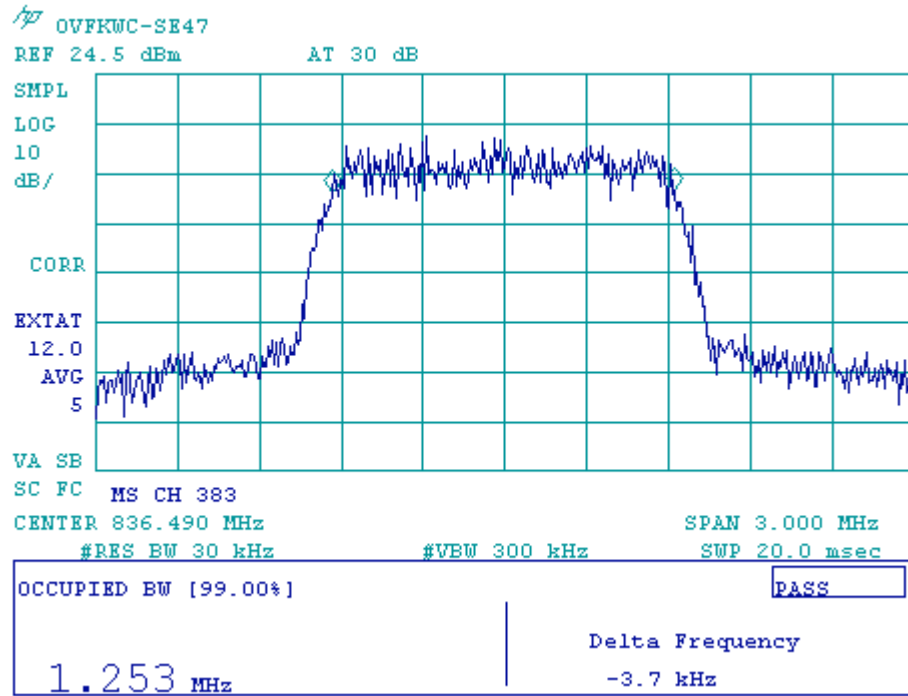


Figure 7-3a CDMA 800 1X at RC3 (F/R-FCH + F/R-SCH)

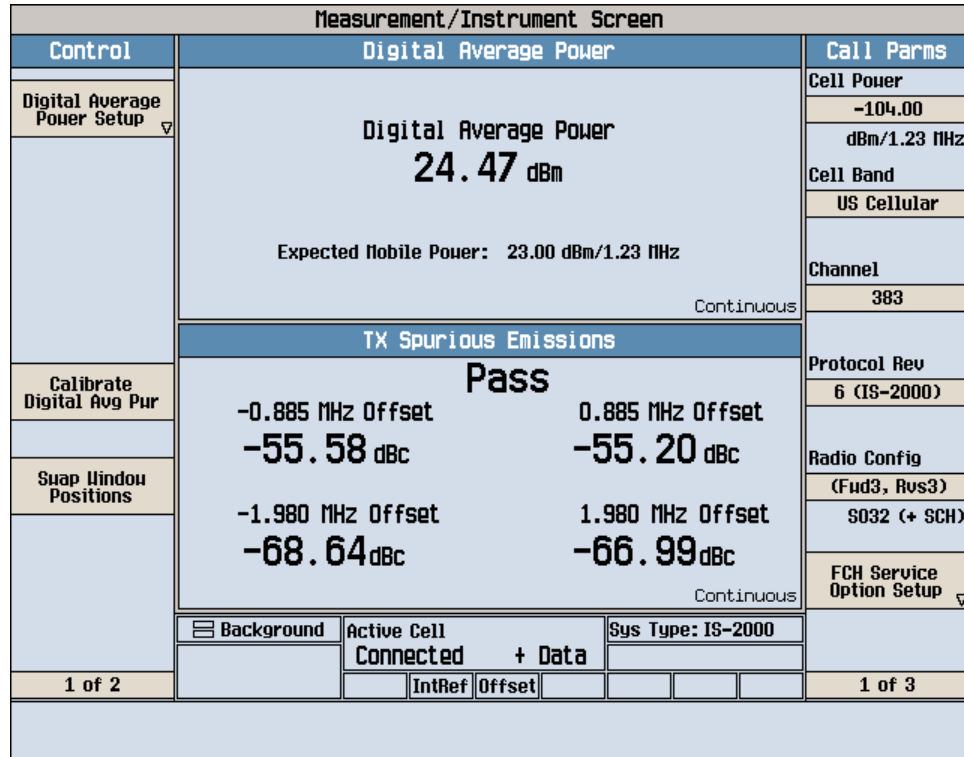


Figure 7-3b CDMA 800 1X at RC3 (F/R-FCH + F/R-SCH)

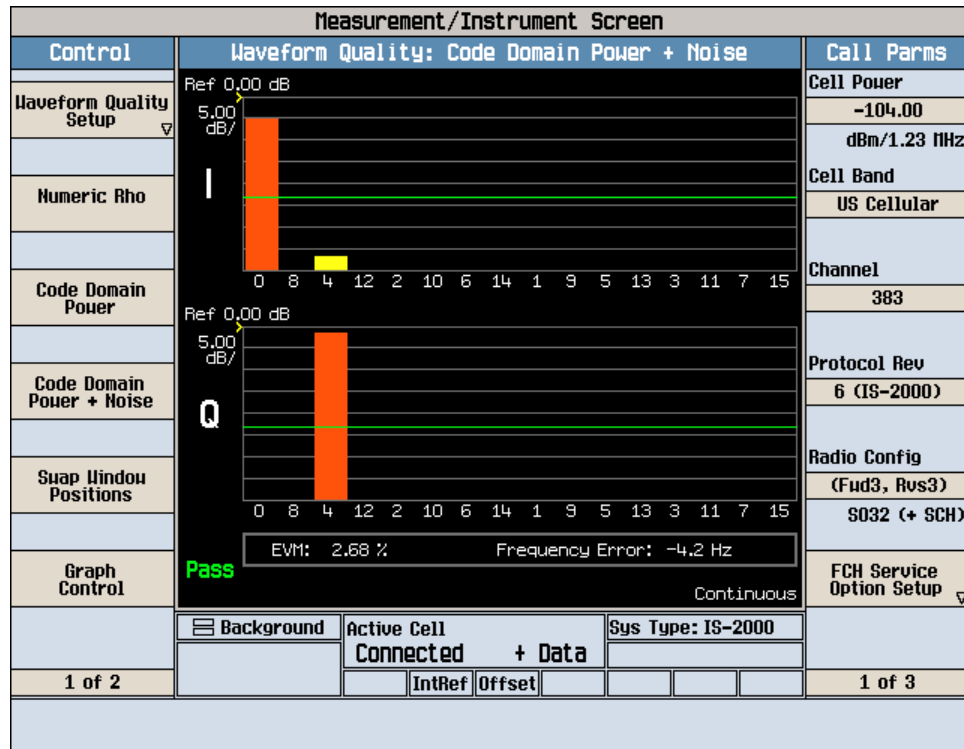


Figure 7-3c CDMA 800 1X at RC3 (F/R-FCH + F/R-SCH)

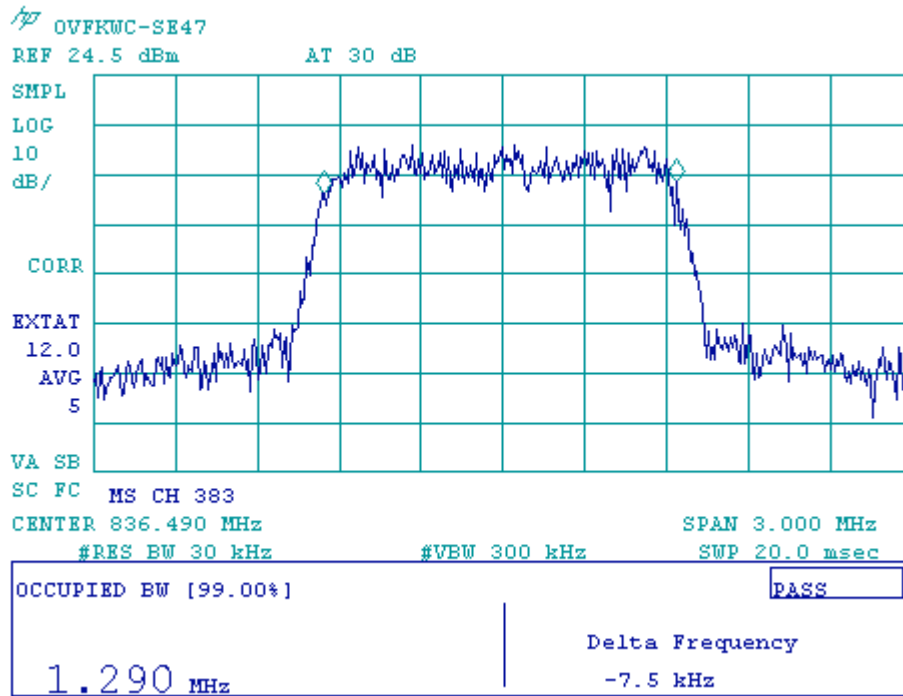


Figure 7-4 CDMA 1900 at RC1

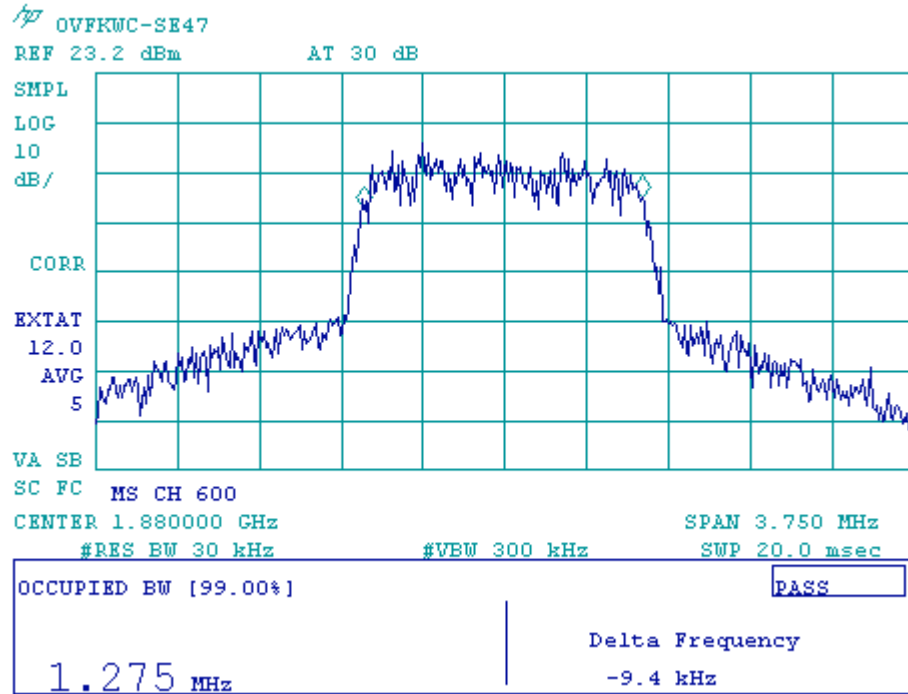


Figure 7-5a CDMA 1900 1X at RC3 (F/R-FCH)

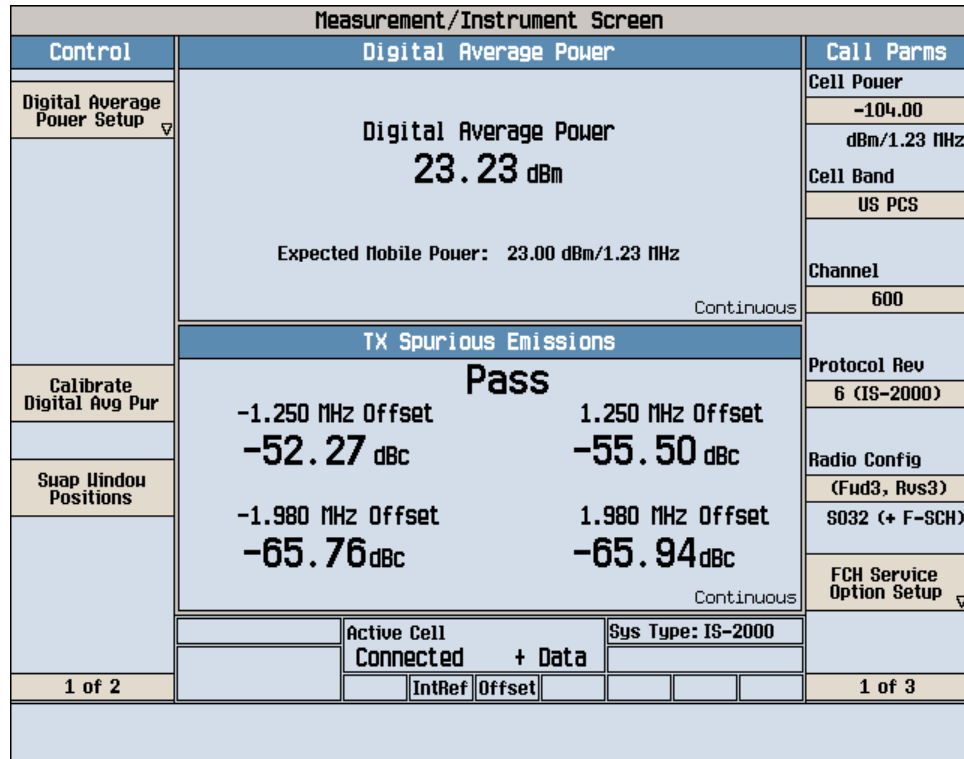


Figure 7-5b CDMA 1900 1X at RC3 (F/R-FCH)

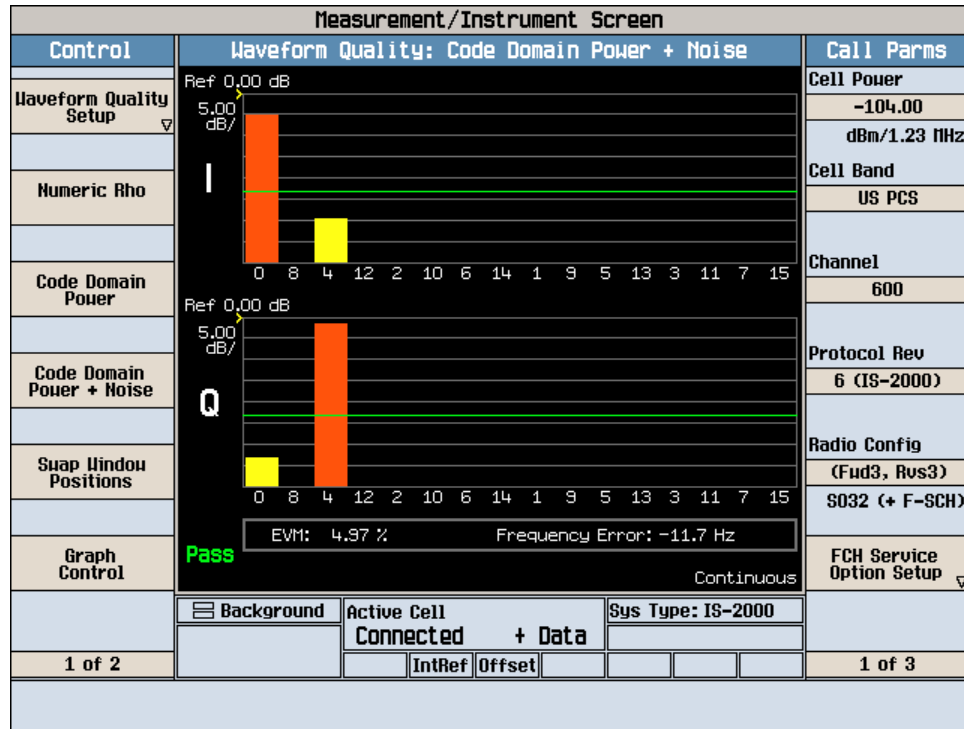


Figure 7-5c CDMA 1900 1X at RC3 (F/R-FCH)

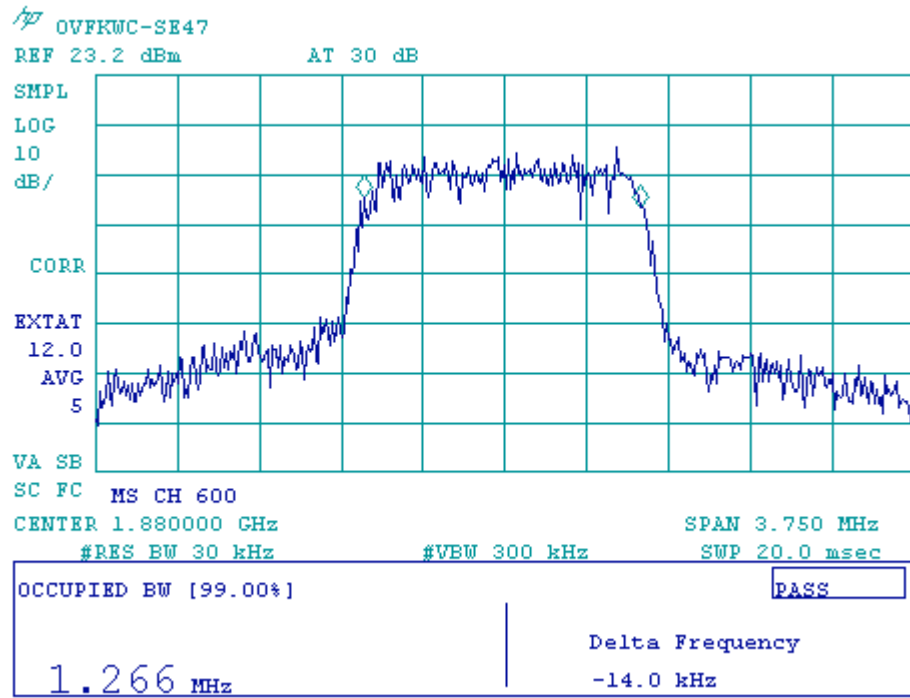


Figure 7-6a CDMA 1900 1X at RC3 (F/R-FCH + F/R-SCH)

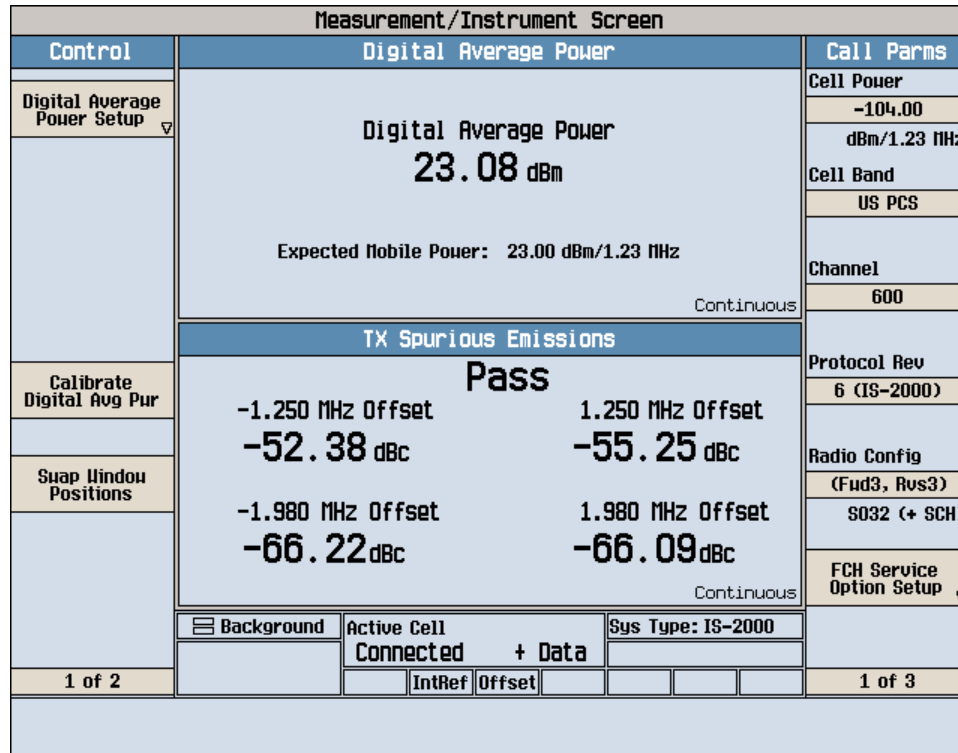


Figure 7-6b CDMA 1900 1X at RC3 (F/R-FCH + F/R-SCH)

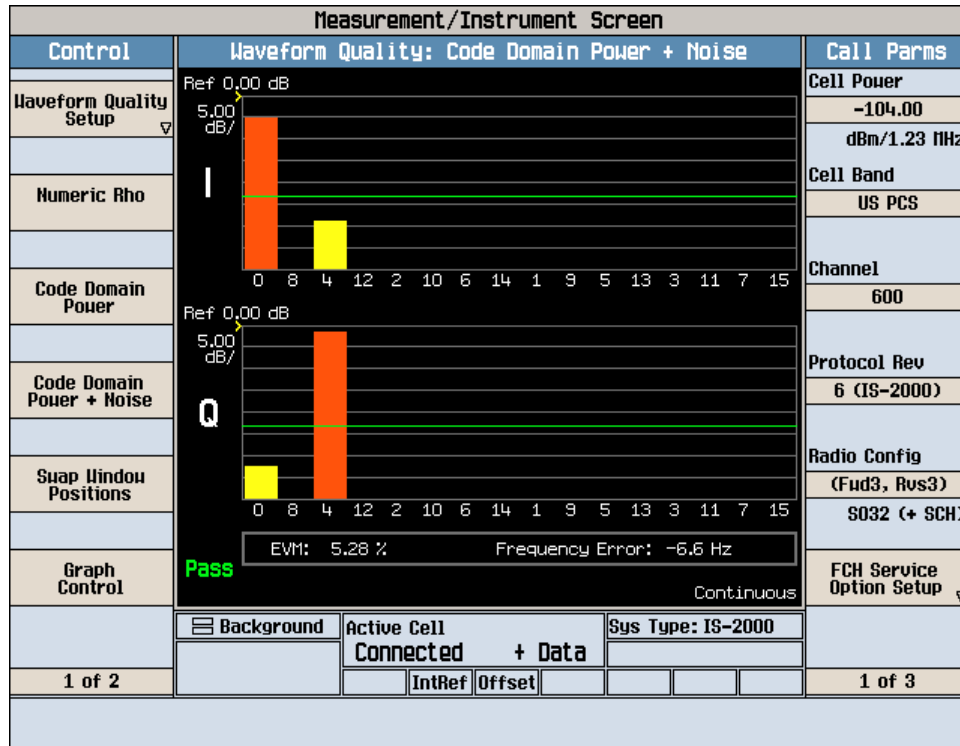
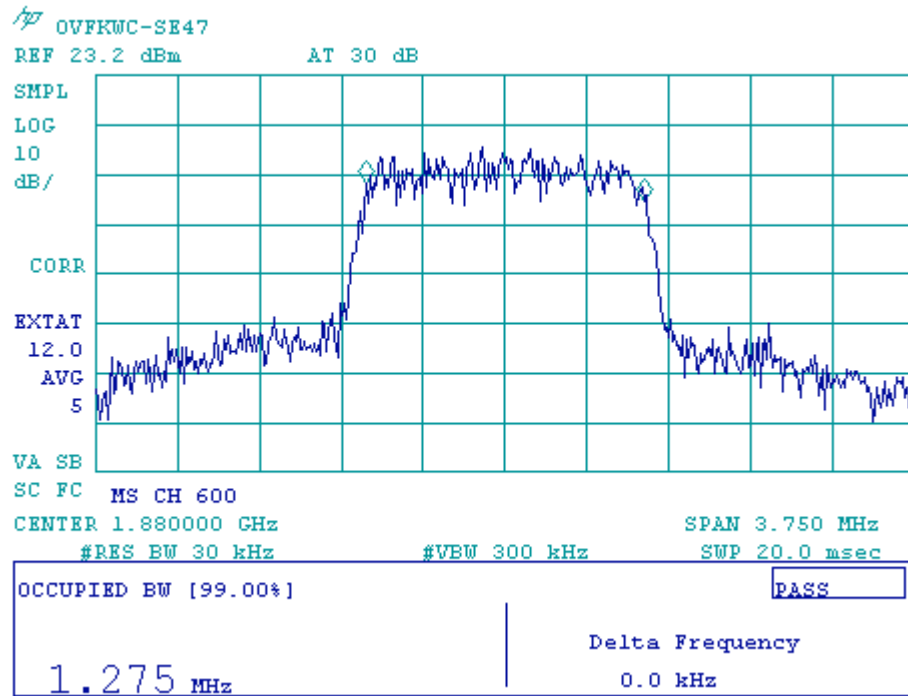


Figure 7-6c CDMA 1900 1X at RC3 (F/R-FCH + F/R-SCH)





**8 Block Edge Compliance**

**8.1 CDMA 1900 Mode**

<b>FCC:</b> § 24.238a	<b>IC:</b> RSS-133 §6.3
<b>Measurement Procedures:</b> The RF output of the EUT was connected to the input of the spectrum analyzer with sufficient attenuation. During tests, the EUT was modulated with full rate.	

**List of Figures**

<b>Figure</b>	<b>Mode</b>	<b>Description</b>
8.1-1	CDMA 1900	Block A Lower edge, Channel 25
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8.1-3		Block D Lower edge, Channel 325
8.1-4		Block D Upper edge, Channel 375
8.1-5		Block B Lower edge, Channel 425
8.1-6		Block B Upper edge, Channel 675
8.1-7		Block E Lower edge, Channel 725
8.1-8		Block E Upper edge, Channel 775
8.1-9		Block F Lower edge, Channel 825
8.1-10		Block F Upper edge, Channel 875
8.1-11		Block C Lower edge, Channel 925
8.1-12		Block C Upper edge, Channel 1175

Figure 8.1-1 Block A Lower edge, Channel 25

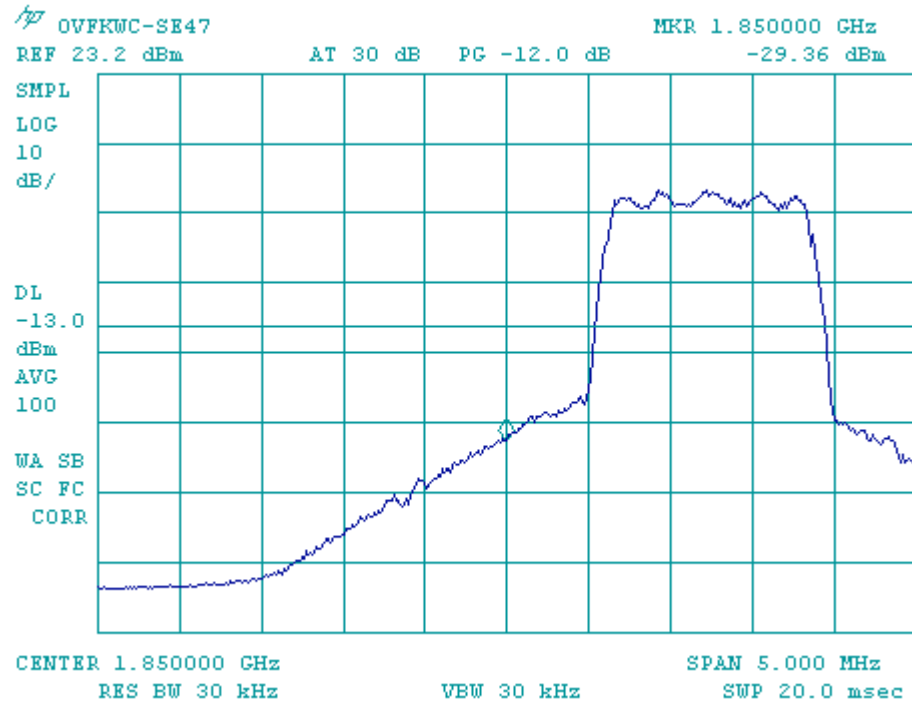


Figure 8.1-2 Block A Upper edge, Channel 275

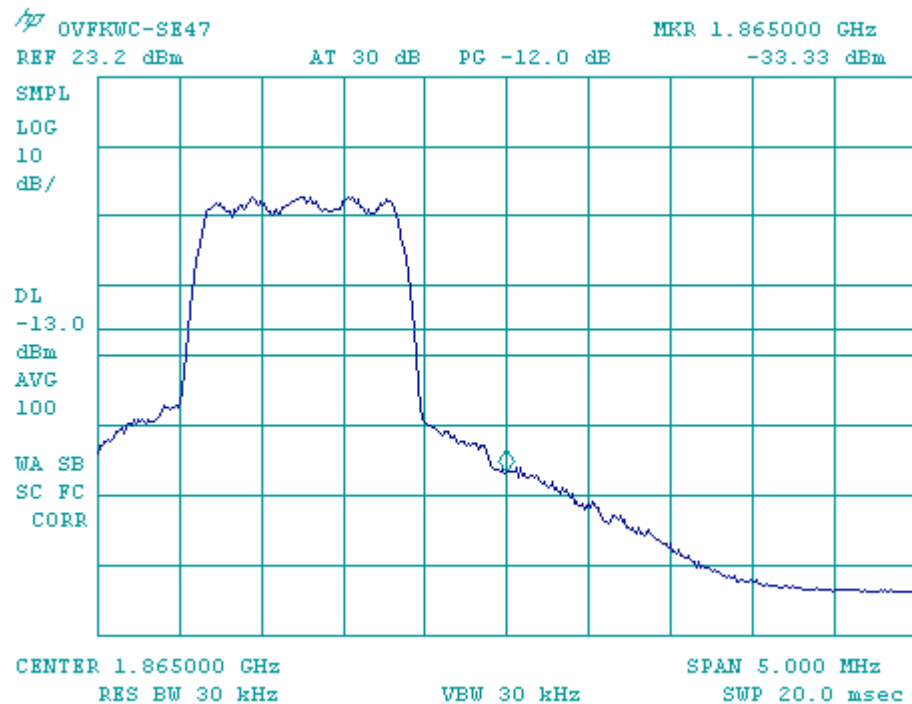


Figure 8.1-3 Block D Lower edge, Channel 325

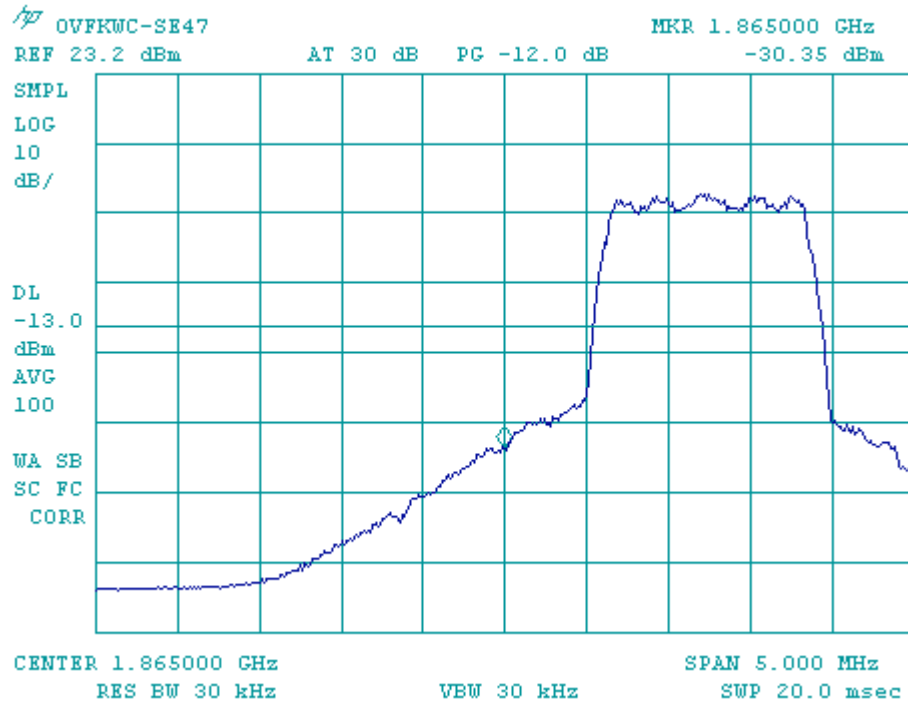


Figure 8.1-4 Block D Upper edge, Channel 375

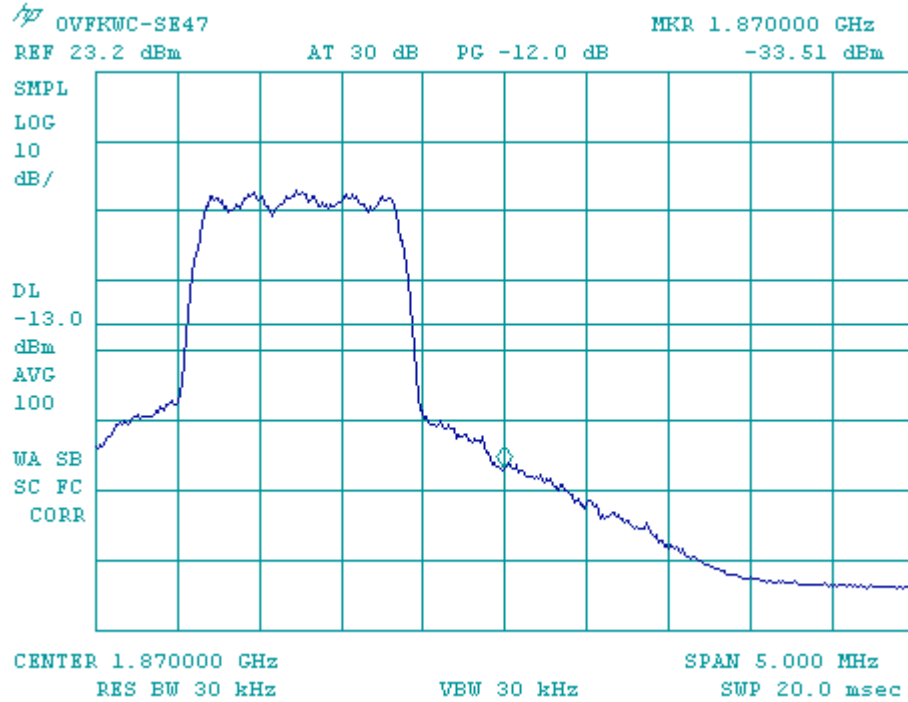


Figure 8.1-5 Block B Lower edge, Channel 425

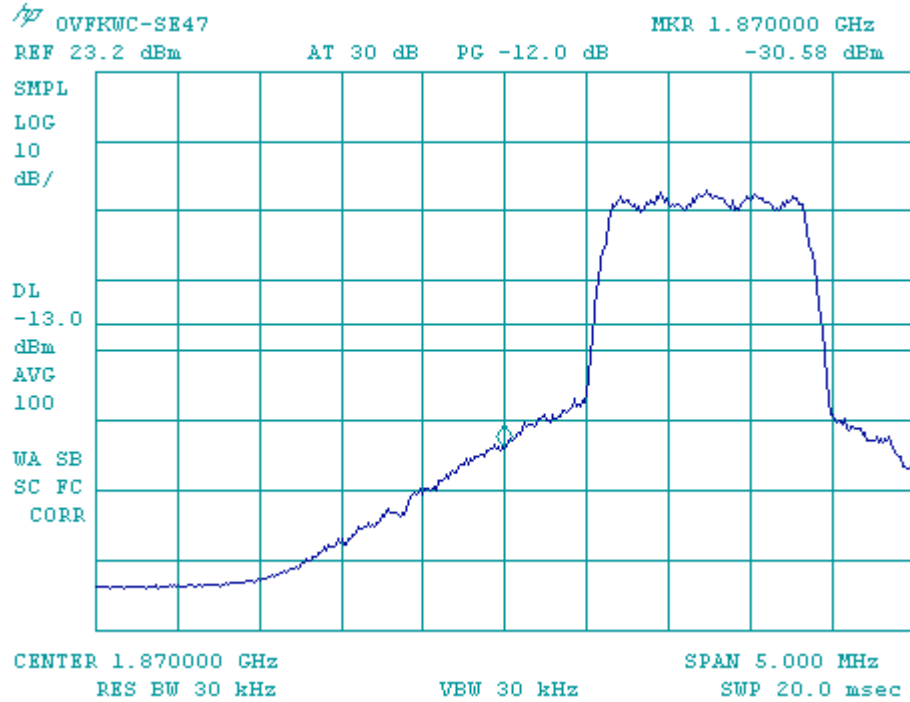


Figure 8.1-6 Block B Upper edge, Channel 675

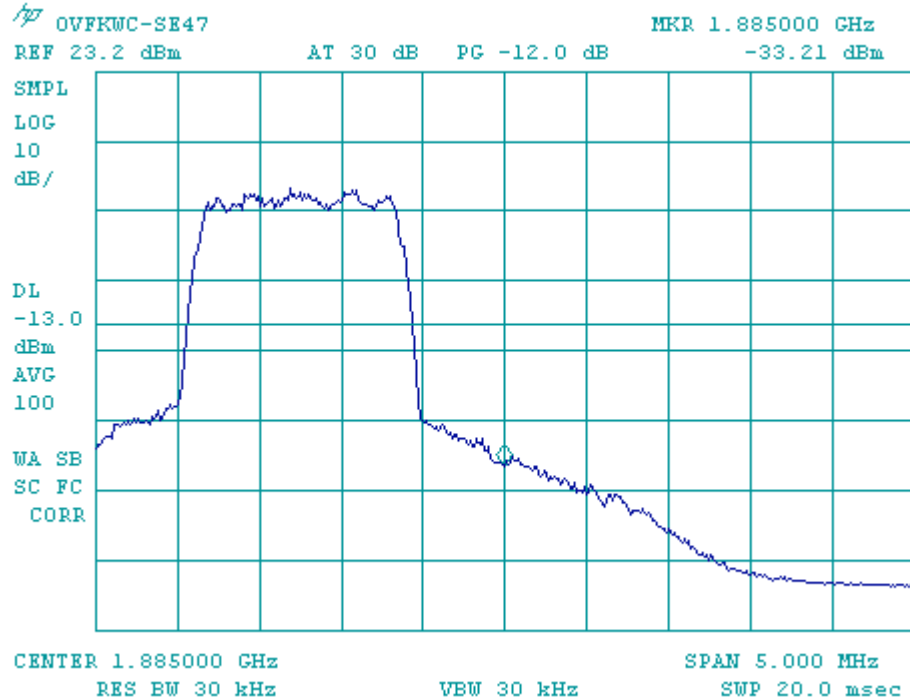


Figure 8.1-7 Block E Lower edge, Channel 725

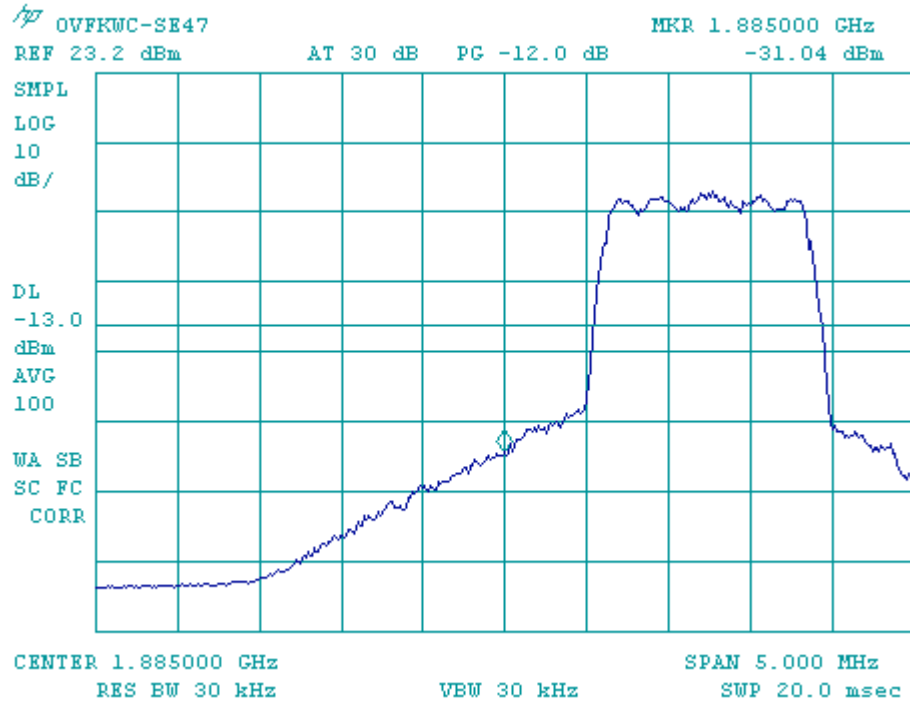


Figure 8.1-8 Block E Upper edge, Channel 775

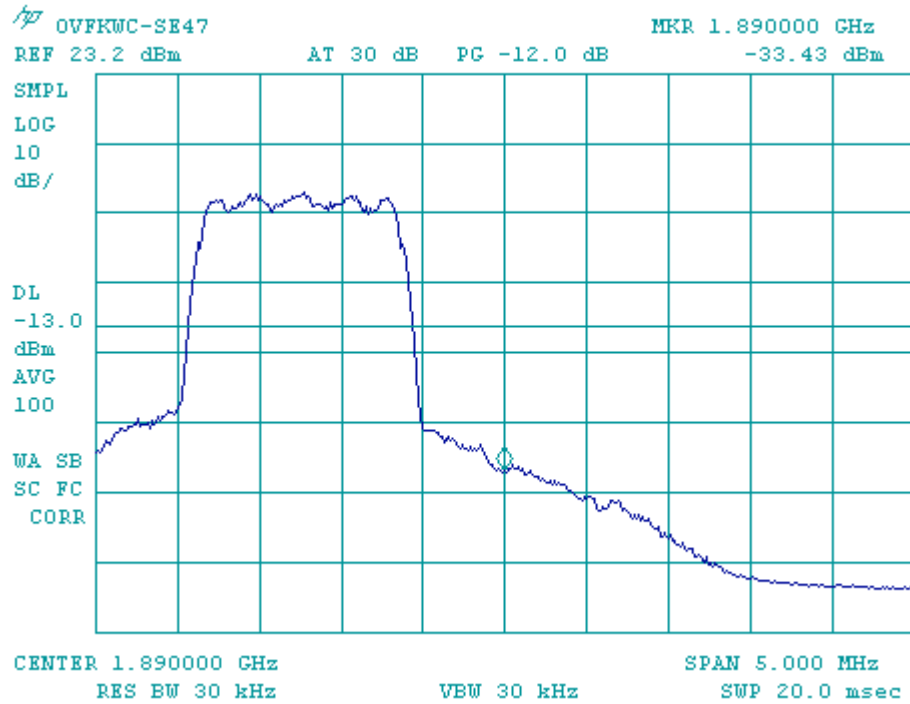


Figure 8.1-9 Block F Lower edge, Channel 825

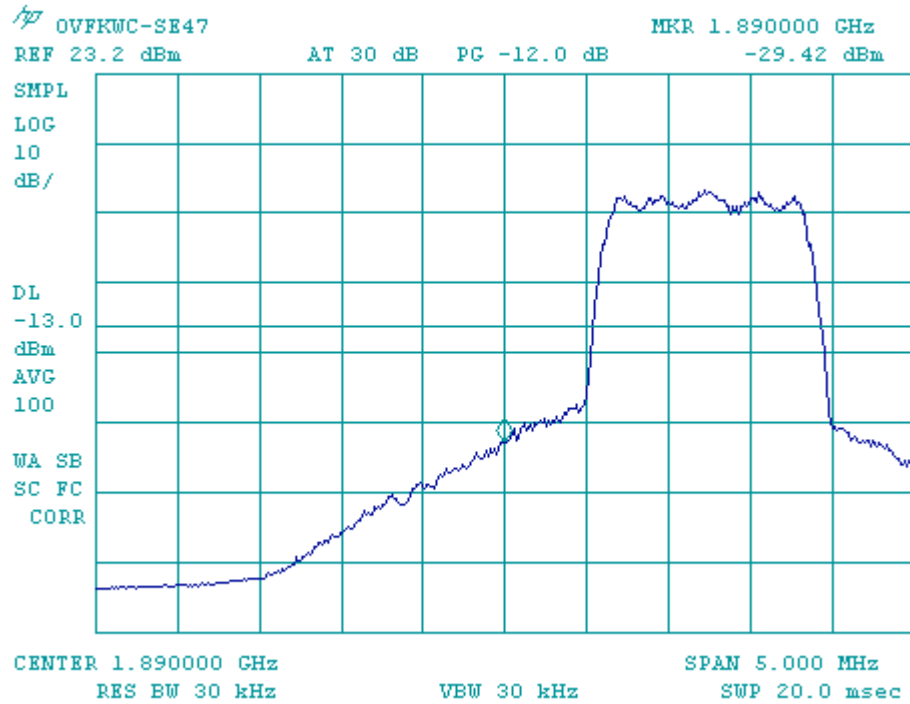


Figure 8.1-10 Block F Upper edge, Channel 875

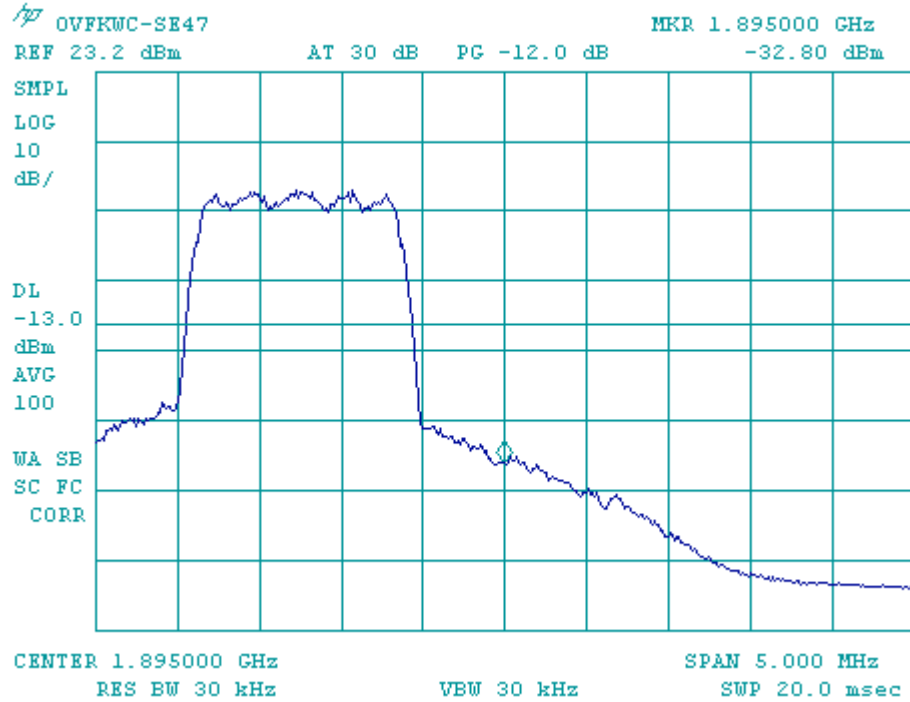


Figure 8.1-11 Block C Lower edge, Channel 925

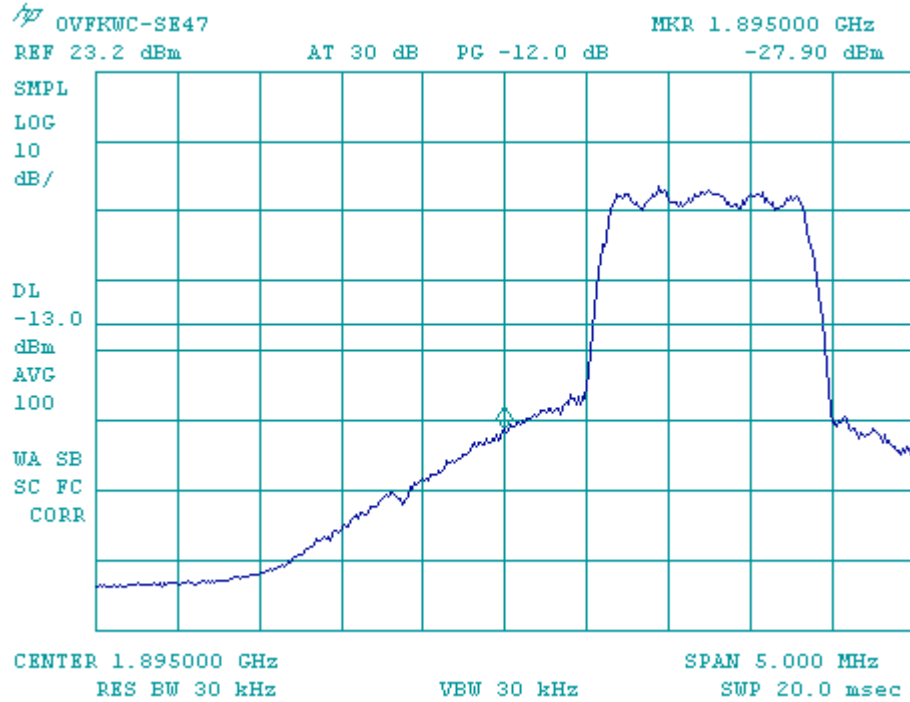
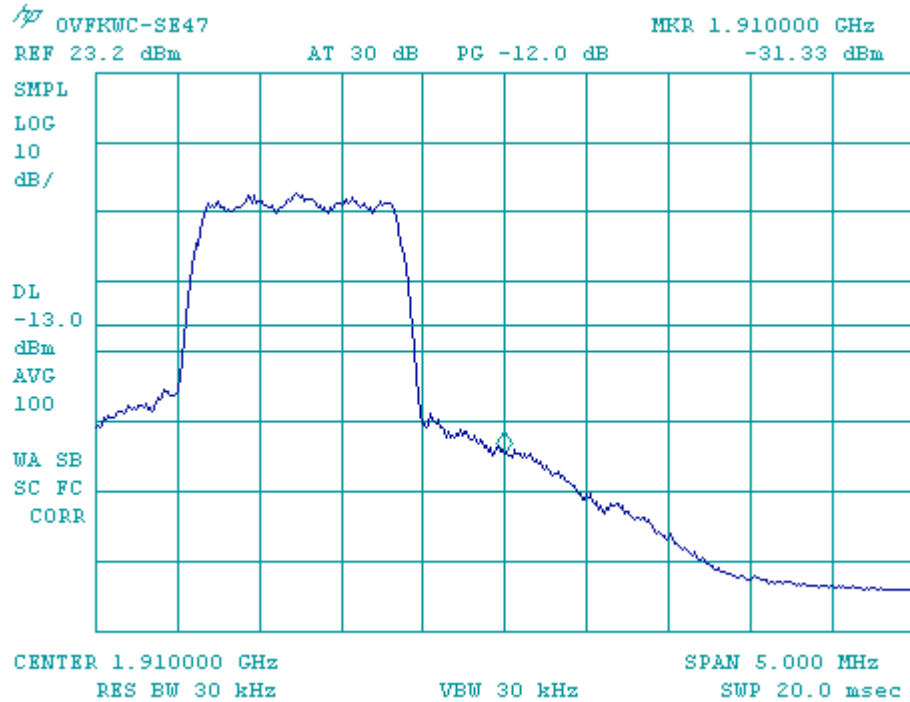


Figure 8.1-12 Block C Upper edge, Channel 1175



**8.2 CDMA 800 Mode**

<b>FCC:</b> § 22.917	<b>IC:</b> RSS-129
<b>Measurement Procedures:</b> The RF output of the EUT was connected to the input of the HP8594E spectrum analyzer with sufficient attenuation. During tests, the EUT was modulated with full rate.	

**List of Figures**

<b>Figure</b>	<b>Mode</b>	<b>Description</b>
8.2-1	CDMA 800	Block A Lower edge, Channel 1013
8.2-2		Block A Upper edge, Channel 310
8.2-3		Block B Lower edge, Channel 357
8.2-4		Block B Upper edge, Channel 643
8.2-5		Block A Lower edge, Channel 690
8.2-6		Block B Lower edge, Channel 740
8.2-7		Block A Upper edge, Channel 693
8.2-8		Block B Upper edge, Channel 777



Figure 8.2-1 Block A Lower edge, Channel 1013

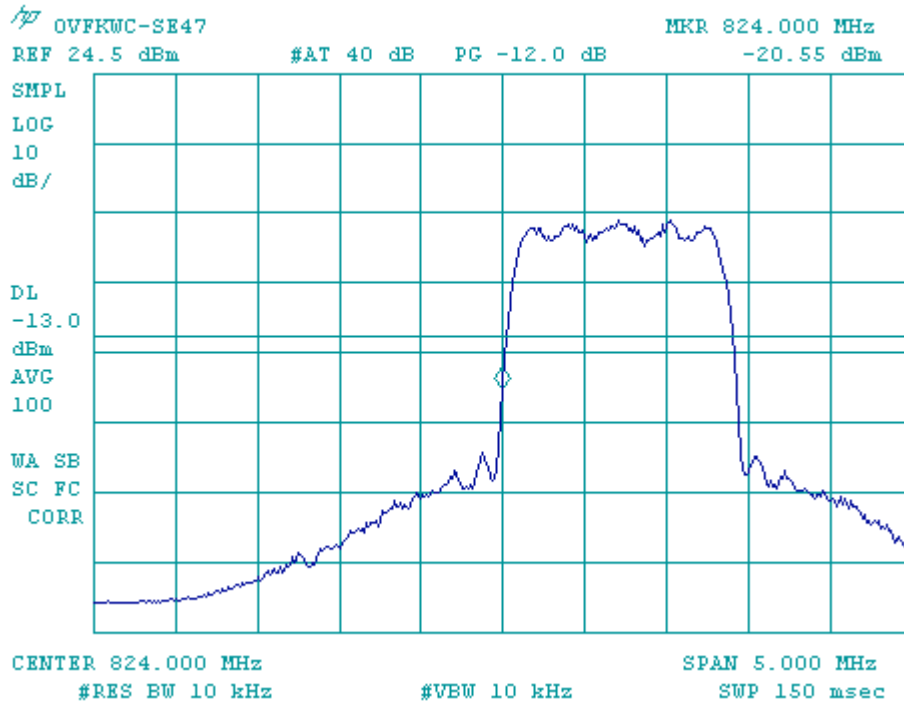


Figure 8.2-2 Block A Upper edge, Channel 310

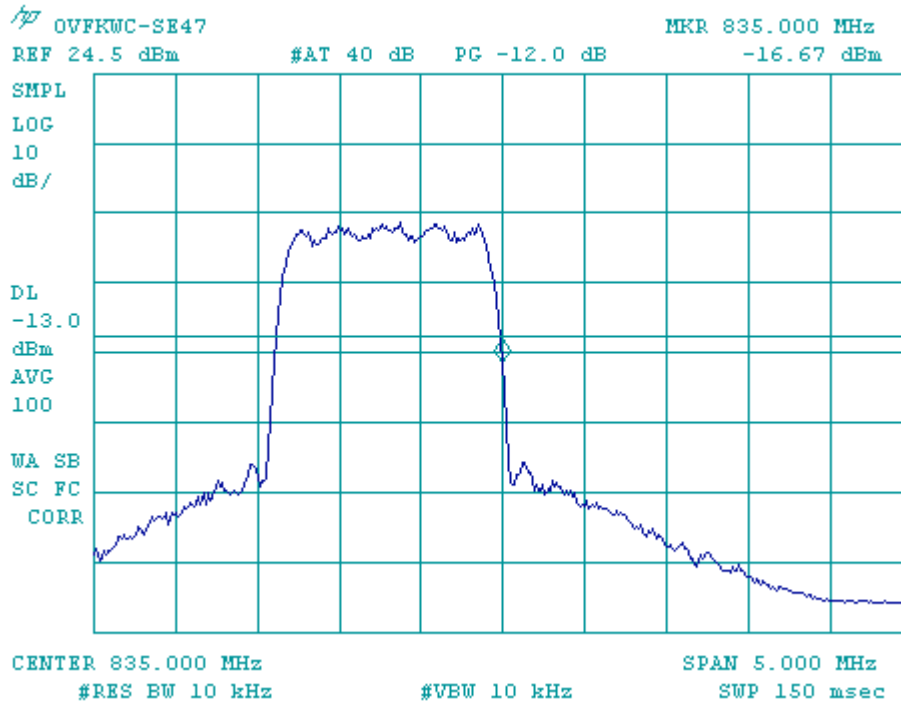


Figure 8.2-3 Block B Lower edge, Channel 357

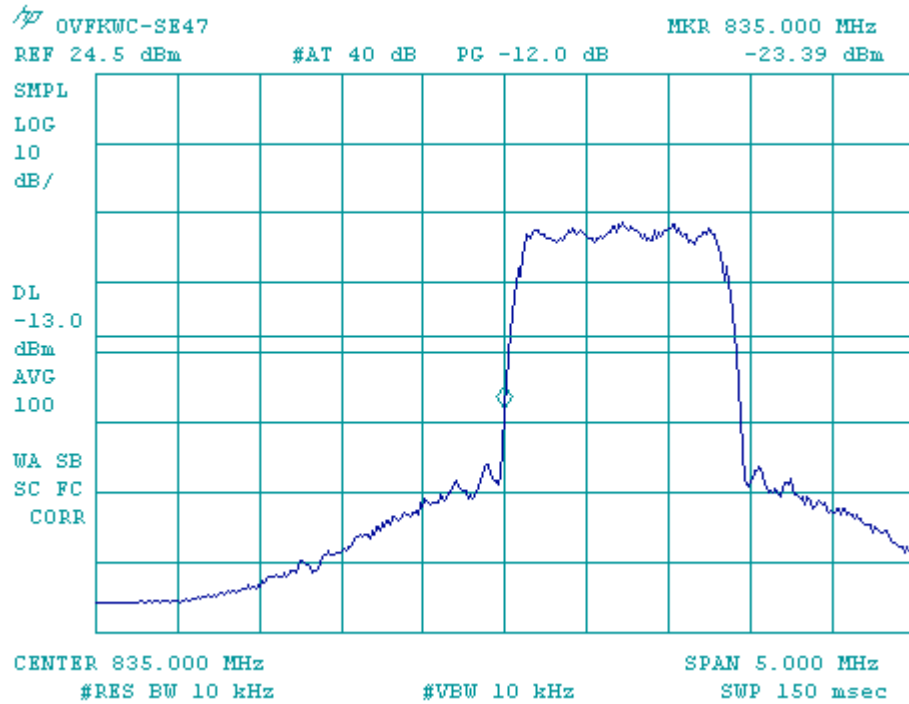


Figure 8.2-4 Block B Upper edge, Channel 643

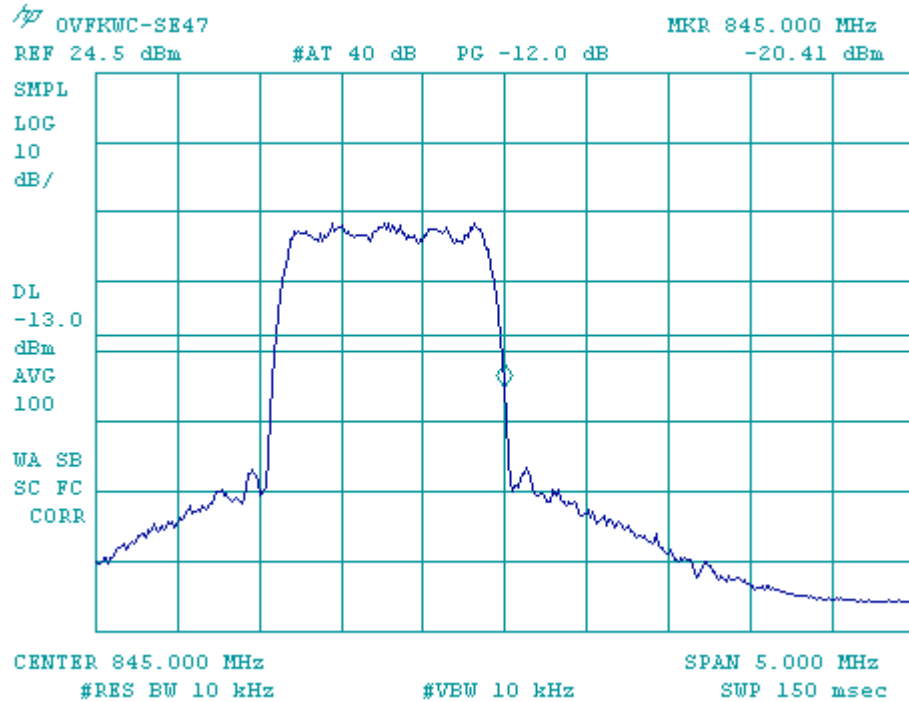


Figure 8.2-5 Block A Lower edge, Channel 690

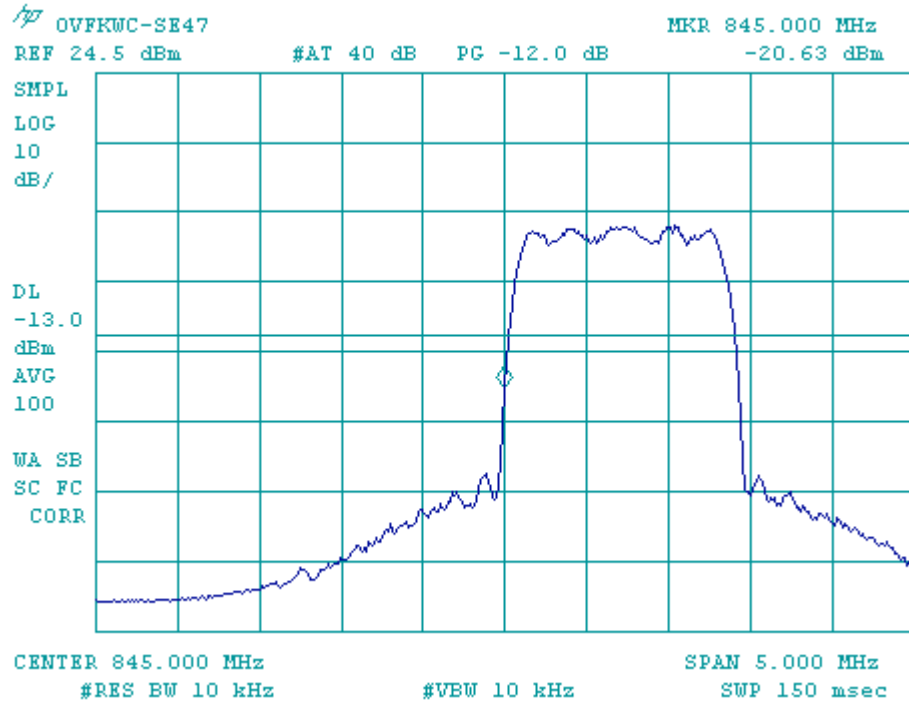


Figure 8.2-6 Block B Lower edge, Channel 740

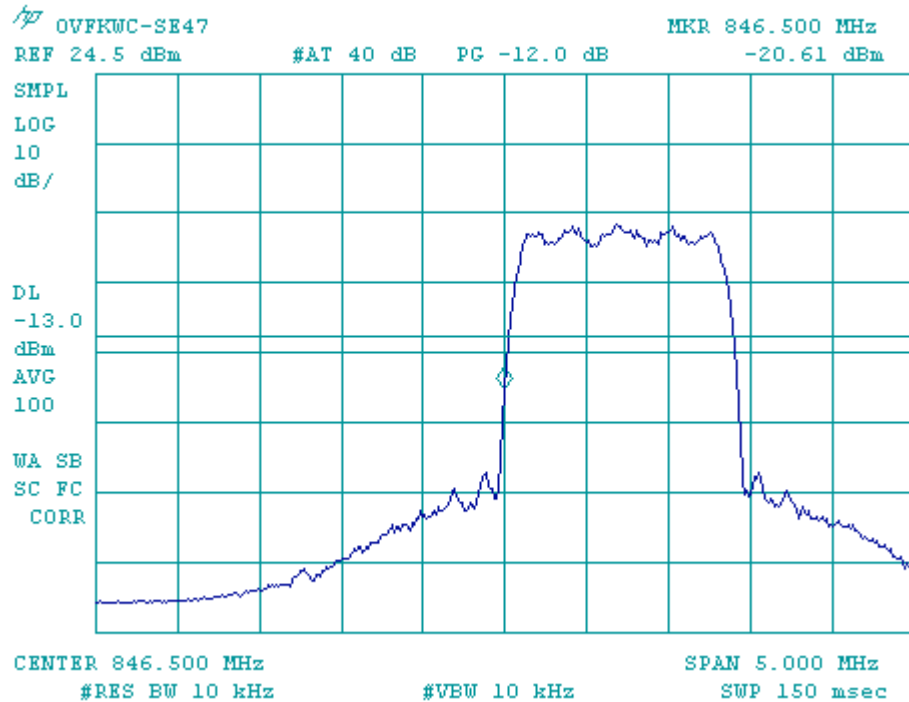


Figure 8.2-7 Block A Upper edge, Channel 693

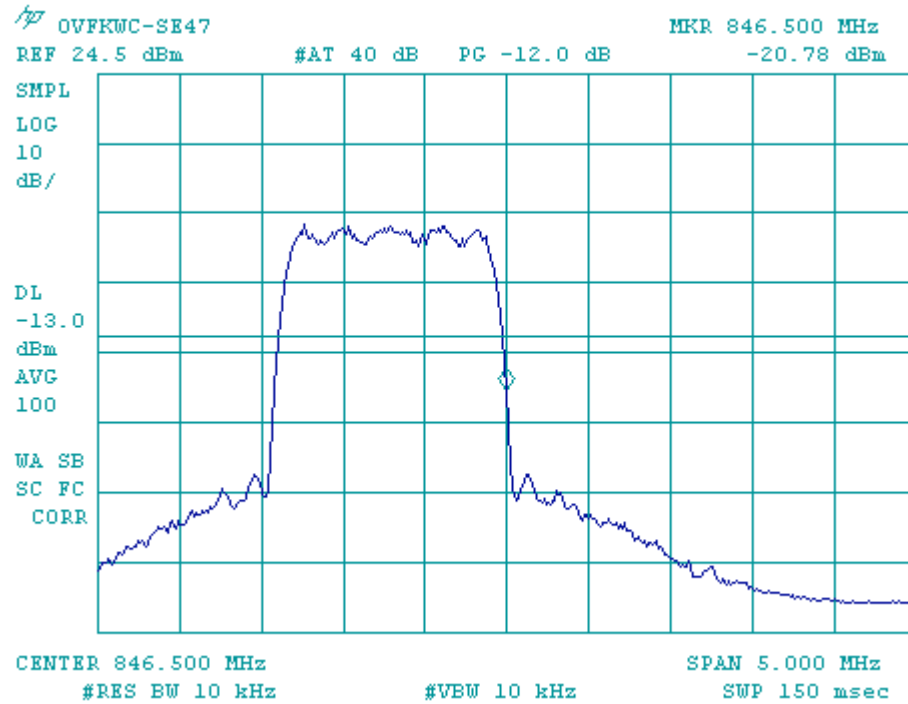
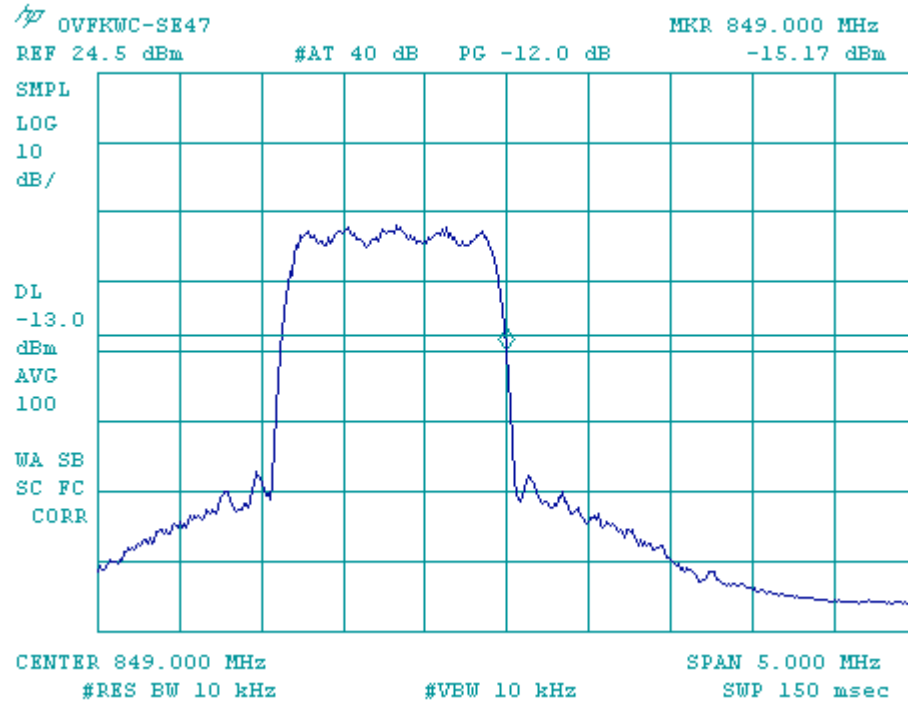


Figure 8.2-8 Block B Upper edge, Channel 777



**9 Spurious Emissions At Antenna Terminals**

<b>FCC:</b> § 2.1051, § 22.917(e)(f), § 24.238	<b>IC:</b> RSS-129 §6.3, §8.1, RSS-133 §6.3
<b>Measurement Procedures:</b>	
<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
9-1	CDMA 800	1013	Emissions in base station frequency range, 869 - 894 MHz
9-2			Conducted spurious emissions, 9kHz to 10GHz
9-3		383	Emissions in base station frequency range, 869 - 894 MHz
9-4			Conducted spurious emissions, 9kHz to 10GHz
9-5		777	Emissions in base station frequency range, 869 - 894 MHz
9-6			Conducted spurious emissions, 9kHz to 10GHz
9-7	CDMA 1900	25	Conducted spurious emissions, 9kHz to 20GHz
9-8		600	Conducted spurious emissions, 9kHz to 20GHz
9-9		1175	Conducted spurious emissions, 9kHz to 20GHz

Figure 9-1 CDMA 800 - Emissions in base station frequency range (CH 1013)

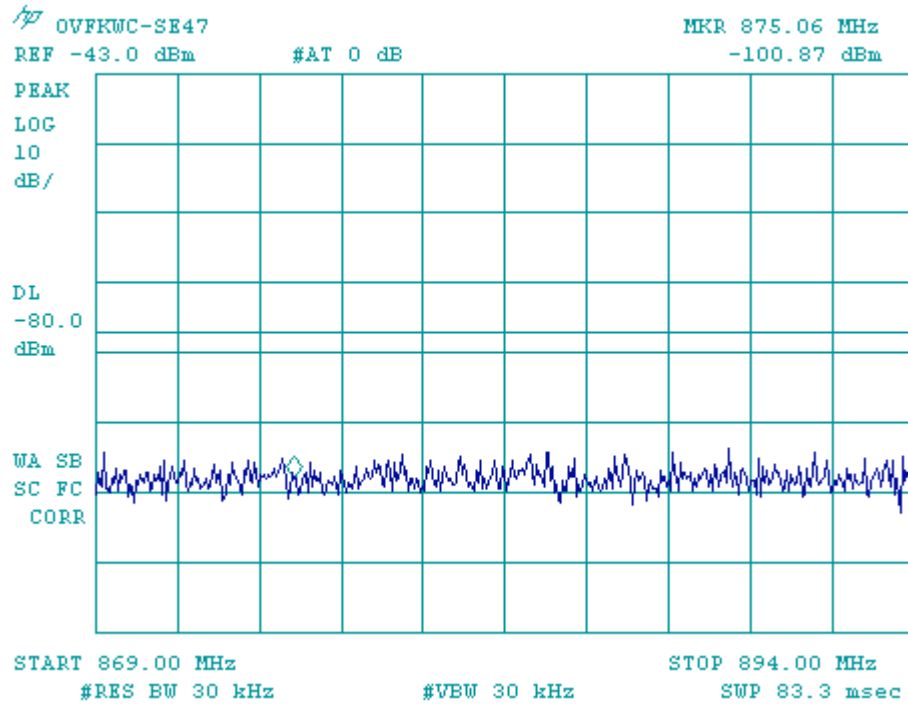


Figure 9-2a CDMA 800 – Conducted Spurious Emission (CH 1013)

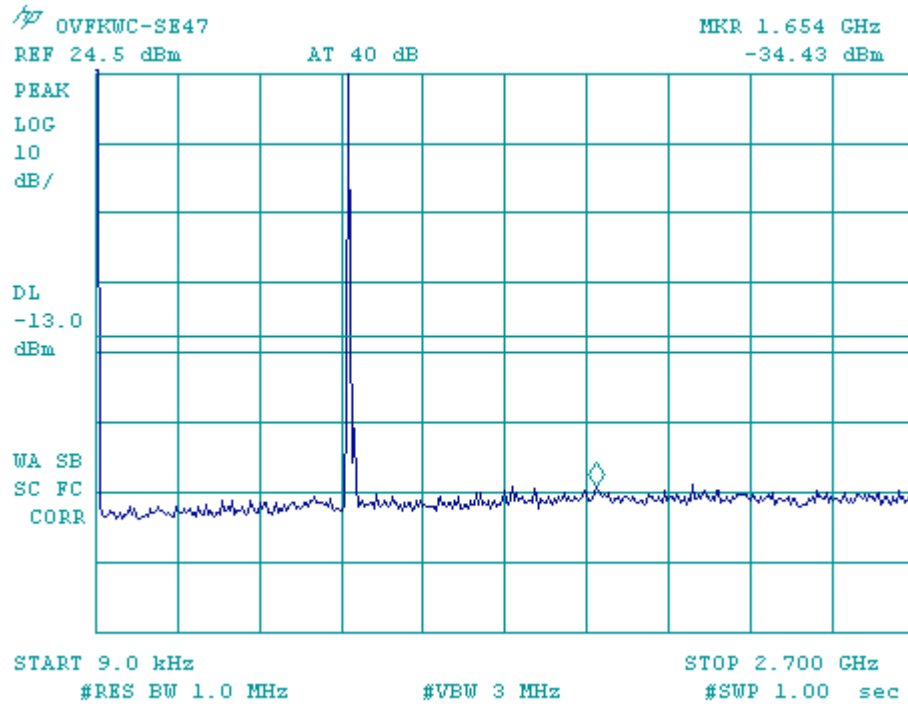


Figure 9-2b CDMA 800 – Conducted Spurious Emission (CH 1013)

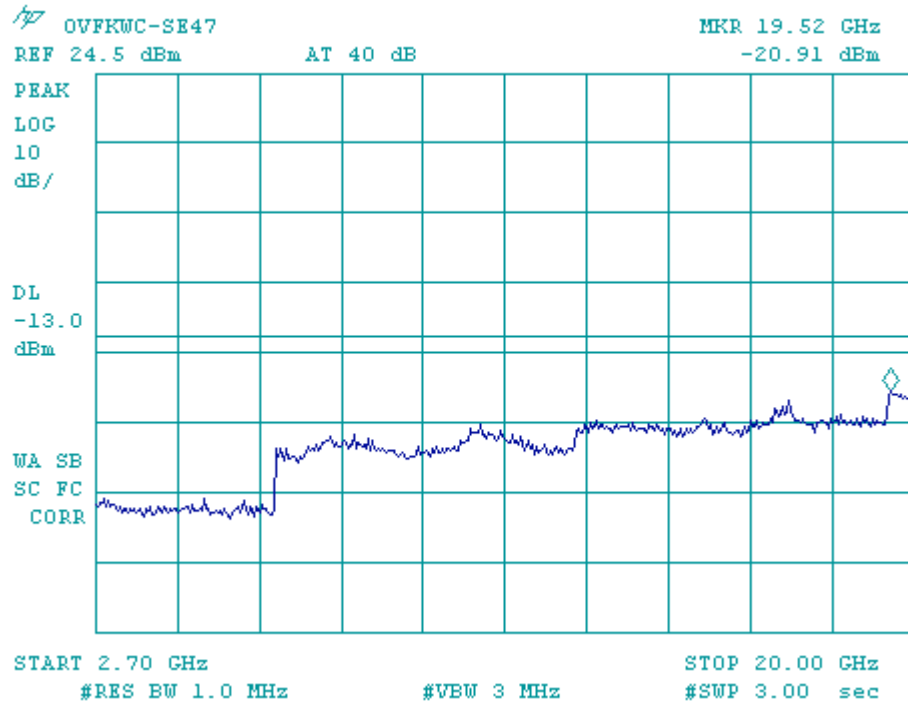


Figure 9-3 CDMA 800 - Emissions in base station frequency range (CH 383)

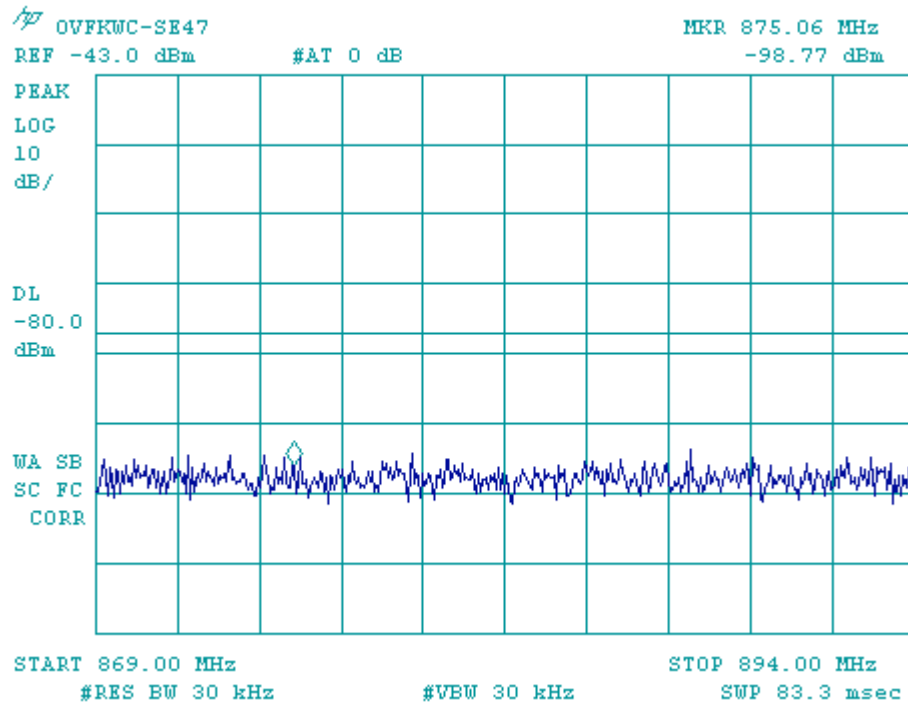




Figure 9-4a CDMA 800 – Conducted Spurious Emission (CH 383)

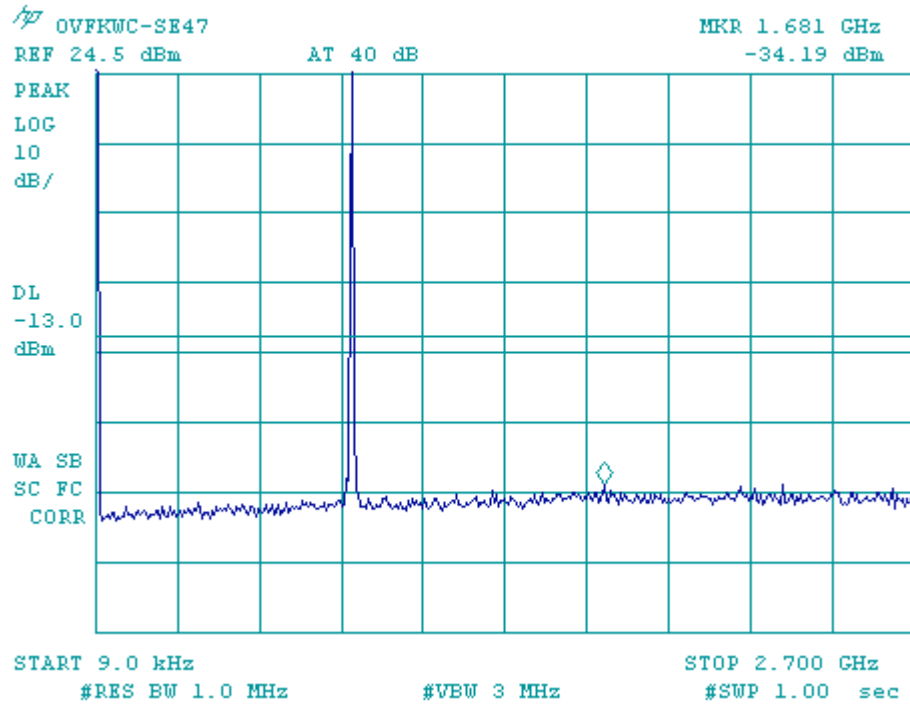


Figure 9-4b CDMA 800 – Conducted Spurious Emission (CH 383)

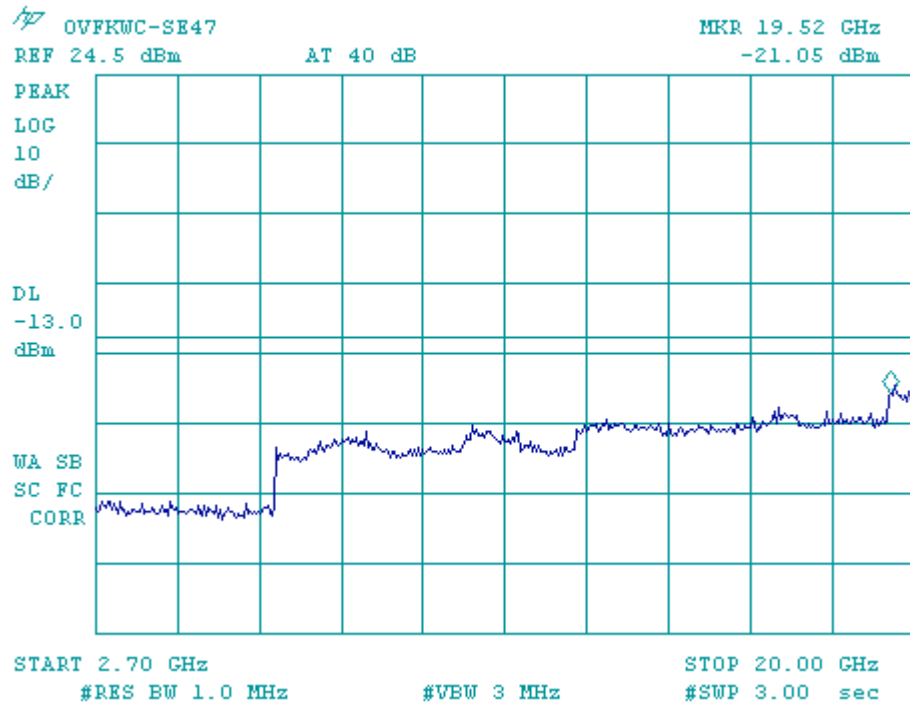


Figure 9-5 CDMA 800 - Emissions in base station frequency range (CH 777)

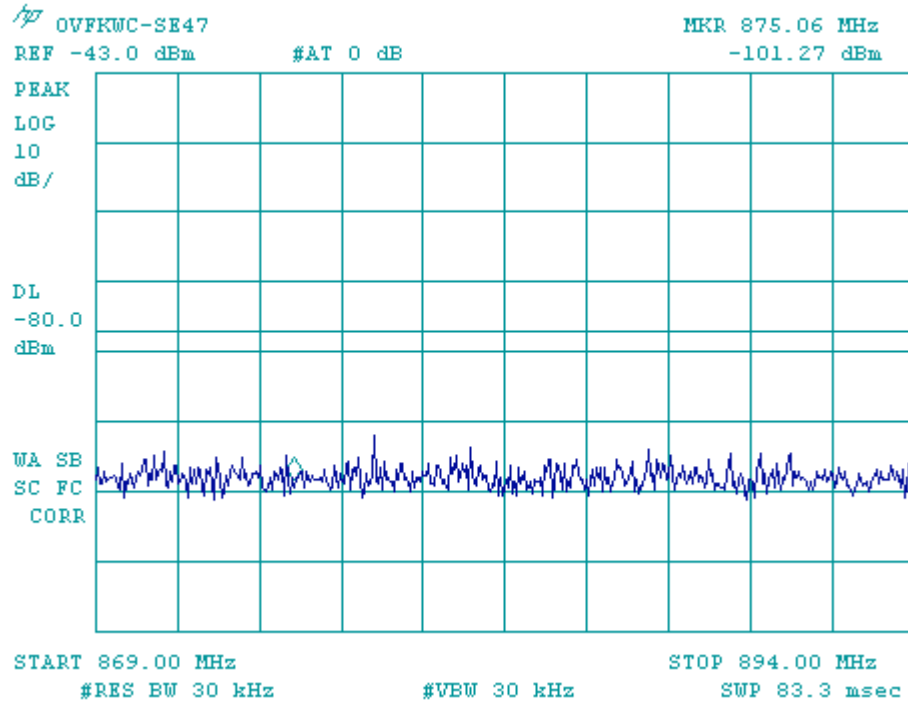


Figure 9-6a CDMA 800 – Conducted Spurious Emission (CH 777)

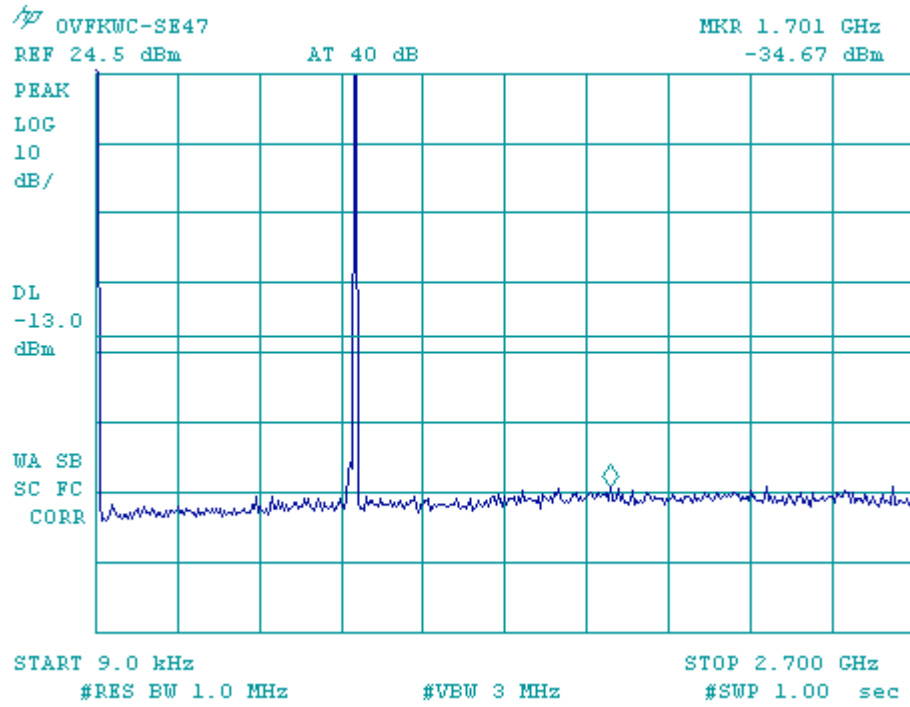


Figure 9-6b CDMA 800 – Conducted Spurious Emission (CH 777)

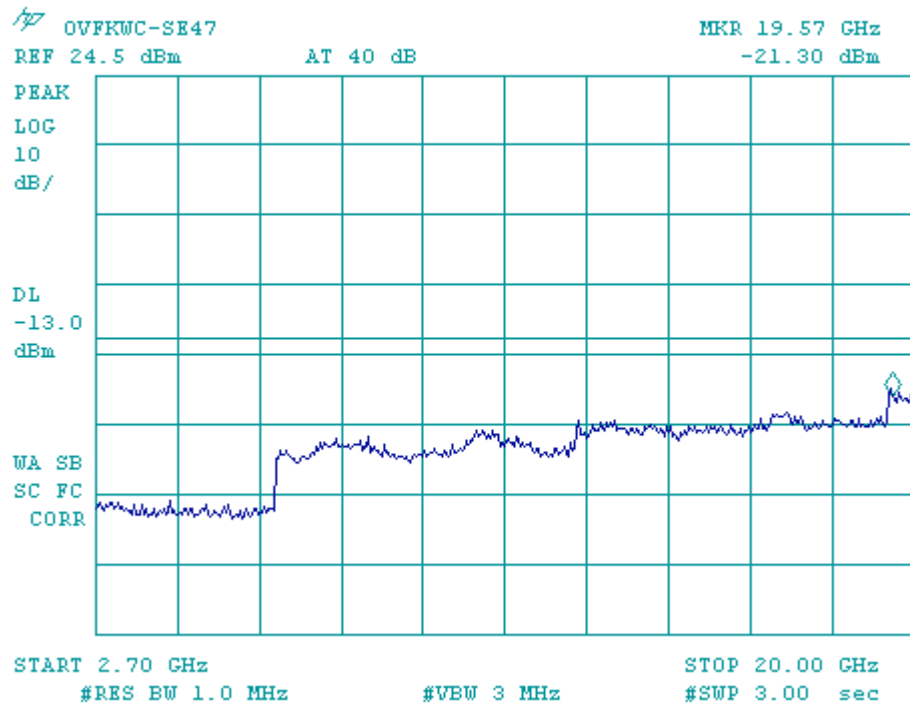


Figure 9-7a CDMA 1900 - Conducted Spurious Emission (CH 25)

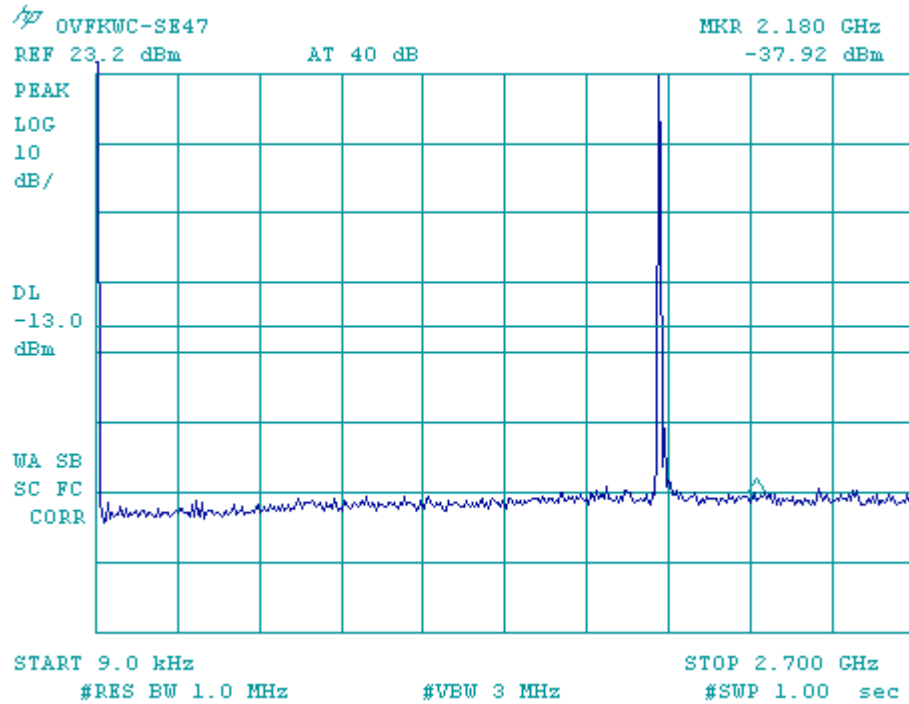


Figure 9-7b CDMA 1900 - Conducted Spurious Emission (CH 25)

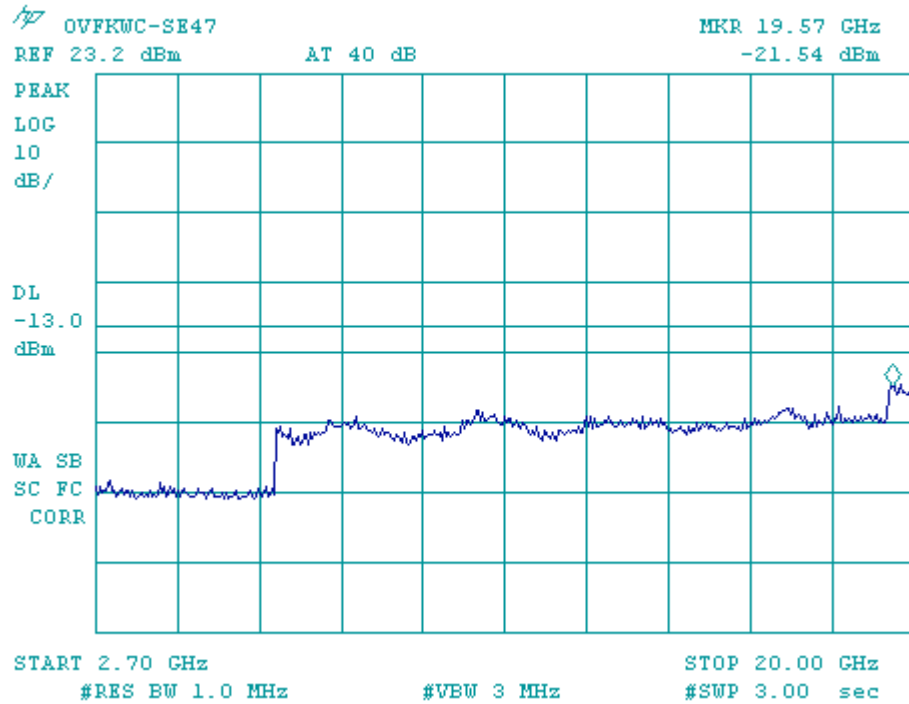


Figure 9-8a CDMA 1900 - Conducted Spurious Emission (CH 600)

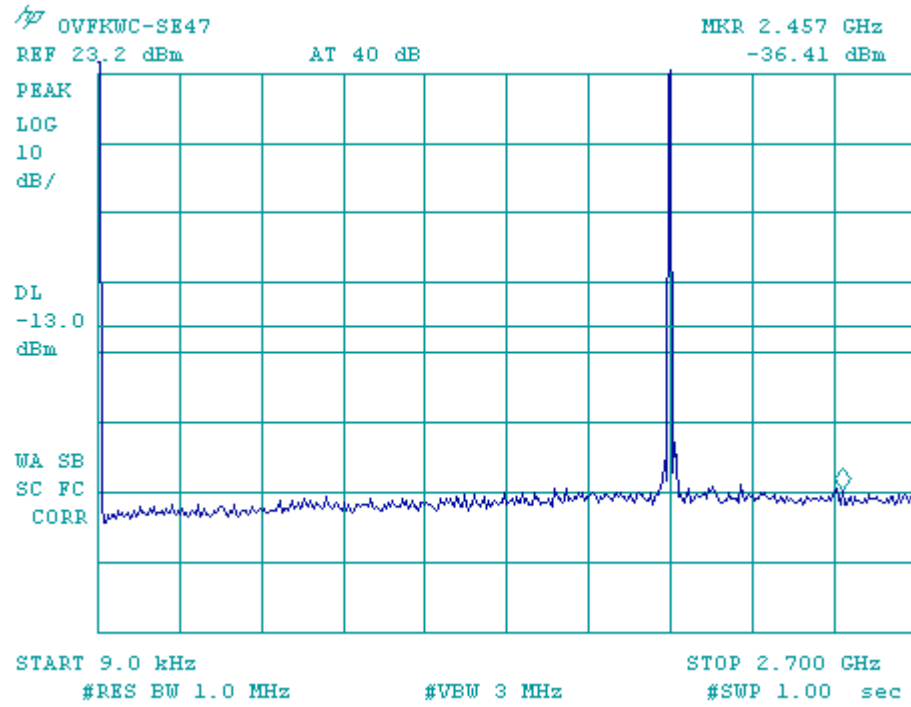


Figure 9-8b CDMA 1900 - Conducted Spurious Emission (CH 600)

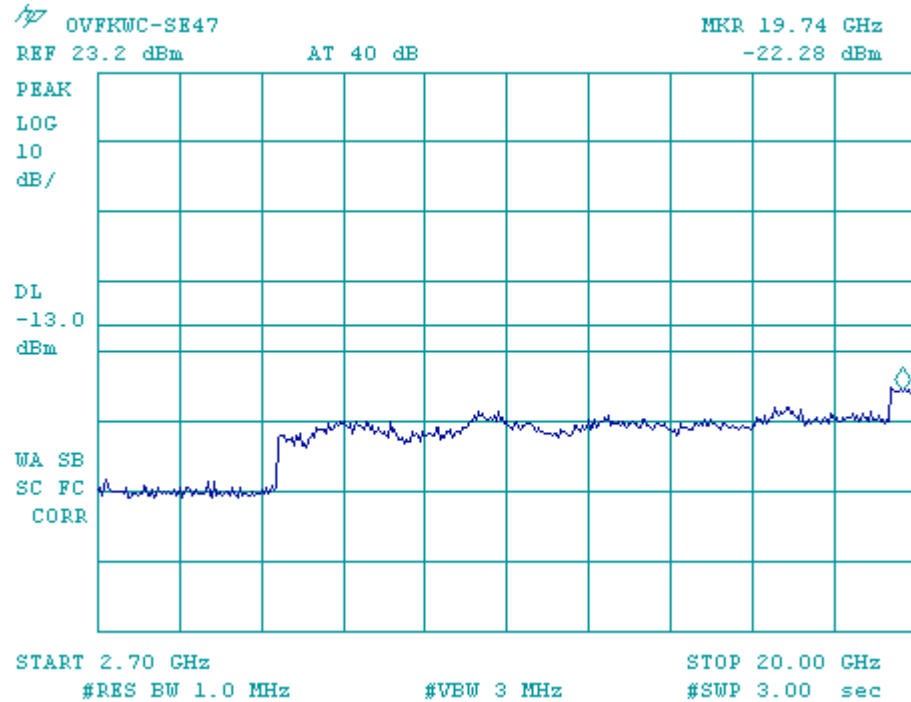


Figure 9-9a CDMA 1900 - Conducted Spurious Emission (CH 1175)

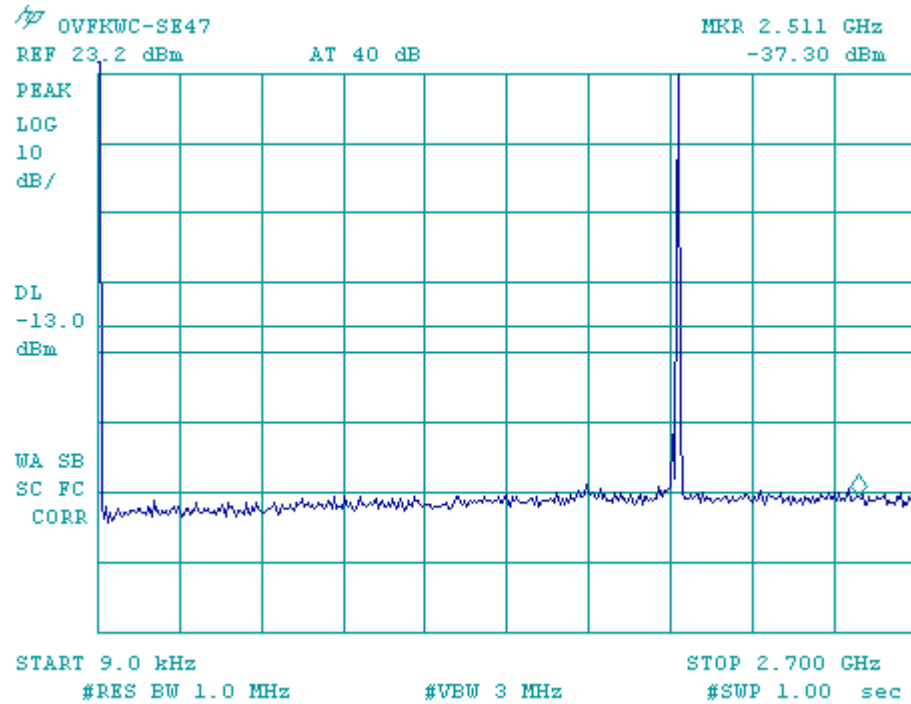
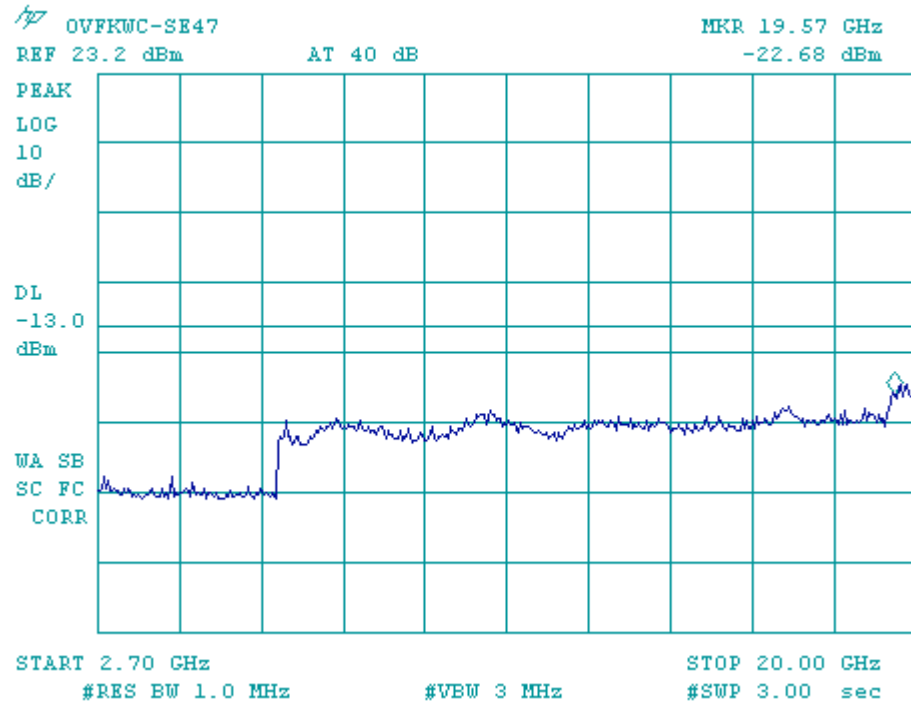


Figure 9-9b CDMA 1900 - Conducted Spurious Emission (CH 1175)



**10 Transmitter Radiated Spurious Emissions Measured Data**

<b>FCC:</b> § 2.1053, § 22.91, § 24.238	<b>IC:</b> RSS-129 §8.1, RSS-133 §6.3
<b>Measurement Procedures:</b>  The radiated spurious emission test was performed at TUV in San Diego, California. The test report is attached in a separate attachment.	

**11 Receiver Spurious Emissions**

<b>FCC:</b> § 15.109	<b>IC:</b> RSS-129 §10, RSS-133 §9
<b>Measurement Procedures:</b>  The receiver radiated spurious emission test was performed at TUV in San Diego, California. The test report is attached in a separate attachment.	

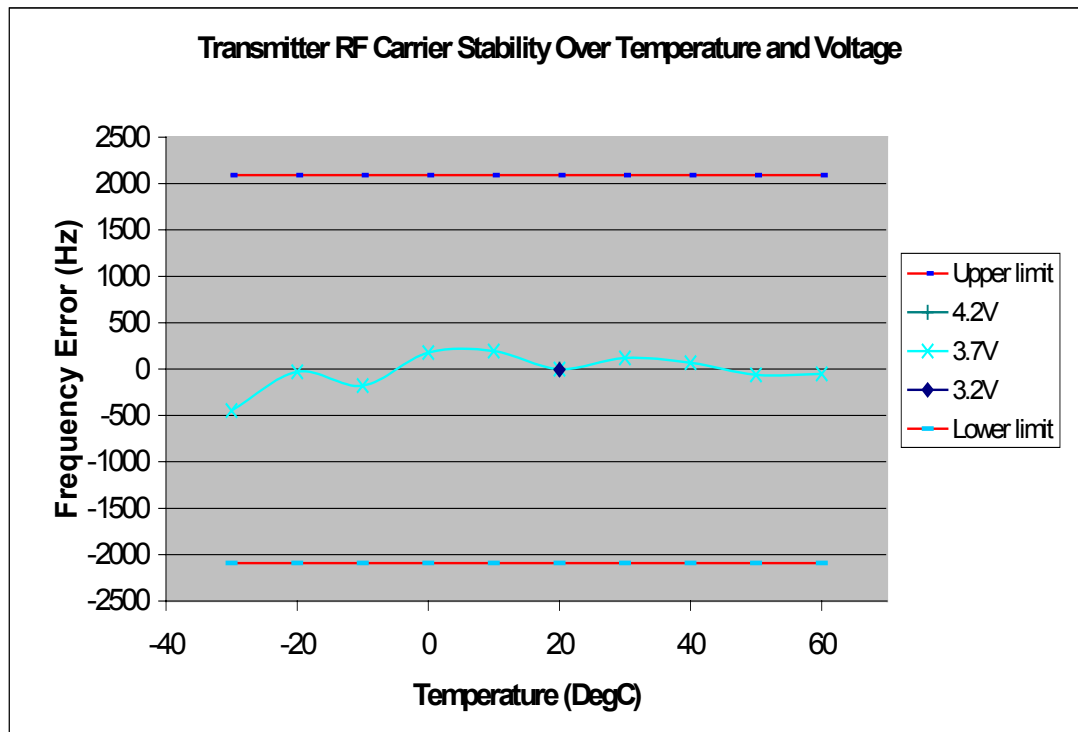
## 12 Transmitter RF Carrier Frequency Stability

<b>FCC:</b> § 2.1055, § 22.355, § 24.235	<b>IC:</b> RSS-129 §7.2 and §9.2, RSS-133 §7
<b>Measurement Procedures:</b>	
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.	

### 12.1 CDMA 800 Mode

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

Temperature (°C)	Deviation of Carrier (Hz)			Specification (Hz)		
	3.3V (Battery endpoint)	3.7V	4.26V (115%)	Lower limit	Upper limit	
-30		-142		-2091	2091	
-20		-267		-2091	2091	
-10		-250		-2091	2091	
0		-75		-2091	2091	
10		125		-2091	2091	
20	-825	25	0	-2091	2091	
30		-8		-2091	2091	
40		-40		-2091	2091	
50		-83		-2091	2091	
60		258			-2091	2091
					-2091	2091

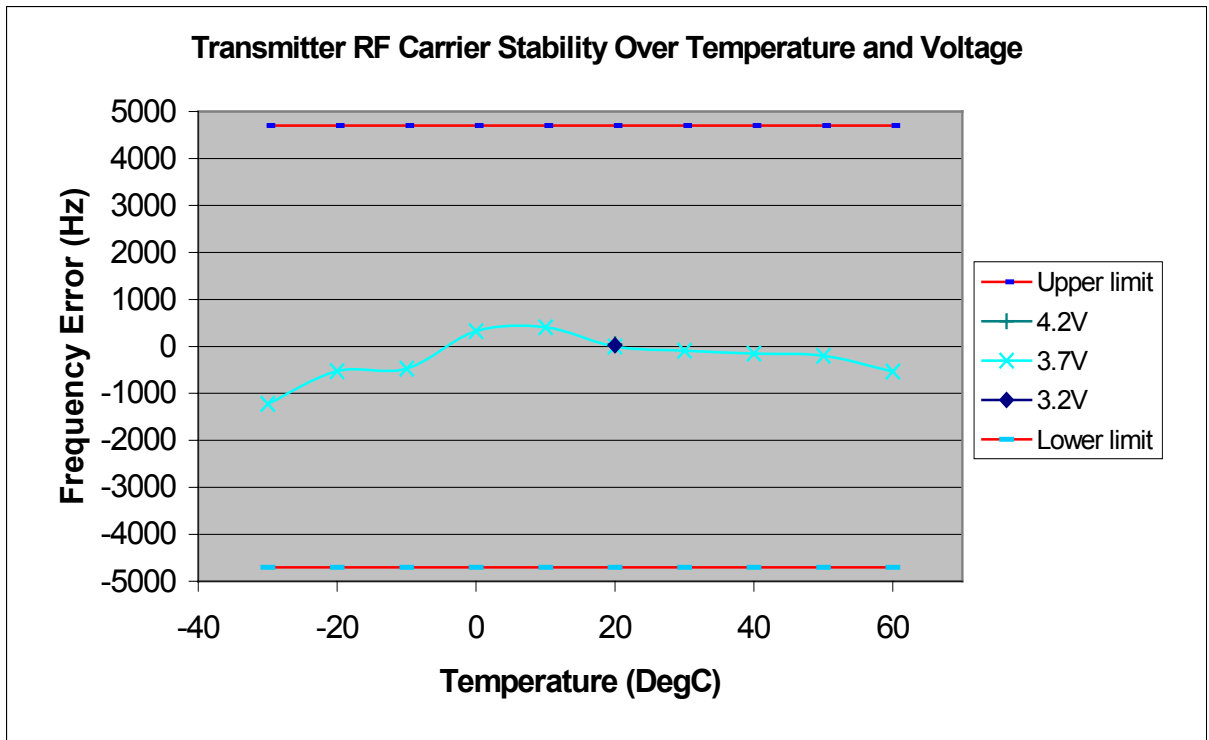




12.2 CDMA 1900 Mode

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

Temperature (°C)	Deviation of Carrier (Hz)			Specification (Hz)	
	3.2V (Battery endpoint)	3.7V	4.26V (115%)	Lower limit	Upper limit
-30		-367		-4700	4700
-20		-600		-4700	4700
-10		-725		-4700	4700
0		-167		-4700	4700
10		-75		-4700	4700
20	-533	-200	-233	-4700	4700
30		-208		-4700	4700
40		-317		-4700	4700
50		-217		-4700	4700
60		475		-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	1835203	11/24/03
Spectrum Analyzer	Hewlett Packard	8593EM	3710A00203	04/15/04
Spectrum Analyzer	Hewlett Packard	8594E	3810A06429	11/19/03
Wireless Communications Test Set	Agilent	8960	GB41251014	11/15/04
RF communication test set	Hewlett Packard	8920B	US35320824	12/21/03
Temperature Chamber	CSZ	Z2033	Z9343034	02/14/04