

**ETL SEMKO**

TEST REPORT

Report Number: 3125065LEX-001**Project Number: 3125065****Evaluation of Model Number: System 5000 PTU****FCC ID: OAM5000****FCC Part 22 Subpart H****FCC Part 24 Subpart E****For****iSECUREtrac Corporation**

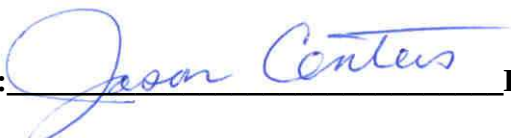
Test Performed by:

Intertek
731 Enterprise Drive
Lexington, KY 40510

Test Authorized by:

iSECUREtrac Corporation
5022 South 114th Street
Omaha, NE 68137

Prepared By:



Date: 6/21/2007

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Date: 6/21/2007

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**Intertek**

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1 JOB DESCRIPTION

1.1 Company Information

Company Information	
Manufacturer:	iSECUREtrac Corporation
Address:	5022 South 114th Street Omaha NE 68137
Contact Name:	Jef Higgason
Telephone Number:	(402) 537-5663

1.2 Test Sample Information

The iSECUREtrac Corporation System 5000 PTU is a portable tracking unit that is used by law enforcement to locate and track offenders.

Test sample		
Model Number:	System 5000 PTU	
Serial Number:	0000050115	
FCC ID:	OAM5000	
Device Category:	Mobile	
RF Exposure Category:	General Population/Uncontrolled Environment	
Transmission Modes:	CDMA Cell	CDMA PCS
Frequency Range, MHz:	824 MHz-849 MHz	1850 – 1910 MHz
Maximum Conducted RF Output Power:	25.13dBm	24.78dBm
Antenna Type:	¼ wave helical	¼ wave helical
Antenna Location:	External	External
Antenna Gain (max):	0dBi	0dBi

1.3 System Support Equipment

Table 1-1 contains the details of the support equipment associated with the Equipment Under Test during the testing.

Table 1-1: System Support Equipment

Description	Manufacturer	Model Number	Serial Number
Charging Base	iSECUREtrac Corporation	System 5000 Base	Not Labeled

1.4 Cables Used During Testing

Table 1-2 contains the details of the cables used during the testing.

Table 1-2: Interconnecting Cables Used During Testing

Cables					
Description	Length	Shielding	Ferrites	Connection	
				From	To
AC Power Cord – Charging Base	12ft.	No	No	Charging Base	AC Power Source

1.5 System Block Diagram(s)

The diagrams below detail the interconnection of the EUT and its accessories during the testing.

Figure 1-1: Radiated Test Configuration

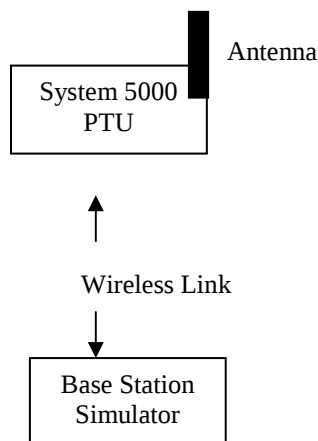
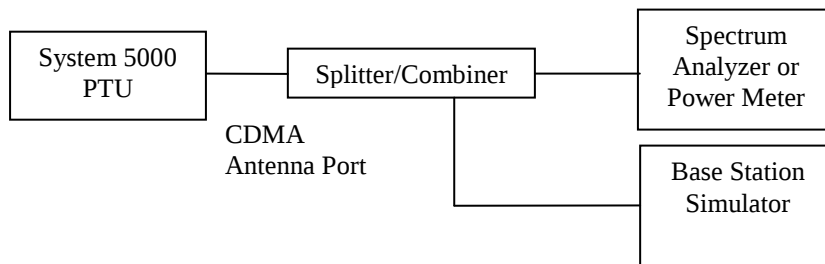


Figure 1-2: Conducted Test Configuration



1.6 Mode(s) of operation / Engineering Judgments

The System 5000 PTU was powered by an internal fully charged battery. For radiated testing, the CDMA antenna was connected to the System 5000 PTU. For conducted measurements the antenna was removed and a calibrated coaxial cable inserted between the CDMA port and the measuring equipment (spectrum analyzer or power meter). A base station simulator was used to force the System 5000 PTU to transmit at maximum output power.

2 EXECUTIVE SUMMARY

Testing performed for: iSECUREtrac Corporation

Equipment Under Test: System 5000 PTU

Receipt of Test Sample: 6/4/2007

Test Start Date: 6/7/2007

Test End Date: 6/15/2007

FCC RULE	IC RULE	DESCRIPTION OF TEST	RESULT	PAGE
§2.1046	RSS-129 (9.2.2)	RF Power Output	Compliant	9
§22.913, §24.232	RSS-129 (9.1) RSS-133 (6.4)	ERP, EIRP	Compliant	10
§2.1049 §22.917(b)(d) §24.238(a)	NA	Occupied Bandwidth, Emissions Limitations	Compliant	12
§2.1051 §22.917(a) §24.238(a)	RSS-129 (8.1.1) RSS-133 (6.5.1)	Out of Band Emissions at Antenna Terminals	Compliant	17
§2.1053 §22.917(a) §24.238(a)	RSS-129 (8.1.1) RSS-133 (6.5.1)	Field Strength of Spurious Radiation	Compliant	22
§15.107	RSS-Gen [7.2.2]	Power Line Conducted Emissions	NA¹	-
§15.109	RSS-129 (10) RSS-133 (6.7)	Receiver Spurious Emission	Compliant	27
§2.1055, §22.355, §24.235	RSS-129 (9.2.1) RSS-133 (6.3)	Frequency Stability vs. Temperature	Compliant	29
§2.1055, §22.355, §24.235	RSS-129 (9.2.1) RSS-133 (6.3)	Frequency Stability vs. Voltage	Compliant	30

2.1 Modifications required for compliance

No modifications were implemented by Intertek. All results in this report pertain to the un-modified sample provided to Intertek.

¹ The System 5000 PTU is DC powered.

3 TEST FACILITY

All testing was completed at the INTERTEK-Lexington location at 731 Enterprise Drive, Lexington Kentucky, 40510. The radiated emission test site is a 10-meter semi-anechoic chamber. The chamber meets the characteristics of CISPR 16-1: 1993 and ANSI C63.4: 1992. For measurements, a remotely controlled flush-mount metal-top turntable is used to rotate the EUT a full 360 degrees. A remote controlled non-conductive antenna mast is used to scan the antenna height from one to four meters.

For radiated immunity testing, removable ferrite tiles are positioned between the transmitting antenna and the area occupied by the equipment under test. The remaining tests typically are performed outside the chamber on the conducting ground reference plane.



The Industry Canada filing number for this site is 2055A-1. The FCC registration number is 485103. The VCCI registration numbers are R-2056, C-2214, and T-195.

3.1 Test Equipment

Description	Manufacturer	Model Number	Serial Number	Calibration due date
Environmental Chamber	Thermotron	SM-8C	32692	1/24/2008
Signal Generator	HP	83620B	3614A00199	8/15/2007
Horn Antenna	EMCO	3115	6556	7/28/2007
Horn Antenna	Antenna Research	DRG-118/A	1086	7/20/2007
EMI Receiver	Rohde & Schwarz	ESI 26	1088.7490	9/6/2007
EMI Receiver	Rohde & Schwarz	FSP	1164.439107	8/2/2007
LISN	Fischer Custom Communication	FCC-LISN-50-50-2M	1026	5/11/2008
Bilog Antenna	EMCO	3142C	00051864	11/14/2007
Preamplifier	Miteq	AFS44-00102000-30-10P-44	987410	6/15/2007
Digital Multimeter	Fluke	87	1280	3/18/2008
Base Station Simulator	Rhode & Schwarz	CMU200	1100.0008.02	3/29/2008
Function Generator	HP	3325B	2801A0216	2/21/2008
Modulator Analyzer	HP	8901B	2142A01663	3/22/2008

4 CONDUCTED RF POWER

FCC Rule: §2.1046

IC Rule: RSS-129 §7.1, §9.1 and RSS-133 §6.2

4.1 Test Procedure

The transmitter output was connected to a calibrated coaxial cable, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The EUT was placed into a call and the transmitter output was read off the base station simulator in dBm. The power output at the transmitter antenna port was determined by adding the value of the cable insertion loss to the base station simulator power reading.

Tests were performed at three frequencies (low, middle, and high channels) and on the highest power levels, which can be setup on the transmitters.

4.2 Test Results

The System 5000 PTU met the RF power output requirements of FCC Part 22 Subpart H and FCC Part FCC Part 24 Subpart E. The test results are shown Table 4-1.

Table 4-1 RF Power Variation with Temperature

Temp (°C)	CDMA Cell Band			CDMA PCS Band		
	Channel 1013	Channel 384	Channel 777	Channel 25	Channel 600	Channel 1175
-30	17.36	20.53	18.17	16.32	15.09	17.39
-20	23.13	24.45	23.62	23.82	22.87	23.57
-10	23.39	24.72	23.79	24.37	24.78	24.52
0	23.46	24.53	23.88	24.45	24.78	24.37
10	23.87	24.83	24.17	24.48	24.59	24.37
20	24.44	24.48	23.84	24.09	24.04	24.21
30	23.66	25.13	23.97	24.05	23.97	23.93
40	23.41	24.77	24	24.07	24.1	24.22
50	23.39	24.61	23.52	23.67	24.13	24.31
60	23.15	24.58	23.29	23.51	23.96	24.03

5 RADIATED RF POWER

FCC Rule §22.913; The Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

FCC Rule §24.232; RSS-133 §6.2; The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

RSS-129 §7.1, §9.1

5.1 Test Procedure

The EUT was placed on a non-conductive turntable. The Base Station Simulator was set to force the EUT to its maximum power setting. The radiated power was measured in a fully anechoic chamber designed to measure antenna performance. ERP in the CDMA 800 band and EIRP in the CDMA 1900 band were measured using a substitution method as described in TIA-603-B Section 2.2.17 (Radiated Power Output). EIRP was calculated as follows:

$$\text{EIRP} = E_1 - E_2 + V_{\text{sub}} + G$$

where,

E_1 is the receiver reading in dBm when measuring the field strength of the EUT

E_2 is the receiver reading in dBm when measured field strength from the generator

V_{sub} is the power delivered to the substitution antenna (generator output in dBm – cable loss between the generator and the substitution antenna)

G is the gain of the transmitting antenna in dBi.

5.2 Test Results

The System 5000 PTU met the radiated power requirements of FCC §22.913 and §24.232. The test results are located in Table 5-1. The maximum ERP (EIRP-2.15) for the CDMA Cell band was 14.21 dBm. The maximum EIRP for the PCS band was 8.92 dBm.

Table 5-1 Radiated RF Power

Antenna Configuration	Technology	Band	Phone Configuration	Channel	Peak EIRP
Fixed	CDMA	Cell	Free Space	384	12.26
Fixed	CDMA	Cell	Free Space	777	13.74
Fixed	CDMA	Cell	Free Space	1013	16.35
Fixed	CDMA	PCS	Free Space	25	8.92
Fixed	CDMA	PCS	Free Space	600	3.06
Fixed	CDMA	PCS	Free Space	1175	2.58

6 EMISSION LIMITATIONS, OCCUPIED BANDWIDTH

CFR 47 §2.1049: The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

RSS-129 (6.3.2)

6.1 Test Procedure

In both CDMA 800 and 1900 modes the antenna port of the EUT was connected to a spectrum analyzer using a calibrated coaxial cable and power divider. The EUT was placed into a call using base station simulator. The base station simulator was set to force the EUT to its maximum power setting. The occupied bandwidth function of the analyzer was used to automatically generate the occupied bandwidth plots below.

6.2 Test Results

The following is the occupied bandwidth data for the System 5000 PTU .

Table 6-1: Occupied bandwidth measurements for CDMA modes

Mode	Channel	Resolution Bandwidth	Video Bandwidth	Sweep time	Measured Bandwidth (MHz)
CDMA800	1013	30 kHz	100 kHz	20s	1.27
CDMA800	384	30 kHz	100 kHz	20s	1.27
CDMA800	777	30 kHz	100 kHz	20s	1.27
CDMA1900	25	30 kHz	100 kHz	20s	1.28
CDMA1900	600	30 kHz	100 kHz	20s	1.28
CDMA1900	1175	30 kHz	100 kHz	20s	1.28

Figure 6-1: Occupied Bandwidth – Cell Channel 1013

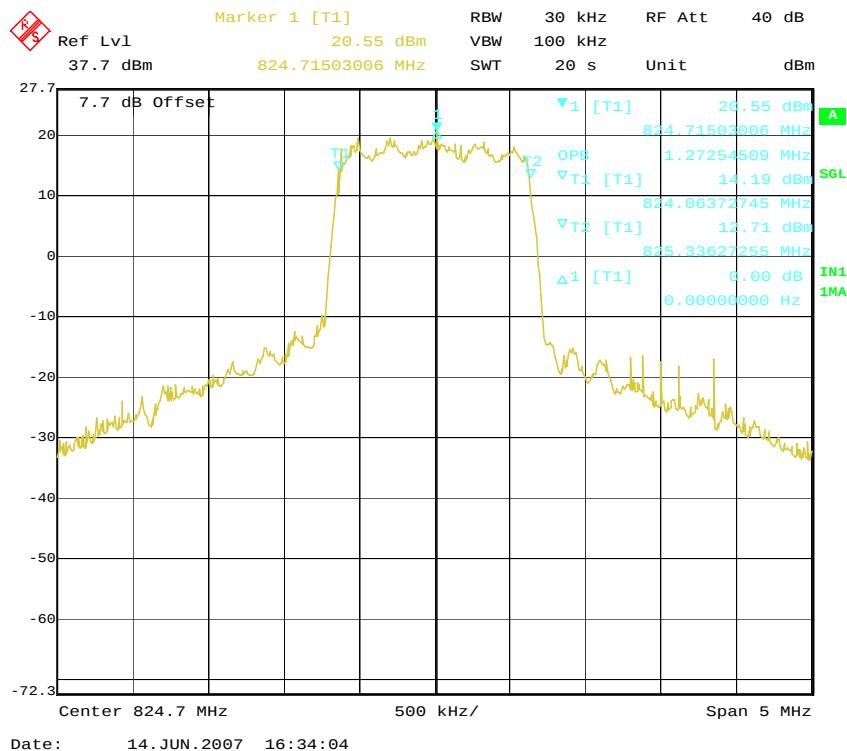


Figure 6-2: Occupied Bandwidth – Cell Channel 384

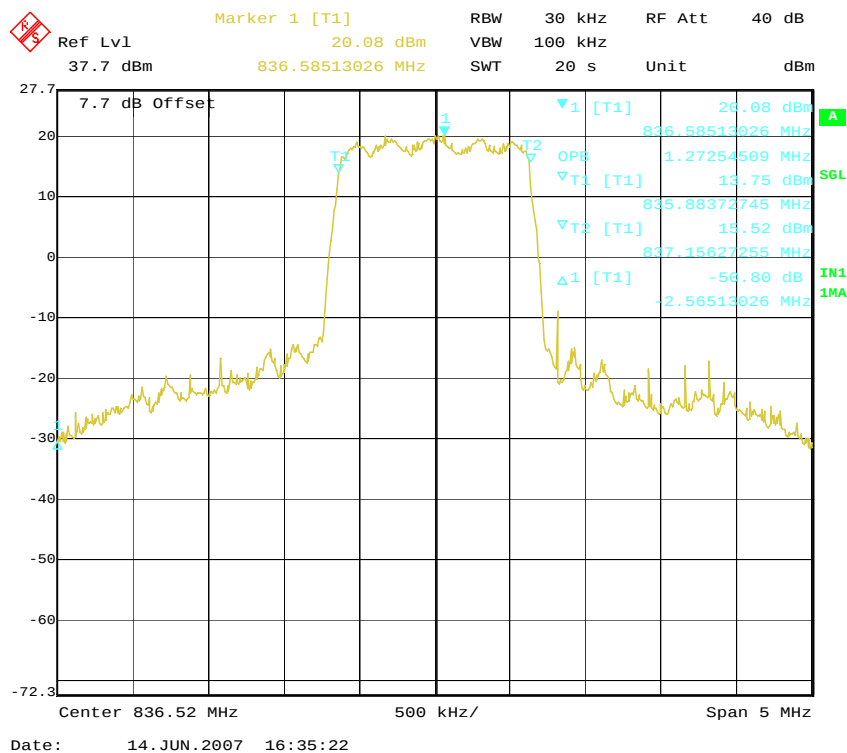


Figure 6-3: Occupied Bandwidth – Cell Channel 777

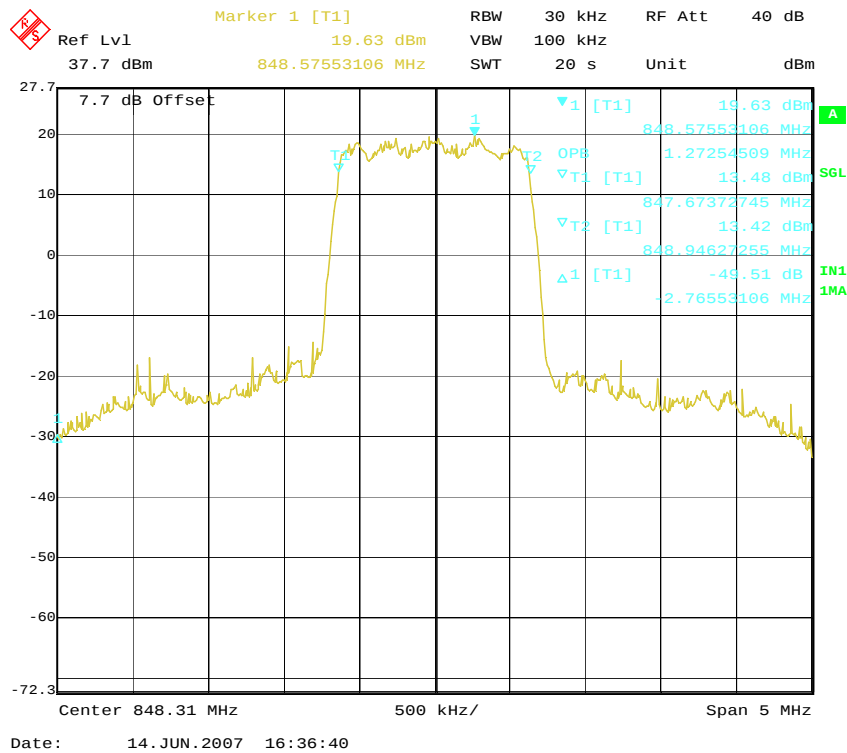


Figure 6-4: Occupied Bandwidth – PCS Channel 25

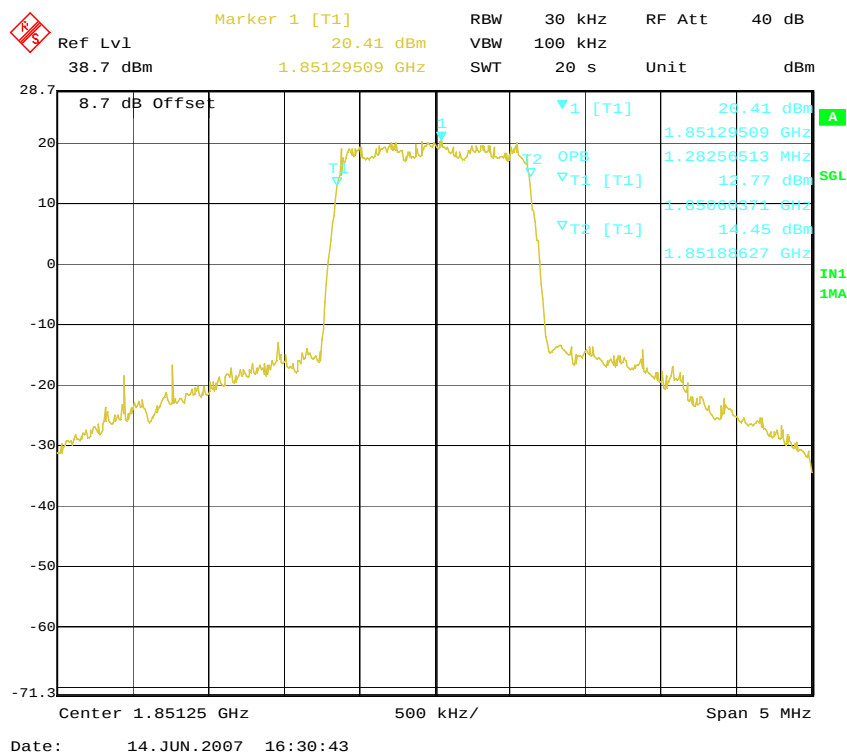


Figure 6-5: Occupied Bandwidth – PCS Channel 600

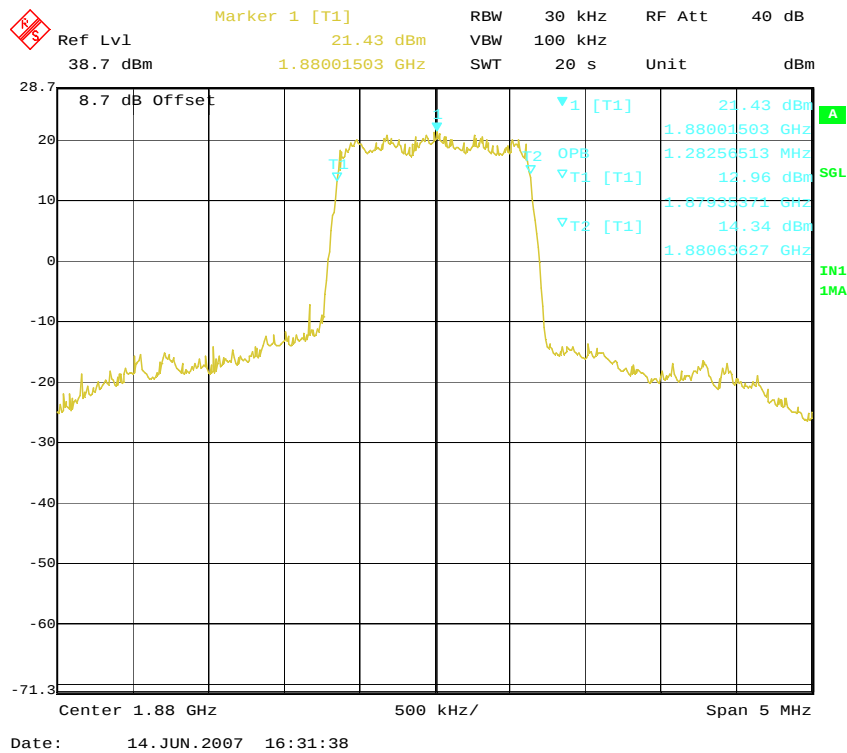
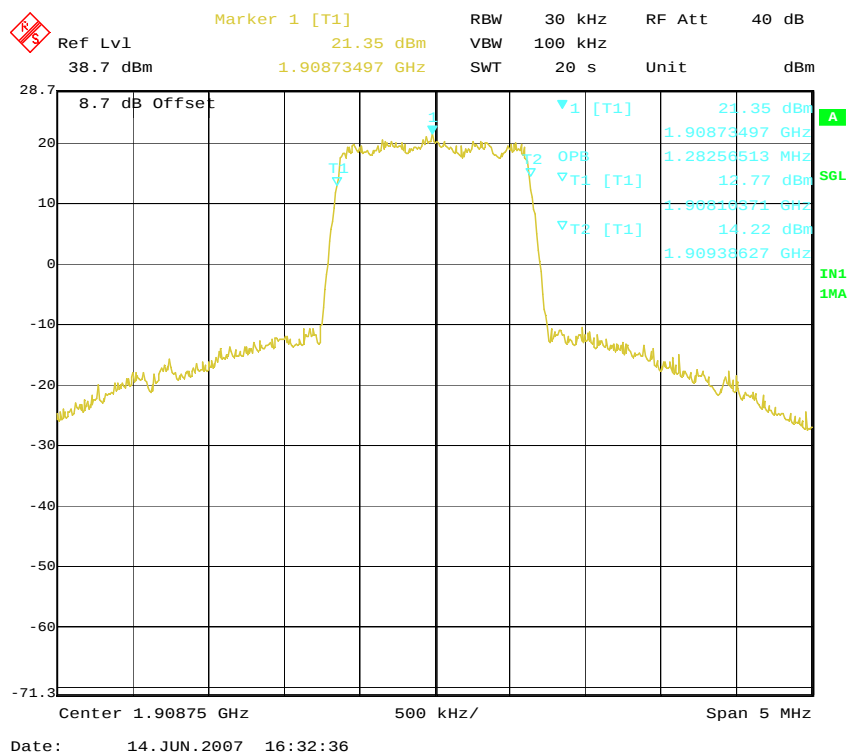


Figure 6-6: Occupied Bandwidth – PCS Channel 1175



7 OUT OF BAND EMISSION AT ANTENNA TERMINALS

FCC §2.1049, FCC §2.1051, §22.917(a), FCC §24.238(a)

RSS-129 §6.3, §7.2.2, §8.1.1, §10

RSS-133 §6.3

Out of Band Emissions: The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

7.1 Test Procedure

Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for the Cellular band and 1 MHz or greater in the PCS band. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The Base Station Simulator was set to force the EUT to its maximum power setting. The resolution bandwidth of the spectrum analyzer was set at 1 MHz. Sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

7.2 Test Results

The System 5000 PTU met the out of band emission at antenna terminal requirements of §22.917(a), FCC §24.238(a). See Table 7-2 for a list of emissions within 20dB of the limit. Graphical results are shown in Figure 7-1 through Figure 7-4.

Table 7-1: Summary of test result locations

Location	Mode (Band)	Channel	Description
Figure 7-1	CDMA Cell	384, 777, 1013	Conducted spurious emissions, 30MHz to 20 GHz
Figure 7-2	CDMA Cell	384, 777, 1013	Zoom Graph of the Carrier Frequencies
Figure 7-3	CDMA PCS	25, 600, 1175	Conducted spurious emissions, 30MHz to 20 GHz
Figure 7-4	CDMA PCS	25, 600, 1175	Zoom Graph of the Carrier Frequencies
Figure 7-5	CDMA Cell	1013	Emissions within 1 MHz of band edge
Figure 7-6	CDMA Cell	777	Emissions within 1 MHz of band edge
Figure 7-7	CDMA PCS	25	Emissions within 1 MHz of band edge
Figure 7-8	CDMA PCS	1175	Emissions within 1 MHz of band edge

Table 7-2: Spurious Emissions at Antenna Terminals

EUT Mode	TX Channel	Spurious Emission Frequency (GHz)	Device Reading (dBm)	Cable Loss (dB)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)
CDMA Cell	1013	2.4741	-32.98	0.6	-32.38	-13	-19.38
CDMA Cell	384	2.50956	-31.21	0.6	-30.61	-13	-17.61
CDMA Cell	777	2.54493	-32.57	0.6	-31.97	-13	-18.97
CDMA PCS	25	5.55375	-31.99	0.7	-31.29	-13	-18.29
CDMA PCS	600	5.64	-22.756	0.7	-22.056	-13	-9.056
CDMA PCS	1175	5.72625	-21.98	0.7	-21.28	-13	-8.28

Figure 7-1: Out of band emissions at antenna terminals – CDMA 800 Channel 384, 777, and 1013

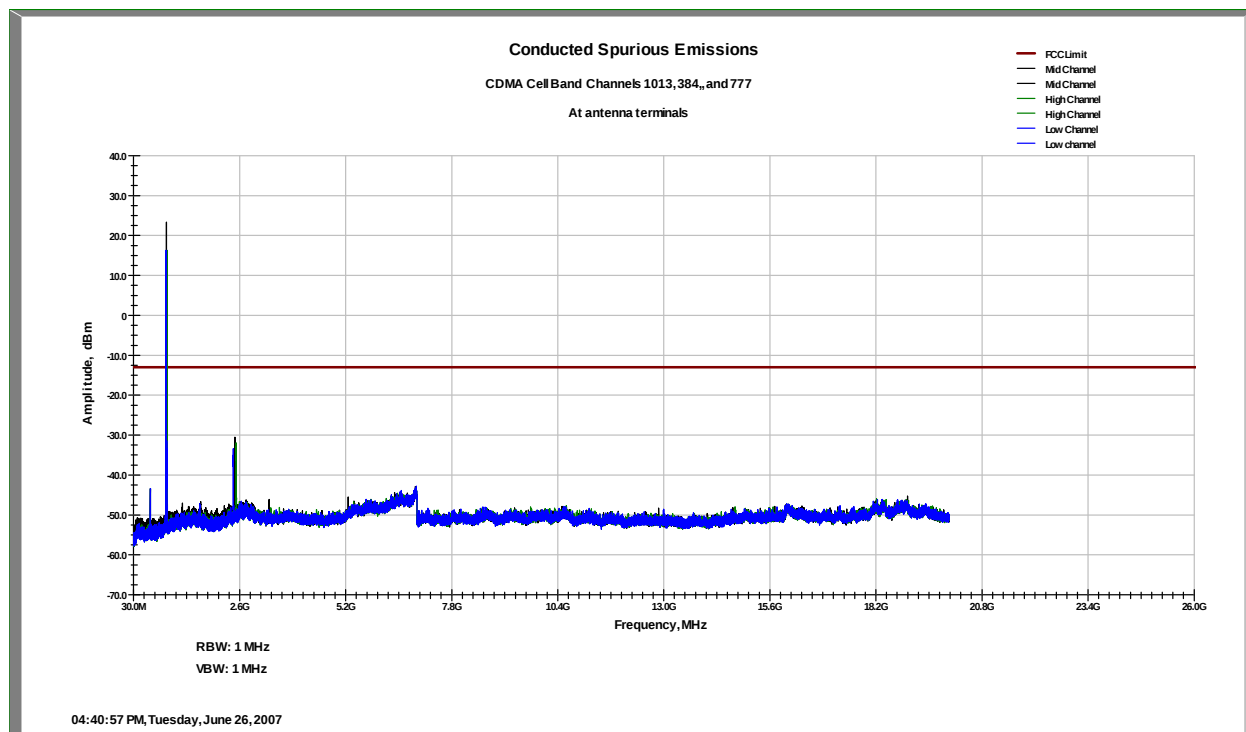


Figure 7-2: Out of band emissions at antenna terminals – CDMA 800 Channel 384, 777, and 1013 (Zoomed Around Carrier Frequencies)

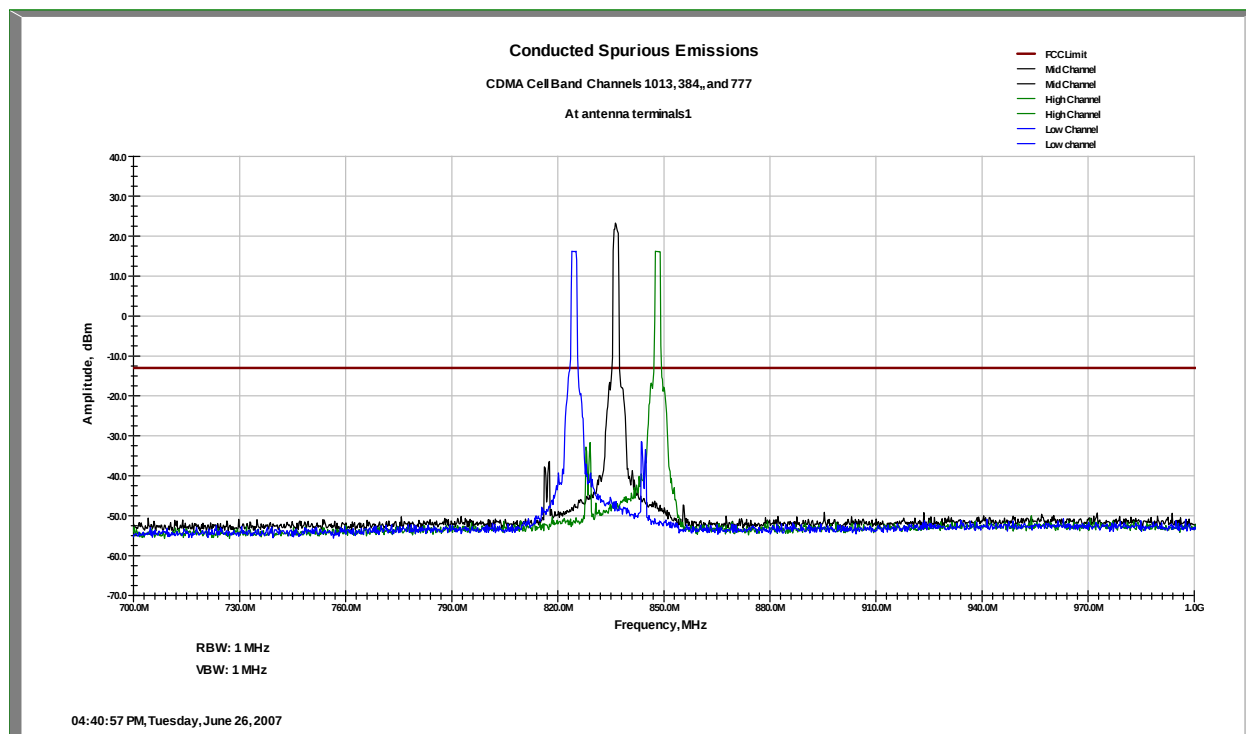


Figure 7-3: Out of band emissions at antenna terminals – CDMA1900 Channel 25, 600, 1175

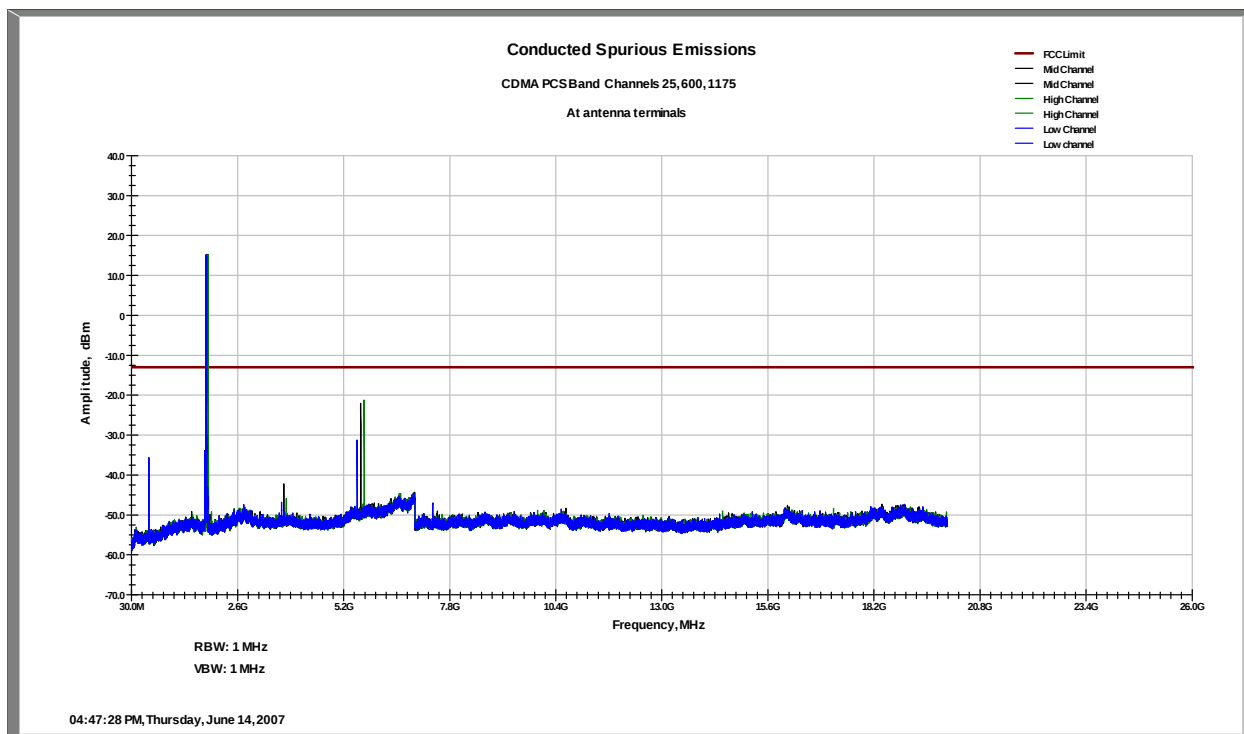


Figure 7-4: Out of band emissions at antenna terminals – CDMA1900 Channel 25, 600, 1175 (Zoomed In on Carrier Frequencies)

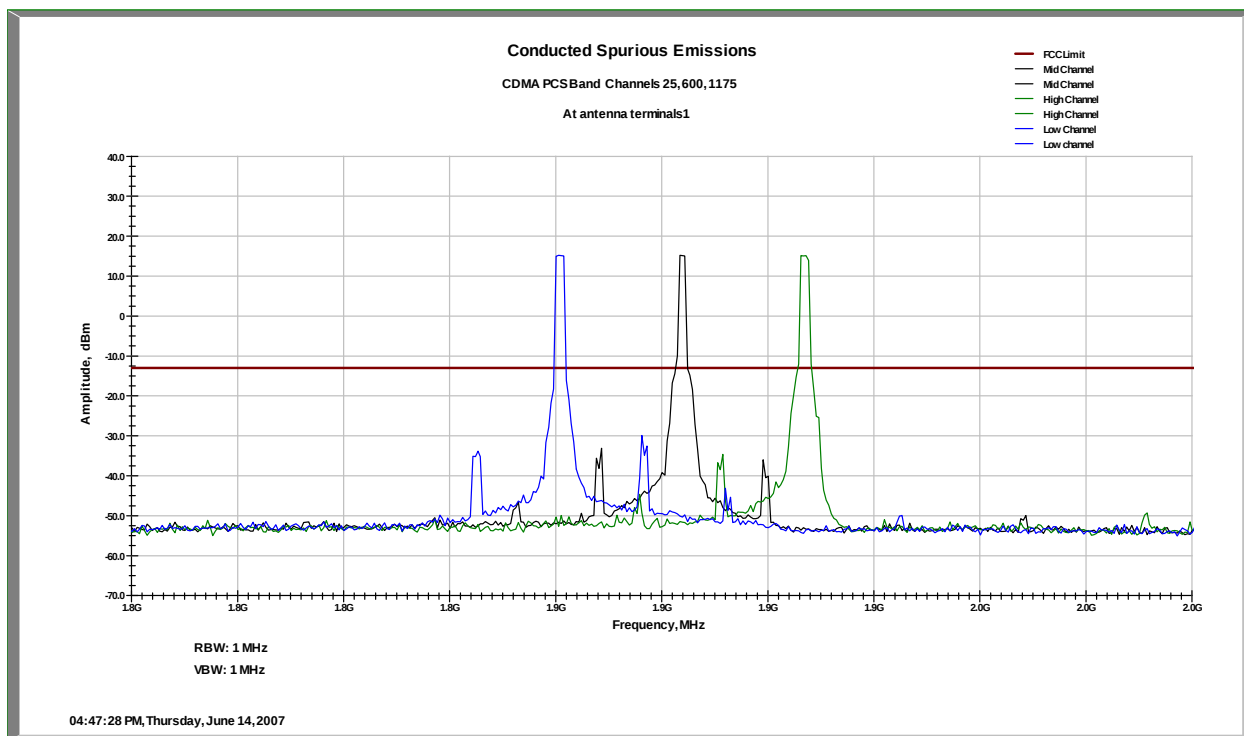


Figure 7-5: Emissions within 1 MHz of band edge, CDMA 800 Channel 1013

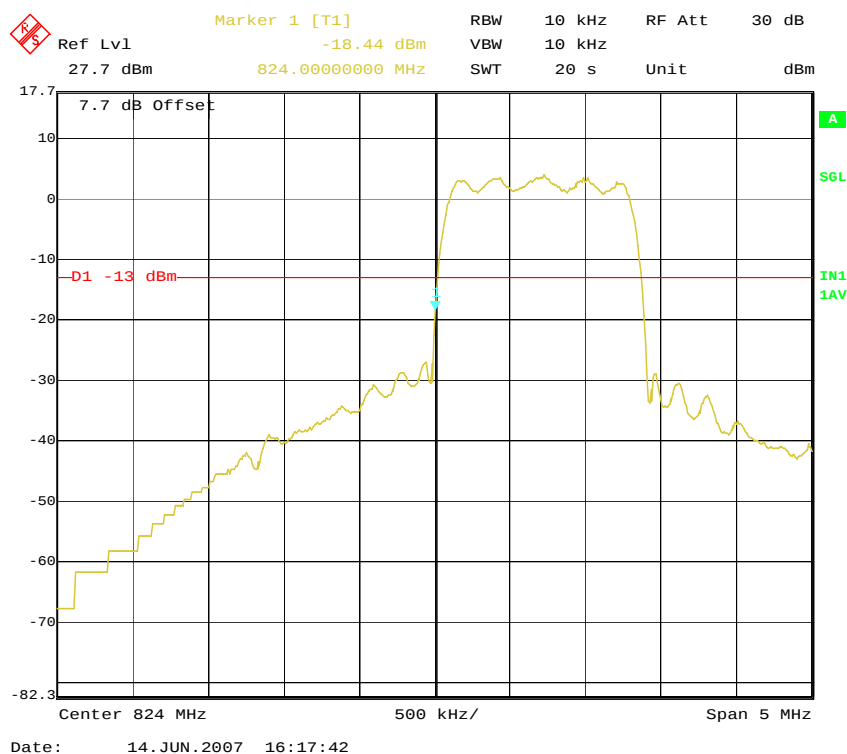


Figure 7-6: Emissions within 1 MHz of band edge, CDMA 800 Channel 777

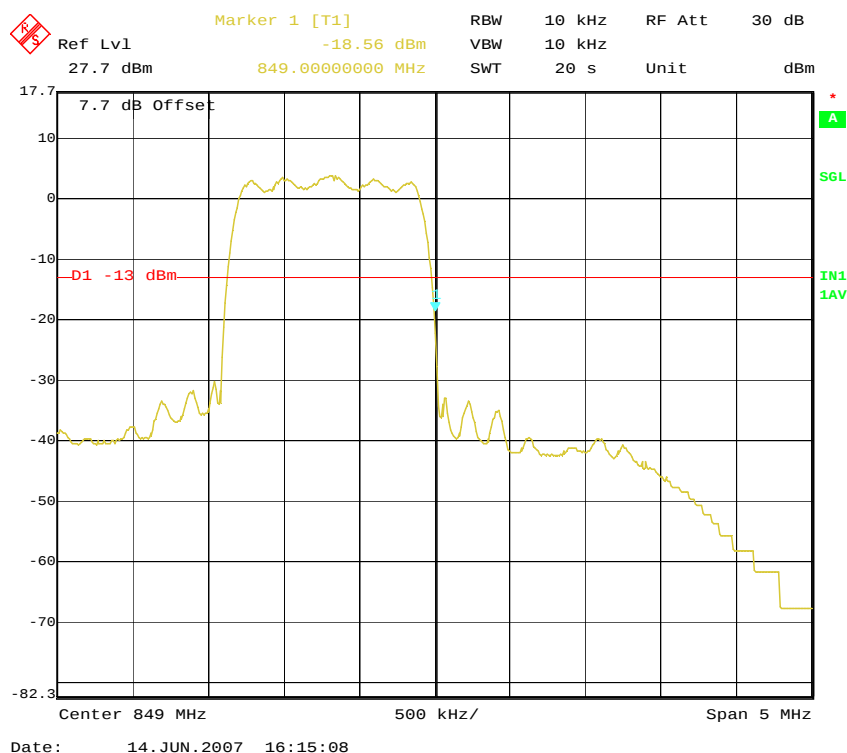


Figure 7-7: Emissions within 1 MHz of band edge, CDMA 1900 Channel 25

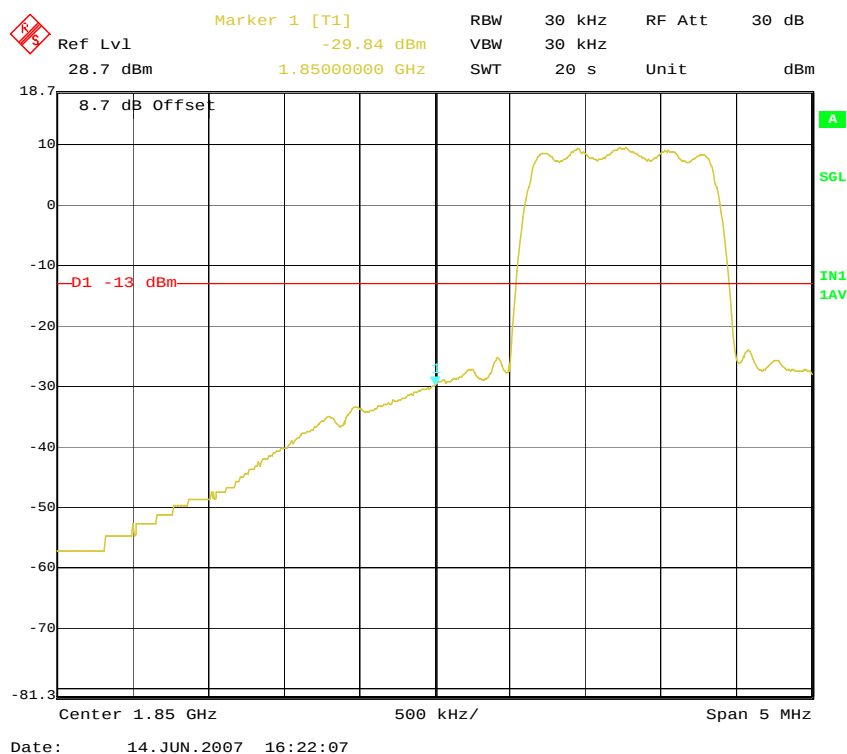
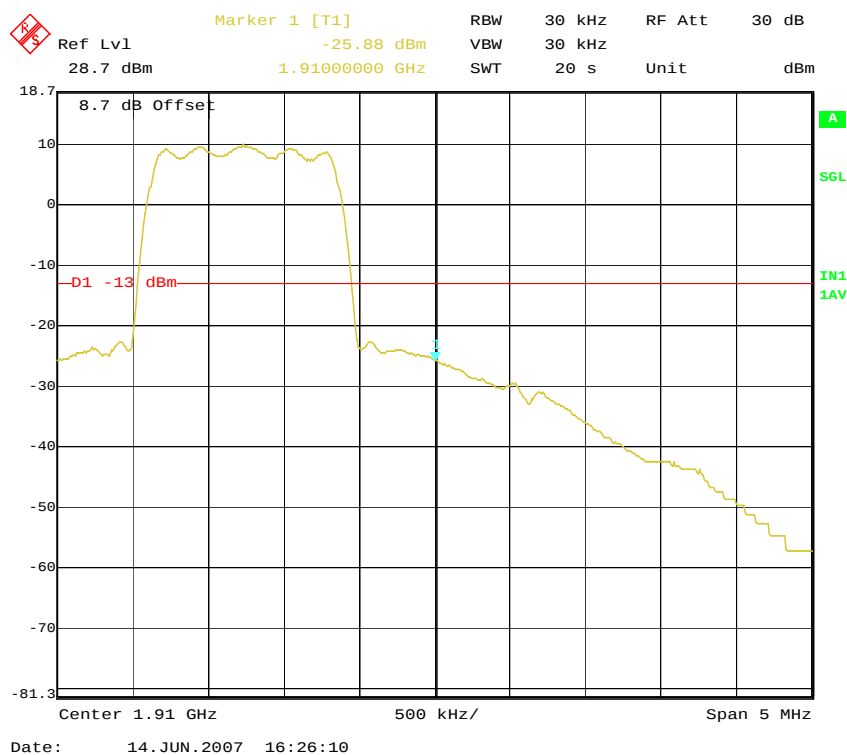


Figure 7-8: Emissions within 1 MHz of band edge, CDMA 1900 Channel 1175



8 FIELD STRENGTH OF SPURIOUS RADIATION

FCC §2.1053

RSS-129 §8.1

8.1 Test Procedure

The EUT was placed on a non-conductive turntable. The measurement antenna was placed at a distance of 3 meters from the EUT. The Base Station Simulator was set to force the EUT to its maximum power setting. During the tests, the antenna height and EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequencies (low, middle, and high channels) in each operating band. Once spurious emissions were identified, the power of the emission was determined using the substitution method described in TIA-603-B section 2.2.12 (Radiated Spurious Emissions).

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and at the spurious emissions frequency.

The device was tested in three orthogonal axes. The worst case emission of the three axes is reported.

8.2 Test Results

The System 5000 PTU met the field strength of spurious radiation requirements of FCC §2.1053. See Table 8-1 for spurious emissions data and Figure 8-1 through Figure 8-6 for the graphical test data.

Table 8-1: Spurious Emissions

EUT Mode	TX Channel	Polarity	Spurious Emission Frequency	Device Reading (dBuV)	Signal Generator Output (dBm)	Cable Loss (dB)	Tx Antenna Gain (dBi)	Tx Antenna Gain (dBd)	Radiated Power (dBm)	Limit (dBm)	Margin (dB)
CDMA Cell	1013	V	5.2182	47.94	-50.8	6.9	10.67	8.53	-49.17	-13	-36.17
CDMA Cell	1013	H	5.2182	48.50	-47.6	6.9	10	7.86	-46.64	-13	-33.64
CDMA Cell	384	V	3.3468	54.78	-49.5	5.3	9.06	6.92	-47.88	-13	-34.88
CDMA Cell	384	H	3.3468	56.81	-48.8	5.3	8.46	6.32	-47.78	-13	-34.78
CDMA Cell	777	V	3.5733	49.06	-57.3	5.5	9.23	7.09	-55.71	-13	-42.71
CDMA Cell	777	H	3.5733	48.7	-56.8	5.5	8.61	6.47	-55.83	-13	-42.83
CDMA Cell	777	V	5.3598	49.0	-49.6	7.1	10.64	8.5	-48.2	-13	-35.2
CDMA Cell	777	H	5.3598	50.13	-46.9	7.1	9.96	7.82	-46.18	-13	-33.18
CDMA PCS	25	H	3.70197	70.01	-33.6	5.6	9.15	7.01	-32.19	-13	-19.19
CDMA PCS	25	V	3.70197	71.04	-32.7	5.6	9.79	7.65	-30.65	-13	-17.65
CDMA PCS	25	H	5.55366	73.72	-22	7.2	9.98	7.84	-21.36	-13	-8.36
CDMA PCS	25	V	5.55366	74.09	-23.2	7.2	10.6	8.46	-21.94	-13	-8.94
CDMA PCS	600	H	3.76	60.37	-42.8	5.7	9.4	7.26	-41.24	-13	-28.24
CDMA PCS	600	V	3.76	62.06	-40.9	5.7	10.05	7.91	-38.69	-13	-25.69
CDMA PCS	600	H	5.64	75.44	-21.7	7.5	9.9	7.76	-21.44	-13	-8.44
CDMA PCS	600	V	5.64	79.16	-19.3	7.5	11.5	9.36	-17.44	-13	-4.44
CDMA PCS	1175	H	3.8176	58.38	-44.3	5.7	9.64	7.5	-42.5	-13	-29.5
CDMA PCS	1175	V	3.8176	62.87	-39.9	5.7	10.3	8.16	-37.44	-13	-24.44
CDMA PCS	1175	H	5.7274	68.84	-28.3	7.6	9.87	7.73	-28.17	-13	-15.17
CDMA PCS	1175	V	5.7274	76.25	-22	7.6	10.57	8.43	-21.17	-13	-8.17
CDMA PCS	25	H	7.405	56.69	-31.3	9.6	9.4	7.26	-33.64	-13	-20.64
CDMA PCS	25	V	7.405	54.23	-34.8	9.6	9.8	7.66	-36.74	-13	-23.74
CDMA PCS	25	H	16.6615	48.61	-22.4	14.75	13.0	10.86	-26.29	-13	-13.29
CDMA PCS	25	V	16.6615	45.68	-27.1	14.75	13.0	10.86	-30.99	-13	-17.99
CDMA PCS	600	H	13.16	53.06	-24.7	16	12.2	10.06	-30.64	-13	-17.64
CDMA PCS	600	V	13.16	50.37	-28.8	16	12.1	9.96	-34.84	-13	-21.84
CDMA PCS	600	H	16.92	45.98	-23.5	16.6	13.1	10.96	-29.14	-13	-16.14
CDMA PCS	600	V	16.92	44.34	-26	16.6	13.2	11.06	-31.54	-13	-18.54
CDMA PCS	1175	H	17.182	43.18	-18.6	17.7	13.1	10.96	-25.34	-13	-12.34
CDMA PCS	1175	V	17.182	42.94	-20.1	17.7	13.0	10.86	-26.94	-13	-13.94

Figure 8-1: Field Strength of Spurious Radiation (30 MHz – 20 GHz), CDMA Cell Channel 1013

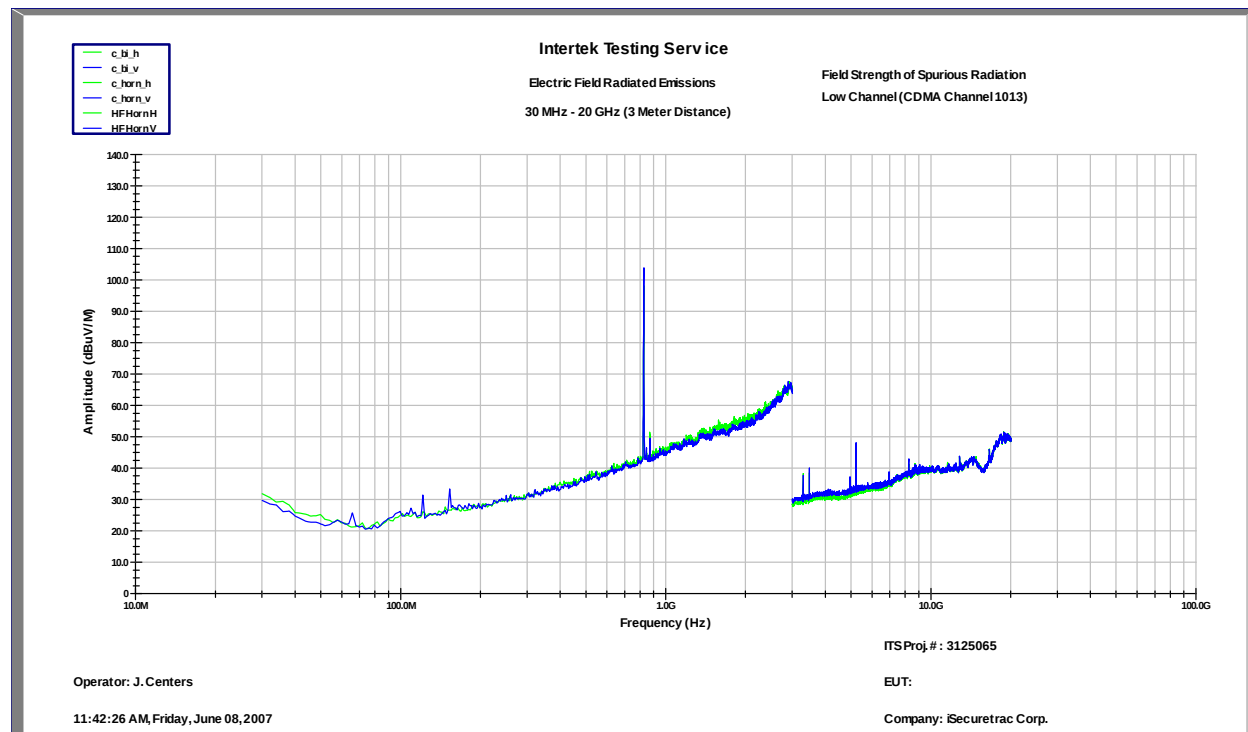


Figure 8-2: Field Strength of Spurious Radiation (30 MHz – 20 GHz), CDMA Cell Channel 384

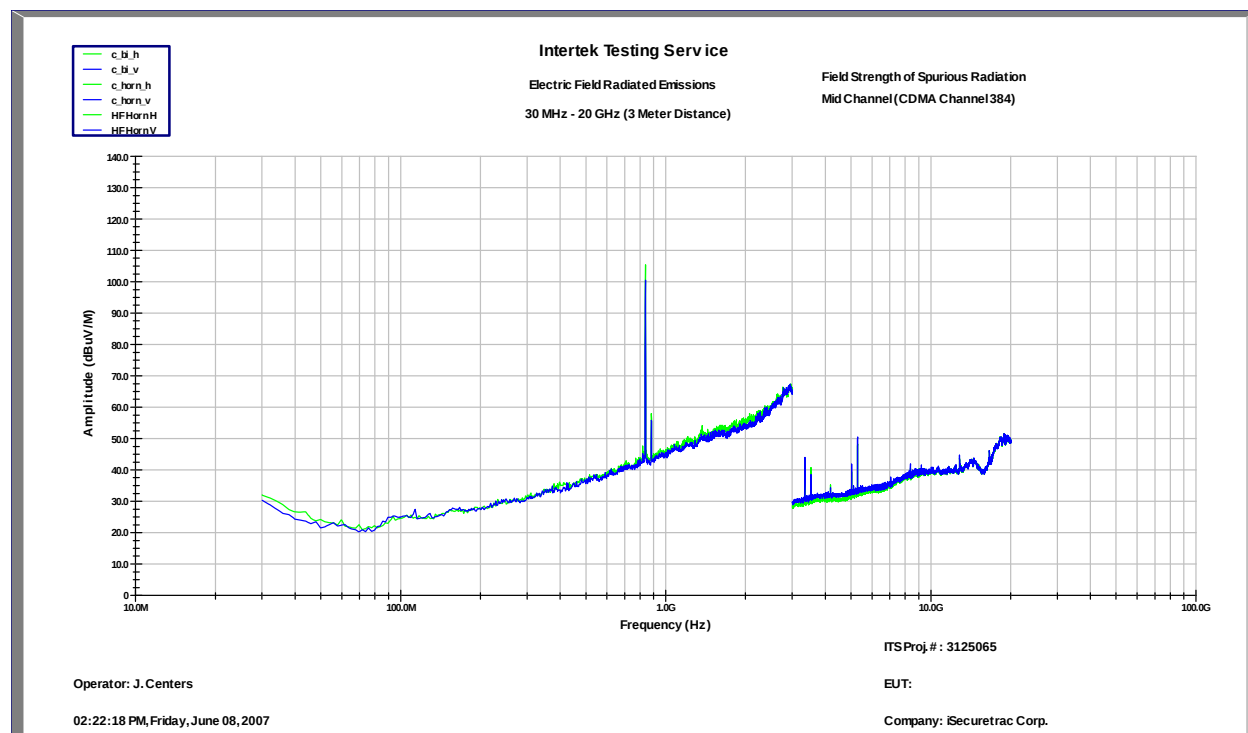


Figure 8-3: Field Strength of Spurious Radiation (30 MHz – 20 GHz), CDMA Cell Channel 777

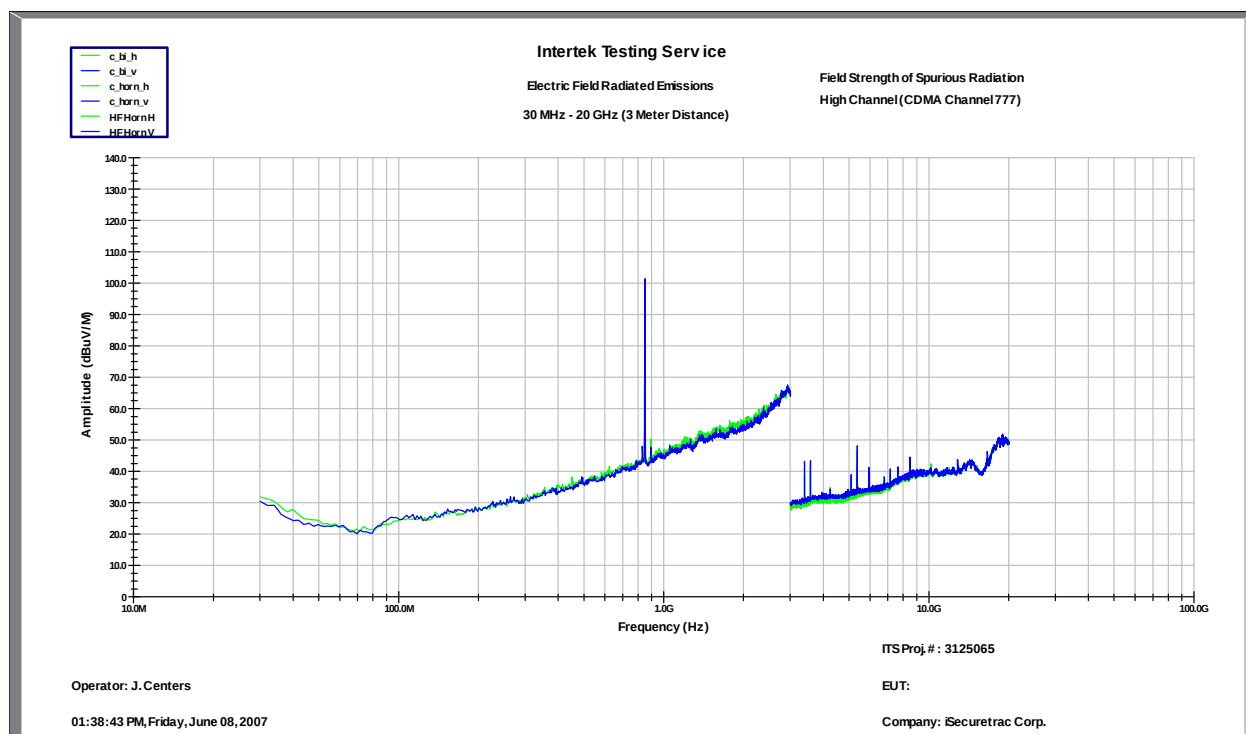


Figure 8-4: Field Strength of Spurious Radiation (30 MHz – 20 GHz), CDMA PCS Channel 25

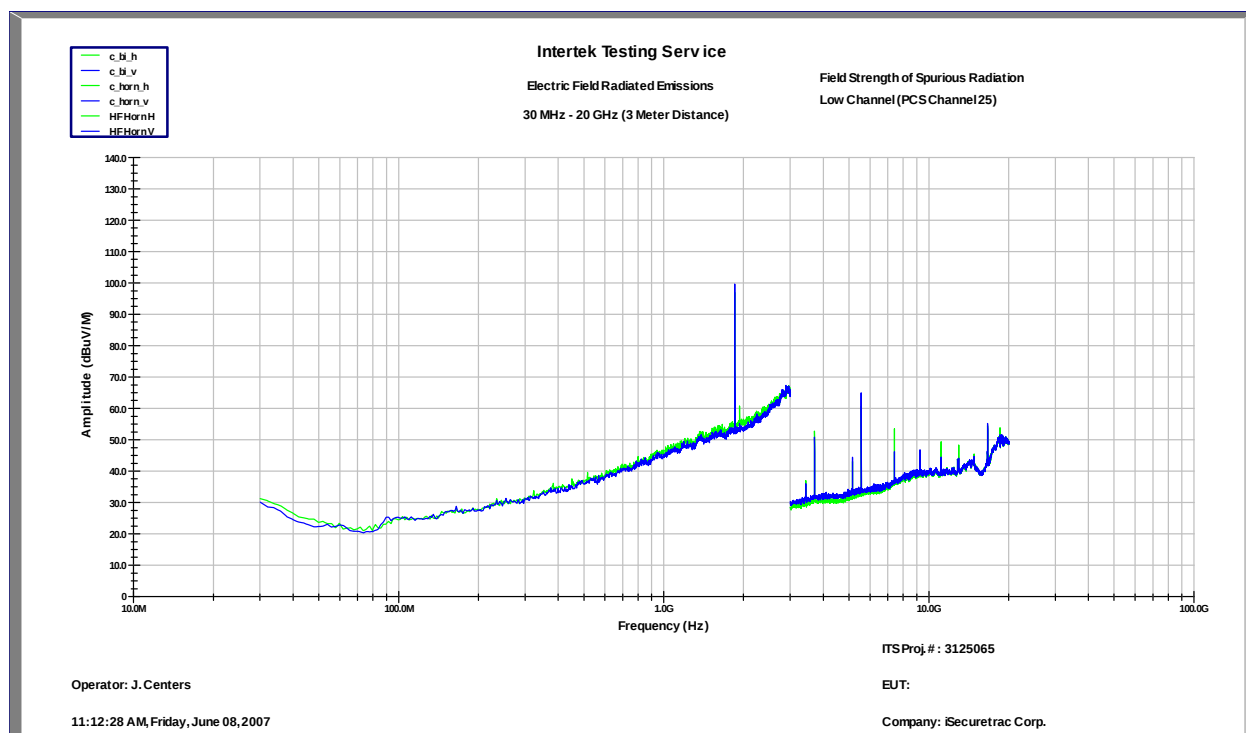


Figure 8-5: Field Strength of Spurious Radiation (30 MHz – 20 GHz), CDMA PCS Channel 600

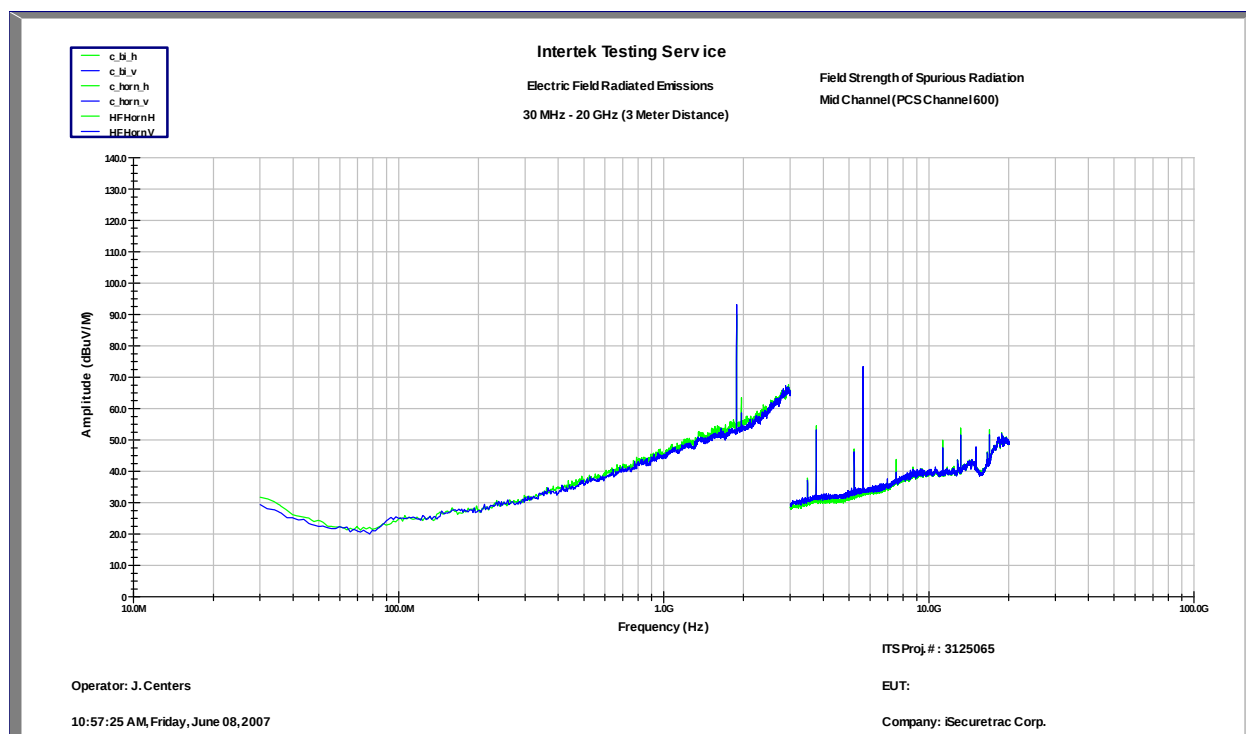
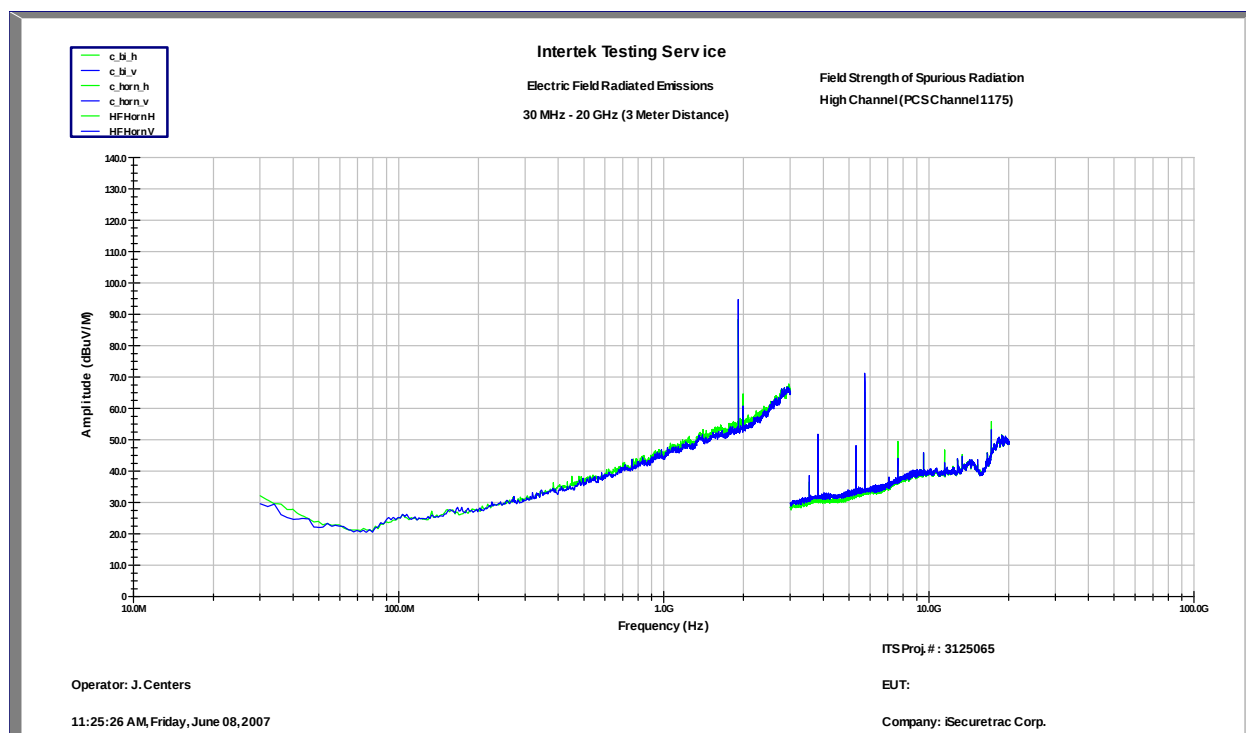


Figure 8-6: Field Strength of Spurious Radiation (30 MHz – 20 GHz), CDMA PCS Channel 1175



9 RECEIVER SPURIOUS EMISSIONS

FCC §15.109

ICES-003, RSS-129 §10, RSS-133 §9

9.1 Test Limits

Table 9-1 Radiated Emission Limit for FCC §15.109

Radiated Emission Limits at 3 meters	
Frequency (MHz)	Quasi-Peak limits, dB (µV/m)
30 to 88	40.0
88 to 216	43.5
216 to 960	46.0
960 and up	54.0

9.2 Test Procedure

Measurements are made over the frequency range of 30 MHz to five times the highest frequency operating within the device. The measuring receiver meets the requirements of Section One of CISPR 16 and the measuring antenna correlates to a balanced dipole. From 30 to 1000 MHz, a quasi-peak detector was used for measurement. Above 1000 MHz, average measurements were performed.

Measurements of the radiated field are made with the antenna located at a distance of 3 meters from the EUT. If the field-strength measurements at 3m cannot be made because of high ambient noise level or for other reasons, measurements may be made at a closer distance, for example 1m. An inverse proportionality factor of 20 dB per decade should be used to normalize the measured data to the specified distance for determining compliance.

The antenna is adjusted between 1m and 4m in height above the ground plane for maximum meter reading at each test frequency.

The antenna-to-EUT azimuth is varied during the measurement to find the maximum field-strength readings.

The antenna-to-EUT polarization (horizontal and vertical) is varied during the measurements to find the maximum field-strength readings.

The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for larger EUT.

Equipment setup for radiated disturbance tests followed the guidelines of ANSI C63.4: 2003.

9.3 Test Results

The System 5000 PTU is **compliant** with the radiated disturbance requirements of FCC §15.109 for a class B device. The maximized quasi peak data can be found in Figure 9-2.

Figure 9-1 FCC §15.109 Receiver Spurious Emissions Graphical Data

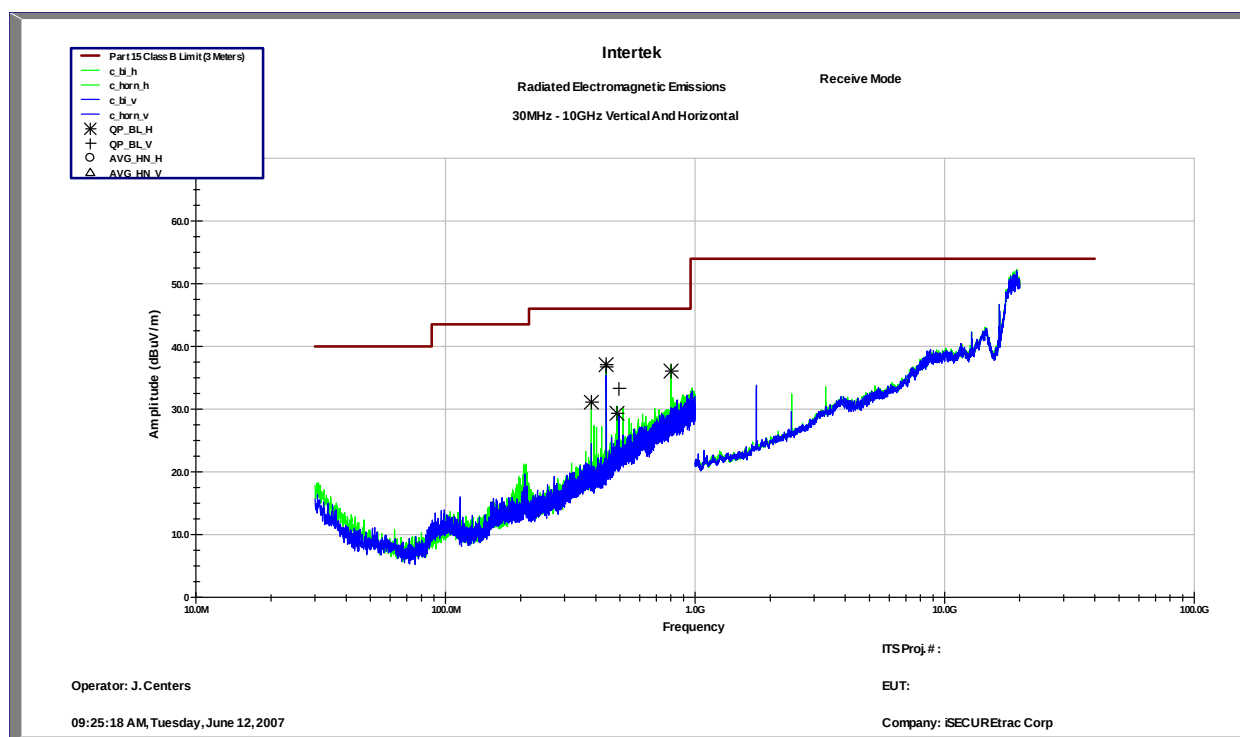


Figure 9-2 FCC §15.109 Maximized Quasi Peak and Average Emissions

Frequency (MHz)	Polarity (H/V)	Cab. (dB)	Ant. (dB)	Corr. Reading. (dBuV/m)	Limit (dBuV/m)	Delta (dB)	Results
440.71 MHz	H	3.2	16.86	37.08	46.02	-8.94	Compliant
440.71 MHz	V	3.2	16.34	36.73	46.02	-9.29	Compliant
801.83 MHz	H	4.36	22.04	36.06	46.02	-9.96	Compliant
495.24 MHz	V	3.36	17.7	33.31	46.02	-12.71	Compliant
384.0 MHz	H	2.94	16.04	31.09	46.02	-14.93	Compliant
486.82 MHz	H	3.36	18.53	29.35	46.02	-16.67	Compliant

10 FREQUENCY STABILITY VS TEMPERATURE

FCC §2.1055, FCC §22.355, FCC §24.235

RSS-133 §7

Frequency tolerance: 2.5ppm

10.1 Test Procedure

The equipment under test was powered by a fully charged internal battery and the RF output was connected to a CMU-200 Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The EUT was placed inside the temperature chamber. The RF output cable exited the chamber through an opening made for that purpose. After the temperature stabilized for approximately 30 minutes, the frequency error was read from the base station simulator.

10.2 Test Results

The System 5000 PTU met the frequency stability requirements of FCC §2.1055, FCC §22.355 and FCC §24.235. The test results are shown in Table 10-1.

Table 10-1: Frequency Error (ppm) vs. Temperature

Temp	CDMA Cell Band			CDMA PCS Band		
	Channel 1013	Channel 384	Channel 777	Channel 25	Channel 600	Channel 1175
-30	0.1746	0.1949	0.2087	0.1745	0.1803	0.1750
-20	0.0255	0.0203	0.0224	0.0319	0.0218	0.0372
-10	0.0243	0.0191	0.0189	0.0216	0.0218	0.0210
0	0.0194	0.0191	0.0165	0.0205	0.0234	0.0199
10	0.0194	0.0215	0.0224	0.0173	0.0245	0.0210
20	0.0206	0.0215	0.0224	0.0189	0.0234	0.0189
30	0.0218	0.0239	0.0236	0.0216	0.0160	0.0225
40	0.0243	0.0239	0.0224	0.0184	0.0165	0.0236
50	0.0218	0.0227	0.0248	0.0238	0.0255	0.0210
60	0.0267	0.0227	0.0236	0.0232	0.0245	0.0262

11 FREQUENCY STABILITY VS VOLTAGE

FCC §2.1055, FCC §22.355

Frequency tolerance: 2.5ppm

11.1 Test Procedure

An external DC power supply was connected to the battery terminals of the equipment under test. The Base Station Simulator was set to force the EUT to its maximum power setting. The voltage was set to the battery end point as declared by the manufacture. The output frequency error was recorded for each battery voltage.

11.2 Test Results

The System 5000 PTU met the frequency stability requirements of FCC §2.1055 and FCC §22.355. The test results are located in Table 11-1.

Table 11-1: Frequency Error (ppm) vs. Input Voltage

Battery Voltage – End Point	CDMA Cell Band			CDMA PCS Band		
	Channel 1013	Channel 384	Channel 777	Channel 25	Channel 600	Channel 1175
Fully Charged	0.0206	0.0215	0.0224	0.0189	0.0234	0.0189
3.6VDC	0.0194	0.0239	0.0236	0.0227	0.0239	0.0183