TEST REPORT

OF

FCC Part 22H, Part 24E and Part 15

FCC ID : TARCDU-680

Equipment Under Test	:	Dual Band CDMA 1xEVDO Wireless Modem
Model Name	:	CDU-680
Serial No.	:	N/A
Applicant	:	C-motech Co., Ltd.
Manufacturer	:	C-motech Co., Ltd.
Date of Test(s)	:	2006-11-13~ 2006-12-29
Date of Issue	:	2007-01-08

In the configuration tested, the EUT complied with the standards specified above.

Tested By: **Date:** 2007-01-08

Feel Jeong

Approved By: **Date:** 2007-01-08

Albert Lim

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1. General Information

1-1. Testing Laboratory

SGS Testing Korea Co., Ltd.
Wireless Div. 2FL, 18-34, Sanbon-dong, Gunpo-Si, Gyeonggi-do, Korea 435-040
www.electrolab.kr.sgs.com
Telephone : +82 +31 428 5700
FAX : +82 +31 427 2371

1-2. Details of Applicant

Applicant : C-motech Co., Ltd.
Address : 8,9F Yongsan Bldg. 14-14 Yoido-dong, Youngdungpo-gu, Seoul 150-871, Korea
Contact Person : Bahn Gil-Sung
Phone No. : 82-2-368-9881
Fax No. : 82-2-785-5740

1-3. Description of EUT

Kind of Product	Dual Band CDMA 1xEVDO Wireless Modem
Model Name	CDU-680
Serial Number	N/A
Power Supply	DC 5V from USB Host connector
Frequency Range	TX: 824.70 ~ 848.31 MHz, 1851.25 ~ 1908.75 MHz RX: 869.70 ~ 893.31 MHz, 1931.25 ~ 1988.75 MHz
Transmit Power	CDMA : ERP 24.68 dBm (293.76 mW) US PCS :EIRP 23.27 dBm (212.32 mW)
Modulation Technique	OQPSK, QPSK
Number of Channels	20 CH for CDMA, 48 CH for US PCS
Emission Designation	1M27F9W(CDMA), 1M27F9W(PCS)
Operating Conditions	-30℃~60℃
Antenna Type	Chip Antenna

1-4. Details of modification

-N/A

1.5. Test Equipment List

EQUIPMENT	MANUFACTURER	MODEL	CAL DUE.
Signal Generator	Agilent	E4438C	May 2007
Spectrum Analyzer	Agilent	E4440A	May 2007
Spectrum Analyzer	H.P	8593E	Sep. 2007
Power Meter	Agilent	E4416A	May 2007
Power Sensor	Agilent	E9327A	May 2007
DC Power Supply	Agilent	6674A	May 2007
Attenuator	Agilent	8494B	May 2007
Two-Line V-Network	NNB 41	Schaffner	Sep. 2007
Test Receiver	Rohde & Schwarz	ESVS10	May 2007
Test Receiver	Rohde & Schwarz	ESHS10	Aug. 2007
Ultra-Broadband Antenna	Rohde & Schwarz	HL562	Sep. 2007
Horn Antenna	Electro-Metrics	RGA-60	Dec. 2007
Horn Antenna	SCHWARZBECK	BBHA9120D(0600)	Jul. 2007
Dipole Antenna	VHAP/UHAP	975/958	Jun. 2007
Communication Antenna	AR	AT 4002	N.C.R
Band Reject Filter	Wainwright	WRCG824/849-814/85960/10SS	May 2007
Highpass Filter	Wainwright	WHK3.0/18G-10SS	Dec.2007
Mobile Test Unit	Agilent	E5515C	May 2007

EQUIPMENT	MANUFACTURER	MODEL	CAL DUE.
Pulse Limiter	Rohde & Schwarz	EHS3-Z2	Jan.2007
Preamplifier	Agilent	8449B	May 2007
Preamplifier	Agilent	8447F	Jun.2007
Dual Directional Coupler	Agilent	778D	Dec. 2007
Anechoic Chamber	SY Corporation	L x W x H 9.6 x 6.4 x 6.4	Aug. 2007

1.6. Summary of Test Results

Description of Test	FCC Rule	Result
AC Power Line Conducted Emissions	§15.107	Complies
Field Strength of Radiated Emission	§15.109(a)	Complies
Spurious Radiated Emission	§22.917(a) §24.238(a)	Complies
RF Radiated Output Power	§2.1046 §22.913(a) §24.232(c)	Complies
Conducted Output Power	§2.1046(a) §22.913(a) §24.232(c)	Complies
Occupied Bandwidth	§2.1049(h) (i)	Complies
Spurious Emission at Antenna Terminal	§2.1051 §22.917(a) §24.238(a)	Complies
Frequency Stability	§2.1055 §22.355 §24.235	Complies
Band Edge	§22.905 §24.229	Complies

1.7. Description of Support Units

Product	Model No.	Serial No.	Manufacturer
Note PC	R40e	99-F1442	LG IBM

2. AC Power Line Conducted Emissions

2.1. Limit

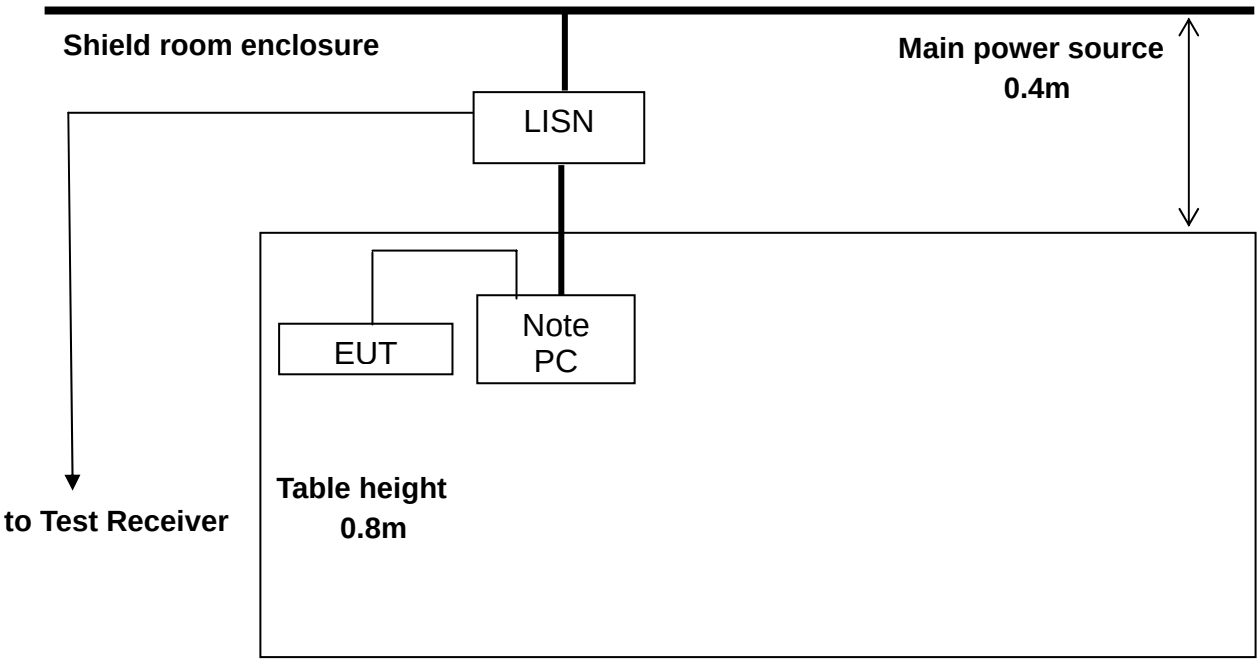
According to §15.107(a) for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network(LISN).
Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted limit (dBμV)	
	Qausi-peak	Average
0.15 – 0.50	66-56*	56-46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

* Decreases with the logarithm of the frequency.

2.2. Test Procedure

The test procedure is performed in a 6.5*3.6*3.6(L×W×H) shielded room. The EUT along with its peripherals were placed on a 1.0m(W)× 1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.



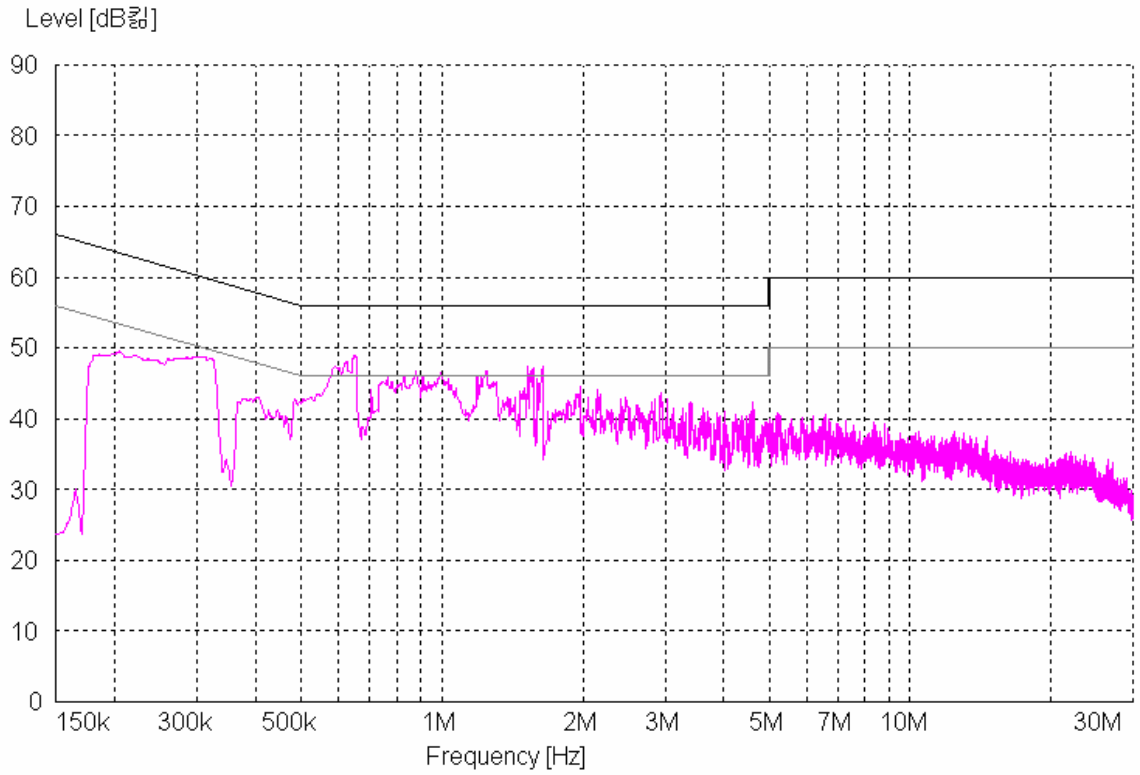
2.3. Test Result

CDMA 800

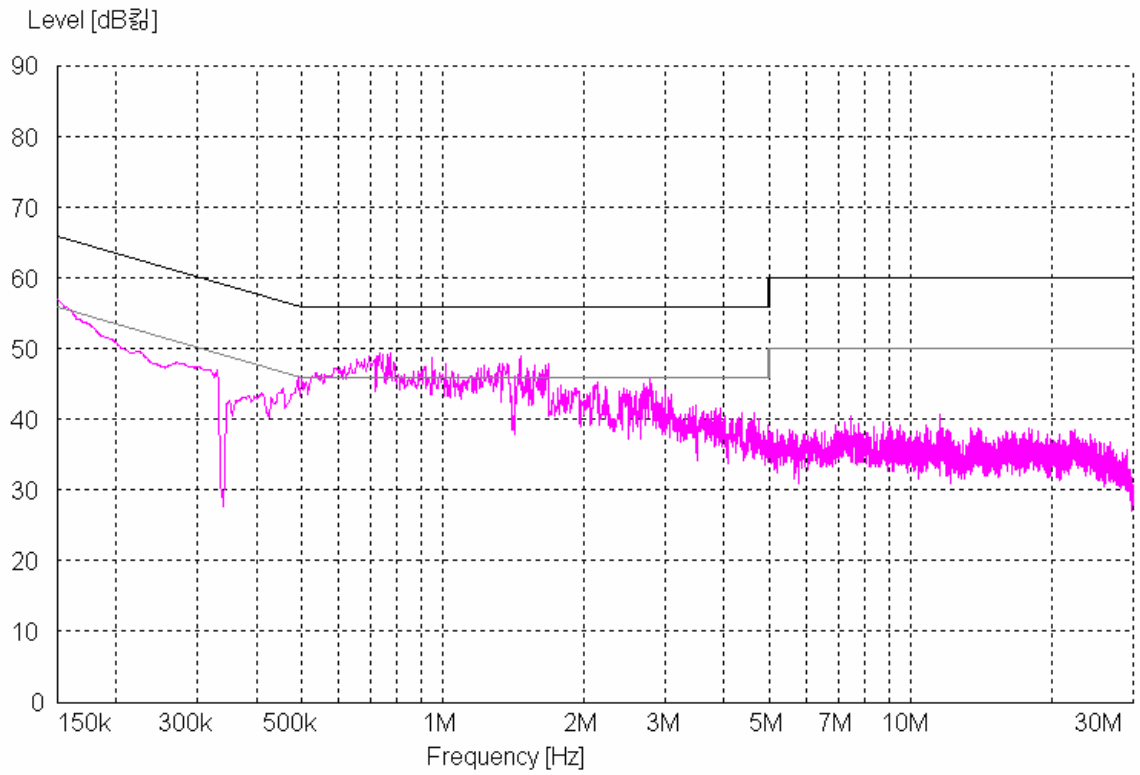
FREQ. (MHz)	LEVEL(dB μV)		LINE	LIMIT(dB μV)		MARGIN(dB)	
	Q-Peak	Average	LINE	Q-Peak	Average	Q-Peak	Average
0.15	52.1	32.3	H	66.0	56.0	13.9	23.7
0.64	41.7	23.4	H	56.0	46.0	14.3	22.6
0.74	43.7	24.7	H	56.0	46.0	12.3	21.3
0.77	41.6	25.2	H	56.0	46.0	14.4	20.8
0.95	41.6	25.0	H	56.0	46.0	14.4	21.0
1.47	42.3	26.0	H	56.0	46.0	13.7	20.0
0.33	44.1	30.2	N	59.6	49.6	15.5	19.4
0.65	41.7	29.4	N	56.0	46.0	14.3	16.6
0.88	41.9	29.4	N	56.0	46.0	14.1	16.6
0.99	39.0	28.1	N	56.0	46.0	17.0	17.9
1.25	38.8	28.6	N	56.0	46.0	17.2	17.4
1.65	36.7	28.3	N	56.0	46.0	19.3	17.7

Please refer to the following plots.

Neutral



HOT

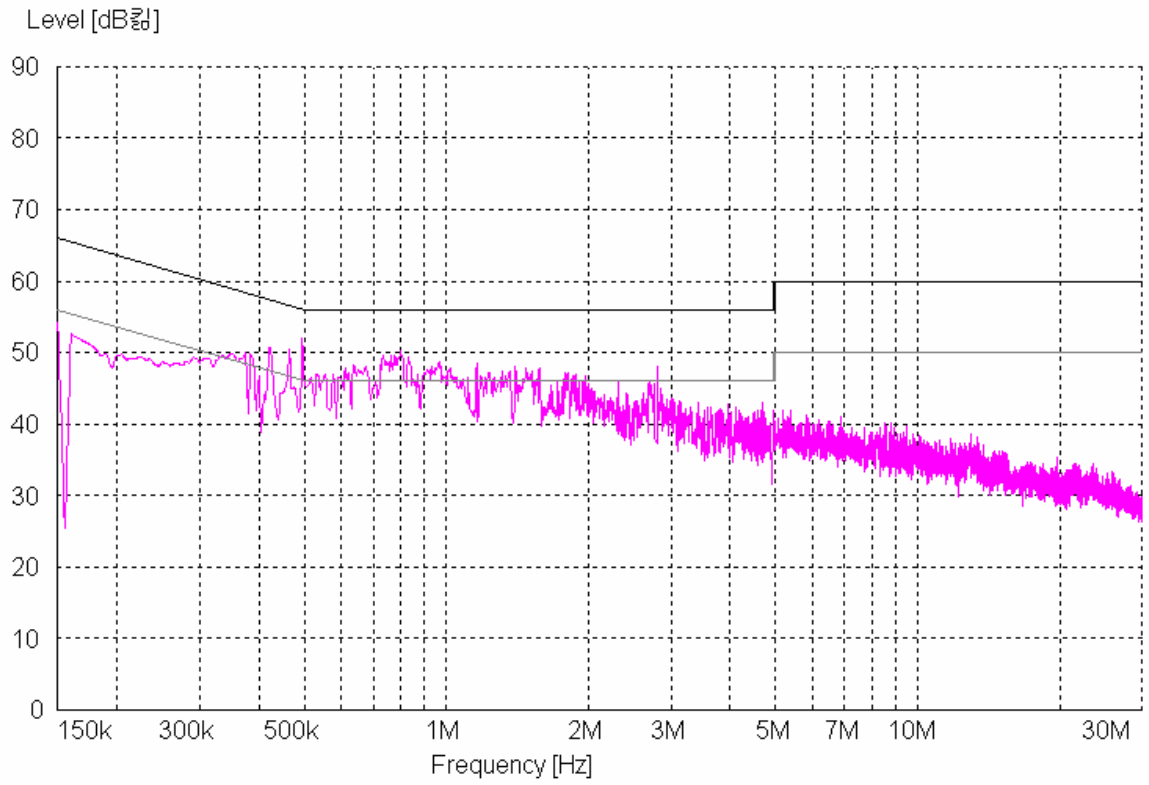


PCS 1900

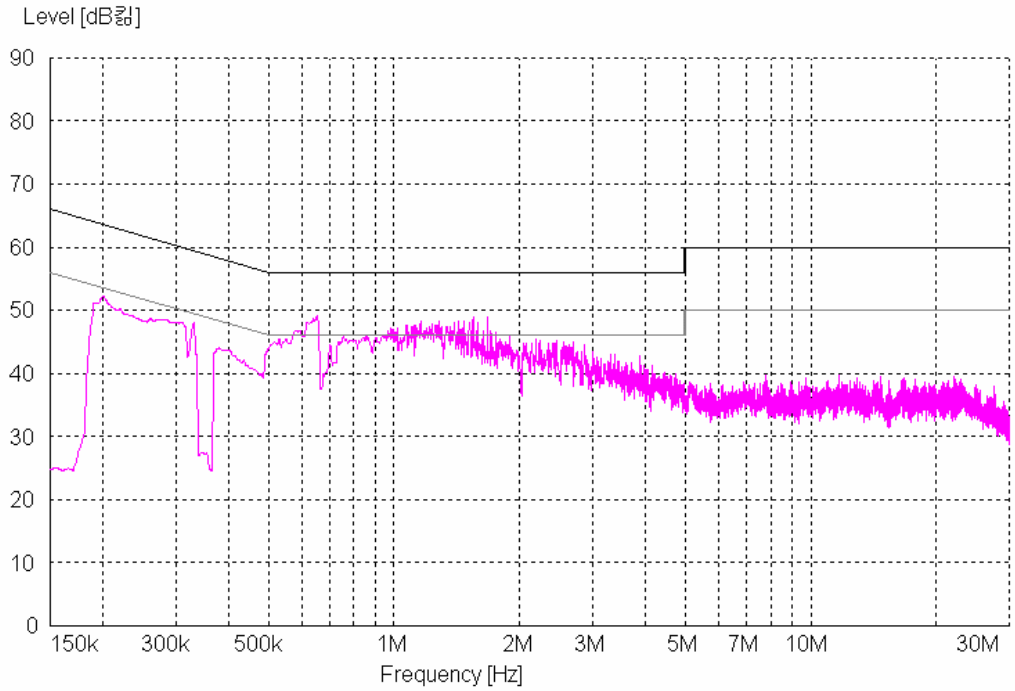
FREQ. (MHz)	LEVEL(dB μV)		LINE	LIMIT(dB μV)		MARGIN(dB)	
	Q-Peak	Average	LINE	Q-Peak	Average	Q-Peak	Average
0.20	43.8	31.8	H	63.6	53.6	19.8	21.8
0.33	43.8	26.3	H	59.5	49.5	15.7	23.2
0.66	40.5	24.6	H	56.0	46.0	15.5	21.4
1.16	40.4	25.9	H	56.0	46.0	15.6	20.1
1.55	38.9	25.6	H	56.0	46.0	17.1	20.4
1.68	38.3	25.0	H	56.0	46.0	17.7	21.0
0.15	49.4	31.4	N	66.0	56.0	16.6	24.6
0.16	47.4	28.2	N	65.5	55.5	18.1	27.3
0.43	44.4	30.2	N	57.3	47.3	12.9	17.1
0.50	39.1	24.7	N	56.1	46.1	17.0	21.4
0.80	42.1	28.0	N	56.0	46.0	13.9	18.0
2.81	34.4	28.7	N	56.0	46.0	21.6	17.3

Please refer to the following plots.

Neutral



HOT



3. RF Radiated Output Power

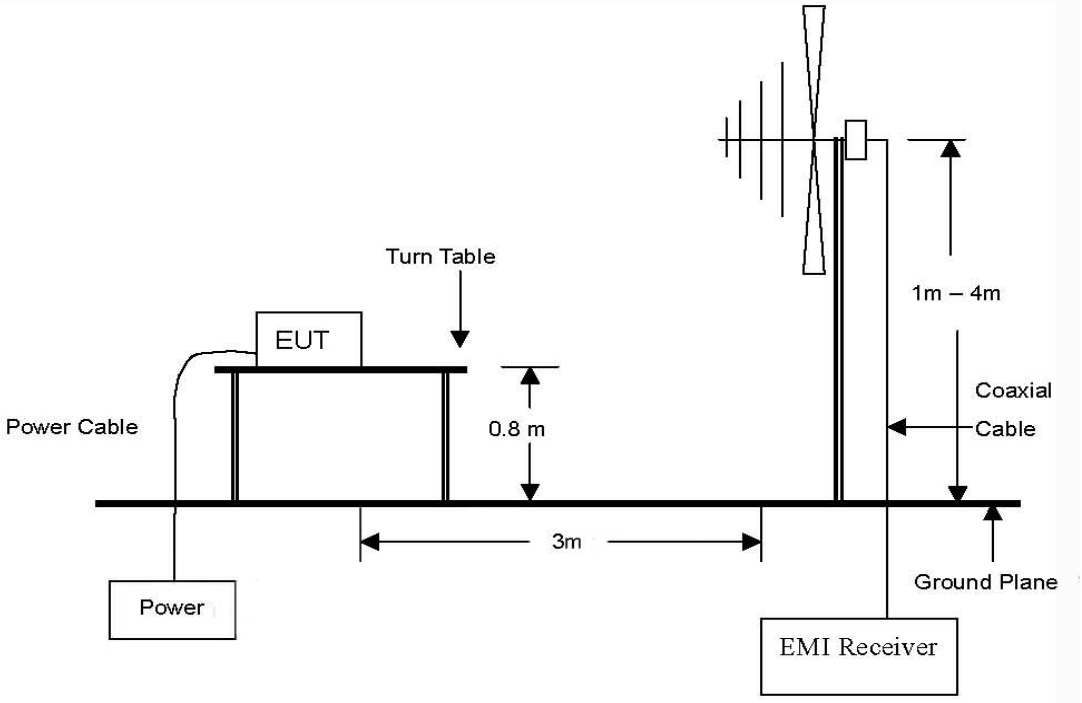
3.1. Limit

FCC §22.913(a), the ERP of mobile transmitters must not exceed 7 watts. FCC §24.232(c) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

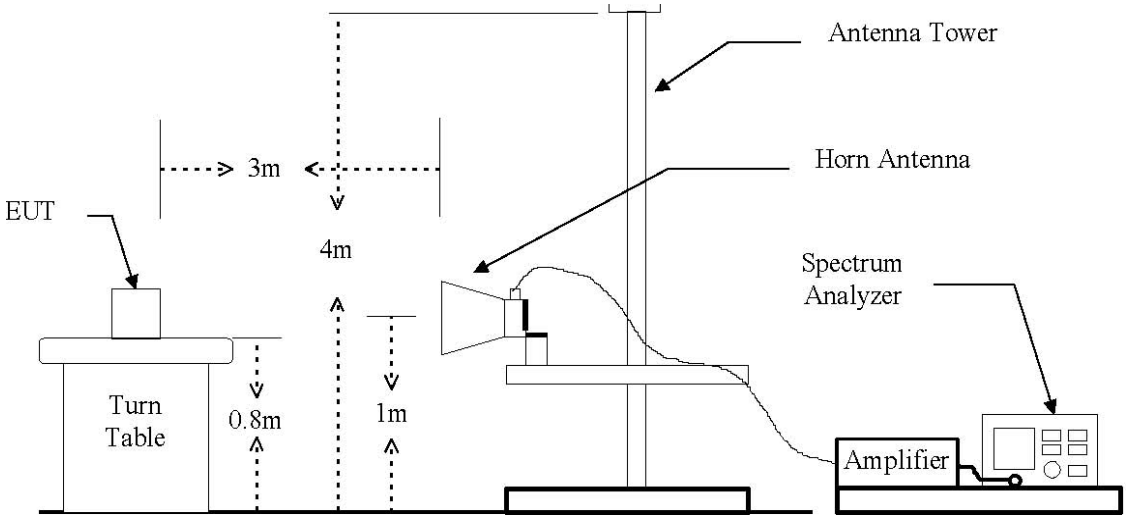
3.2. Test Procedure

1. On a test site, the EUT shall be placed at 80cm height on a turn table, and in the position closest to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3m from EUT to correspond to the frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
5. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6. The transmitter shall then the rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8. The maximum signal level detected by the measuring receiver shall be noted.
9. The transmitter shall be replaced by a horn (substitution antenna).
10. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
11. The substitution antenna shall be connected to a calibrated signal generator.
12. In necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase he sensitivity of the measuring receiver.
13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring received, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
15. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
17. The measure of the effective radiated power is the large of the two levels recorded, at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
18. The ERP/EIPR test under RC5/SO55.

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 18 GHz Emissions.



3.3. Test Results

ERP : CDMA 800

Frequency (MHz)	Ant. Pol. (H/V)	Amp-C.L (dB)	S.G. Reading (dBm)	Antenna Gain (dBd)	E. R. P.	
					(dBm)	(mW)
824.700	V	28.64	-3.81	-8.53	16.30	42.66
	H	28.64	3.12	-8.53	22.23	210.38
836.520	V	28.64	-3.30	-8.52	16.82	48.08
	H	28.64	4.56	-8.52	24.68	293.76
848.310	V	28.64	-5.67	-8.50	14.47	27.99
	H	28.64	1.35	-8.50	21.49	140.93

Remake: 1. ERP= SG Reading +Amp-C.L. +Gain

EIRP : PCS 1900

Frequency (MHz)	Ant. Pol. (H/V)	Amp-C.L (dB)	S.G. Reading (dBm)	Antenna Gain (dBi)	E. I. R. P.	
					(dBm)	(mW)
1851.25	V	33.91	-19.66	9.02	23.27	212.32
	H	33.91	-31.56	9.02	11.37	13.71
1880.00	V	33.91	-21.47	9.06	21.50	141.25
	H	33.91	-31.86	9.06	11.11	12.91
1908.75	V	33.91	-20.35	9.09	22.65	184.08
	H	33.91	-33.47	9.09	9.53	8.97

Remake: 1. EIRP= SG Reading +Amp-C.L. +Gain

4. Spurious Radiated Emission

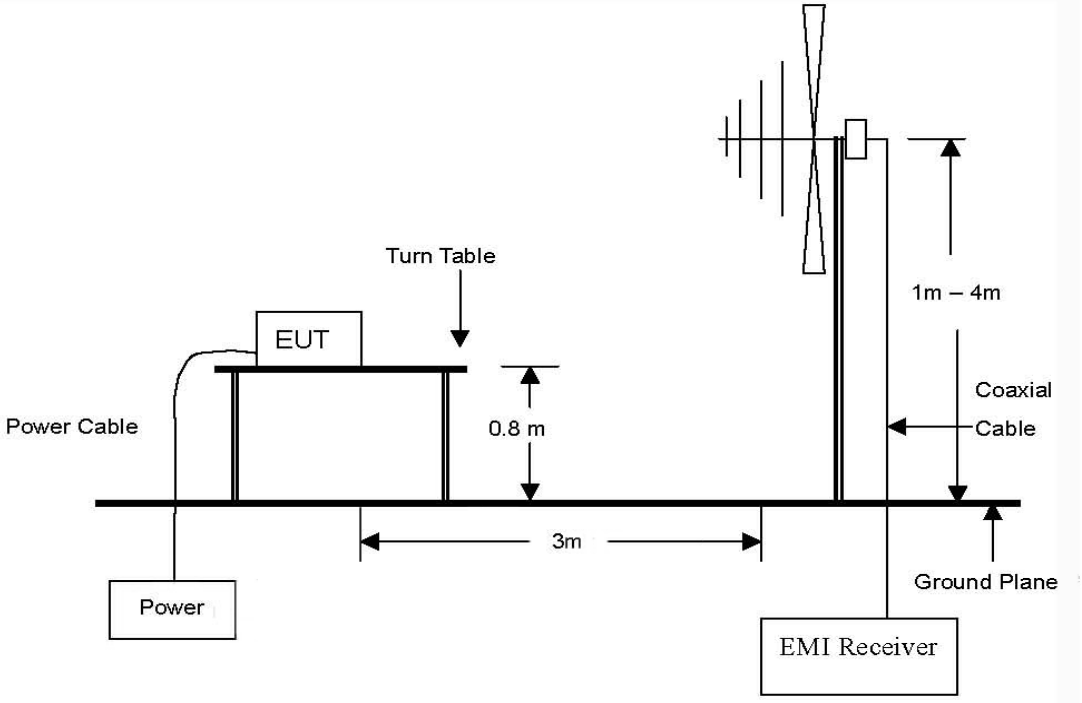
4.1. Limit

§ 22.917(a) and §24.238 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency must be attenuated below the transmitting (P) by a factor of at least 43+10log(P)dB.

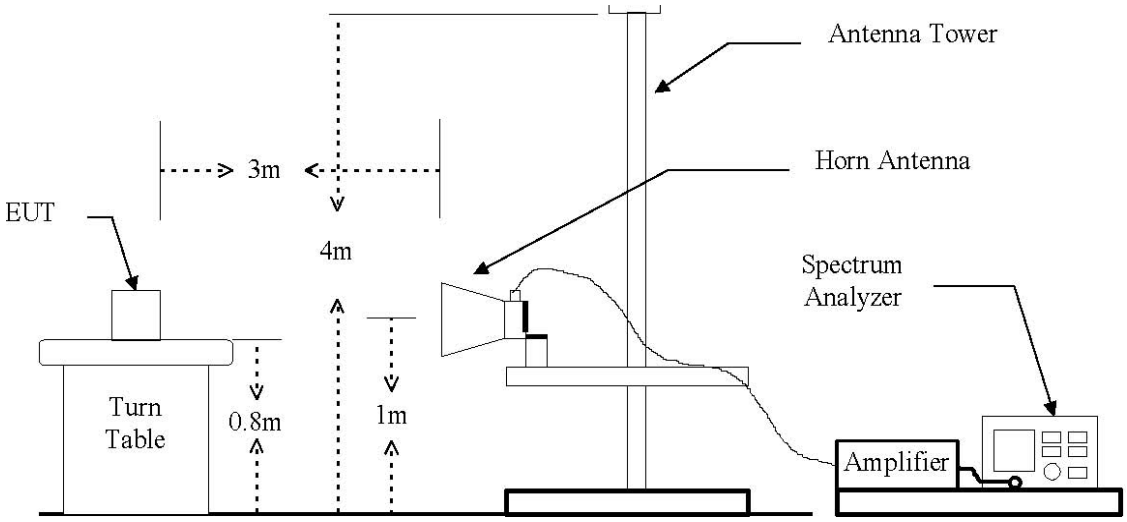
4.2. Test Procedure

1. On a test site, the EUT shall be placed at 0.8cm height on a turn table, and in the position closest to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3m from EUT to correspond to the frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
5. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6. The transmitter shall then the rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8. The maximum signal level detected by the measuring receiver shall be noted.
9. The transmitter shall be replaced by a horn (substitution antenna).
10. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
11. The substitution antenna shall be connected to a calibrated signal generator.
12. In necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase he sensitivity of the measuring receiver.
13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring received, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
15. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
17. The measure of the effective radiated power is the large of the two levels recorded, at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary
18. Spurious radiated emission was tested under RC5/SO55.

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 18 GHz Emissions.



4.3. Test Result

CDMA 800

Frequency (MHz)	Ant.Pol. (H/V)	S.G. reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
TX LOW channel (824.64 MHz)								
1649.28	H	-42.28	1.03	8.22	6.07	-37.24	-13	24.24
	V	-41.35	1.03	8.22	6.07	-36.31	-13	23.31
2474.10	H	-42.96	1.10	10.03	7.88	-36.18	-13	23.18
	V	-47.55	1.10	10.03	7.88	-40.77	-13	27.77
TX MID Channel (836.52 MHz)								
1673.04	H	-38.22	1.03	8.30	6.15	-33.10	-13	20.10
	V	-38.10	1.03	8.30	6.15	-32.98	-13	19.98
2509.56	H	-41.08	1.10	10.07	7.92	-34.26	-13	21.26
	V	-41.29	1.10	10.07	7.92	-34.47	-13	21.47
TX HIGH Channel (848.31 MHz)								
1696.62	H	-40.60	1.03	8.40	6.25	-35.38	-13	22.38
	V	-42.07	1.03	8.40	6.25	-36.85	-13	23.85
2544.93	H	-39.40	1.10	10.11	7.96	-32.54	-13	19.54
	V	-40.53	1.10	10.11	7.96	-33.67	-13	20.67

Remake: 1. No more harmonic above 3rd harmonic for all channel.
2. ERP= SG Reading –Cable Loss +Gain

PCS 1900

Frequency (MHz)	Ant.Pol. (H/V)	S.G. reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
TX LOW channel (1851.25 MHz)								
3702.50	H	-40.21	1.53	11.14	8.99	-32.75	-13	19.75
	V	-44.83	1.53	11.14	8.99	-37.37	-13	24.37
5553.75	H	-41.06	2.20	11.56	9.41	-33.85	-13	20.85
	V	-53.01	2.20	11.56	9.41	-45.80	-13	32.80
TX MID Channel (1880.00 MHz)								
3760.00	H	-46.26	1.53	11.18	9.03	-38.76	-13	25.76
	V	-46.33	1.53	11.19	9.03	-38.83	-13	25.83
5640.00	H	-42.06	2.20	11.62	9.47	-34.79	-13	21.79
	V	-55.28	2.20	11.62	9.47	-48.01	-13	35.01
TX HIGH Channel (1908.75 MHz)								
3817.50	H	-40.41	1.53	11.22	9.07	-32.87	-13	19.87
	V	-42.46	1.53	11.22	9.07	-34.92	-13	21.92
5726.25	H	-39.61	2.20	11.68	9.53	-32.28	-13	19.28
	V	-51.90	2.20	11.68	9.53	-44.57	-13	31.57

Remake: 1. No more harmonic above 3rd harmonic for all channel.
2. ERP= SG Reading –Cable Loss +Gain

5. Field Strength of Radiated Emissions

5.1. Limit

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30 - 88	3	40.0	100
88 – 216	3	43.5	150
216 – 960	3	46.0	200
Above 960	3	54.0	500

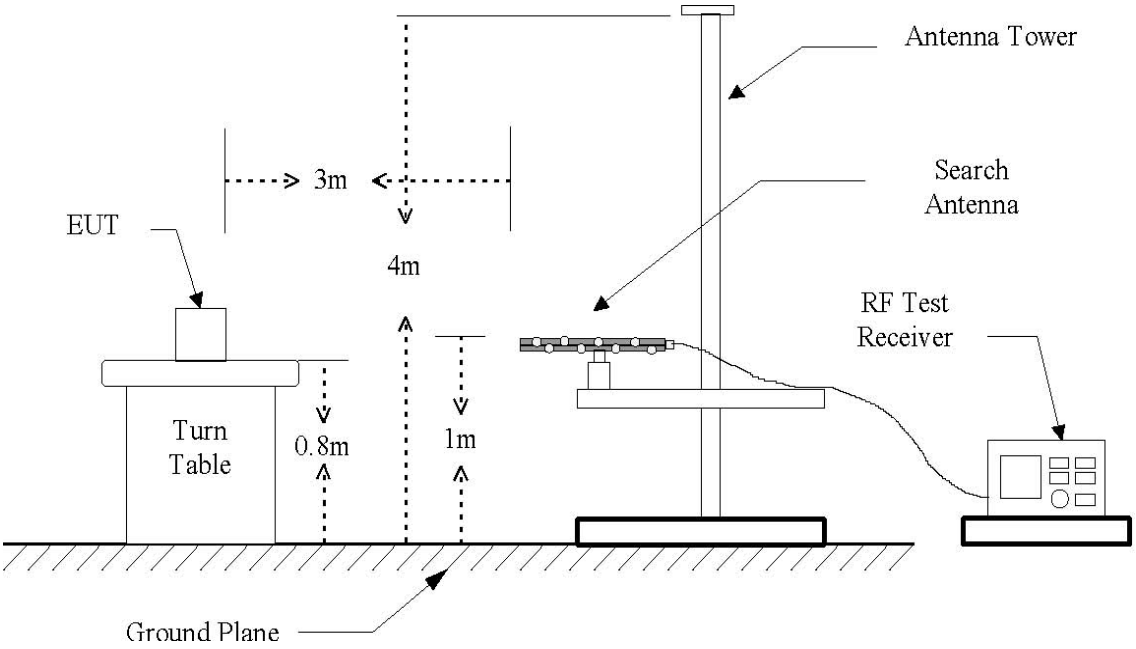
5.2. Test Procedure

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 1 meter away from the interference-receiving antenna.
3. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

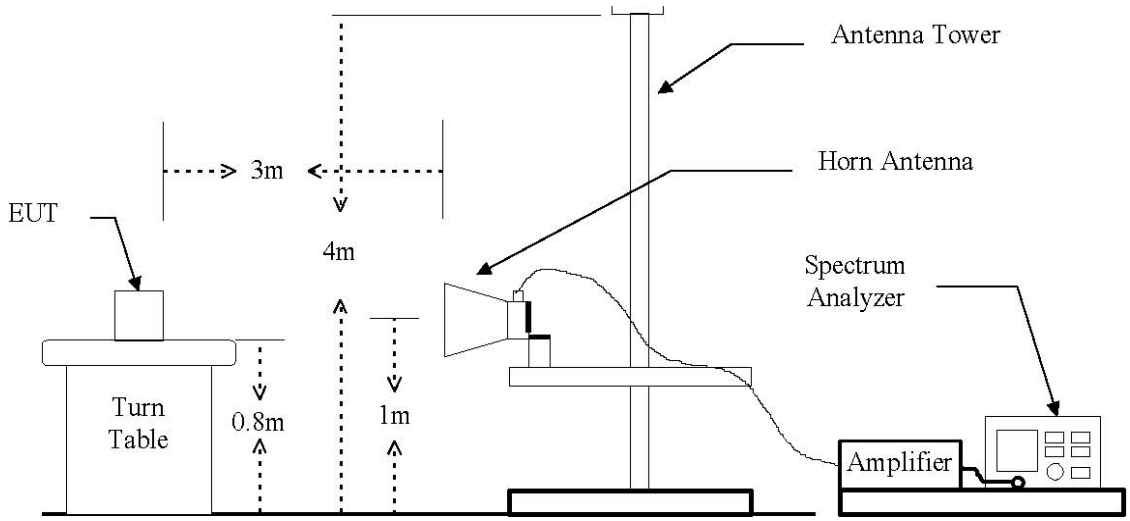
NOTE :

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz for Peak detection and frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1 GHz.

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 40 GHz Emissions.



Frequencies measured below 1 GHz configuration



Frequencies measured above 1 GHz configuration

5.3. Test Results

CDMA 800

Radiated Emissions			Ant	Correction Factors		Total	FCC Limit	
Frequency (MHz)	Reading (dBuV)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dBuV/m)	Q.P. Limit (dBuV/m)	Margin (dB)
133.52	29.31	Q.P.	H	8.55	1.34	39.20	44	4.80
703.36	17.28	Q.P.	H	18.43	3.11	38.82	46	7.18
902.24	13.64	Q.P.	V	20.61	3.56	37.81	46	8.19

PCS 1900

Radiated Emissions			Ant	Correction Factors		Total	FCC Limit	
Frequency (MHz)	Reading (dBuV)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dBuV/m)	Q.P. Limit (dBuV/m)	Margin (dB)
77.84	26.39	Q.P.	H	7.78	0.98	35.15	44	8.85
703.36	18.67	Q.P.	V	18.43	3.11	40.21	46	5.79
902.24	14.23	Q.P.	H	20.61	3.56	38.40	46	7.60

6. Conducted Output Power

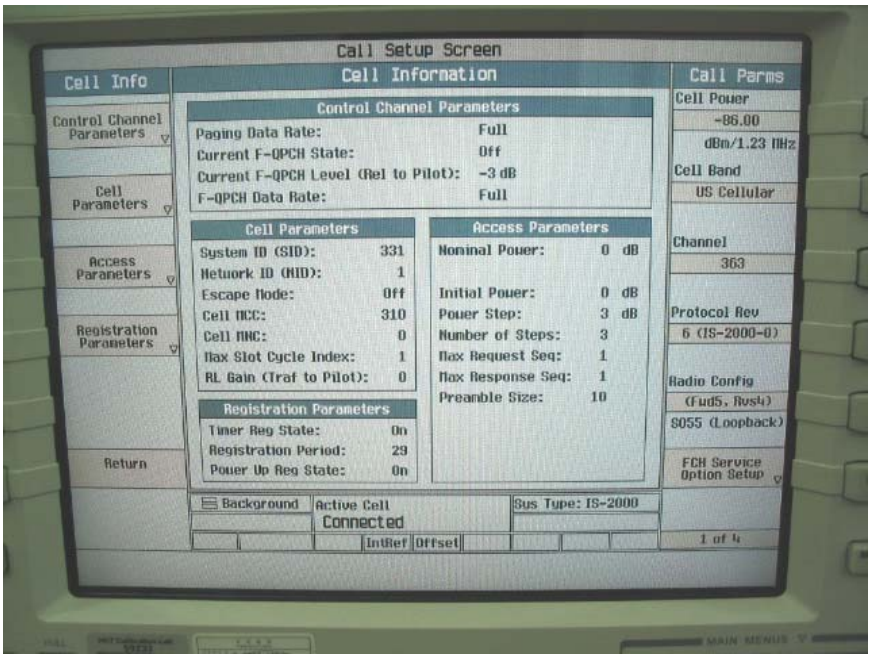
6.1. Limit

FCC §22.913(a), the ERP of mobile transmitters must not exceed 7 watts. FCC §24.232(c) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

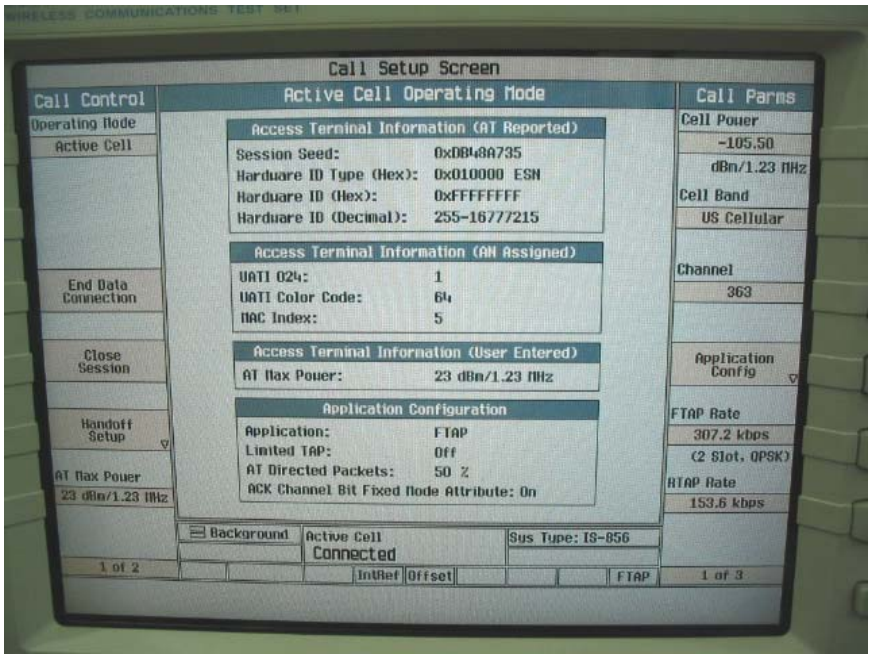
6.2. Test Procedure

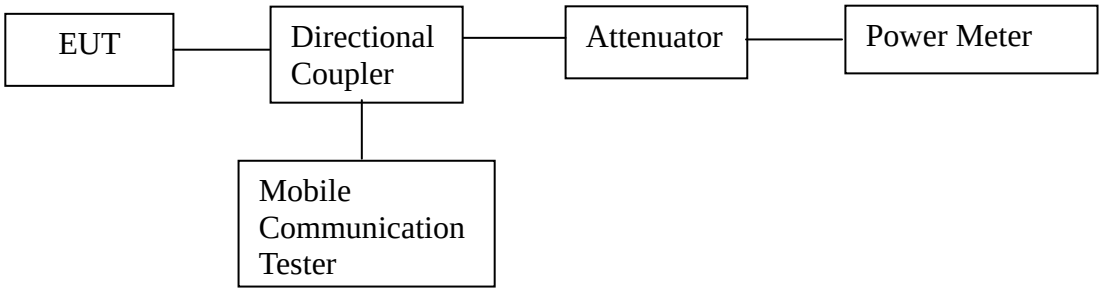
The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
See 3GPP2 C.S0011/TIA-98-E as recommended by "SAR Measurement Procedures for 3G Devices", May 2006. Maximum output power is verified on the High, Middle and Low channels according to procedures defined in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in “All Up” condition.

Test procedure refers to the picture below:



Maximum output power is verified on the High, Middle and Low channels according to procedures in section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rev. 0 and section 4.3.4 of 3GPP2 C.S0033-A for Rev. A. tests were measured with power control bits in “All Up” condition. Test procedure refers to the picture below:





6.3. Test Results

Average Power Output Table (CDMA 1xRTT)

Band	Channel	CDMA2000 RC	S02 (dBm)	S09 (dBm)	S032(+SCH) (dBm)	S032(+F-SCH) (dBm)	S055 (dBm)
CDMA 800	384	(Fwd1,Rvs1)	23.45	-	-	-	23.48
		(Fwd2,Rvs2)	-	23.43	-	-	23.50
		(Fwd3,Rvs3)	23.29	-	23.42	23.41	23.48
		(Fwd4,Rvs3)	23.42	-	23.40	23.46	23.49
		(Fwd5,Rvs4)	-	23.49	-	-	23.52

Band	Channel	CDMA2000 RC	S02 (dBm)	S09 (dBm)	S032(+SCH) (dBm)	S032(+F-SCH) (dBm)	S055 (dBm)
PCS 1900	600	(Fwd1,Rvs1)	23.31	-	-	-	23.34
		(Fwd2,Rvs2)	-	23.34	-	-	23.36
		(Fwd3,Rvs3)	23.30	-	23.34	23.32	23.36
		(Fwd4,Rvs3)	23.27	-	23.30	23.31	23.34
		(Fwd5,Rvs4)	-	23.37	-	-	23.40

Peak Power Output Table (CDMA 1xRTT)

Band	Channel	CDMA2000 RC	S02 (dBm)	S09 (dBm)	S032(+SCH) (dBm)	S032(+F-SCH) (dBm)	S055 (dBm)
CDMA 800	384	(Fwd1,Rvs1)	26.64	-	-	-	26.67
		(Fwd2,Rvs2)	-	26.64	-	-	26.65
		(Fwd3,Rvs3)	26.10	-	26.21	26.24	26.61
		(Fwd4,Rvs3)	26.61	-	26.18	26.29	26.63
		(Fwd5,Rvs4)	-	26.69	-	-	26.72

Band	Channel	CDMA2000 RC	S02 (dBm)	S09 (dBm)	S032(+SCH) (dBm)	S032(+F-SCH) (dBm)	S055 (dBm)
PCS 1900	600	(Fwd1,Rvs1)	26.30	-	-	-	26.30
		(Fwd2,Rvs2)	-	26.31	-	-	26.34
		(Fwd3,Rvs3)	26.31	-	26.30	26.34	26.31
		(Fwd4,Rvs3)	26.24	-	26.32	26.34	26.31
		(Fwd5,Rvs4)	-	26.40	-	-	26.35

CDMA 800 (1xRTT)

Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (W)
LOW	824.70	26.21	418	7
MIDDLE	836.52	26.72	470	7
HIGH	848.31	26.24	421	7

PCS 1900 (1xRTT)

Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (W)
LOW	1851.25	26.29	426	2
MIDDLE	1880.00	26.35	432	2
HIGH	1908.75	26.04	402	2

Rev. 0

Cellular Band - RTAP					**Cellular Band - FTAP**				
Channel	f (MHz)	RTAP Rate	Conducted power (dBm)		Channel	f (MHz)	FTAP Rate	Conducted power (dBm)	
			Average	Peak				Average	Peak
1013	824.70	153.6			1013	824.70	307.2 kbps (2 slot, QPSK)		
384	836.52		23.31	26.48	384	836.52		23.44	26.62
777	848.31				777	848.31			

PCS Band - RTAP					**PCS Band - FTAP**				
Channel	f (MHz)	RTAP Rate	Conducted power (dBm)		Channel	f (MHz)	FTAP Rate	Conducted power (dBm)	
			Average	Peak				Average	Peak
25	1851.25	153.6			25	1851.25	307.2 kbps (2 slot, QPSK)		
600	1880.00		22.44	25.50	600	1880.00		22.50	25.59
1175	1908.75				1175	1908.75			

Rev. A

Cellular Band - RETAP					Cellular Band - FETAP				
Channel	f (MHz)	R-Data Pkt-Size	Conducted power (dBm)		Channel	f (MHz)	FTAP Rate	Conducted power (dBm)	
			Average	Peak				Average	Peak
384	836.52	128	23.21	26.41	384	836.52	307.2 (2 slot)	23.23	26.48
		256	23.28	26.48			307.2 (4 slot)	23.31	26.51
		512	23.24	26.50					
		768	23.20	26.42					
		1024	23.29	26.07					
		1536	23.13	26.25					
		2048	23.10	26.01					
		3072	22.97	26.04					
		4096	22.96	26.18					
		6144	23.22	26.33					
		8192	23.29	26.40					
		12288	23.31	26.49					

PCS Band – RETAP					PCS Band - FETAP				
Channel	f (MHz)	R-Data Pkt-Size	Conducted power (dBm)		Channel	f (MHz)	FTAP Rate	Conducted power (dBm)	
			Average	Peak				Average	Peak
600	1880.00	128	22.02	25.20	600	1880.00	307.2 (2 slot)	22.37	25.38
		256	22.00	25.23			307.2 (4 slot)	22.40	25.44
		512	22.09	25.06					
		768	22.02	25.03					
		1024	22.16	24.91					
		1536	22.02	24.83					
		2048	22.06	24.91					
		3072	21.90	24.94					
		4096	21.84	24.98					
		6144	22.14	25.12					
		8192	22.28	25.37					
		12288	22.40	25.48					

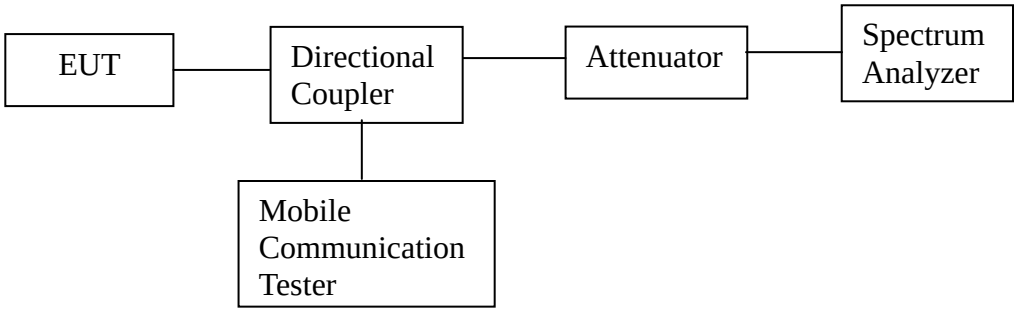
7. Occupied Bandwidth 26 dB

7.1. Limit

Requirements: CFR 47, Section §2.1049.

7.2. Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
The resolution bandwidth of the spectrum analyzer was set at 30 kHz.
Occupied Bandwidth 6 dB was tested under RC5/SO55.



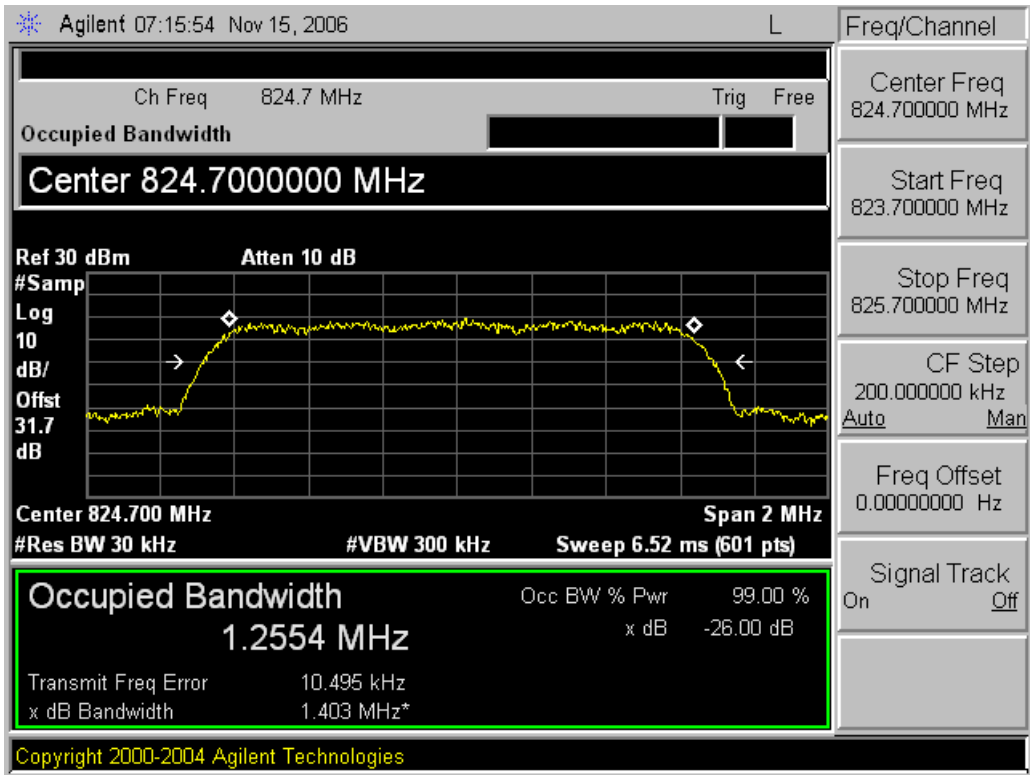
7.3 Test Results

CDMA 800

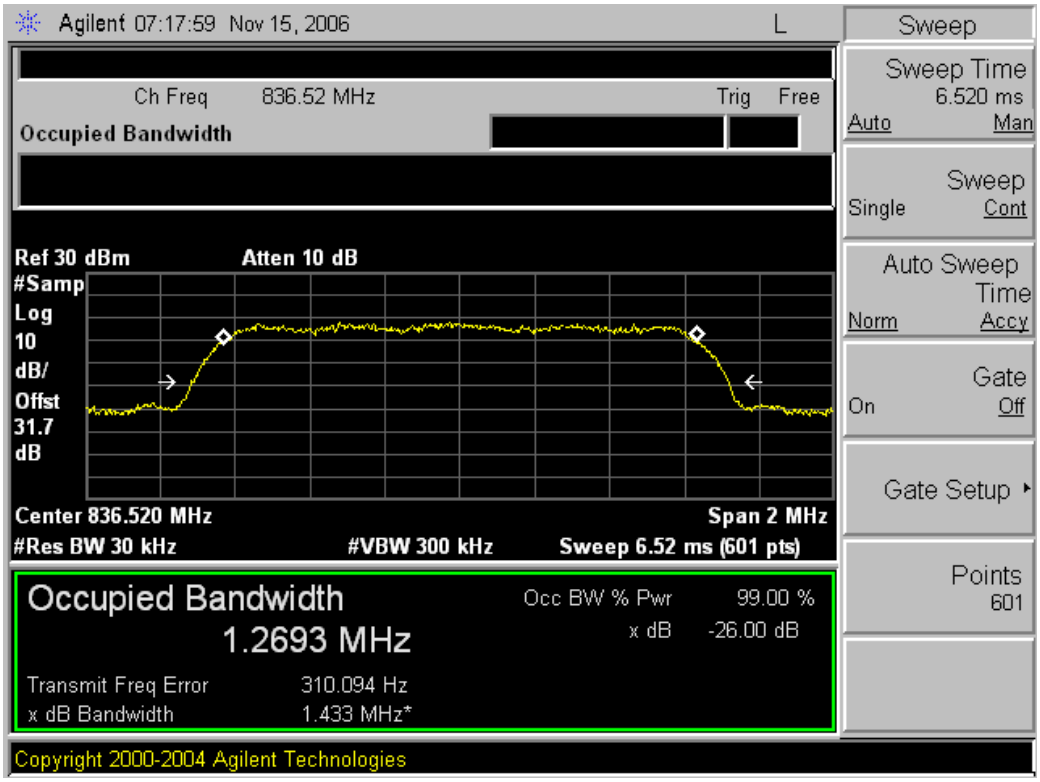
Channel	Frequency(MHz)	-26 dB Bandwidth(MHz)
LOW	824.70	1.403
MIDDLE	836.52	1.433
HIGH	848.31	1.427

Please refer to the following plots.

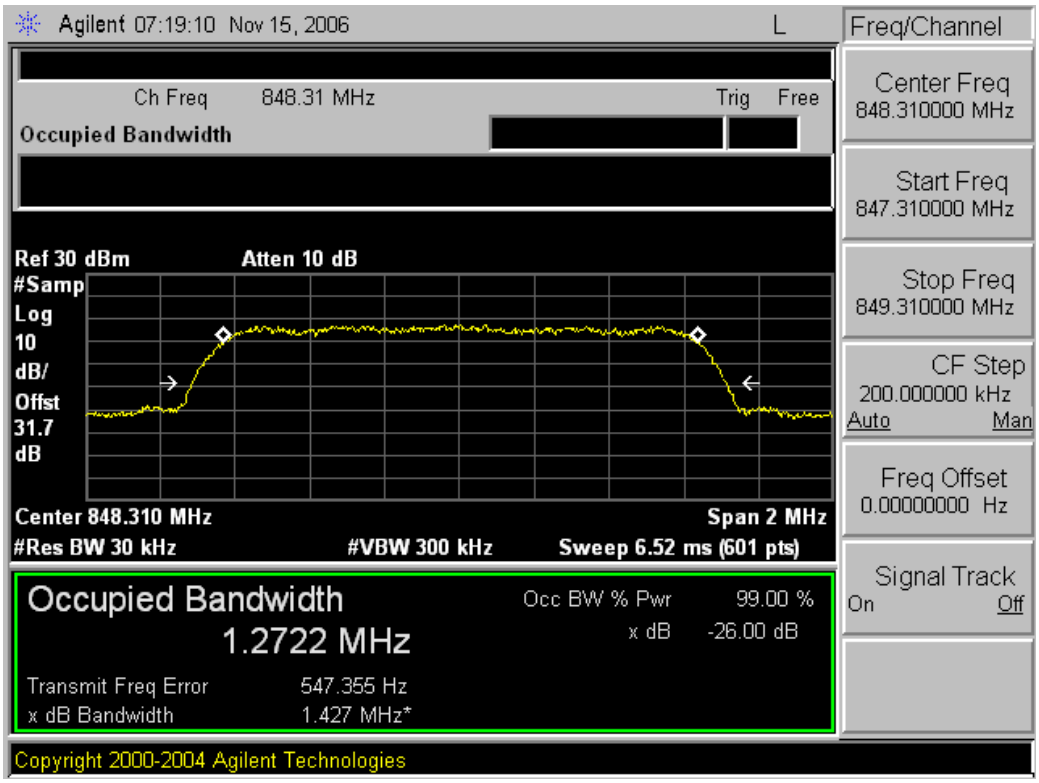
Low Channel



Middle Channel



High Channel

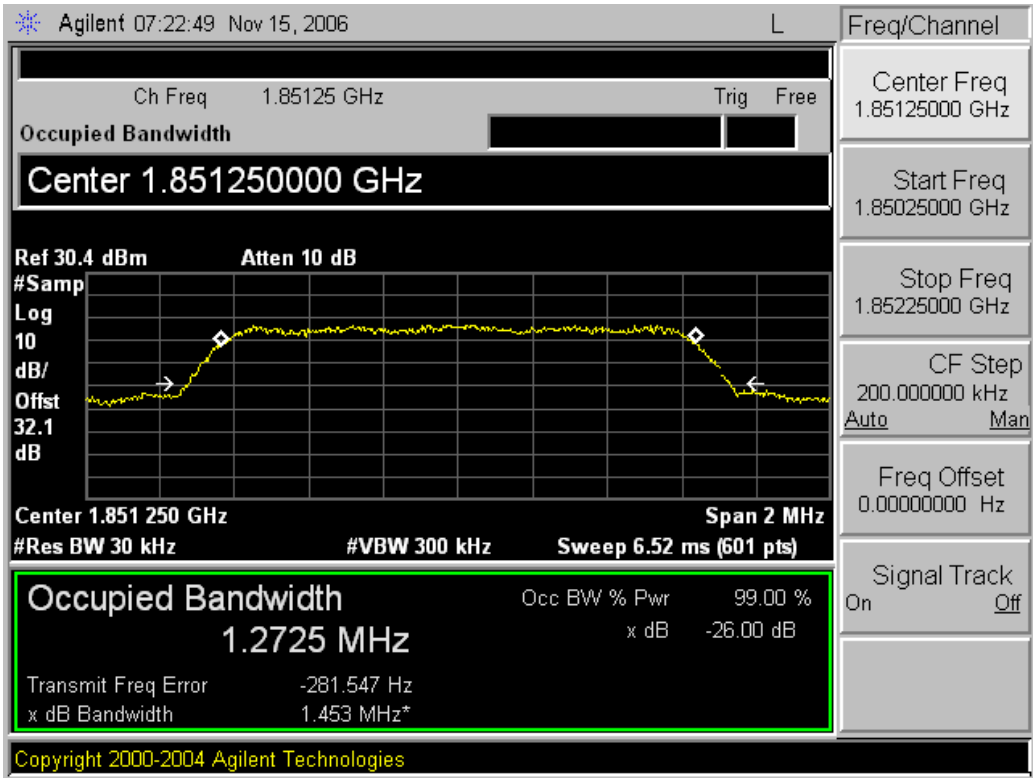


PCS 1900

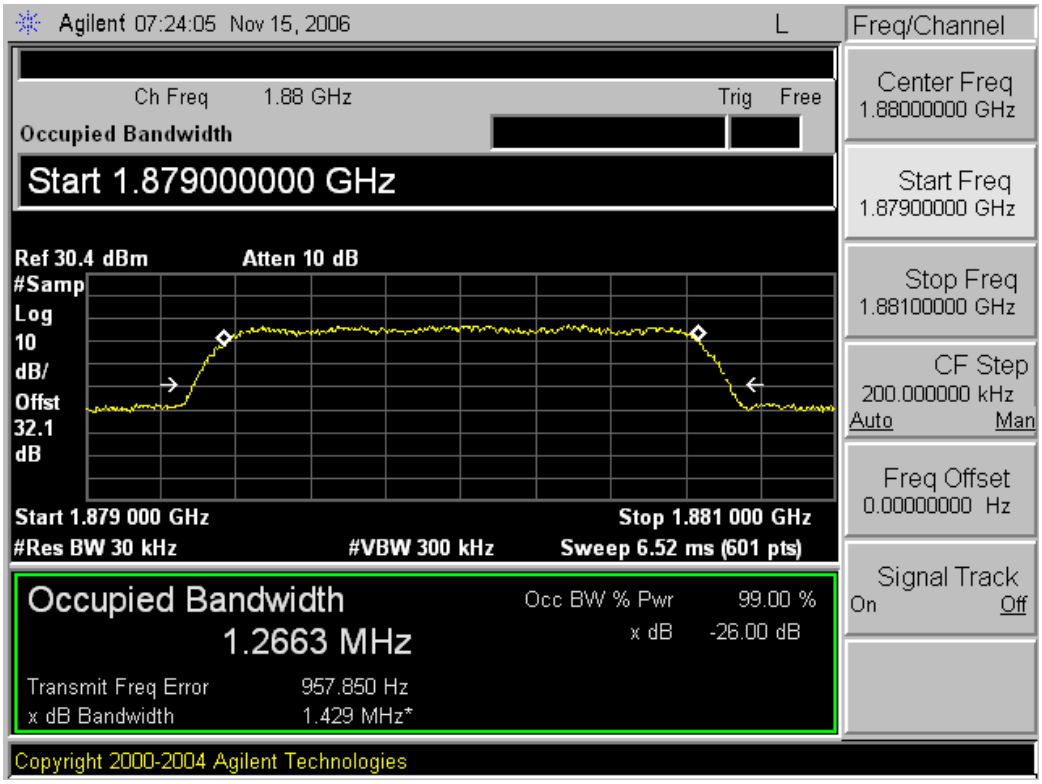
Channel	Frequency(MHz)	-26 dB Bandwidth(MHz)
LOW	1851.25	1.453
MIDDLE	1880.00	1.429
HIGH	1908.75	1.425

Please refer to the following plots.

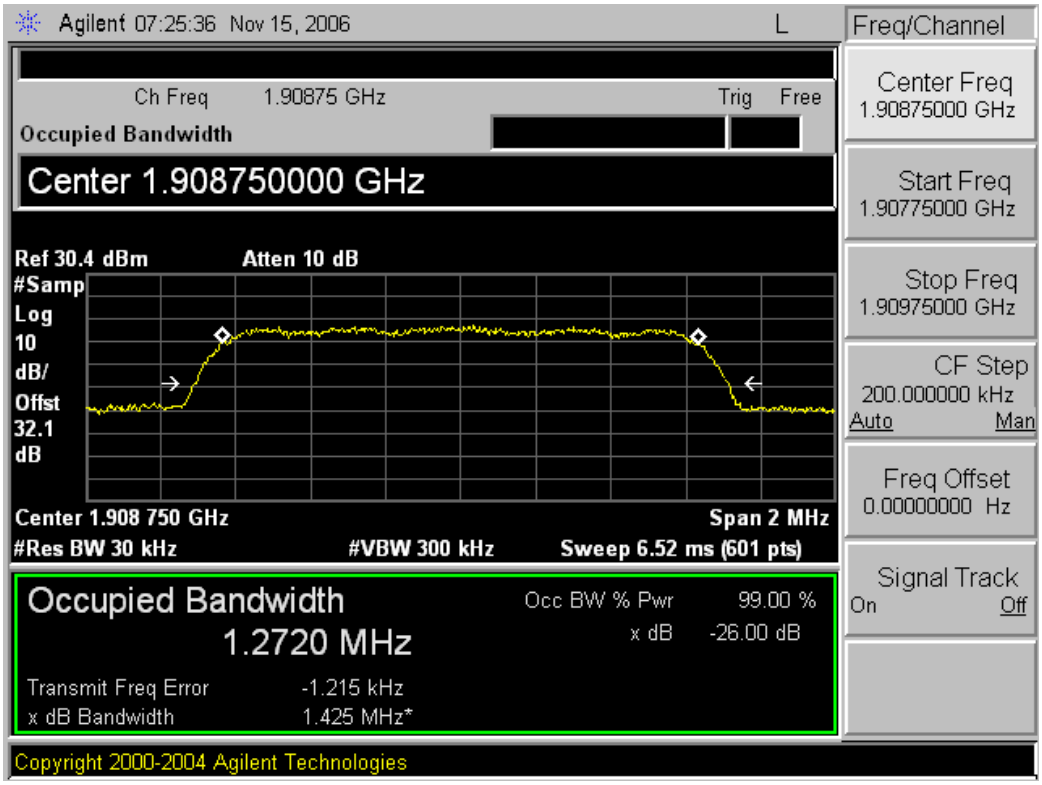
Low Channel



Middle Channel



High Channel



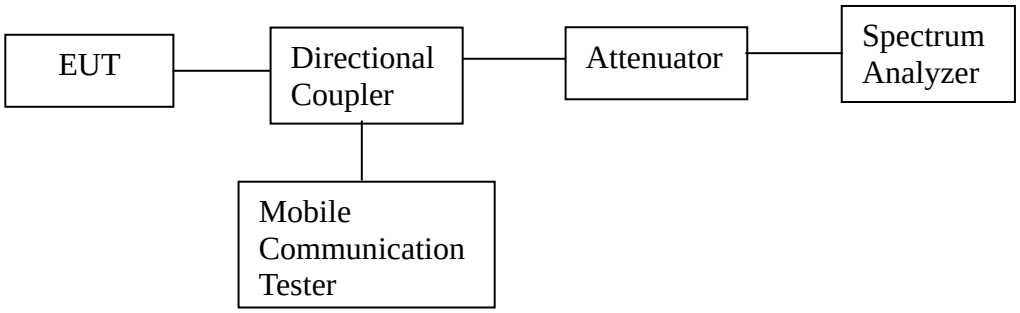
8. Spurious Emissions at Antenna Terminal

8.1. Limit

Requirements: CFR 47, § 2.1051. § 22.917 and §24.238 (a) Out of band emissions.
The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1057.

8.2. Test Procedure

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
2. The resolution bandwidth of the spectrum analyzer was set at 1 MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.
3. Spurious Emission was tested under RC5/SO55

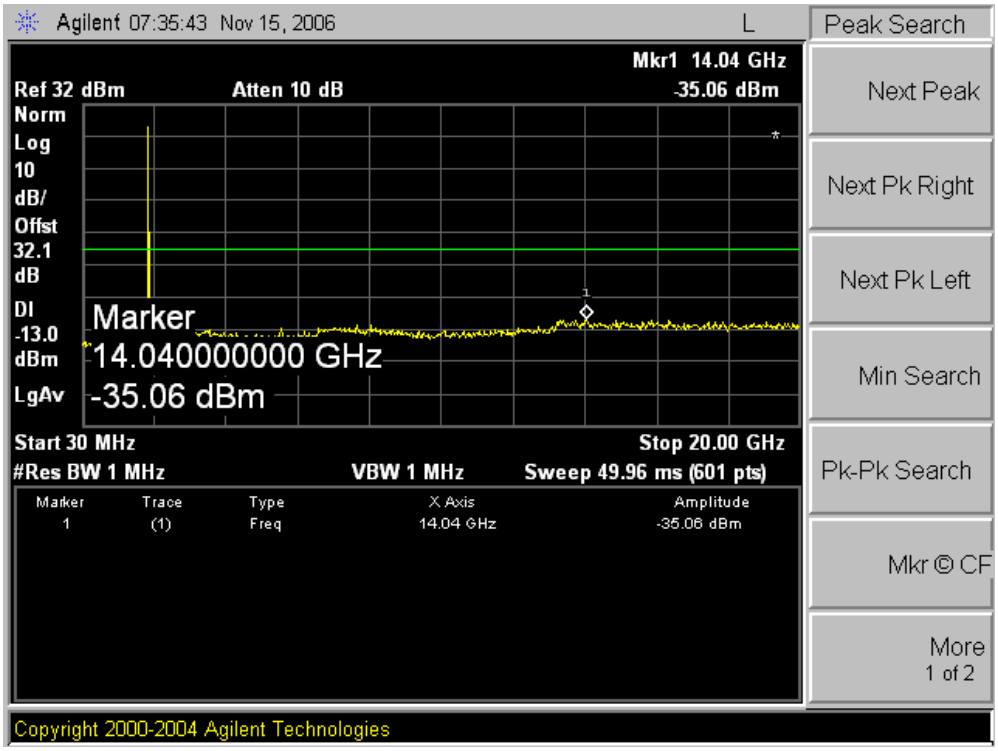


8.3. Test Results

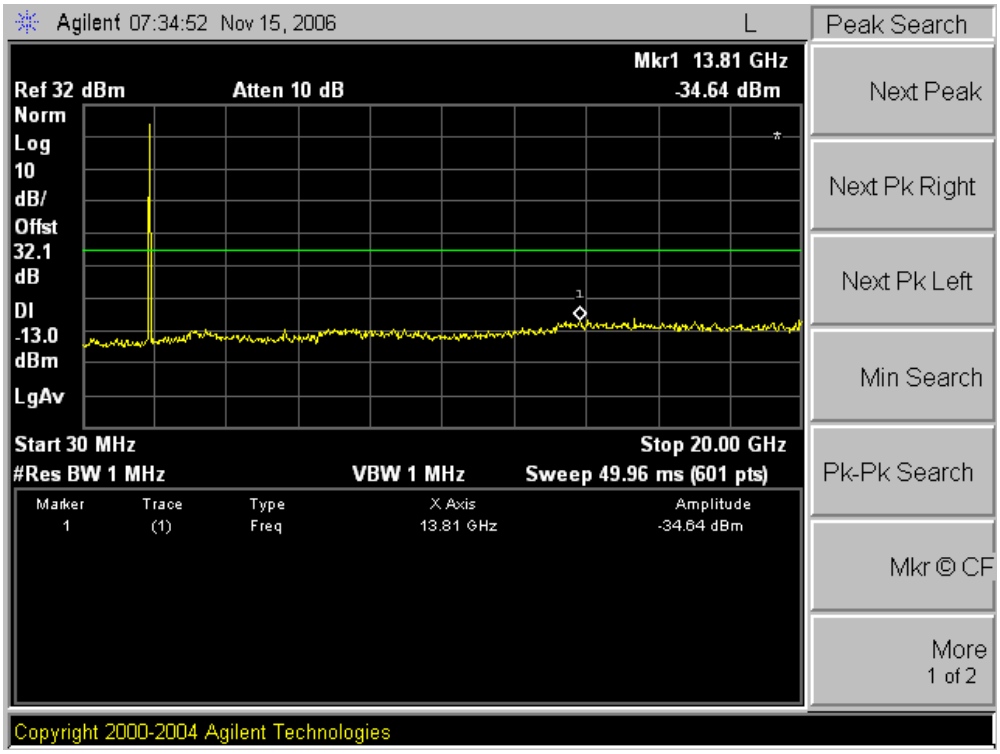
Please refer to the following plots.

CDMA 800

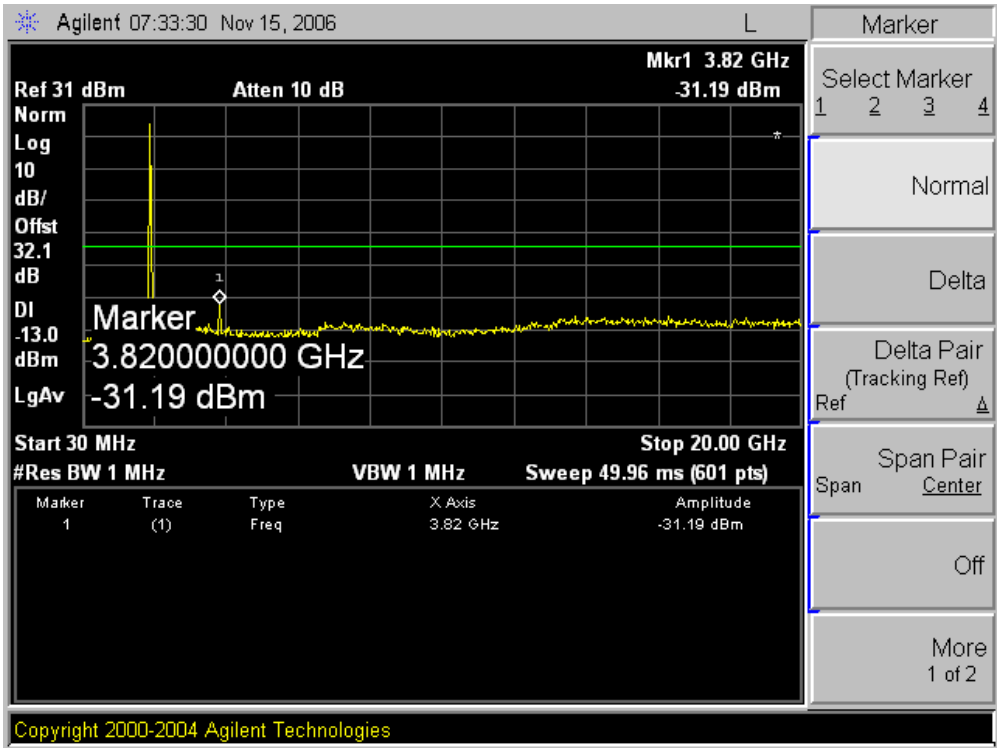
Low Channel



Middle Channel

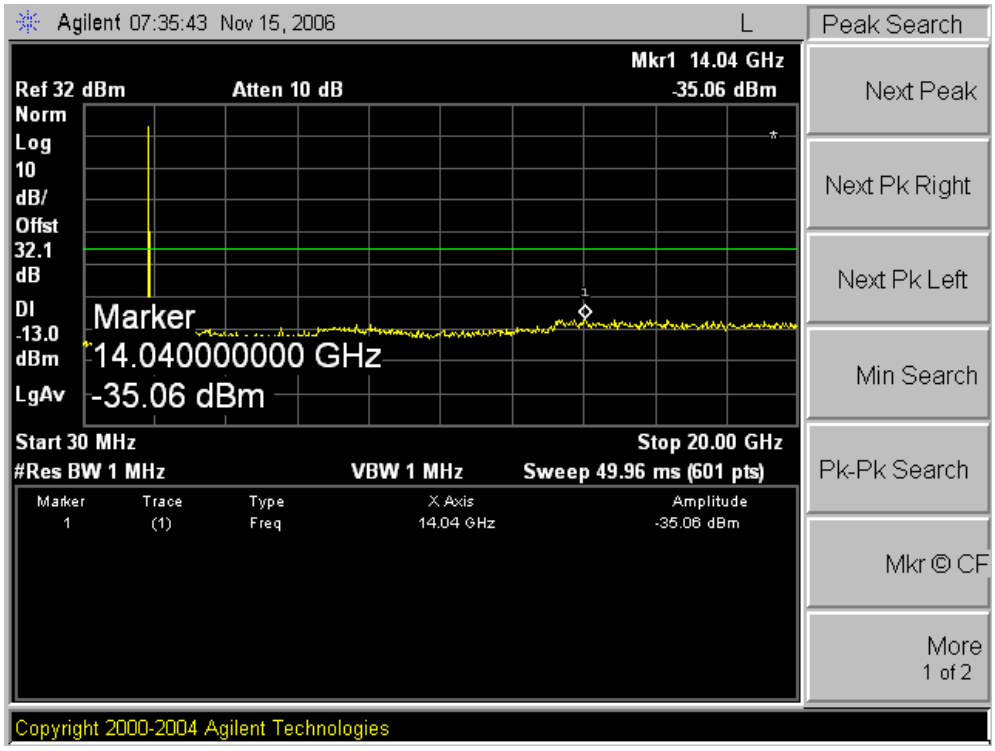


High Channel

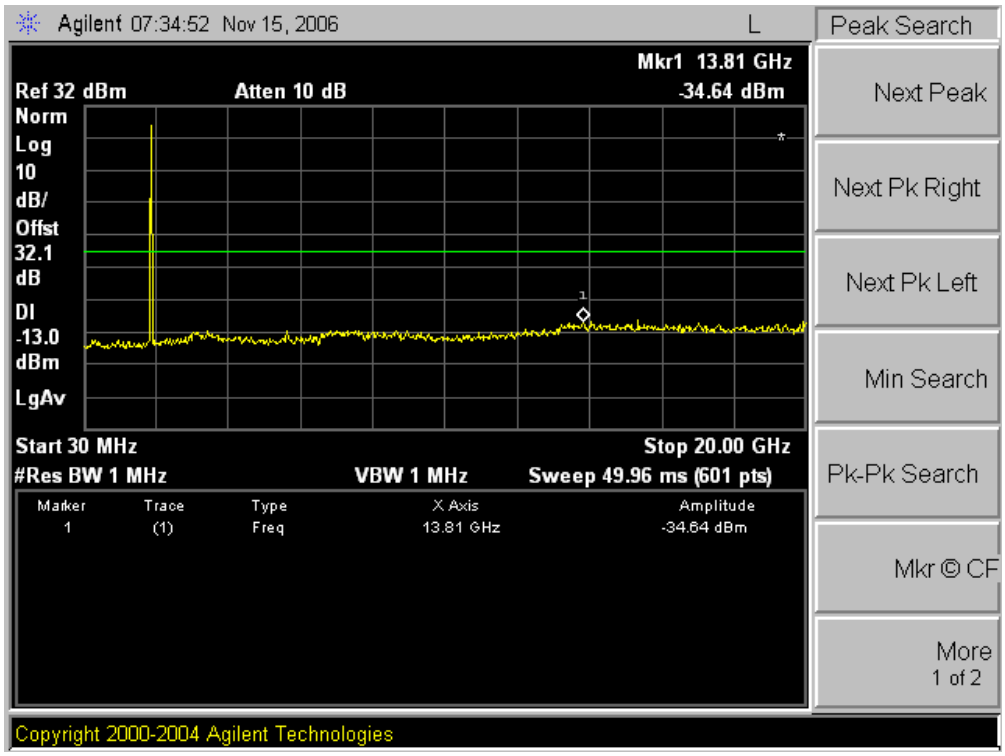


PCS 1900

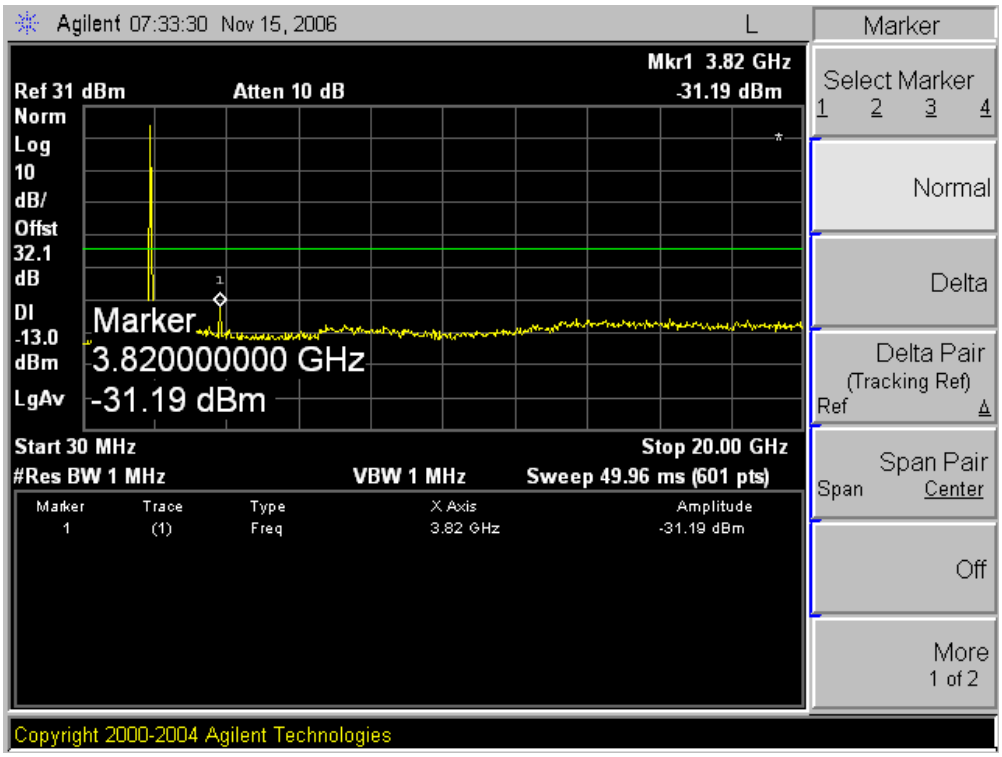
Low Channel



Middle Channel



High Channel



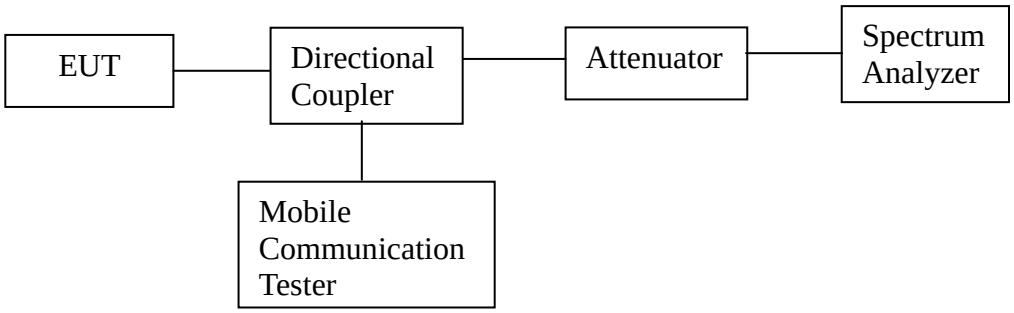
9. Band Edge

9.1. Limit

§ 22.917, 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.

9.2. Test Procedure

1. The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
2. The center of the spectrum analyzer was set to block edge frequency, RBW set to 15 kHz.

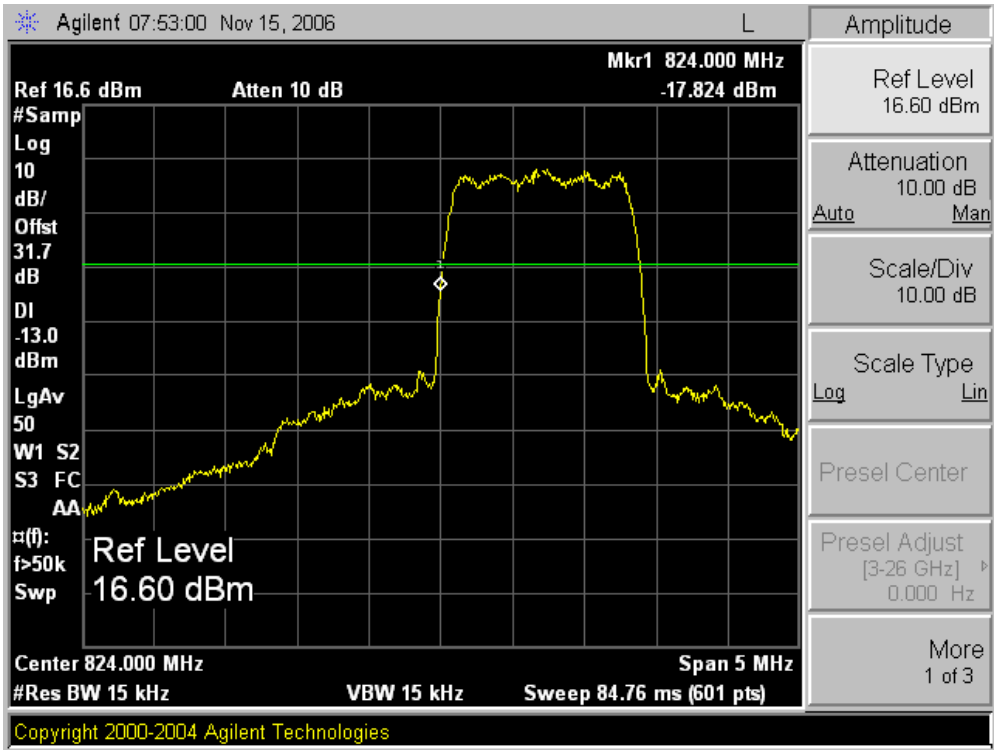


9.3. Test Results

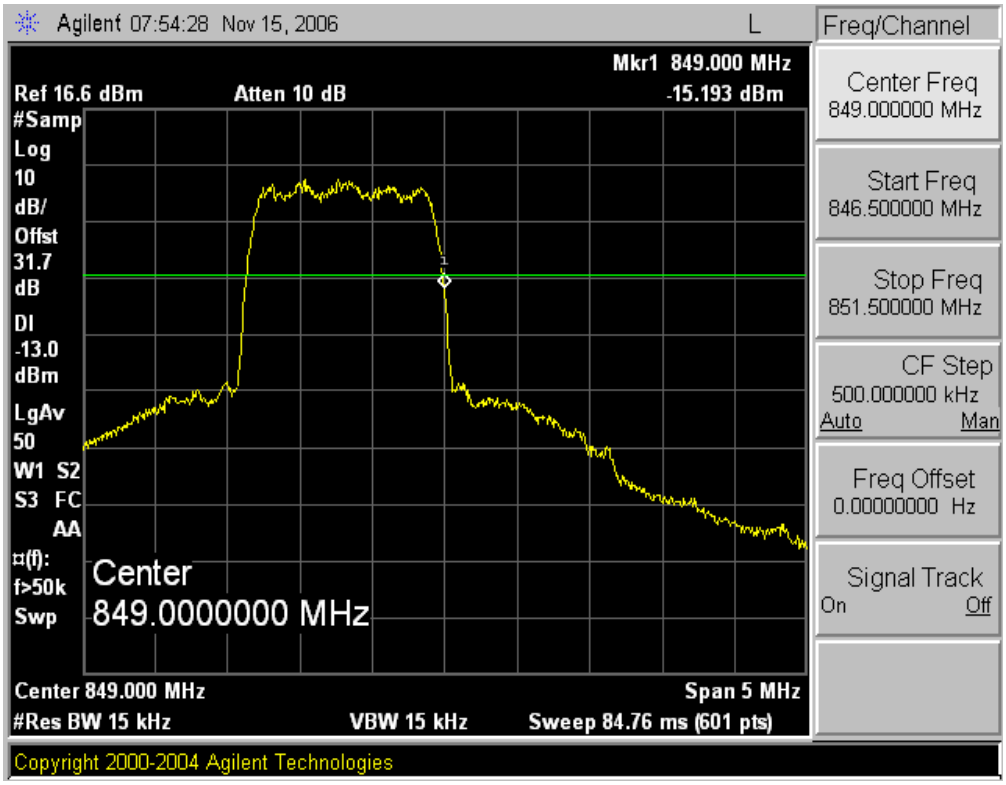
Please refer to the following plots.

CDMA 800

Low Channel

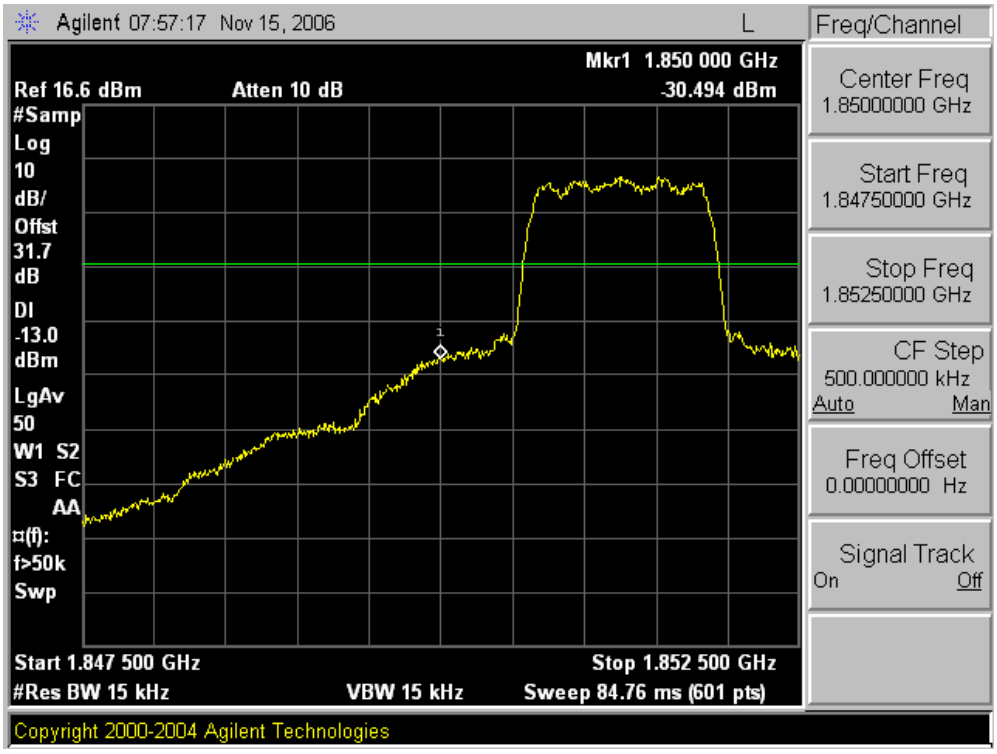


High Channel

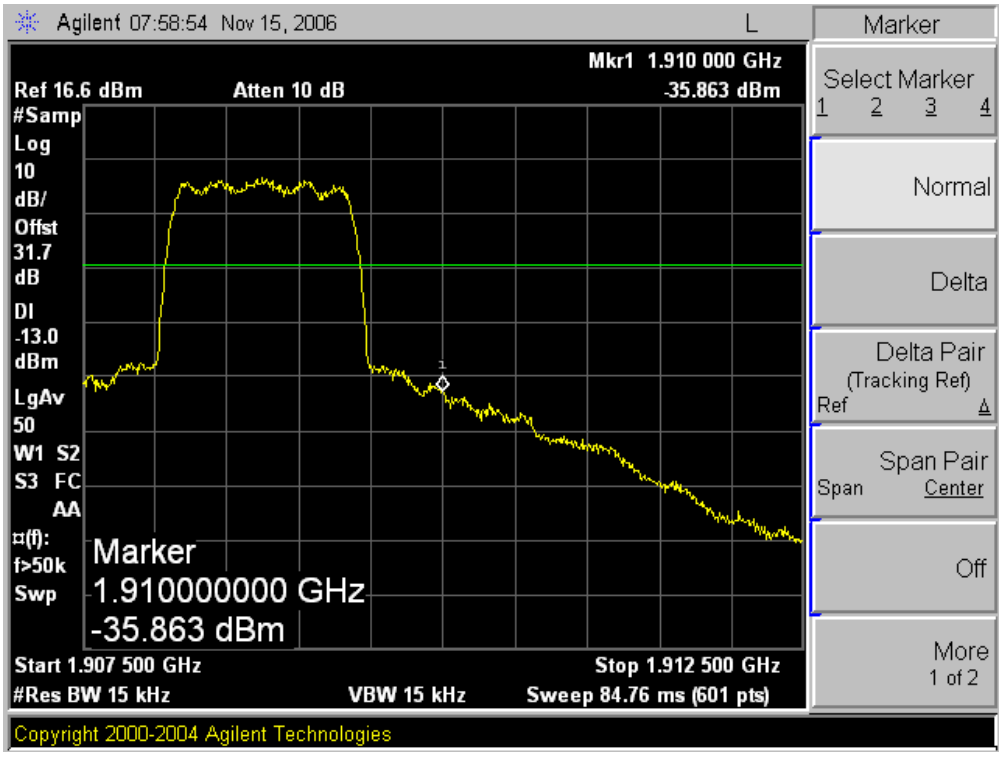


PCS 1900

Low Channel

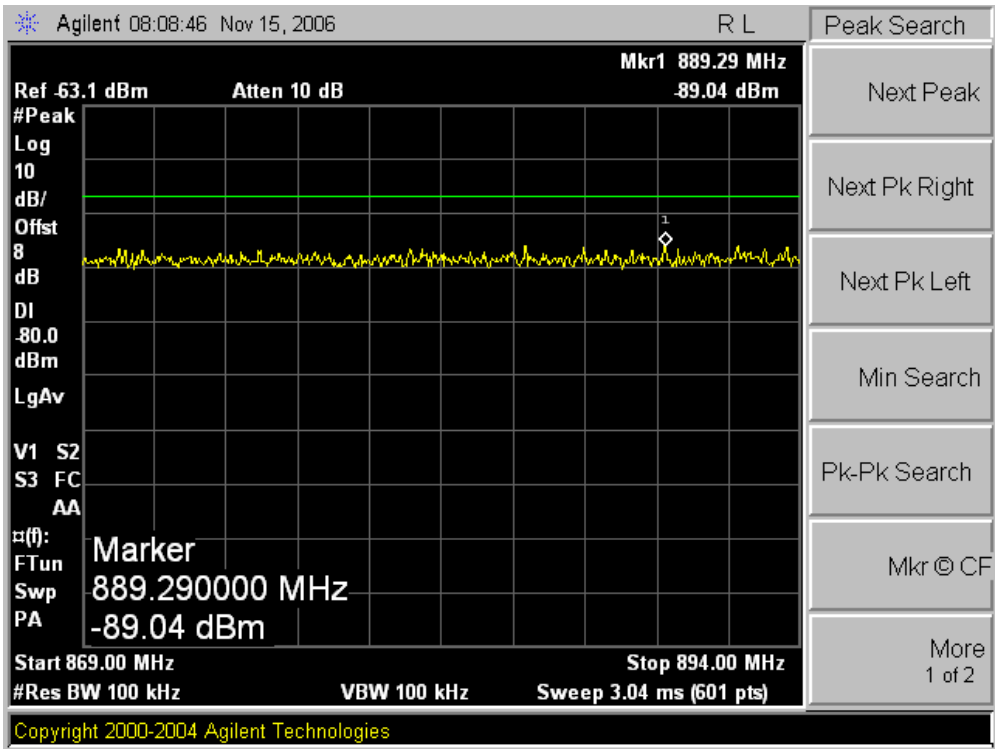


High Channel



10. Emission in Receiver Critical Band

CDMA 800



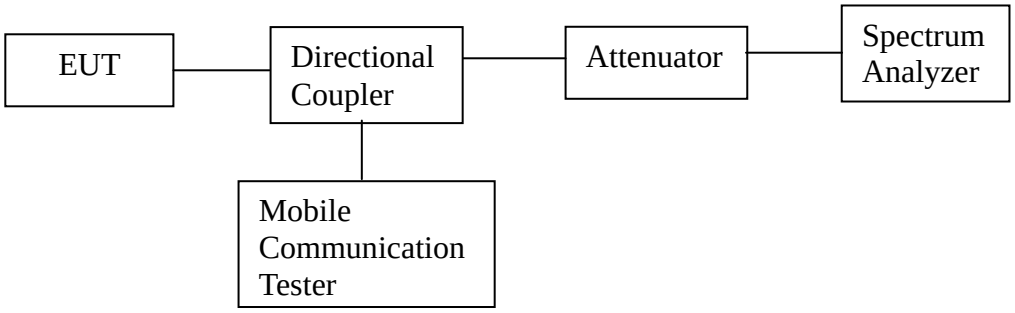
11. Frequency Stability

11.1. Limit

Requirements: FCC § 2.1055 (a), § 2.1055 (d) & following:
According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table of this section.
For Mobile devices operating in the 824 to 849 MHz band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.
§24.235 The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

11.2. Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.
After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the counter.
Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.



11.3. Test Results

Frequency Stability versus Temperature

CDMA 800

Reference Frequency: 836.52 MHz, Limit: 2.5 ppm			
Environment Temperature (℃)	Power Supplied (Vdc)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
22(Ref.)	5.0	+10	+0.0120
60	5.0	-5	-0.0060
50	5.0	+3	+0.0036
40	5.0	+6	+0.0072
30	5.0	+8	+0.0096
20	5.0	+4	+0.0048
10	5.0	+10	+0.0120
0	5.0	-4	-0.0048
-10	5.0	-6	-0.0072
-20	5.0	-10	-0.0120
-30	5.0	-14	-0.0167

PCS 1900

Reference Frequency: 1880.00 MHz, Limit: 2.5 ppm			
Environment Temperature (℃)	Power Supplied (Vdc)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
22(Ref.)	5.0	+9	+0.0048
60	5.0	-10	-0.0053
50	5.0	-3	-0.0016
40	5.0	+7	+0.0037
30	5.0	+9	+0.0048
20	5.0	+7	+0.0037
10	5.0	+12	+0.0064
0	5.0	-8	-0.0043
-10	5.0	-10	-0.0053
-20	5.0	-12	-0.0064
-30	5.0	-15	-0.0080

Frequency Stability versus Battery Voltage

CDMA 800

Reference Frequency:836.52 MHz, Limit: 2.5ppm			
Power Supplied (Vdc)	**Environment Temperature (℃)**	**Frequency Error (Hz)**	**ppm**
4.25	22	4	+0.0048
5.75	22	8	+0.0096

PCS 1900

Reference Frequency:1880.00 MHz, Limit:2.5ppm			
Power Supplied (Vdc)	**Environment Temperature (℃)**	**Frequency Error (Hz)**	**ppm**
4.25	22	6	+0.0032
5.75	22	11	+0.0059