



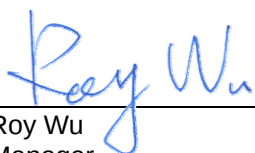
FCC Test Report

According to

47 CFR Part 22H, 24E

Equipment : Point of Sales Payment Terminal
Trade Name : VeriFone
Model No. : VX610
FCC ID : B32VX610C-M200
Uplink Frequency Range : CDMA2000 Cellular : 824.7~848.31 MHz
CDMA2000 PCS : 1851.25~1908.75 MHz
Max. ERP/EIRP Power : CDMA2000 Cellular : 0.16 W
CDMA2000 PCS : 0.30 W
Emission Designator : 1M25F9W
Applicant : VeriFone Inc.
3755 ATHERTON RD, ROCKLIN, CA 95765, USA

- The test result refers exclusively to the test presented test model / sample.
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- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**
- The data shown in this test report were carried out on Mar. 26, 2008 at **Sporton International Inc. LAB.**
- Report No.: FG830510, Report Version: Rev. 01.


Roy Wu
Manager

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Report Version: Rev. 01



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History of This Test Report

Report Issue Date: Mar. 28, 2008

Report No.	Description



1. General Information

1.1. Applicant

VeriFone Inc.
3755 ATHERTON RD, ROCKLIN, CA 95765, USA

1.2 Manufacturer

Sanmina-SCI Systems (Kunshan) Co., Ltd.
312, Qing Yang South Road, Economics and Technical Development Zone, Kunshan, Jiangsu Province,
China 215300

1.3 Basic Description of Equipment under Test

Equipment		Point of Sales Payment Terminal
Trade Name		VeriFone
Model Name		VX610
FCC ID		B32VX610C-M200
AC Adapter 1	Brand Name	VeriFone
	Model Name	Au-7992n
	Power Rating	I/P:100-240Vac, 50-60Hz, 2A; O/P: 9Vdc, 4A
	AC Power Cord Type	1.8 meter shielded cable without ferrite core
AC Adapter 2	Brand Name	VeriFone
	Model Name	NU40-3090400-I1
	Power Rating	I/P:100-240Vac, 50-60Hz, 1.2A; O/P: 9Vdc, 4A
	Power Cord Type	1.8 meter non-shielded cable without ferrite core
Battery	Brand Name	VeriFone
	Model Name	23326-04-R (Rev:E)
	Power Rating	7.2Vdc, 1800mAh
	Type	Li-ion

Remark: Above EUT's information was declared by manufacturer. Please refer to the specifications of manufacturer or User's Manual for more detailed features description.



1.4 Feature of Equipment under Test

Product Feature & Specification	
DUT Type	Point of Sales Payment Terminal
Model Name	VX610
FCC ID	B32VX610C-M200
Tx Frequency	CDMA2000 Cellular : 824 ~ 849 MHz CDMA2000 PCS : 1850 ~1910 MHz
Rx Frequency	CDMA2000 Cellular : 869 ~ 894 MHz CDMA2000 PCS : 1930 ~ 1990 MHz
Maximum Output Power	CDMA2000 Cellular FCH_RC1 : 24.42 dBm FCH_RC3 : 24.39 dBm FCH+SCH_RC3 : 24.33 dBm CDMA2000 PCS FCH_RC1 : 23.52 dBm FCH_RC3 : 23.54 dBm FCH+SCH_RC3 : 23.51 dBm
Maximum ERP/EIRP	CDMA2000 Cellular : 0.16 W (22.00 dBm) CDMA2000 PCS : 0.30 W (24.71 dBm)
HW Version	Rev. EVT 1.2
SW Version	OS: QB0110A1
Antenna Type	Fixed External
Antenna Gain	1 dBi
Power Rating (DC/AC, Voltage and Current of RF element or PA)	DC 7.2V / 1800mA
Digital Modulation Emission	QPSK
Type of Emission	1M25F9W
Device Power Class	CDMA2000 Cellular : 3 CDMA2000 PCS : 2
DUT Stage	Identical Prototype

1.5 Report Date

EUT Received : Mar. 05, 2008

Report Date : Mar. 28, 2008

2 Test Configuration of Equipment under Test

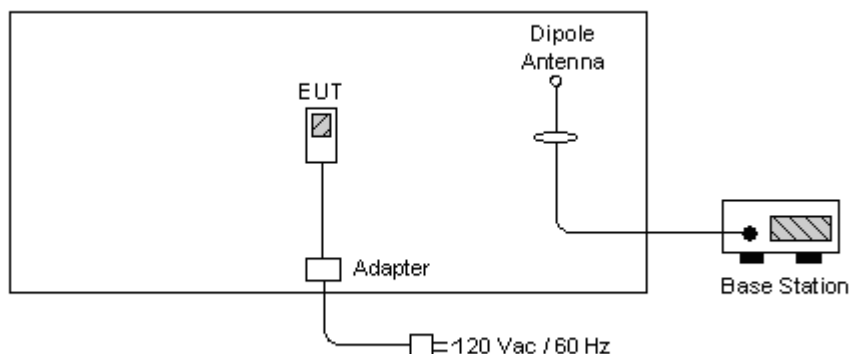
2.1 Test Manner

- The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range.
- During all testings, EUT is in link mode with base station emulator at maximum power level.
- Frequency range investigated: radiated emission 1000 MHz to 9000 MHz for CDMA2000 Cellular; 1000MHz to 19000 MHz for CDMA2000 PCS.

2.2 Test Mode

Application	CDMA2000 Cellular	CDMA2000 PCS
Radiated Emission	☒ Mode 1: 1xRTT Link Mode	☒ Mode 2: 1xRTT Link Mode
Conducted Measurement	☒ Mode 1: 1xRTT Link Mode	☒ Mode 2: 1xRTT Link Mode

2.3 Connection Diagram of Test System



2.4 Ancillary Equipmnt List

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Code
1.	Base Station	R&S	CMU200	N/A	N/A	Unshielded, 1.8m



3. General Information of Test Site

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-328-4978

Test Site No : 03CH07-HY, TH02-HY

The chamber meets the characteristics of ANSI C63.4-2003. This site is on file with the FCC.

3.1 Test Voltage

AC 120V / 60Hz

3.2 Test Compliance

47 CFR Part 22H, 24E, Part 2

3.3 Frequency Range

- a. Radiation: from 1000MHz to 9000MHz for CDMA2000 Cellular.
- b. Radiation: from 1000MHz to 19000 MHz for CDMA2000 PCS.

3.4 Test Distance

The test distance of radiated emission from antenna to EUT is 3 m.

4. Test Data and Test Result

4.1 List of Measurements and Examinations

FCC Rule	Description Of Test	Result	Section
§2.1046	RF Output Power	Passed	4.2
§ 22.913 §24.232	ERP / EIRP	Passed	4.3
§2.1049, § 22.917, § 24.238(b)	Occupied Bandwidth & Band Edge Measurement	Passed	4.4
§2.1051	Conducted Emission	Passed	4.5
§2.1053	Field Strength of Spurious Radiation	Passed	4.6
§2.1055, § 22.355, §24.235	Frequency Stability vs. Temperature	Passed	4.7
§2.1055, §22.355, §24.235	Frequency Stability vs. Voltage	Passed	4.8

4.2 RF Output Power

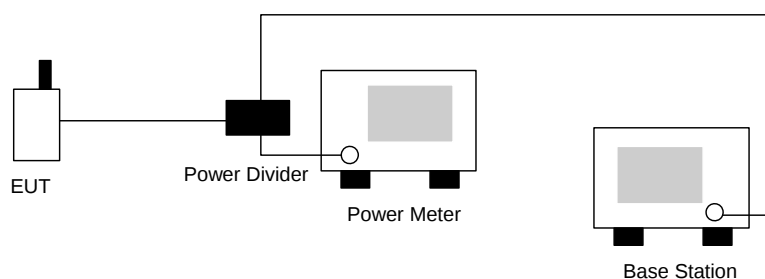
4.2.1 Measurement Instruments

As described in chapter 5 of this test report.

4.2.2 Test Procedure

- a. The transmitter output was connected to power meter and base station through power divider.
- b. Set EUT at maximum power through base station.
- c. Select lowest, middle, and highest channels for each band.

4.2.3 Test Setup Layout



4.2.4 Test Result

Bands	Test Mode	Test Status	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
CDMA2000 Cellular	1xRTT	FCH_RC1	1013	824.70 (Low)	24.07	0.26
			384	836.52 (Mid)	24.42	0.28
			777	848.31 (High)	24.21	0.26
		FCH_RC3	1013	824.70 (Low)	23.99	0.25
			384	836.52 (Mid)	24.39	0.27
			777	848.31 (High)	24.19	0.26
		FCH+SCH_RC3	1013	824.70 (Low)	23.95	0.25
			384	836.52 (Mid)	24.33	0.27
			777	848.31 (High)	23.93	0.25
CDMA2000 PCS	1xRTT	FCH_RC1	25	1851.25 (Low)	23.26	0.21
			600	1880.00 (Mid)	23.46	0.22
			1177	1908.75 (High)	23.52	0.22
		FCH_RC3	25	1851.25 (Low)	23.47	0.22
			600	1880.00 (Mid)	23.44	0.22
			1177	1908.75 (High)	23.54	0.23
		FCH+SCH_RC1	25	1851.25 (Low)	23.26	0.21
			600	1880.00 (Mid)	23.44	0.22
			1177	1908.75 (High)	23.51	0.22

Note:

1. For cellular band, the worst case adopted as maximum output power 24.42dBm, is at CDMA2000 1xRTT, FCH_RC1.
2. For PCS band, the worst case adopted as maximum output power 23.54dBm, is at CDMA2000 1xRTT, FCH_RC3.

4.3 ERP / EIRP Measurement

Equivalent isotropic radiated power measurements by substitution method according to ANSI/TIA/EIA-603-C.

4.3.1 Measurement Instruments

As described in chapter 5 of this test report.

4.3.2 Test Procedure

- a. The EUT was placed on a trolley with 1.0 meter height in an fully anechoic chamber.
- b. The EUT was set 1.2 meters from the receiving antenna which was mounted on the antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiated power.
- d. The height of the receiving antenna is also kept at 1.0M height.
- e. Taking the record of maximum ERP/EIRP.
- f. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
- g. The conducted power at the terminal of the dipole antenna is measured.
- h. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
- i. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$

P_s (dBm) : Input power to substitution antenna.

G_s (dBi or dBd) : Substitution antenna Gain.

$E_t = R_t + AF$

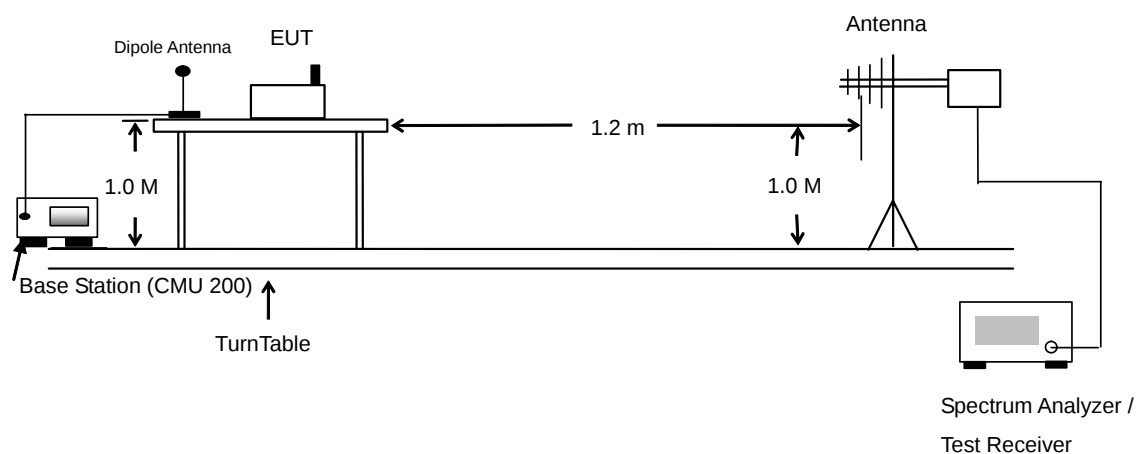
$E_s = R_s + AF$

AF (dB/m) : Receive antenna factor

R_t : The highest received signal in Spectrum Analyzer for EUT.

R_s : The highest received signal in spectrum analyzer for substitution antenna.

4.3.3 Test Setup Layout of ERP/EIRP



**4.3.4 Test Result**

CDMA2000 Cellular 850 1xRTT FCH_RC1 Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.70	-25.65	-48.12	0.00	-1.08	21.39	0.14
836.52	-27.27	-48.28	0.00	-0.93	20.08	0.10
848.31	-27.16	-48.35	0.00	-0.76	20.43	0.11
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.70	-25.01	-47.97	0.00	-1.08	21.88	0.15
836.52	-25.83	-48.01	0.00	-0.93	21.25	0.13
848.31	-25.29	-48.05	0.00	-0.76	22.00	0.16

CDMA2000 PCS1900 1xRTT FCH_RC3 Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1851.25	-30.62	-51.88	0.00	1.96	23.22	0.21
1880.00	-31.03	-52.99	0.00	2.00	23.96	0.25
1908.75	-31.86	-54.28	0.00	1.98	24.40	0.28
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1851.25	-31.35	-52.13	0.00	1.96	22.74	0.19
1880.00	-31.24	-53.17	0.00	2.00	23.93	0.25
1908.75	-31.40	-54.13	0.00	1.98	24.71	0.30

4.4 Occupied Bandwidth and Band Edge Measurement

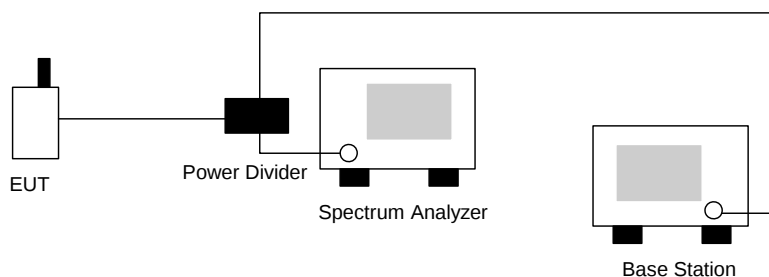
4.4.1 Measurement Instruments

As described in chapter 5 of this test report.

4.4.2 Test Procedure

- The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- The 99% occupied bandwidth and 26 dB Bandwidth of middle channel for the highest RF powers were measured.
- The bandedge of low and high channels for the highest RF powers within the transmitting frequency band were measured. Setting RBW as roughly BW/100.
- The RBW was replaced 30KHz with 10KHz, due to the spectrum analyzer IF-Filter leading to an exceeding of the limit, a worst case correction factor of $10 \log (1\% \text{ Occupy Bandwidth} / \text{Measured RBW})$ was used.

4.4.3 Test Setup Layout



4.4.4 Test Data

• Mode 1

Bands	Test Mode	Test Status	Channel	Frequency (MHz)	Measurement Value (dBm)	Correction Factor (dB)	Band Edge (dBm)
CDMA2000 Cellular	1xRTT	FCH_RC1	1013	824.70 (Low)	-17.11	1.09	-16.02
			777	848.31 (High)	-15.39	1.09	-14.30
		FCH_RC3	1013	824.70 (Low)	-17.72	1.09	-16.63
			777	848.31 (High)	-16.54	1.09	-15.45
		FCH+SCH_RC3	1013	824.70 (Low)	-16.97	1.09	-15.88
			777	848.31 (High)	-16.19	1.09	-15.10

Note:

*Occupancy Bandwidth = 1284.00KHz

*Correction Factor = $10 \cdot \log(1\% \text{ Occupancy Bandwidth} / \text{Measurement RBW})$
 $= 10 \cdot \log[(0.01 \cdot 1284.00\text{KHz}) / 10\text{KHz}]$
 $= 1.09 \text{ dB}$

*Band Edge = Measurement Value + Correction Factor

• Mode 3

Bands	Test Mode	Test Status	Channel	Frequency (MHz)	Measurement Value (dBm)	Correction Factor (dB)	Band Edge (dBm)
CDMA2000 PCS	1xRTT	FCH_RC1	25	1851.25 (Low)	-38.67	1.06	-37.61
			1177	1908.75 (High)	-35.35	1.06	-34.29
		FCH_RC3	25	1851.25 (Low)	-38.45	1.06	-37.39
			1177	1908.75 (High)	-38.28	1.06	-37.22
		FCH+SCH_RC3	25	1851.25 (Low)	-38.63	1.06	-37.57
			1177	1908.75 (High)	-38.74	1.06	-37.68

Note:

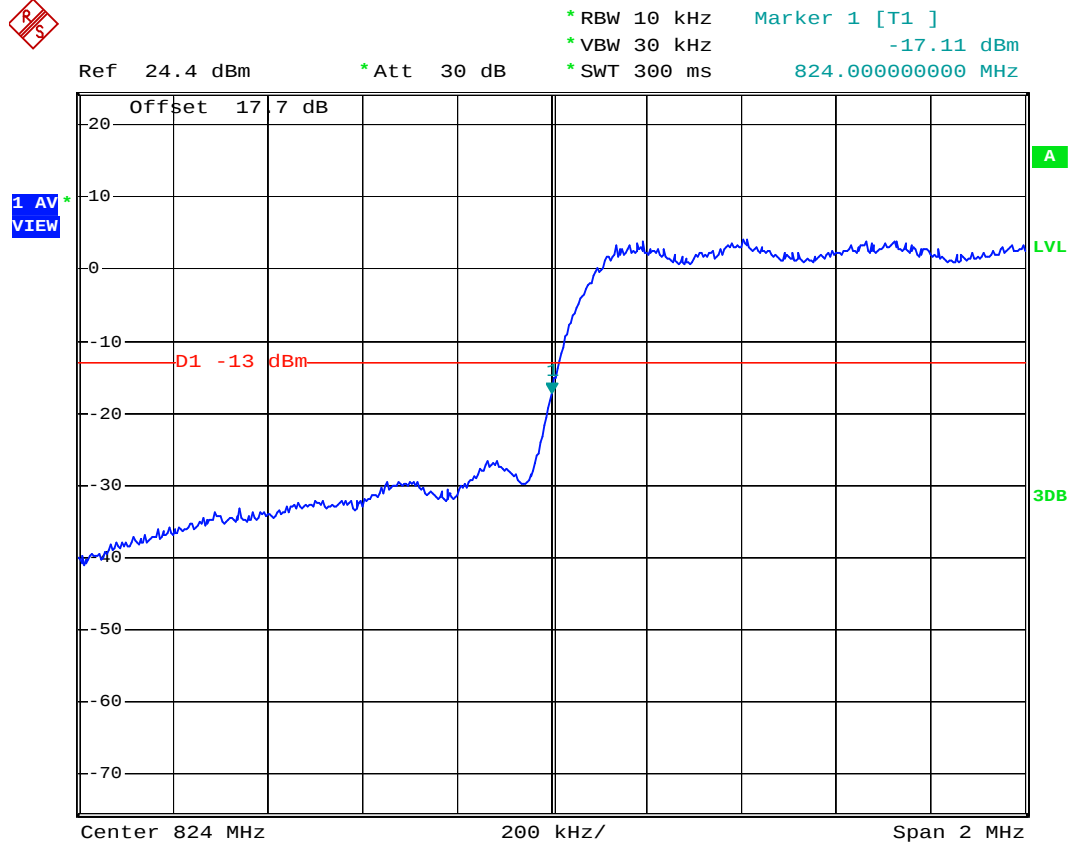
*Occupancy Bandwidth = 1276.00KHz

*Correction Factor = $10 \cdot \log(1\% \text{ Occupancy Bandwidth} / \text{Measurement RBW})$
 $= 10 \cdot \log[(0.01 \cdot 1276.00\text{KHz}) / 10\text{KHz}]$
 $= 1.06 \text{ dB}$

*Band Edge = Measurement Value + Correction Factor

**4.4.5 Test Result**

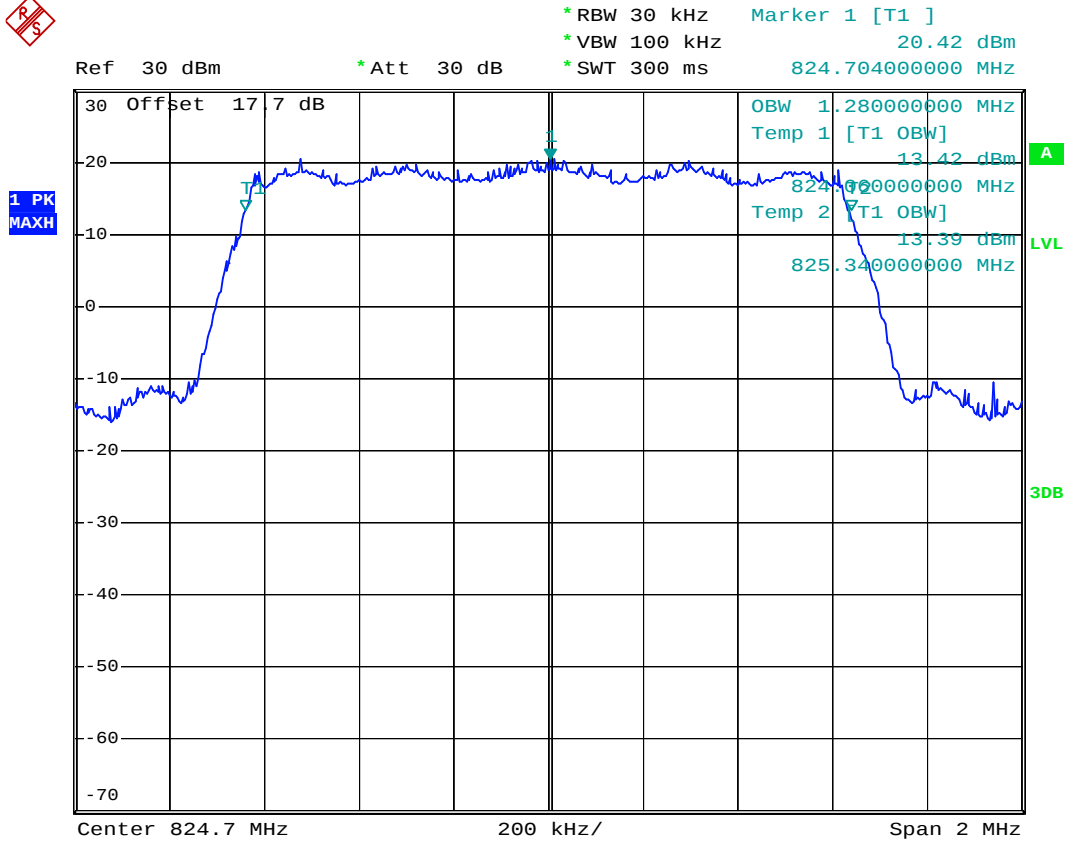
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- Test Mode : CDMA2000 Cellular Band CH1013_FCH_RC1 Lower Band Edge for 1xRTT
- Power State : High



Date: 20.MAR.2008 02:31:06



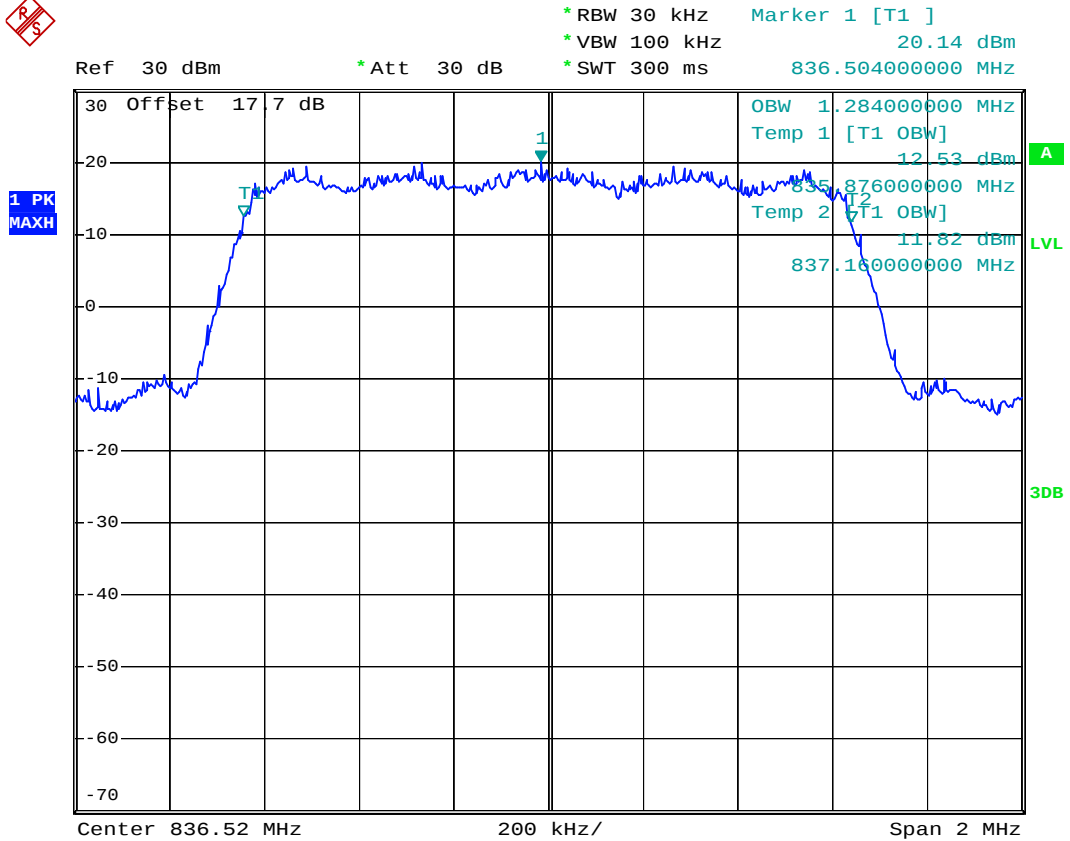
- Test Mode : CDMA2000 Cellular CH1013_FCH_RC1 99% Occupied Bandwidth for 1xRTT
- Power State : High



Date: 19.MAR.2008 23:55:24



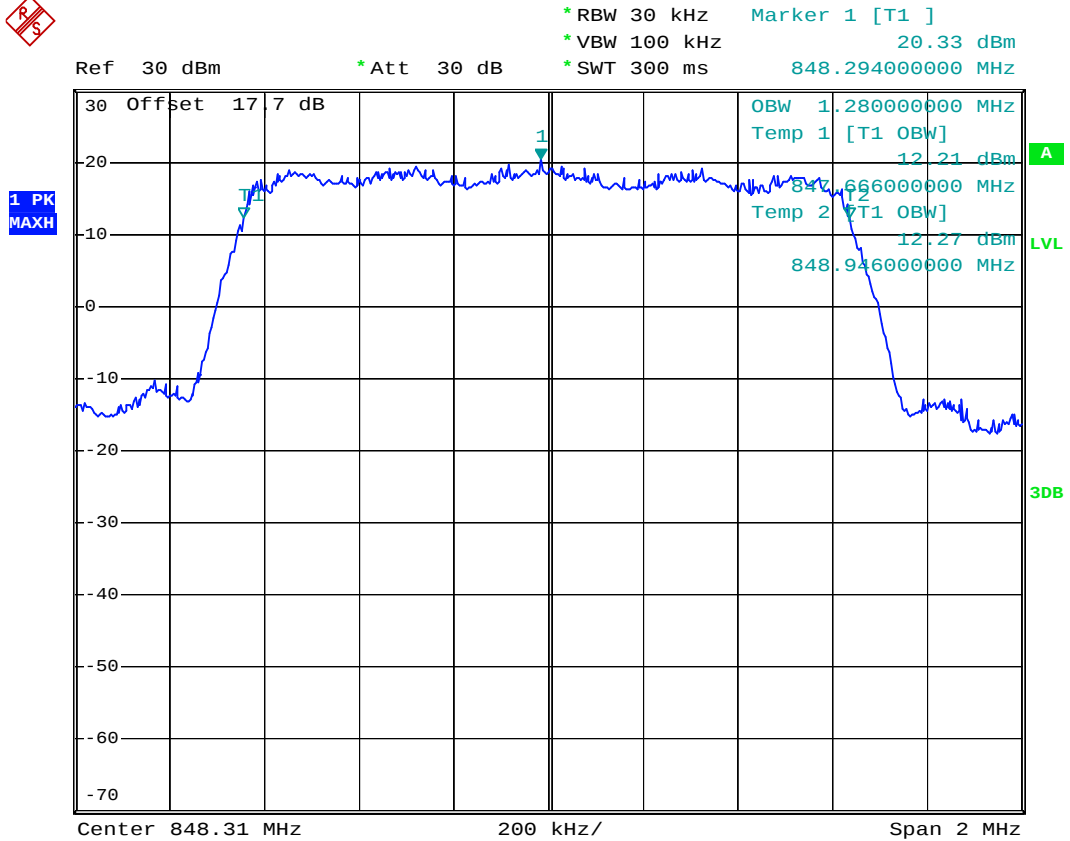
- Test Mode : CDMA2000 Cellular CH384_FCH_RC1 99% Occupied Bandwidth for 1xRTT
- Power State : High



Date: 19.MAR.2008 23:57:01



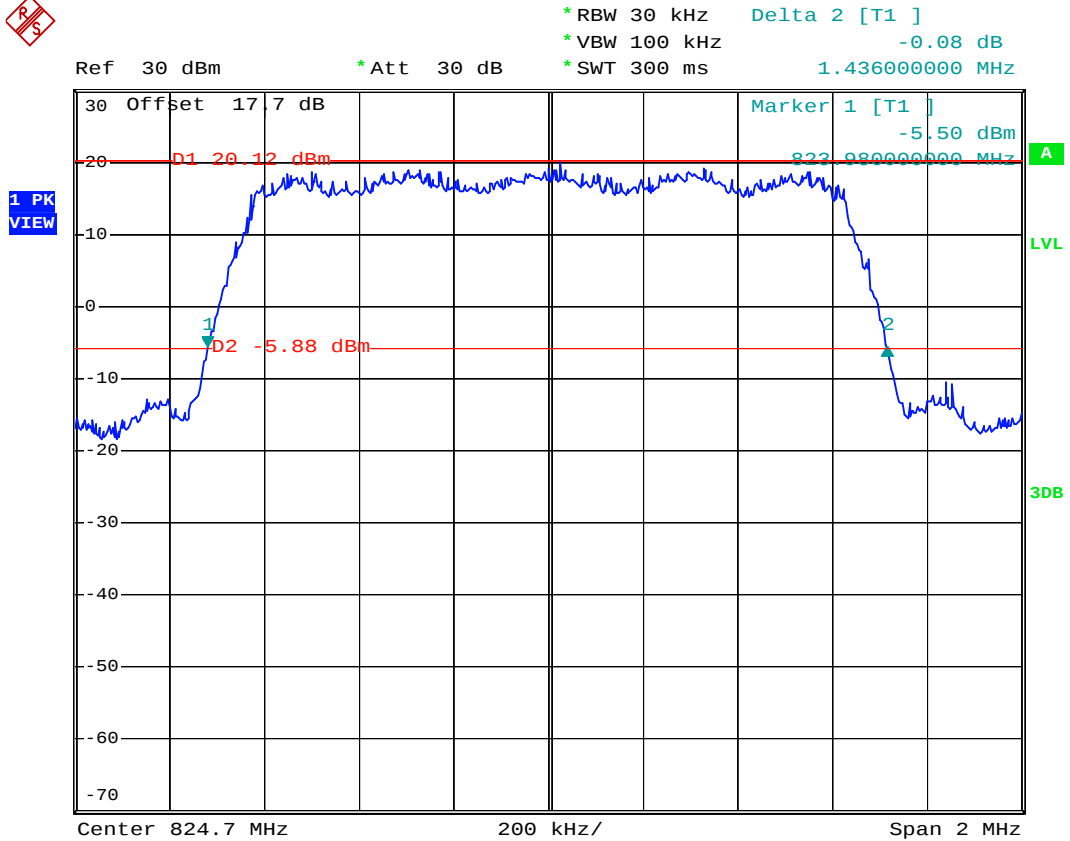
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- Power State : High



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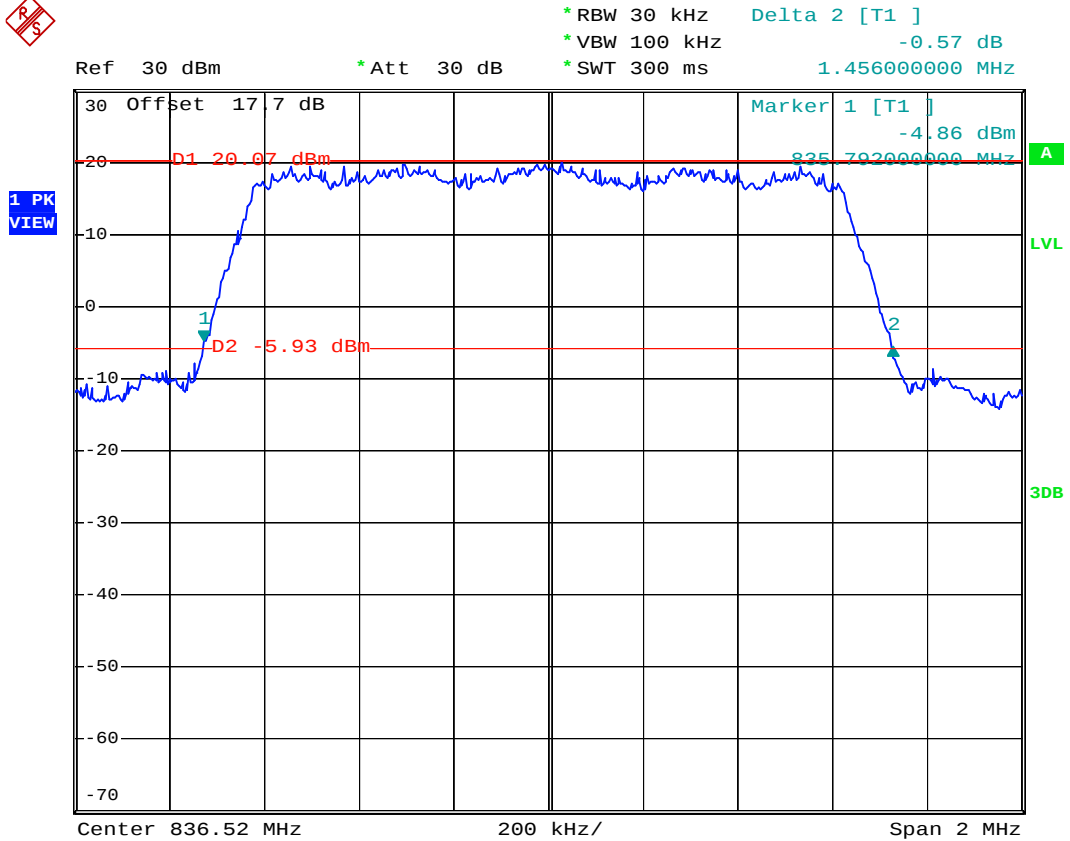
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- Power State : High



Date: 19.MAR.2008 23:41:58



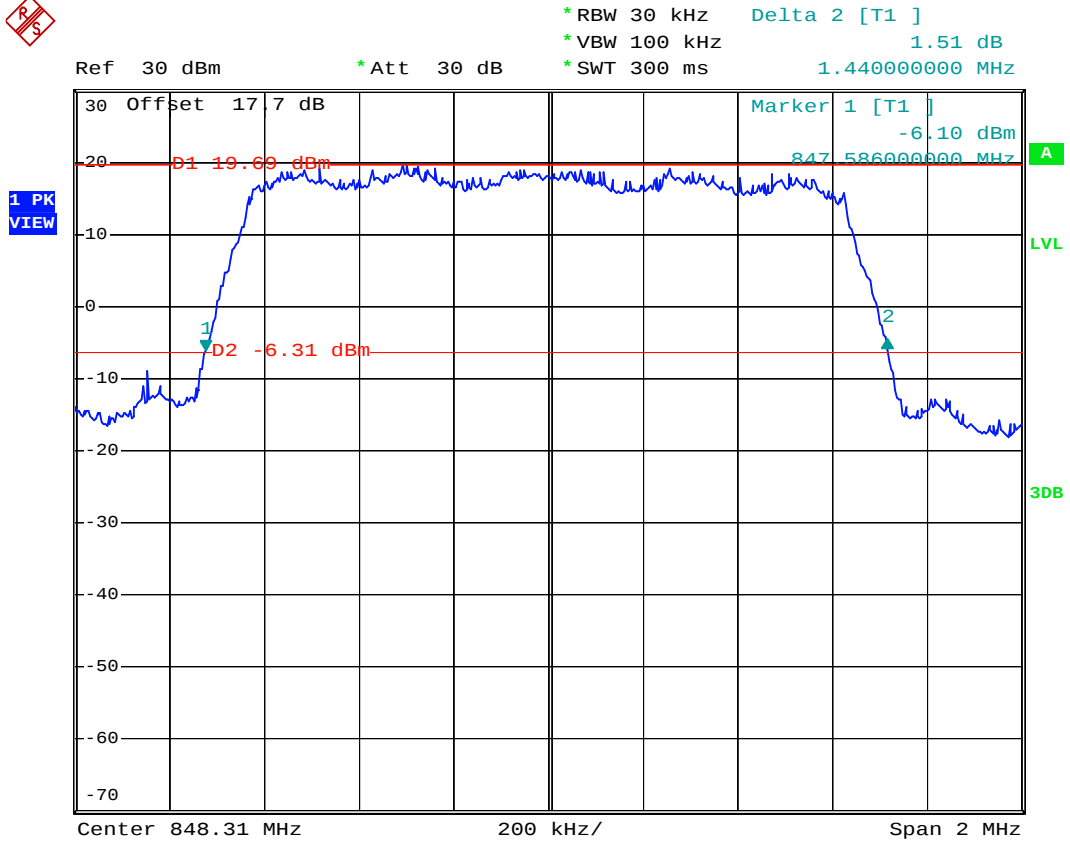
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- Power State : High



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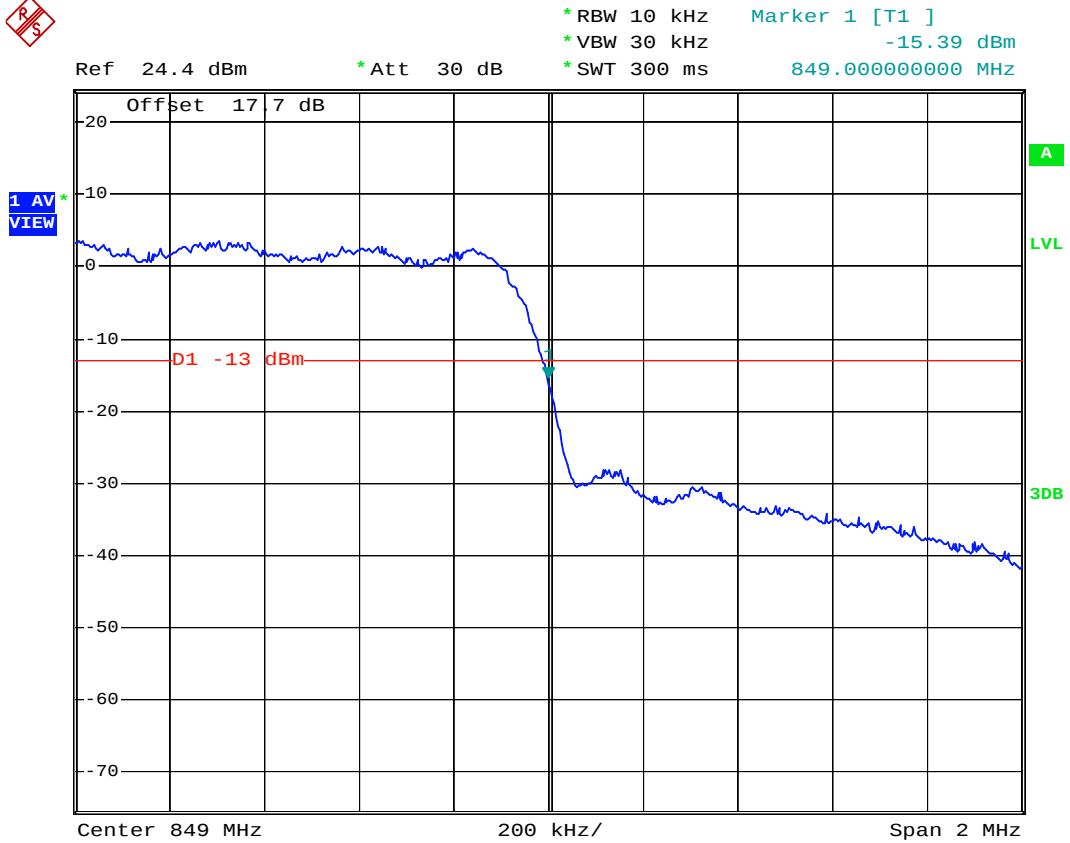
- Test Mode : CDMA2000 Cellular CH777_FCH_RC1 26 dB Bandwidth for 1xRTT
- Power State : High



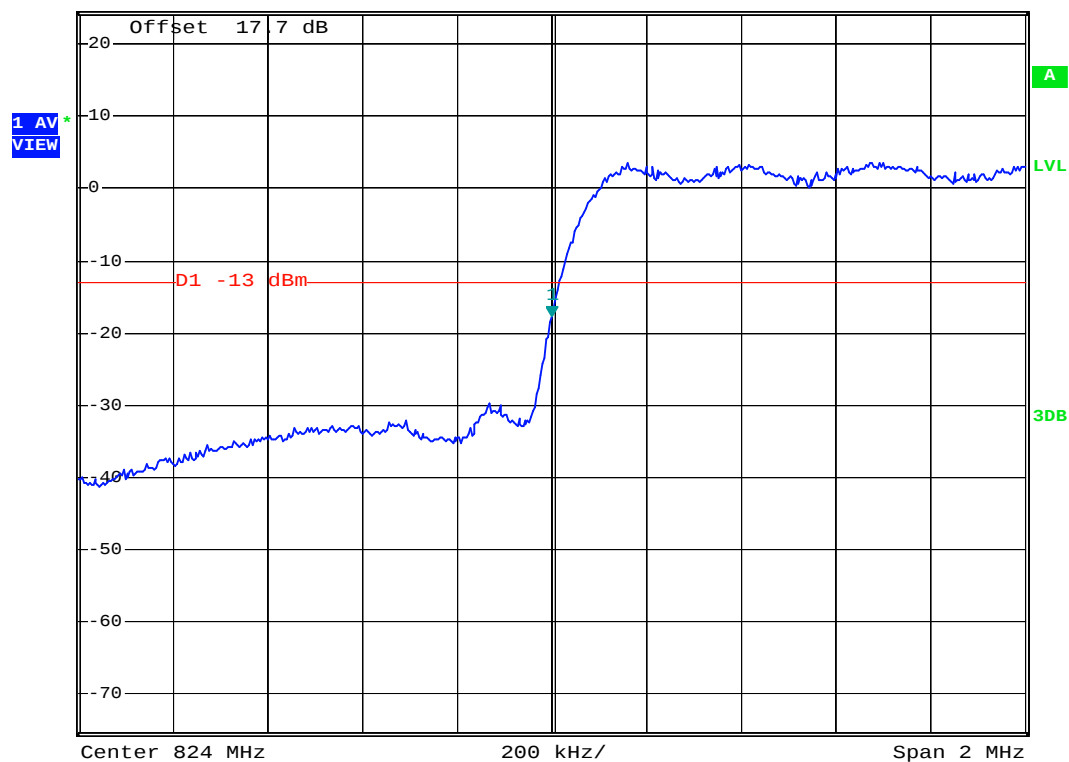
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- Test Mode : CDMA2000 Cellular CH777_FCH_RC1 Higher Band Edge for 1xRTT
- Power State : High



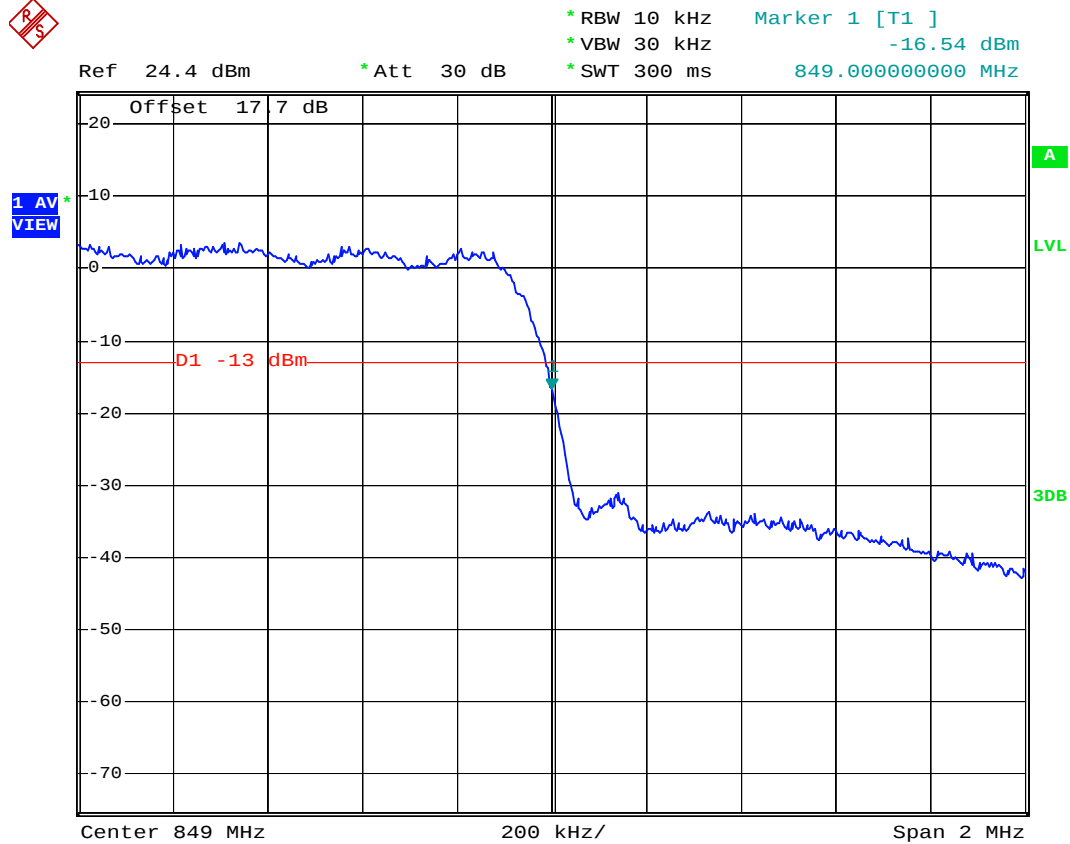
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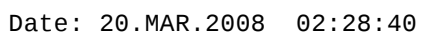
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- Test Mode : CDMA2000 Cellular CH777_FCH_RC3 Higher Band Edge for 1xRTT
- Power State : High

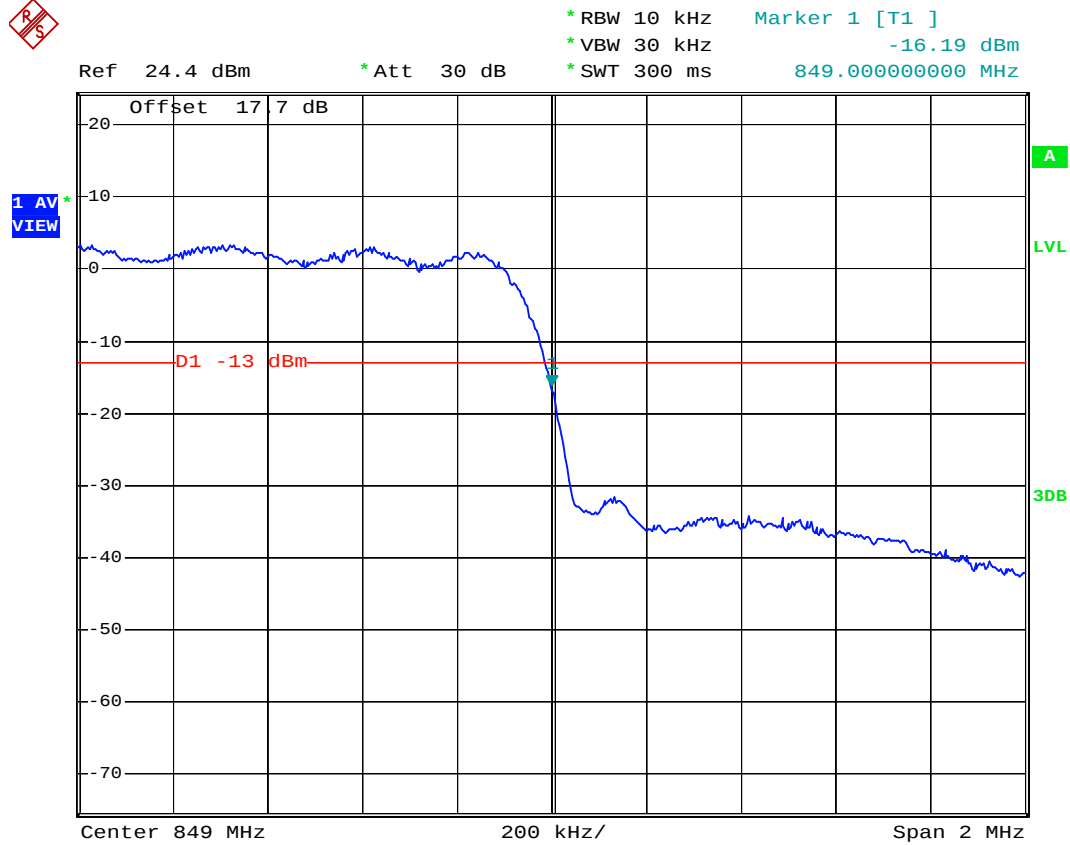


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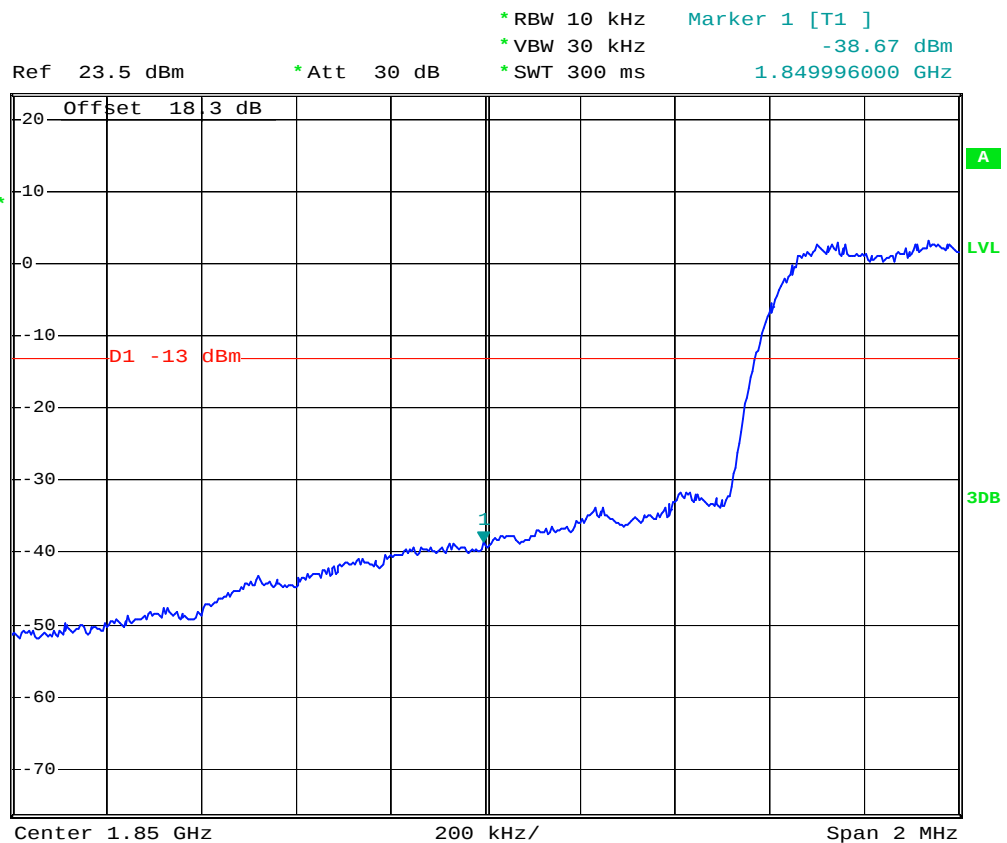
- Test Mode : CDMA2000 Cellular CH777_FCH+SCH_RC3 Higher Band Edge for 1xRTT
- Power State : High



Date: 20.MAR.2008 02:27:28



- Mode 2
- Test Mode : CDMA2000 PCS Band CH25_FCH_RC1 Lower Band Edge for 1xRTT
- Power State : High



Date: 20.MAR.2008 01:18:46



- Test Mode : CDMA2000 PCS Band CH1175_FCH_RC1 Lower Band Edge for 1xRTT
- Power State : High

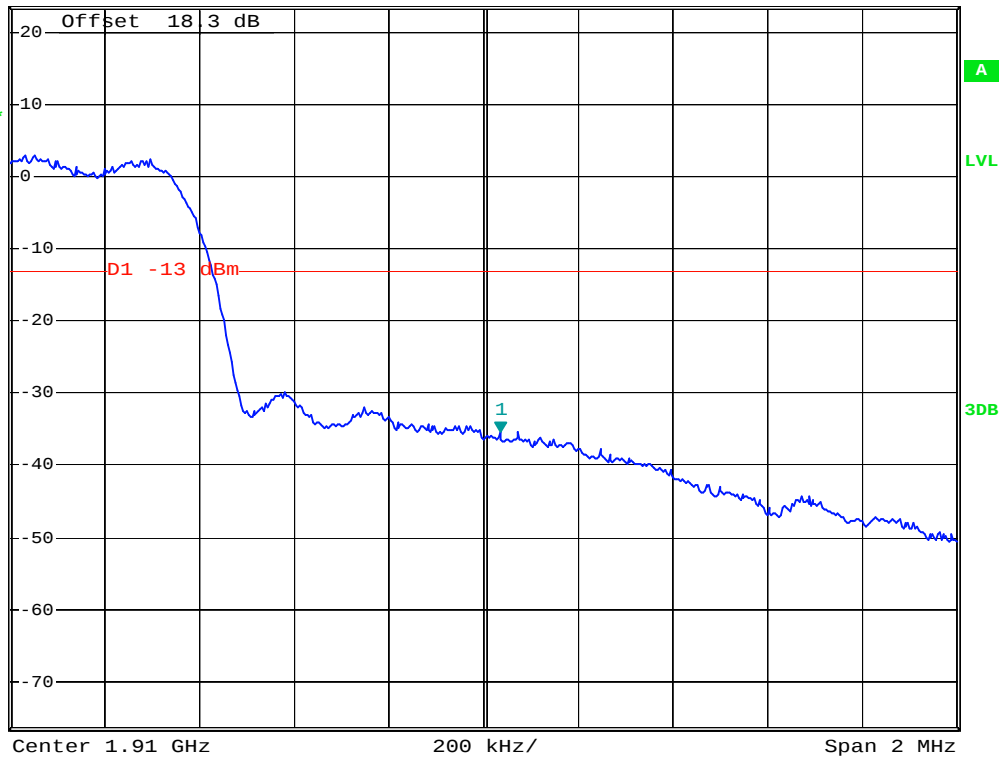


*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -35.35 dBm
*SWT 300 ms 1.910036000 GHz

Ref 23.5 dBm

*Att 30 dB

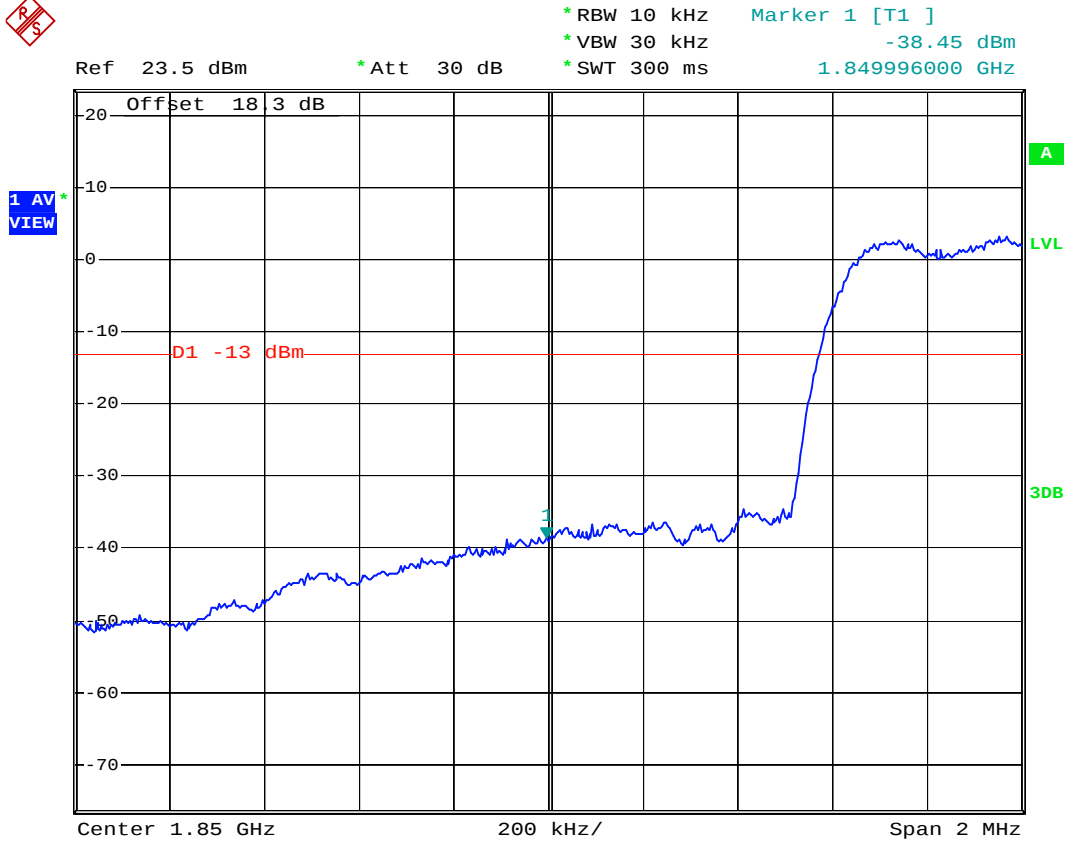
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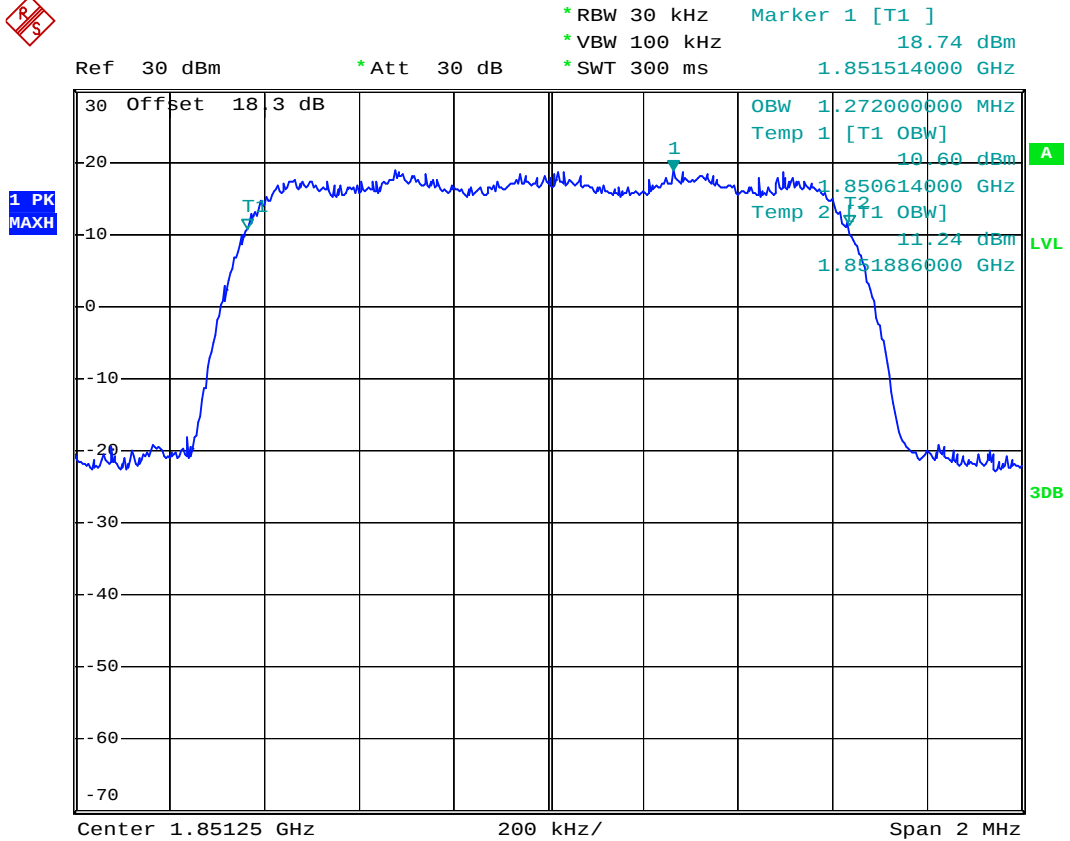
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- Power State : High



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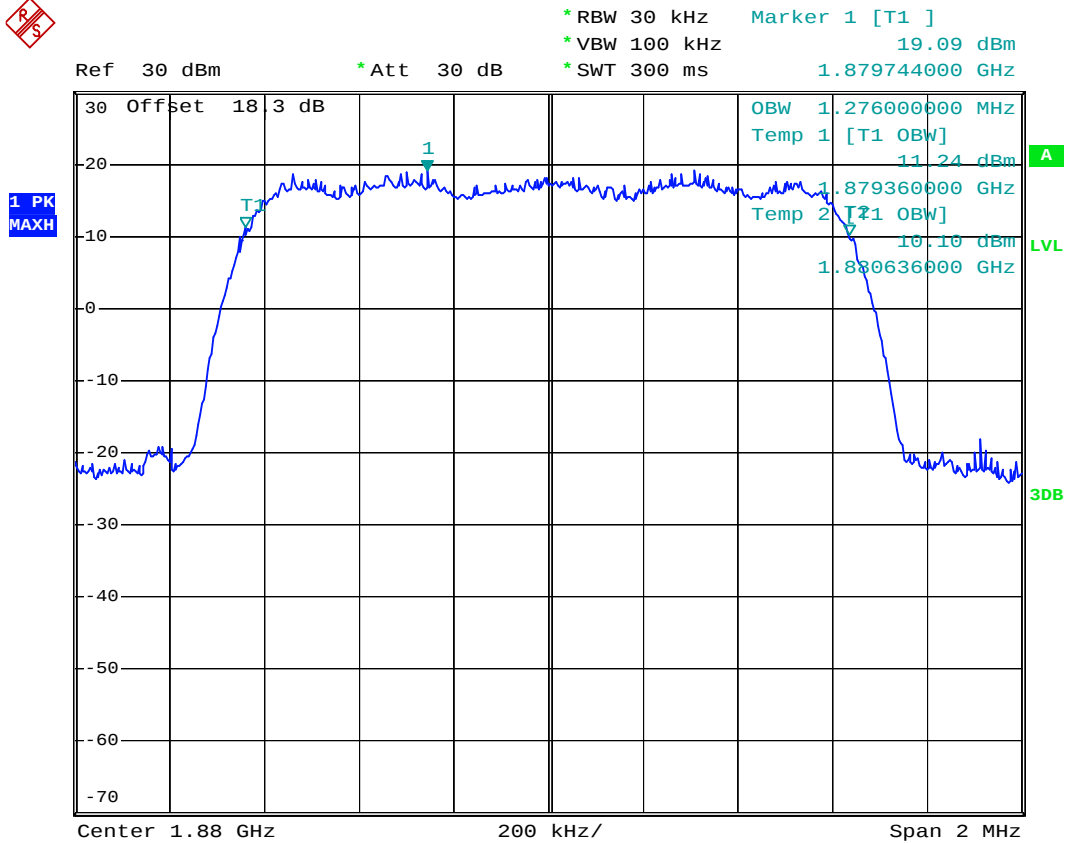
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- Power State : High



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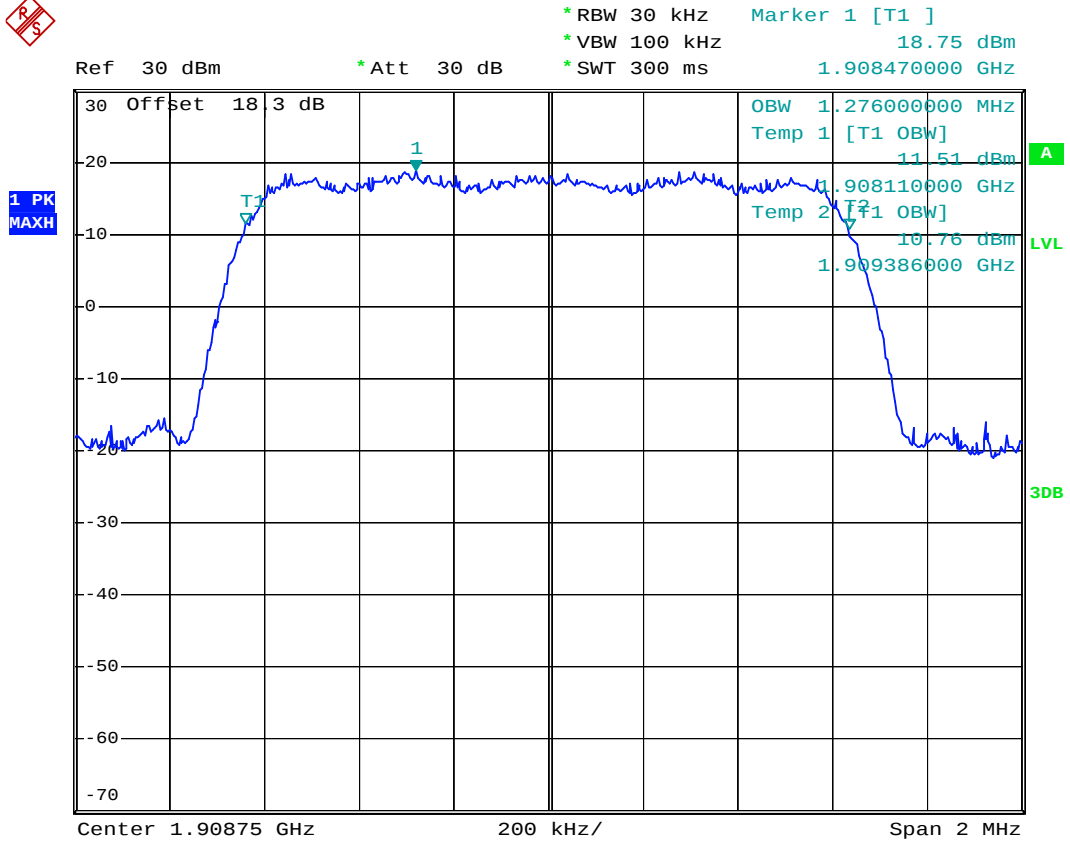
- Test Mode : CDMA2000 PCS Band CH600_FCH_RC3 99% Occupied Bandwidth for 1xRTT
- Power State : High



Date: 20.MAR.2008 01:48:39



- Test Mode : CDMA2000 PCS Band CH1175_FCH_RC3 99% Occupied Bandwidth for 1xRTT
- Power State : High



Date: 20.MAR.2008 01:51:44



- Test Mode : CDMA2000 PCS Band CH25_FCH_RC3 26 dB Bandwidth for 1xRTT
- Power State : High



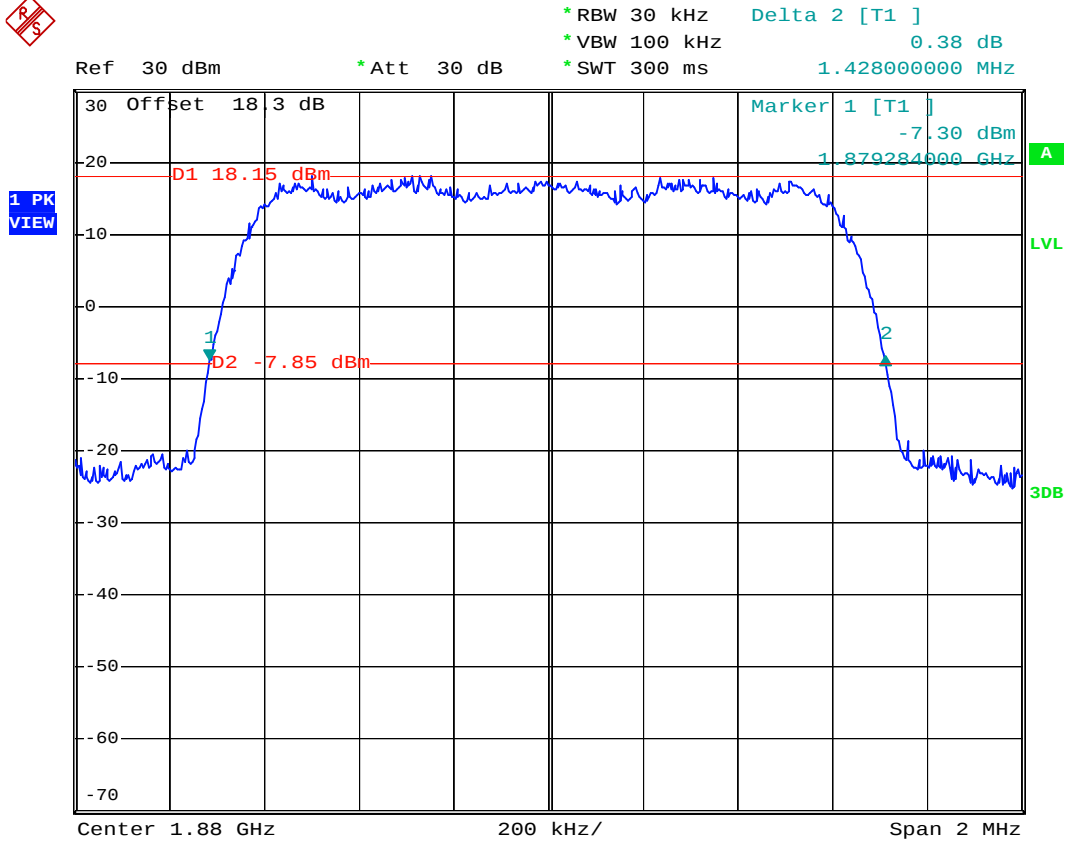
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LVL

3DB



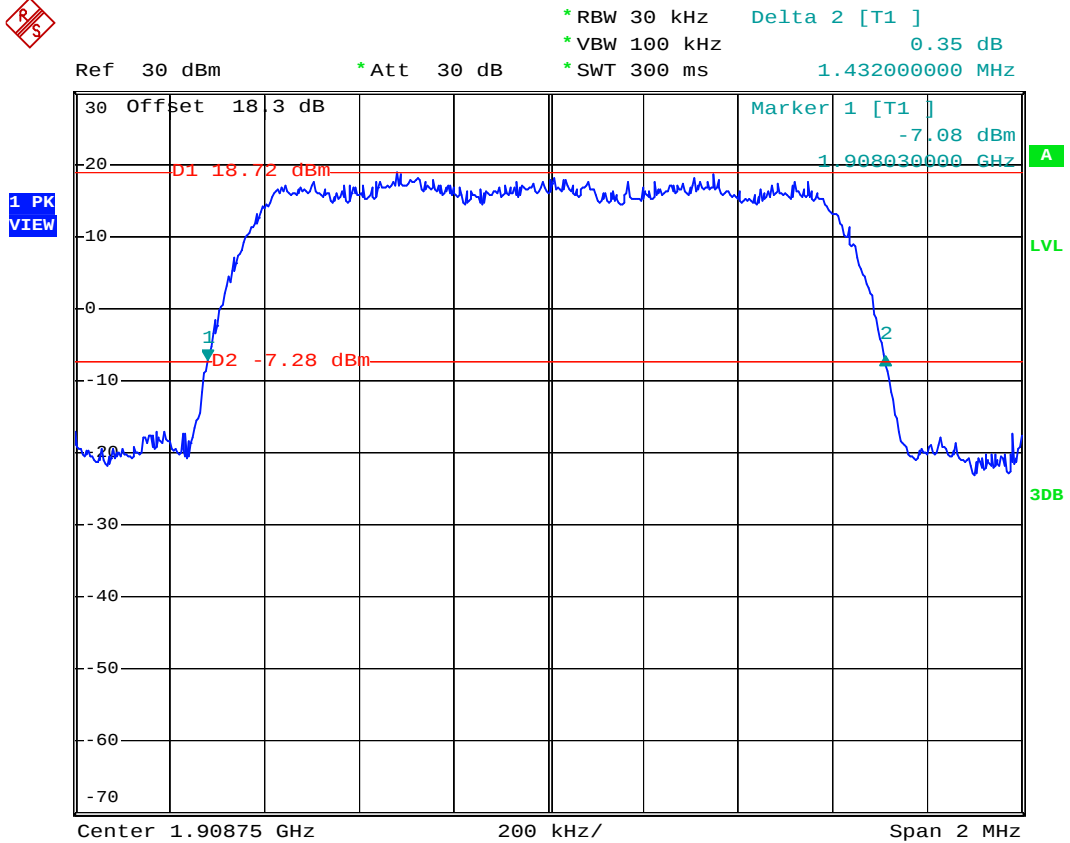
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- Power State : High



Date: 20.MAR.2008 01:42:00



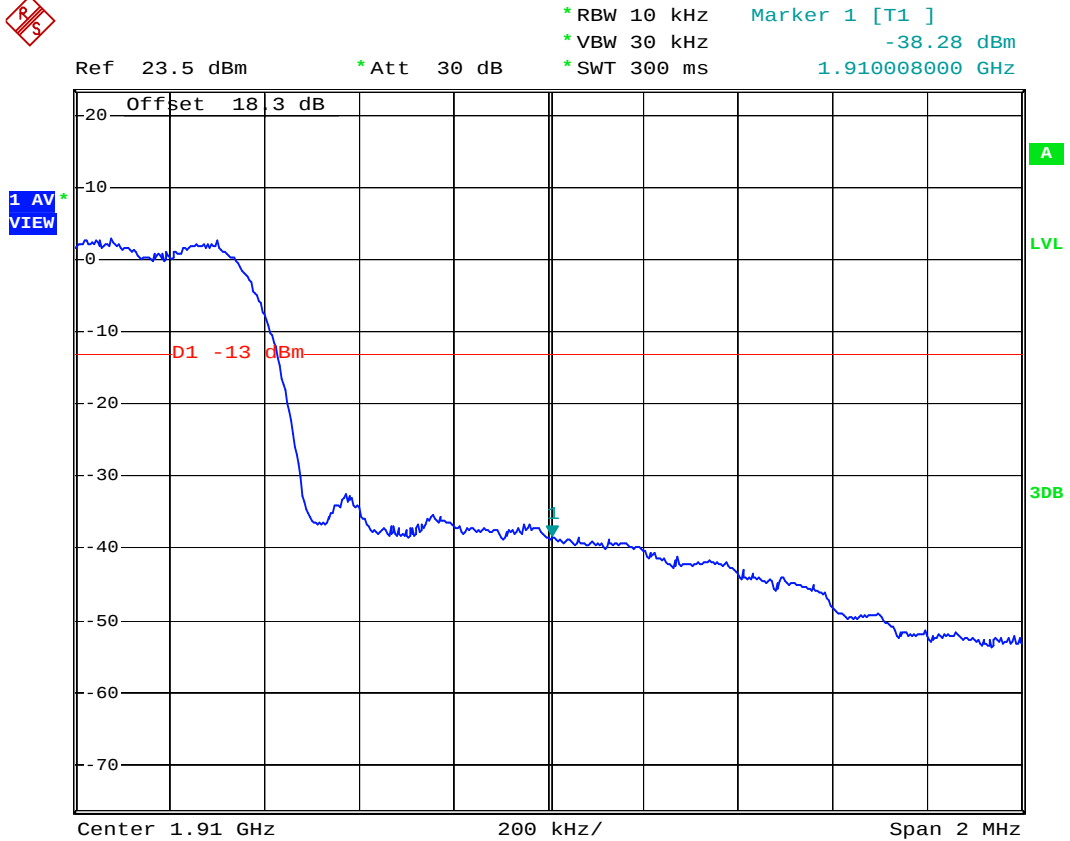
- Test Mode : CDMA2000 CS 1900 Band CH1175_FCH_RC3 26 dB Bandwidth for 1xRTT
- Power State : High



Date: 20.MAR.2008 01:40:00



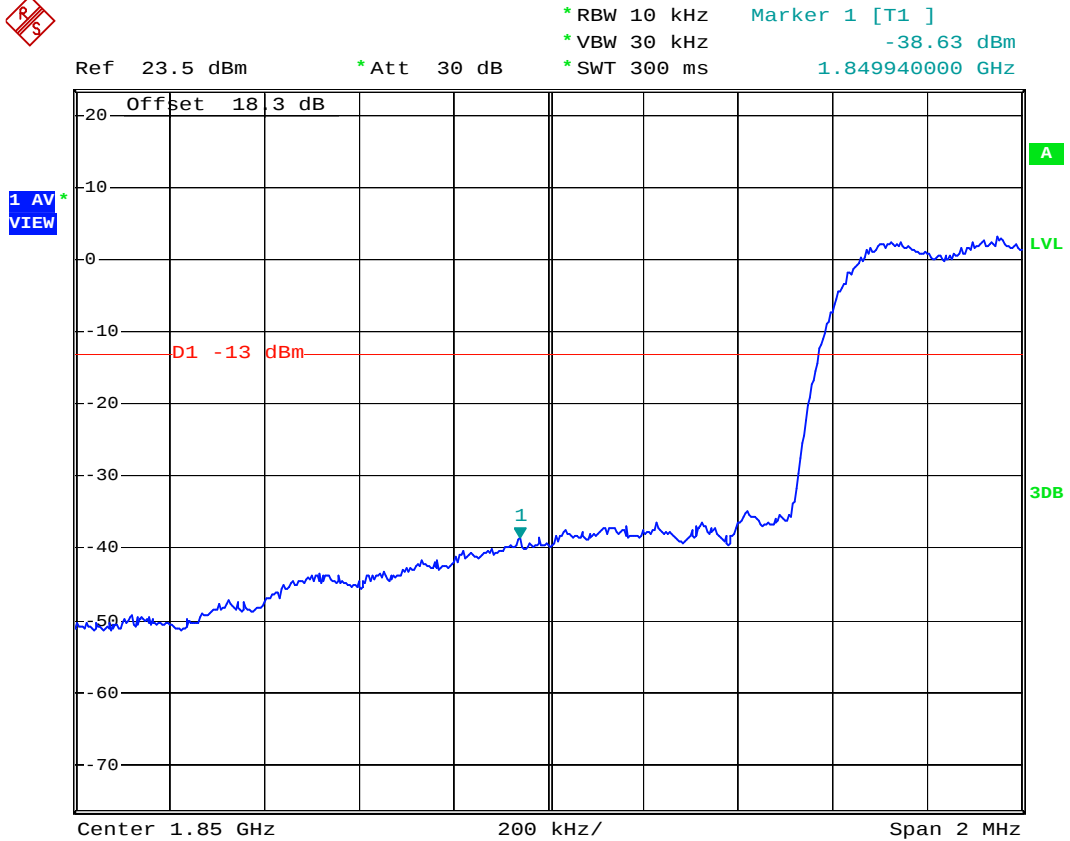
- Test Mode : CDMA2000 PCS Band CH1175_FCH_RC3 Higher Band Edge for 1xRTT
- Power State : High



Date: 20.MAR.2008 01:24:23



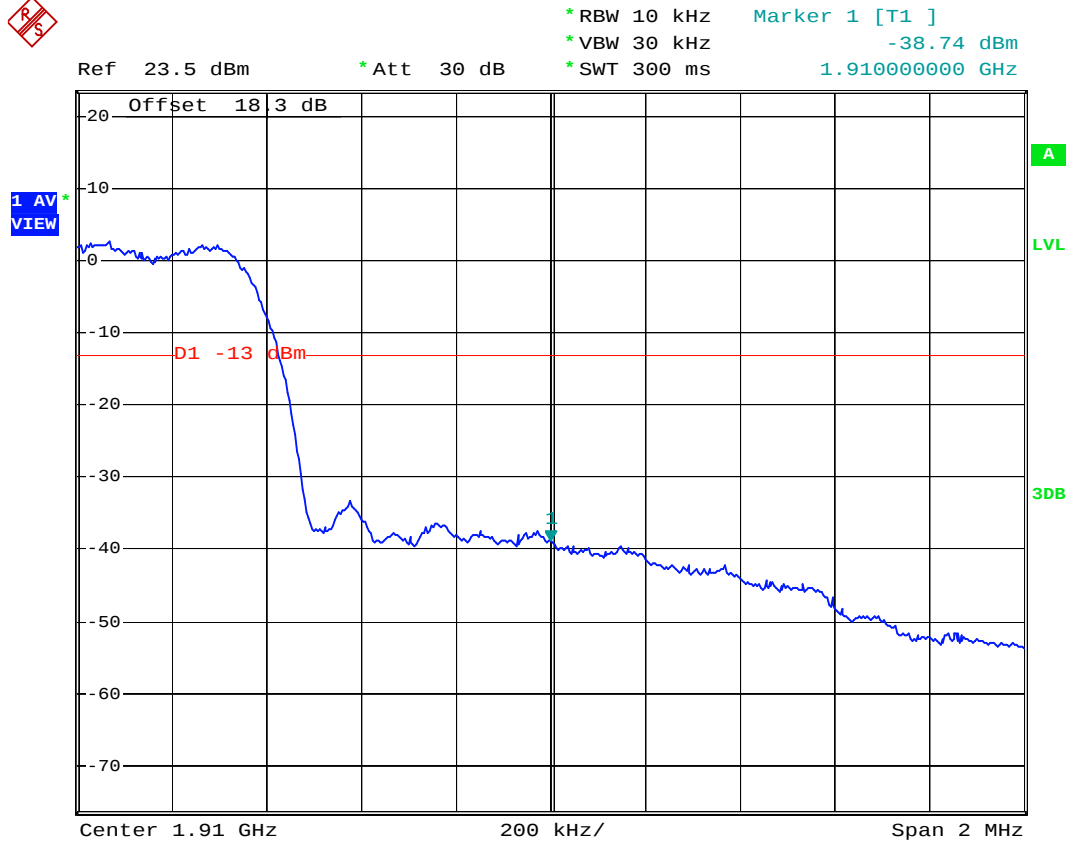
- Test Mode : CDMA2000 PCS Band CH25_FCH+SCH_RC3 Lower Band Edge for 1xRTT
- Power State : High



Date: 20.MAR.2008 01:10:20



- Test Mode : CDMA2000 PCS Band CH1175_FCH+SCH_RC3 Higher Band Edge for 1xRTT
- Power State : High



Date: 20.MAR.2008 01:11:10

4.5 Conducted Emission

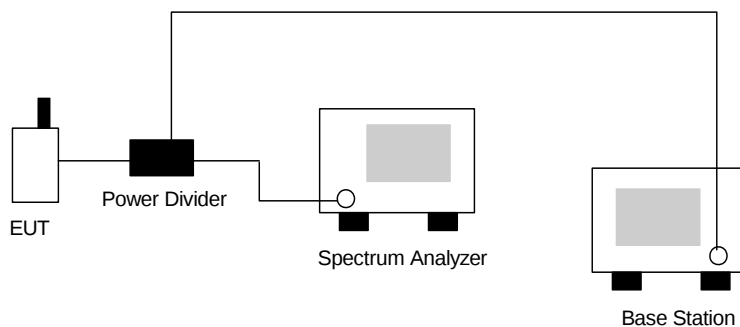
4.5.1 Measurement Instruments

As described in chapter 5 of this test report.

4.5.2 Test Procedure

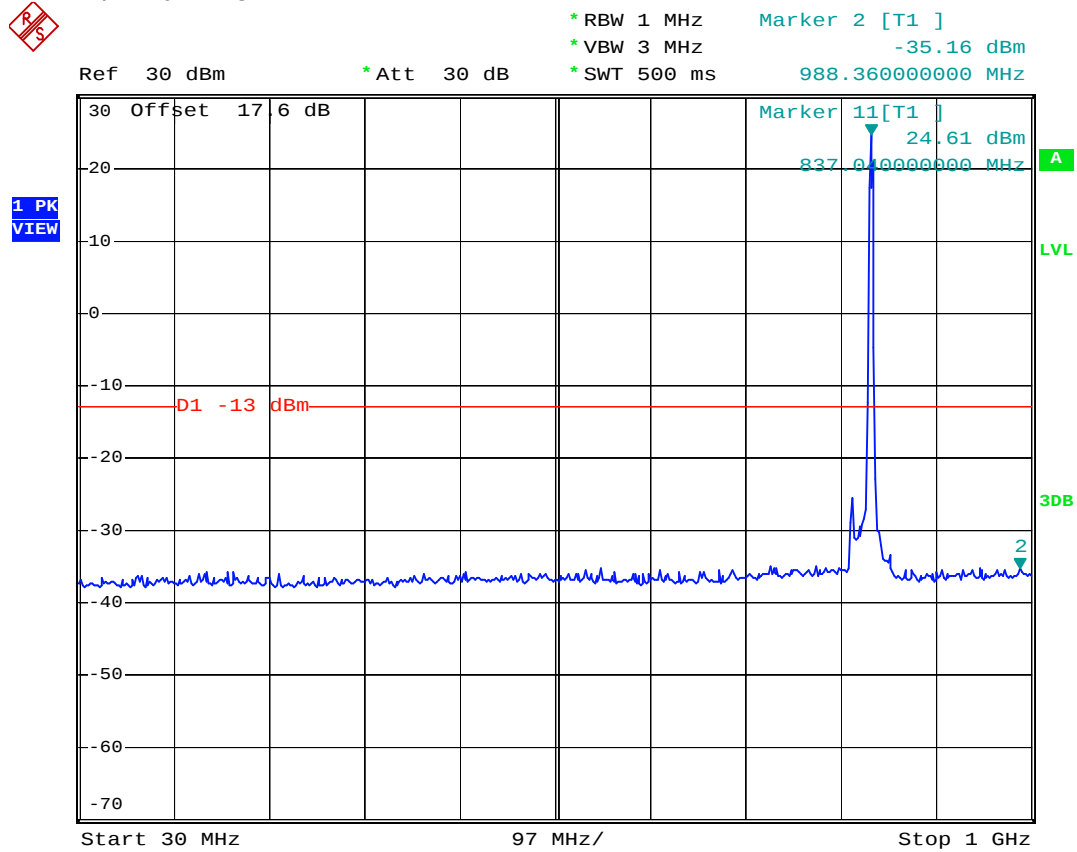
- The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- The middle channel for the highest RF power within the transmitting frequency was measured.
- The conducted spurious emission for the whole frequency range was taken.

4.5.3 Test Setup Layout



**4.5.4 Test Result**

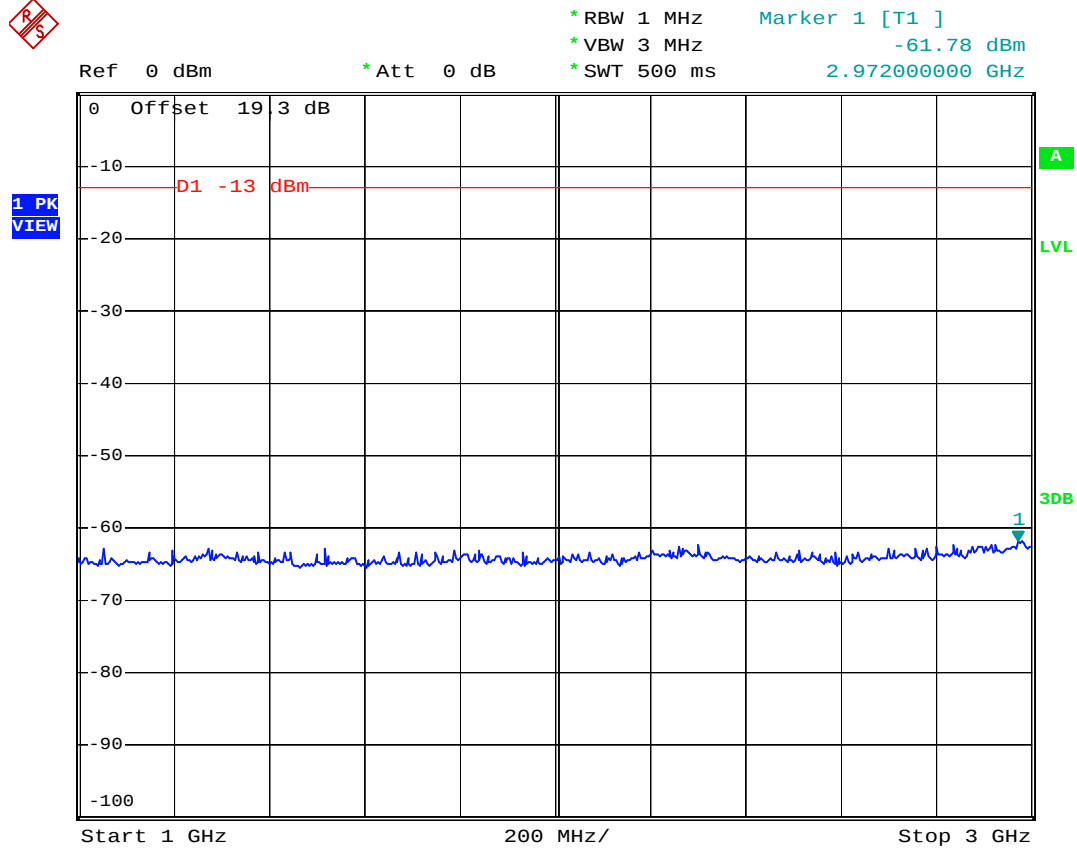
- Mode 1
- Test Mode : CDMA2000 Cellular CH384 for 1xRTT
- Frequency Range : 30M-1G



Date: 20.MAR.2008 03:17:04



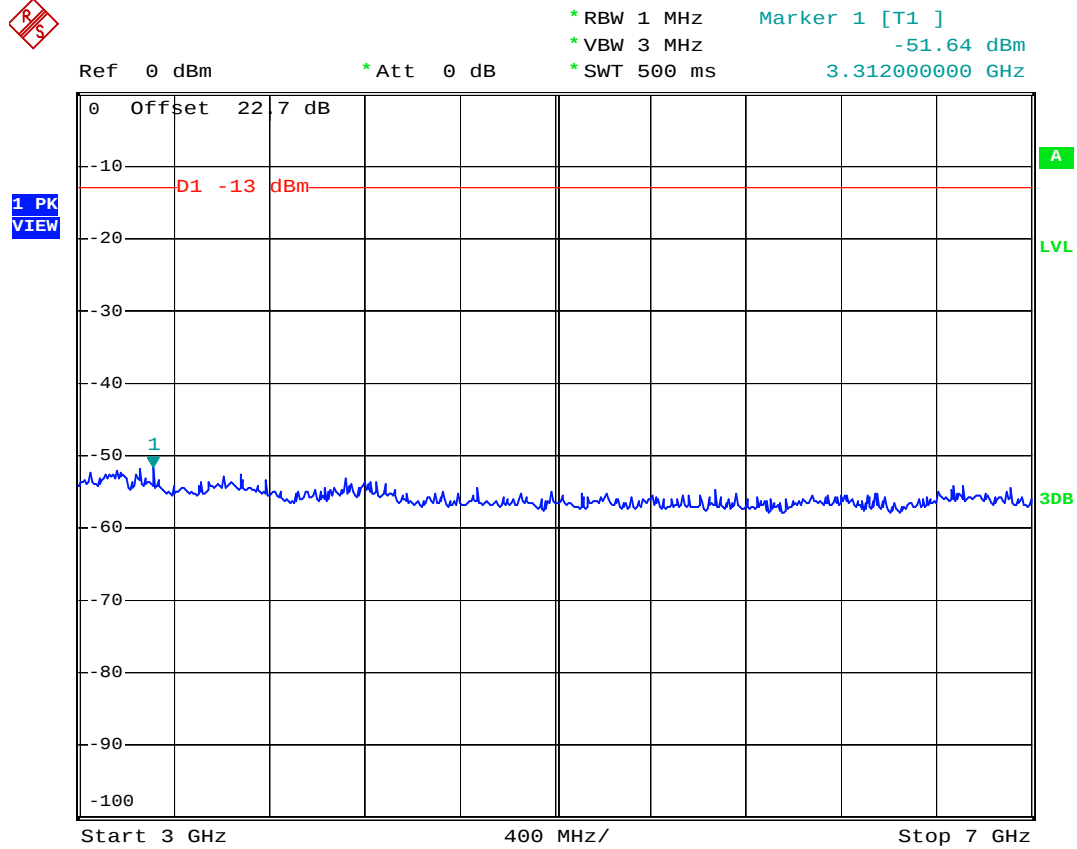
- Test Mode : CDMA2000 Cellular CH384 for 1xRTT
- Frequency Range : 1G-3G



Date: 20.MAR.2008 03:33:27



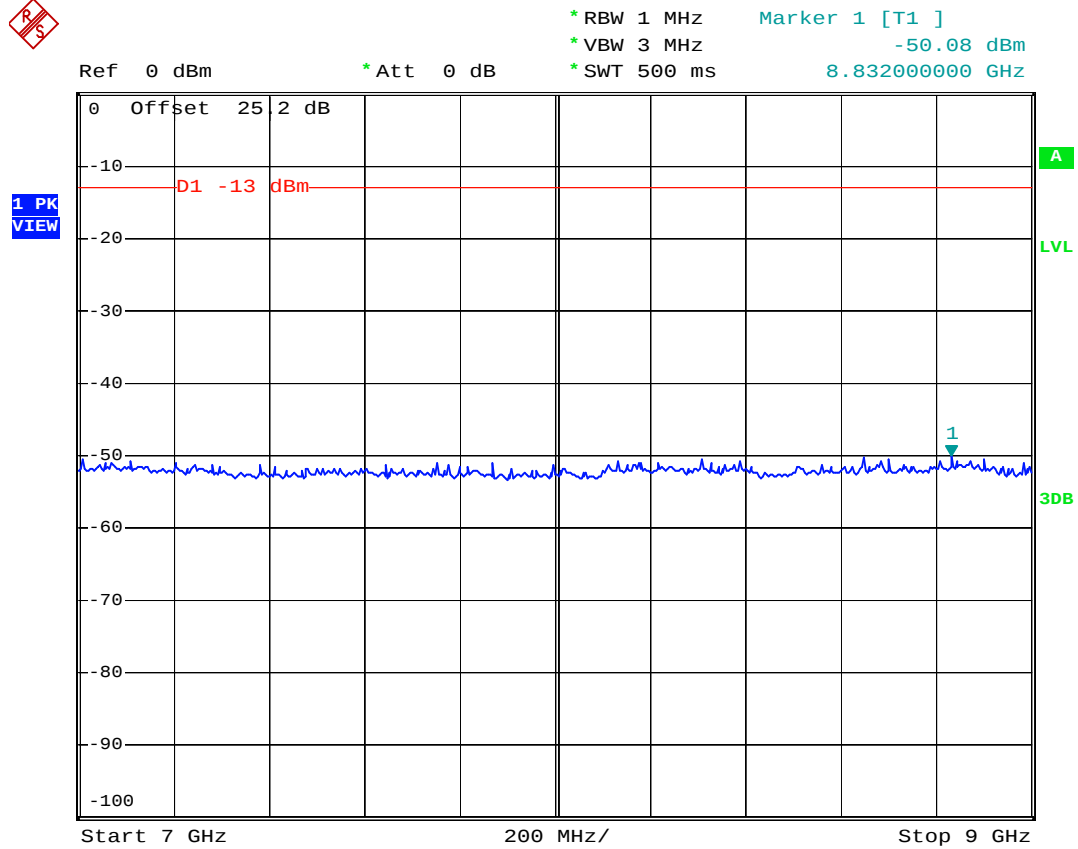
- Test Mode : CDMA2000 Cellular CH384 for 1xRTT
- Frequency Range : 3G-7G



Date: 27.MAR.2008 08:45:54



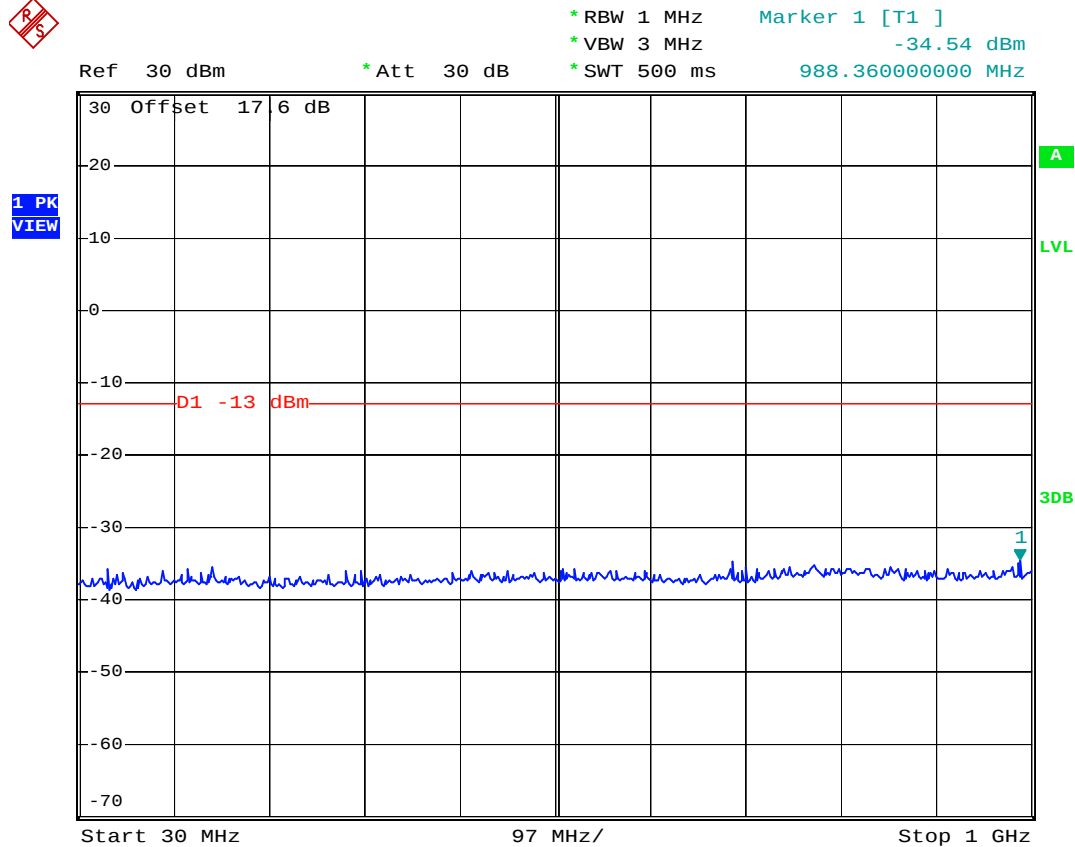
- Test Mode : CDMA2000 Cellular CH384 for 1xRTT
- Frequency Range : 7G-9G



Date: 20.MAR.2008 03:29:17



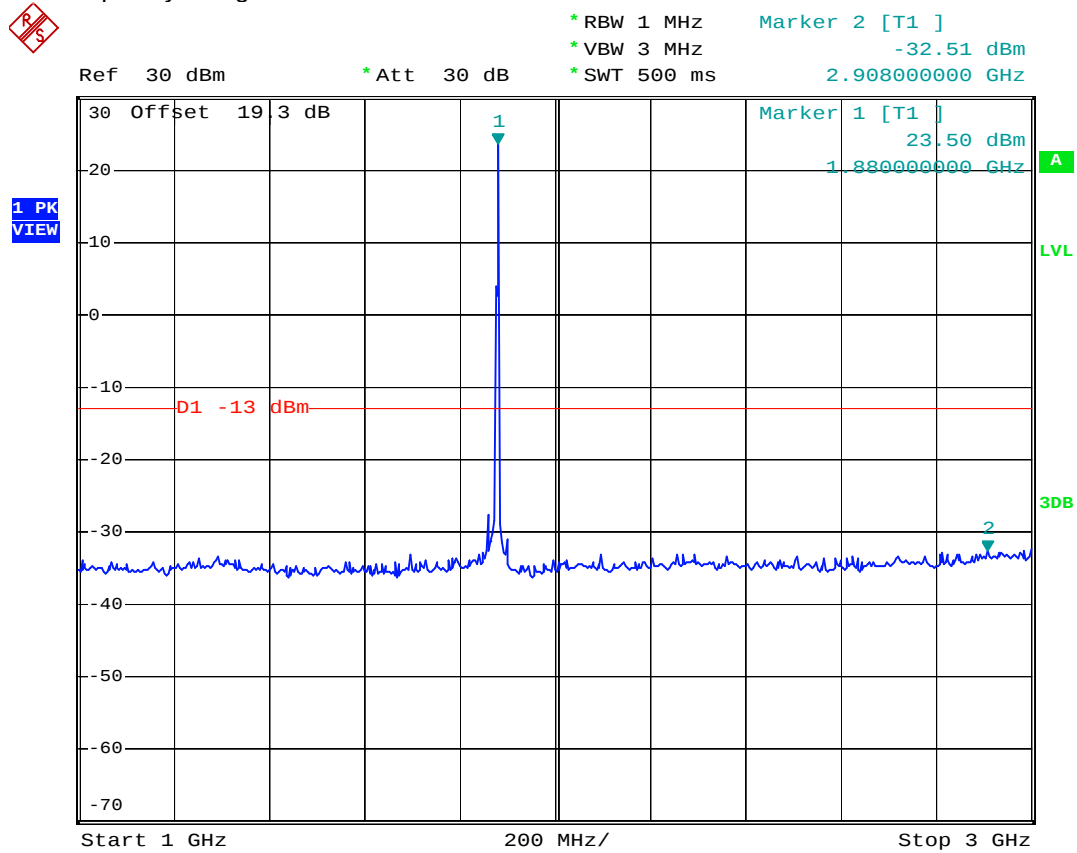
- Mode 2
- Test Mode : CDMA2000 PCS CH600 for 1xRTT
- Frequency Range : 30M-1G



Date: 20.MAR.2008 03:15:38



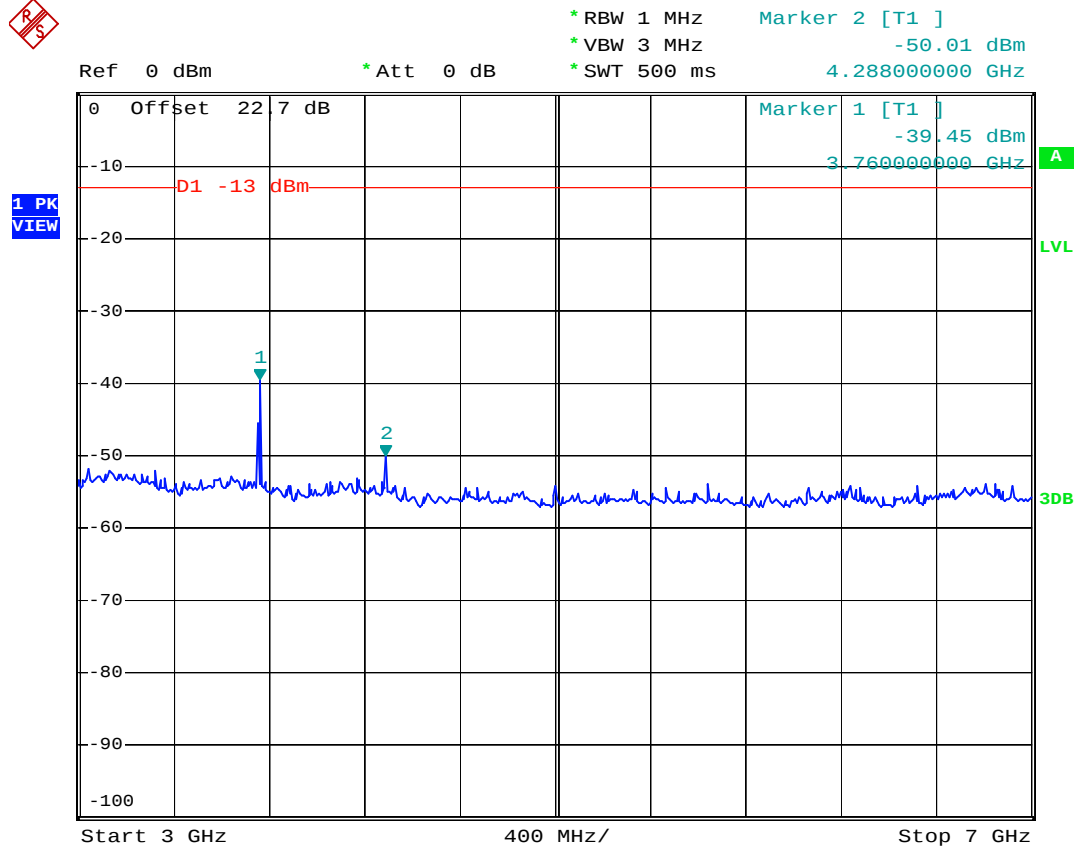
- Test Mode : CDMA2000 PCS CH600 for 1xRTT
- Frequency Range : 1G-3G



Date: 20.MAR.2008 03:14:29



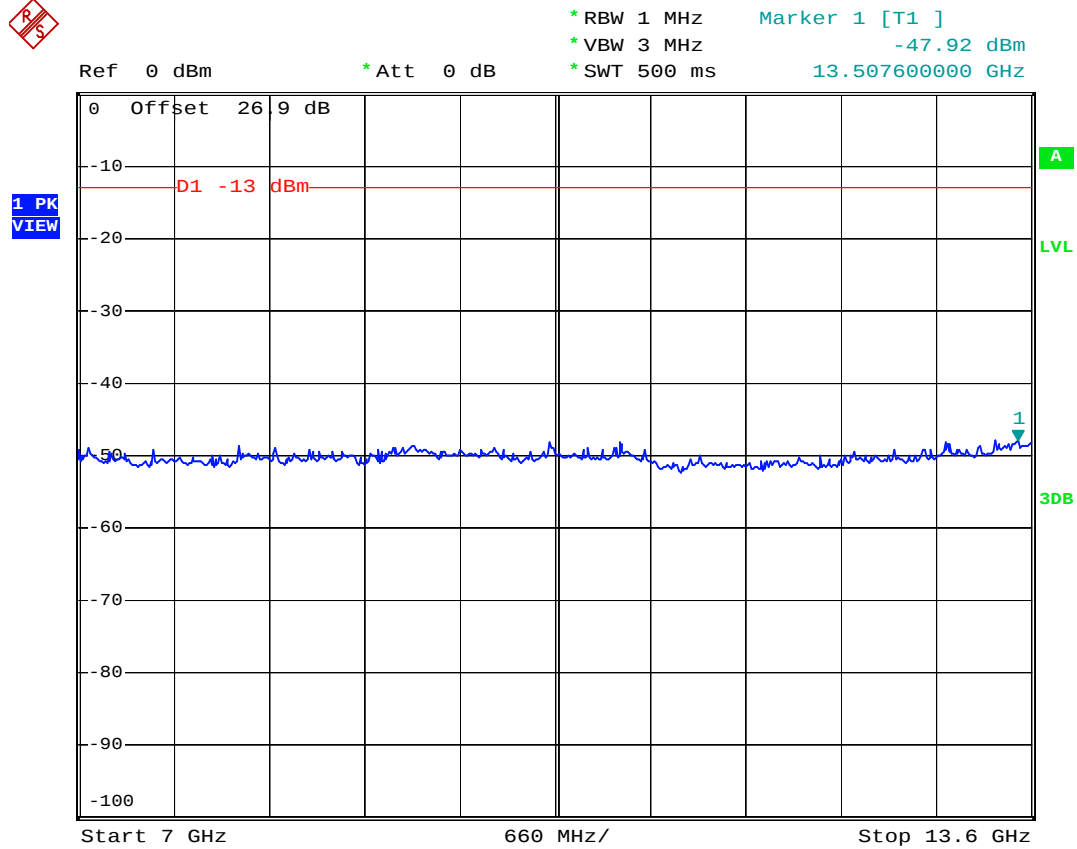
- Test Mode : CDMA2000 PCS CH600 for 1xRTT
- Frequency Range : 3G-7G



Date: 20.MAR.2008 03:00:53

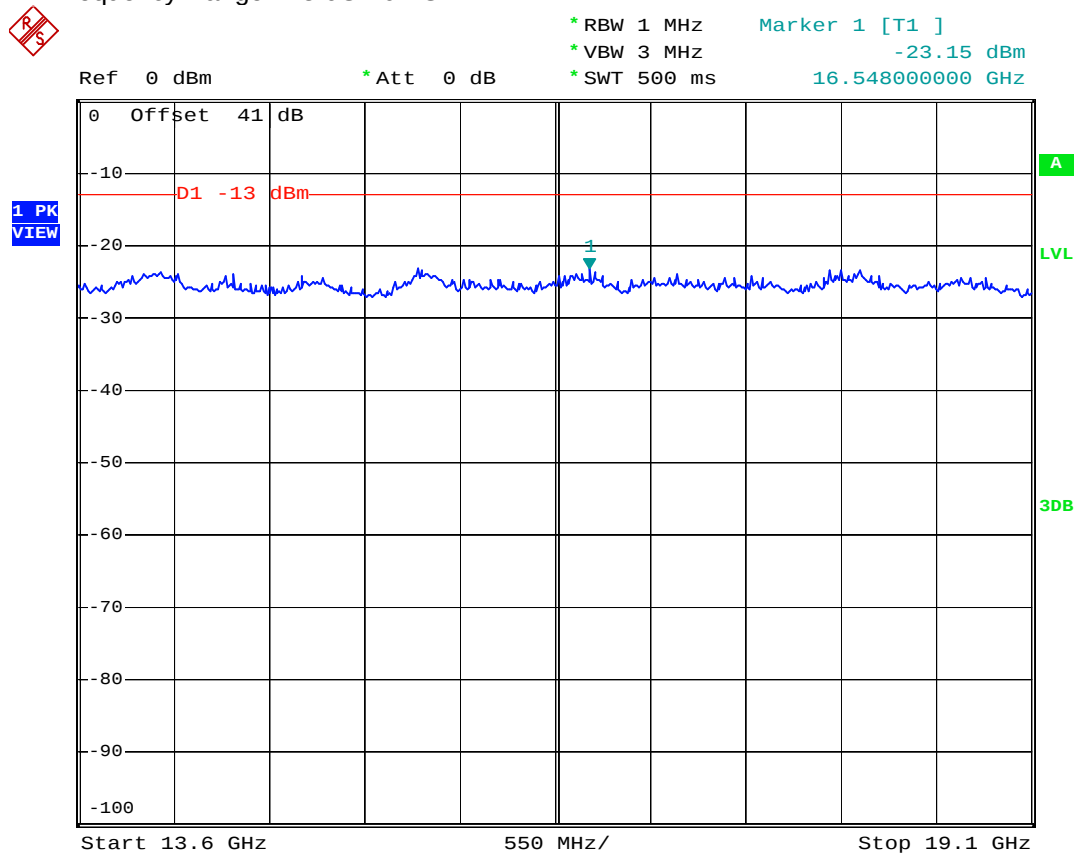


- Test Mode : CDMA2000 PCS CH600 for 1xRTT
- Frequency Range : 7G-13.6G



Date: 20.MAR.2008 03:04:37

- Test Mode : CDMA2000 PCS CH600 for 1xRTT
- Frequency Range : 13.6G-19.1G



Date: 20.MAR.2008 03:06:41



4.6 Field Strength of Spurious Radiation

Equivalent isotropic radiated Power Measurements by substitution method according to ANSI/TIA/EIA-603-C.

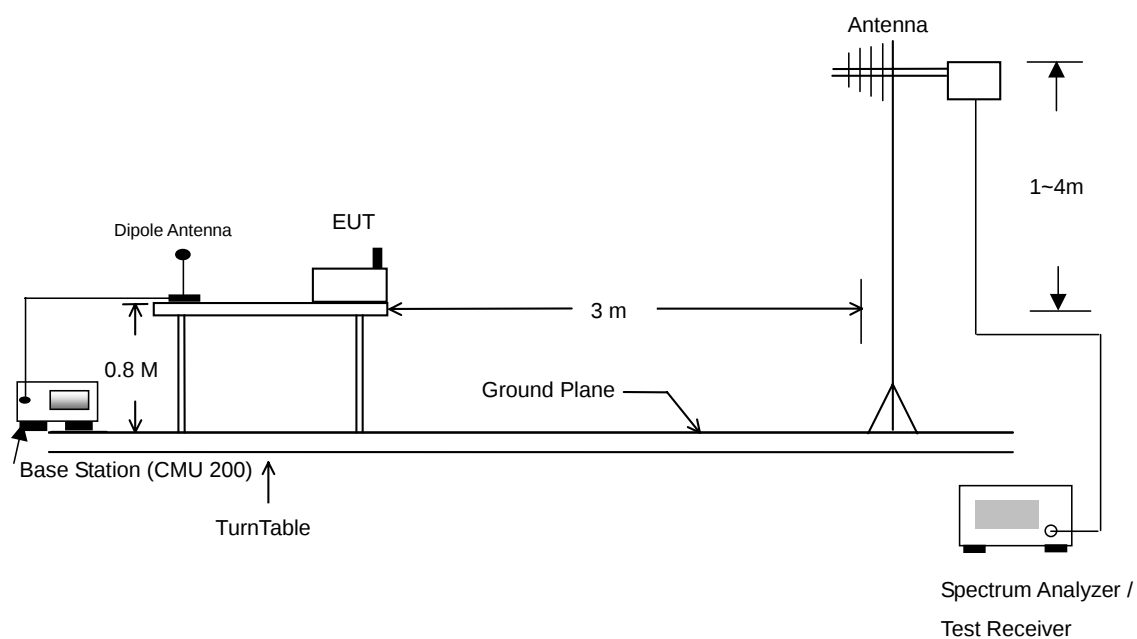
4.6.1 Measurement Instruments

As described in chapter 5 of this test report.

4.6.2 Test Procedure

- a. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
- b. The EUT was set 3 meters from the receiving antenna which was mounted on the antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest spurious emission.
- d. The height of the receiving antenna is varied between one meter and four meters to reach the maximum spurious emission for both horizontal and vertical polarizations.
- e. Taking the record of maximum spurious emission.
- f. A Horn antenna was substituted in place of the EUT and was driven by a signal generator.
- g. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- h. Taking the record of output power at antenna port.
- i. Repeat step 7 to step 8 for another polarization.
- j. Emission level (dBm) = output power + substitution Gain.

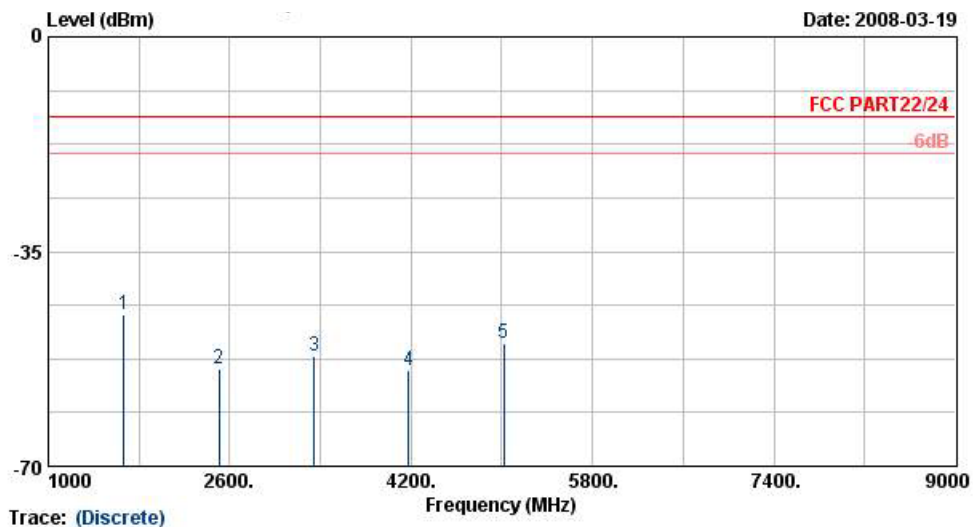
4.6.3 Test Setup Layout





4.6.4 Test Data

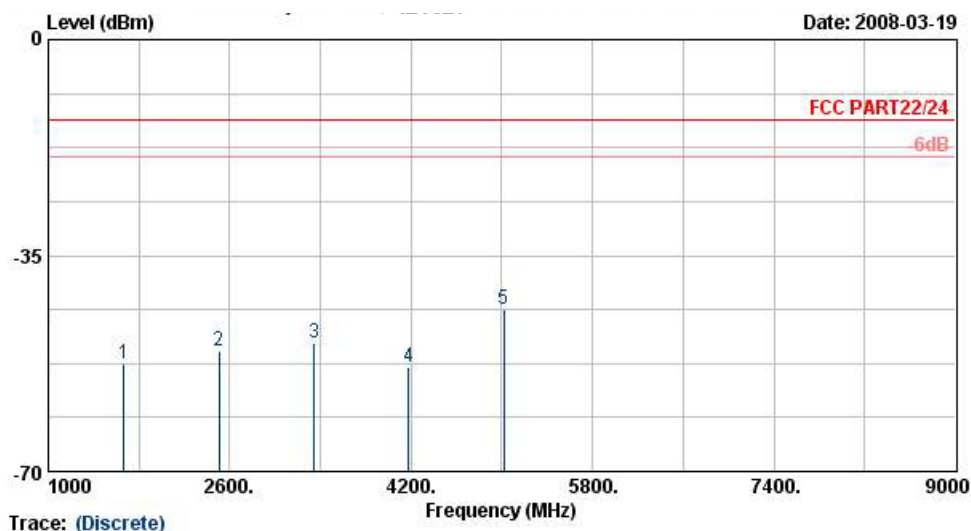
4.6.4.1 Mode 1



Site : 03CH07-HY
 Condition : FCC PART22/24 HF-EIRP(080306) HORIZONTAL
 eut : Card Reader
 power : 120Vac/60Hz
 memo : CDMA 850 Link Mode ; CH 384 + Adaptor
 S/N : 600-921-670

Frequency (MHz)	ERP (dBm)	Limit (dBm)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-45.39	-13	-52.69	-44.4	3.39	4.55	H	Pass
2509	-54.04	-13	-63.11	-54.1	3.71	5.92	H	Pass
3346	-51.97	-13	-61.46	-53.9	3.13	7.21	H	Pass
4175	-54.29	-13	-65.04	-56.7	3.01	7.57	H	Pass
5015	-50.05	-13	-65.52	-53.8	2.61	8.51	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



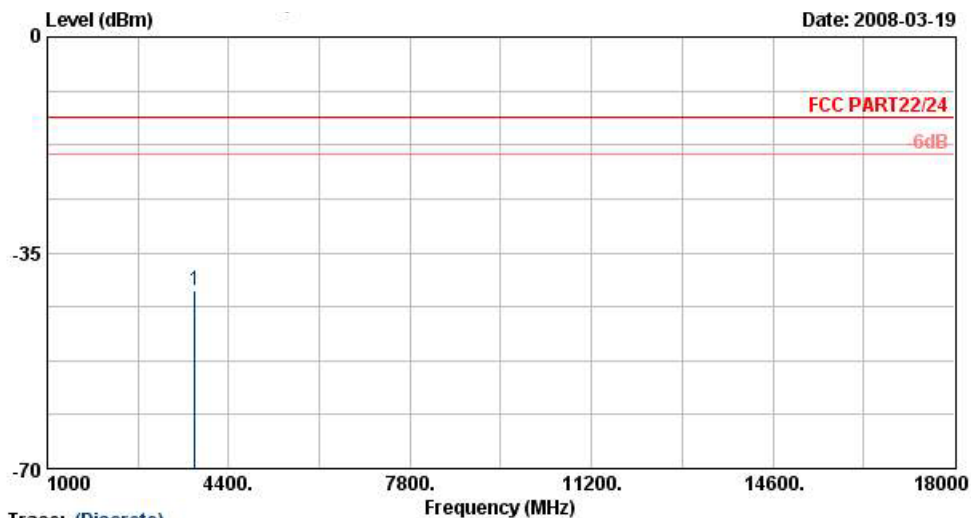
Site : 03CH07-HY
Condition : FCC PART22/24 HF-EIRP(080306) VERTICAL
Antenna : Card Reader
Power : 120Vac/60Hz
Memo : CDMA 850 Link Mode ; CH 384 + Adaptor
S/N : 600-921-670

Frequency (MHz)	ERP (dBm)	Limit (dBm)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-52.58	-13	-59.56	-51.20	3.39	4.16	V	Pass
2509	-50.54	-13	-61.82	-50.40	3.71	5.72	V	Pass
3349	-49.30	-13	-60.92	-51.50	3.13	7.48	V	Pass
4175	-53.08	-13	-64.57	-56.20	3.01	8.28	V	Pass
5015	-43.84	-13	-60.76	-48.20	2.61	9.12	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



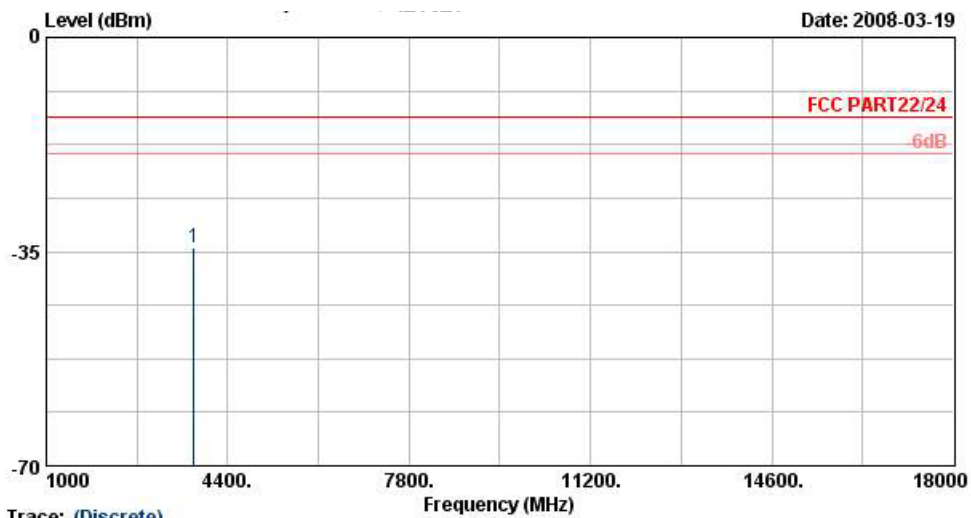
4.6.4.2 Mode 2



Site : 03CH07-HY
Condition : FCC PART22/24 HF-EIRP(080306) HORIZONTAL
eut : Card Reader
power : 120Vac/60Hz
memo : CDMA 1900 Link Mode ; CH 600 + Adaptor
S/N : 600-921-670

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-41.13	-13	-55.84	-44.5	4.03	7.40	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



Site : 03CH07-HY
Condition : FCC PART22/24 HF-EIRP(080306) VERTICAL
eui : Card Reader
power : 120Vac/60Hz
memo : CDMA 1900 Link Mode ; CH 600 + Adaptor
S/N : 600-921-670

Frequency	EIRP	Limit	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBm)	(dBm)	Reading	Power	loss	Gain	(H/V)	
3760	-34.32	-13	-52	-38.20	4.03	7.91	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

4.7 Frequency Stability (Temperature Variation)

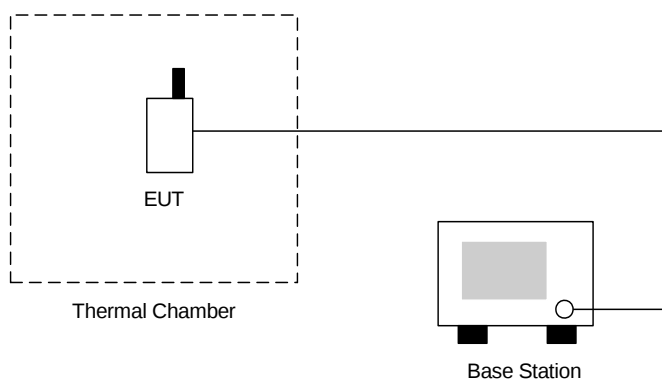
4.7.1 Measurement Instrument

As described in chapter 5 of this test report.

4.7.2 Test Procedure

- The EUT and test equipment were set up as shown on the following section.
- With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
- With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
- The temperature tests were performed for the worst case.
- Test data was recorded.

4.7.3 Test Setup Layout



4.7.4 Test Result

- Test Mode : CDMA2000 Cellular 1xRTT FCH_RC1 CH384

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-9	-0.01	2.5	Passed
-20	9	0.01		
-10	11	0.01		
0	26	0.03		
10	-7	-0.01		
20	-21	-0.02		
30	18	0.02		
40	14	0.02		
50	13	0.02		

- Test Mode : CDMA2000 PCS 1xRTT FCH_RC3 CH600

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-16	-0.01	2.5	Passed
-20	-20	-0.01		
-10	-17	-0.01		
0	-20	-0.01		
10	15	0.01		
20	27	0.01		
30	-24	-0.01		
40	22	0.01		
-30	-18	-0.01		

4.8 Frequency Stability (Voltage Variation)

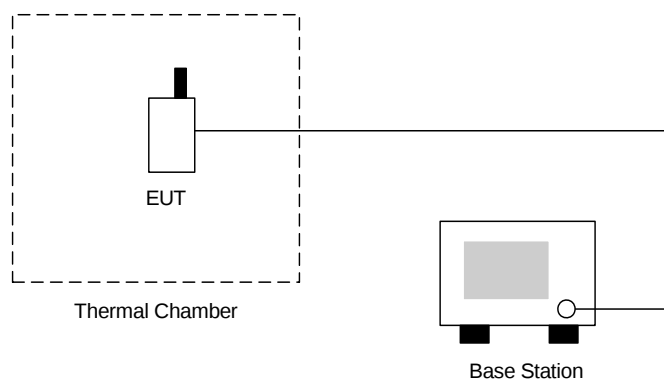
4.8.1 Measurement Instrument

As described in chapter 5 of this test report.

4.8.2 Test Procedure

- The EUT was placed in a temperature chamber at $25\pm5^{\circ}\text{C}$ and connected as the following section.
- The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
- The variation in frequency was measured for the worst case.

4.8.3 Test Setup Layout



4.8.4 Test Result

- Test Mode : CDMA2000 Cellular 1xRTT FCH+SCH RC3 CH384

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
7.2	12.0	0.01	2.5	Passed
BEP	-11.0	-0.01		
8.3	10.0	0.01		

- Test Mode : CDMA2000 PCS 1xRTT FCH RC3 CH600

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
7.2	-20.0	-0.01	2.5	Passed
BEP	-23.0	-0.01		
8.3	-19.0	-0.01		

Remark:

- Normal Voltage = 7.2V.
- Battery End Point (BEP) = 6.1V.

5 List of Measurement Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY44211028	9KHz-26.5GHz	Oct. 17, 2007	Oct. 16, 2008	Radiation (03CH07-HY)
EMI Test Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jul. 26, 2007	Jul. 25, 2008	Radiation (03CH07-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Dec. 01, 2007	Nov. 30, 2008	Radiation (03CH07-HY)
Double Ridge Horn Antenna	Com-Power	AH118	071025	1G~18G	Jun. 04, 2007	Jun. 03, 2008	Radiation (03CH07-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-251	14G - 40G	Oct. 17, 2007	Oct. 16, 2008	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1G - 26.5G	Nov. 22, 2007	Nov. 21, 2008	Radiation (03CH07-HY)
Pre Amplifier	EMEC	PA303	PA303-SMA-059	100K~3GHz	Nov. 26, 2007	Nov. 25, 2008	Radiation (03CH07-HY)
Base Station Simulator	R & S	CMU200	103937	Third-Band	Oct. 19, 2007	Oct. 18, 2008	Radiation (03CH07-HY)
Thermal Chamber	Tenyi technology	TTH-D35P	TBN-930701	N/A	Aug. 02, 2007	Aug. 01, 2008	Conduction (TH02-HY)
Spectrum	R&S	FSP40	100055	9KHz~40GHz	Jun. 25, 2007	Jun. 24, 2008	Conduction (TH02-HY)
Bluetooth Test	ANRITSU	MT8852A	6K00003939	N/A	N/A	N/A	Conduction (TH02-HY)
Power Divider	ARRA	5200-1	3871	N/A	Oct. 01, 2007	Sep. 30, 2008	Conduction (TH02-HY)
DC Power Supply	TOPWARD	3303D	740889	N/A	May 25, 2007	May 24, 2009	Conduction (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 21, 2008	Feb. 20, 2009	Conduction (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 21, 2008	Feb. 20, 2009	Conduction (TH02-HY)

6 Uncertainty Evaluation

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch	+0.39/-0.41	U-shaped	0.28
Combined standard uncertainty Uc(y)	1.27		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.54		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	C_i	$C_i * u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20 \log(1 - \Gamma_1 \Gamma_2)$	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	2.36				
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	4.72				

END OF TEST REPORT