COMPTEST
Services LLC

Applicant:	Kyocera
FCC ID:	V65S2150A1
Report #:	CT-S2150-22_24-0313-R0

RF Emissions Test Report

FCC Part 22 and 24

For

Kyocera Corporation
c/o Kyocera Communication Inc.

Product:	Dual-Band CDMA Phone
Model:	S2150

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ATTESTATION

The tested device complies with the requirements in respect of all parameters subject to the test.

The test results and statements relate only to the items tested.

The test equipment used was suitable for the tests performed and within manufacturer's published specifications and operating parameters.

The test methods were consistent with the methods described in the relevant standards.

Product:	Dual-Band CDMA Cellular Phone with Bluetooth
Model #:	S2150
FCC ID:	V65S2150A1
Tested in accordance with:	FCC Part 22 & 24
Test performed by:	CompTest Services LLC
Test Requested by:	Kyocera Corporation c/o Kyocera Communication Inc 8611 Balboa Avenue San Diego, CA 92121 United States
Date of Test:	March 18 – March 20, 2013

Responsible Engineer	**Reviewed and approved by:**
Benjamin Nguyen	*Kelly Hill*
Benjamin Nguyen Test Engineer	Kelly Hill Quality Manager

1 SUMMARY OF TESTING

Section #	Rule Part	Test Description	Verdict
6	FCC § 2.1046, RSS-GEN 4.9	Conducted Power	Pass
7	FCC § 22.913, 24.232, RSS-GEN 132, 133 (6.4)	Radiated Power	Pass
8	FCC § 24.232(d), RSS133 (6.4)	Peak-to-Average Ratio	Pass
9	FCC § 2.1049, 22.917 (b)(d), 24.238, RSS-GEN 4.9	Occupied Bandwidth	Pass
10	FCC § 2.1051, 22.917(e)(f), 24.238, RSS-GEN 132 (4.5), 133 (6.5)	Spurious Emissions at Antenna Terminals	Pass
11	FCC § 2.1053, 22.91, 24.238, RSS-GEN 132 (4.5), 133 (6.5)	Transmitter Radiated Spurious Emissions	Pass
12	FCC § 15.109, RSS-GEN	Receiver Spurious Emissions	Pass
13	FCC § 2.1055, 22.355, 24.235, RSS-GEN 132 (4.3), 133 (6.3)	Transmitter RF Carrier Frequency Stability	Pass
14	FCC § 2.1093, RSS102	Exposure of Humans to RF Fields	Pass

2 EQUIPMENT UNDER TEST INFORMATION

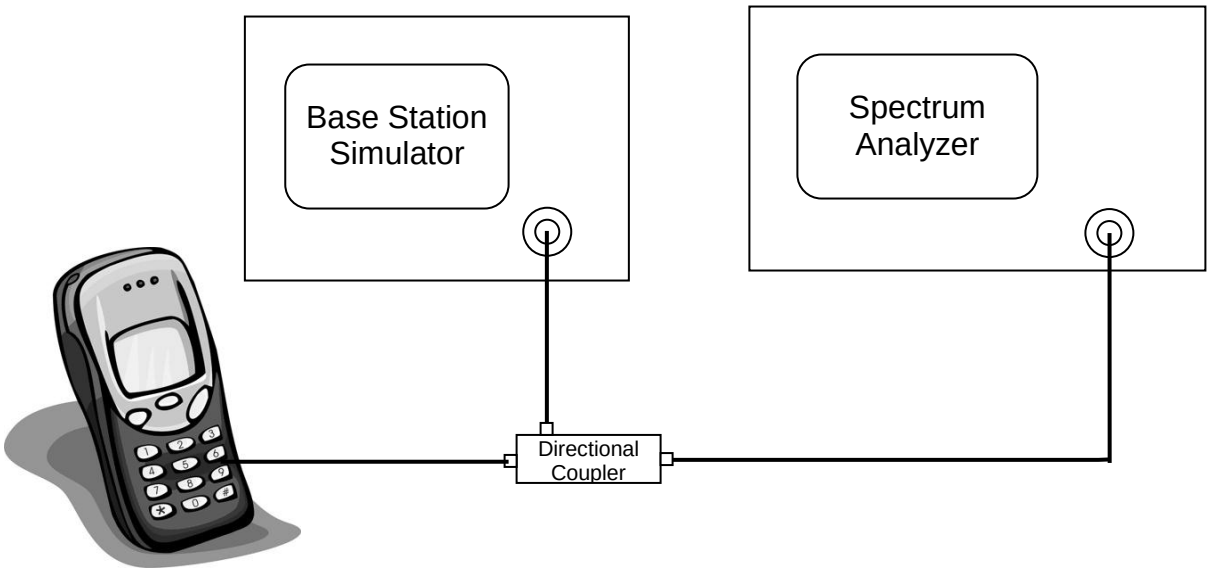
EUT Serial Number:	268435457816731761		
Type:	[ ] Prototype, [X] Pre-Production, [ ] Production		
Equipment Category:	Portable		
RF Exposure Environment:	General Population / Uncontrolled		
Antenna:	Internal Antenna	**Detachable Antenna:**	No
External Input:	Audio/Digital Data		
Quantity:	Quantity production is planned		
Multiple Access Scheme:	CDMA		
Emission Designators:	1M25F9W		
FCC Rule Parts:	§22H	§24E	
Mode:	CDMA 2000, 1X	CDMA 2000, 1x	
Band:	BC-0	BC-1	
TX Frequency (MHz):	824 – 849	1850 - 1910	

3 TEST FACILITIES

The test sites and measurement facilities used to collect data are located at 8611 Balboa Ave., San Diego, CA 92121, USA

4 TEST SETUP

All CDMA measurements were conducted with a base station simulator to establish a CDMA link with the equipment under test (EUT). To investigate the response of the EUT the main antenna RF output port of the EUT was connected to the input of the spectrum analyzer with a RF cable. The amplitude of the spectrum analyzer is corrected for the cable insertion loss and any other applicable losses. A fully charged battery was used as a power supply voltage, except for the Transmitter RF Carrier Frequency Stability test a dummy battery connected to a power supply was used.



4.1 Test Configuration

To justify on the selection of applicable configurations, the EUT was pre-tested under all Radio Configuration and Service Option operation modes to determine the worst-case scenario.

The following configuration was determined and reported as worst-case for all measurements:

Radio Configuration:	**RC1**
Service Options:	**SO55**
Data Rate:	**Full Rate**

CONFIGURATION	CONDUCTED POWER (dBm)					
	CDMA 800 BC-0			CDMA 1900		
Peak Power	Ch1013	Ch 384	Ch 777	Ch 25	Ch 600	Ch 1175
	Peak	Peak	Peak	Peak	Peak	Peak
SO2, RC1 Full Rate	28.63	29.27	28.96	28.89	29.32	29.30
SO2, RC3 Full Rate	28.20	28.88	28.63	28.49	28.88	28.77
SO55, RC1 Full Rate	**28.72**	**29.35**	**29.04**	**28.97**	**29.33**	**29.31**
SO55, RC3 Full Rate	28.33	28.89	29.15	28.45	28.86	28.93
TDSO SO32, RC3 (+SCH) Full Rate	28.24	28.97	29.15	28.89	28.97	29.04
TDSO SO32, RC3 (+F-SCH) Full Rate	28.25	29.05	28.73	28.52	28.97	28.99

CONFIGURATION	CONDUCTED POWER (dBm)					
	CDMA 800 BC-0			CDMA 1900		
Average Power	Ch 1013	Ch 384	Ch 777	Ch 25	Ch 600	Ch 1175
	Avg	Avg	Avg	Avg	Avg	Avg
SO2, RC1 Full Rate	24.40	24.20	24.31	24.20	24.38	24.20
SO2, RC3 Full Rate	24.39	24.23	24.32	24.22	24.38	24.19
SO55, RC1 Full Rate	24.40	24.22	24.32	24.22	24.39	24.21
SO55, RC3 Full Rate	**24.41**	**24.25**	**24.34**	**24.23**	**24.38**	**24.20**
TDSO SO32, RC3 (+SCH) Full Rate	24.45	24.24	24.43	24.29	24.37	24.35
TDSO SO32, RC3 (+F-SCH) Full Rate	24.45	24.27	24.42	24.34	24.38	24.34

5 TTY COMPLIANCE

FCC:	**§ 255 of the Telecom Act**

The EUT has been designed for TTY Compliance with Cellular Compatibility Standard.

6 CONDUCTED RF OUTPUT POWER

6.1 Test Configuration

FCC:	**§ 2.1046**
IC:	**RSS132 §4.4; RSS133 §6.4**

The EUT was connected to a Universal Power Meter through a RF cable. The cable loss was taken into account for accurate power measurement. The EUT was set at low, mid, high channels and each frequency band to investigate the conducted power.

6.2 Test Results

Mode	Frequency (MHz)	Channel	Conducted Power (dBm)
CDMA 800	824	1013	24.41
	836.52	384	24.25
	848.31	777	24.34
CDMA 1900	1851.25	25	24.23
	1880	600	24.38
	1908.75	1175	24.20

7 RADIATED RF OUTPUT POWER

7.1 Test Configuration

FCC:	**§ 22.913, § 24.232**
IC:	**RSS132 §4.4; RSS133 §6.4**

The test was performed in Compliance Certification Service using substitution method. See separated radiated emission report for details.

The test report is attached in a separate attachment.

8 PEAK-AVERAGE RATIO

8.1 Test Configuration

FCC:	**§ 24.232(d)**
IC:	**RSS133 (6.4)**

The RF output of the EUT was connected to the input of the spectrum analyzer (S.A.) with sufficient attenuation. The spectrum analyzer Complementary Cumulative Distribution Function (CCDF) function is utilized to determine the largest deviation between average and peak power of the EUT.

For Digital: Modulate with full rate and all up power control bit.

S.A. Setting	RBW	VBW
Power Stat CCDF	5MHz	auto

Limits: <13 dB

8.2 Test Result

Figure	Description	Mode	Result
8-1	CCDF @ Ch600	**CDMA 1900**	Pass

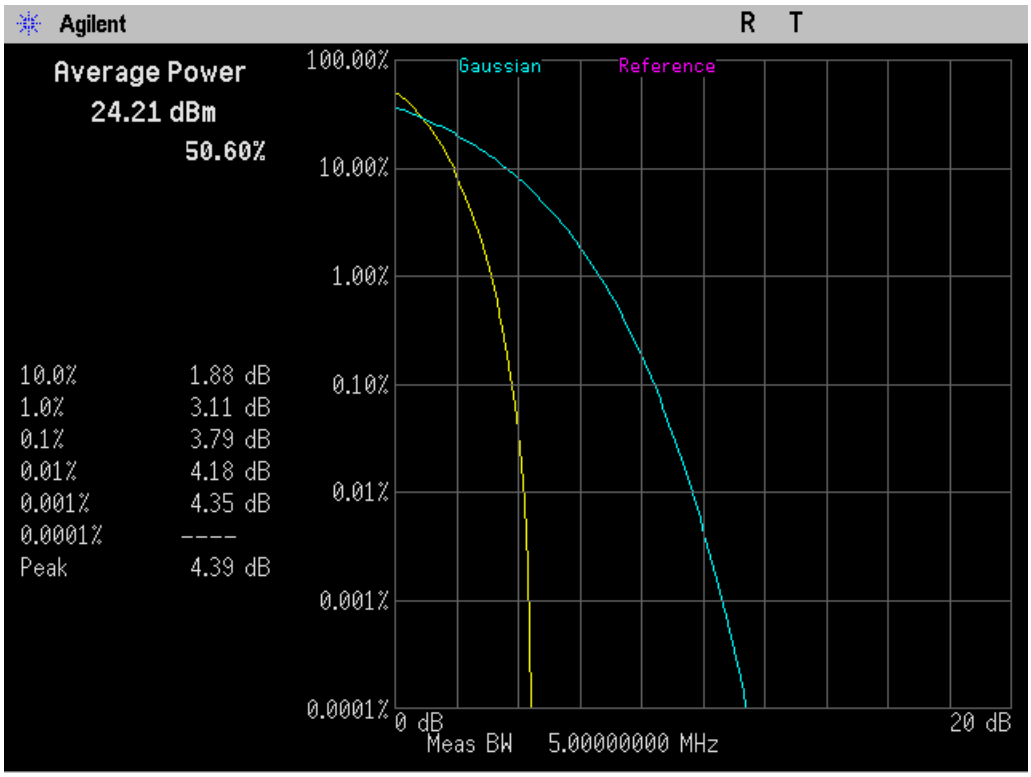


Figure 8-1 CCDF @ CH 600

9 OCCUPIED BANDWIDTH

9.1 Test Configuration

FCC:	**§ 2.1049, § 22.917(b)(d), § 24.238, § 27.53(g)(1)**
IC:	**RSS132 §4.5; RSS133 §6.5**

The RF output of the EUT was connected to the input of the spectrum analyzer (S.A.) with sufficient attenuation. The spectrum with no modulation was recorded.

For Digital: Modulate with full rate all up power control bit.

S.A. Setting	RBW	VBW
Bandwidth Measurement	30KHz	300kHz
Band Edge Measurement	30KHz	100KHz

Limits: Bandwidth: N/A
Bandedge: -13dBm

9.2 Test Result

Figure	Description	Mode	Result
9-1	CDMA @ Ch384	**CDMA 800**	Pass
9-2	Lower Band Edge @ Ch 1013		Pass
9-3	Upper Band Edge @ Ch 777		Pass
9-4	CDMA @ CH600	**CDMA 1900**	Pass
9-5	Lower Band Edge @ CH 25		Pass
9-6	Upper Band Edge @ CH 1175		Pass

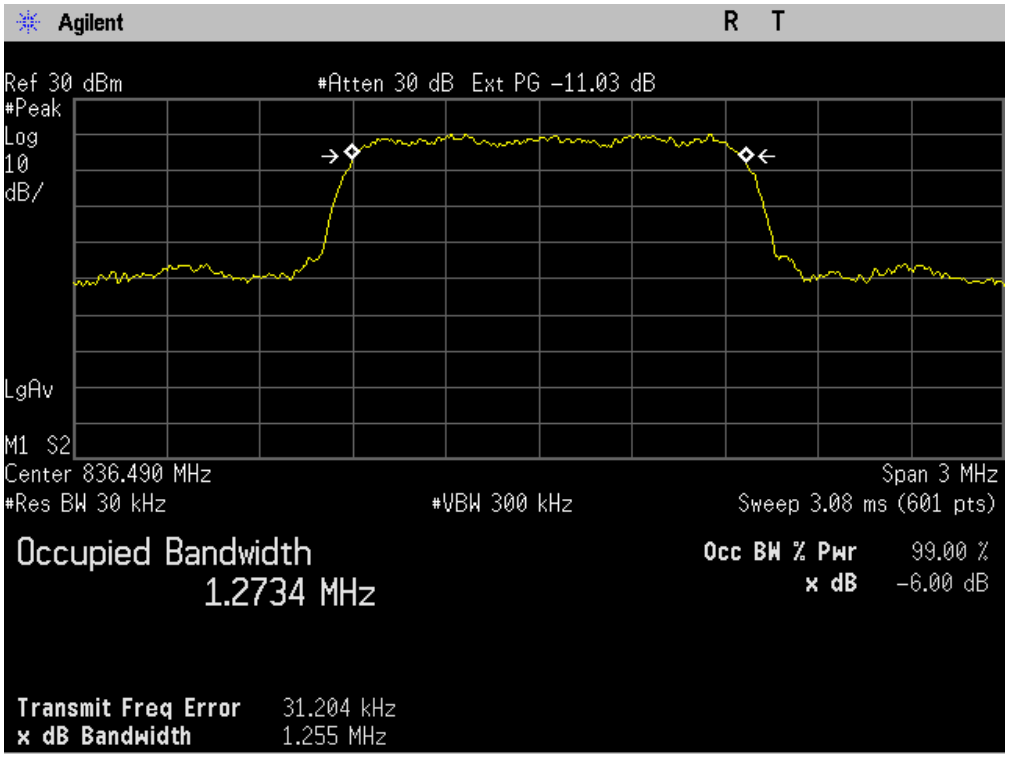


Figure 9-1 CDMA 800 @ CH 384

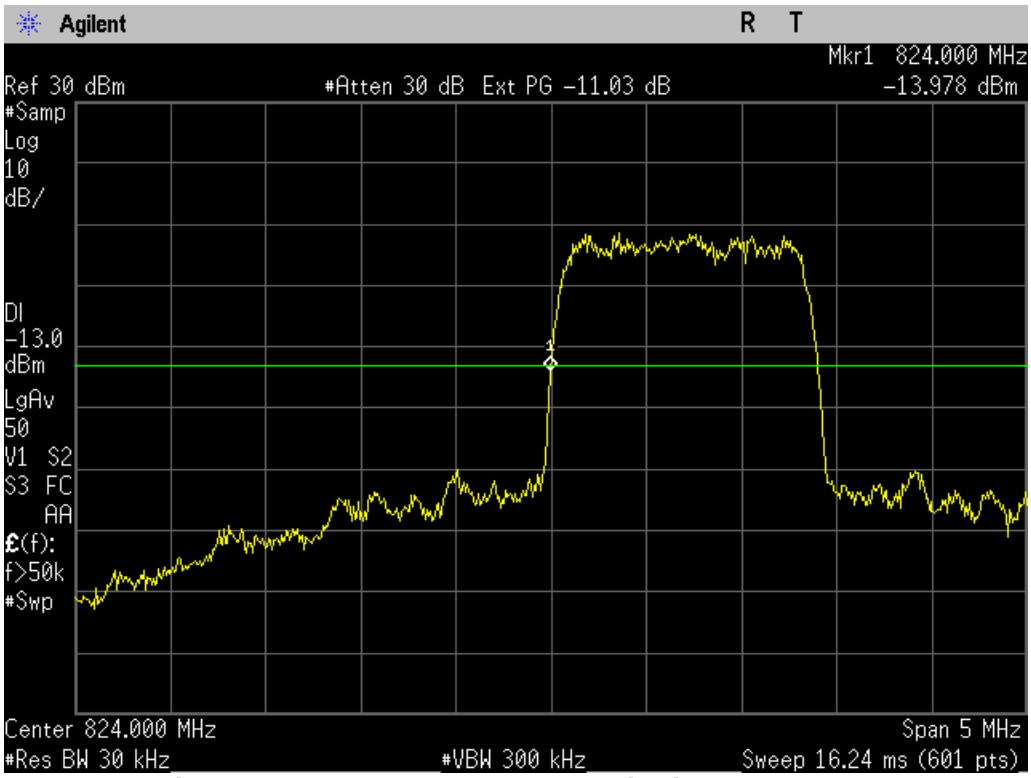


Figure 9-2 CDMA 800 Lower Band Edge @ CH 1013

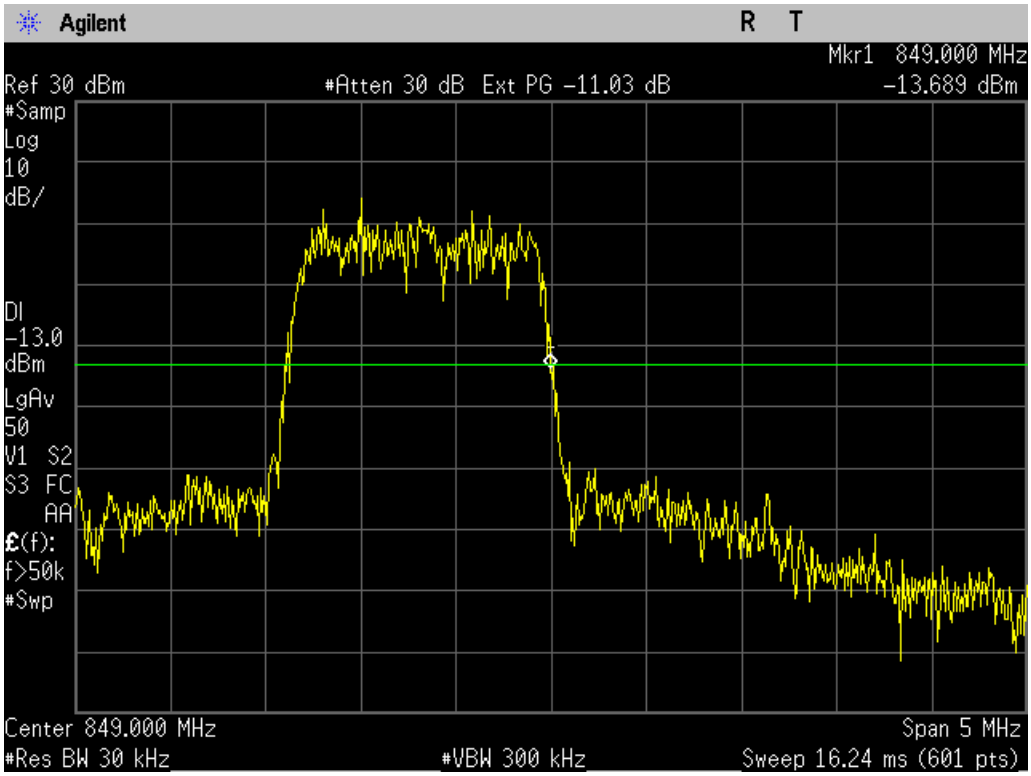


Figure 9-3 CDMA 800 Lower Band Edge @ CH 777

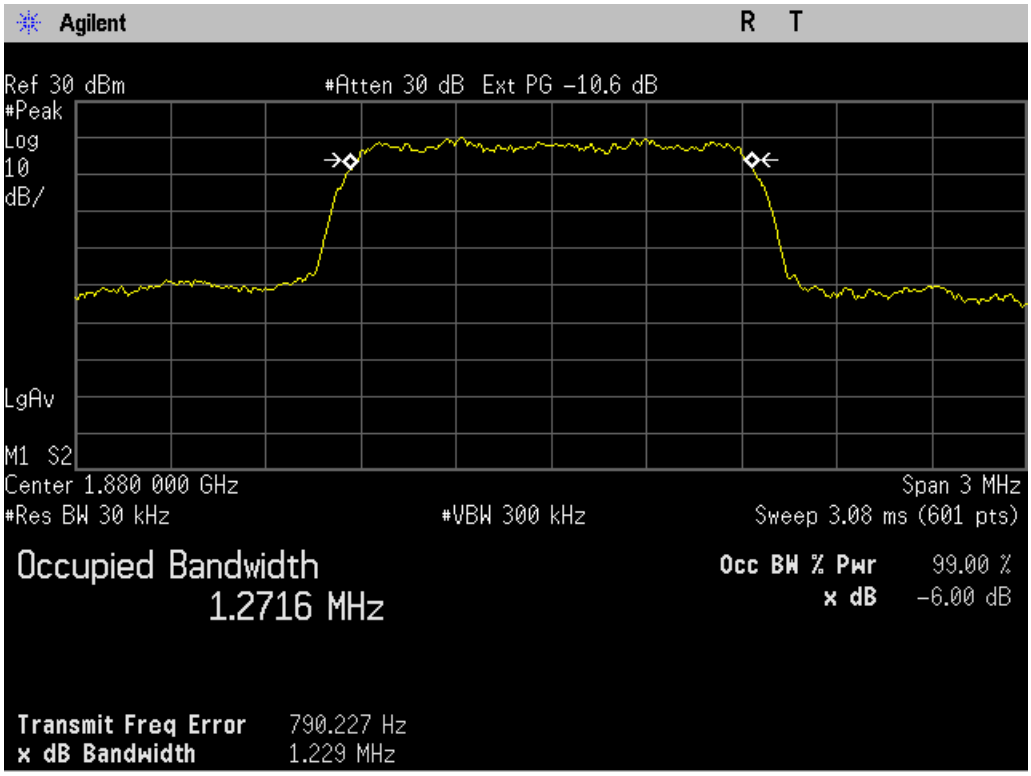


Figure 9-4 CDMA 1900 @ CH 600

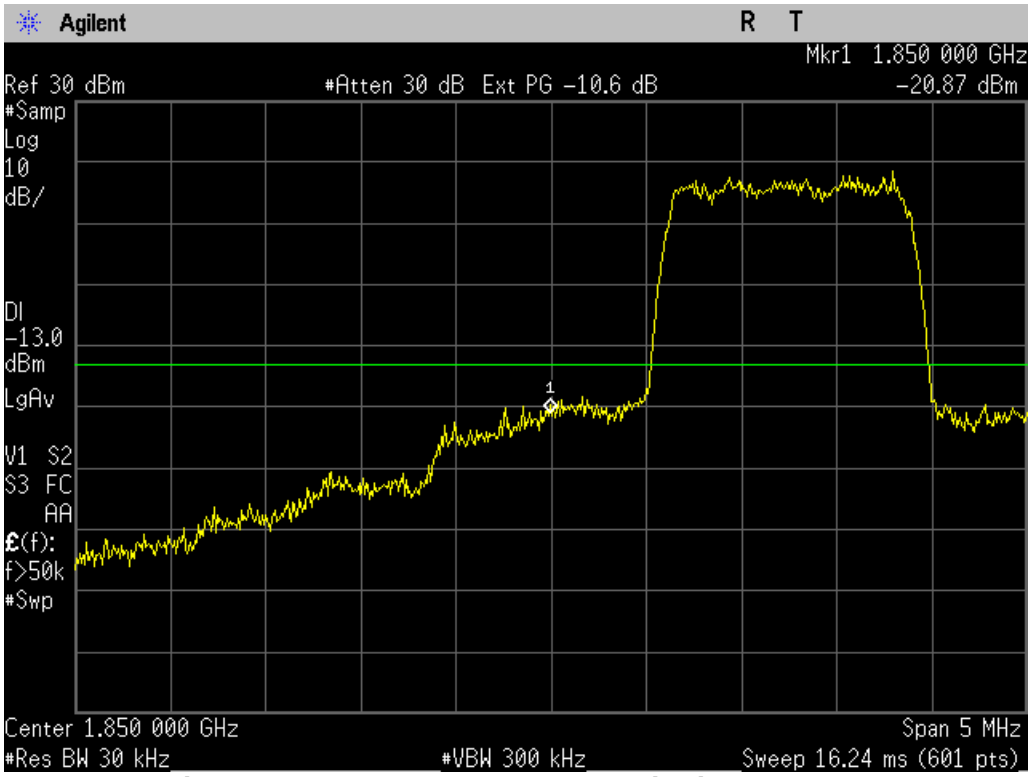


Figure 9-5 CDMA 1900 Lower Band Edge @ CH 25

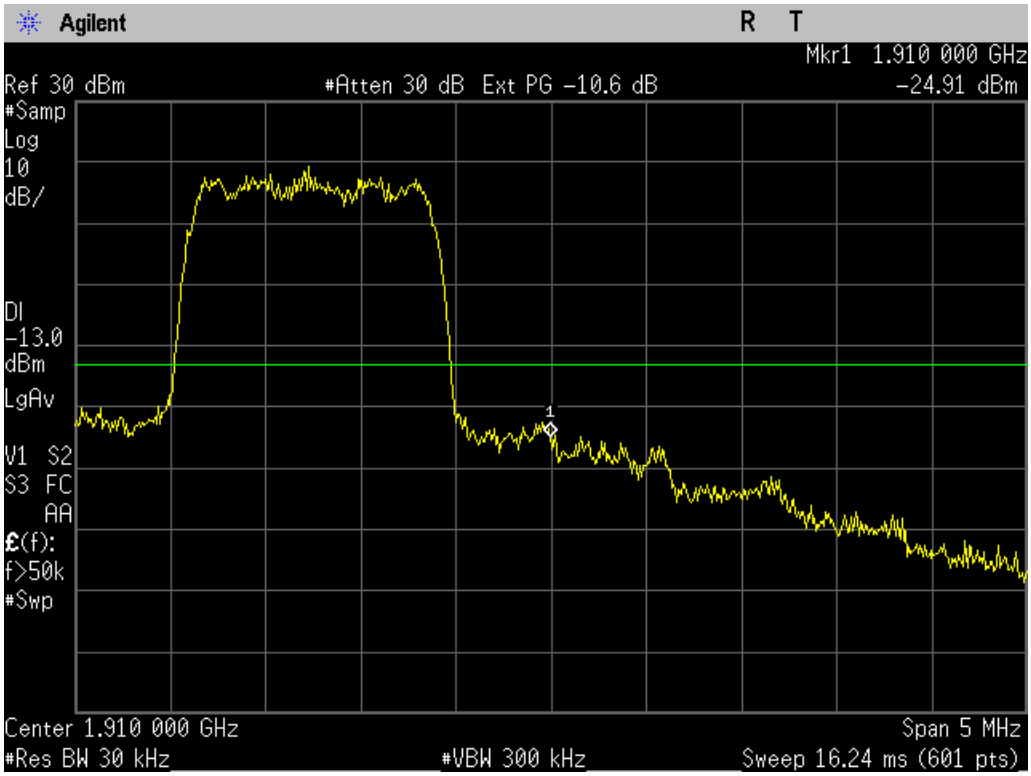


Figure 9-6 CDMA 1900 Upper Band Edge @ CH 1175

10 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

10.1 Test Configuration

FCC:	**§ 2.1051, § 22.917(e)(f), § 24.238**
IC:	**RSS132 §4.5; RSS133 §6.5**

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.

S.A. Setting	RBW	VBW
Spurious Emissions Measurement	1MHz	1MHz

Limits: -13dBm

10.2 Test Result

Figure	Channel	Plot Description	Result
10-1	1013	CDMA 800 Conducted spurious emissions 9kHz to 10GHz	Pass
10-2	384		Pass
10-3	777		Pass
10-4	25	CDMA 1900 Conducted spurious emissions 9kHz to 20GHz	Pass
10-5	600		Pass
10-6	1175		Pass

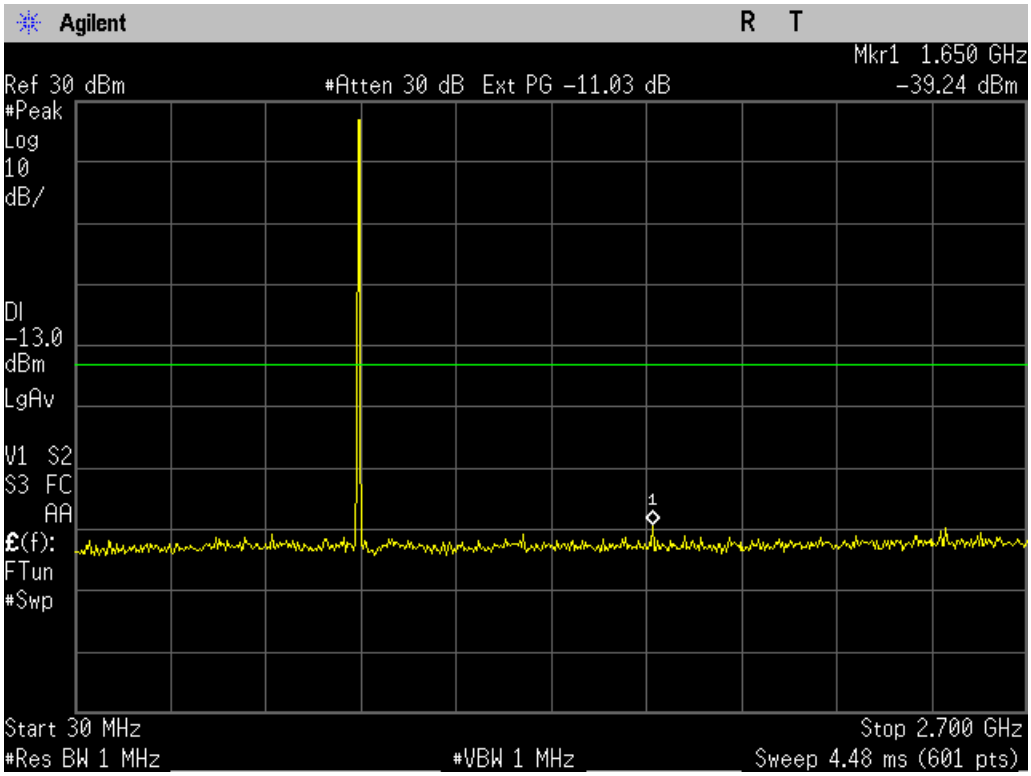


Figure 10-1a CDMA 800 – Conducted Spurious Emission (CH 1013)

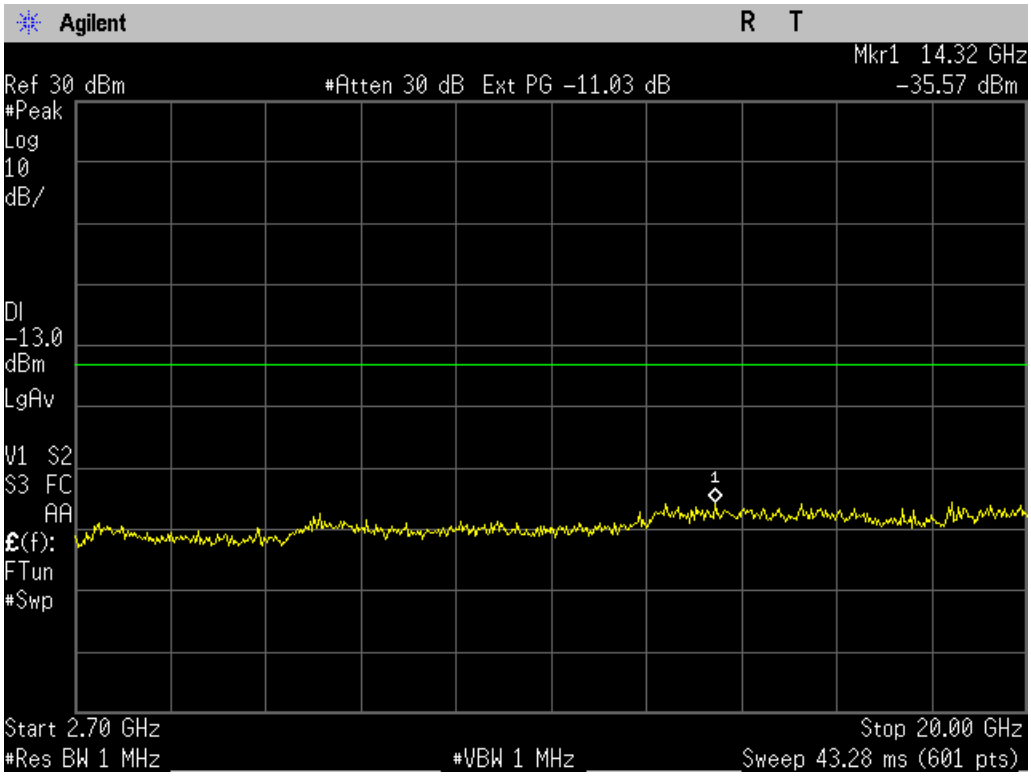


Figure 10-1b CDMA 800 – Conducted Spurious Emission (CH 1013)

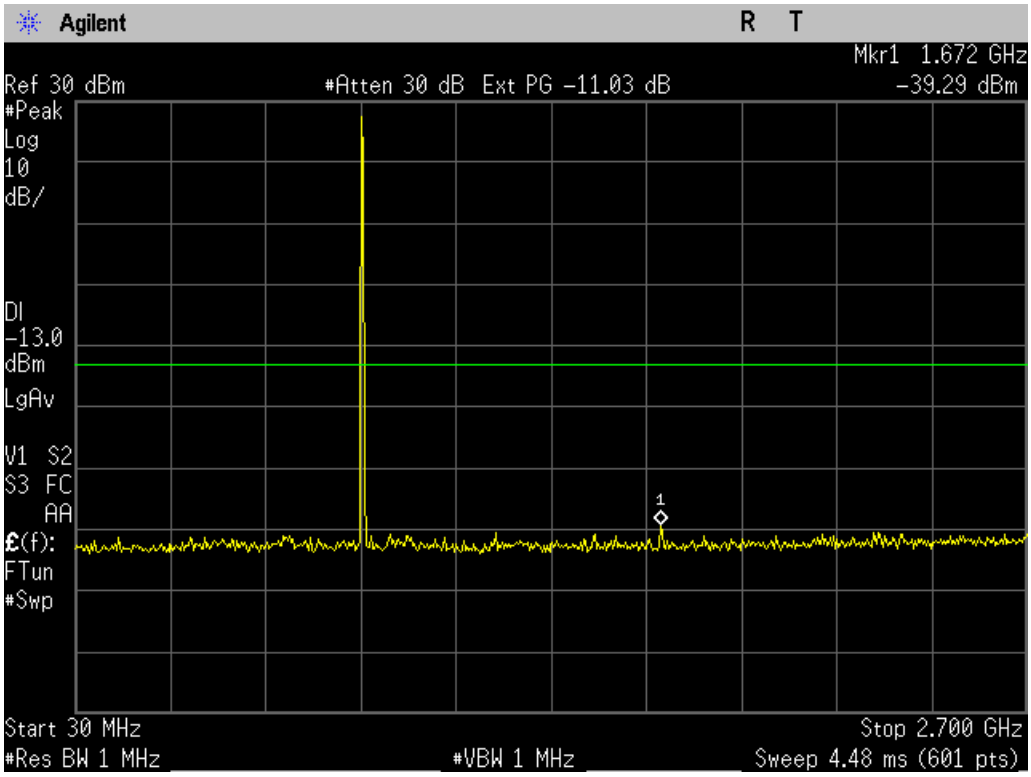


Figure 10-2a CDMA 800 – Conducted Spurious Emission (CH 384)

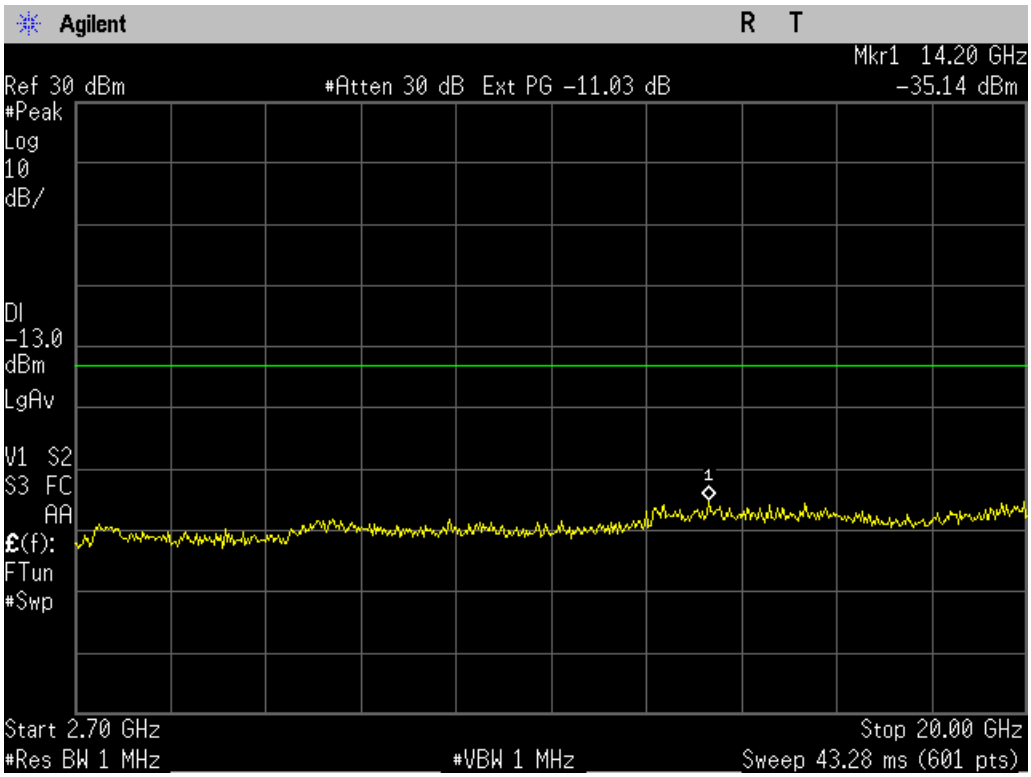


Figure 10-2b CDMA 800 – Conducted Spurious Emission (CH 384)

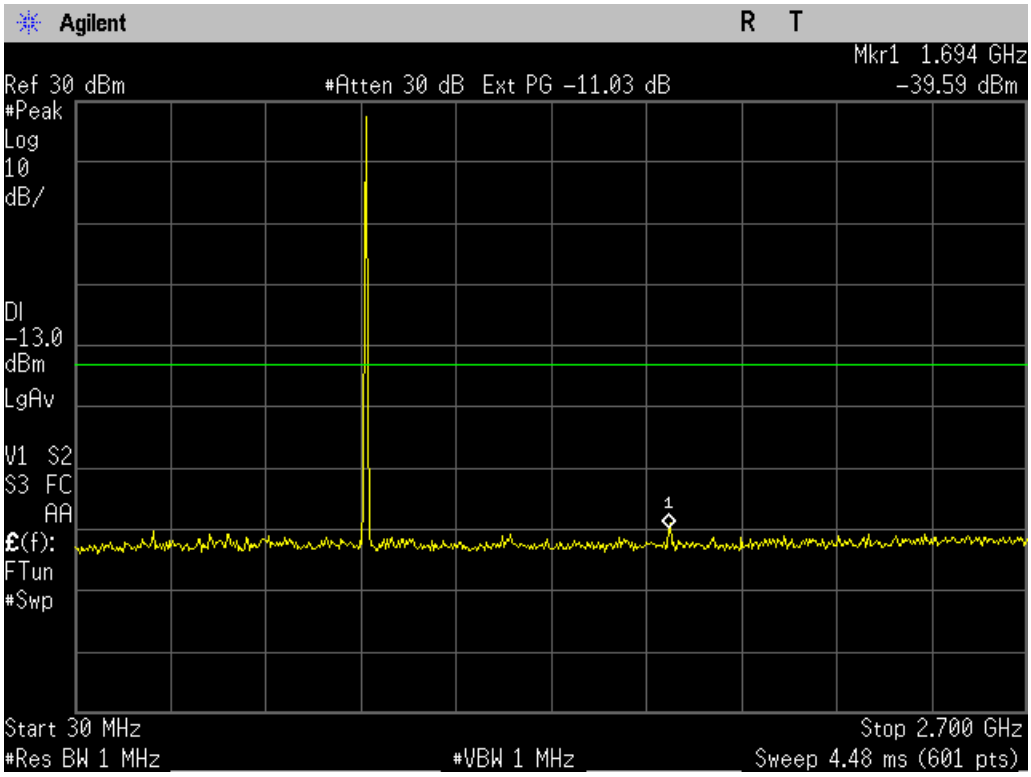


Figure 10-3a CDMA 800 – Conducted Spurious Emission (CH 777)

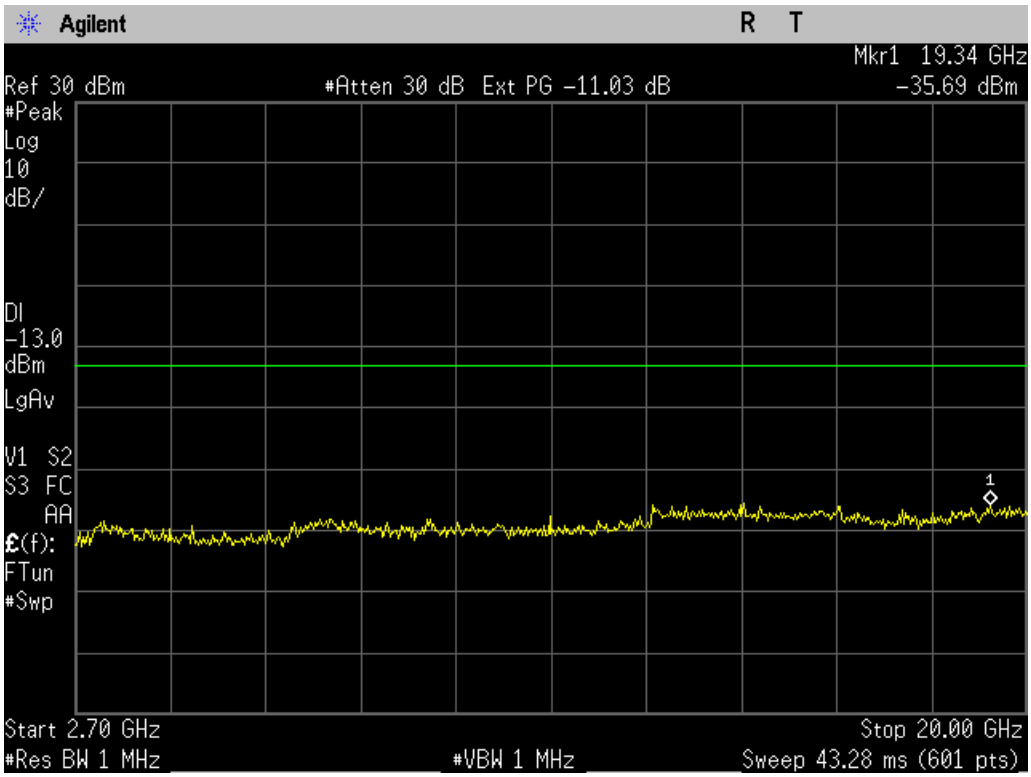


Figure 10-3b CDMA 800 – Conducted Spurious Emission (CH 777)

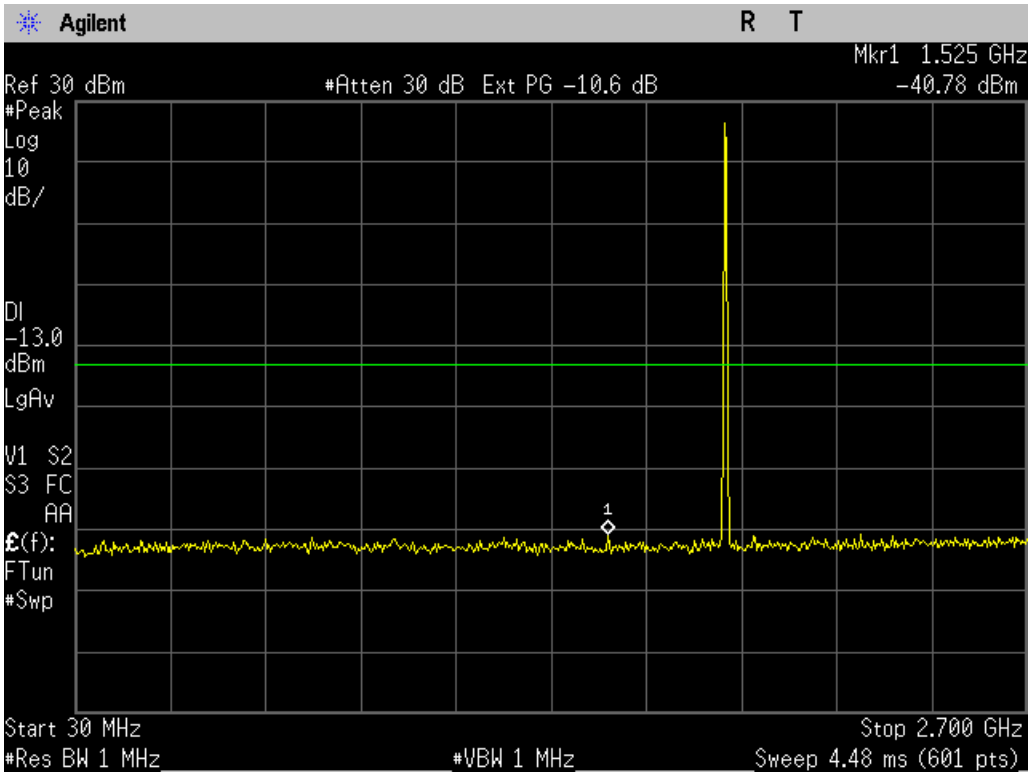


Figure 10-4a CDMA 1900 - Conducted Spurious Emission (CH 25)

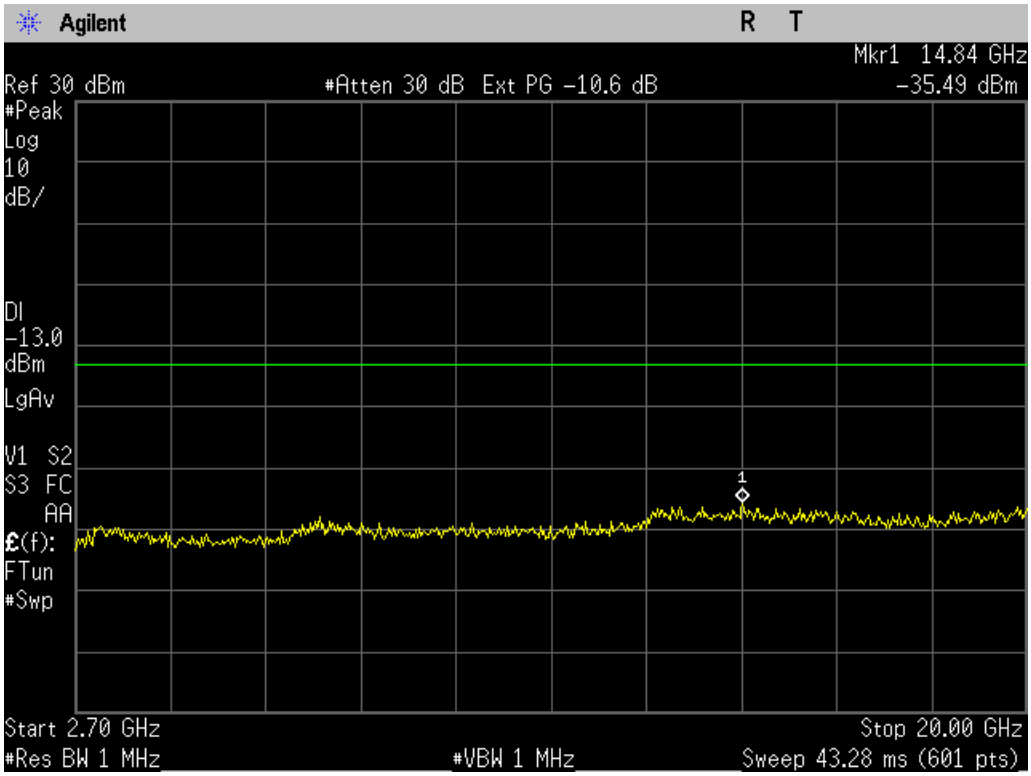


Figure 10-4b CDMA 1900 - Conducted Spurious Emission (CH 25)

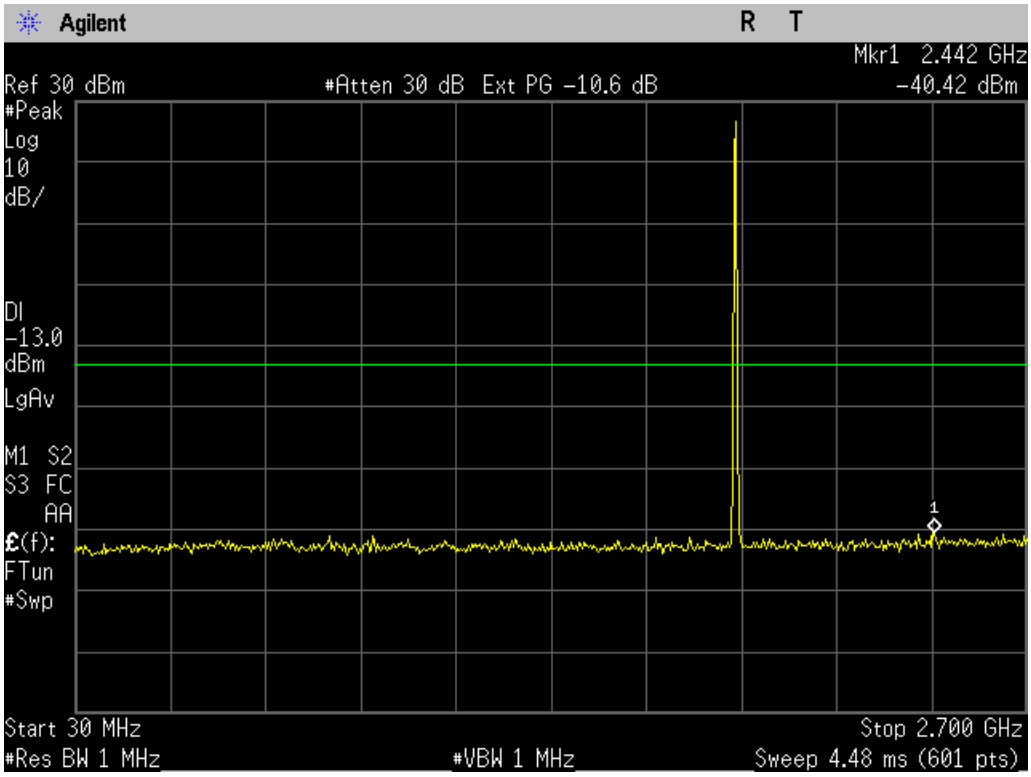


Figure 10-5a CDMA 1900 - Conducted Spurious Emission (CH 600)

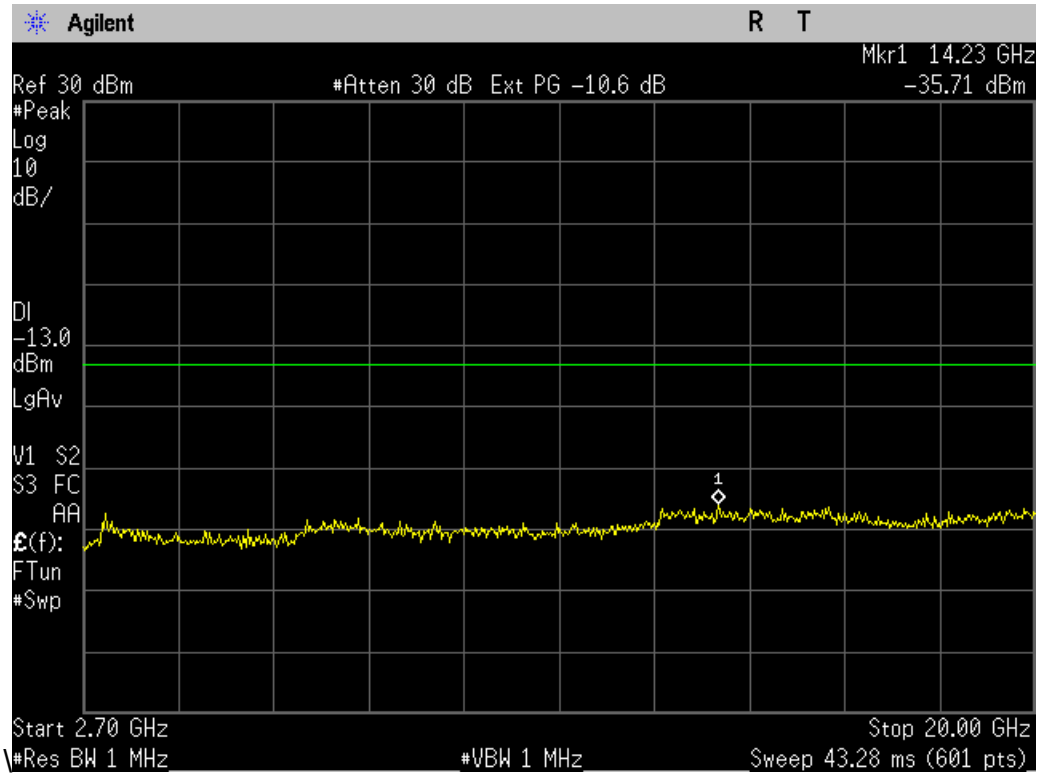


Figure 10-5b CDMA 1900 - Conducted Spurious Emission (CH 600)

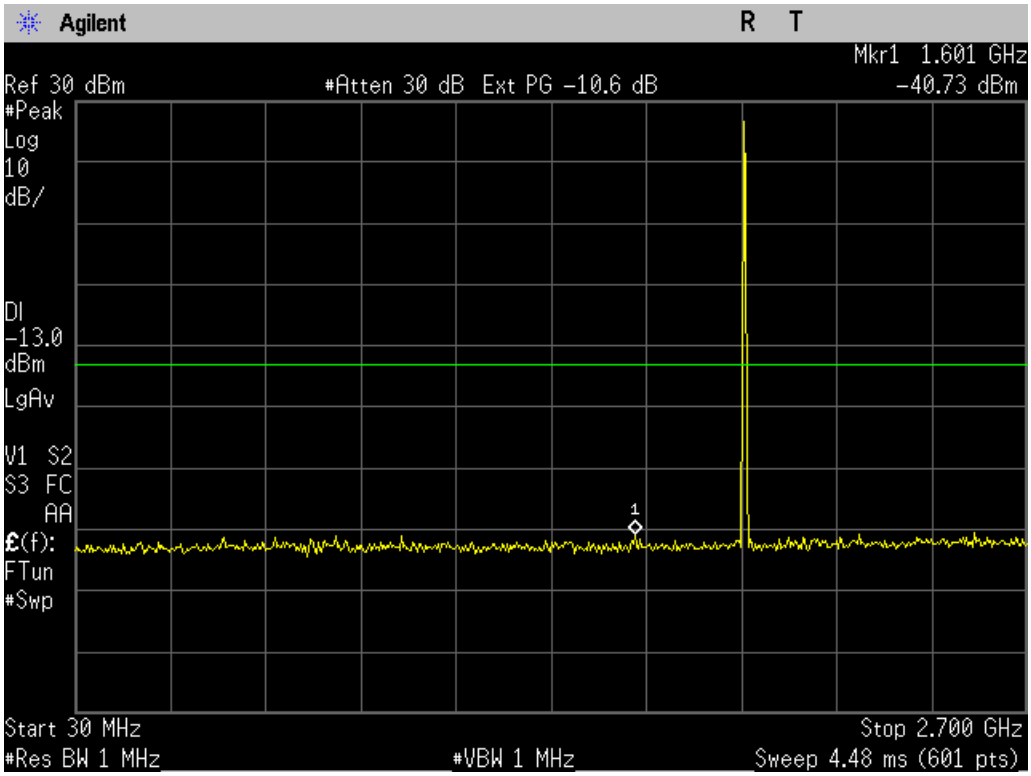


Figure 10-6a CDMA 1900 - Conducted Spurious Emission (CH 1175)

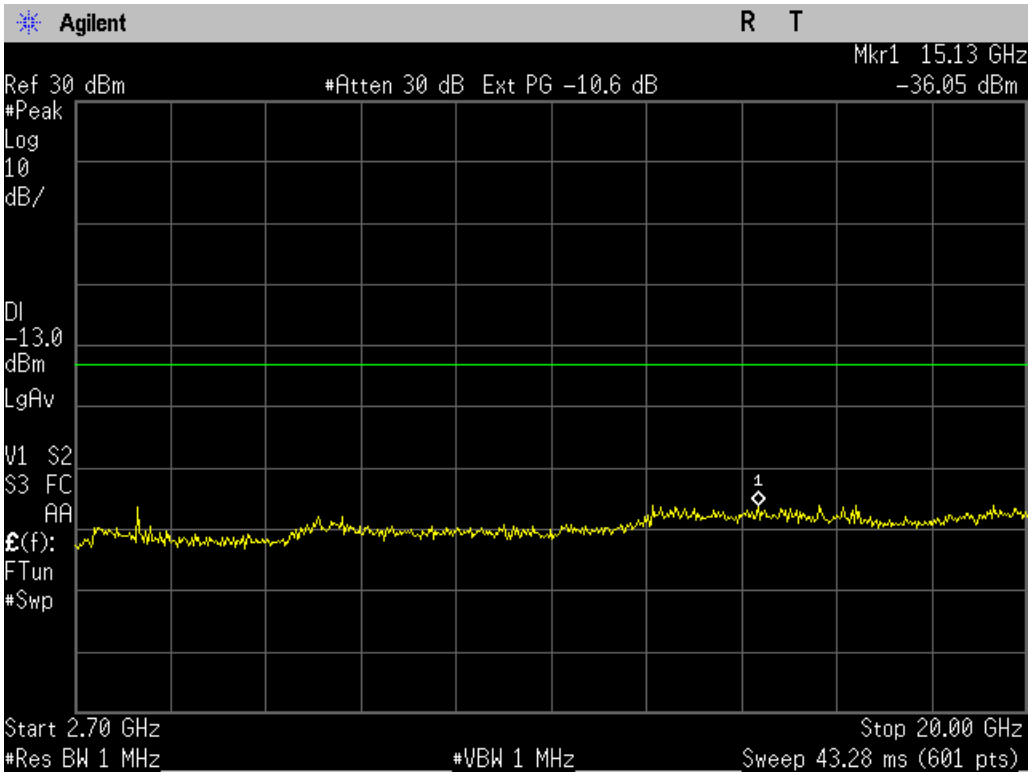


Figure10-6b CDMA 1900 - Conducted Spurious Emission (CH 1175)

11 TRANSMITTER RADIATED SPURIOUS EMISSION

FCC:	**§ 2.1053, § 22.91, § 24.238, §27.53(g)**
IC:	**RSS132 §4.5; RSS133 §6.5**

The radiated spurious emission test was performed at Compliance Certification Service. The test report is attached in a separate attachment.

12 RECEIVER SPURIOUS EMISSIONS

12.1 Receiver Spurious Emissions

FCC:	**§ 15.109**
IC:	**RSS-GEN**

The receiver radiated spurious emission test was performed at Compliance Certification Service. The test report is attached in a separate attachment.

13 TRANSMITTER RF CARRIER FREQUENCY STABILITY

13.1 Test Configuration

FCC:	**§ 2.1055, § 22.355, § 24.235, § 27.54**
IC:	**RSS132 §4.3; RSS133 §6.3**

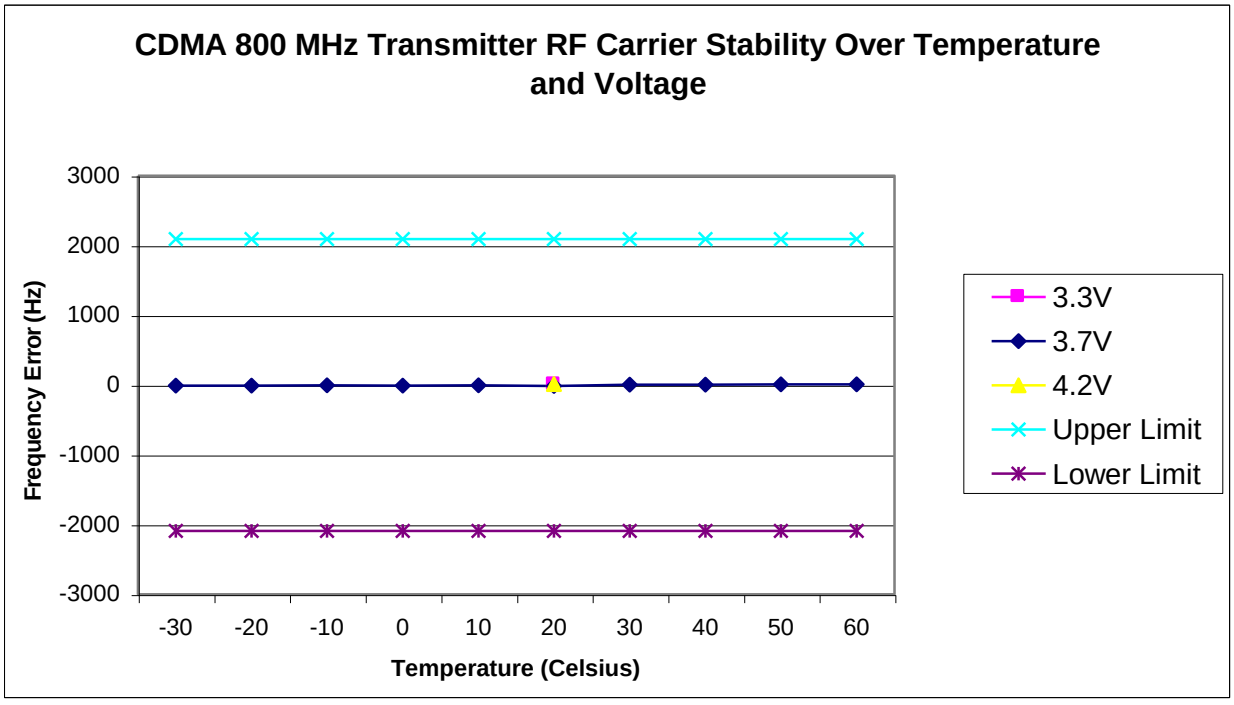
The EUT was placed in an environmental chamber. The RF output of the EUT was connected to Agilent 8960 Series 10 E5515C. A power supplier was connected as primary voltage supply. Only the mid channel of each frequency band was investigated.

Limits:

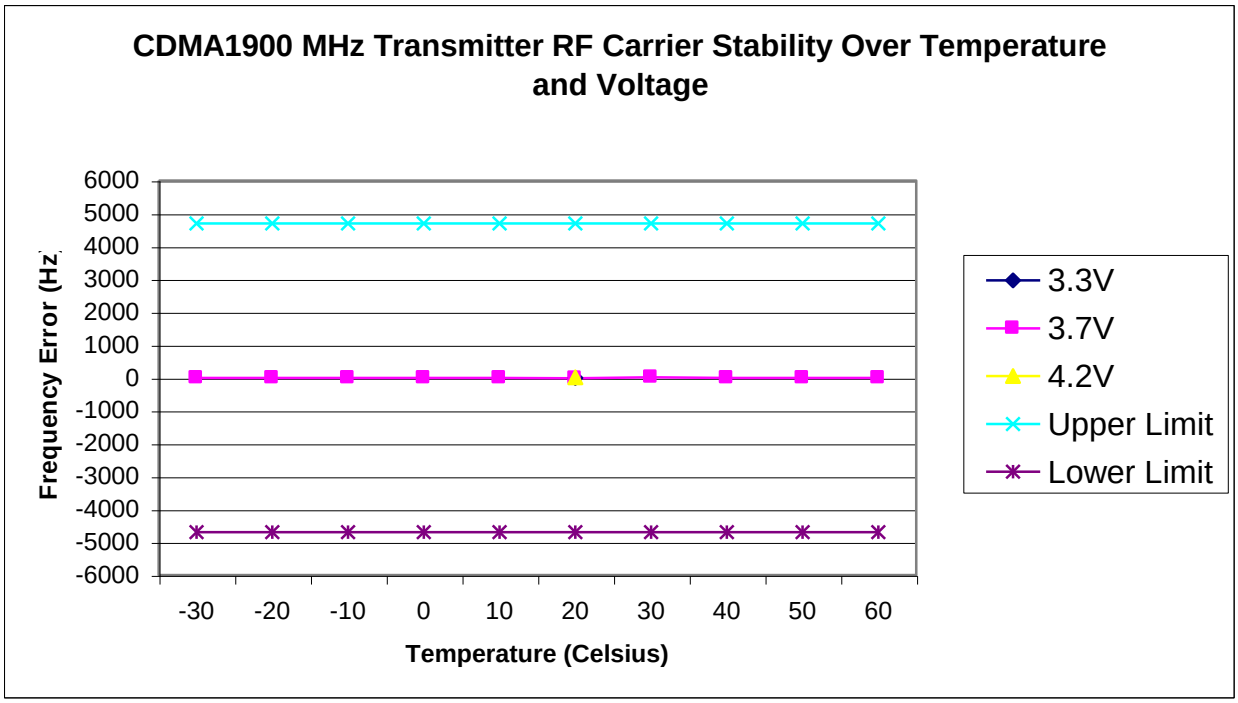
Tx Frequency	Channel	Limit
836.52 MHz	384	+/- 2.5 ppm (+/- 2091 Hz)
1880 MHz	600	+/- 2.5 ppm (+/-4700 Hz)

13.2 Test Result

CDMA 800						
Temperature (°C)	Deviation of Carrier (Hz)			Specification (Hz)		Result
	3.3V (Battery endpoint)	3.7V	4.2V (115%)	Lower limit	Upper limit	
-30		-9.46		-2091	2091	Pass
-20		-7.41		-2091	2091	
-10		-4.83		-2091	2091	
0		-8.93		-2091	2091	
10		-5.86		-2091	2091	
20	**7.61**	**-15.01**	**12.39**	-2091	2091	
30		5.82		-2091	2091	
40		5.27		-2091	2091	
50		7.81		-2091	2091	
60		7.66		-2091	2091	



CDMA 1900						
Temperature (°C)	Deviation of Carrier (Hz)			Specification (Hz)		Result
	3.3V (Battery endpoint)	3.7V	4.2V (115%)	Lower limit	Upper limit	
-30		-4.93		-4700	4700	Pass
-20		-3.51		-4700	4700	
-10		-8.65		-4700	4700	
0		-5.26		-4700	4700	
10		-2.54		-4700	4700	
20	**-9.31**	**-15.54**	**12.38**	-4700	4700	
30		16.32		-4700	4700	
40		-8.52		-4700	4700	
50		-9.65		-4700	4700	
60		-8.20		-4700	4700	



14 EXPOSURE OF HUMANS TO RF FIELDS (SAR)

14.1 Test Configuration and Result

FCC: § 2.1093

IC: RSS102

The SAR test report is attached in a separate attachment.

15 TEST EQUIPMENT

The test 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.

Description	Manufacturer	Model No.	Serial No.	Cal Due Date
Power Meter	Giga-tronics	8541C	1831306	05/16/13
Spectrum Analyzer	Agilent	E4440A	MY44303130	12/11/13
Wireless Communications Test Set	Agilent	8960	GB44052789	08/03/13
Temperature Chamber	Test Equity	ZH2-033-033-H/AC	ZZ9622421	08/03/13