TEST REPORT

Report Number: 100114624ATL-005

August 11, 2010

Product Designation: YX545

Standard: FCC Part 22; and FCC Part 24; FCC Part 15, Subpart B

Tested by:
Intertek Testing Services NA Inc.
1950 Evergreen Blvd., Suite 100
Duluth, GA 30096

Client:
Wi-Ex
3174 Catawba Ct.
Pleasanton, CA 94566
Contact: Scott Terry
Phone: 408.838.1302

Tests performed by:

Richard C. Bianco
EMC Project Engineer

Report reviewed by:

Jeremy O. Pickens
EMC Department Manager

1.0 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatum text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2.0 Test Summary

Section	Test Full Name	Test Date	Result
4.0	RF Output Power (Conducted) (FCC Part 2.1046 Cond)	06/06/2010	PASS
5.0	Conducted emissions on AC power lines (Conducted Emissions)	06/07/2010	PASS
6.0	Radiated emissions (E-field) (Radiated Emissions)	06/01/2010	PASS
7.0	Occupied Bandwidth (FCC Part 2.1049)	06/07/2010	PASS
8.0	Spurious emissions at antenna terminals (FCC Part 2.1051)	06/06/2010	PASS
NA	FCC Part 22 Radiated Power (ERP) and FCC Part 24 Radiated Power (EIRP) (Radiated Power) was waived due to is not required for an amplifier.		
9.0	Field strength of spurious radiation (FCC Part 2.1053)	06/04/2010	PASS
10.0	Revision History (Revision History)		
NA	Frequency Stability (FCC Part 2.1055) was waived due to is not required for an amplifier.		

3.0 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Signal Amplifier	Wi-Ex	YX545	NA

EUT receive date:	05/19/2010
EUT receive condition:	Good

Description of EUT provided by Client:
The product is a cellular band and PCS band signal amplifier for both downlink (signals from the network to the subscriber's equipment) and uplink (signals from subscriber's equipment to the network). The YX545 SOHO model is designed for small office and home office environments.

Description of EUT exercising:
The EUT was powered with 120Vac/60Hz and placed in a normal configuration. Signal generators were used to supply the input signal during testing.

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

Method:

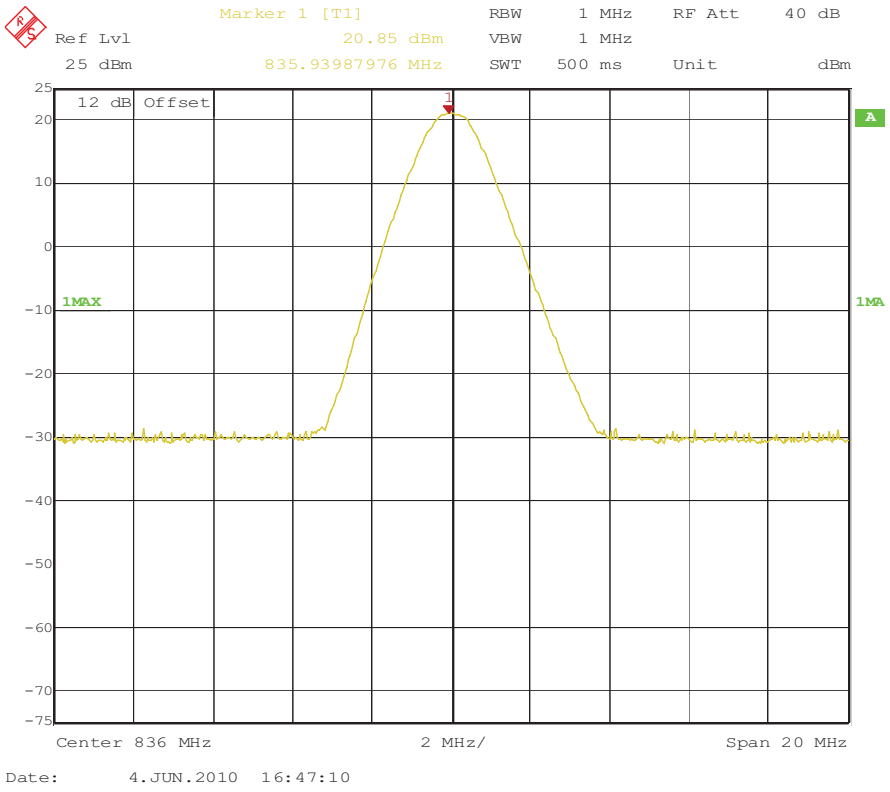
Connect the transmitter output to a calibrated coaxial attenuator. Connect the other end of the attenuator to a power meter. Transmitter output was read off the power meter in dBm.

Perform the test at the middle channel and on the highest power levels, which can be setup on the transmitter.

Canada typically requires this test to be repeated at +60° C and at -30° C.

Results: The sample tested was found to Comply.

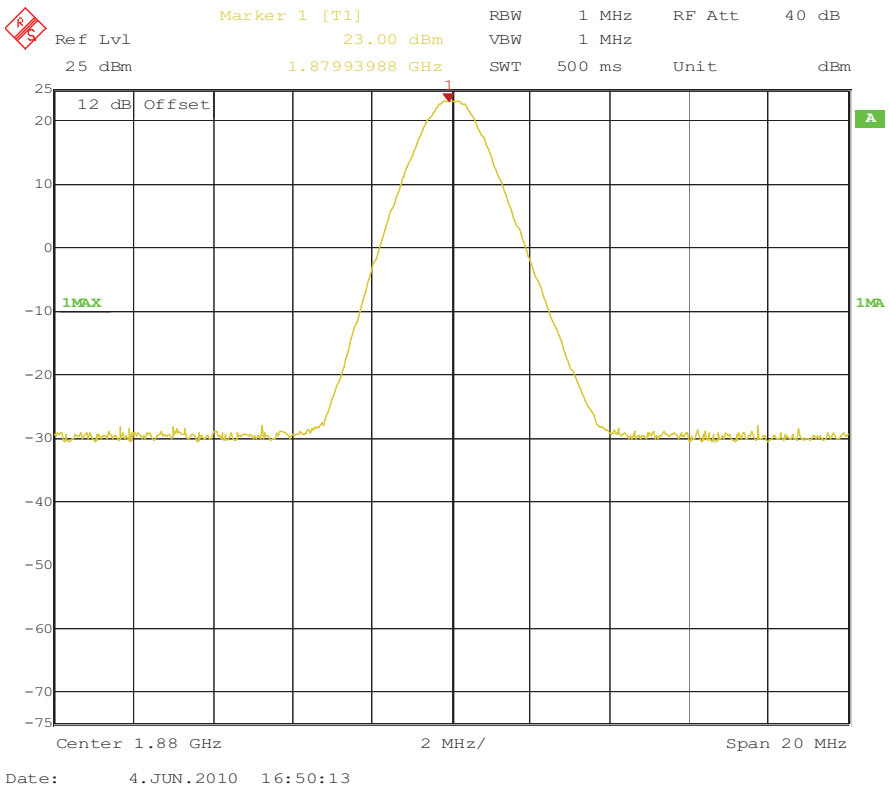
Plot:



Conducted Power - EDGE @ 836MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

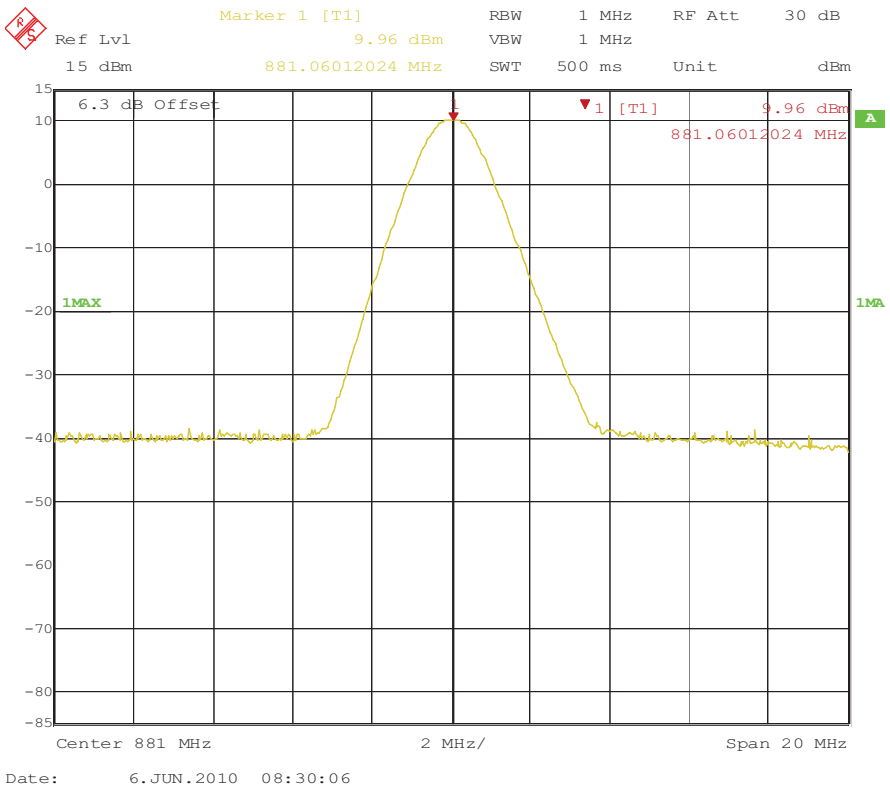
Plot:



Conducted Power - EDGE @ 1880MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

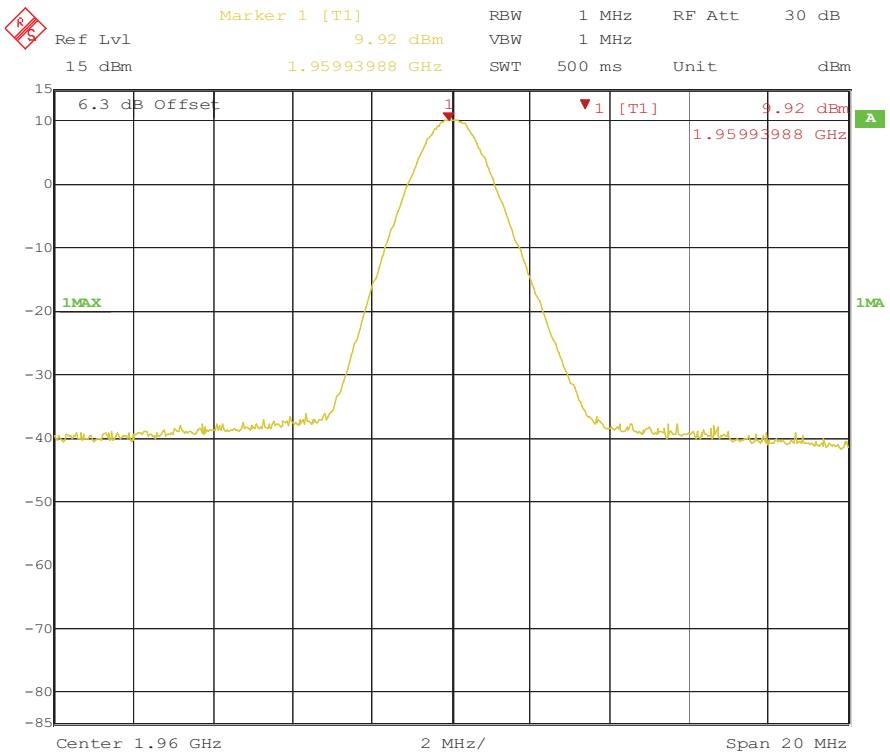
Plot:



Conducted Power - EDGE @ 881MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

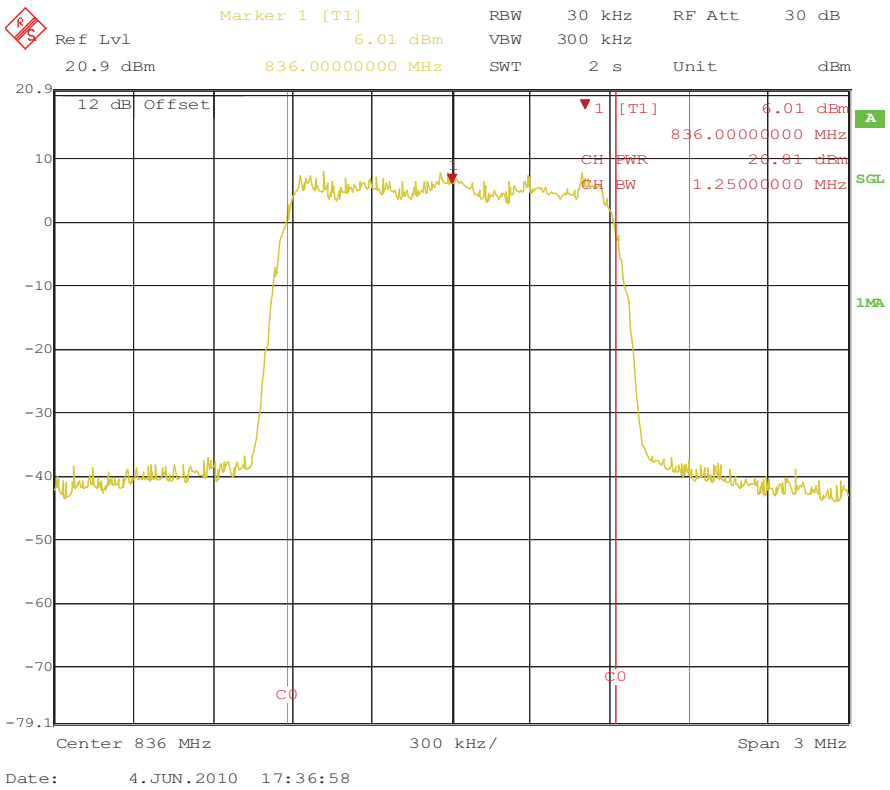
Plot:



Conducted Power - EDGE @ 1960MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

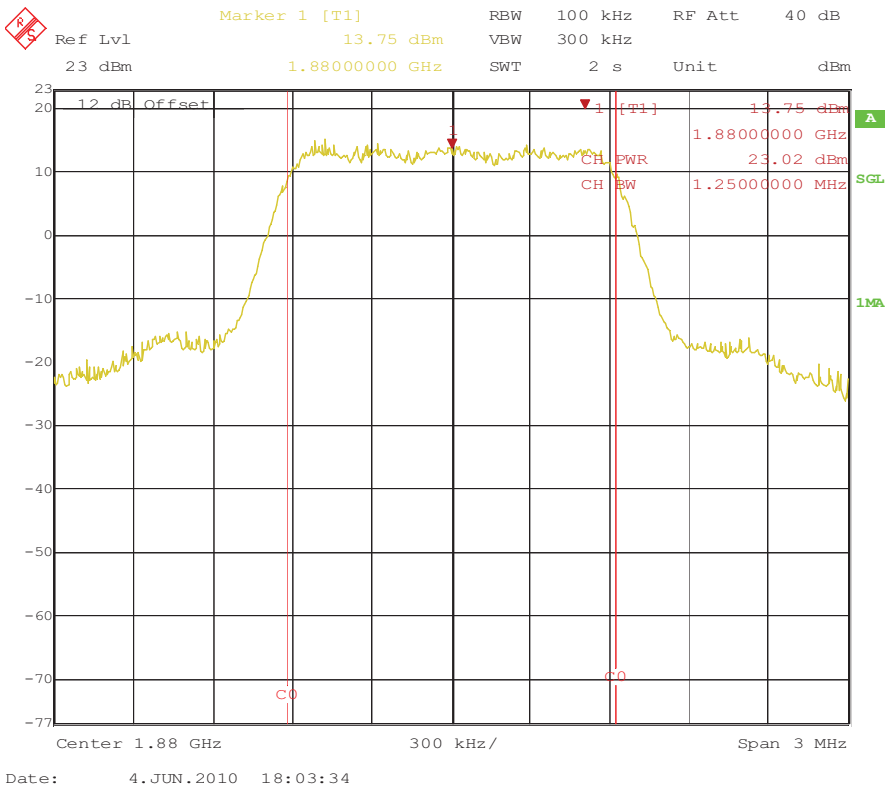
Plot:



Conducted Power - CDMA @ 836MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

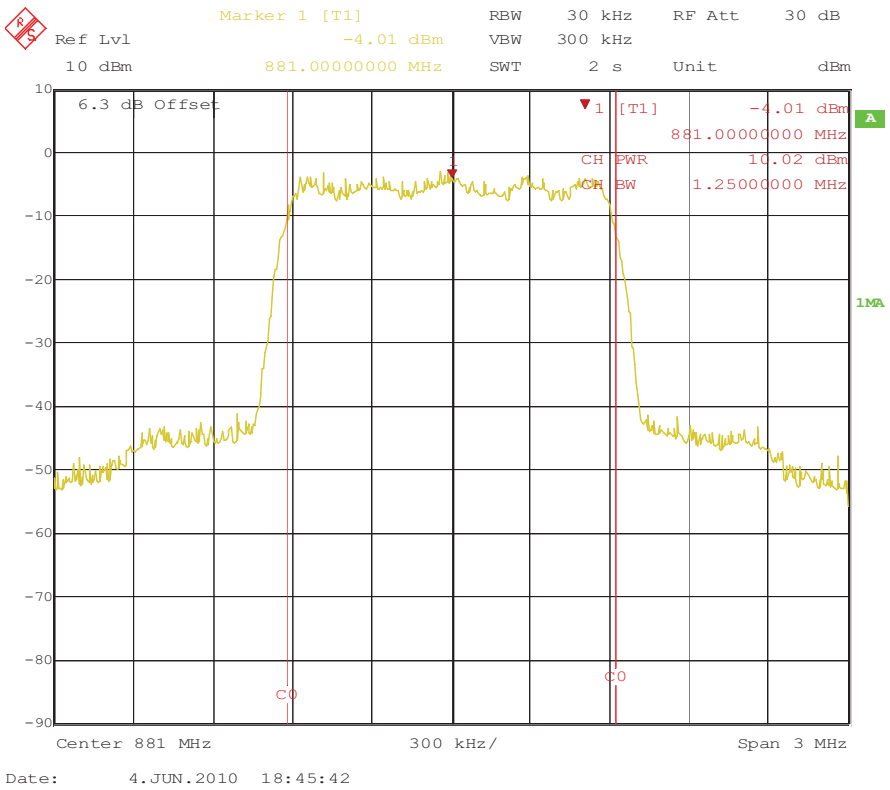
Plot:



Conducted Power - CDMA @ 1880MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

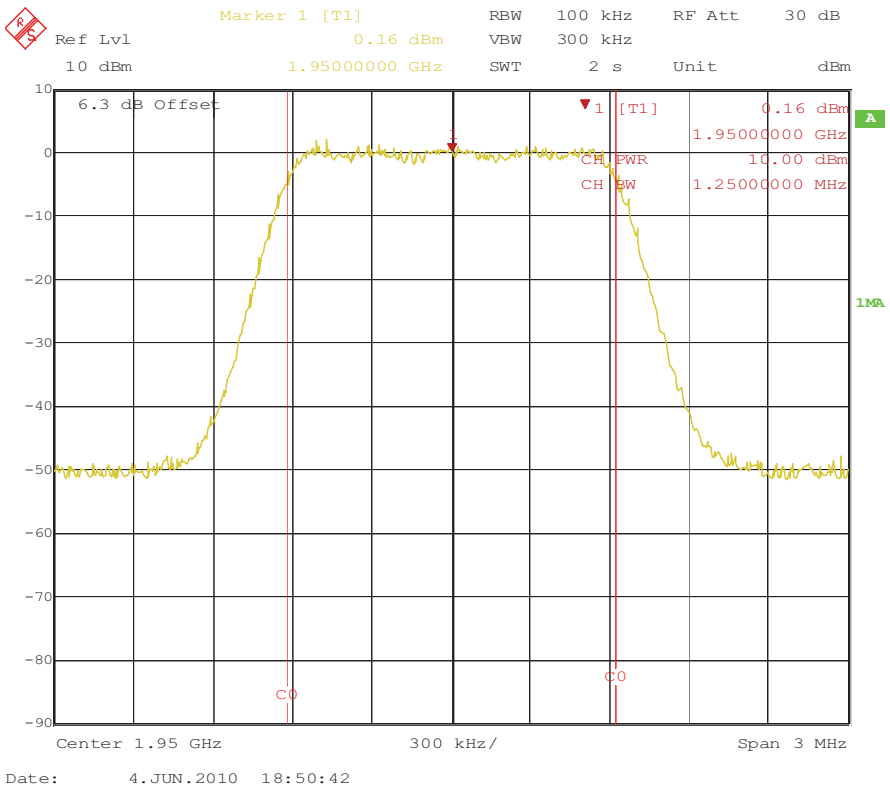
Plot:



Conducted Power - CDMA @ 881MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

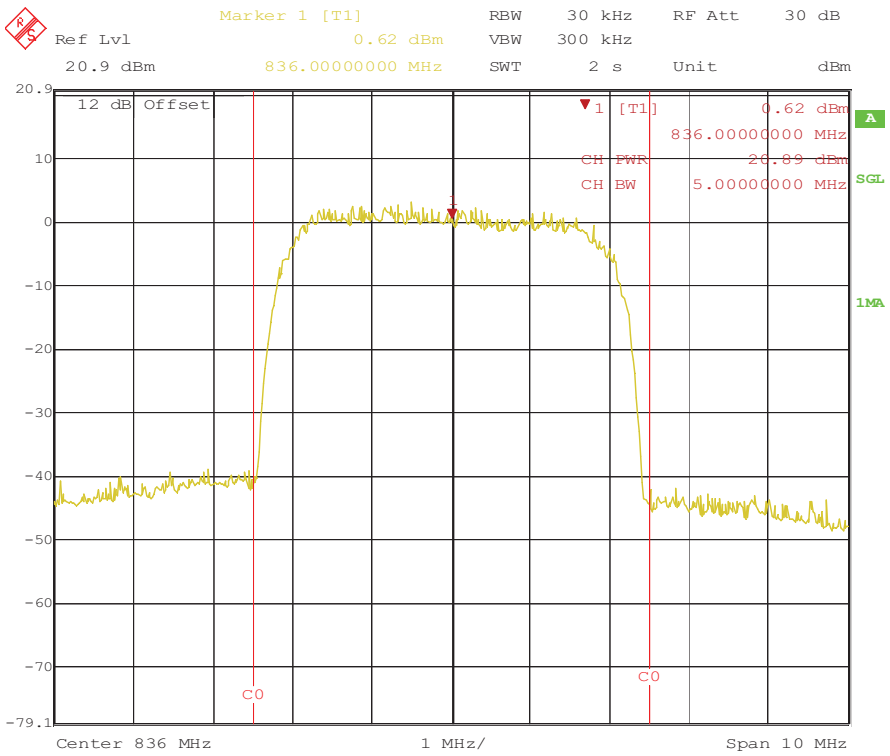
Plot:



Conducted Power - CDMA @ 1950MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

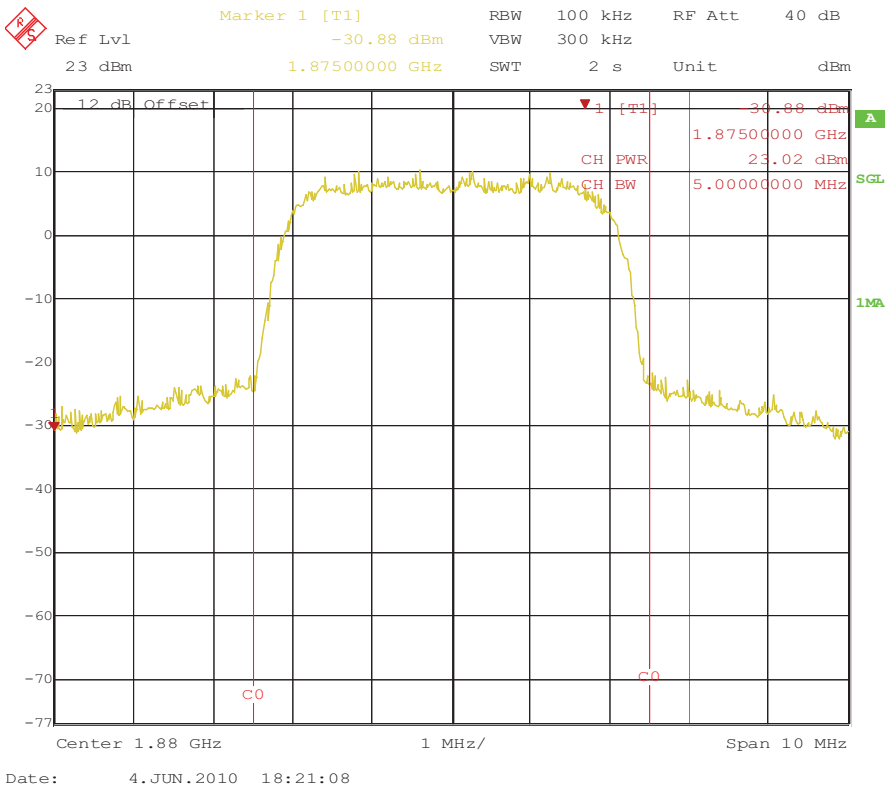
Plot:



Conducted Power - WCDMA @ 836MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

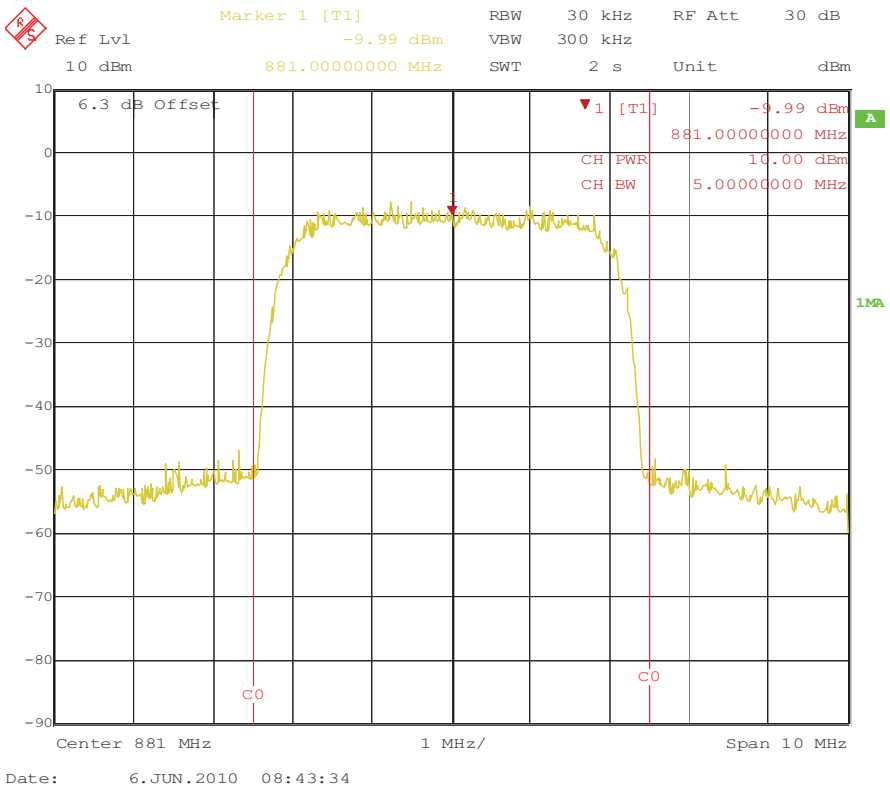
Plot:



Conducted Power - WCDMA @ 1880MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

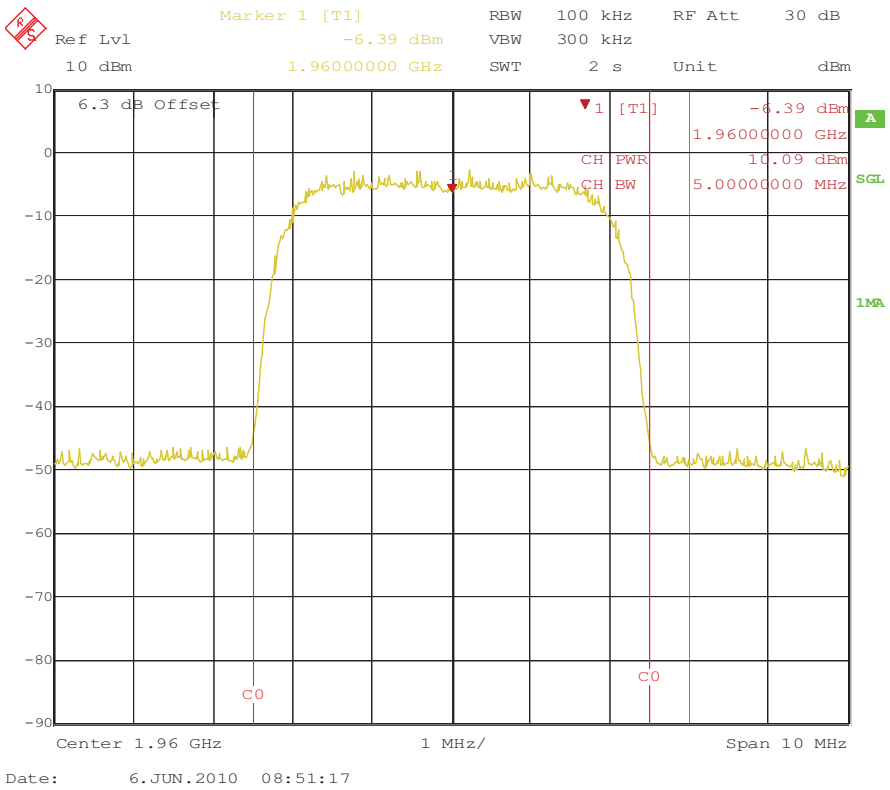
Plot:



Conducted Power - WCDMA @ 881MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

Plot:



Conducted Power - WCDMA @ 1960MHz

4.0 RF Output Power (Conducted) (FCC Part 2.1046 Cond)

Data:

EUT Mode	Frequency MHz	RBW/VBW MHz	Measured Power (dBm)
GSM-EDGE	836	1M/1M	20.85
	1880	1M/1M	23
	881	1M/1M	9.96
	1960	1M/1M	9.92
CDMA	836	Ch Power	20.81
	1880	Ch Power	23.02
	881	Ch Power	10.02
	1950	Ch Power	10
WCDMA	836	Ch Power	20.89
	1880	Ch Power	23.02
	881	Ch Power	10
	1960	Ch Power	10.09

5.0 Conducted emissions on AC power lines (Conducted Emissions)

Method:

Equipment setup for conducted disturbance tests shall follow the guidelines of ANSI C63.4:2003, EN 55022:1998 +A1:2000 +A2:2003, AS/NZS CISPR22: 2002 and VCCI V-3 / 2007.04.

Measurements in the frequency range of 150kHz to 30 MHz shall be performed with a quasi-peak or average detector instrument that meets the requirements of Section One of CISPR 16. An AMN shall be used to provide a defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN defined in CISPR 16 shall be used.

In the frequency range of 150 kHz to 30 MHz, a resolution/video bandwidth of 9kHz/30kHz or greater shall be used.

The EUT shall be located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

If a flexible mains cord is provided by the manufacturer that is in excess of 1m, the excess cable shall be folded back and forth as far as possible to form a bundle not exceeding 0.4m in length.

The EUT shall be arranged and connected with cables terminated in accordance with the product specification.

Conducted disturbance shall be measured between each current carrying conductor and the reference ground. Each measured values shall be reported.

If EUT is intended for tabletop use, the EUT shall be placed on a table whose top is 0.8m above the ground plane. A vertical, metal reference plane is be placed 0.4m from the EUT. The vertical metal reference-plane is at least 2m by 2m. The EUT shall be kept at least 0.8m from any other metal surface or other ground plane not being part of the EUT. The table shall be constructed of non-conductive materials. Its dimensions are at least 1m by 1.5m, but may be extended for larger EUT.

If EUT is floor standing, the floor standing EUT shall be placed on a horizontal metal ground plane and isolated from the ground plane by up to 12 mm of insulating material. The metal ground plane shall extend at least 0.5m beyond the boundaries of the EUT and had minimum dimensions of 2m by 2m.

TEST SITE
The test site for conducted emissions is located at 1950 Evergreen Blvd, Suite 100, Duluth, Georgia 30096. The VCCI Registration Number for this site is C-2818.

MEASUREMENT UNCERTAINTY
Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes. The values given are the measurement uncertainty values with an expanded uncertainty of k=2.
150 kHz to 30 MHz: +/- 2.8 dB

Results: The sample tested was found to Comply.

5.0 Conducted emissions on AC power lines (Conducted Emissions)

Photo:

Test Setup - Front view

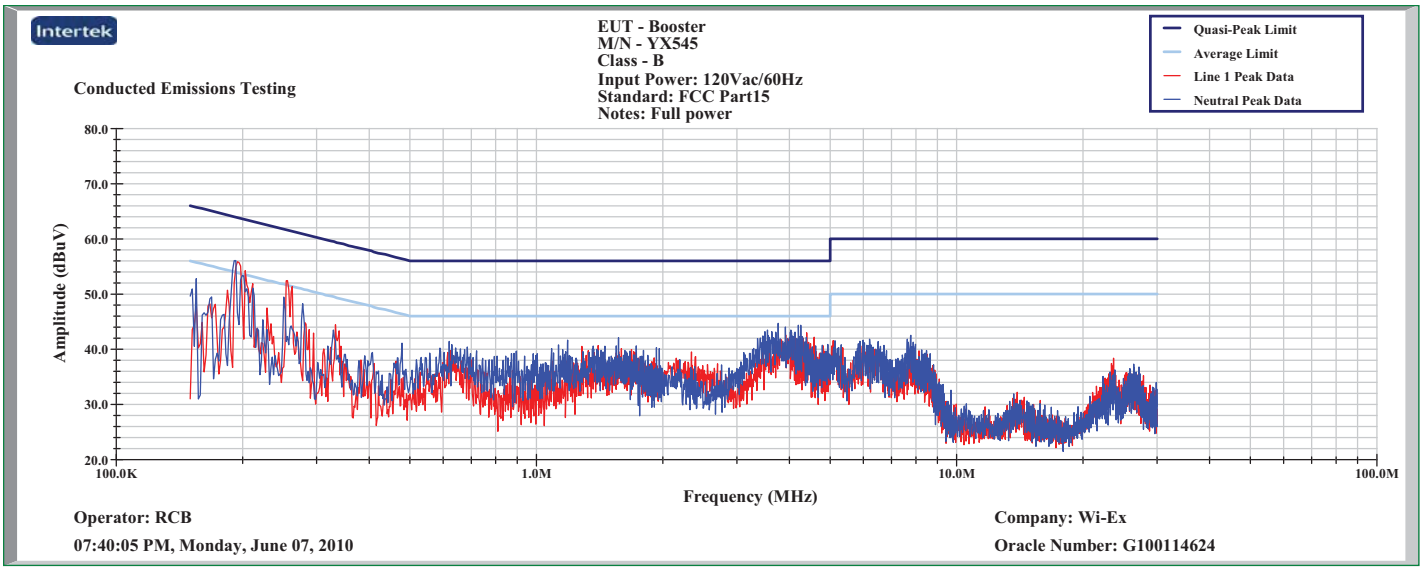
5.0 Conducted emissions on AC power lines (Conducted Emissions)

Photo:

Test Setup - Rear view

5.0 Conducted emissions on AC power lines (Conducted Emissions)

Plot:



Conducted Emissions @ 120Vac/60Hz

5.0 Conducted emissions on AC power lines (Conducted Emissions)

Data:

Client: Wi-Ex
Model Number: YX545
Project Number: G100114624
Tested By: RCB
Date: 06/07/2010
Frequency Range (MHz): .15-30
Input power: 120Vac/60Hz

Receiver: HP 8546A
Cables: TT5+E-203
LISN 1: TT5 LISN Line 1
LISN 2: TT5 LISN Line 2
Limit: CISPR Class B

Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I
LISN Number 1,2	**Detector (P,QP, A)**	**Frequency MHz**	**Reading dBuV**	**Cable Loss dB**	**LISN Ins. Loss dB**	**Net dBuV**	**Limit dBuV**	**Margin dB**
1	QP	0.188	43.5	0.0	6.3	49.8	64.3	-14.5
1	A	0.188	29.4	0.0	6.3	35.7	54.3	-18.6
1	QP	0.205	41.5	0.0	6.3	47.8	63.4	-15.6
1	A	0.205	28.4	0.0	6.3	34.7	53.4	-18.7
1	QP	0.277	37.2	0.0	6.1	43.3	61.0	-17.7
1	A	0.277	23.6	0.0	6.1	29.7	51.0	-21.3
1	QP	1.560	28.7	0.0	6.1	34.8	56.0	-21.2
1	A	1.560	19.8	0.0	6.1	25.9	46.0	-20.1
1	QP	3.830	30.9	0.0	6.1	37.0	56.0	-19.0
1	A	3.830	21.6	0.0	6.1	27.7	46.0	-18.3
1	QP	4.200	30.5	0.0	6.1	36.6	56.0	-19.4
1	A	4.200	19.7	0.0	6.1	25.8	46.0	-20.2
2	QP	0.194	43.6	0.0	6.3	49.9	64.0	-14.1
2	A	0.194	28.5	0.0	6.3	34.8	54.0	-19.2
2	QP	0.205	41.3	0.0	6.3	47.6	63.4	-15.8
2	A	0.205	27.3	0.0	6.3	33.6	53.4	-19.8
2	QP	0.256	37.5	0.0	6.3	43.8	61.6	-17.8
2	A	0.256	22.5	0.0	6.3	28.8	51.6	-22.8
2	QP	1.010	26.6	0.0	6.1	32.7	56.0	-23.3
2	A	1.010	16.4	0.0	6.1	22.5	46.0	-23.5
2	QP	3.830	30.5	0.0	6.1	36.6	56.0	-19.4
2	A	3.830	21.5	0.0	6.1	27.6	46.0	-18.4
2	QP	4.200	30.0	0.0	6.1	36.1	56.0	-19.9
2	A	4.200	19.3	0.0	6.1	25.4	46.0	-20.6
Calculations		G=D+E+F		I=G-H				

Note: Peak measurements are compared to the average limit.

6.0 Radiated emissions (E-field) (Radiated Emissions)

Method:

Measurements in the frequency range of 30 MHz to 1000 MHz shall be performed with a quasi-peak detector instrument that meets the requirements of Section One of CISPR 16. Above 1000 MHz, a peak detector shall be used. Peak values converted to average by appying the duty cycle correction factor, when applicable. When an average detector is used, it shall meet the requirements of Section One of CISPR 16. The measuring antenna shall correlate to a balanced dipole.

Bandwidths:
30 MHz to 1000 MHz: 120 kHz RBW and 1 MHz VBW
Above 1000 MHz: 1 MHz RBW and 3 MHz VBW

Measurements of the radiated field are made with the antenna located at a distance of 3 or 10 meters from the EUT. The limit applied to the measurement shall be appropriate for the test distance. The test distance shall be indicated in the results section.

The EUT shall be arranged and connected with cables terminated in accordance with the product specification.

Exploratory tests should be carried out while varying the cable positions to determine the maximum or near-maximum emission level. During manipulation, cables shall not be placed under or on top of the system test components unless such placement is required by the inherent equipment design.

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

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

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

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

If EUT is floor standing, the EUT was placed on a horizontal metal ground plane and isolated from the ground plane by up to 12 mm of insulating material.

Equipment setup for radiated disturbance tests shall follow the guidelines of
ANSI C63.4:2003,
EN 55022:1998 +A1:2000 +A2:2003
AS/NZS CISPR22:2002
VCCI V-3 / 2007.04

TEST SITE
The test site for radiated emissions is located at 1950 Evergreen Blvd, Suite 100, Duluth, Georgia 30096. It is a 10 meter semi-anechoic chamber manufactured by Panashield. Embedded in the floor is a 3 meter diameter turntable.

A2LA: 1455.01
IC: 2077-1
VCCI Registration Number: R-2570

MEASUREMENT UNCERTAINTY
Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes. The values given are the measurement uncertainty values with an expanded uncertainty of k=2.
30 MHz to 1000 MHz at 3 meters: +/- 3.9 dB
30 MHz to 1000 MHz at 10 meters: +/- 3.6 dB
1 GHz to 18 GHz at 3 meters: +/- 4.2 dB

Results: The sample tested was found to Comply.

6.0 Radiated emissions (E-field) (Radiated Emissions)

Photo:

Test Setup - Front view

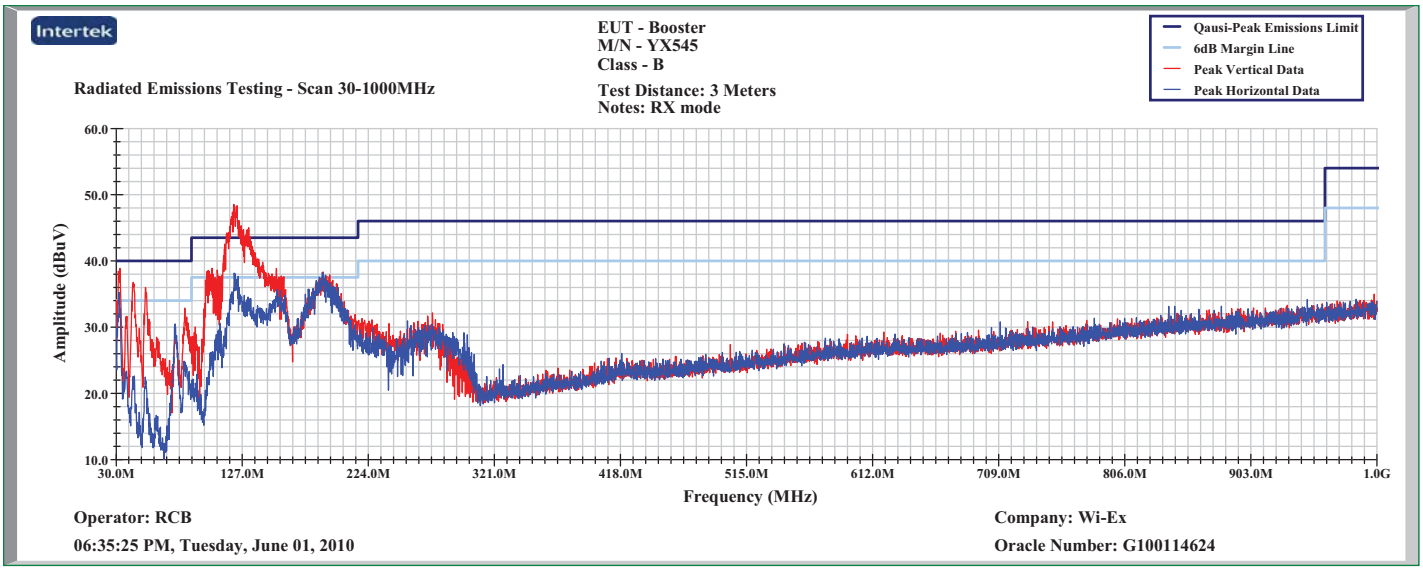
6.0 Radiated emissions (E-field) (Radiated Emissions)

Photo:

Test Setup - Rear view

6.0 Radiated emissions (E-field) (Radiated Emissions)

Plot:



Radiated Emissions @ 3 meters

6.0 Radiated emissions (E-field) (Radiated Emissions)

Data:

Client: Wi-Ex
Model Number: YX545
Project Number: G100114624
Tested By: RCB
Date: 06/01/2010
Frequency Range (MHz): 30-1000
Input power: 120Vac/60Hz

Receiver: HP 8546A
Antenna: Chase 2622
Cables: E-01+MP3+E-203+E-204
Preamp: ZKL-2 D011105
Test Distance (m): 3
Limit: FCC15 Class B-3m
Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	**Frequency MHz**	**Reading dB(uV)**	**Antenna Factor dB(1/m)**	**Cable Loss dB**	**Pre-amp Factor dB**	**Net dB(uV/m)**	**3m Limit dB(uV/m)**	**Margin dB**	**Detectors / Bandwidths Det/RBW/VBW**
V	32.063	38.4	19.1	1.1	28.3	30.3	40.0	-9.7	QP/120k/300k
V	43.200	44.9	12.7	1.3	28.2	30.8	40.0	-9.2	QP/120k/300k
V	52.713	46.6	8.2	1.5	28.2	28.1	40.0	-11.9	QP/120k/300k
V	120.500	53.6	12.8	2.3	28.1	40.5	43.5	-3.0	QP/120k/300k
V	131.500	50.1	12.3	2.4	28.1	36.6	43.5	-6.9	QP/120k/300k
V	188.725	46.9	9.7	2.9	27.7	31.8	43.5	-11.7	QP/120k/300k
Calculations		G=C+D+E-F		I=G-H					

7.0 Occupied Bandwidth (FCC Part 2.1049)

Method:

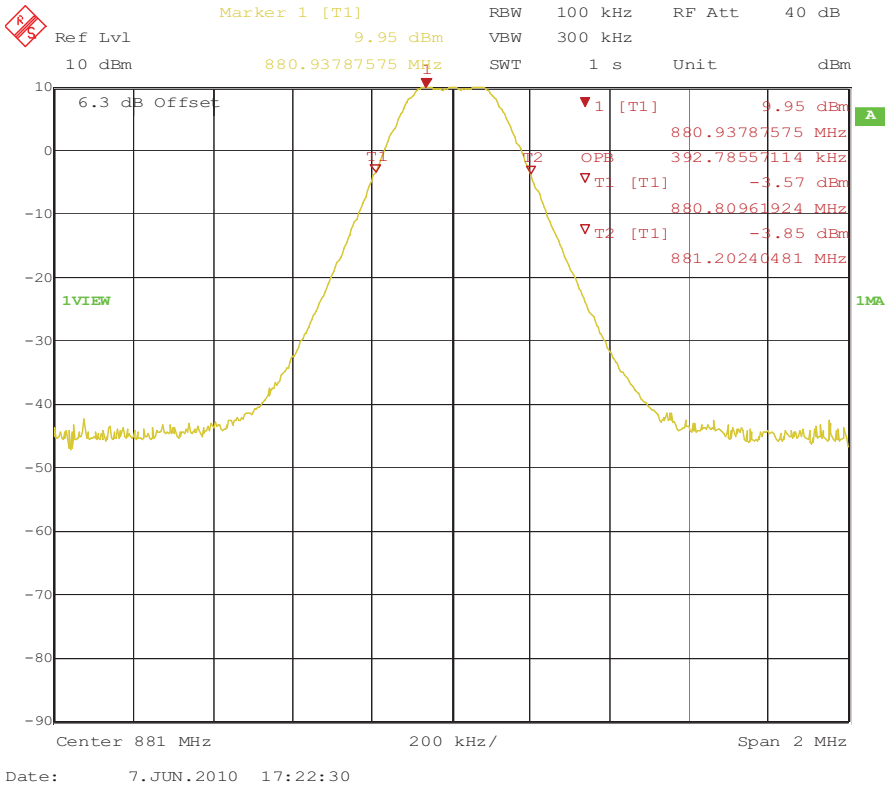
The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Connect the antenna port of the EUT to a spectrum analyzer using a calibrated coaxial cable and attenuator. Set the EUT to transmit at its highest power setting. The 99% bandwidth function of the analyzer was used to automatically generate the occupied bandwidth plots. Repeat for low, mid, and high channels of each band of the EUT.

For amplifiers, the output bandwidth shall be less than or equal to the input bandwidth.

Results: The sample tested was found to Comply.

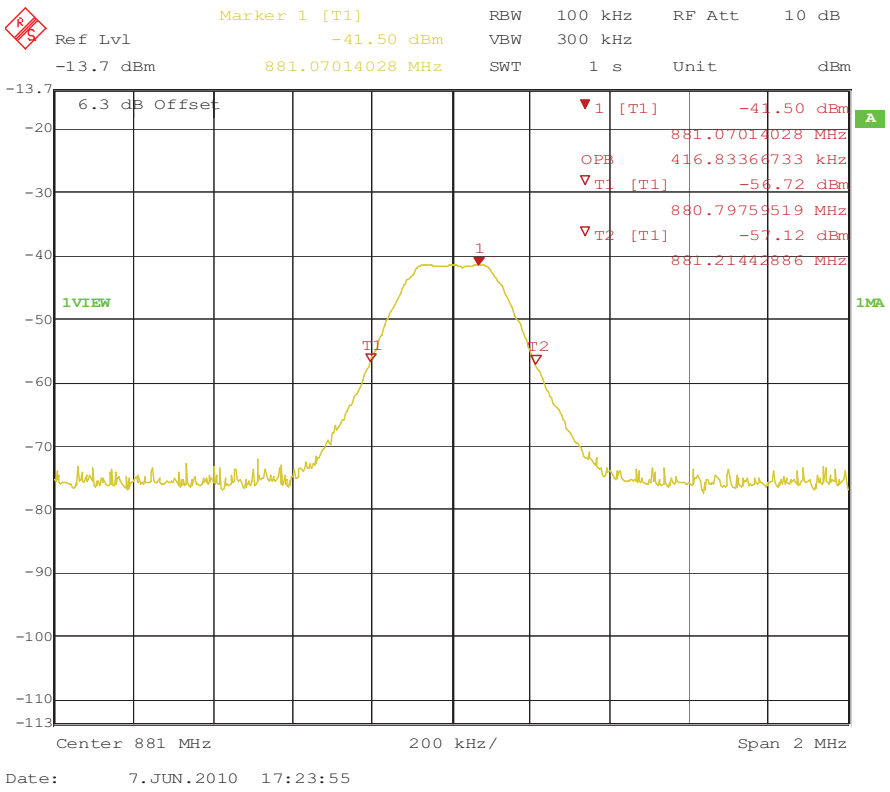
Plot:



EDGE Output @ 881MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

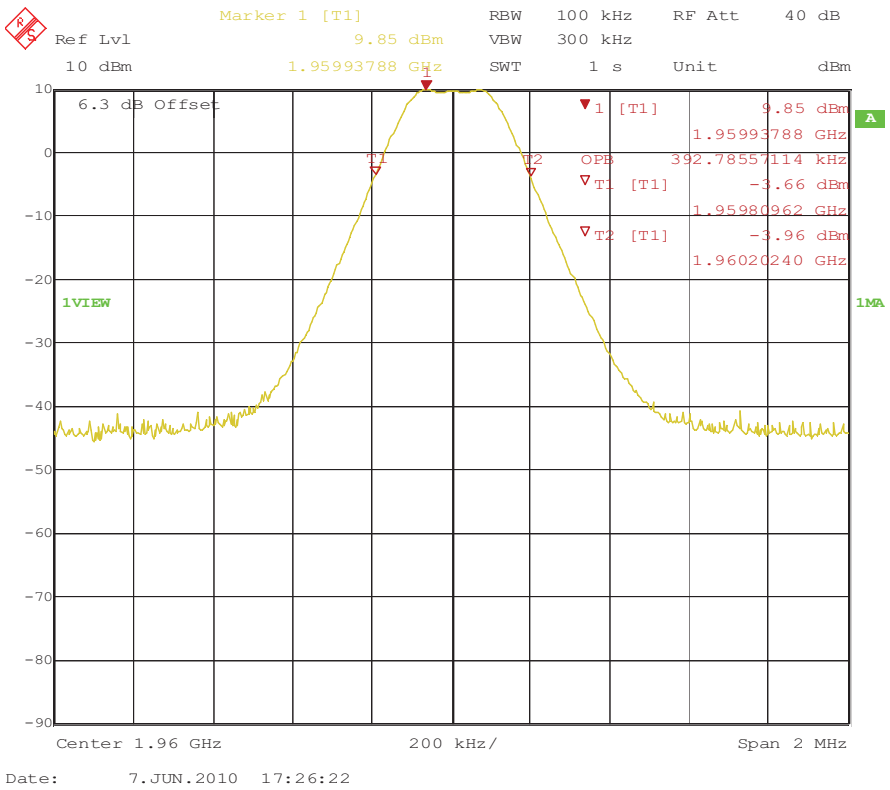
Plot:



EDGE Input @ 881MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

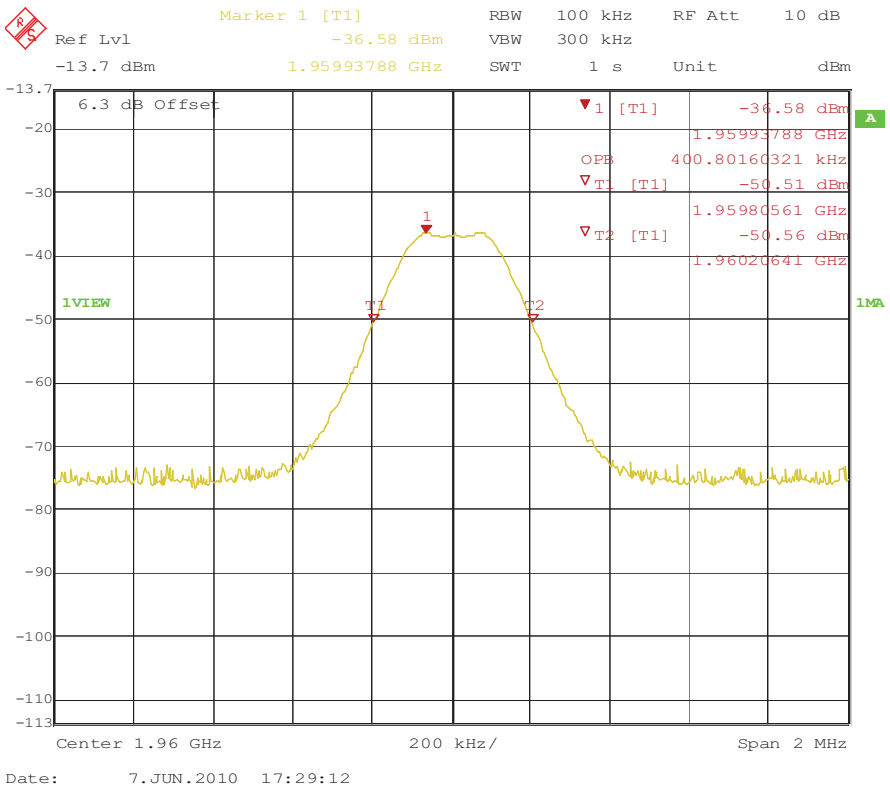
Plot:



EDGE Output @ 1960MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

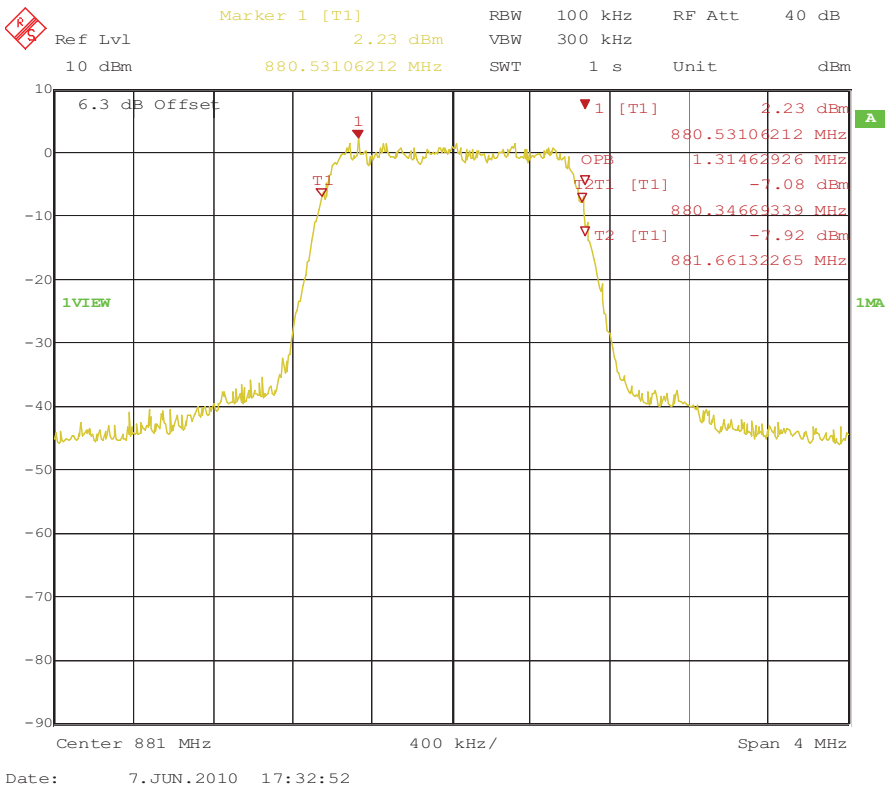
Plot:



EDGE Input @ 1960MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

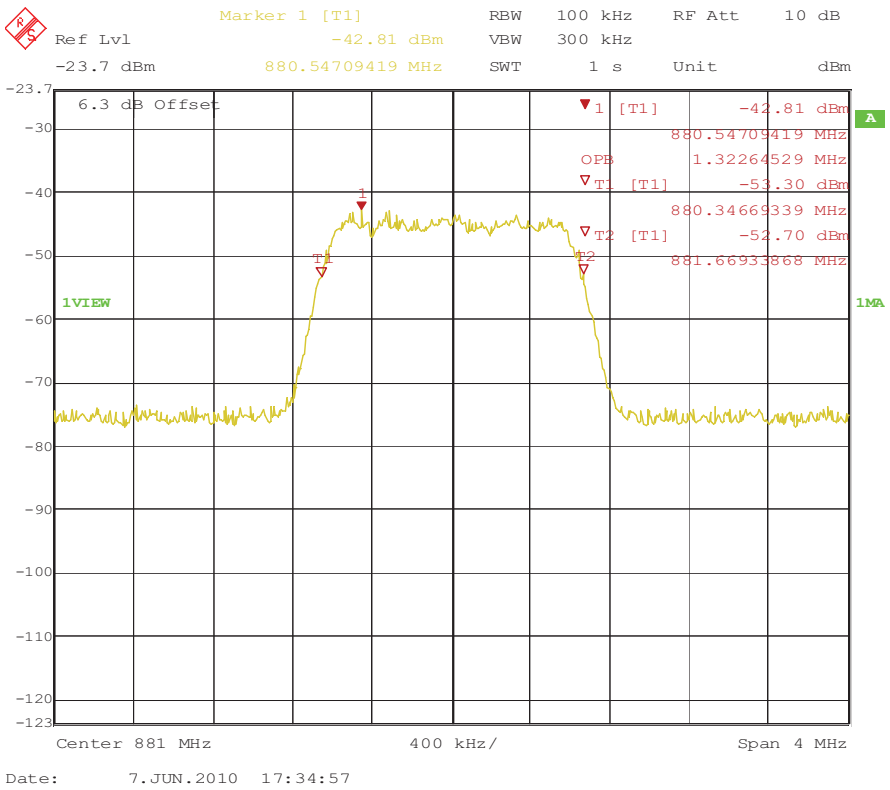
Plot:



CDMA Output @ 881MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

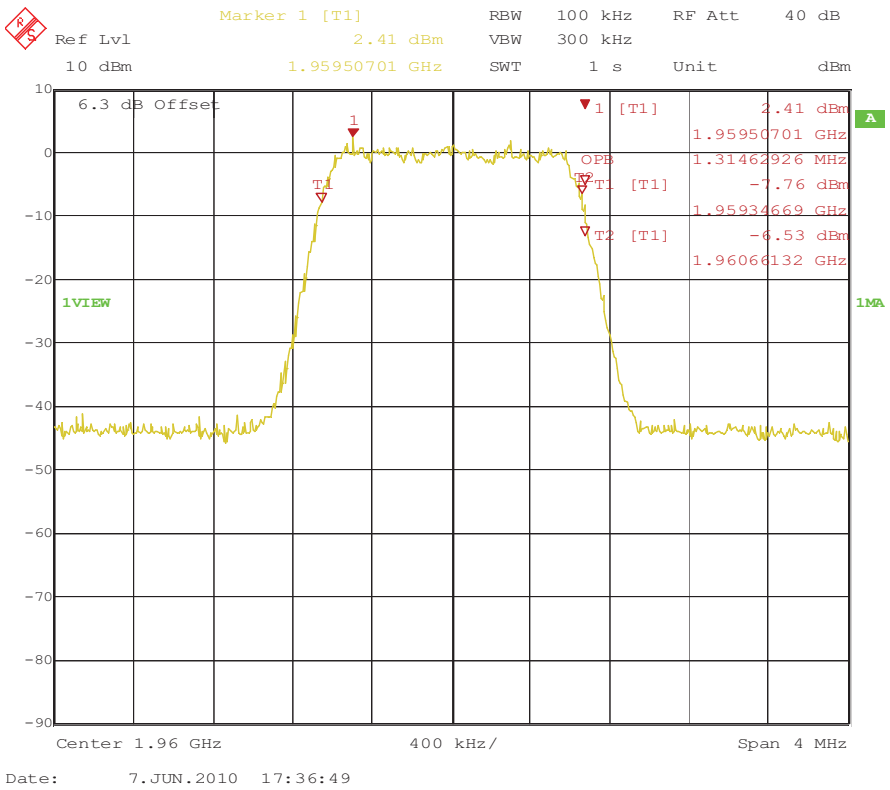
Plot:



CDMA Input @ 881MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

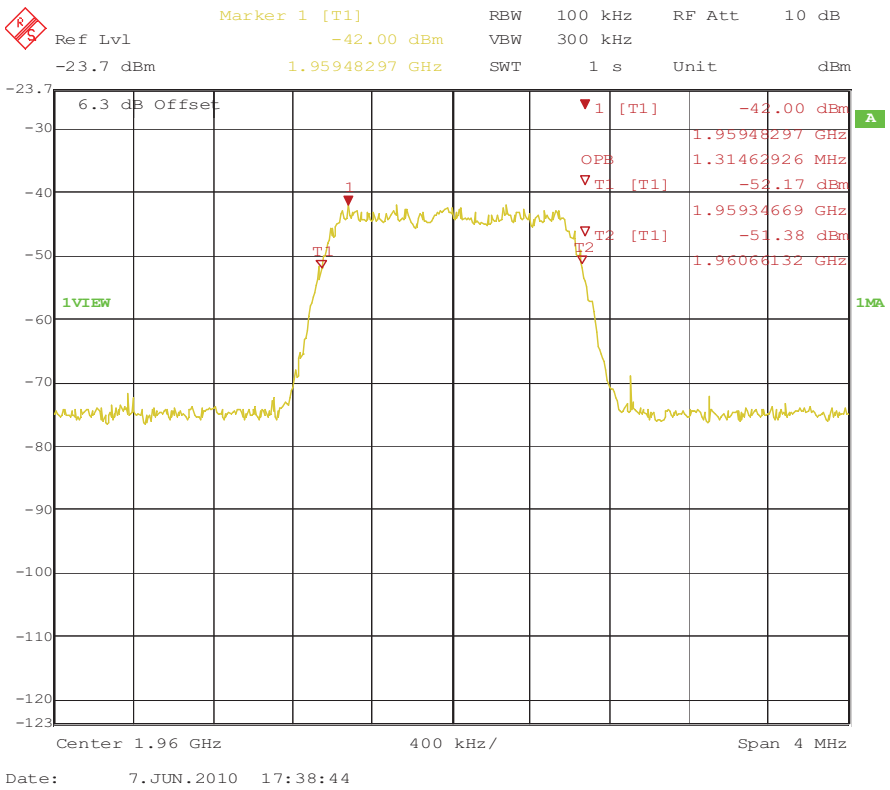
Plot:



CDMA Output @ 1960MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

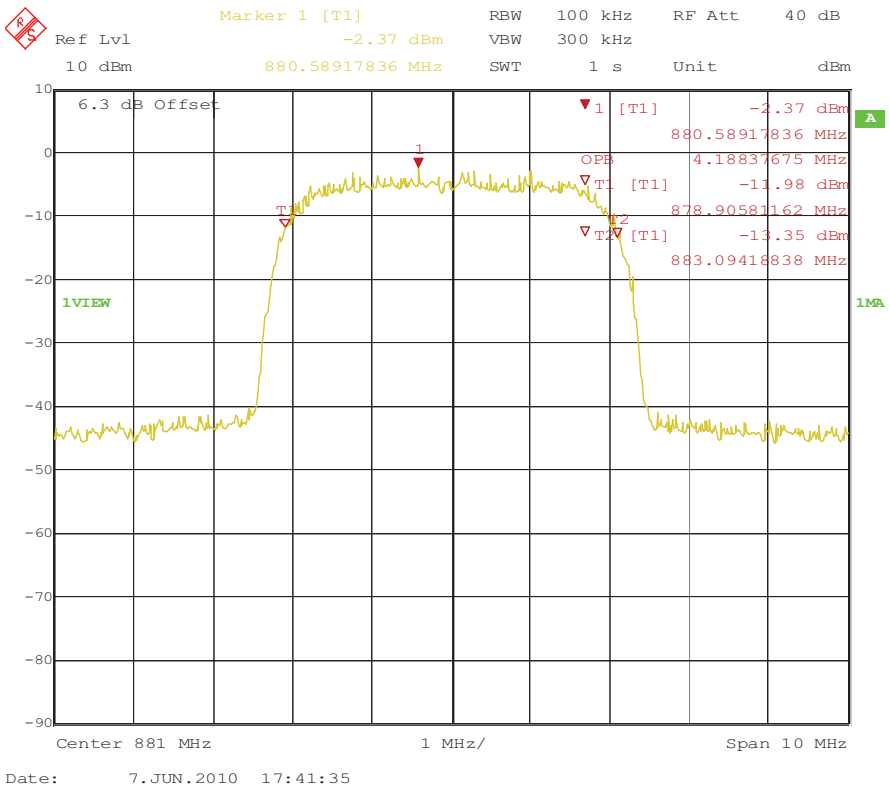
Plot:



CDMA Input @ 1960MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

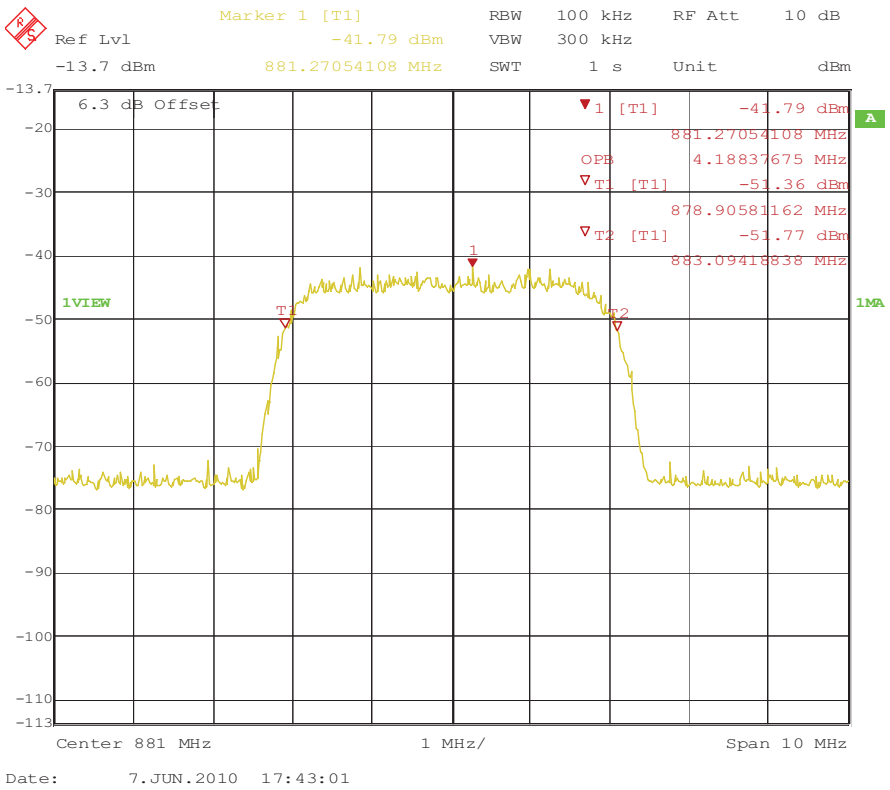
Plot:



WCDMA Output @ 881MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

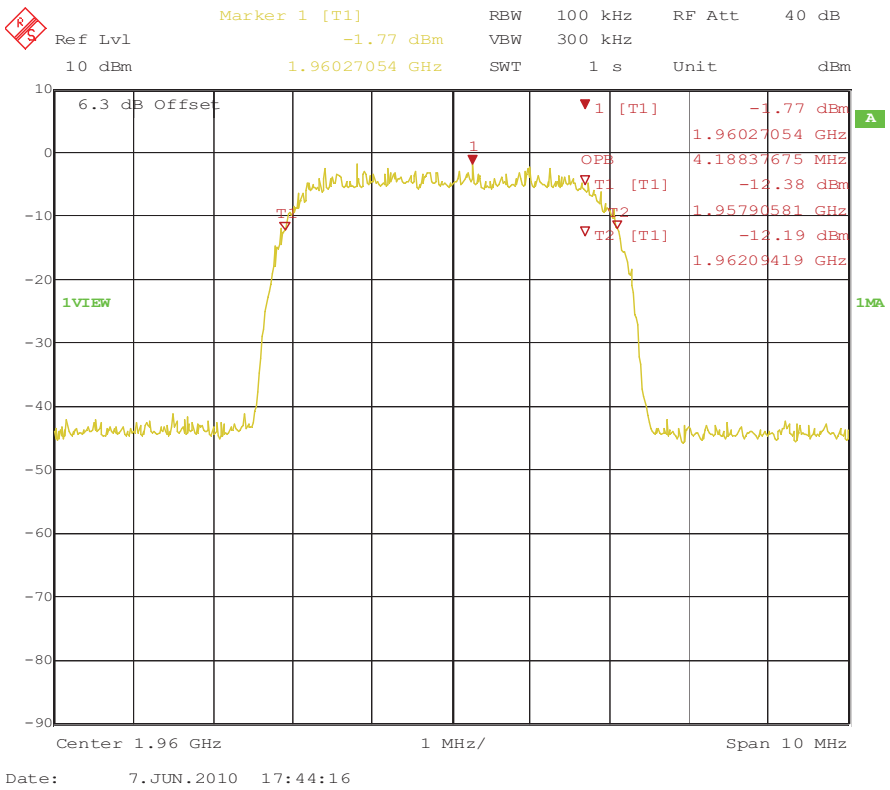
Plot:



WCDMA Input @ 881MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

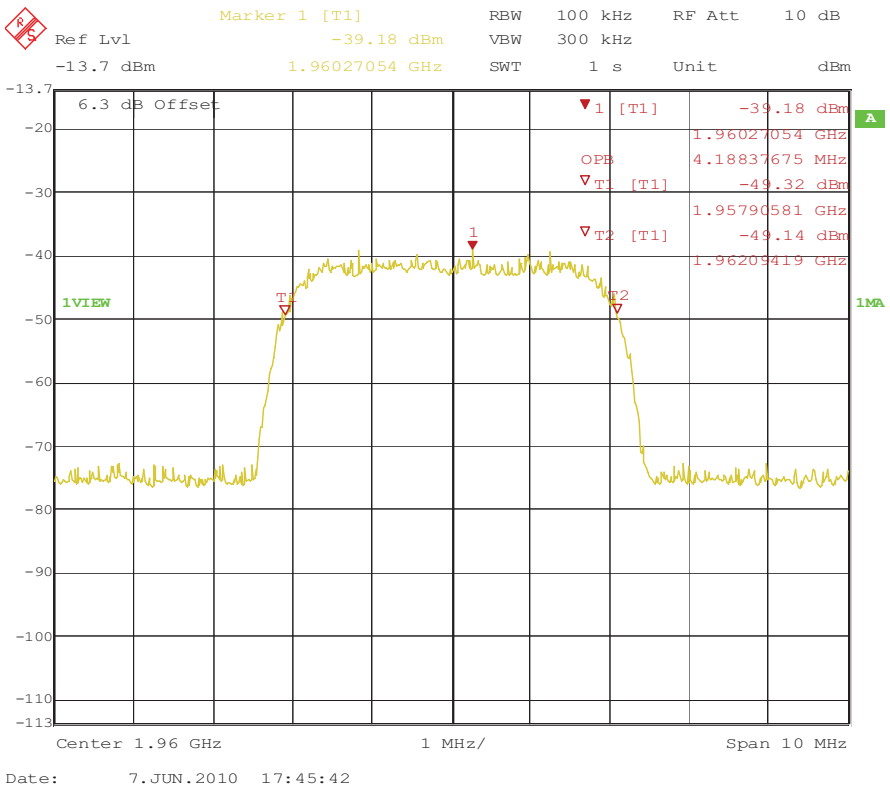
Plot:



WCDMA Output @ 1960MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

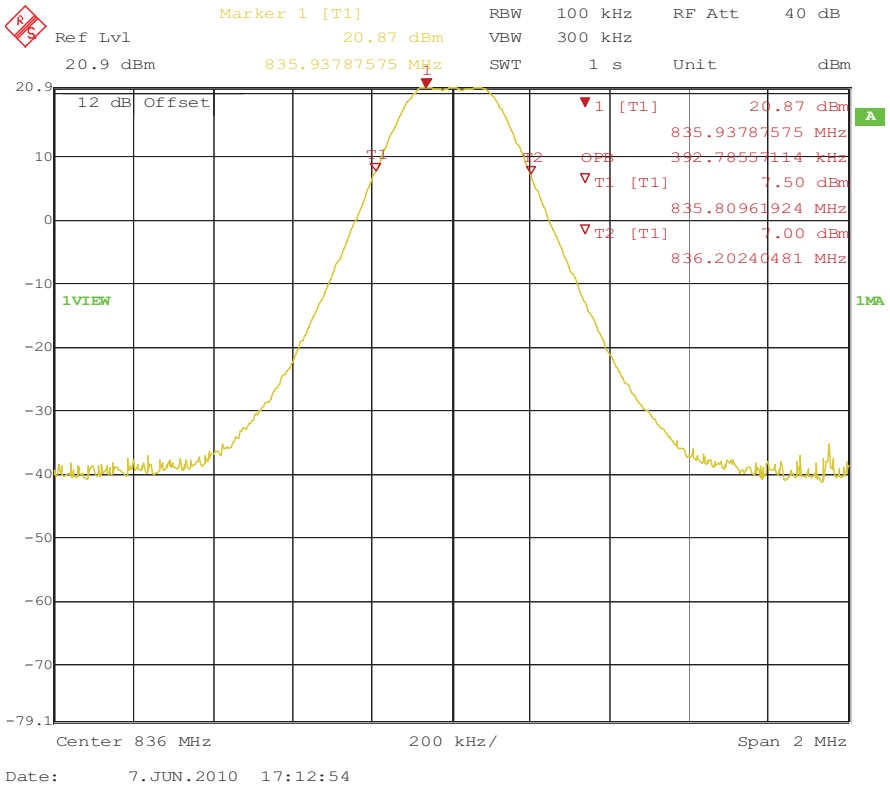
Plot:



WCDMA Input @ 1960MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

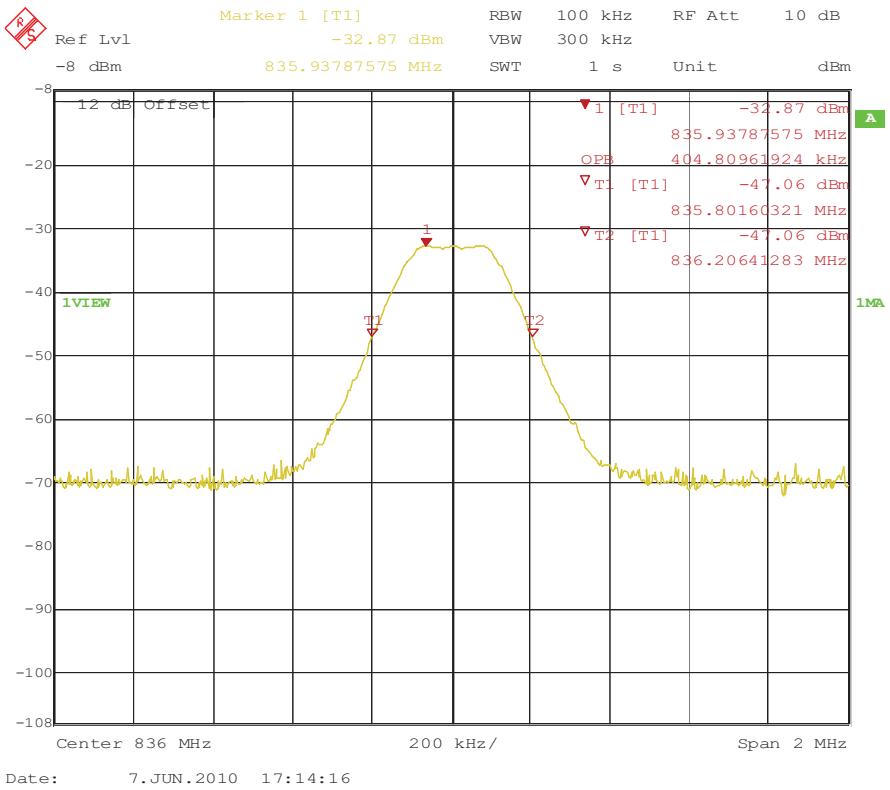
Plot:



EDGE Output @ 836MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

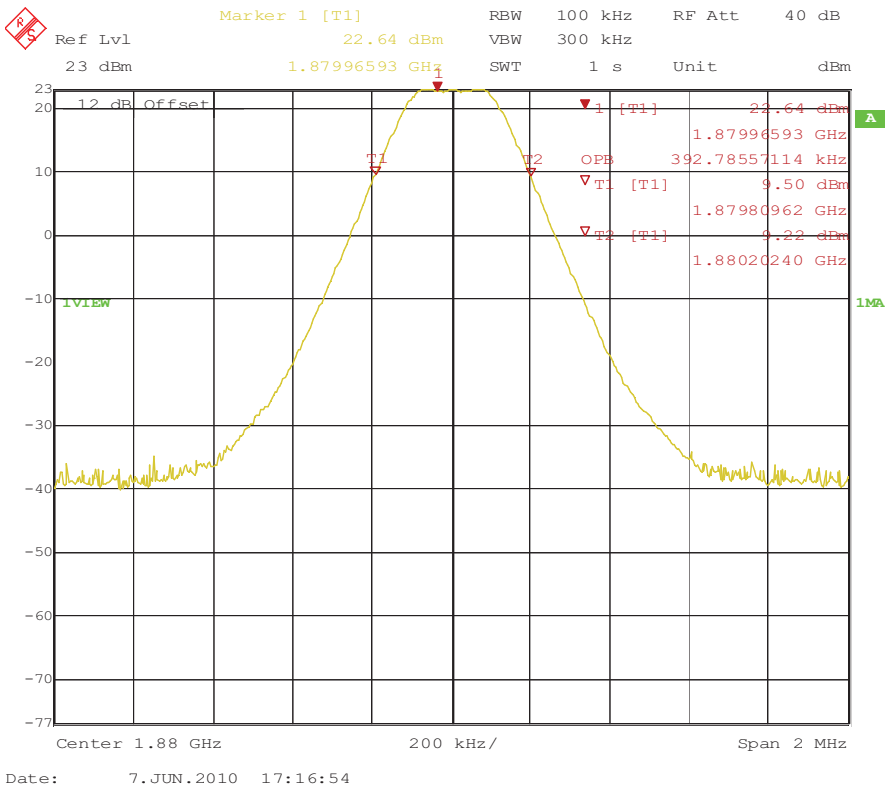
Plot:



EDGE Input @ 836MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

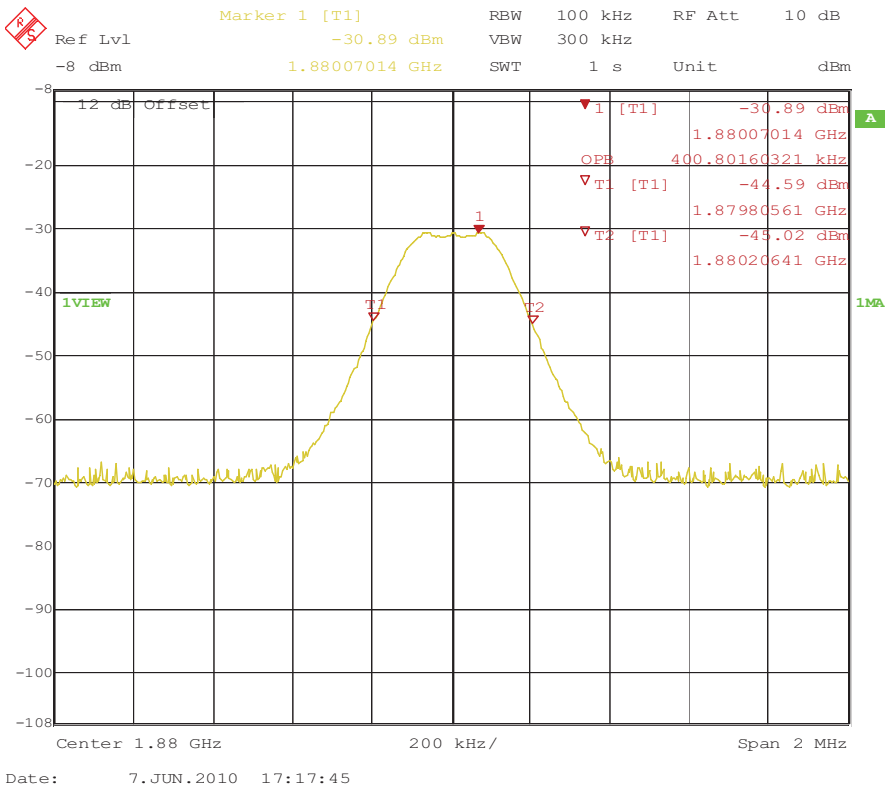
Plot:



EDGE Output @ 1880MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

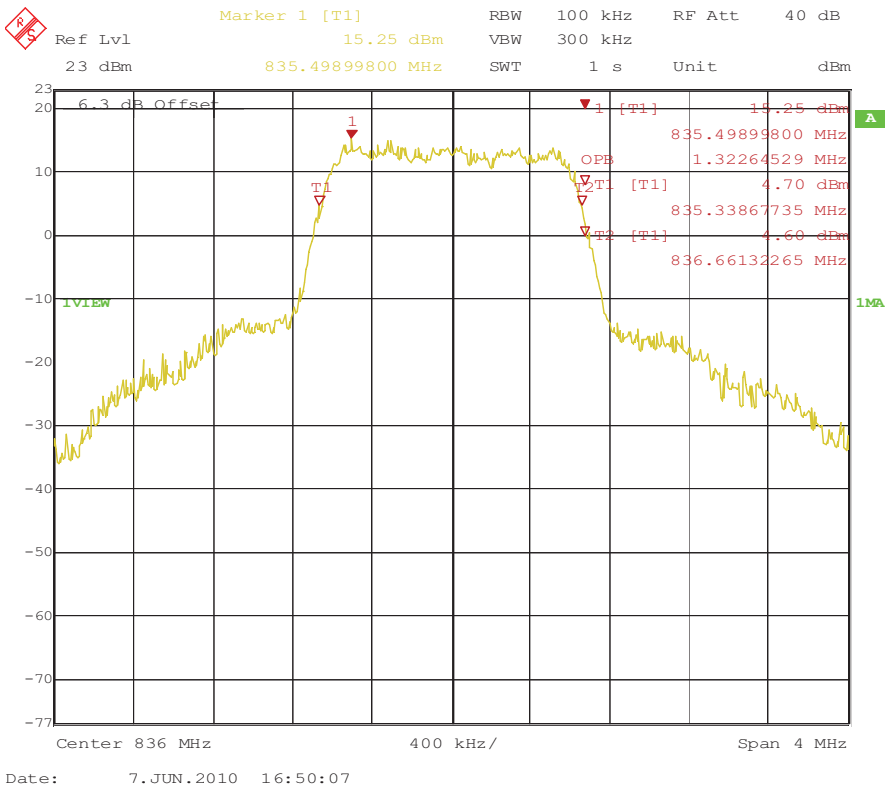
Plot:



EDGE Input @ 1880MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

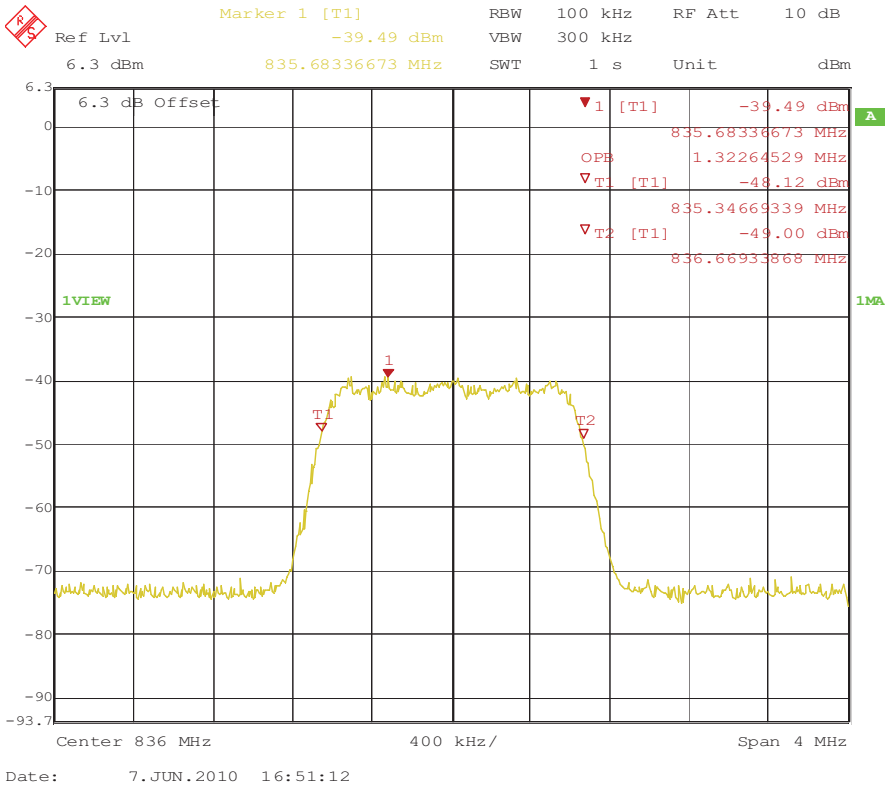
Plot:



CDMA Output @ 836MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

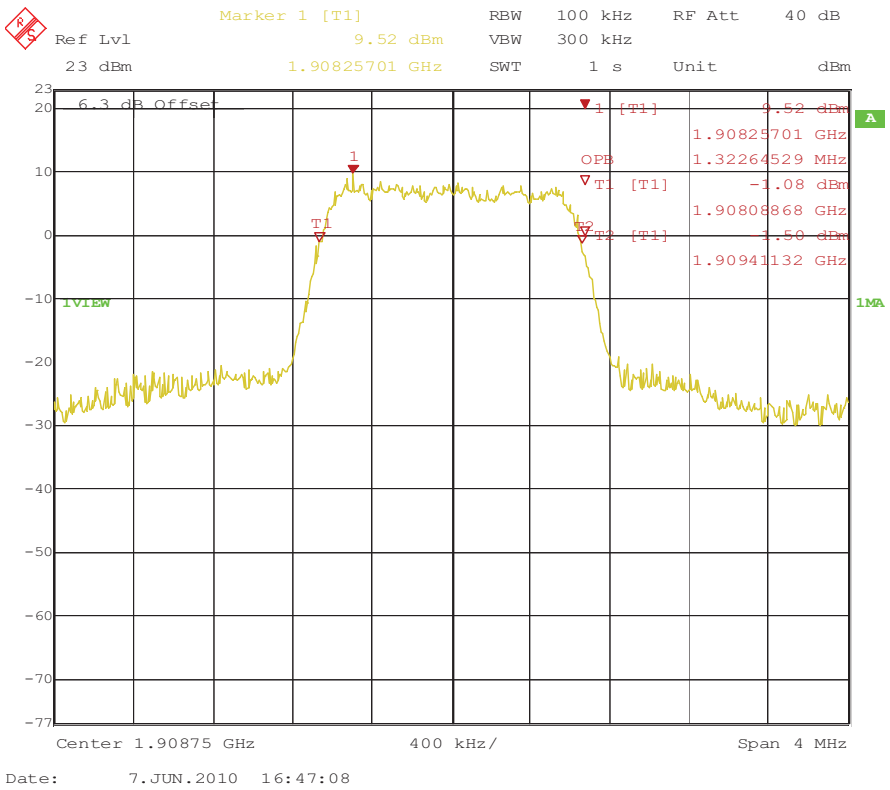
Plot:



CDMA Input @ 836MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

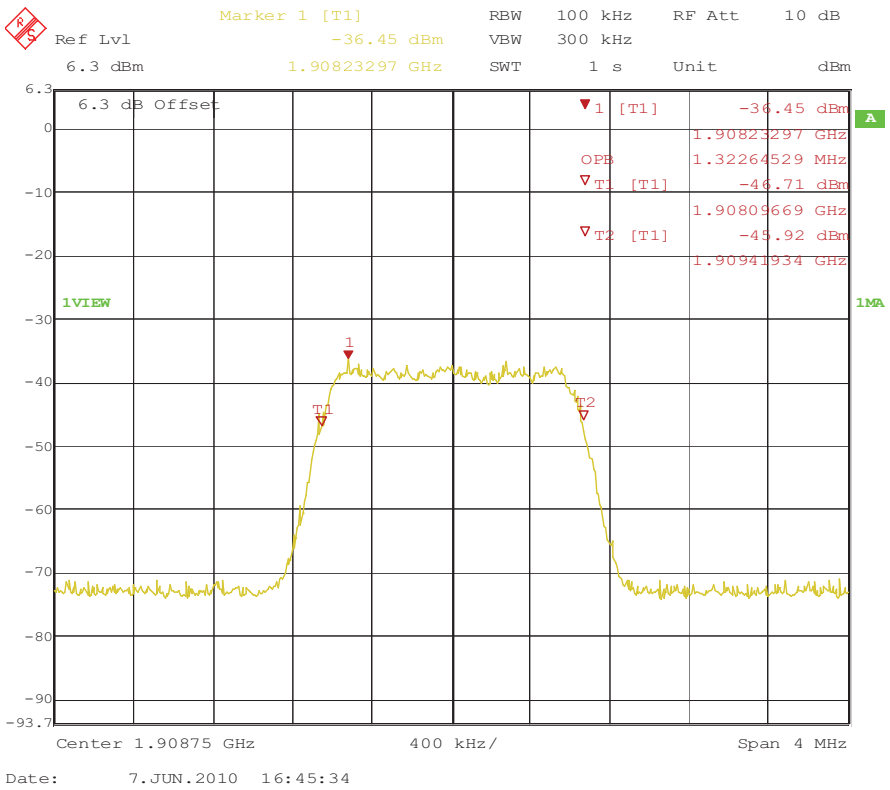
Plot:



CDMA Output @ 1910MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

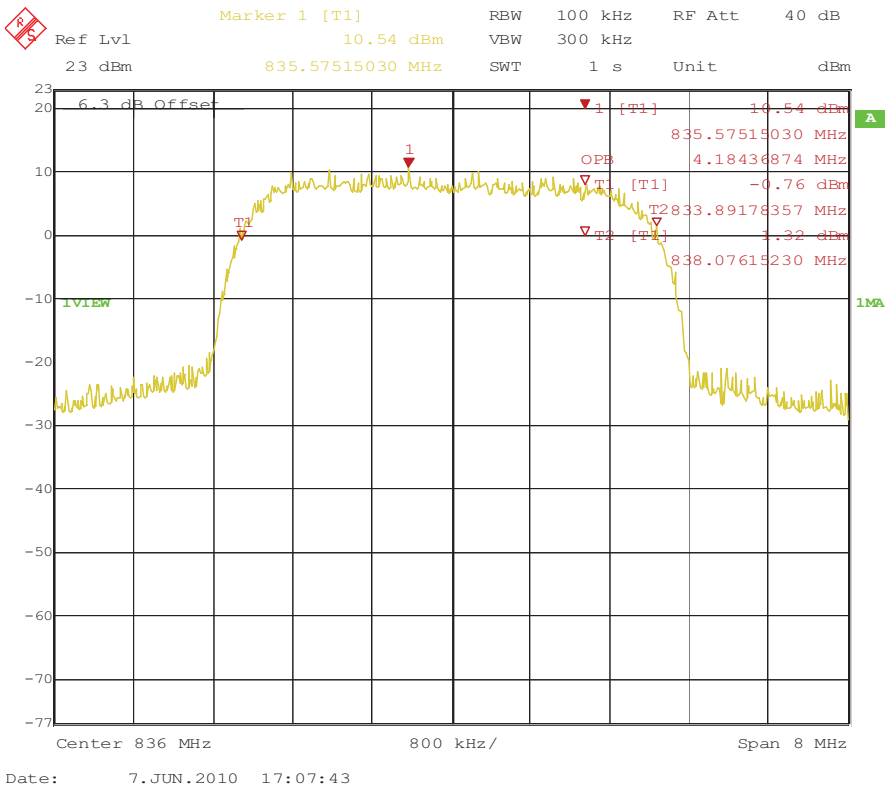
Plot:



CDMA Input @ 1910MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

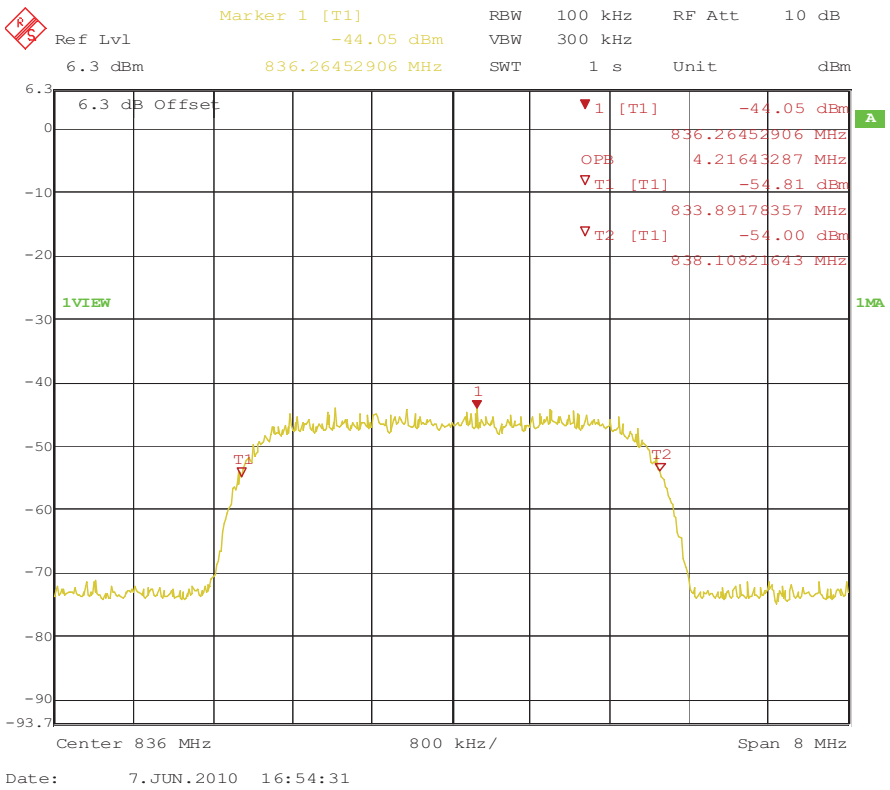
Plot:



WCDMA Output @ 836MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

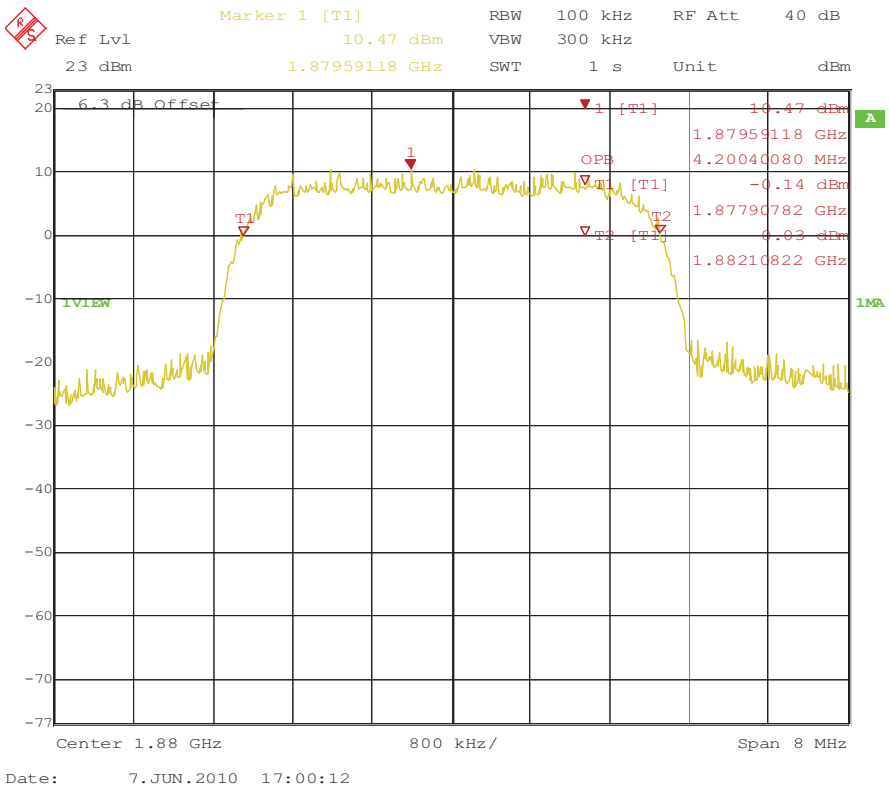
Plot:



WCDMA Input @ 836MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

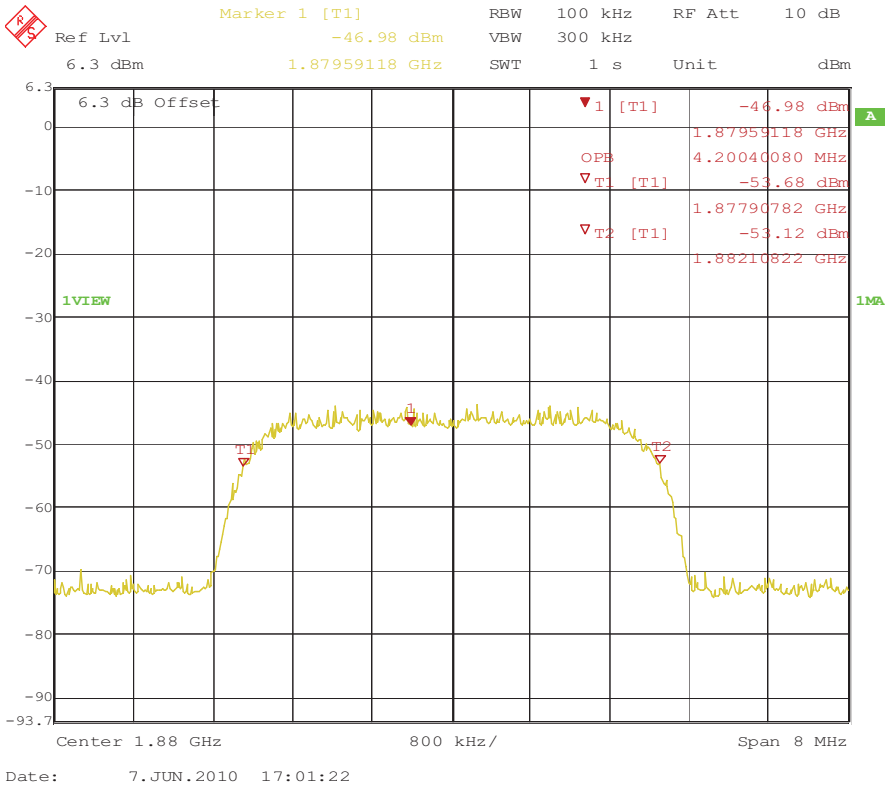
Plot:



WCDMA Output @ 1880MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

Plot:



WCDMA Input @ 1880MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

Data:

Mode	Frequency MHz	Resolution Bandwidth (1)	Video Bandwidth	Sweep time Seconds	Output Measured Bandwidth MHz	Input Measured Bandwidth MHz
EDGE	836	100 kHz	300 kHz	1	393	404
EDGE	881	100 kHz	300 kHz	1	393	416
EDGE	1880	100 kHz	300 kHz	1	393	400
EDGE	1960	100 kHz	300 kHz	1	393	400
CDMA	836	100 kHz	300 kHz	1	1.322	1.322
CDMA	881	100 kHz	300 kHz	1	1.314	1.322
CDMA	1910	100 kHz	300 kHz	1	1.322	1.322
CDMA	1960	100 kHz	300 kHz	1	1.314	1.314
WCDMA	836	100 kHz	300 kHz	1	4.184	4.216
WCDMA	881	100 kHz	300 kHz	1	4.188	4.188
WCDMA	1880	100 kHz	300 kHz	1	4.2	4.2
WCDMA	1960	100 kHz	300 kHz	1	4.188	4.188

Note (1): Greater or equal to 1% of emission bandwidth.

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Method:

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

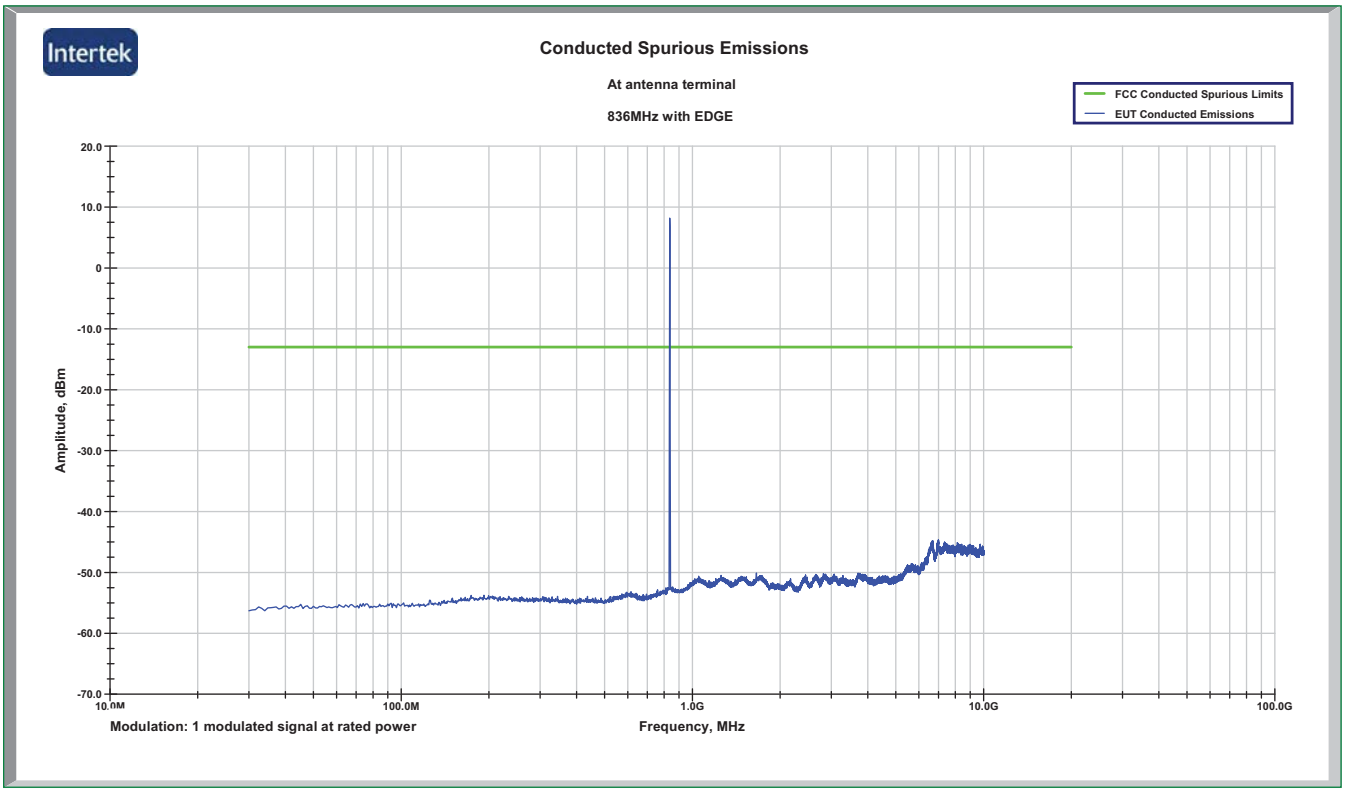
Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for the Cellular band and 1 MHz or greater in the PCS band. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Connect the RF output of the EUT to a spectrum analyzer through appropriate attenuation. Set the EUT to transmit at its maximum power level. Sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For Amplifiers, an intermodulation test is also performed. Test all modulations types [TDMA, CDMA, and FM (covers GSM and F1D)].
· CW signal rather than typical signal is acceptable (for FM).
· At maximum drive level, for each modulation: one test with three tones, or two tests (high-, low-band edge) with two tones
· Limit usually is -13dBm conducted.
· Not needed for Single Channel systems.
· Combination of modulation types not needed.

Results: The sample tested was found to Comply.

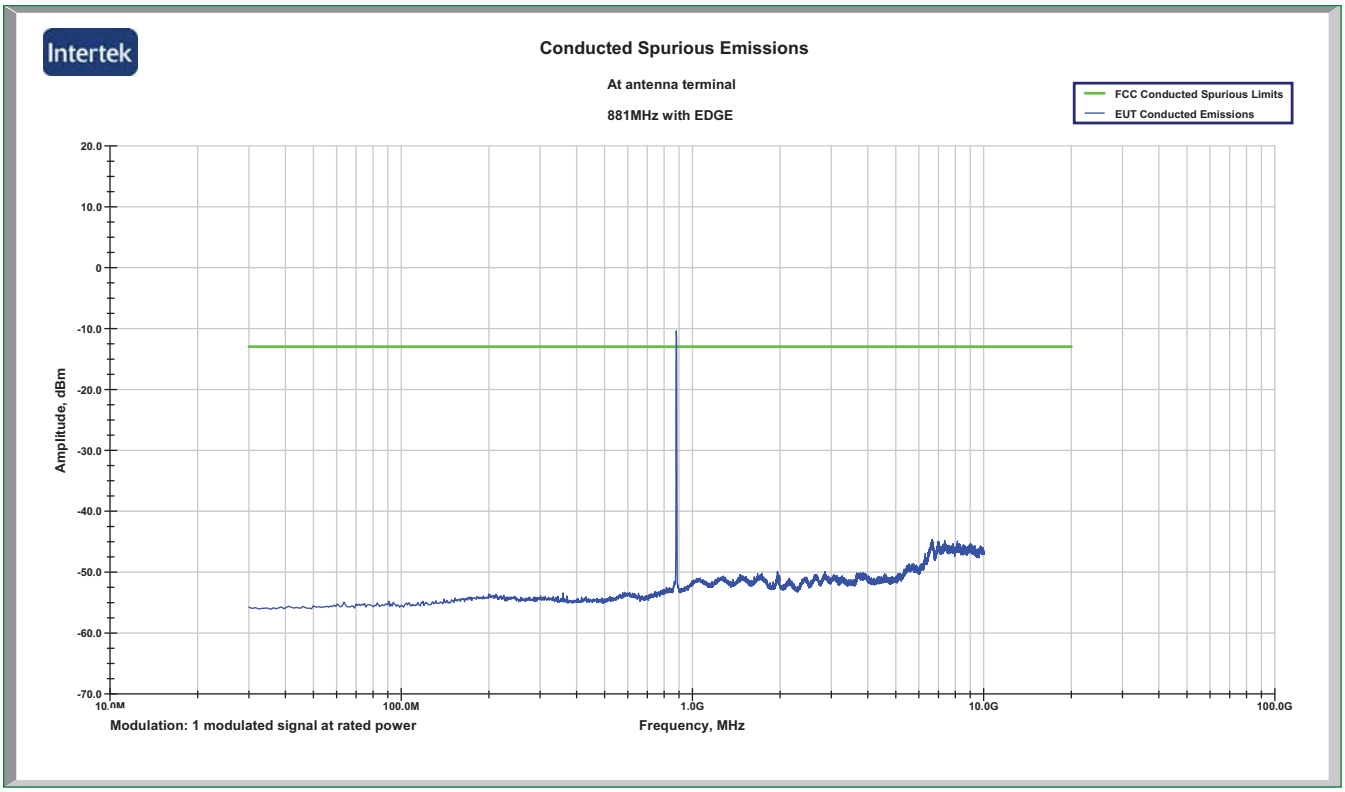
Plot:



Conducted Spurs - EDGE @ 836MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

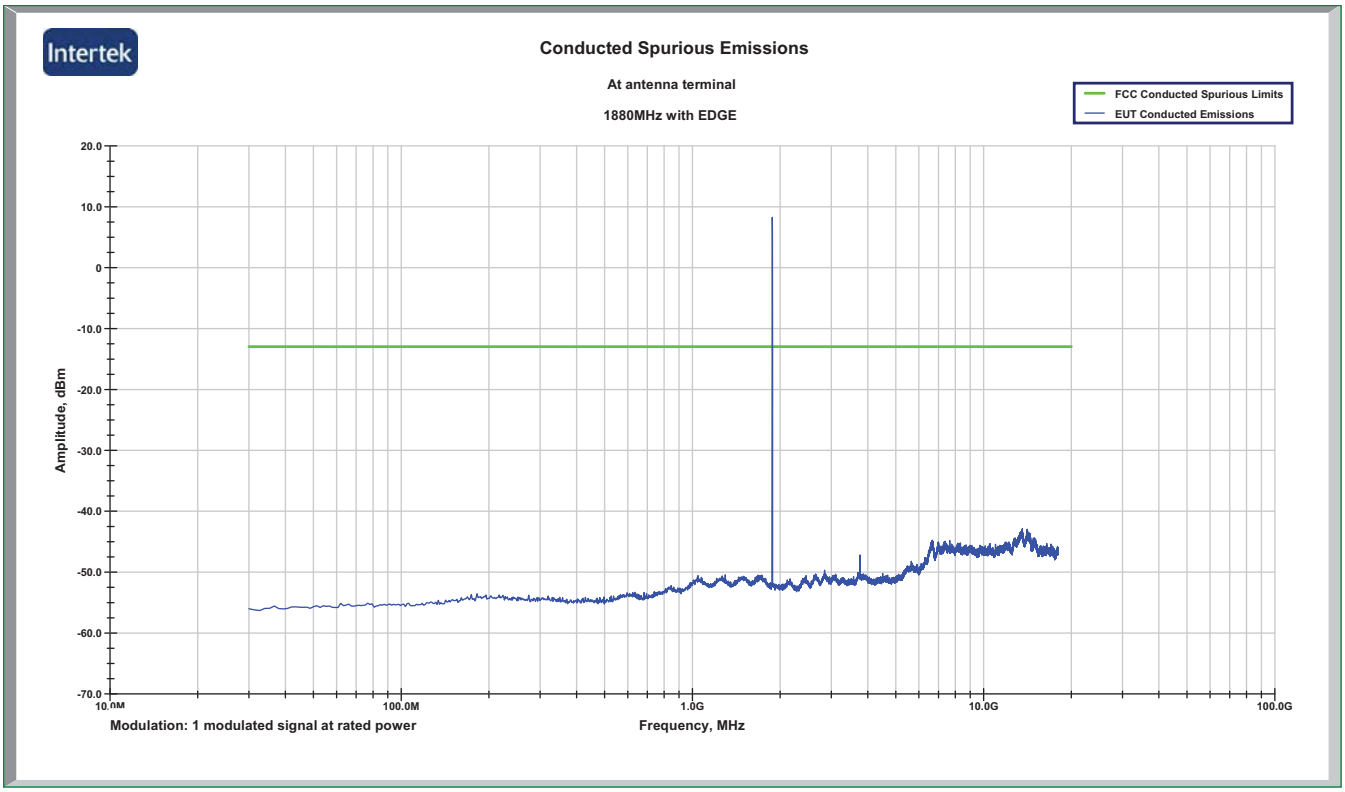
Plot:



Conducted Spurs - EDGE @ 881MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

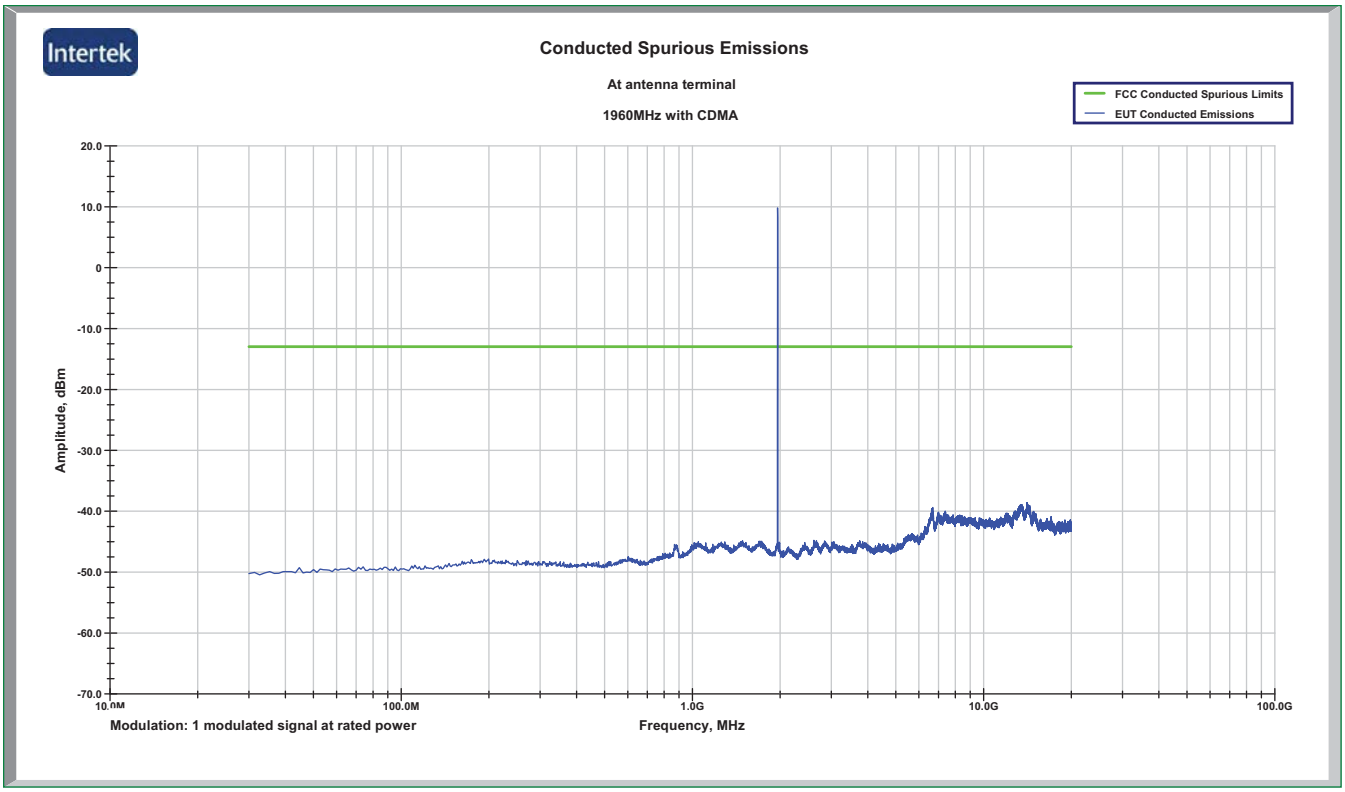
Plot:



Conducted Spurs - EDGE @ 1880MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

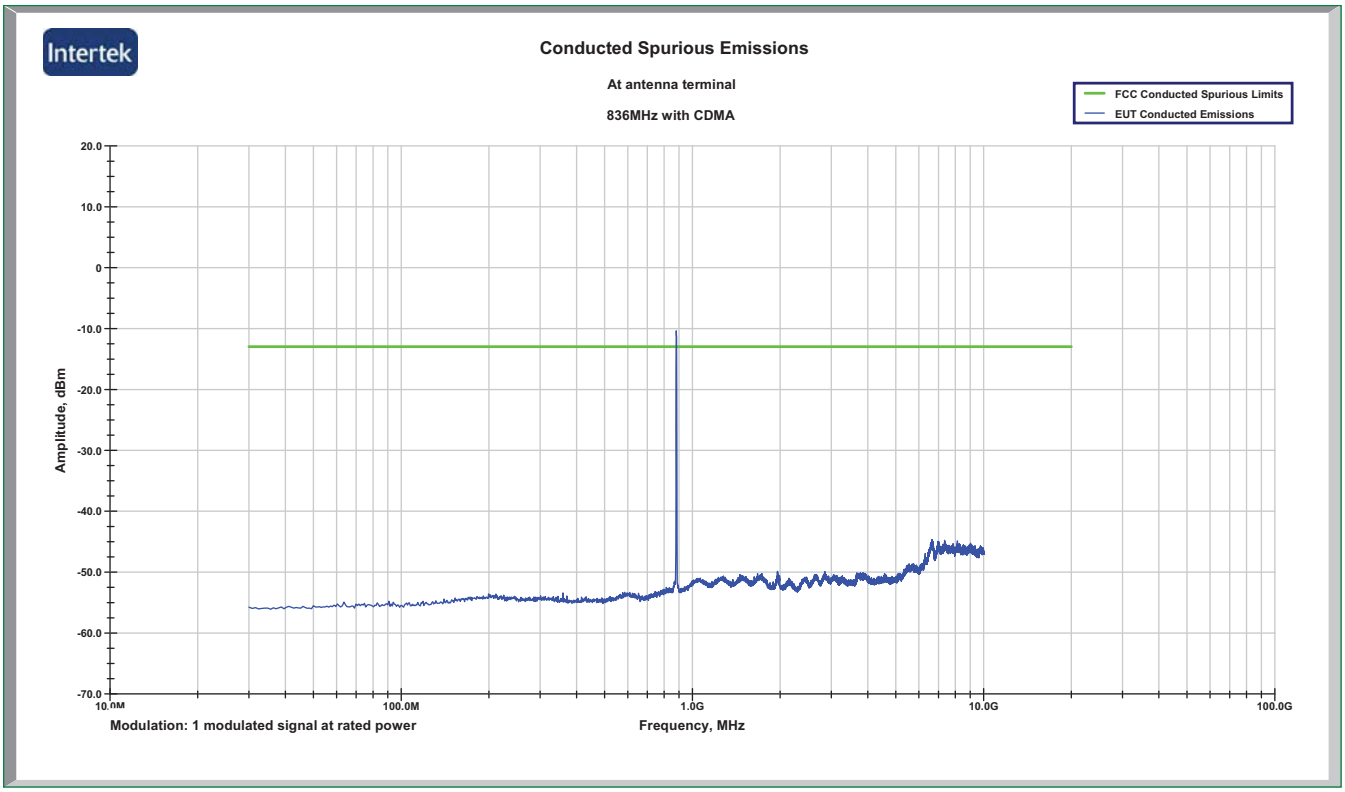
Plot:



Conducted Spurs - EDGE @ 1960MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

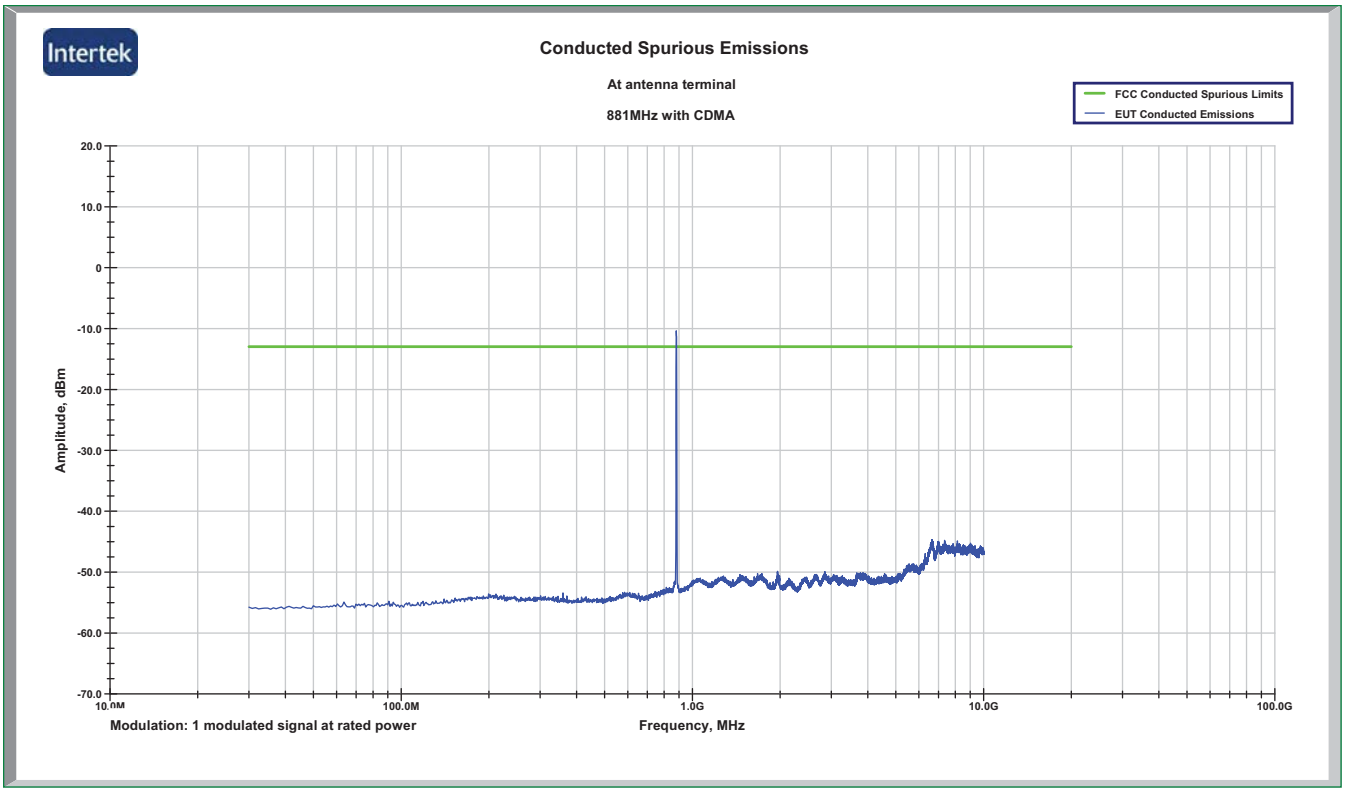
Plot:



Conducted Spurs - CDMA @ 836MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

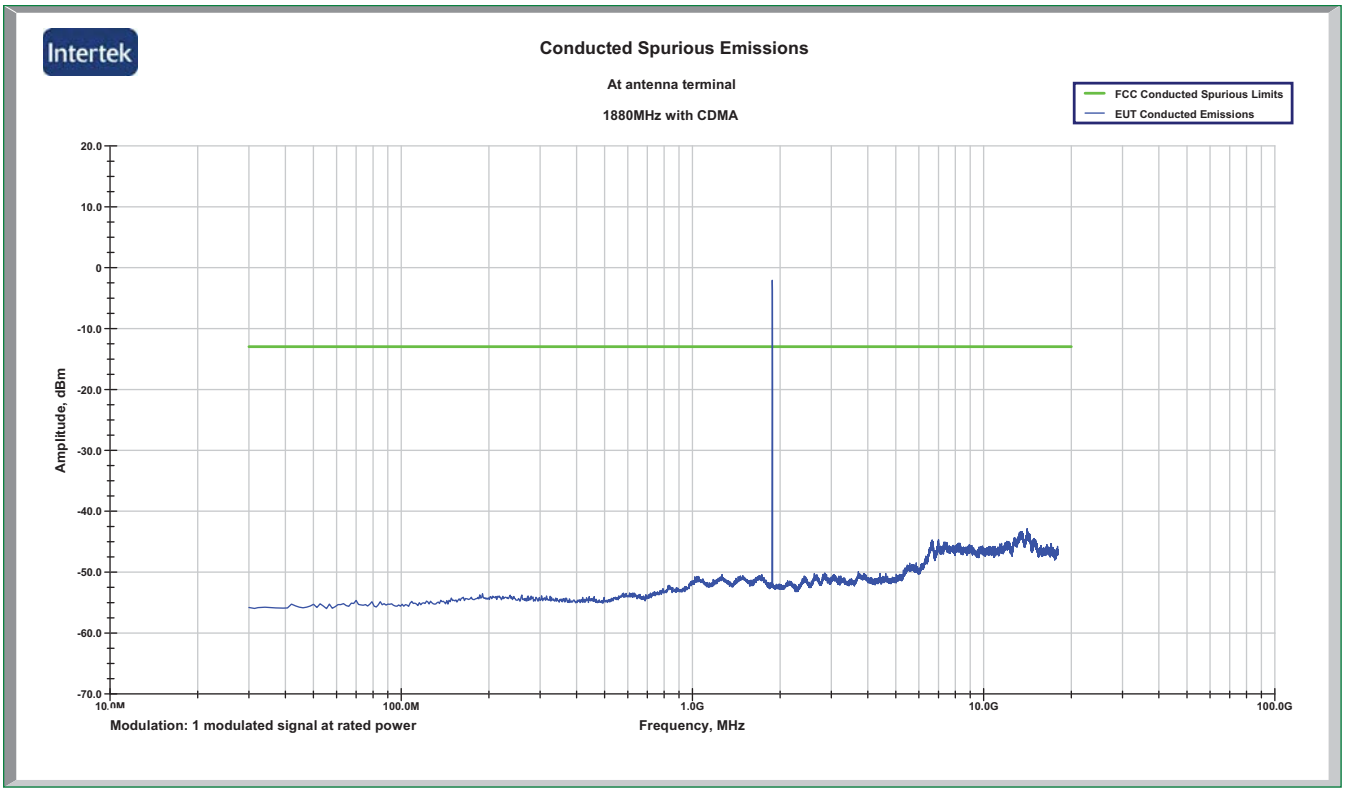
Plot:



Conducted Spurs - CDMA @ 881MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

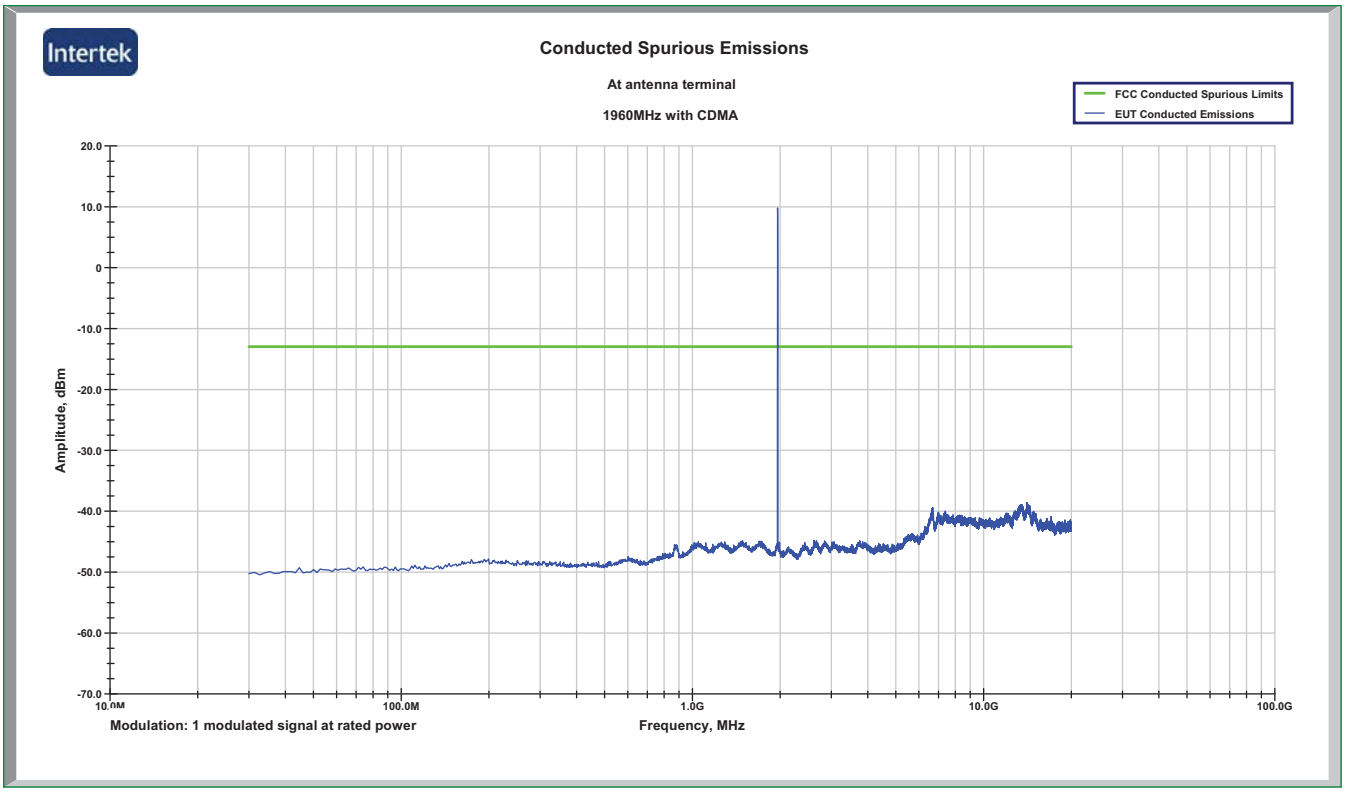
Plot:



Conducted Spurs - CDMA @ 1880MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

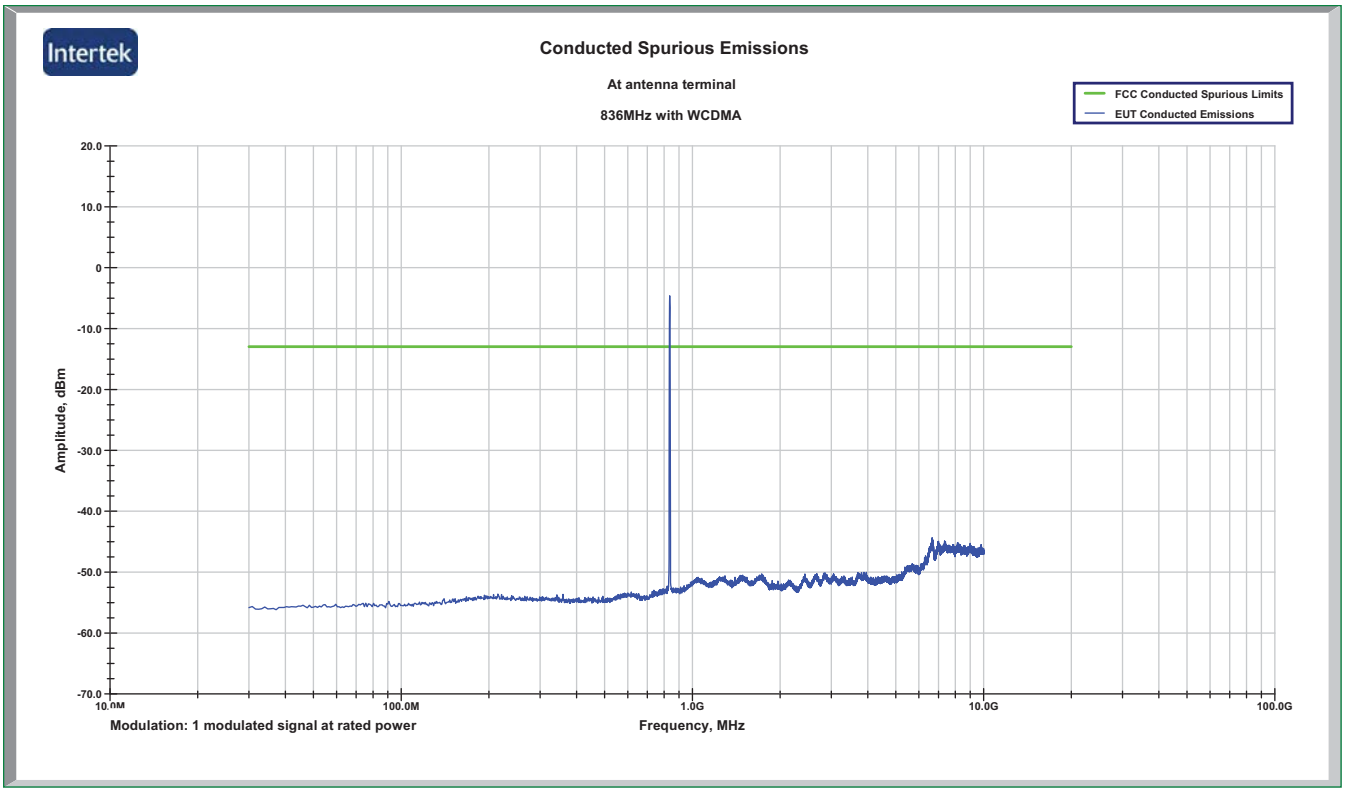
Plot:



Conducted Spurs - CDMA @ 1960MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

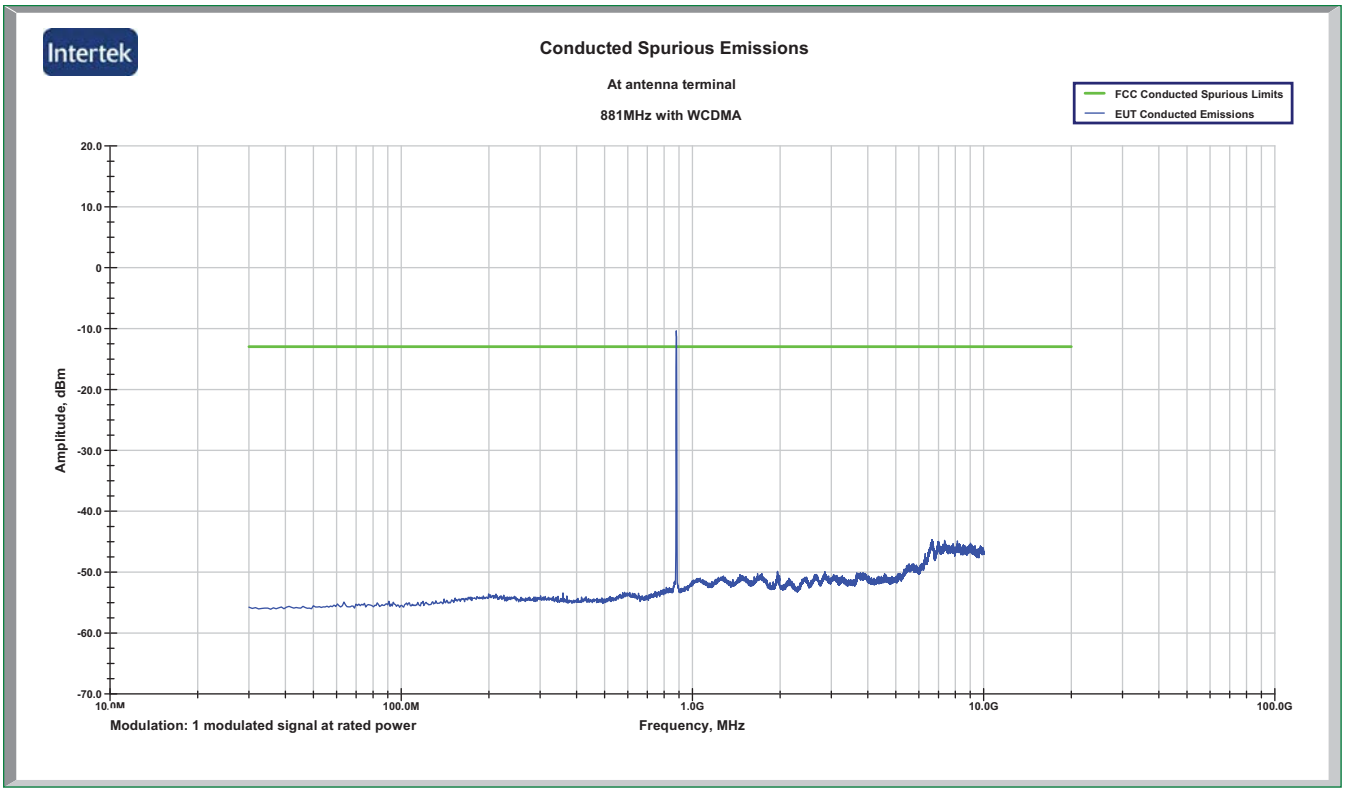
Plot:



Conducted Spurs - WCDMA @ 836MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

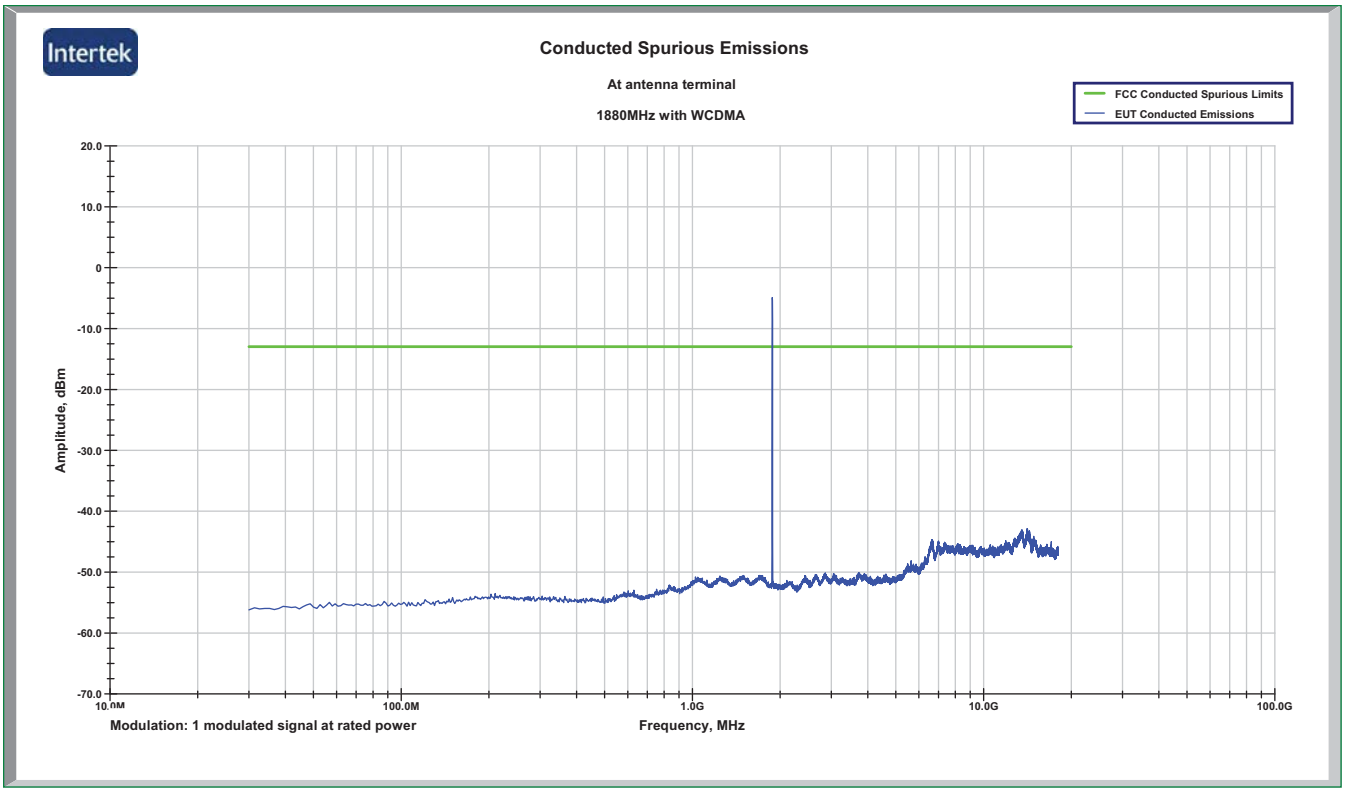
Plot:



Conducted Spurs - WCDMA @ 881MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

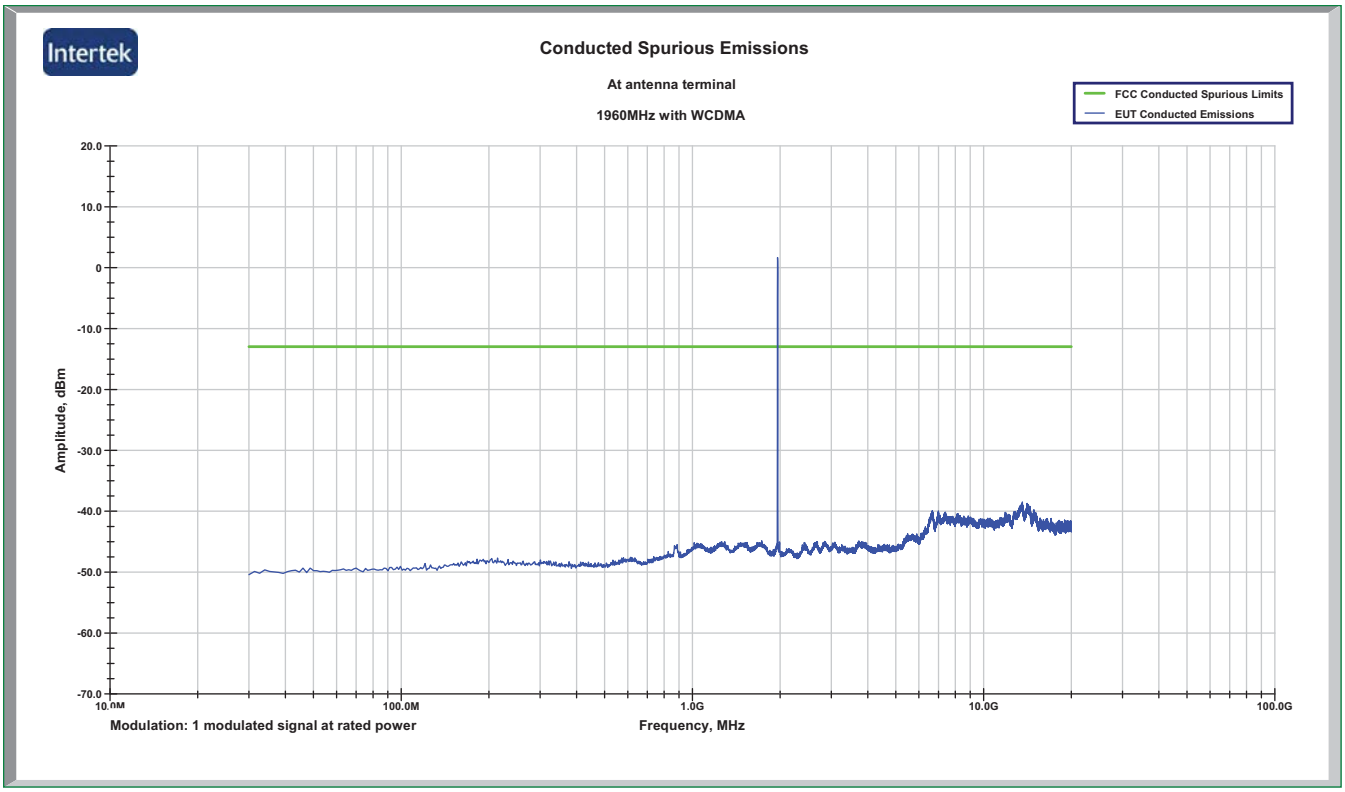
Plot:



Conducted Spurs - WCDMA @ 1880MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Plot:



Conducted Spurs - WCDMA @ 1960MHz

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Data:

Mode	Frequency MHz	RBW/VBW	Peak EUT Emission dBm	Limit dBm	Margin dB
EDGE 836	6995	100 kHz	-44.71	-13	-31.71
EDGE 881	6641	100 kHz	-44.7	-13	-31.7
EDGE 1880	13579	100 kHz	-42.9	-13	-29.9
EDGE 1960	14119	100 kHz	-38.62	-13	-25.62
CDMA 836	6667	100 kHz	-45.2	-13	-32.2
CDMA 881	6641	100 kHz	-44.7	-13	-31.7
CDMA 1880	14109	100 kHz	-42.87	-13	-29.87
CDMA 1960	14119	100 kHz	-38.62	-13	-25.62
WCDMA 836	6648	100 kHz	-44.38	-13	-31.38
WCDMA 881	6641	100 kHz	-44.74	-13	-31.74
WCDMA 1880	14101	100 kHz	-42.88	-13	-29.88
WCDMA 1960	13579	100 kHz	-38.52	-13	-25.52

9.0 Field strength of spurious radiation (FCC Part 2.1053)

Method:

Applies to the following Standards:
TIA-603-C (land mobile)
FCC 47 CFR Part 90 (land mobile)
RSS-119 (land mobile/fixed)

PROCEDURE
A) Connect the equipment as illustrated. Place the transmitter to be tested on the turntable in the test site, in its normal operating position. If the transmitter is intended to be hand held, the testing must be repeated with the transmitter in three orthogonal orientations.
B) Attach a non-radiating standard load to the antenna port, using the shortest possible interconnecting shielded cable. For devices with integral, antennas, run the test with the integral antenna operating.
C) Select the larger test distance consistent with the site noise floor; use 10m if possible, 3m if ambient noise requires a shorter distance.
D) Typical spectrum analyzer settings are given below. Refer to the table above, and the specific standard, for correct settings.
1) RBW = 10 kHz below 1 GHz, 1 MHz above 1 GHz.
2) VBW = 300 kHz below 1 GHz, 3 MHz above 1 GHz.
3) Sweep speed sufficiently slow to maintain calibration.
4) detector mode = positive peak.
E) Place the test antenna in its vertical polarization position; use an attenuator with 6 - 10 dB loss (A) as a matching pad between the test antenna and its cable.
F) The spectrum is to be scanned from the lowest RF frequency generated in the equipment to the 10th harmonic of the carrier, excepting the occupied bandwidth. Specific standards may require a different maximum frequency.
G) For each spurious emission detected, raise and lower the test antenna from 1 to 4m with the transmitter facing the test antenna, and record the highest received signal from the transmitter in dBmR. Rotate the turntable through 360 degrees to find the maximum emission value at that frequency.
H) Rotate the test antenna to its horizontal polarization position. Repeat steps g) and h).
I) Replace the transmitter under test with a substitution antenna whose gain above that of a half-wave dipole is known to be G(dBd). Refer to the illustration below.
J) Place the center of the substitution antenna at the same location on the table as the transmitter under test, using vertical polarization for both substitution and test antennas. Connect the substitution antenna to the signal generator, using a cable with known signal loss LC. Use an attenuator with loss S as a matching pad between the substitution antenna and its cable.
K) Raise the test antenna from 1m to 4m to maximize the analyzer display from the substitution antenna. At the maximum display value for each spurious frequency, adjust the signal level dBmT so that the spectrum analyzer displays the maximum signal observed in steps g) - h) above.
L) Calculate the output power of the transmitter in ERP according to:
spurious power in (dBm) = dBmT - LC - S + dBd
M) Repeat steps k) - l) for both antennas horizontally polarized. Record the spurious power separately for the vertical and horizontal polarizations.

NOTE: For FCC purposes, emissions > 20 dB below the regulatory spurious limit do not have to be determined by the substitution method. The regulatory limit for many licensed transmitters is -13 dBm (50 ?W) or 84.4 dBuV/m at 3m.

MEASUREMENT UNCERTAINTY
Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes. The values given are the measurement uncertainty values with an expanded uncertainty of k=2.

+/- 3.85 dB

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Antenna, BiLog, 20-2000MHz	Chase	CBL6112B	211386	10/02/2009	10/02/2010
Antenna, Horn, <18 GHz	EMCO	3115	213061	05/07/2010	05/07/2011
Cable E01, <18GHz	Pasternack	RG214/U	E01	05/04/2010	05/04/2011
Cable E201, 18 GHz, N, 3m	Megaphase	TM18 NKNK 118	E201	02/02/2010	02/02/2011
Cable MP3, 18 GHz, N, 10m	Megaphase	G919-NKNK-394	MP3	05/04/2010	05/04/2011
Cable, 7 meters, 1-18GHz	Storm Products Co.	PR90-241-7MTR	ST-2	08/18/2009	08/18/2010
Excel spreadsheet for radiated emissions	Software	Excel - RE Worksh	SW004	12/09/2009	12/09/2010
Preamplifier, 10 MHz to 2000 MHz, 30 dB gain	Mini-Circuits	ZKL-2	200069	04/20/2010	04/20/2011
Preamplifier, 20 MHz to 18 GHz, 40 dB	A.H. Systems	PAM-0118	200108	04/21/2010	04/21/2011
Spectrum Analyzer, 20Hz-40GHz	Rohde & Schwarz	FSEK30	200062	10/19/2009	10/19/2010
Tile - software profile for radiated and conducted emissions testing.	Software	Tile - Emissions	SW006	12/09/2009	12/09/2010

Results: The sample tested was found to Comply.

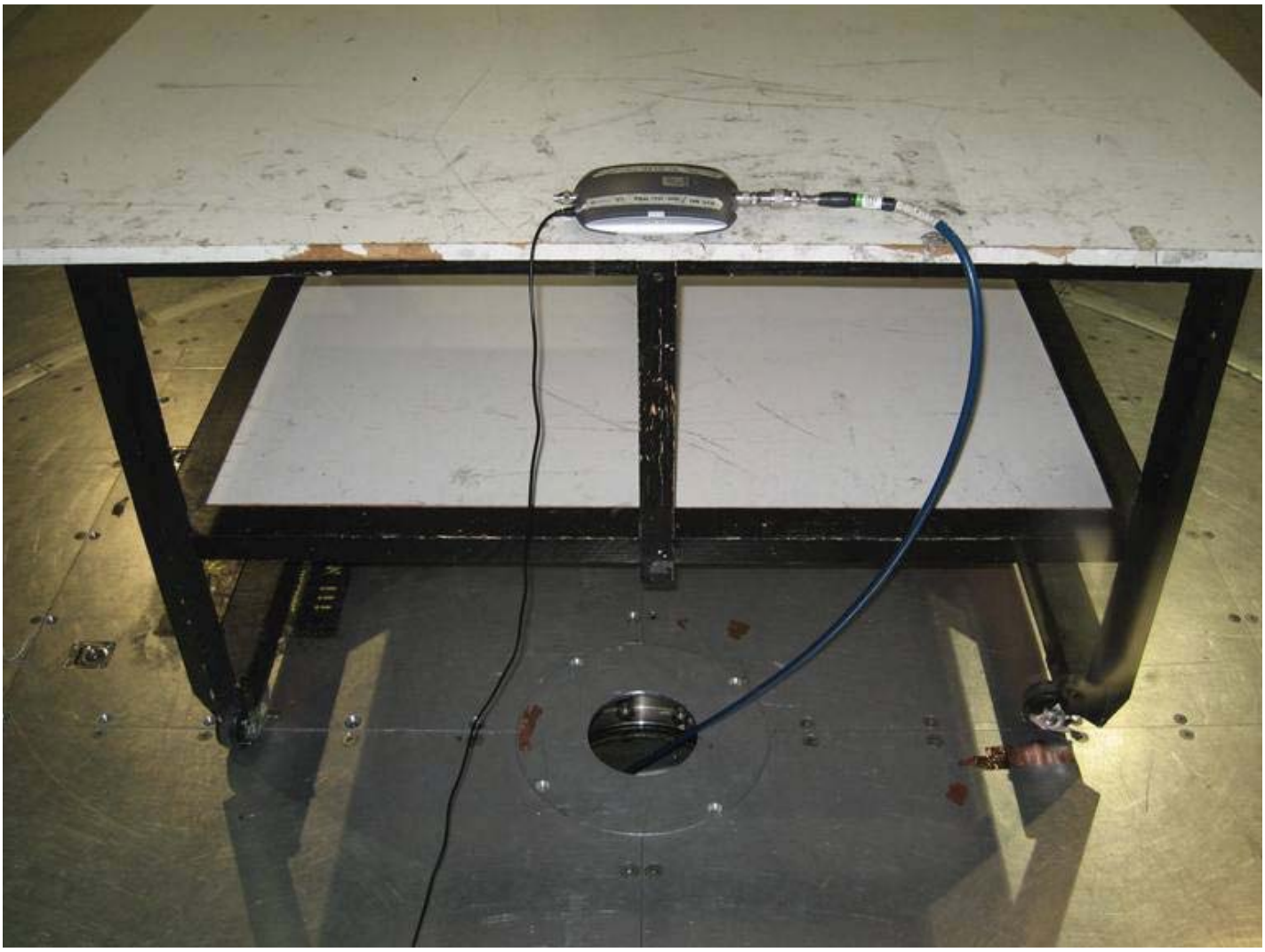
9.0 Field strength of spurious radiation (FCC Part 2.1053)

Photo:

Test Setup - Front view

9.0 Field strength of spurious radiation (FCC Part 2.1053)

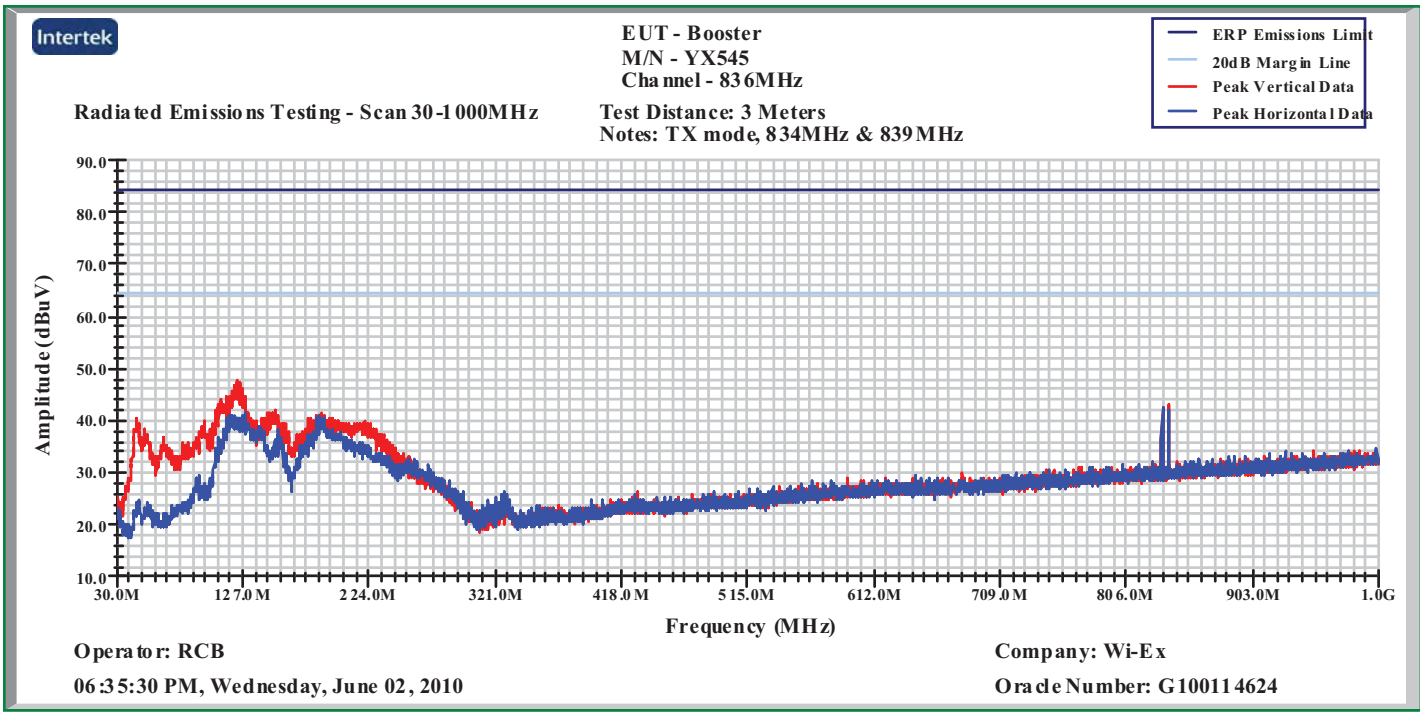
Photo:



Test Setup - Rear view

9.0 Field strength of spurious radiation (FCC Part 2.1053)

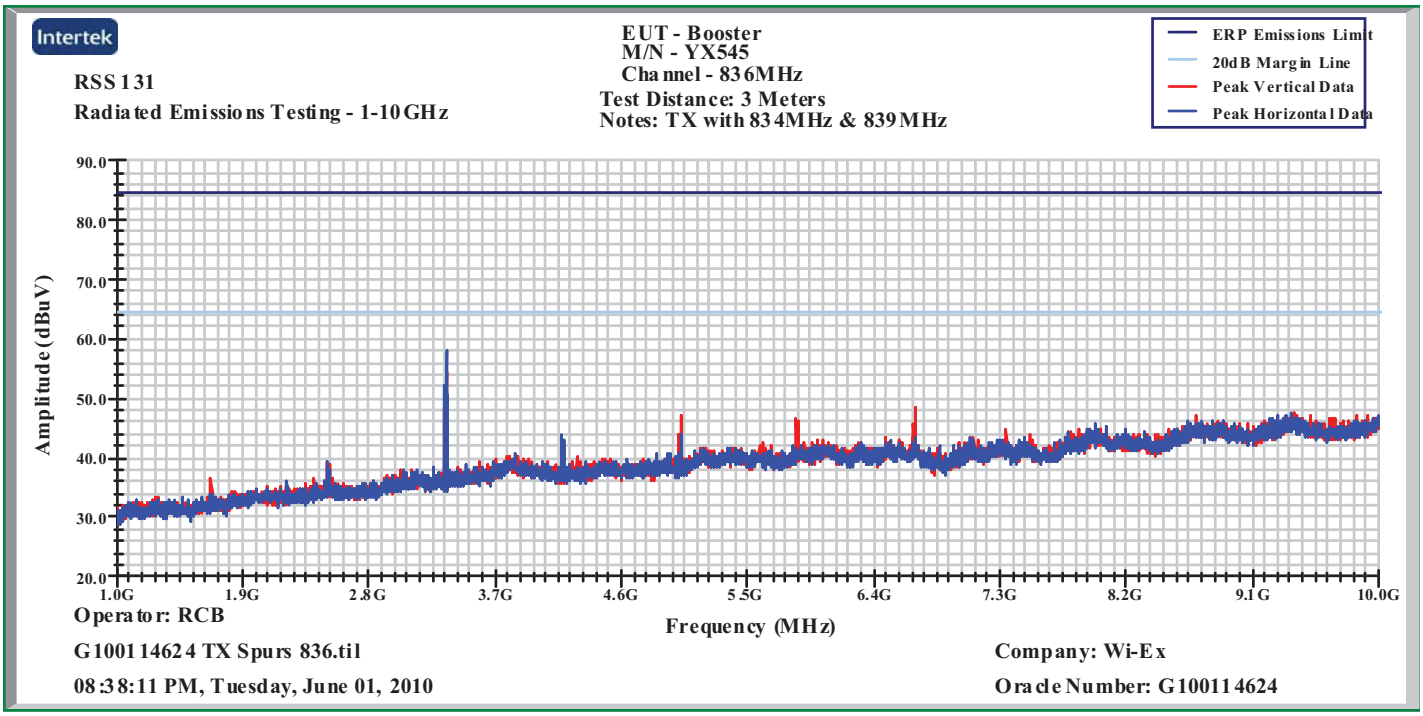
Plot:



836MHz from 30-1000MHz

9.0 Field strength of spurious radiation (FCC Part 2.1053)

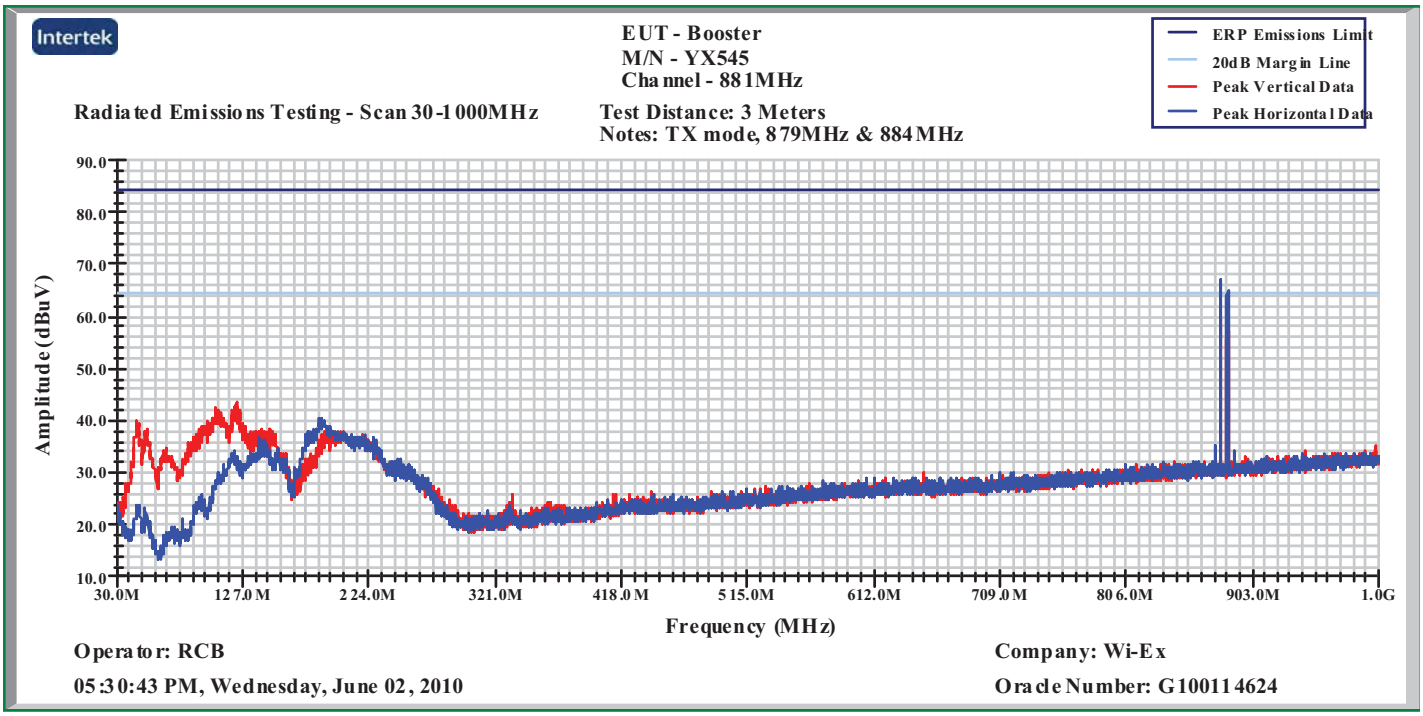
Plot:



836MHz from 1-10GHz

9.0 Field strength of spurious radiation (FCC Part 2.1053)

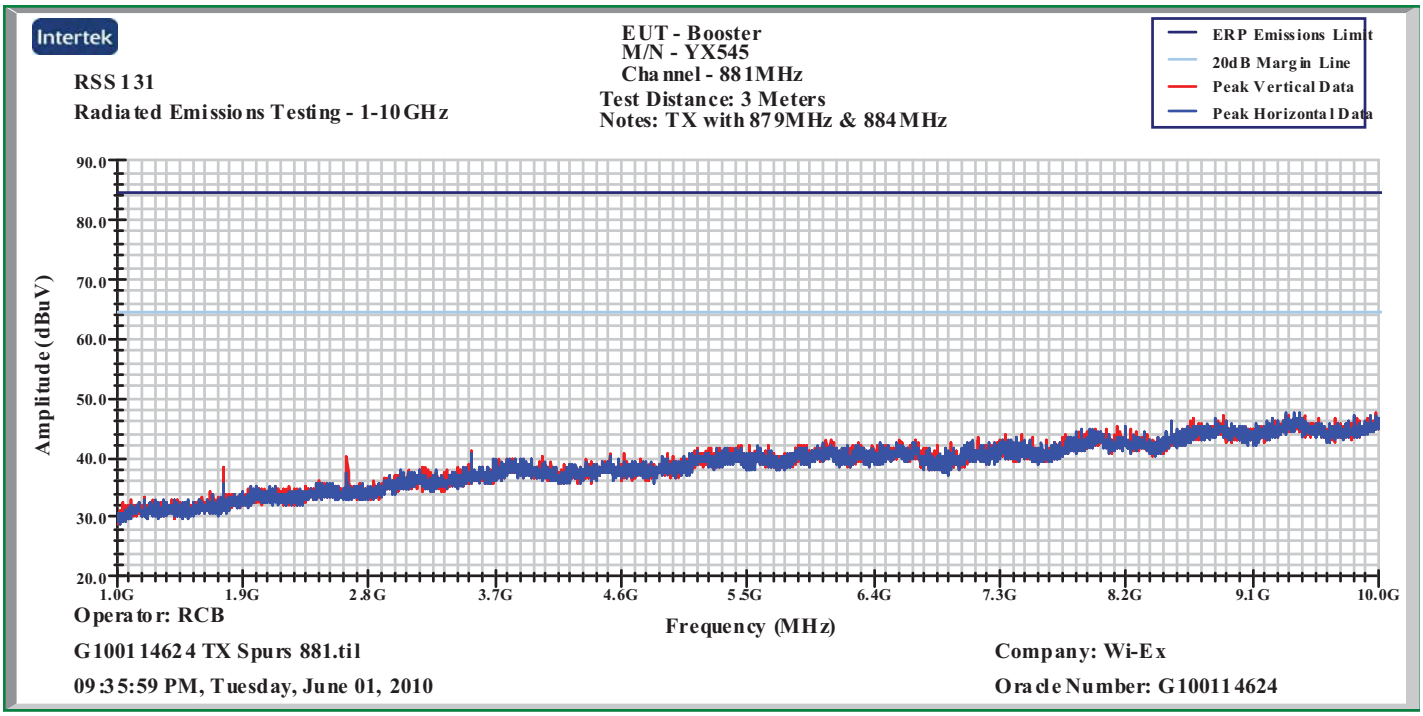
Plot:



881MHz from 30-1000MHz

9.0 Field strength of spurious radiation (FCC Part 2.1053)

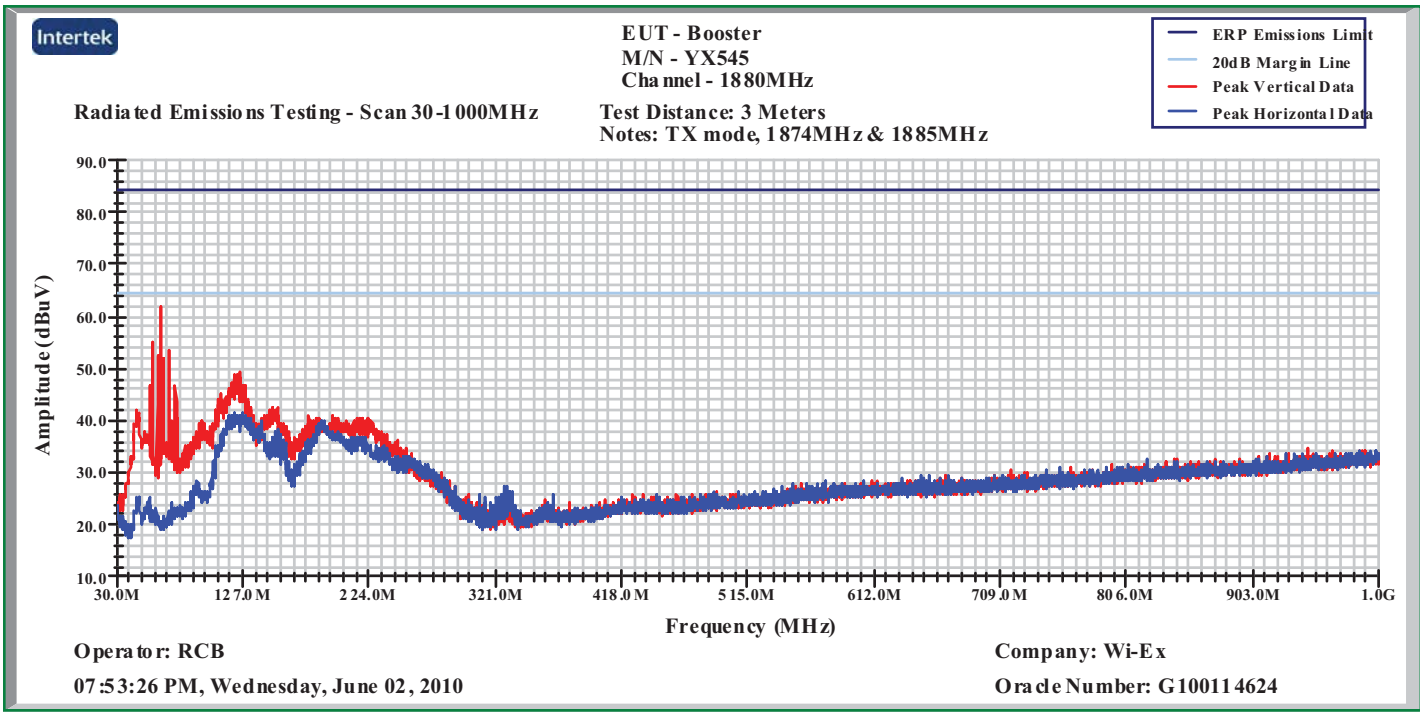
Plot:



881MHz from 1-10GHz

9.0 Field strength of spurious radiation (FCC Part 2.1053)

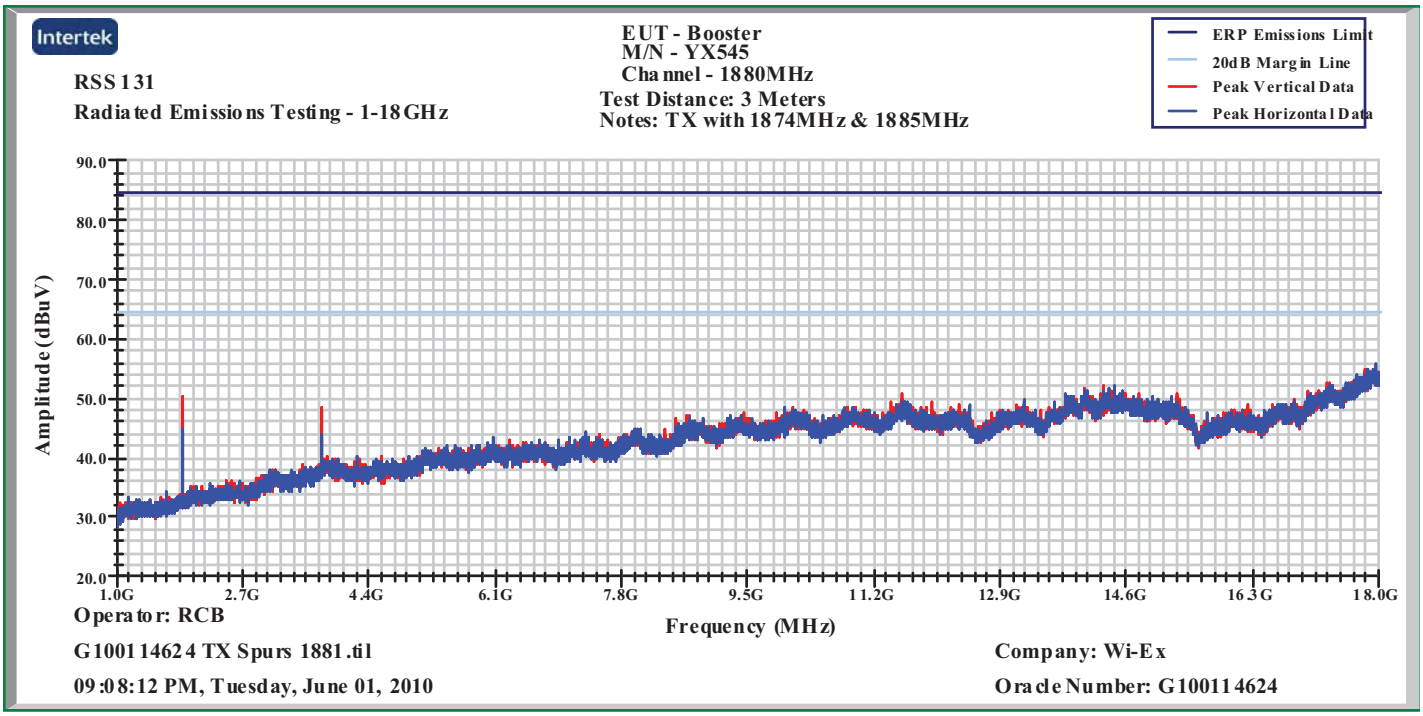
Plot:



1880MHz from 30-1000MHz

9.0 Field strength of spurious radiation (FCC Part 2.1053)

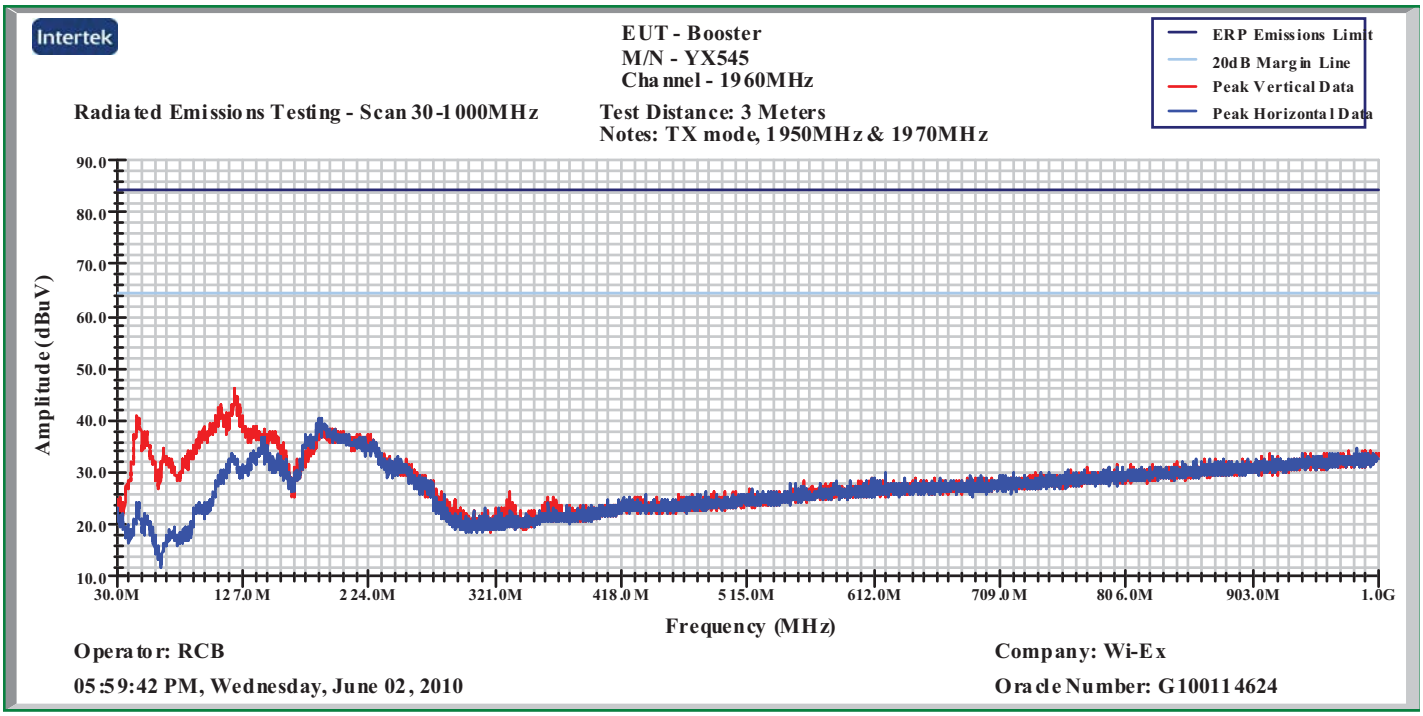
Plot:



1880MHz from 1-18GHz

9.0 Field strength of spurious radiation (FCC Part 2.1053)

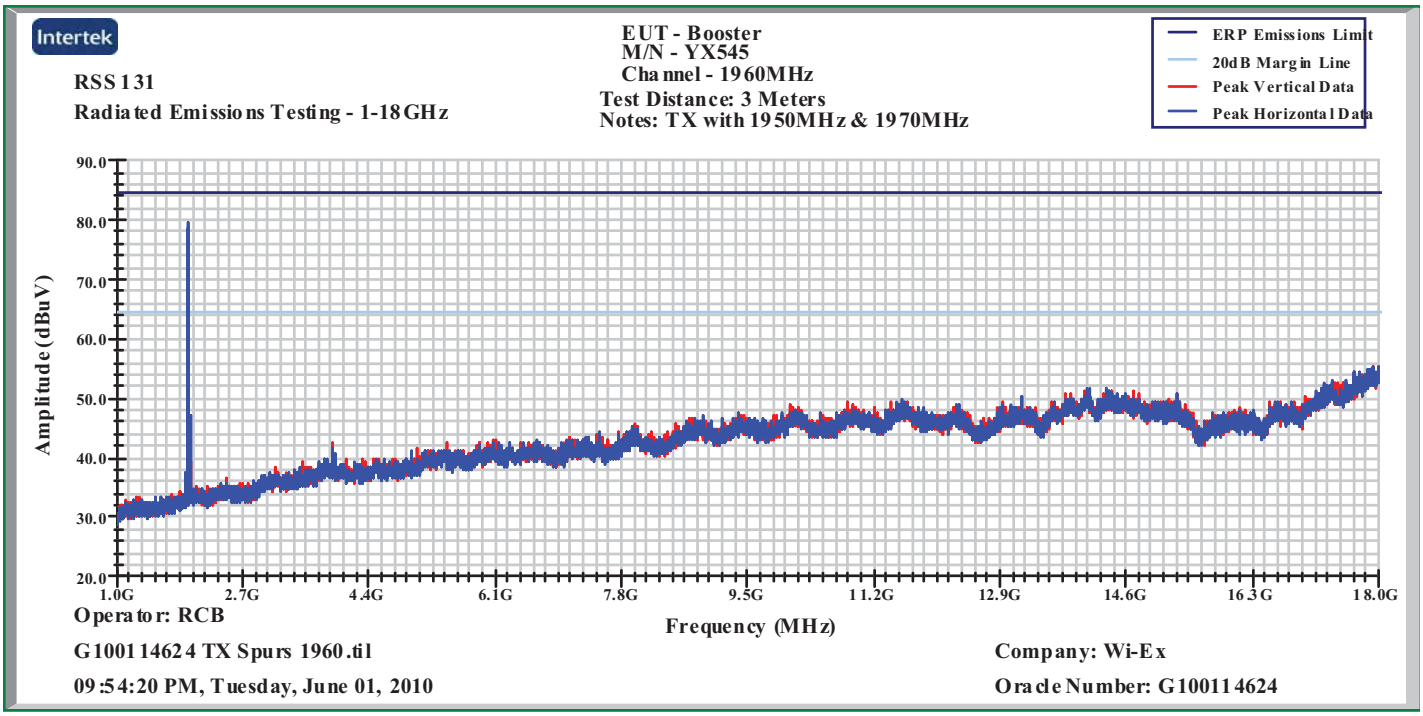
Plot:



1960MHz from 30-1000MHz

9.0 Field strength of spurious radiation (FCC Part 2.1053)

Plot:



1960MHz from 1-20GHz

10.0 Revision History (Revision History)

Method:

Document the history of the report.

Data:

Revision Level	Date	Report Number	Notes
Original issue	June 29, 2010	100114624-005	--
1	August 11, 2010	100114624-005	Page 6 - Text change from "low, middle, high channel" to "middle channel"