FCC TEST REPORT

for

47 CFR Part 22H

Equipment	:	**Broad Band Repeater**
Trade Name	:	**Coiler**
Model No.	:	**TX-800**
FCC ID	:	**UG8C-2024-08**
Uplink Frequency Range	:	**CDMA2000 850 : 824~849 MHz**
Downlink Frequency Range	:	**CDMA2000 850 : 869~894 MHz**
Max. ERP Power	:	**CDMA2000 850 : 0.0499W**
Emission Designator	:	**1M25F9W**
Applicant	:	**Coiler Corporation** 8F-4, No. 75, Sec. 1, Hsin Tai Wu Road, Hsi-Chih City (221), Taipei Hsien, Taiwan

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsed by NVLAP or any agency of U.S. government.**
- The data shown in this test report were carried out on Oct. 24, 2006 at **Sporton International Inc. LAB.**
- Report No.: FG690517, Report Version: Rev. 02

Roy Wu
Deputy Manager

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

Table of Contents

History of this test report ii
1. General Information 1
1.1. Applicant 1
1.2. Manufacturer 1
1.3. Basic Description of Equipment under Test 1
1.2 Feature of Equipment under Test 2
1.3 Report Date 2
2. Test Configuration of Equipment under Test 2
2.1 Test Manner 2
2.2 Test Mode 2
2.3 Connection Diagram of Test System 2
2.4 Ancillary Equipment List 2
3. General Information of Test Site 2
3.1 Test Voltage 2
3.2 Test in Compliance with 2
3.3 Frequency Range Investigated 2
3.4 Test Distance 2
4. Test Data and Test Result 2
4.1 List of Measurements and Examinations 2
4.2 RF Output Power 2
4.3 ERP / EIRP Measurement 2
4.4 Occupied Bandwidth and Band Edge Measurement 2
4.5 Conducted Emission & Out of Band Rejection: Filter Frequency response & Intermodulation 2
4.6 Field Strength of Spurious Radiation 2
5. Maximum Permissible Exposure Test Report 2
5.1 Introduction 2
5.2 Requirements 2
5.3 Radio Frequency Radiation Exposure Evaluation 2
6. List of Measurement Equipments 2
7. Uncertainty Evaluation 2
Appendix A. Photographs of EUT External
Appendix B. Photographs of EUT Internal
Appendix C. Photographs of Setup

History of this test report

Report Issue Date: Sep. 28, 2006

Report No.	Description

1. General Information

1.1. Applicant

Coiler Corporation
8F-4, No. 75, Sec. 1, Hsin Tai Wu Road, Hsi-Chih City (221), Taipei Hsien, Taiwan

1.2. Manufacturer

Coiler Corporation
8F-4, No. 75, Sec. 1, Hsin Tai Wu Road, Hsi-Chih City (221), Taipei Hsien, Taiwan

1.3. Basic Description of Equipment under Test

Equipment	: Broad Band Repeater
Trade Name	: Coiler
Model No.	: TX-800
Power Supply Type	: Switching
AC Power Cord	: AC 120V, Wall-mount, 3.6 meter, 2 pin
Adapter	: SHP-0820A

1.2 Feature of Equipment under Test

DUT Type :	Broad Band Repeater
Trade Name :	Coiler
Model Name :	TX-800
FCC ID :	UG8C-2024-08
Support Band :	CDMA2000 850
Uplink Frequency :	824.0-849.0 MHz.
Downlink Frequency :	869.0-894.0 MHz
Antenna Connector :	SMB Female
Antenna Type :	Uplink : External Panel Antenna (Gain: 9 dBi) Downlink : Internal Panel Antenna (Gain: 0 dBi)
Maximum Output Power to Antenna :	9.95 dBm
Maximum ERP :	Uplink : 0.0499 W (19.13 dBm) Downlink : 0.0059 W (9.85 dBm)
Power Rating (DC/AC Voltage) :	8V / 900mA
Digital Modulation Emission :	QPSK
Type of Emission :	1M25F9W
DUT Stage :	Production Unit

1.3 Report Date

EUT Received : Sep. 05, 2006

Report Date : Sep. 28, 2006

2. Test Configuration of Equipment under Test

2.1 Test Manner

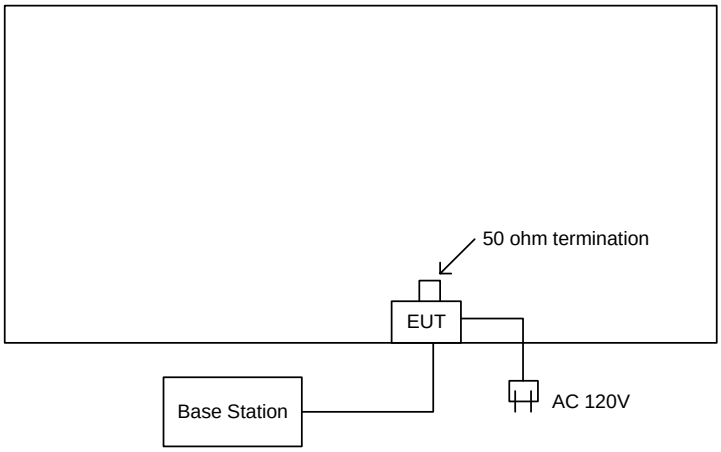
a. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range.
b. During all testings, EUT is in link mode at maximum power level.
c. Frequency range investigated: radiated emission 30MHz to 18000 MHz for CDMA850.

2.2 Test Mode

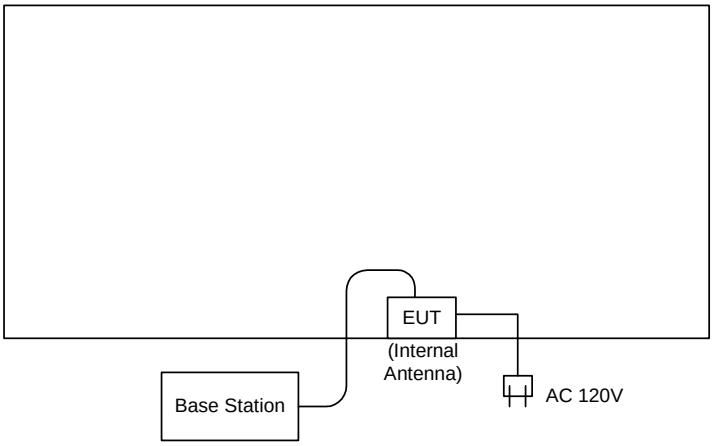
Application	PCS
Radiated Emission	☒ Mode 1: CDMA2000 850 824.70MHz Uplink Mode ☒ Mode 2: CDMA2000 850 836.52MHz Uplink Mode ☒ Mode 3: CDMA2000 850 848.31MHz Uplink Mode ☒ Mode 4: CDMA2000 850 869.70MHz Downlink Mode ☒ Mode 5: CDMA2000 850 881.52MHz Downlink Mode ☒ Mode 6: CDMA2000 850 893.31MHz Downlink Mode
Conducted Measurement	☒ Mode 1: CDMA2000 850 824.70MHz Uplink Mode ☒ Mode 2: CDMA2000 850 836.52MHz Uplink Mode ☒ Mode 3: CDMA2000 850 848.31MHz Uplink Mode ☒ Mode 4: CDMA2000 850 869.70MHz Downlink Mode ☒ Mode 5: CDMA2000 850 881.52MHz Downlink Mode ☒ Mode 6: CDMA2000 850 893.31MHz Downlink Mode

2.3 Connection Diagram of Test System

<Mode 1~3>



<Mode 4~6>



2.4 Ancillary Equipment List

Item	Equipment	Trade Name	Model No.	Power Cord
1.	Base Station	R & S	CMU200	AC 100-240V

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 : 886-3-318-0055
Test Site No : TH02-HY, 03CH06-HY

The chamber meets the characteristics of ANSI C63.4-2003. This site is on file with the FCC. The Industry Canada file number for this site is IC 4088.

3.1 Test Voltage

120V / 60Hz

3.2 Test in Compliance with

47 CFR Part 22H

3.3 Frequency Range Investigated

a. Radiation: from 30 MHz to 18000 MHz for CDMA2000 850.

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	ERP	Passed	4.3
§2.1049, § 22.917	Occupied Bandwidth & Band Edge Measurement	Passed	4.4
§2.1051	Conducted Emission & Out of Band Rejection:Filter Frequency response & Intermodulation	Passed	4.5
§2.1053	Field Strength of Spurious Radiation	Passed	4.6

4.2 RF Output Power

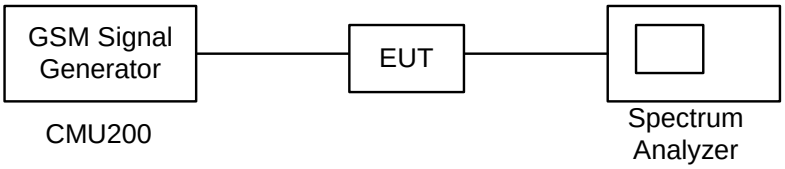
4.2.1 Measurement Instruments：

As described in chapter 5 of this test report.

4.2.2 Test Procedure：

1. The EUT was respectively connected to the specturm analyzer and the CDMA signal genetator.
2. Set the EUT maximum gain condition.
3. Varied the input power from the CDMA signal genetator, and the maximum output power was recorded.
4. Repeatedly tested the low,middle,high channels for uplink and downlink modes .

4.2.3 Test Setup Layout：



4.2.4 Test Result：

Bands	Frequency (MHz)		Input Power (dBm)	Conducted Power (Watts)	Conducted Power (dBm)	Voltage/ Current
CDMA2000 850	Downlink	824.70 (Low)	-50.0	0.0097	9.86	8V/0.48A
		836.52 (Mid)	-52.8	0.0098	9.92	
		848.31 (High)	-50.0	0.0097	9.86	
	Uplink	869.70 (Low)	-46.9	0.0049	6.94	8V/0.48A
		881.52 (Mid)	-48.8	0.0049	6.86	
		893.31 (High)	-49.7	0.0049	6.93	

4.3 ERP / EIRP Measurement

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

4.3.1 Measurement Instruments

As described in chapter 5 of this test report.

4.3.2 Test Procedure

1. The EUT was placed on a rotatable table with 1.0 meter height in an fully anechoic chamber.
2. The EUT was set 1.2 meters from the receiving antenna which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiated power.
4. The height of the receiving antenna is also kept at 1.0M height.
5. Taking the record of maximum ERP/EIRP.
6. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
7. The conducted power at the terminal of the dipole antenna is measured.
8. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
9. ERP/EIRP = Ps + Et – Es + Gs = Ps + Rt – Rs + Gs

   Ps (dBm)：Input power to substitution antenna.

   Gs (dBi or dBd)：Substitution antenna Gain.

   Et = Rt + AF

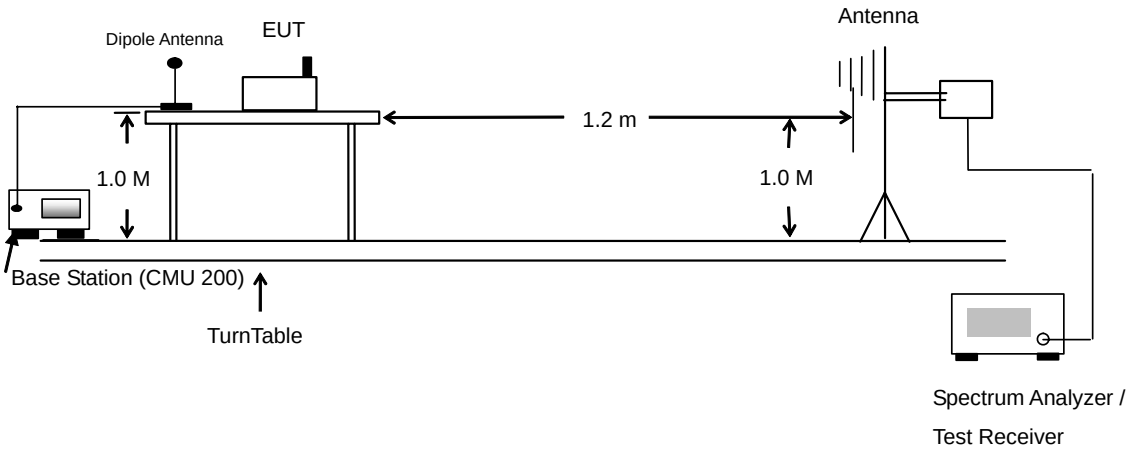
   Es + Rs + AF

   AF (dB/m)：Receive antenna factor

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

   Rs：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 850 Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.68	-44.75	-48.12	0	-1.08	2.29	0.0010
836.50	-39.95	-48.28	0	-0.93	7.40	0.0033
848.29	-47.73	-48.35	0	-0.76	-0.14	0.0006
869.68	-45.96	-48.12	0	-1.08	1.08	0.0008
881.50	-47.96	-48.28	0	-0.93	-0.61	0.0005
893.29	-50.09	-48.35	0	-0.76	-2.50	0.0003
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.68	-33.13	-47.97	0	-1.08	13.76	0.0145
836.50	-27.95	-48.01	0	-0.93	19.13	0.0499
848.29	-32.66	-48.05	0	-0.76	14.63	0.0177
869.68	-37.57	-47.97	0	-1.08	9.32	0.0052
881.50	-37.52	-48.01	0	-0.93	9.56	0.0055
893.29	-37.44	-48.05	0	-0.76	9.85	0.0059

4.4 Occupied Bandwidth and Band Edge Measurement

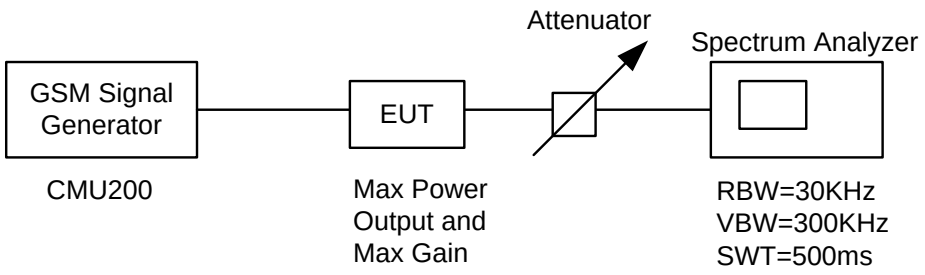
4.4.1 Measurement Instruments

As described in chapter 5 of this test report.

4.4.2 Test Procedure

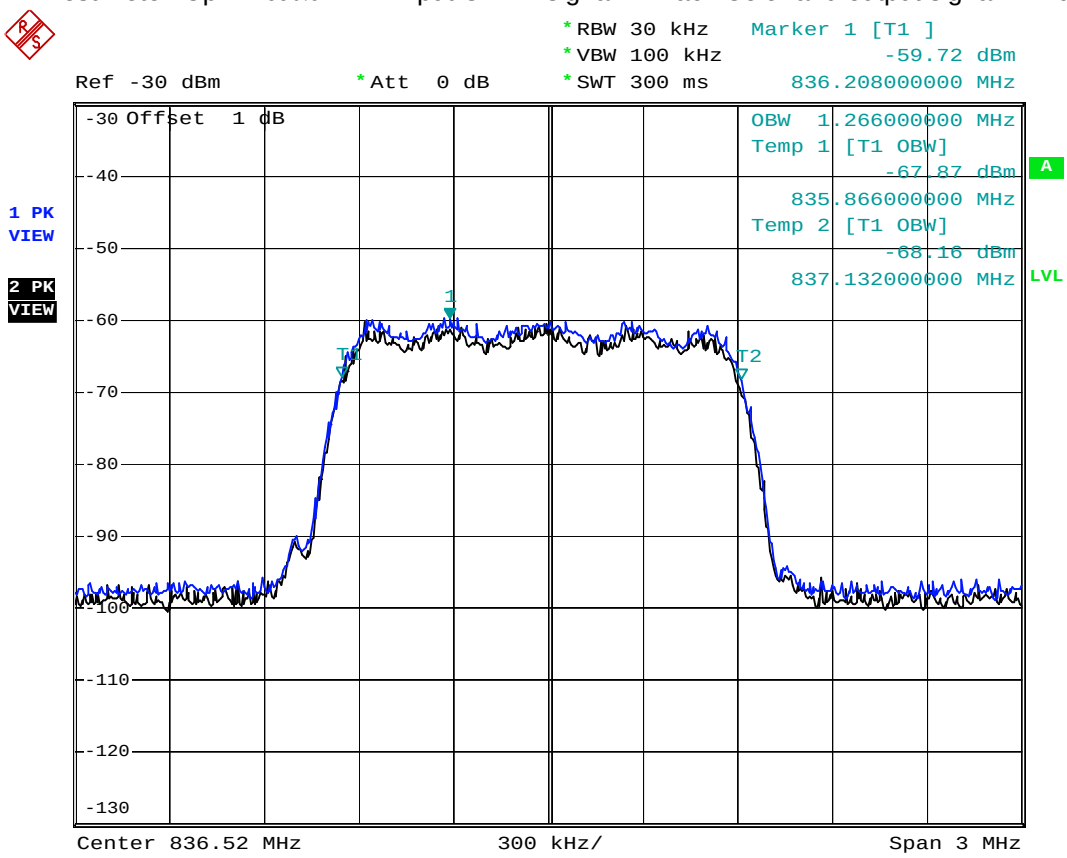
1. Measured directly the input CDMA2000 signal from the signal generator and recorded in a plot in Black Color .
2. The EUT was connected respectively to the specturm analyzer and the signal generattor.
3. An attenuator which had a equivalent loss amount same as the amplified gain of EUT was inserted ahead of the EUT as above figure.
4. Set the EUT maximum gain and output power.
5. Measured the output CDMA2000 signal and recorded in a plot in Blue Color .

4.4.3 Test Setup Layout



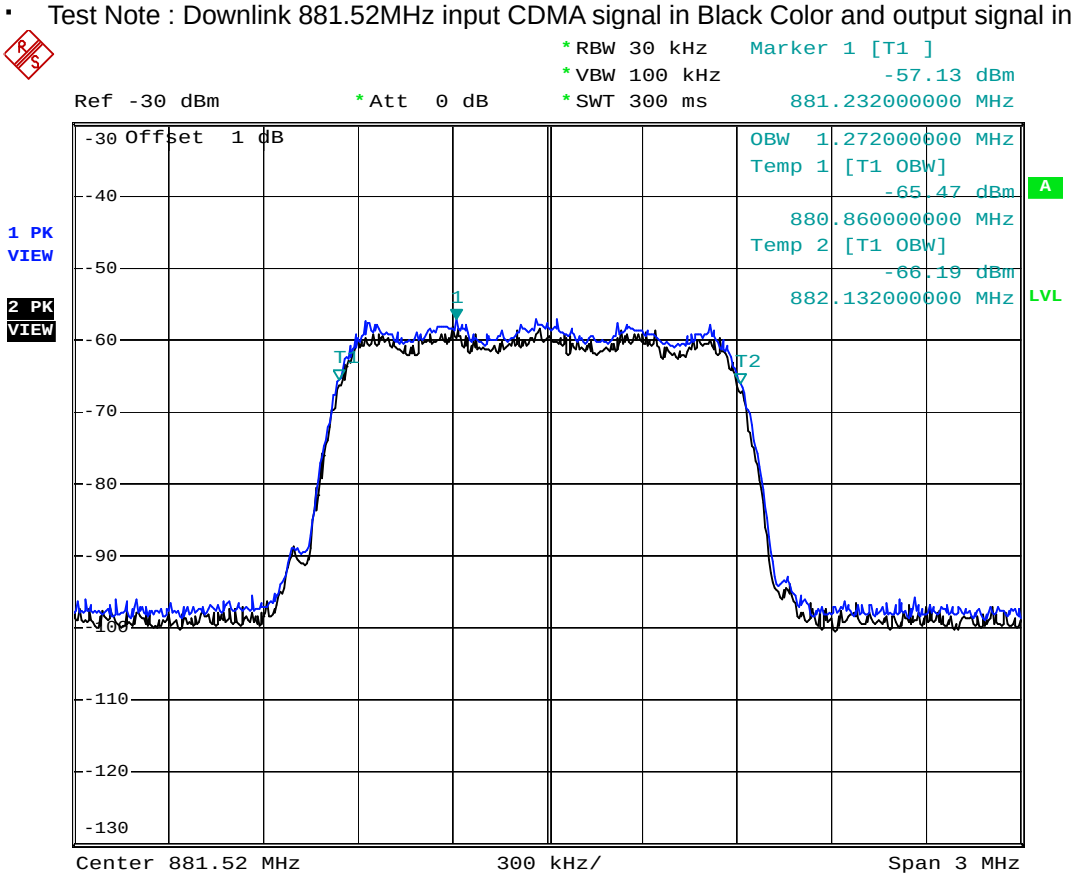
4.4.4 99% Occupid Bandwidth Test Result

- Test Mode : CDMA2000 850 836.52MHz uplink mode
- Test Note : Uplink 836.52MHz input CDMA signal in Black Color and output signal in Blue Color



Date: 26.SEP.2006 23:28:07

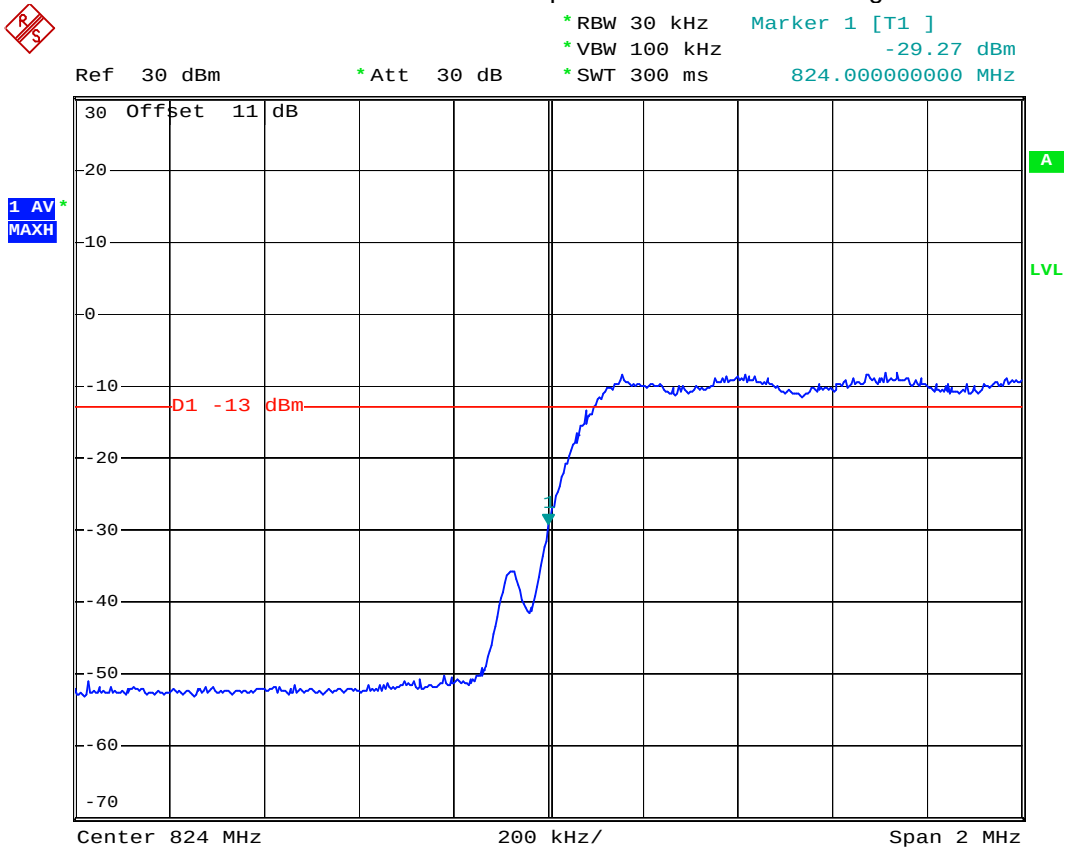
- Test Mode : CDMA2000 850 881.52MHz downlink mode
- Test Note : Downlink 881.52MHz input CDMA signal in Black Color and output signal in Blue Color



Date: 26.SEP.2006 23:30:49

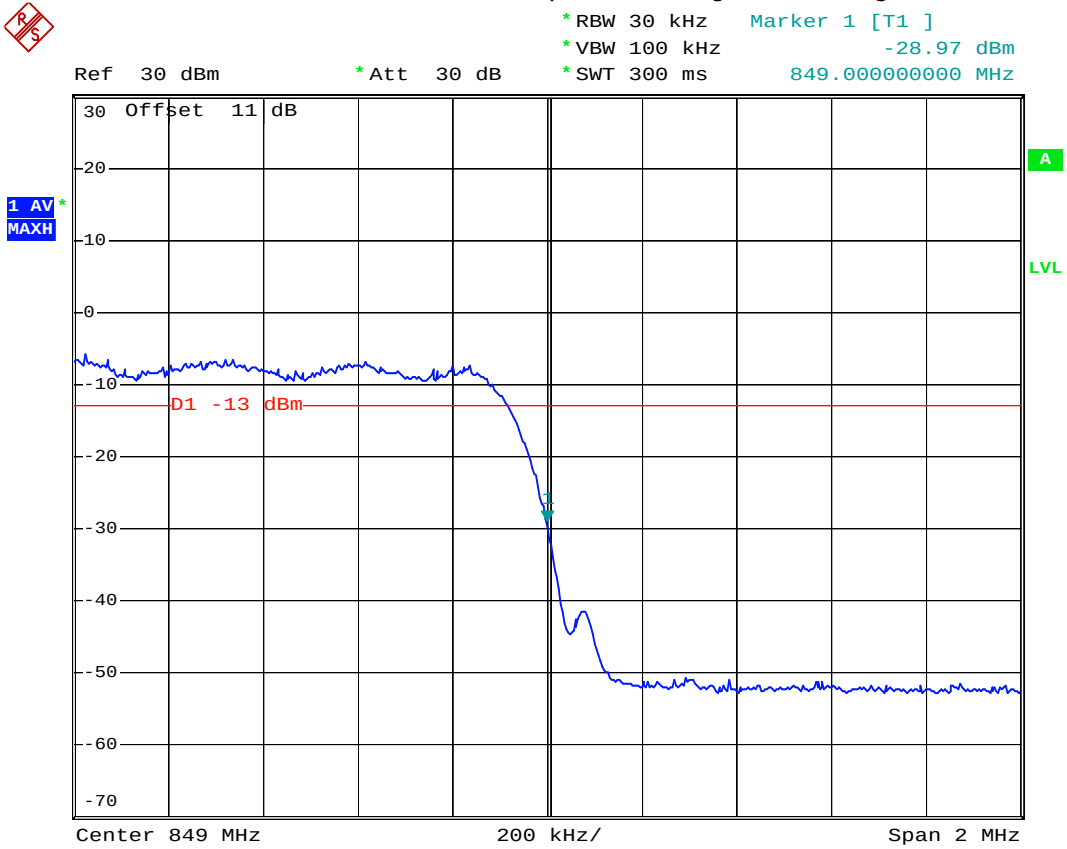
4.4.5 Band Edge Test Result

- Test Mode : CDMA2000 850 824.70MHz uplink mode Lower Band Edge



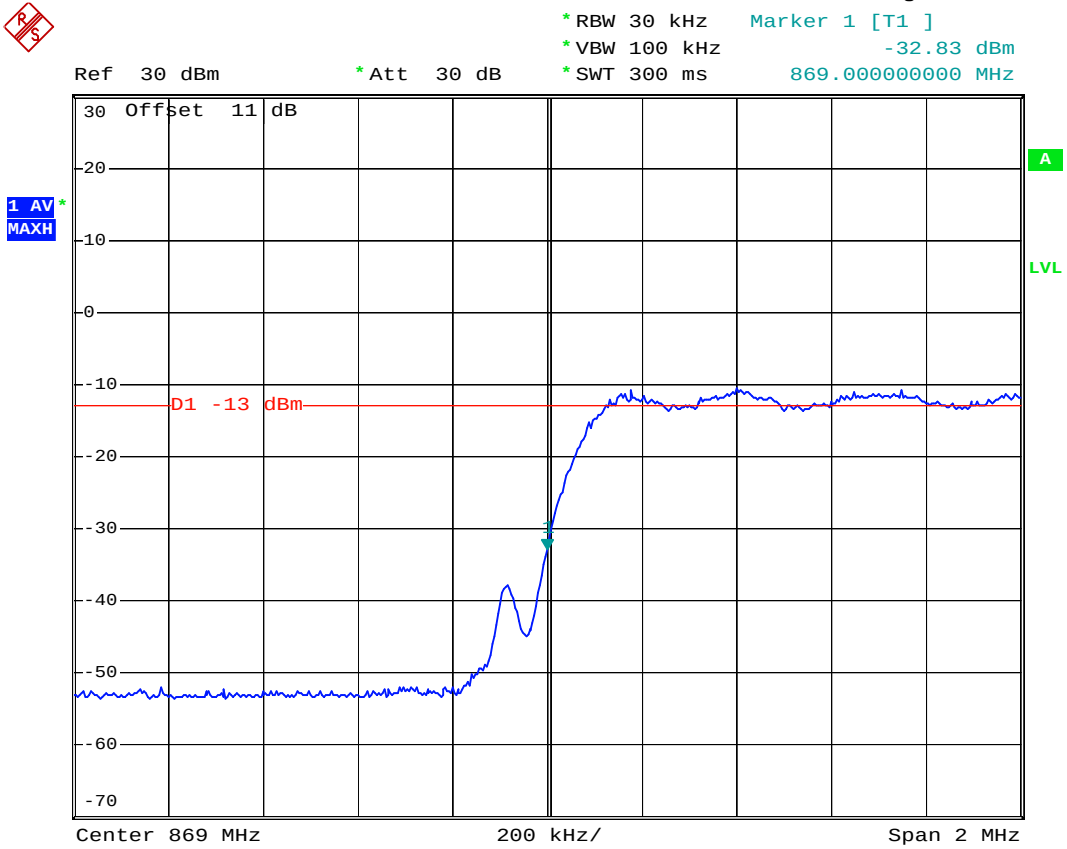
Date: 26.SEP.2006 21:58:10

- Test Mode : CDMA2000 850 848.31MHz uplink mode Higher Band Edge



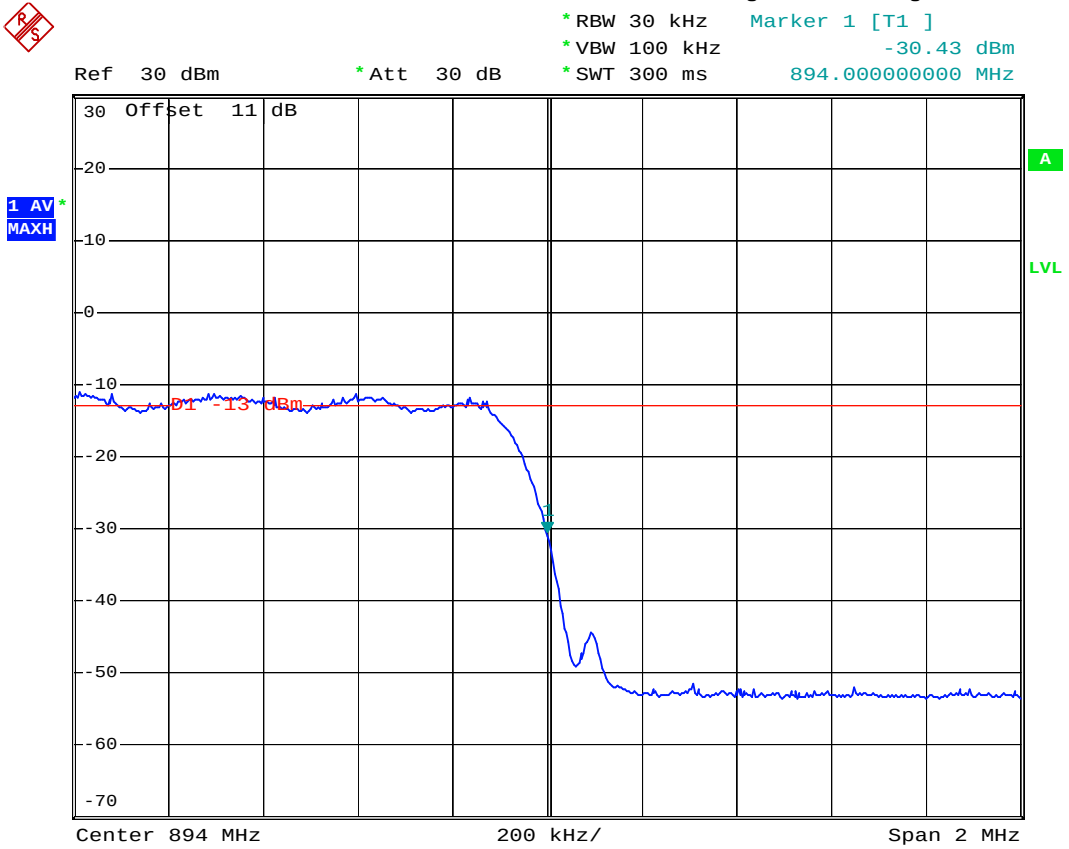
Date: 26.SEP.2006 21:59:56

- Test Mode : CDMA2000 850 869.70MHz downlink mode Lower Band Edge



Date: 18.SEP.2006 22:41:14

- Test Mode : CDMA2000 850 893.31MHz downlink mode Higher Band Edge



Date: 18.SEP.2006 22:34:20

4.5 Conducted Emission & Out of Band Rejection: Filter Frequency response & Intermodulation

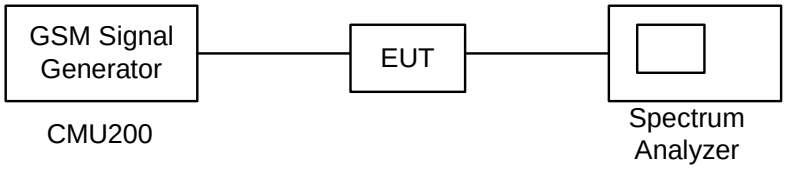
4.5.1 Measurement Instruments

As described in chapter 5 of this test report.

4.5.2 Test Procedure (For Conducted Emission)

1. The EUT was respectively connected to the specturm analyzer and the CDMA signal genetator.
2. Set the EUT maximum gain condition.
3. Varied the input power from the CDMA signal genetator, and the maximum output power reached.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.

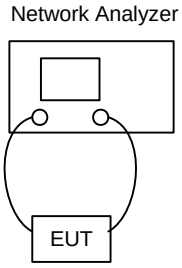
4.5.3 Test Setup Layout



4.5.4 Test Procedure (For Out of Band Rejection)

1. The EUT was respectively connected to Network Analyzer's port 1 and prot2.
2. Set the EUT maximum gain condition.
3. The Out of Band Rejection for the whole authorized frequency band was measured.

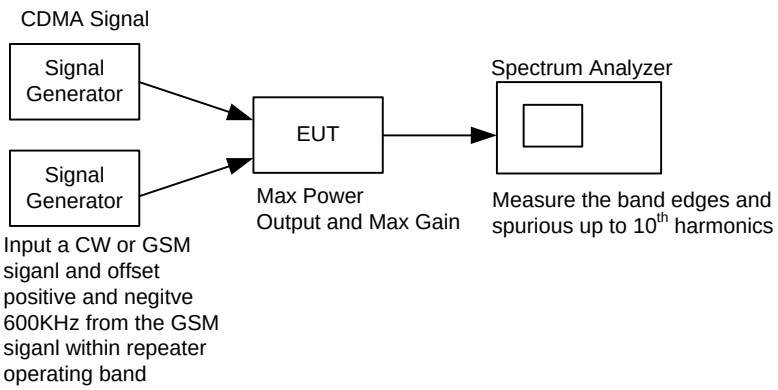
4.5.5 Test Setup Layout



4.5.6 Test Procedure (For Intermodulation)

1. The EUT was connected respectively to the specturm analyzer and the signal generattor (CMU200) which generarted a CW and GSM signal.
2. Set the EUT maximum gain and output power.
3. Inputed a CDMA frequency at 824.7MHz from CMU200 and a CW frequecny at 825.3MHz (Offsets 600KHz from the 824.7MHZ)from another one.
4. Measured and recorded for the lower band edge at 824MHz and spurious up to the10th harmonics.
5. Measured and recorded for the upper band edge at 849MHz and spurious up to the10 th harmonics.
6. Repeatedly measured above steps for downlink mode.
7. Repeatedly measured above steps for CDMA and GSM.

4.5.7 Test Setup Layout



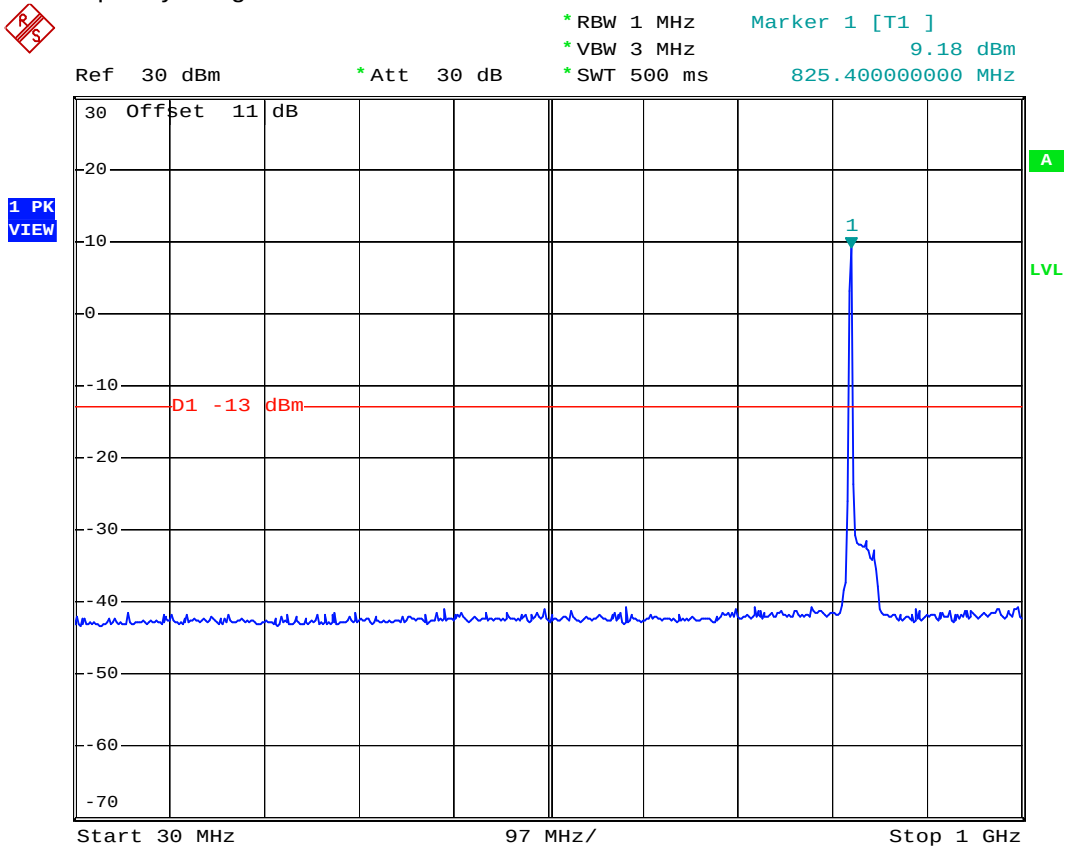
4.5.8 Test Results

Mode		CDMA Freq(MHz)	CW/CDMA Freq(MHz)	CW/GSM Input(dBm)	CW/GSM Output(dBm)	limit line (dBm)	Results
Input Siganl CDMA and CW	Uplink	824.70	825.30	-53.4	9.30	-13	Pass
		848.31	847.71	-53.0	9.83	-13	Pass
	Downlink	869.70	870.30	-47.0	6.96	-13	Pass
		893.31	892.71	-49.5	6.90	-13	Pass
Input Siganl CDMA and GSM	Uplink	824.70	825.20	-45.0	9.66	-13	Pass
		848.31	847.80	-45.0	9.41	-13	Pass
	Downlink	869.70	870.20	-45.3	6.74	-13	Pass
		893.31	892.80	-48.0	6.66	-13	Pass

4.5.8 Test Result

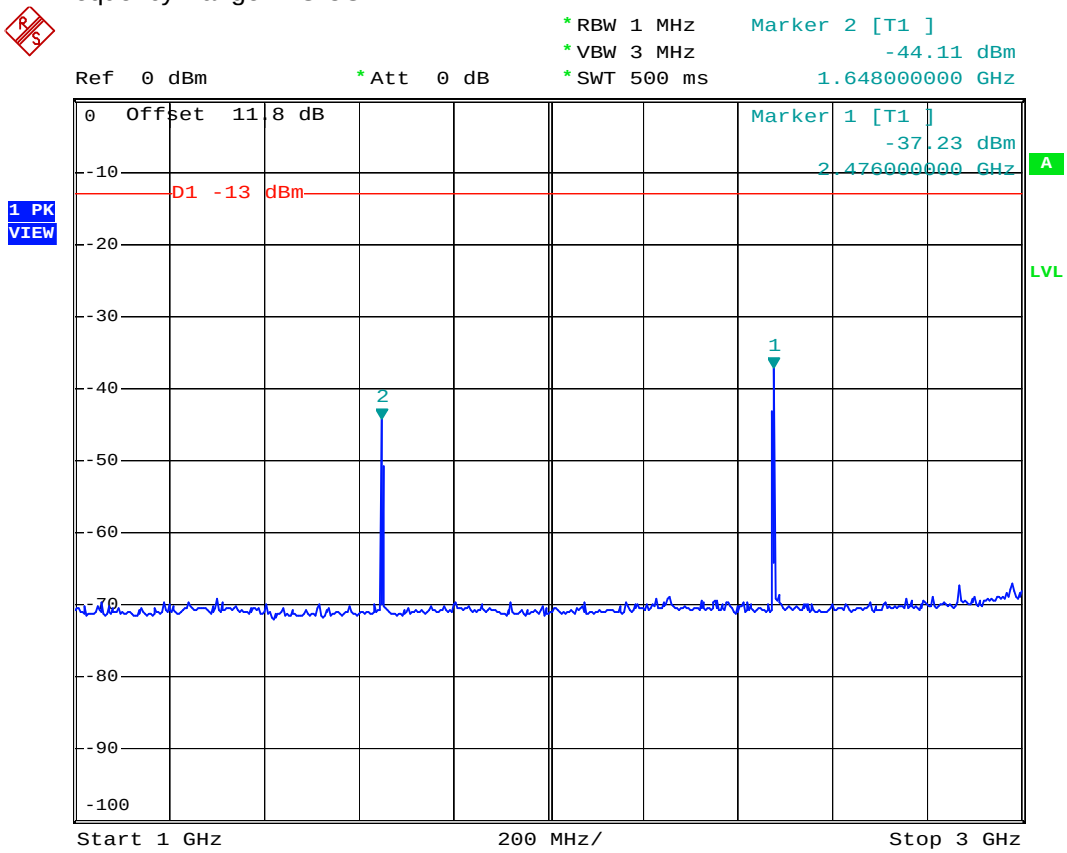
4.5.8.1 Conducted Emission

- Test Mode : CDMA2000 850 824.70MHz uplink mode
- Frequency Range : 0.3G-1G



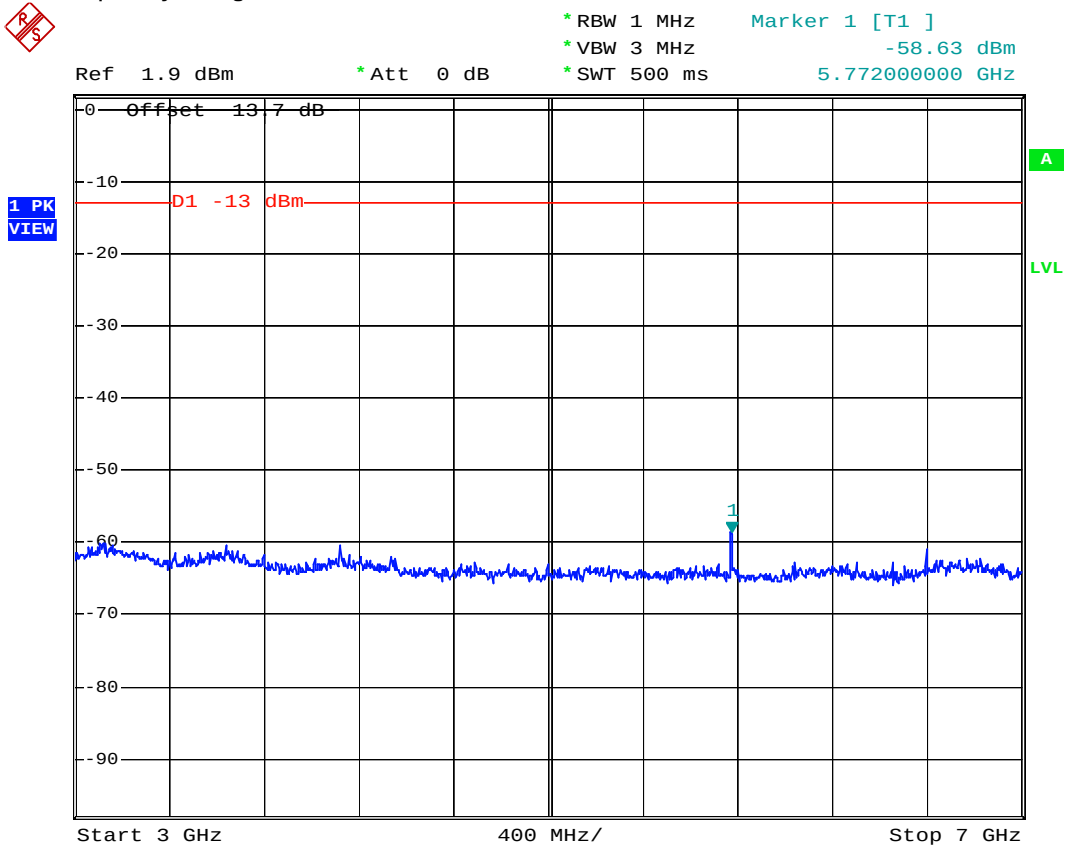
Date: 26.SEP.2006 21:38:05

- Frequency Range : 1G-3G



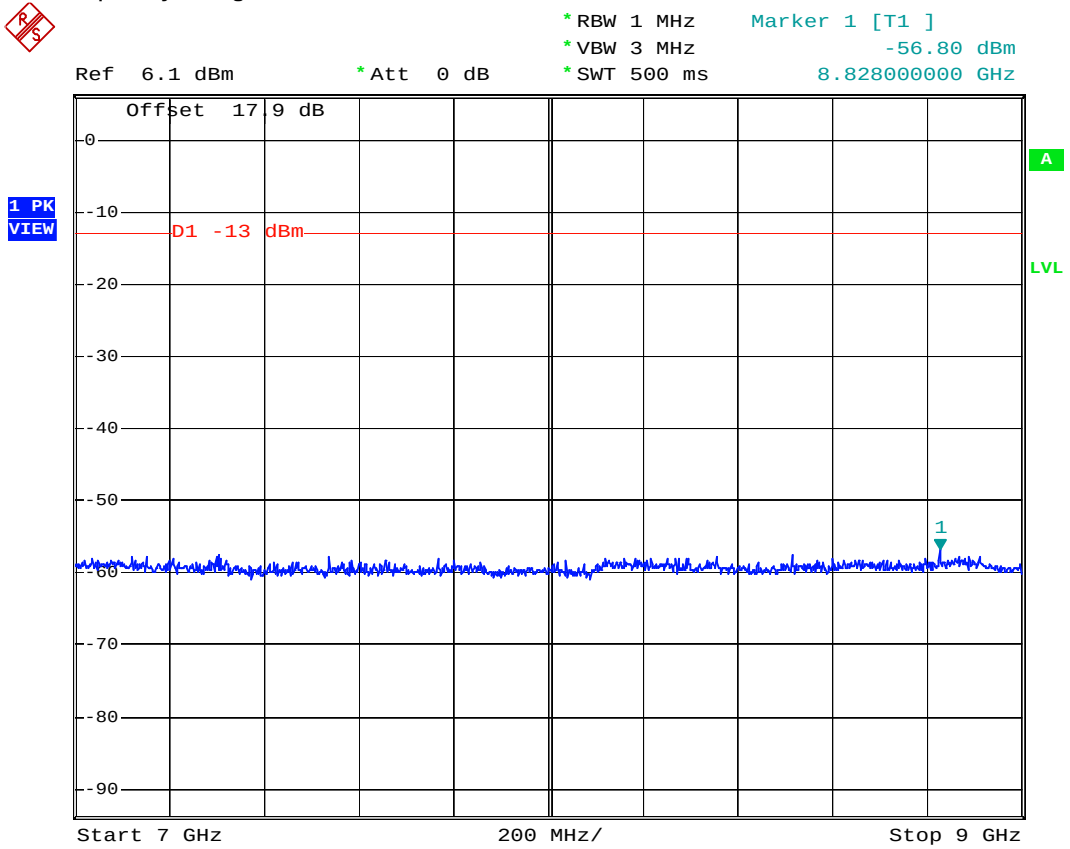
Date: 26.SEP.2006 21:51:34

- Frequency Range : 3G-7G



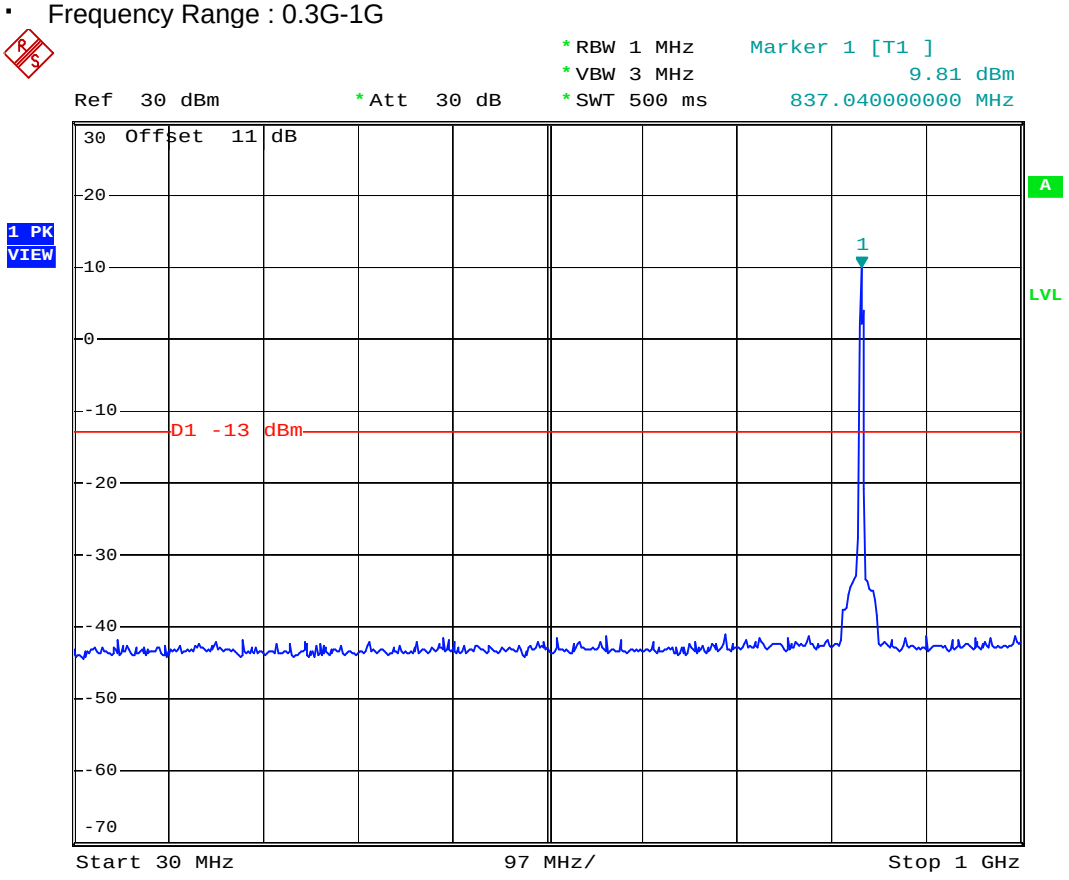
Date: 15.SEP.2006 18:29:30

- Frequency Range : 7G-9G



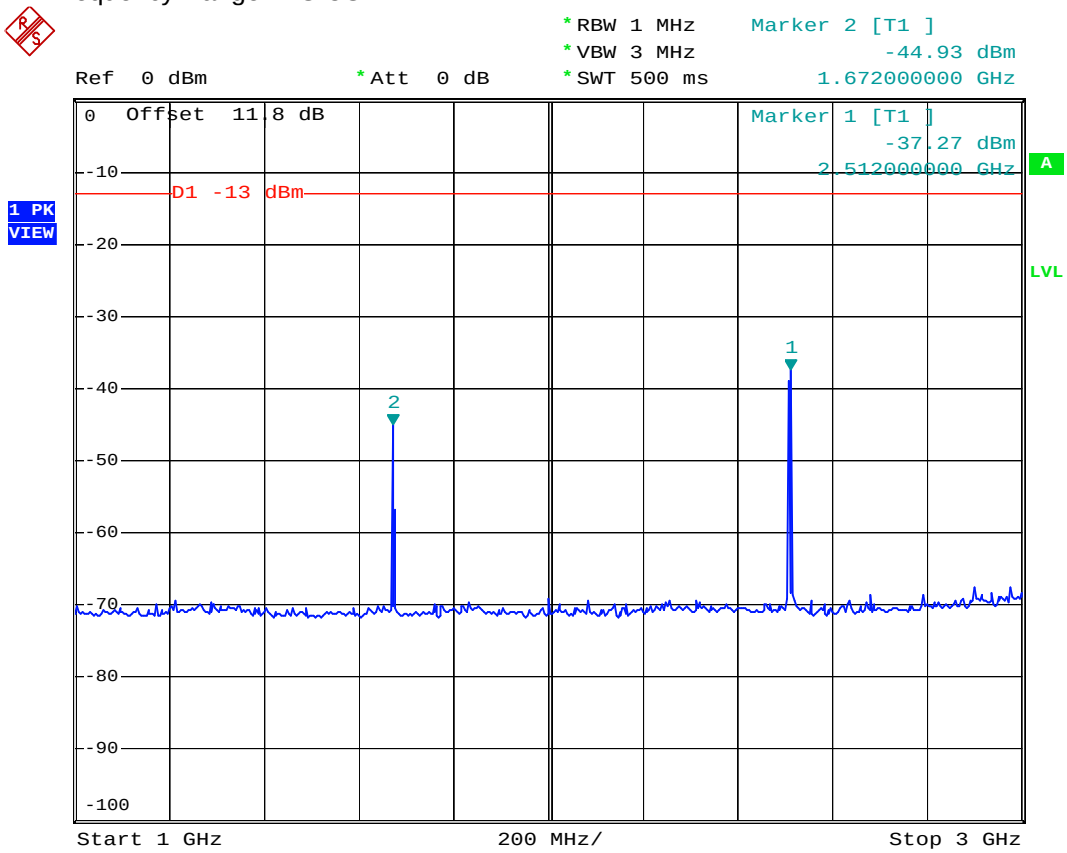
Date: 15.SEP.2006 18:30:37

- Test Mode : CDMA2000 850 836.52MHz uplink mode
- Frequency Range : 0.3G-1G



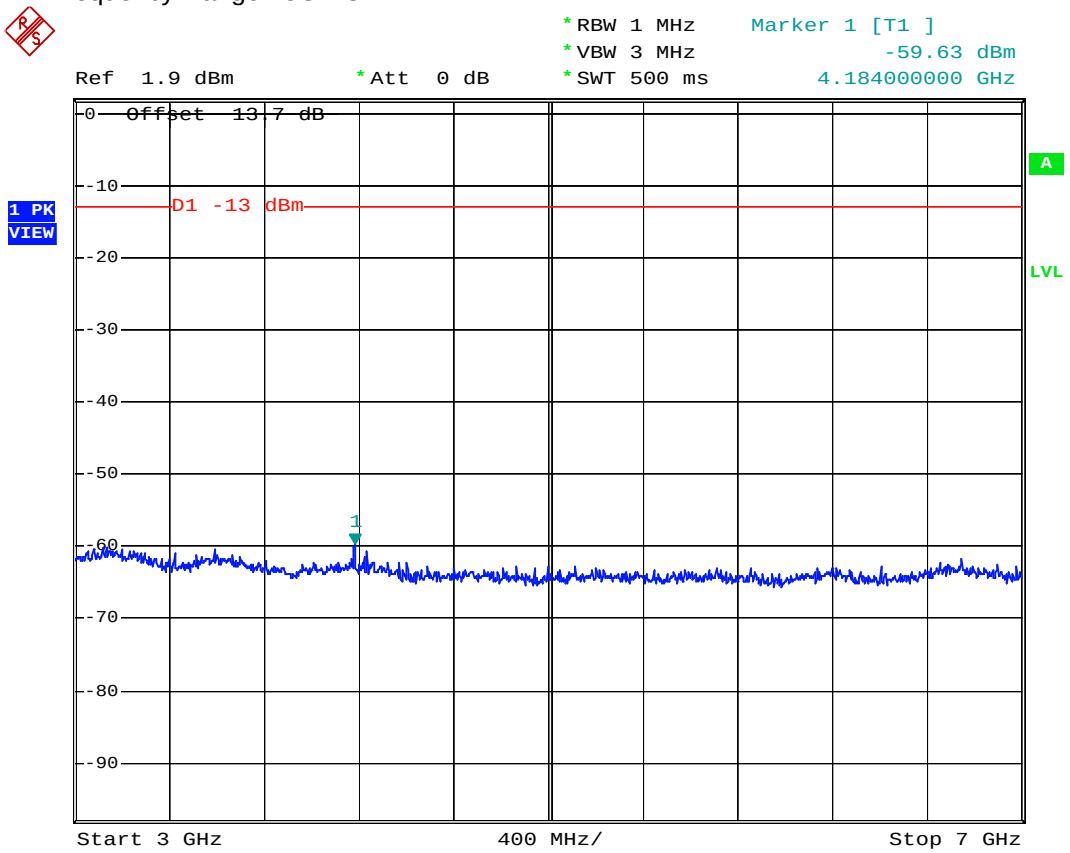
Date: 26.SEP.2006 21:38:52

- Frequency Range : 1G-3G



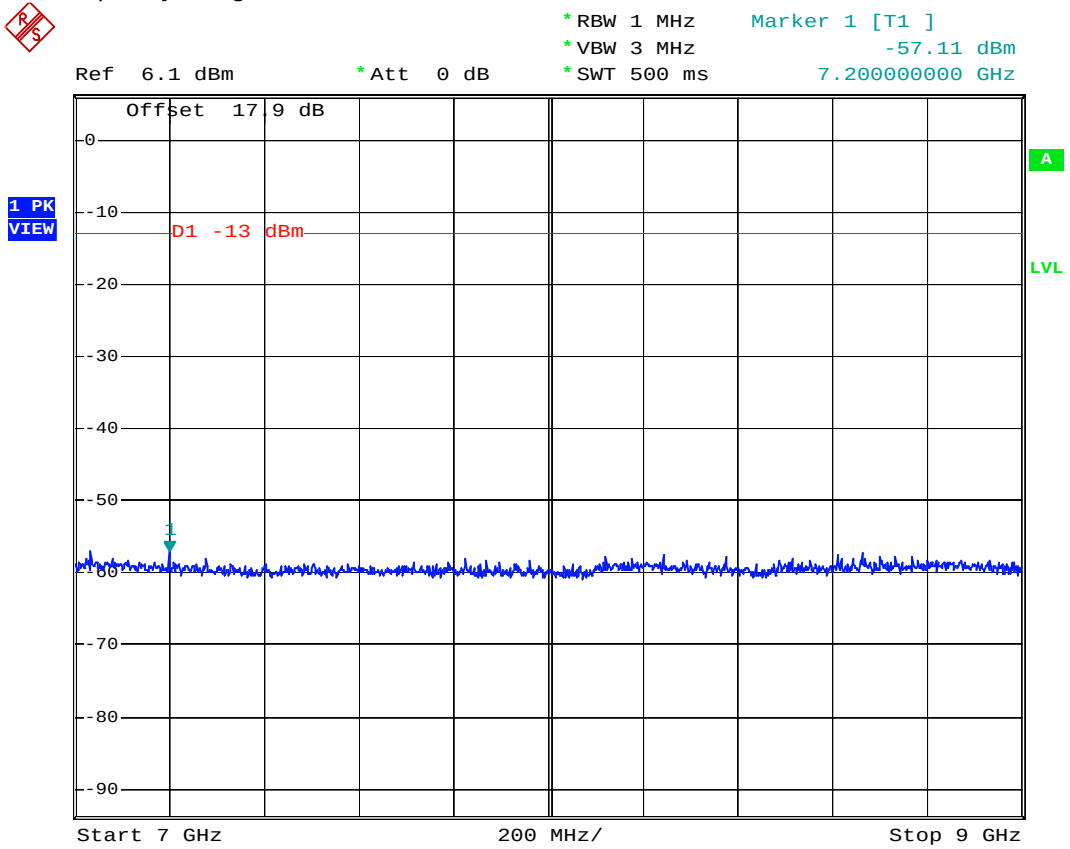
Date: 26.SEP.2006 21:50:38

- Frequency Range : 3G-7G



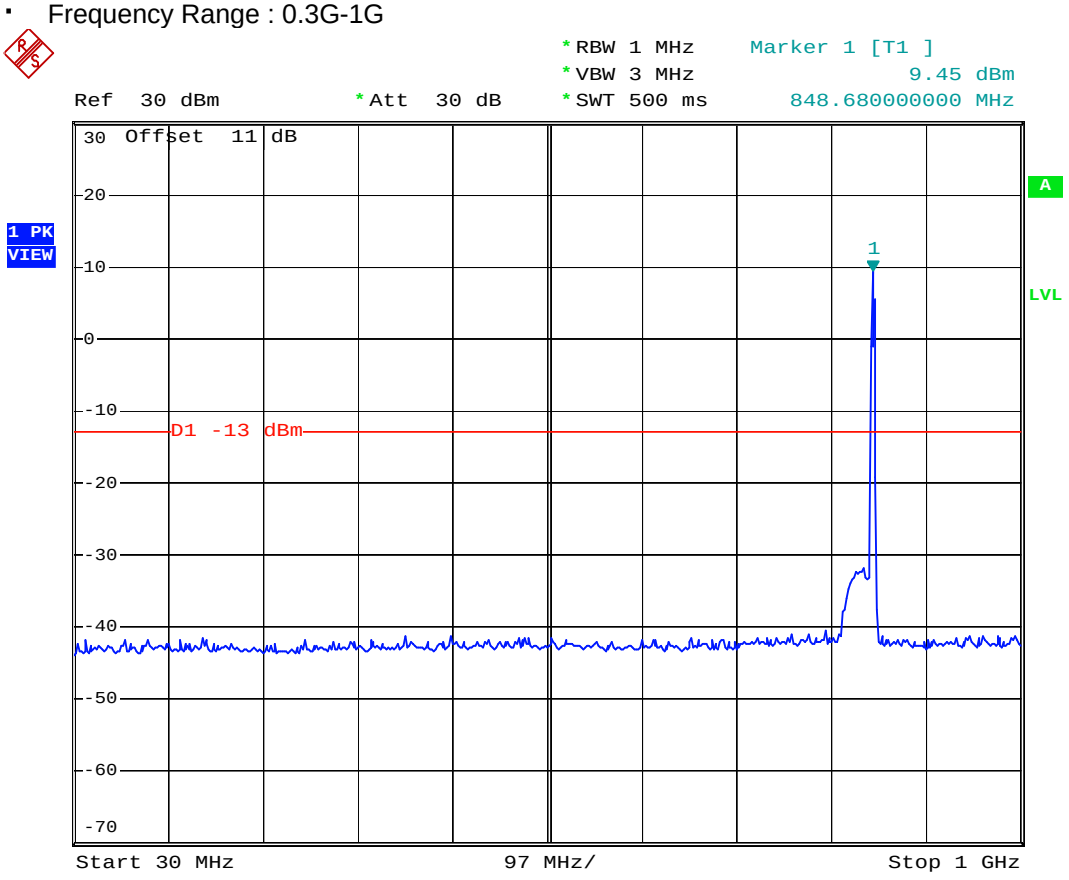
Date: 15.SEP.2006 18:35:37

- Frequency Range : 7G-9G



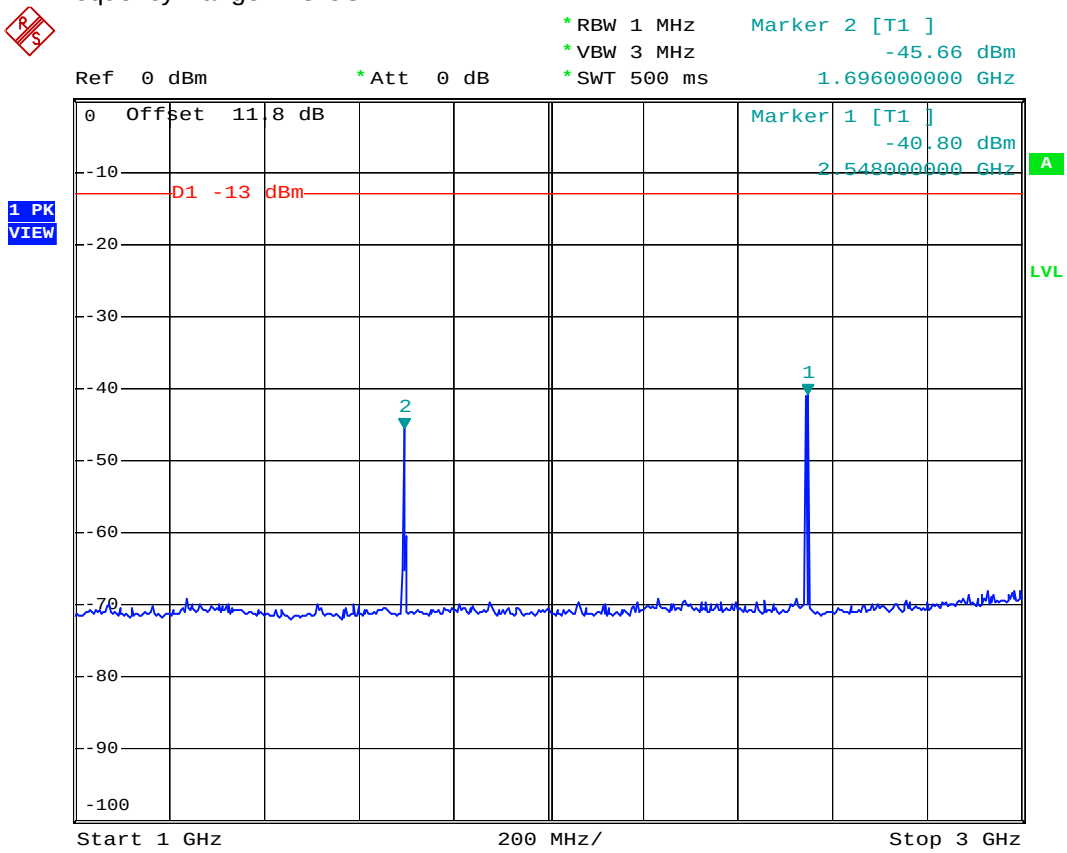
Date: 15.SEP.2006 18:34:53

- Test Mode : CDMA2000 850 848.31MHz uplink mode
- Frequency Range : 0.3G-1G



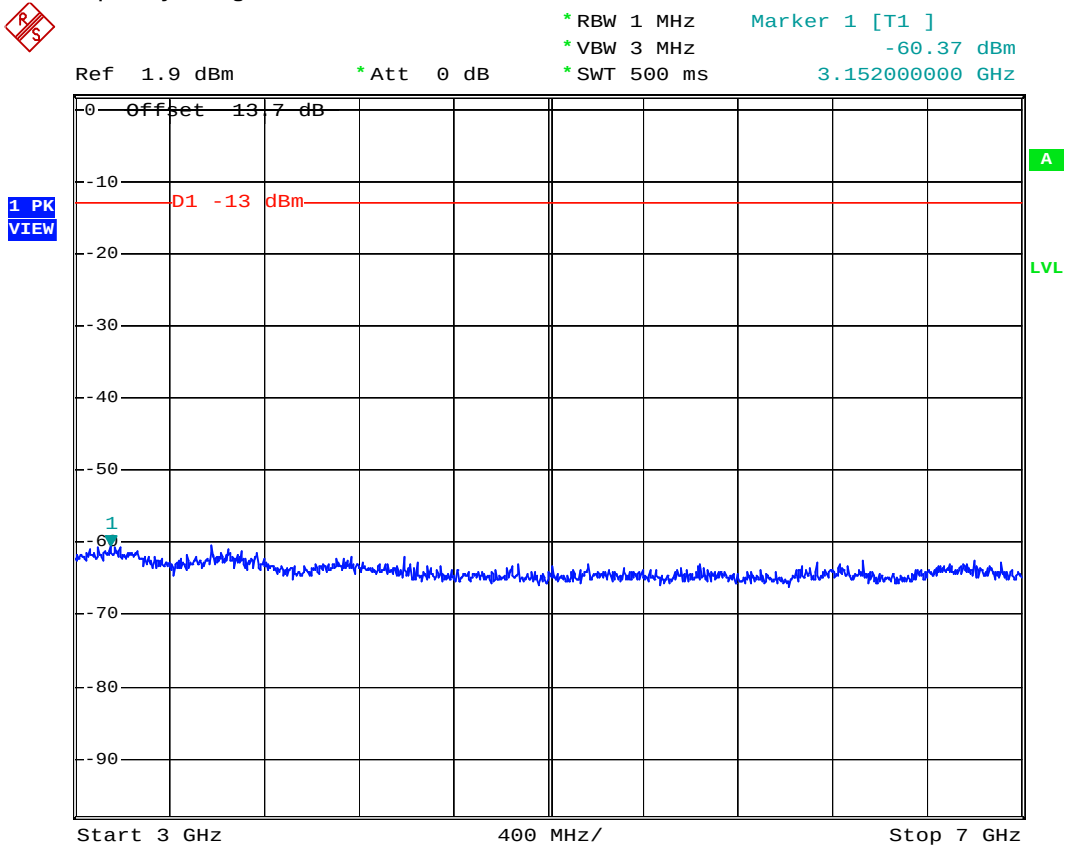
Date: 26.SEP.2006 21:45:12

- Frequency Range : 1G-3G



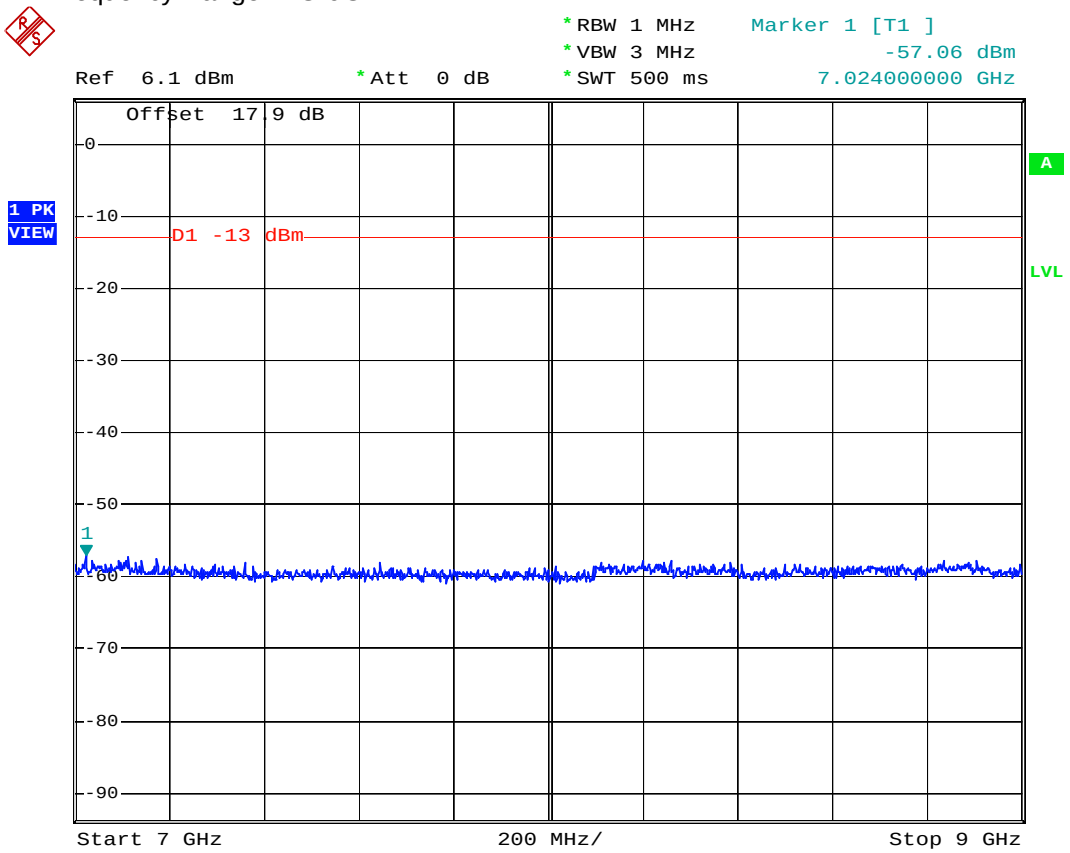
Date: 26.SEP.2006 21:49:31

- Frequency Range : 3G-7G



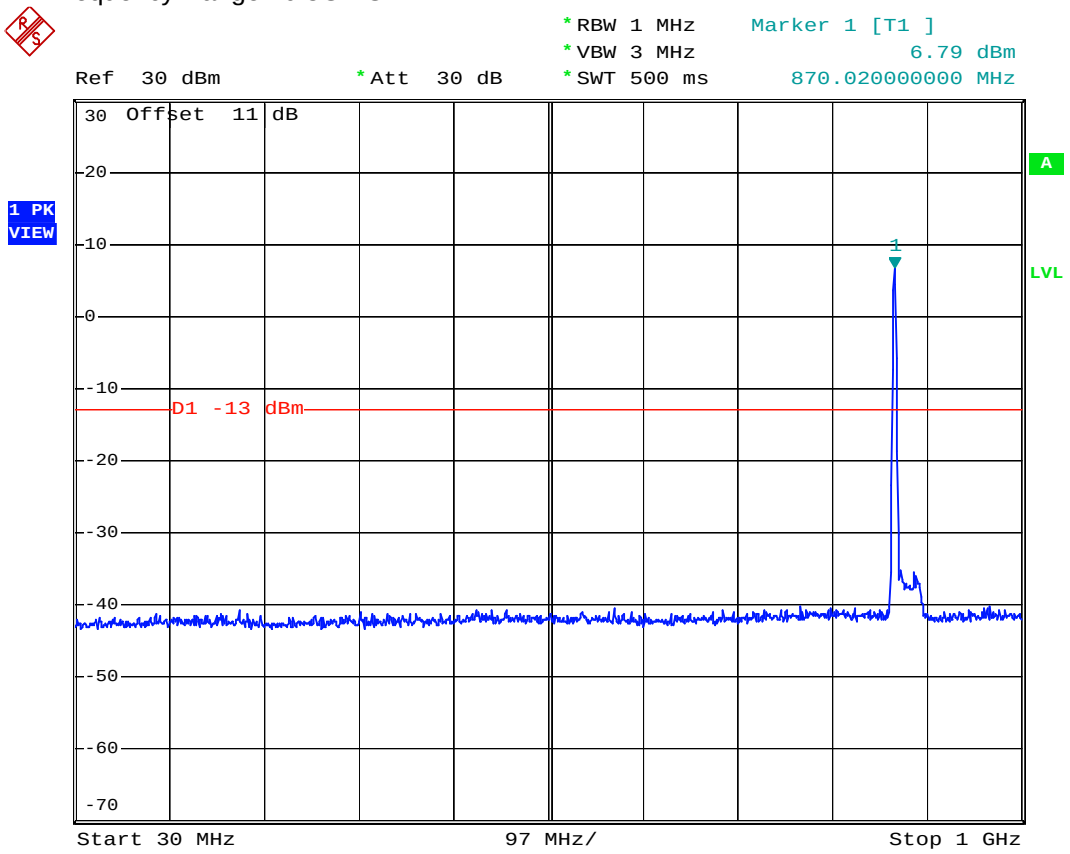
Date: 15.SEP.2006 19:20:00

- Frequency Range : 7G-9G



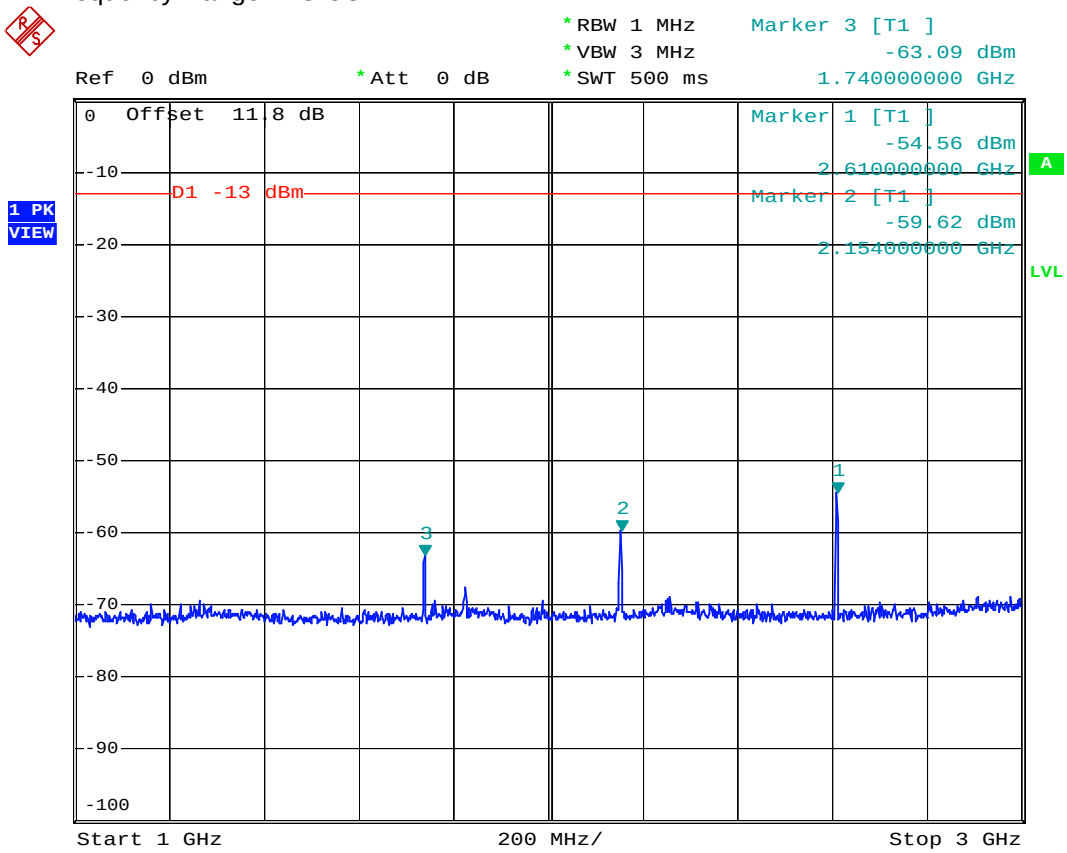
Date: 15.SEP.2006 19:20:50

- Test Mode : CDMA2000 850 869.70MHz downlink mode
- Frequency Range : 0.3G-1G



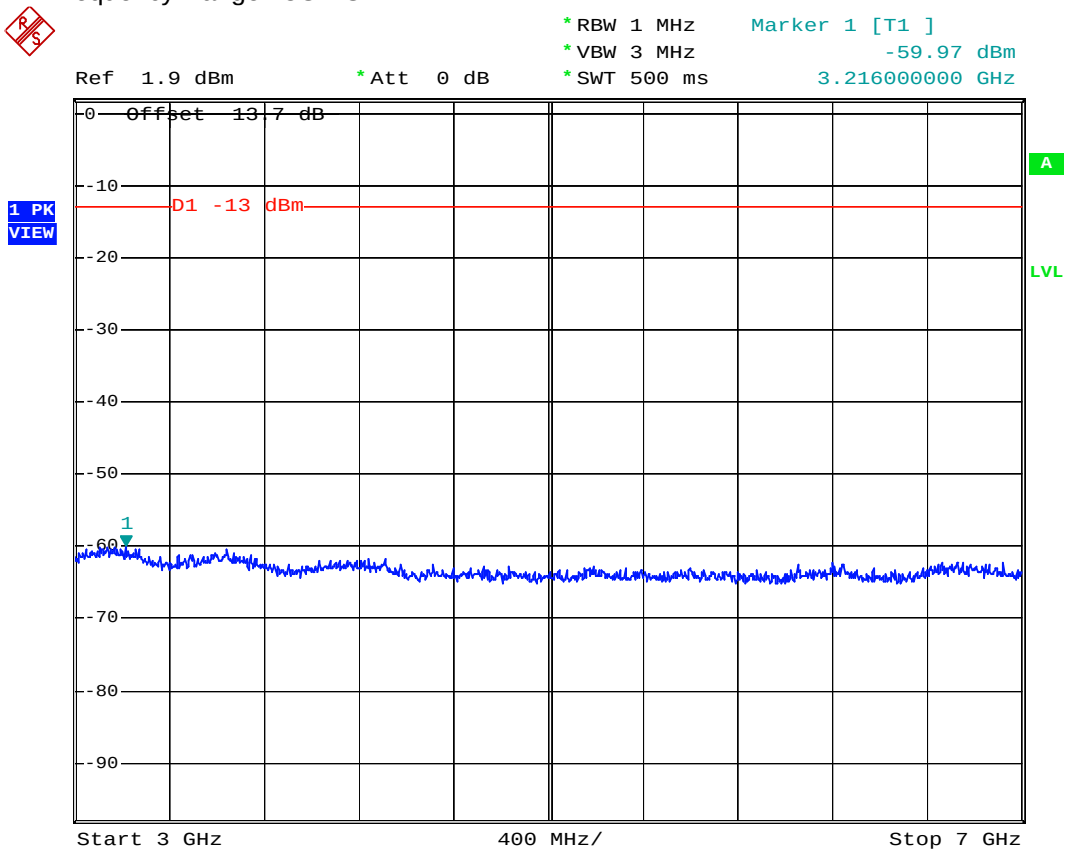
Date: 15.SEP.2006 18:01:05

- Frequency Range : 1G-3G



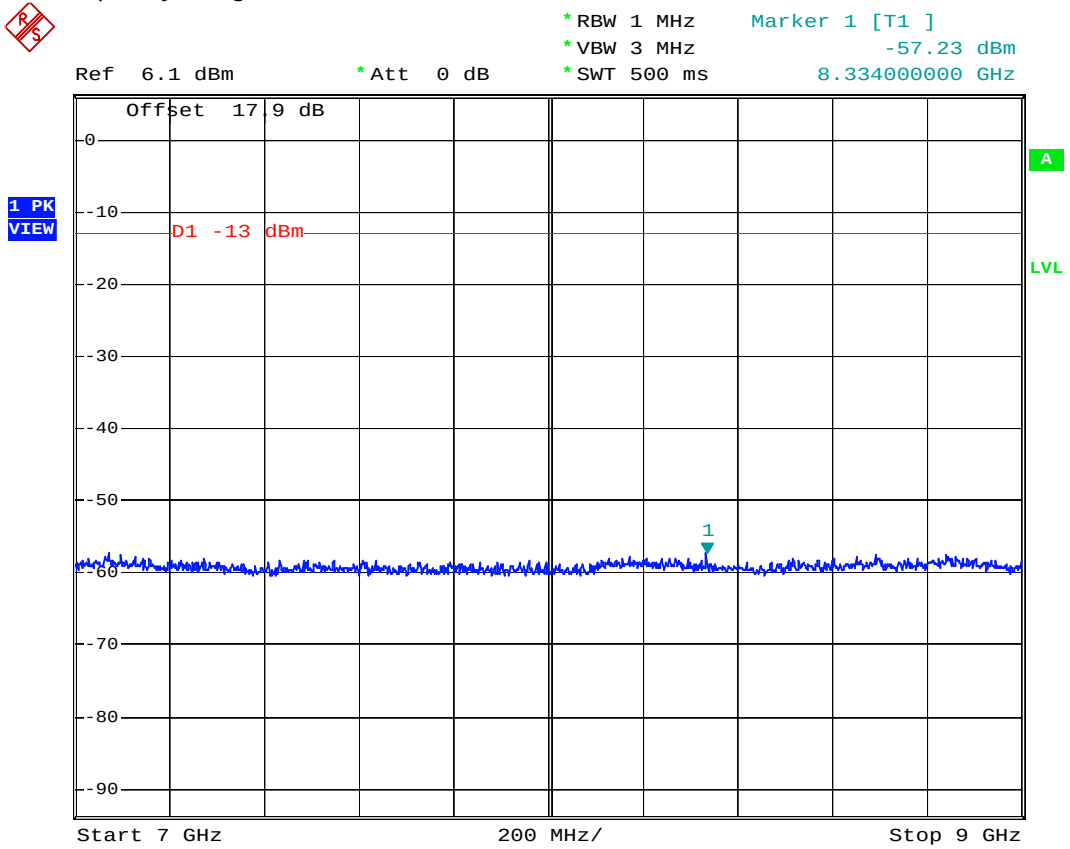
Date: 15.SEP.2006 18:04:11

- Frequency Range : 3G-7G



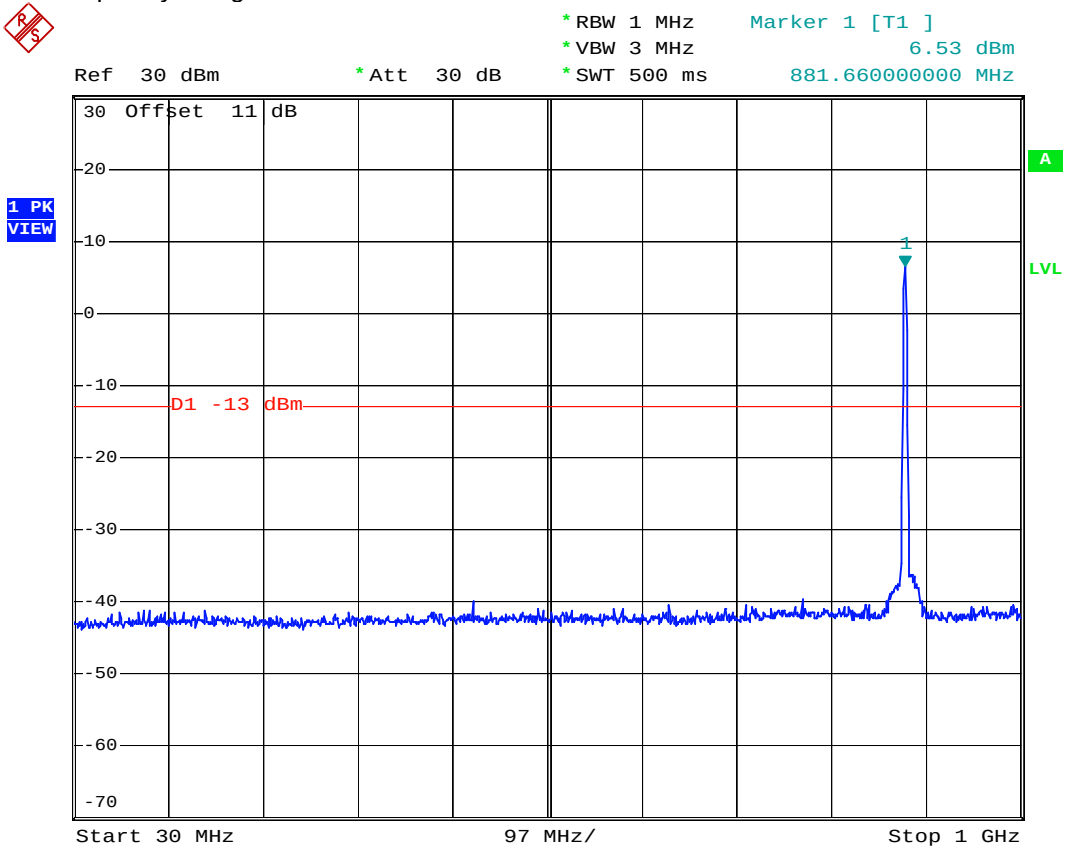
Date: 15.SEP.2006 18:05:09

- Frequency Range : 7G-9G



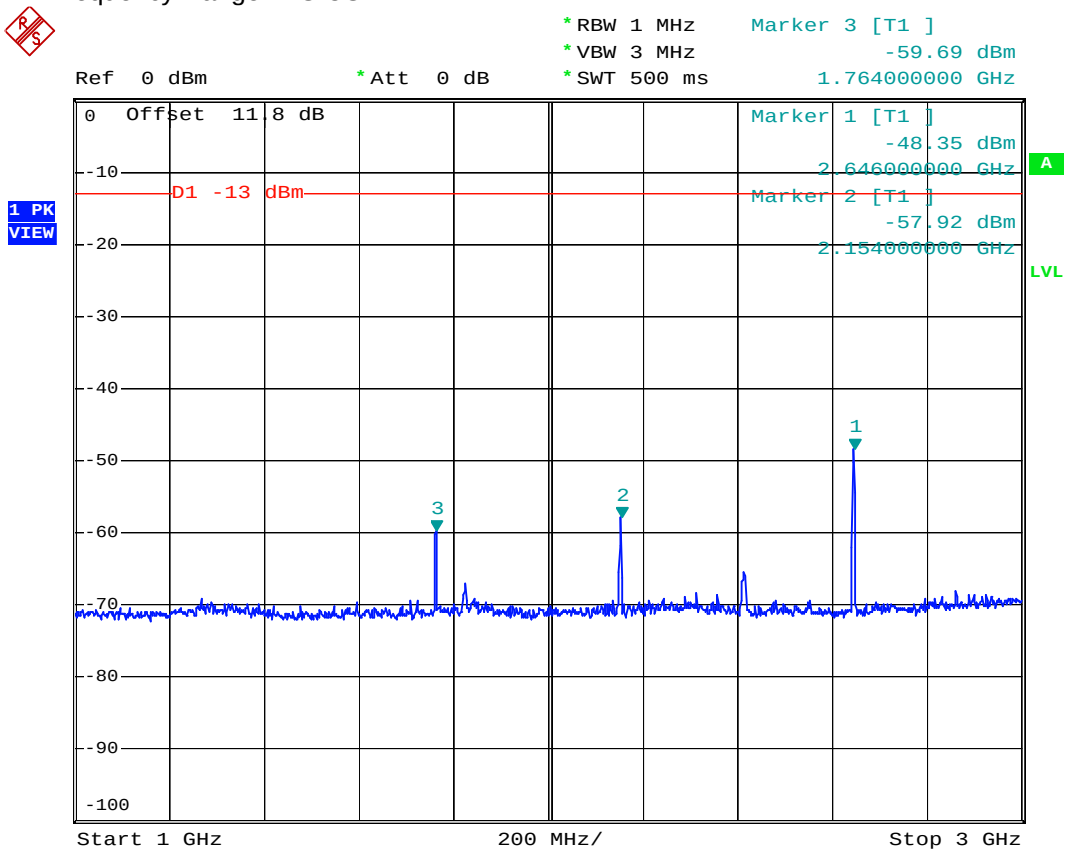
Date: 15.SEP.2006 18:06:06

- Test Mode : CDMA2000 850 881.52MHz downlink mode
- Frequency Range : 0.3G-1G



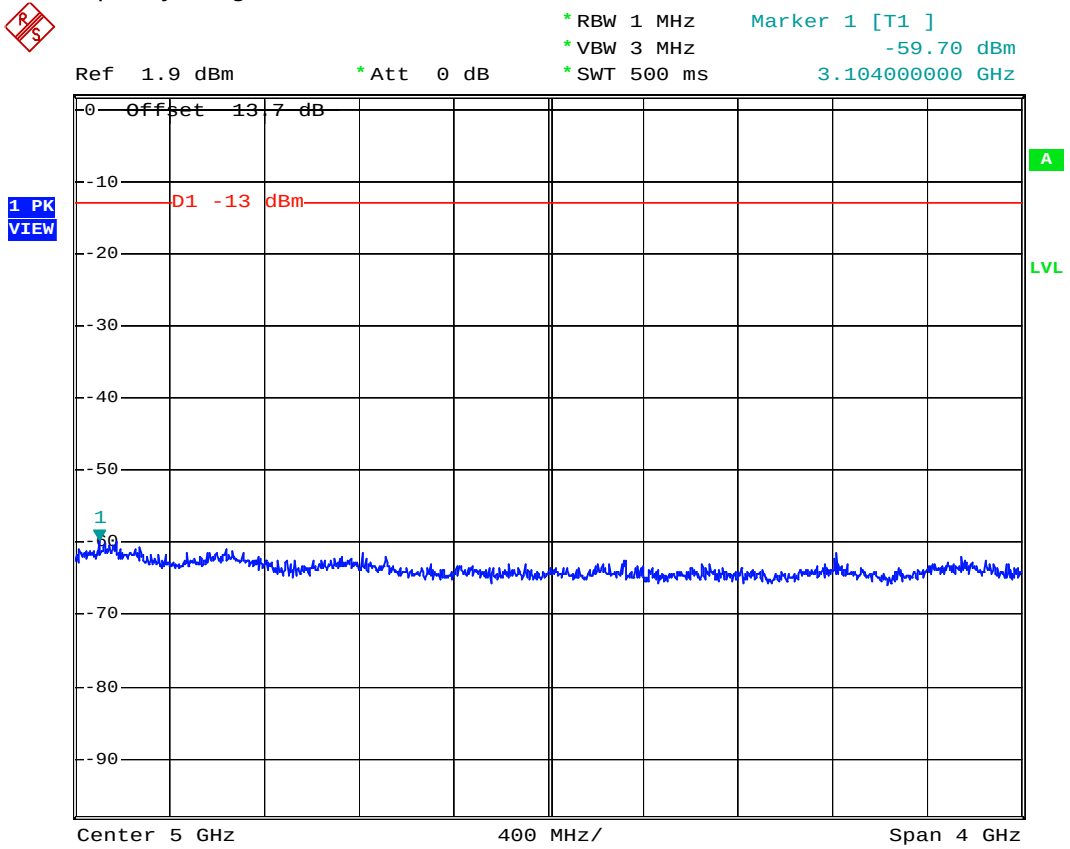
Date: 15.SEP.2006 17:50:08

- Frequency Range : 1G-3G



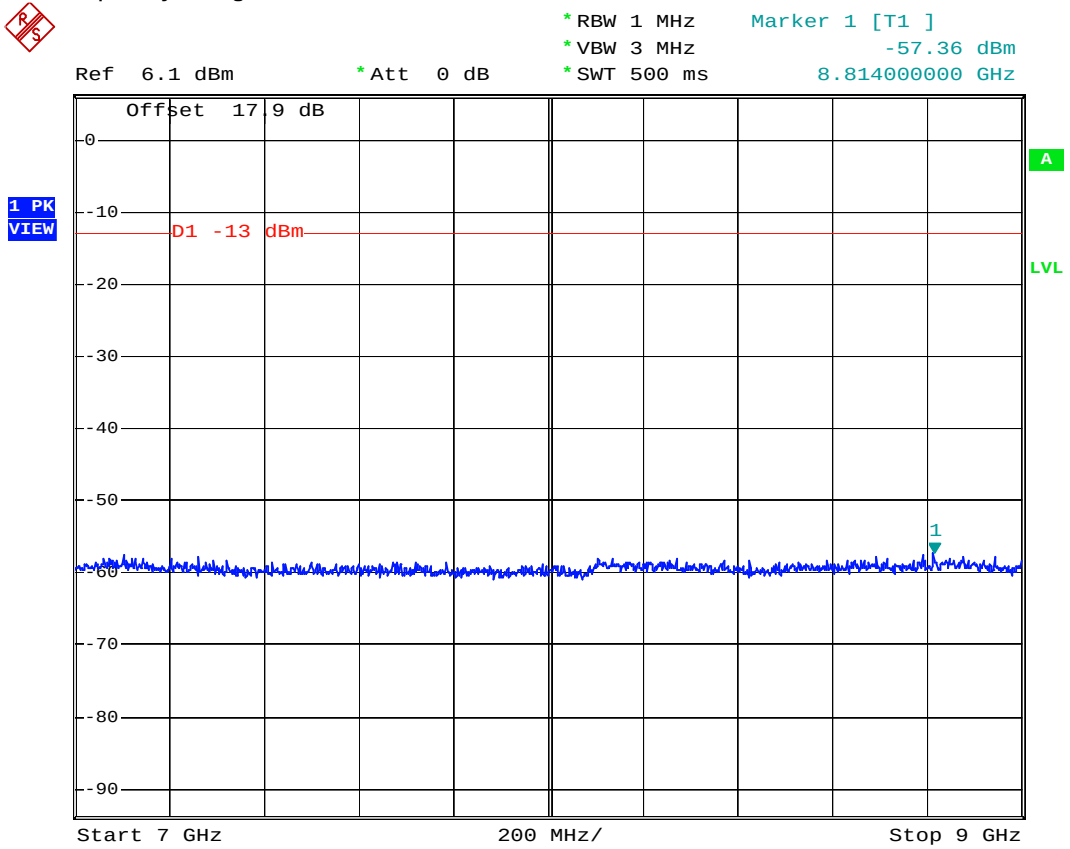
Date: 15.SEP.2006 17:52:50

- Frequency Range : 3G-7G



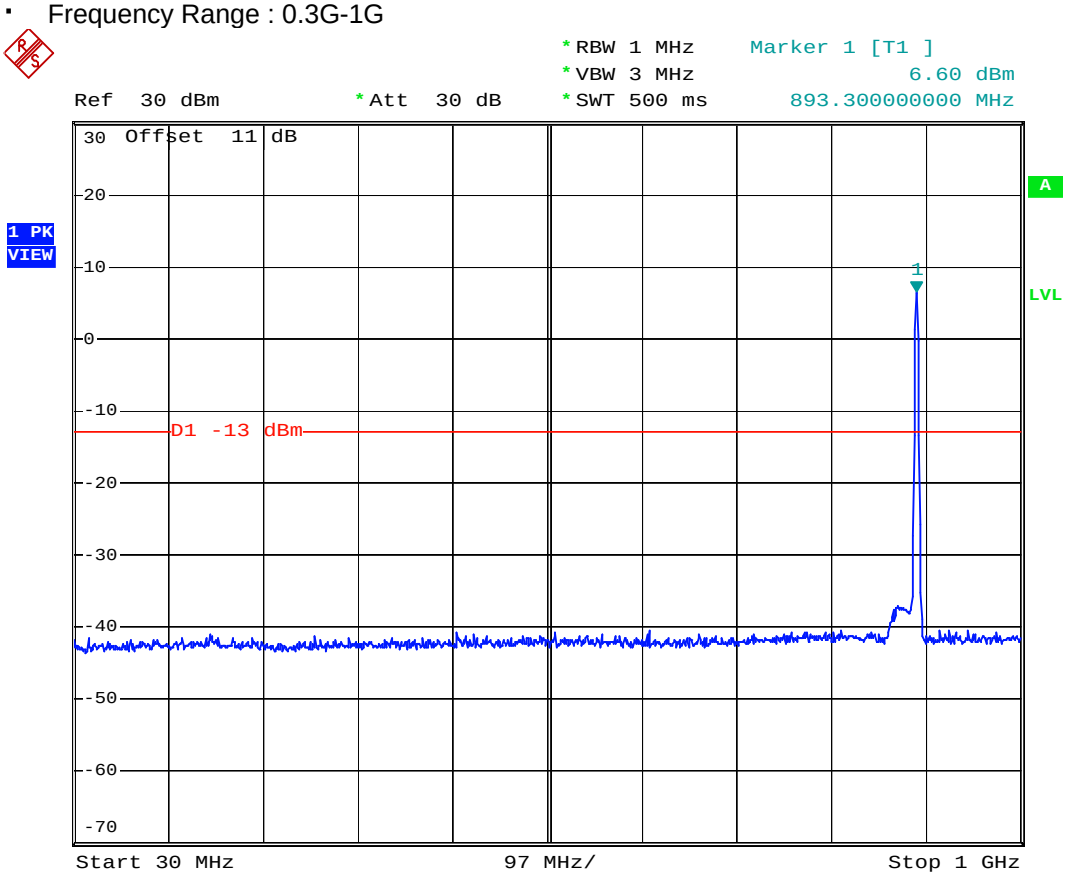
Date: 15.SEP.2006 17:53:48

- Frequency Range : 7G-9G



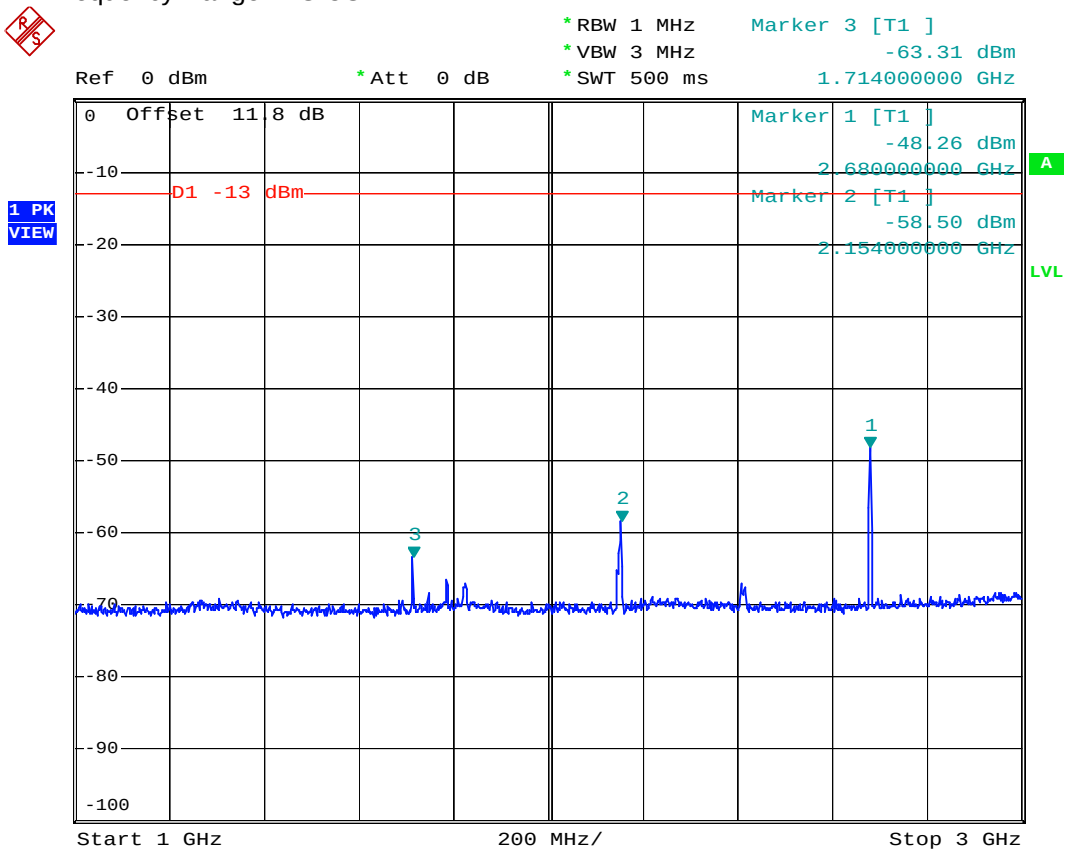
Date: 15.SEP.2006 17:54:39

- Test Mode : CDMA2000 850 893.31MHz downlink mode
- Frequency Range : 0.3G-1G



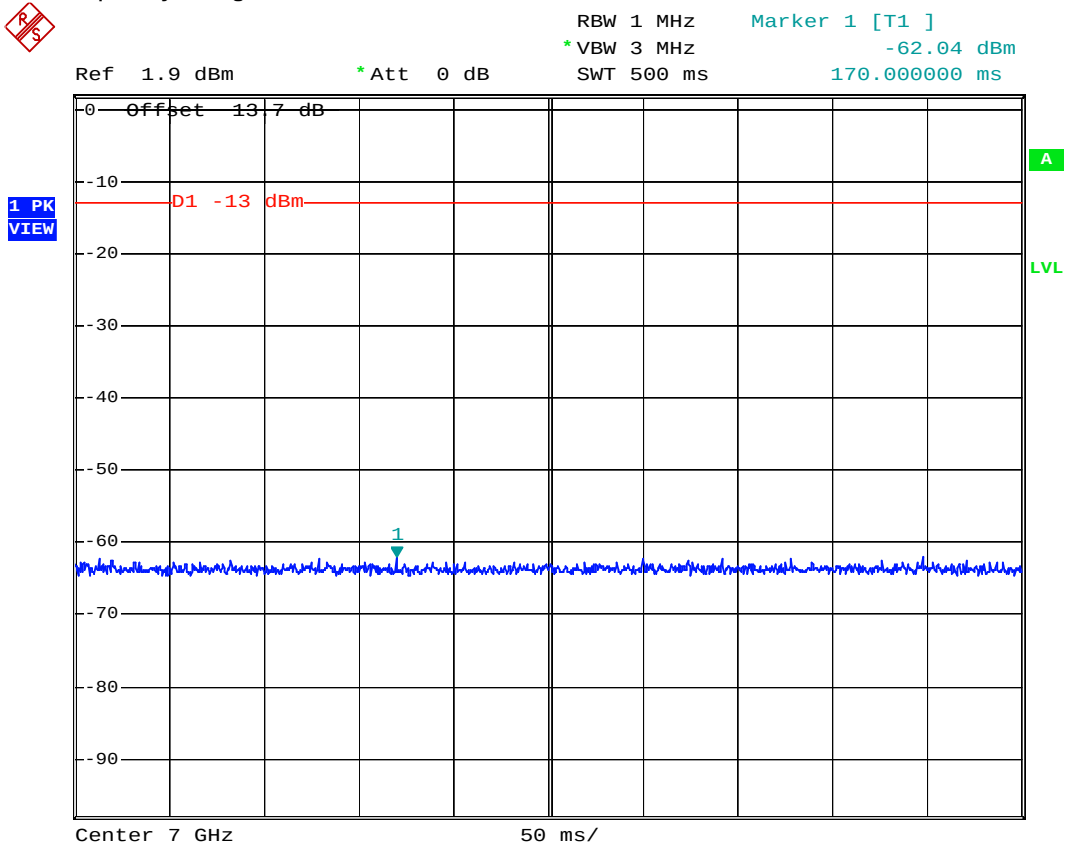
Date: 15.SEP.2006 17:27:48

- Frequency Range : 1G-3G



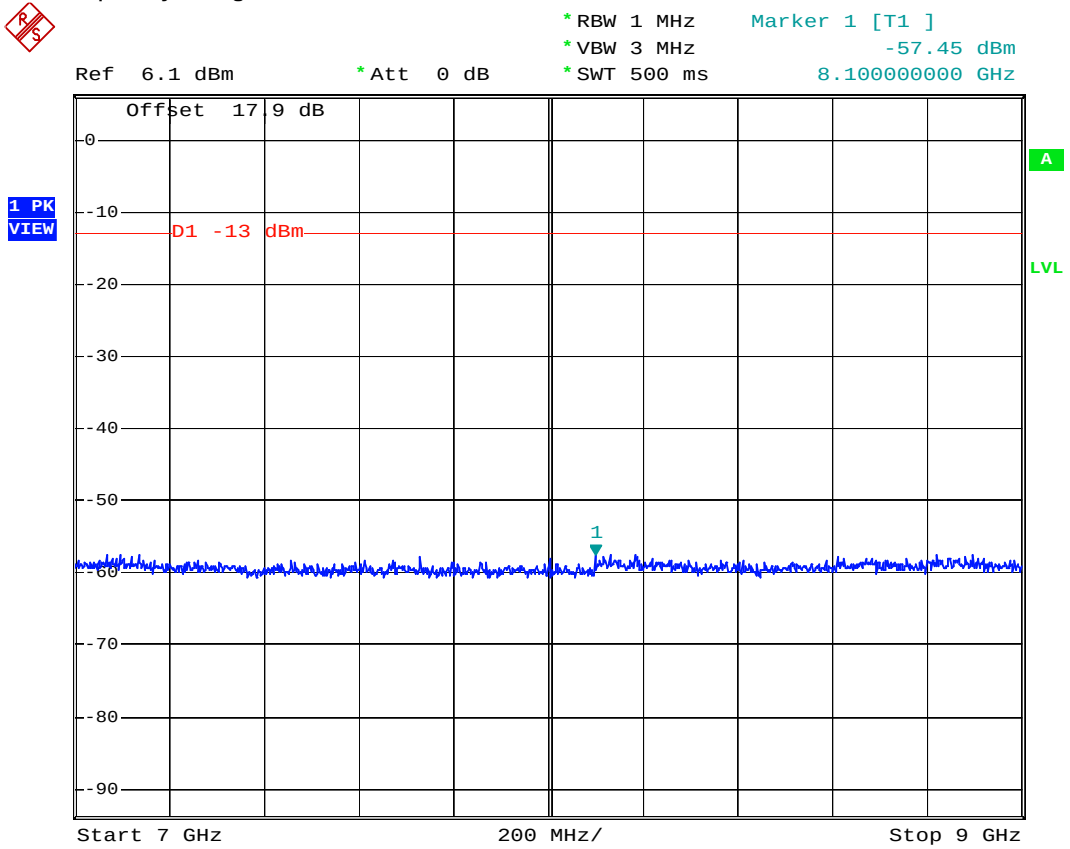
Date: 15.SEP.2006 17:32:42

- Frequency Range : 3G-7G



Date: 15.SEP.2006 17:33:45

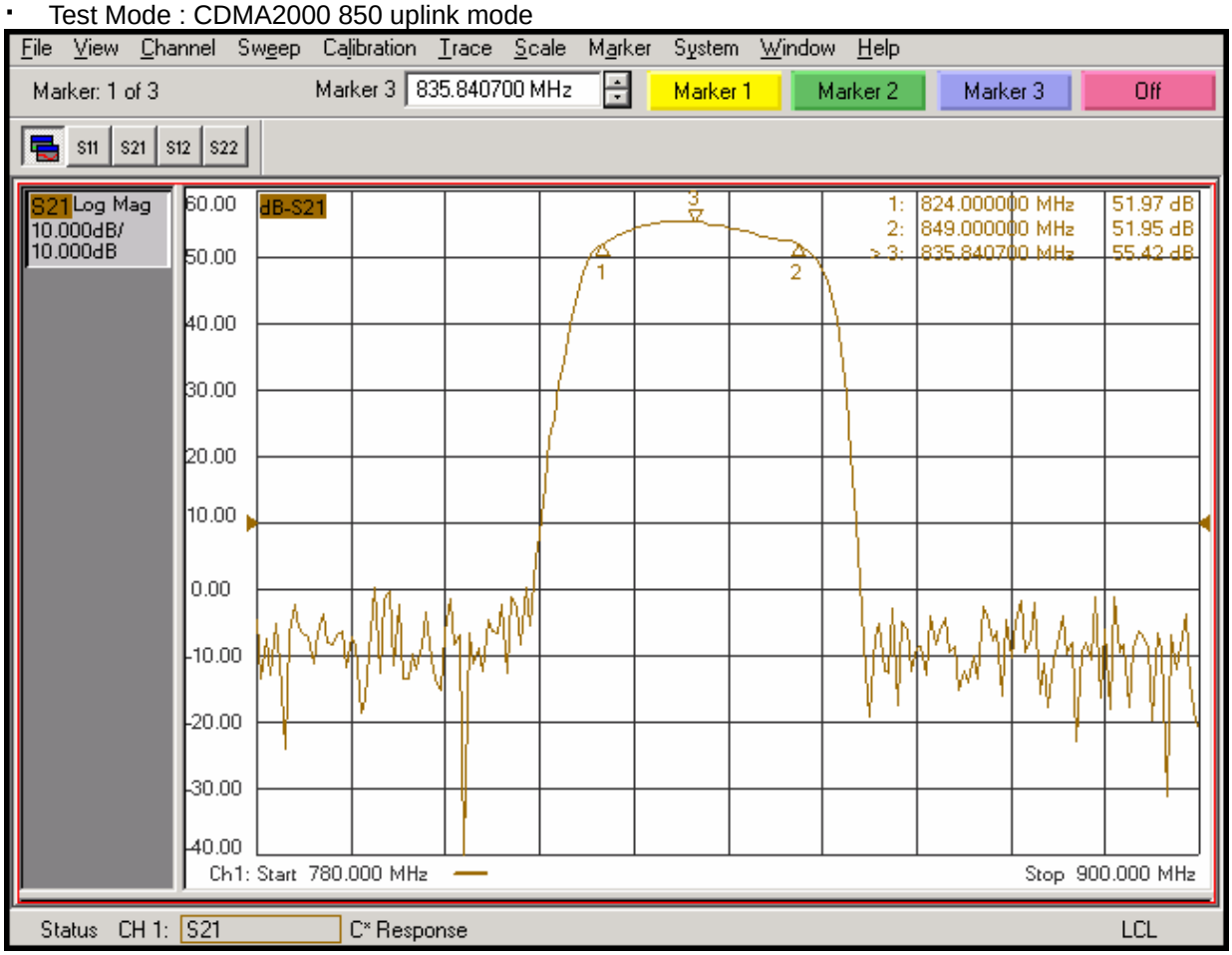
- Frequency Range : 7G-9G



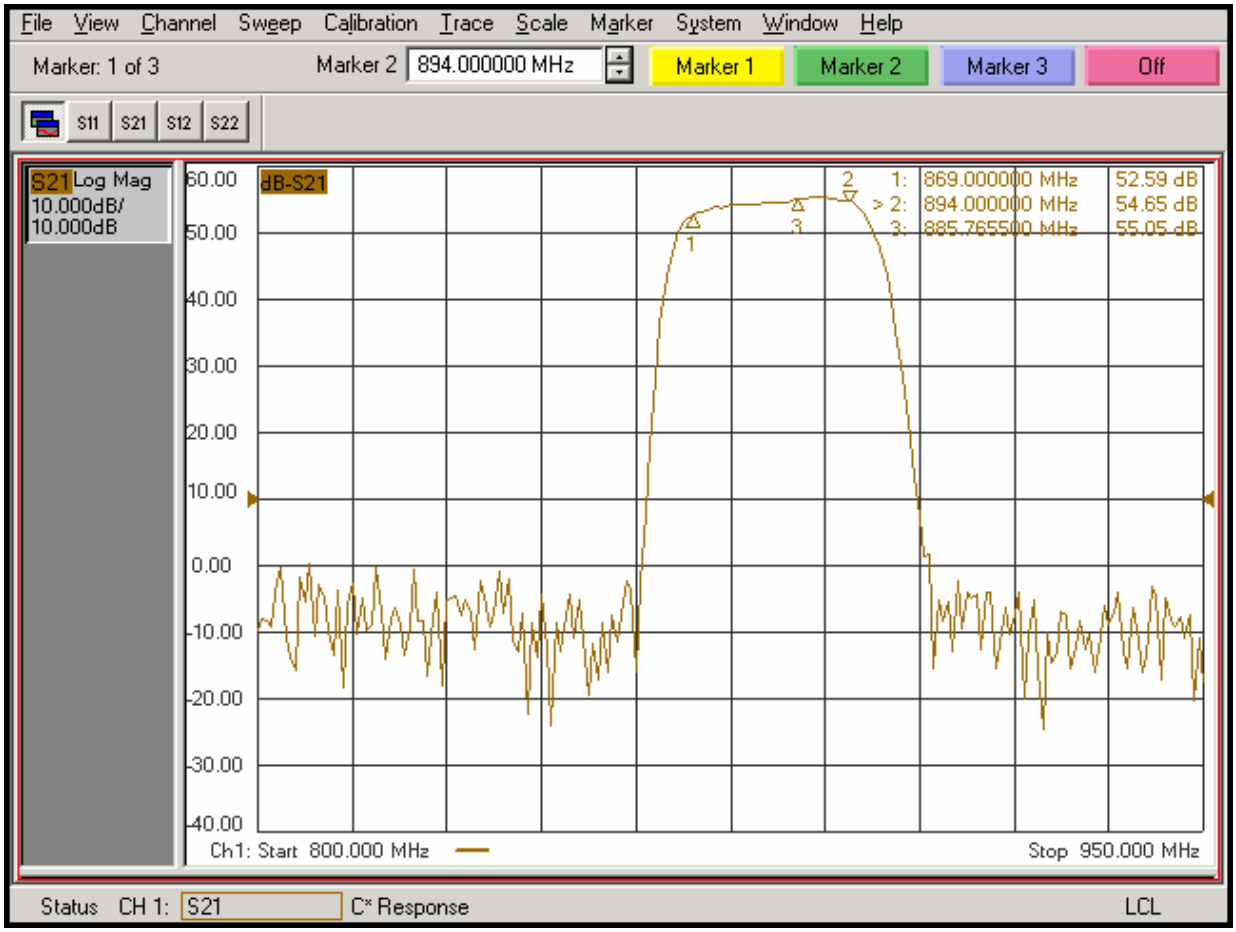
Date: 15.SEP.2006 17:44:33

4.4.8.1 Out of Band Rejection:Filter Frequency response

- Test Mode : CDMA2000 850 uplink mode

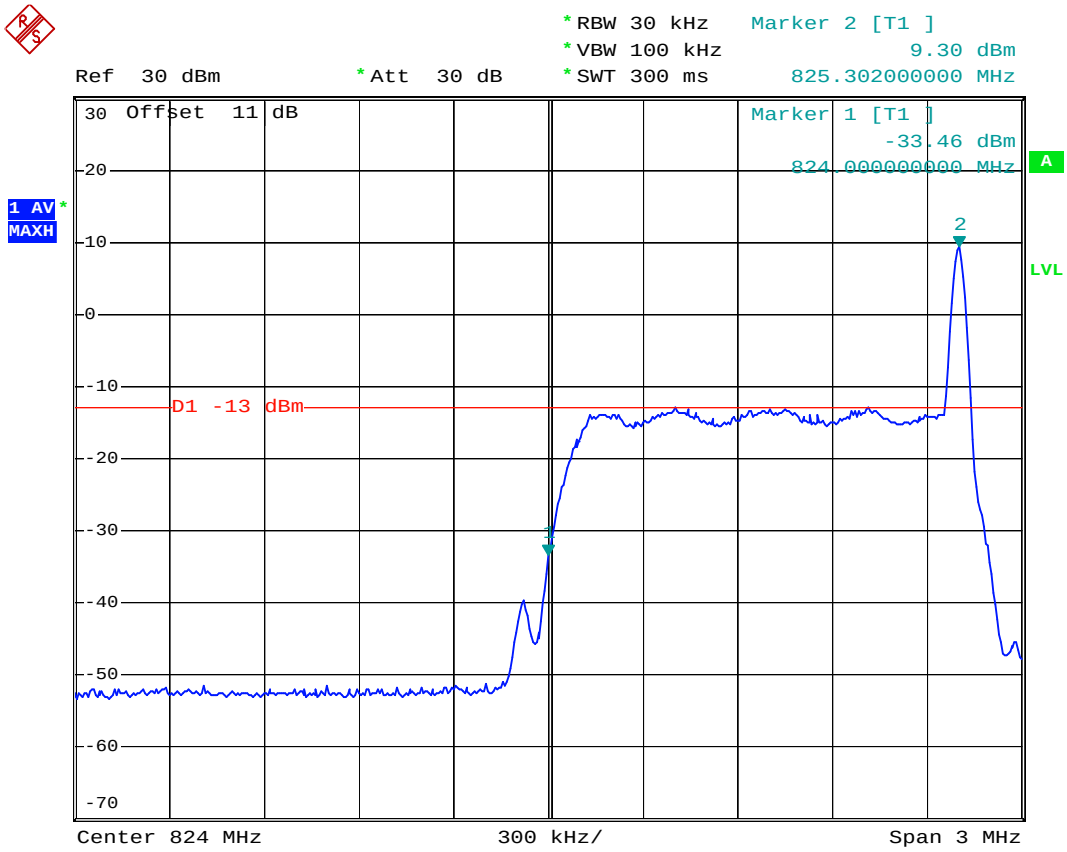


- Test Mode : CDMA2000 850 downlink mode



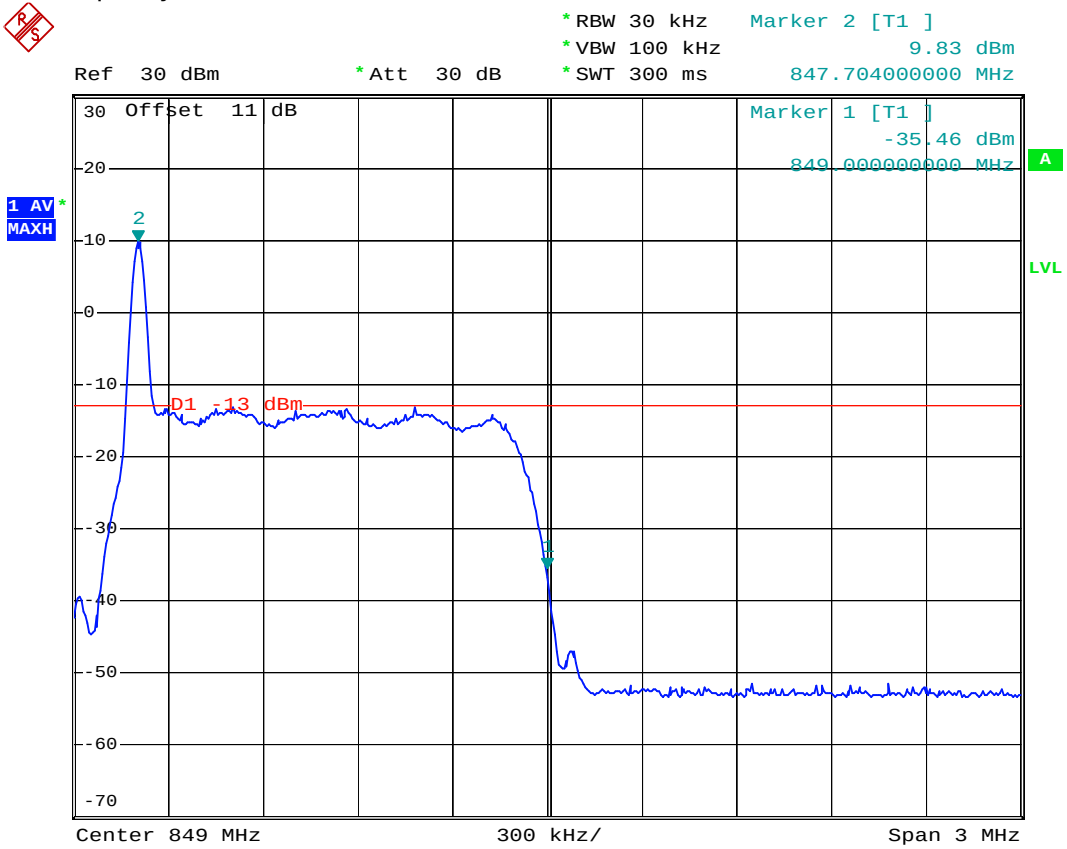
4.5.8.2 Intermodulation

- Test Item: Band Edge
- Input signal mode: CDMA and CW
- Frequency: CDMA2000 850 824.00MHz



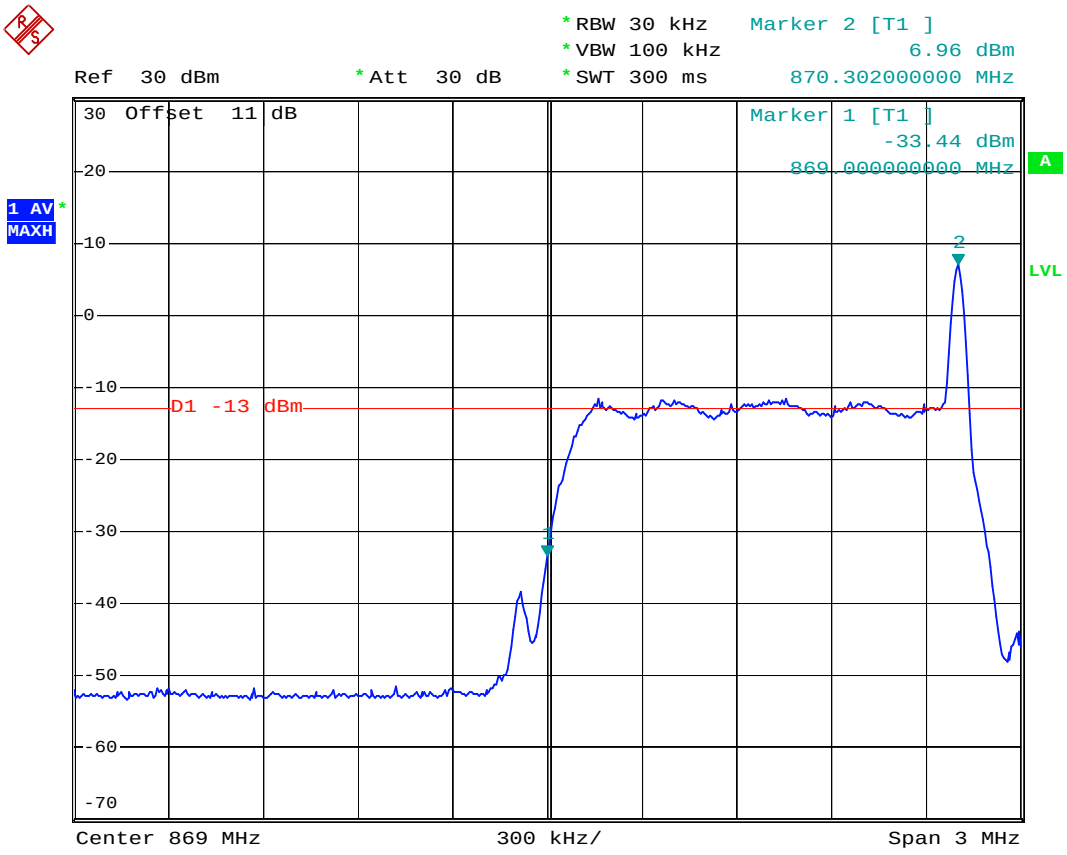
Date: 26.SEP.2006 22:34:47

- Frequency: CDMA2000 850 849.00MHz



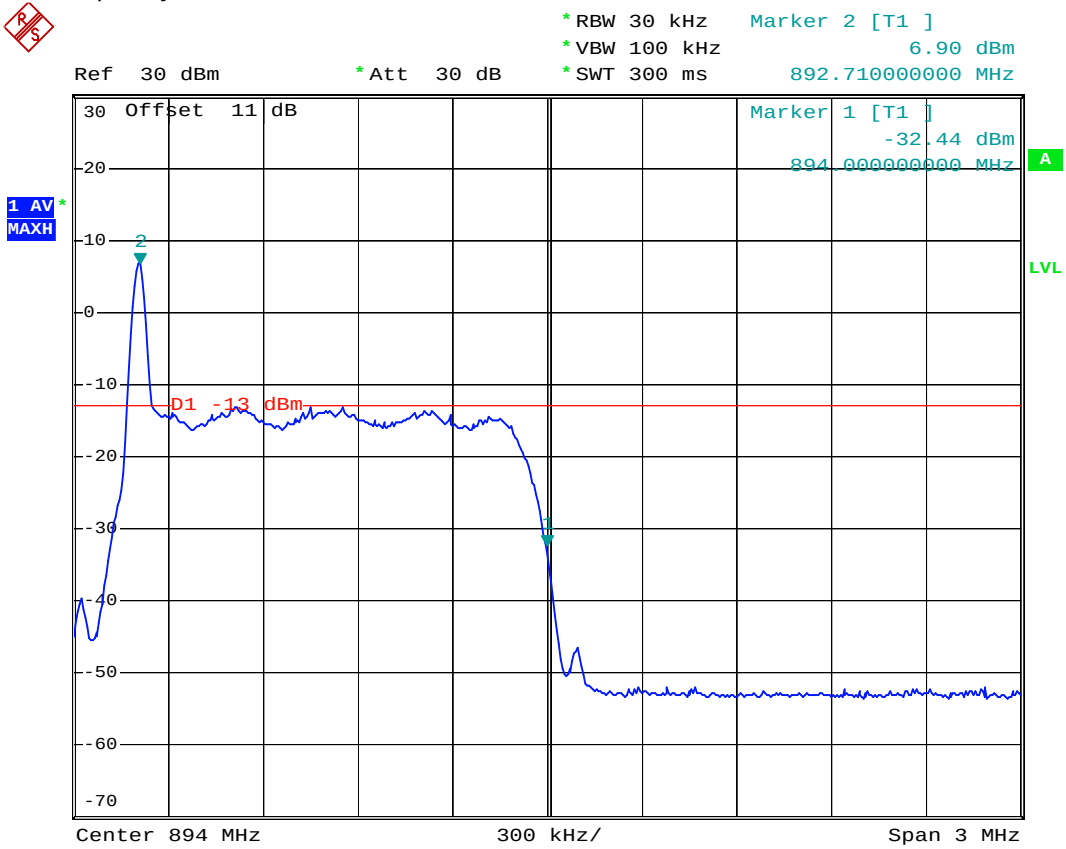
Date: 26.SEP.2006 22:38:59

- Frequency: CDMA2000 850 869.00MHz



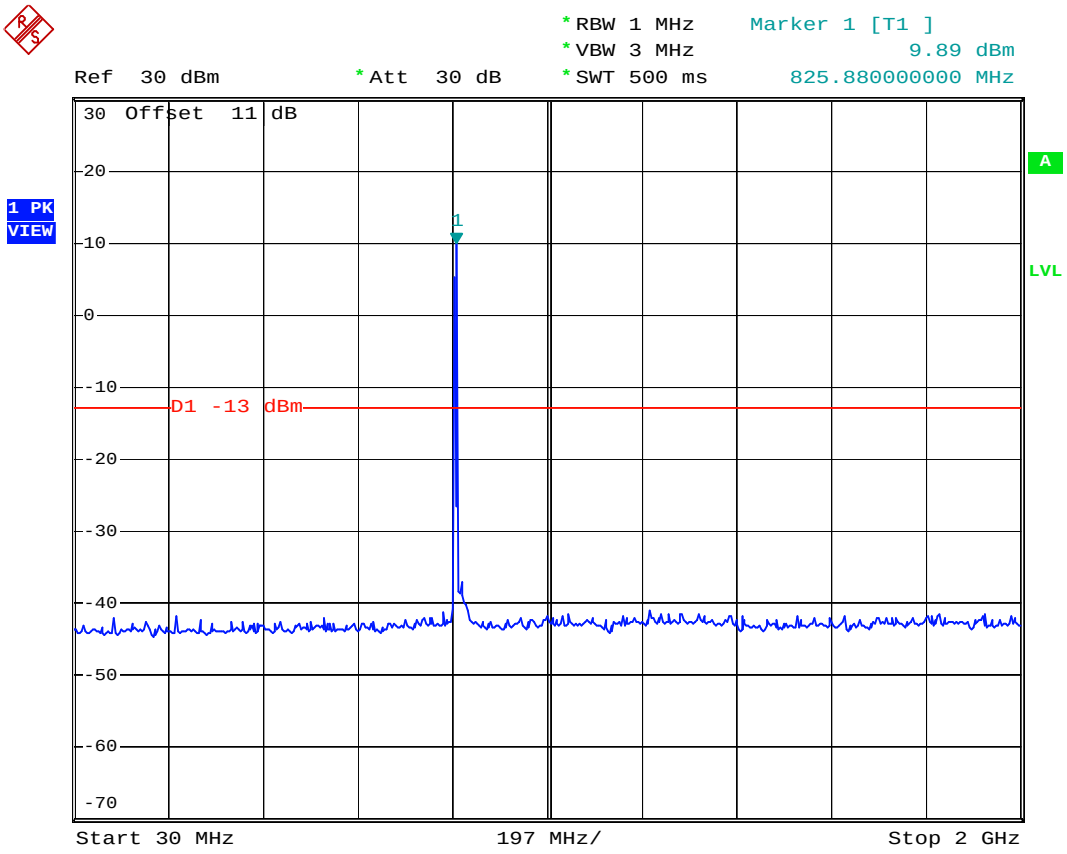
Date: 18.SEP.2006 21:36:28

- Frequency: CDMA2000 850 894.00MHz



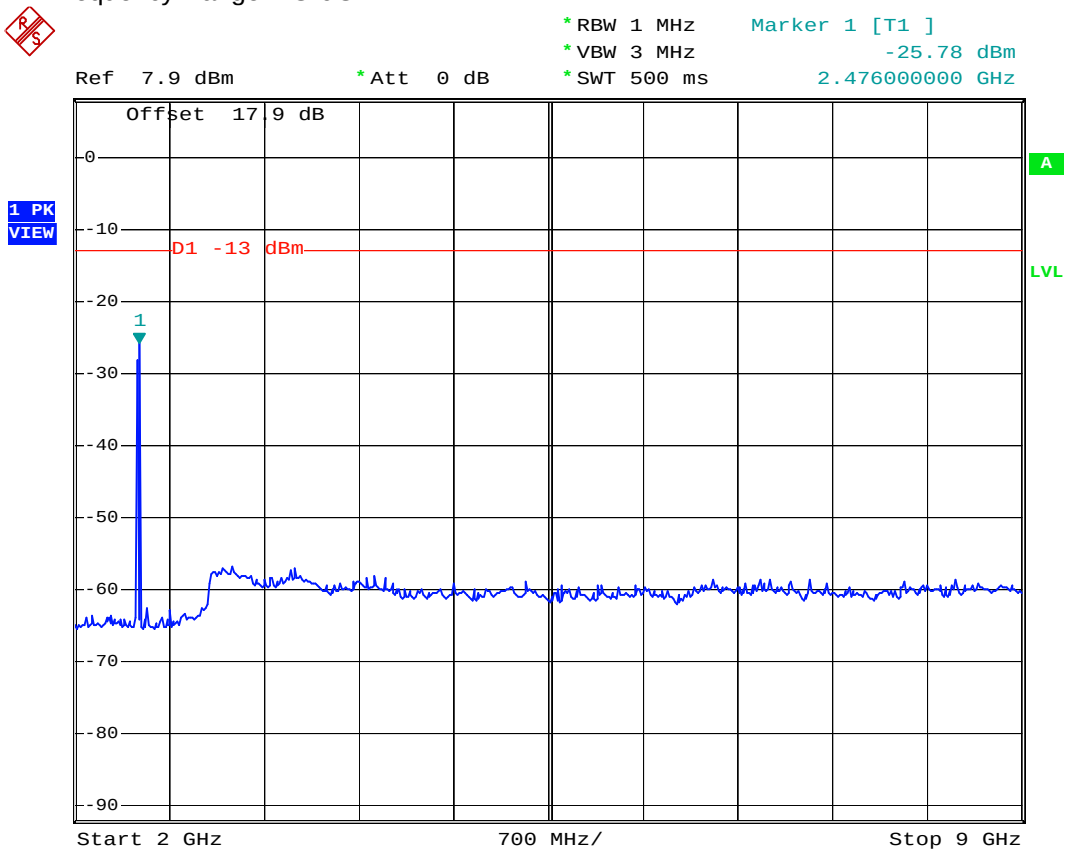
Date: 18.SEP.2006 21:41:39

- Test Item: Conducted Spurious
- Test Mode: CDMA2000 850 824.71MHz Uplink Mode
- Frequency Range: 0.3G-2G



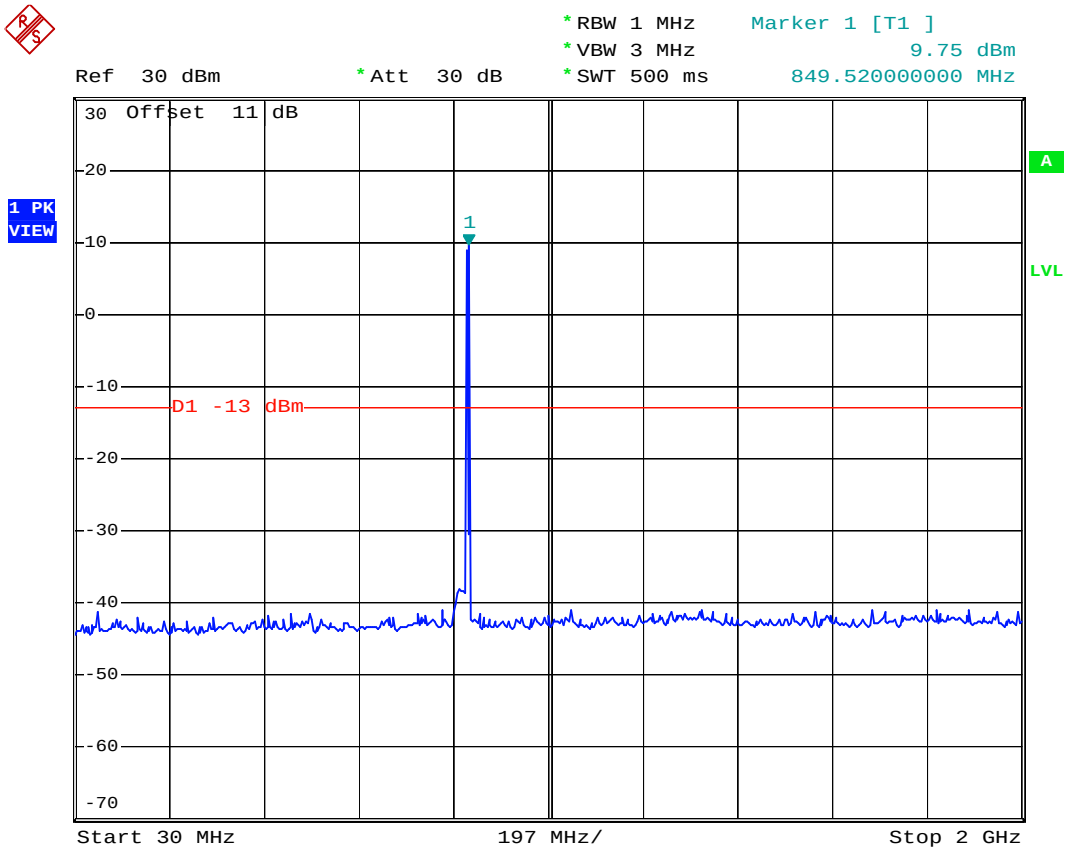
Date: 27.SEP.2006 01:02:23

- Frequency Range: 2G-9G



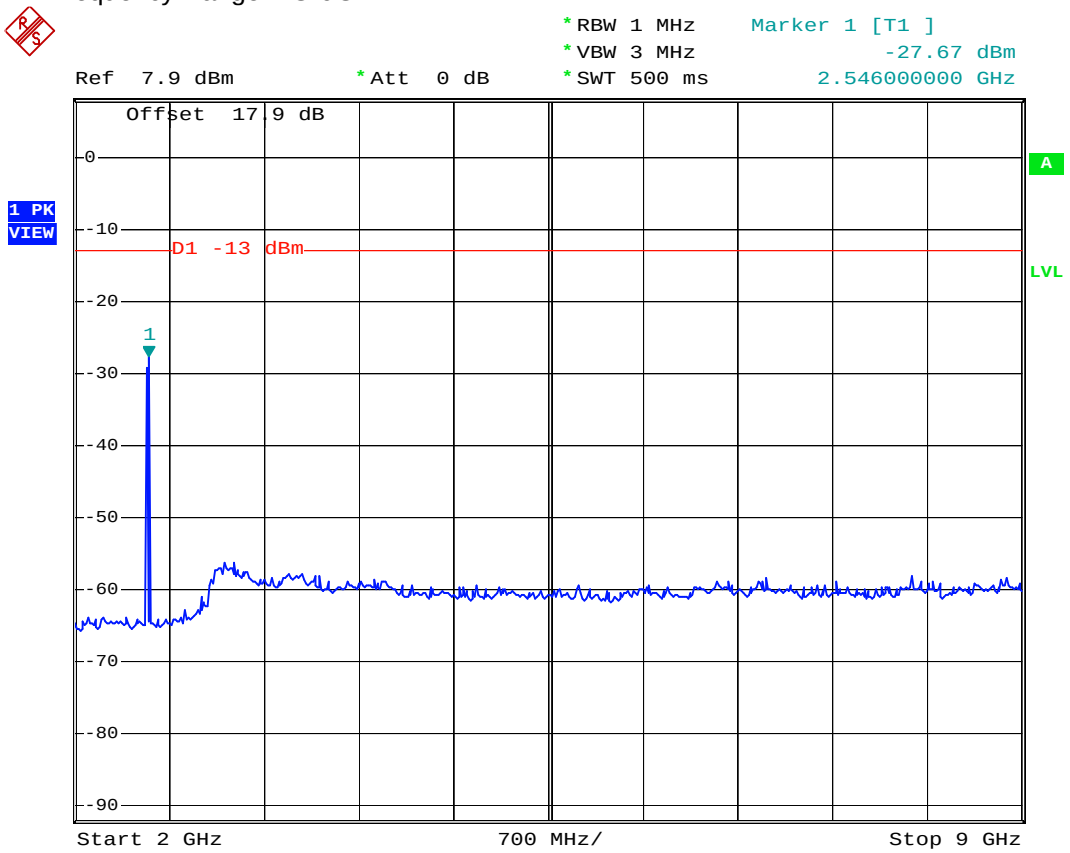
Date: 27.SEP.2006 01:03:43

- Test Mode: CDMA2000 850 848.31MHz Uplink Mode
- Frequency Range: 0.3G-2G



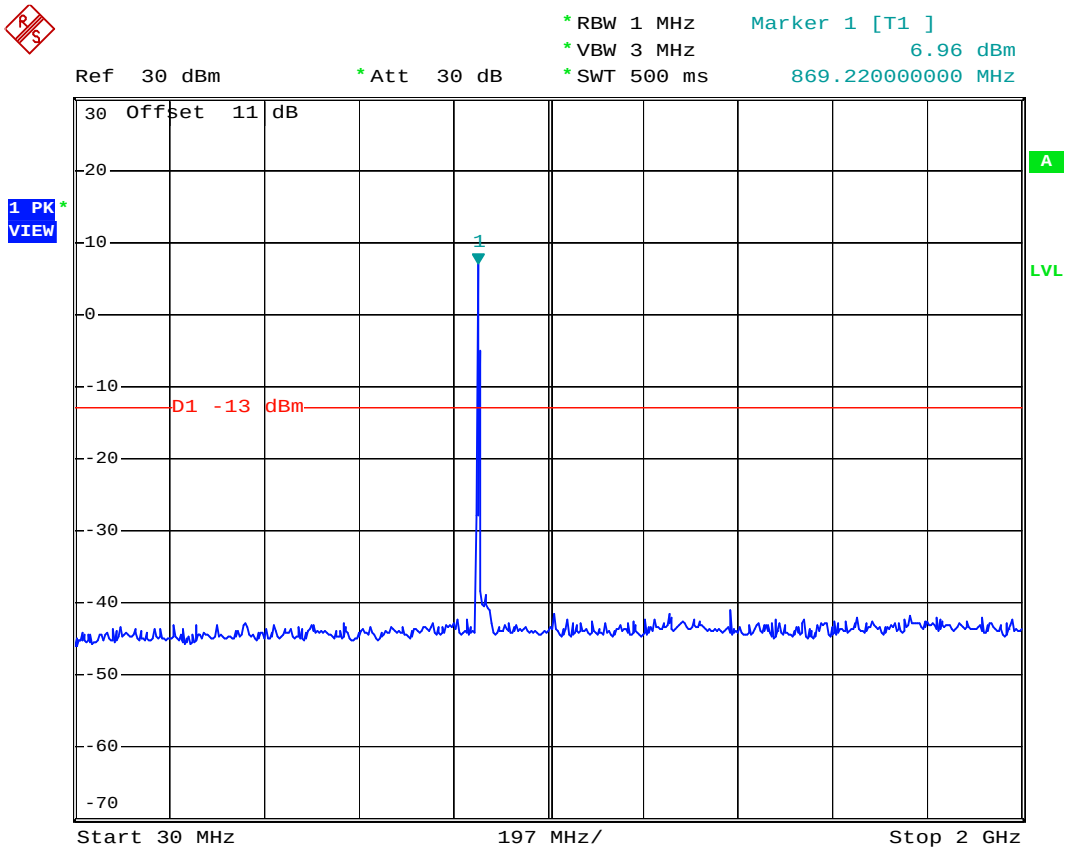
Date: 27.SEP.2006 01:10:46

- Frequency Range: 2G-9G



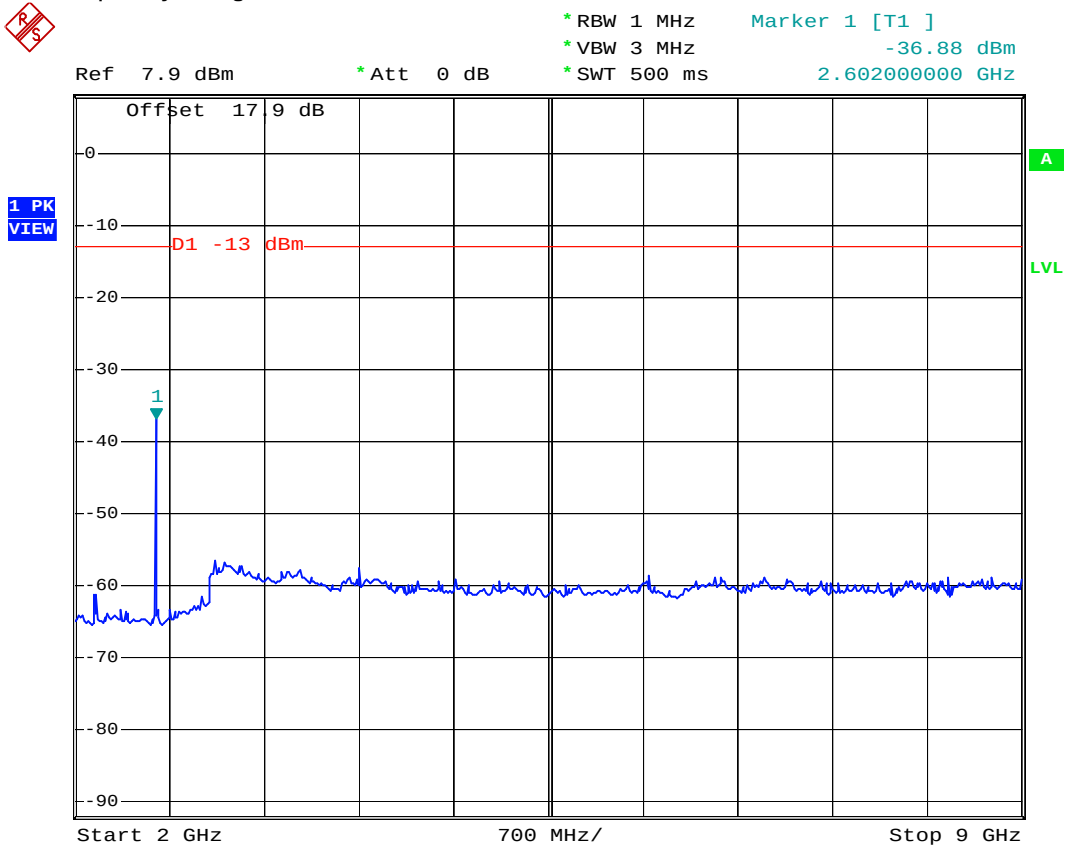
Date: 27.SEP.2006 01:07:34

- Test Mode: CDMA2000 850 869.70MHz Downlink Mode
- Frequency Range: 0.3G-2G



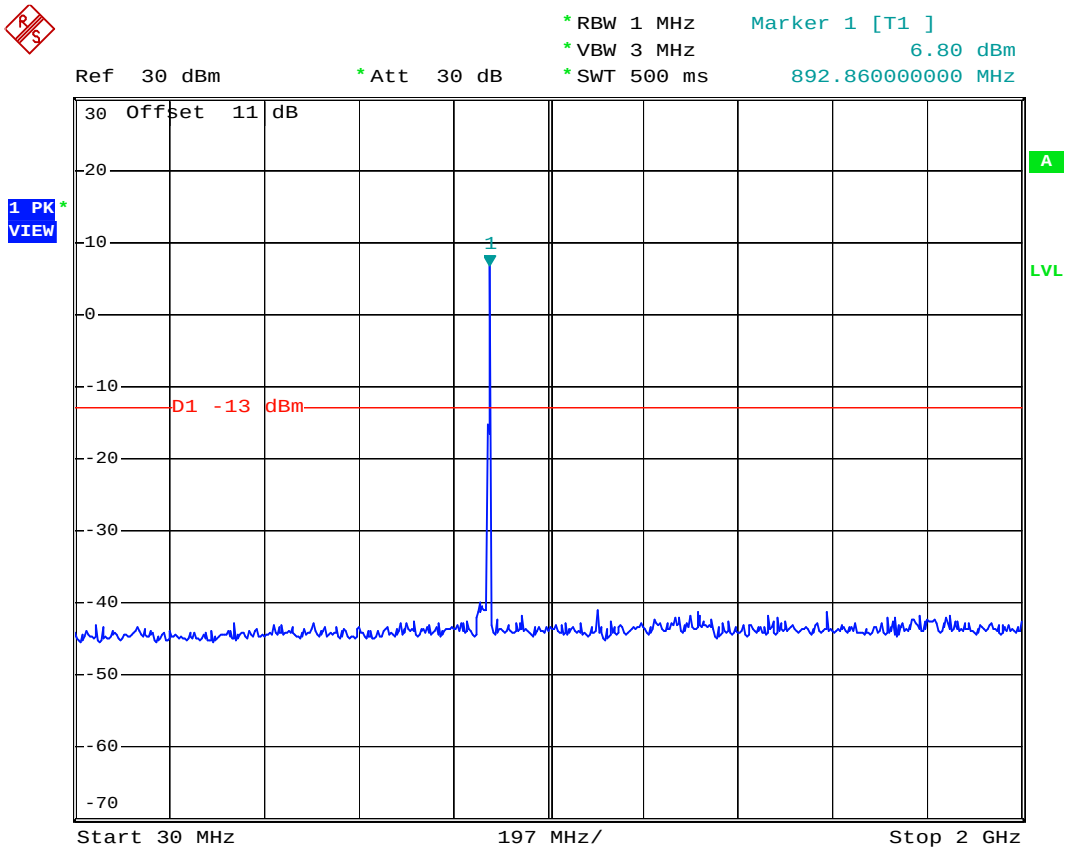
Date: 27.SEP.2006 01:27:16

- Frequency Range: 2G-9G



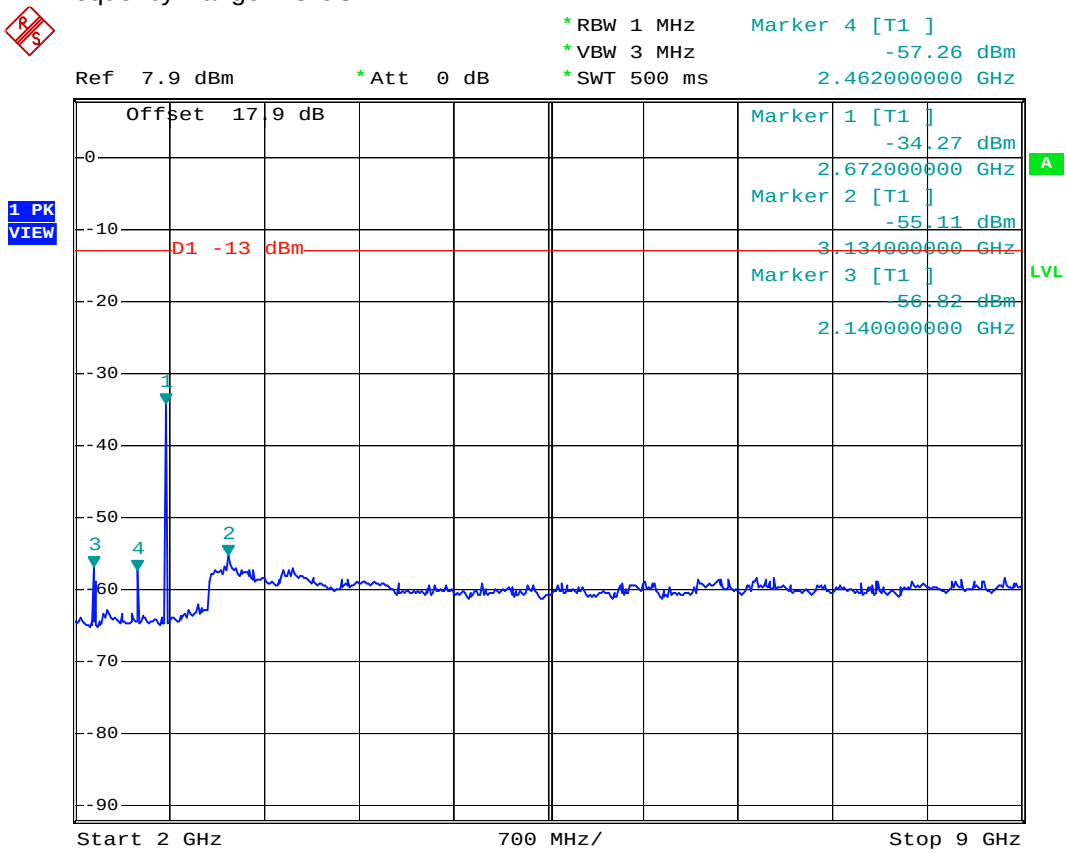
Date: 27.SEP.2006 01:29:39

- Test Mode: CDMA2000 850 893.31MHz Downlink Mode
- Frequency Range: 0.3G-2G



Date: 27.SEP.2006 01:38:28

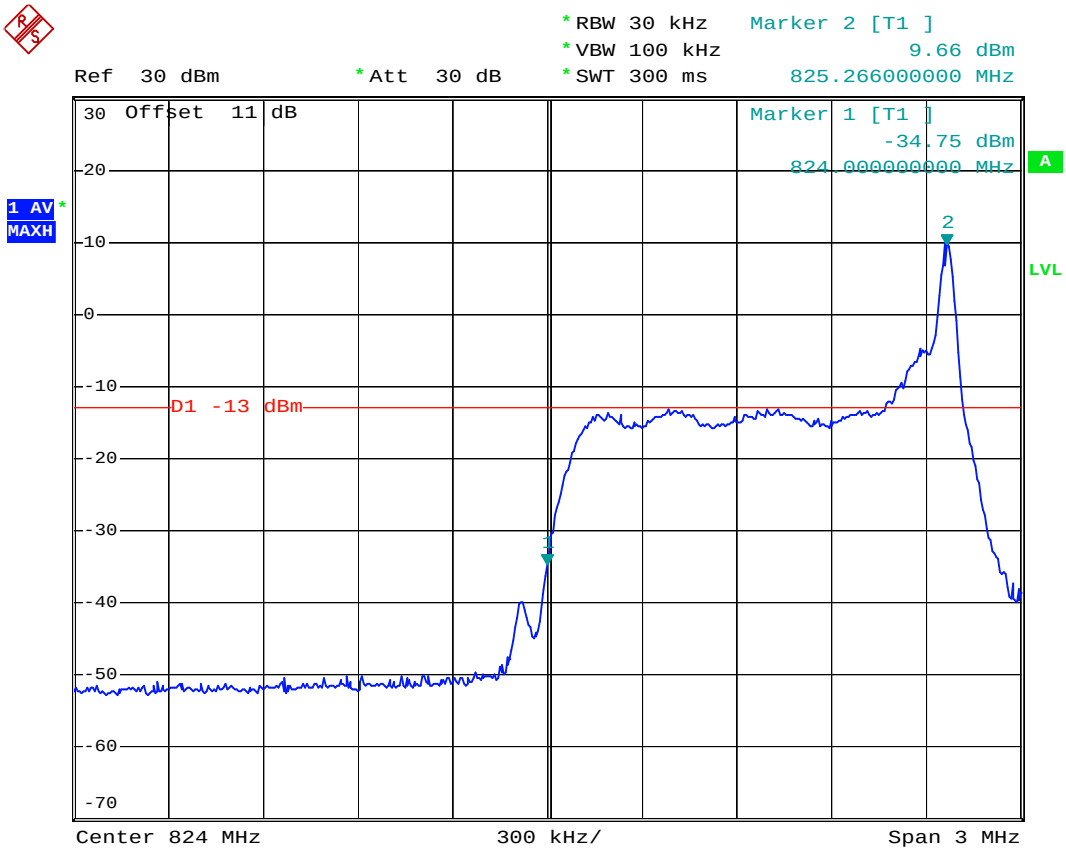
- Frequency Range: 2G-9G



Date: 27.SEP.2006 01:41:03

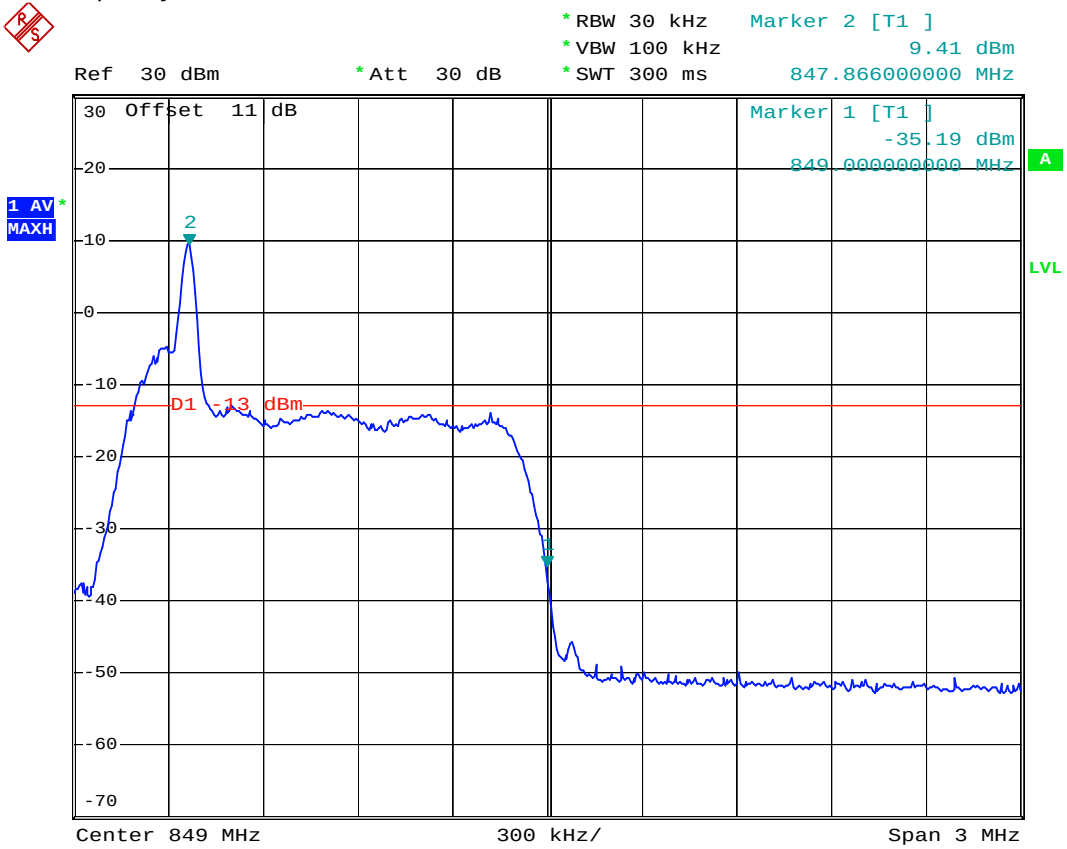
➢ Maximum Output Power for CDMA signal from EUT.

- Test Item: Band Edge
- Input signal mode: CDMA and GSM
- Frequency: CDMA2000 850 824.00MHz



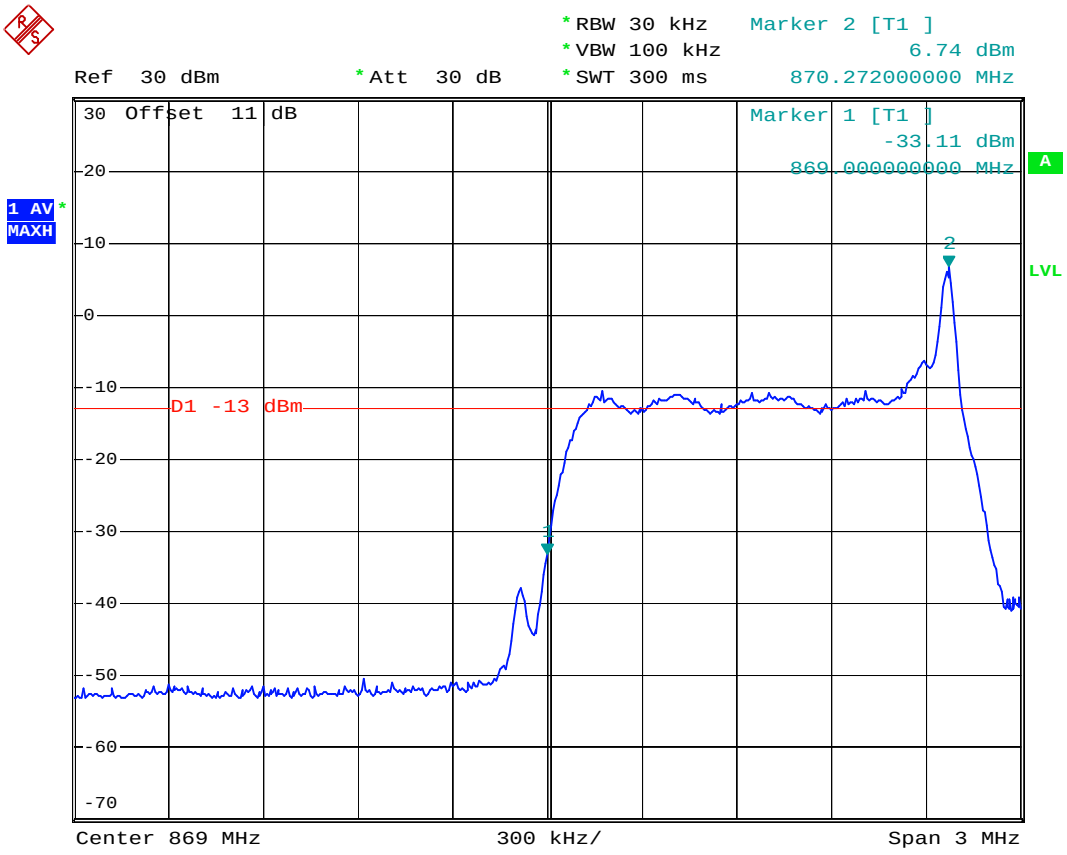
Date: 26.SEP.2006 22:50:03

- Frequency: CDMA2000 850 849.00MHz



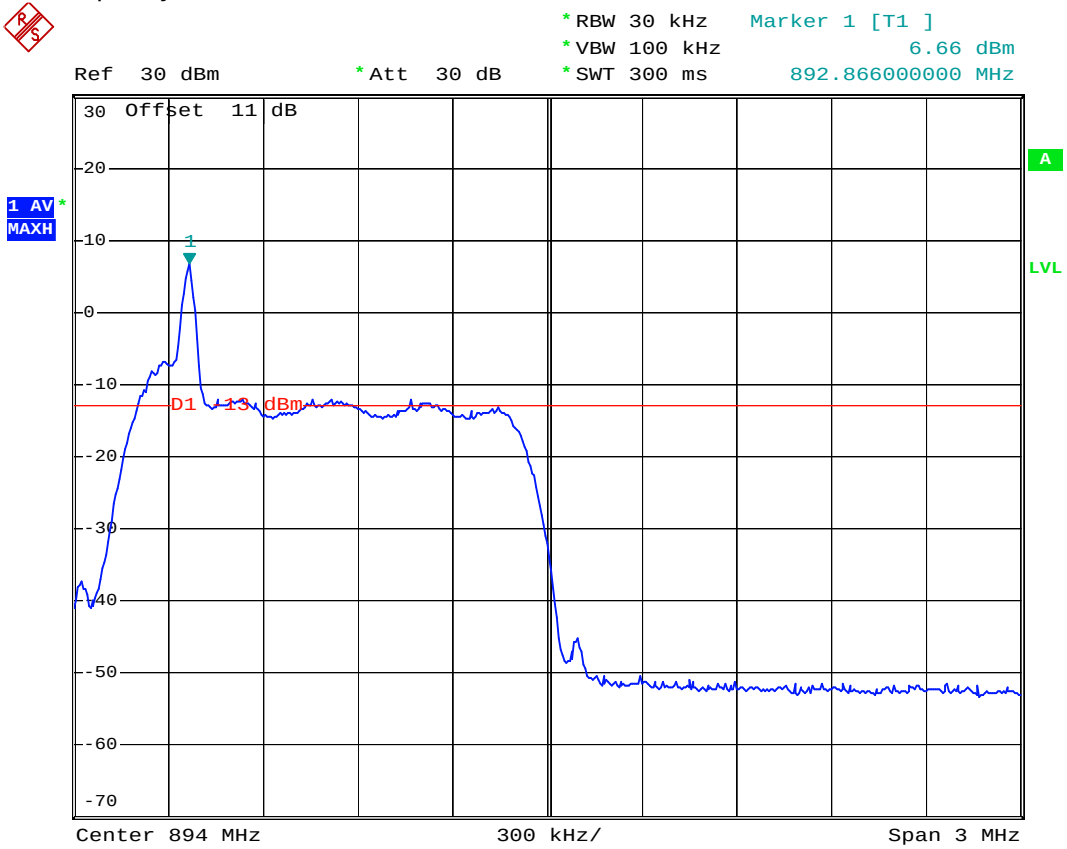
Date: 26.SEP.2006 22:51:53

- Frequency: CDMA2000 850 869.00MHz



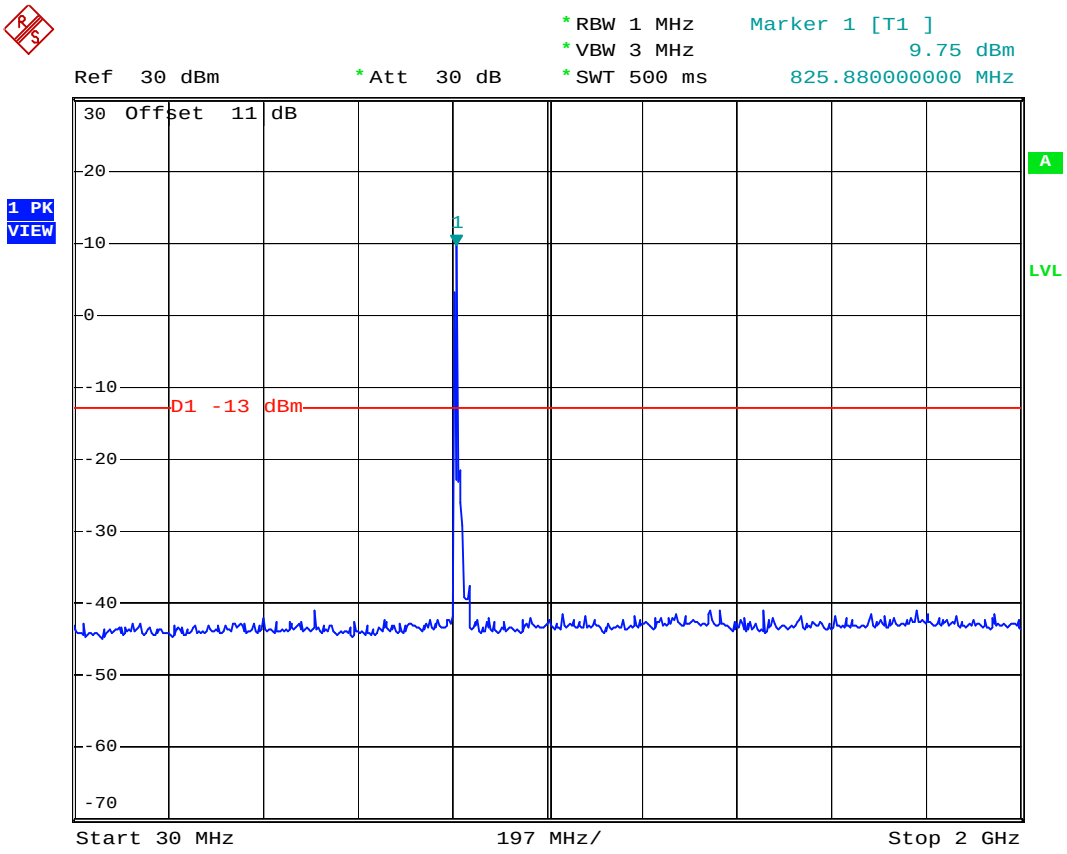
Date: 18.SEP.2006 22:07:13

- Frequency: CDMA2000 850 892.87MHz



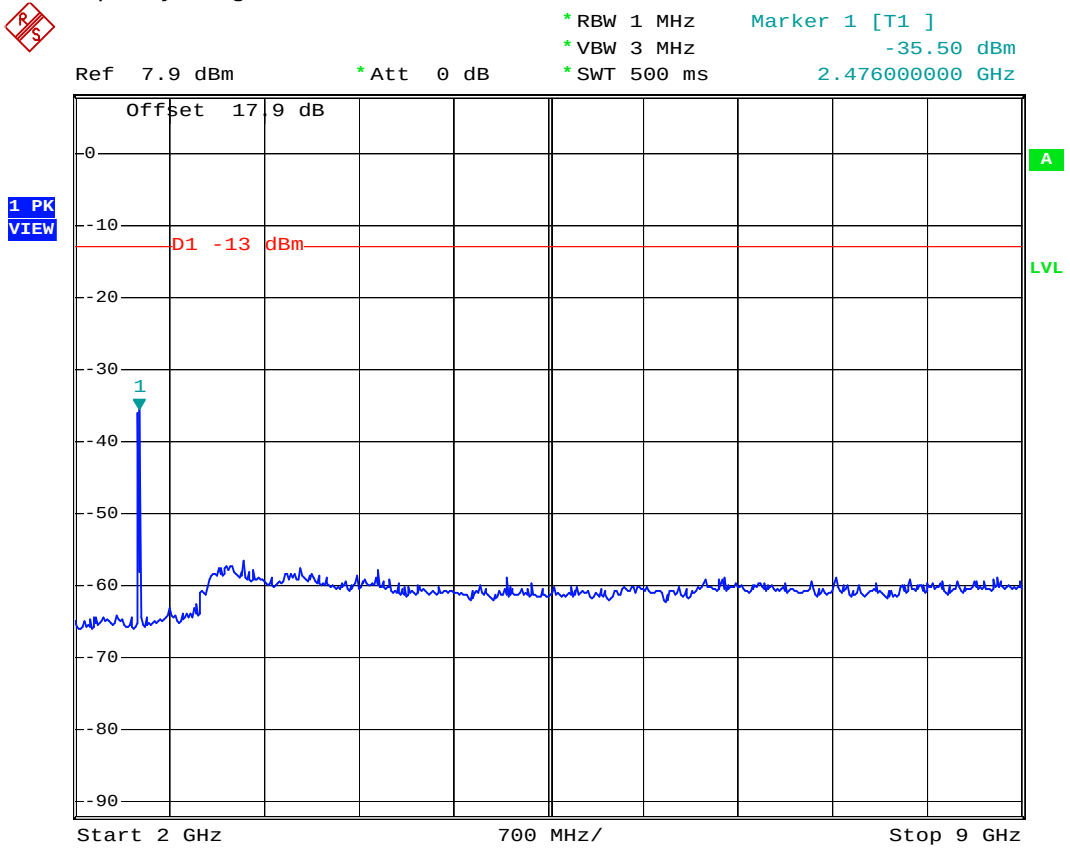
Date: 18.SEP.2006 22:14:32

- Test Item: Conducted Spurious
- Test Mode: CDMA2000 850 824.70MHz Uplink Mode
- Frequency Range: 0.3G-2G



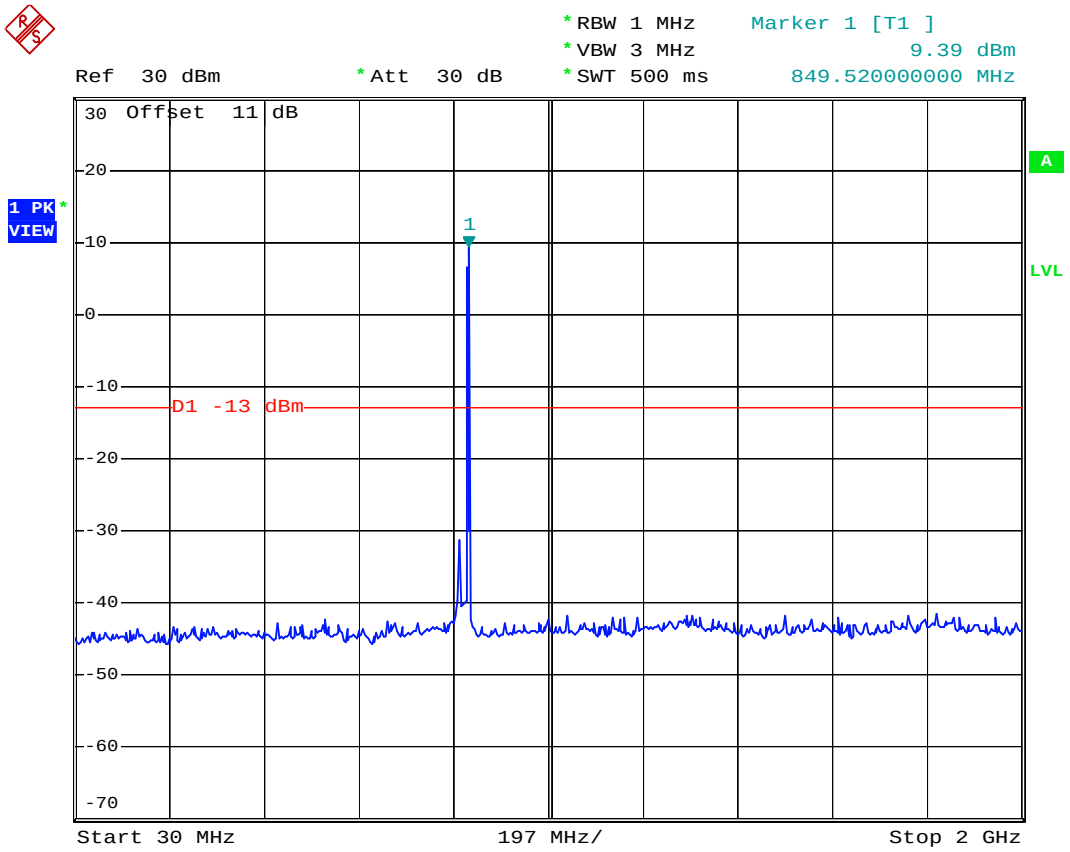
Date: 27.SEP.2006 01:20:47

- Frequency Range: 2G-9G



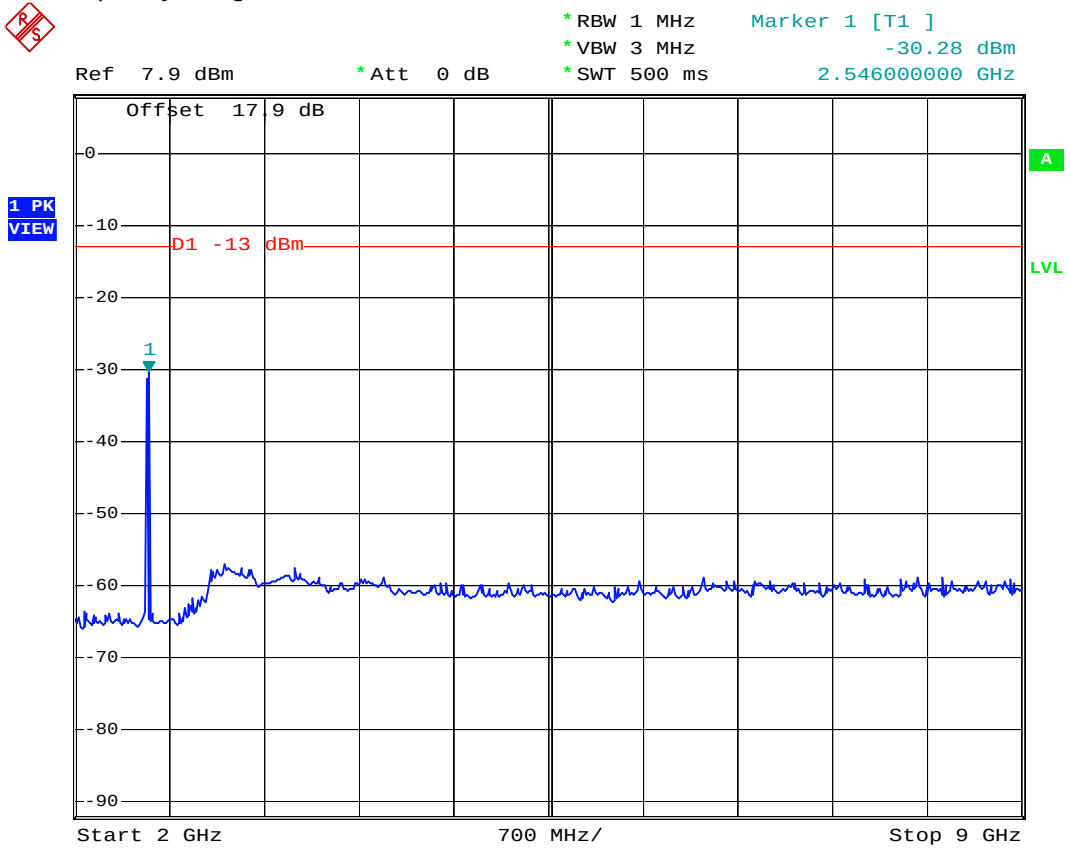
Date: 27.SEP.2006 01:19:34

- Test Mode: CDMA2000 850 848.31MHz Uplink Mode
- Frequency Range: 0.3G-2G



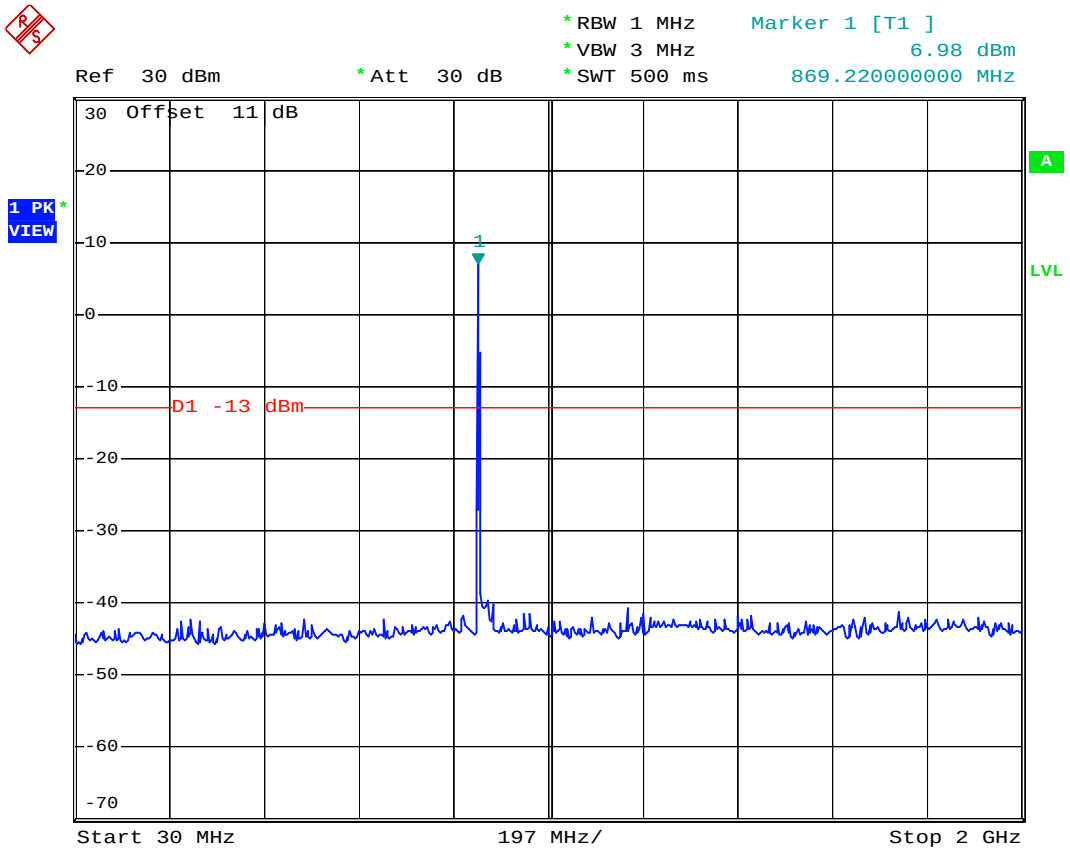
Date: 27.SEP.2006 01:16:41

- Frequency Range: 2G-9G



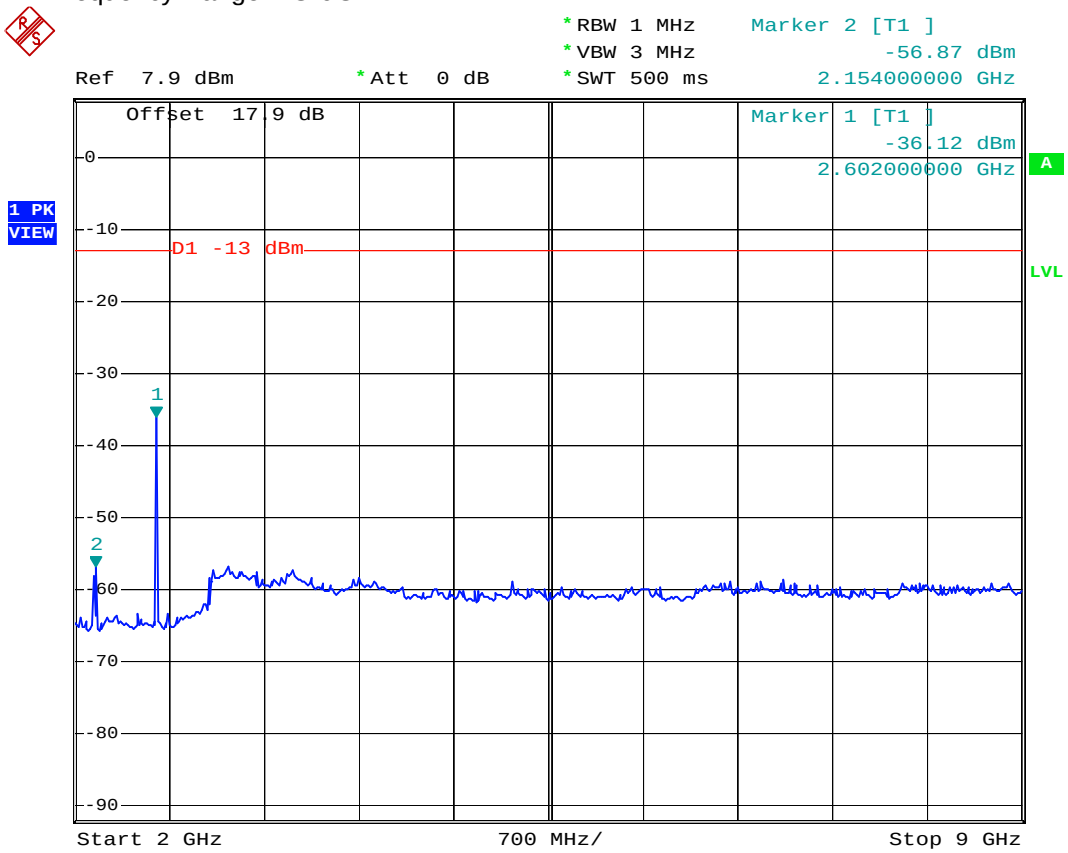
Date: 27.SEP.2006 01:17:53

- Test Mode: CDMA2000 850 869.70MHz Downlink Mode
- Frequency Range: 0.3G-2G



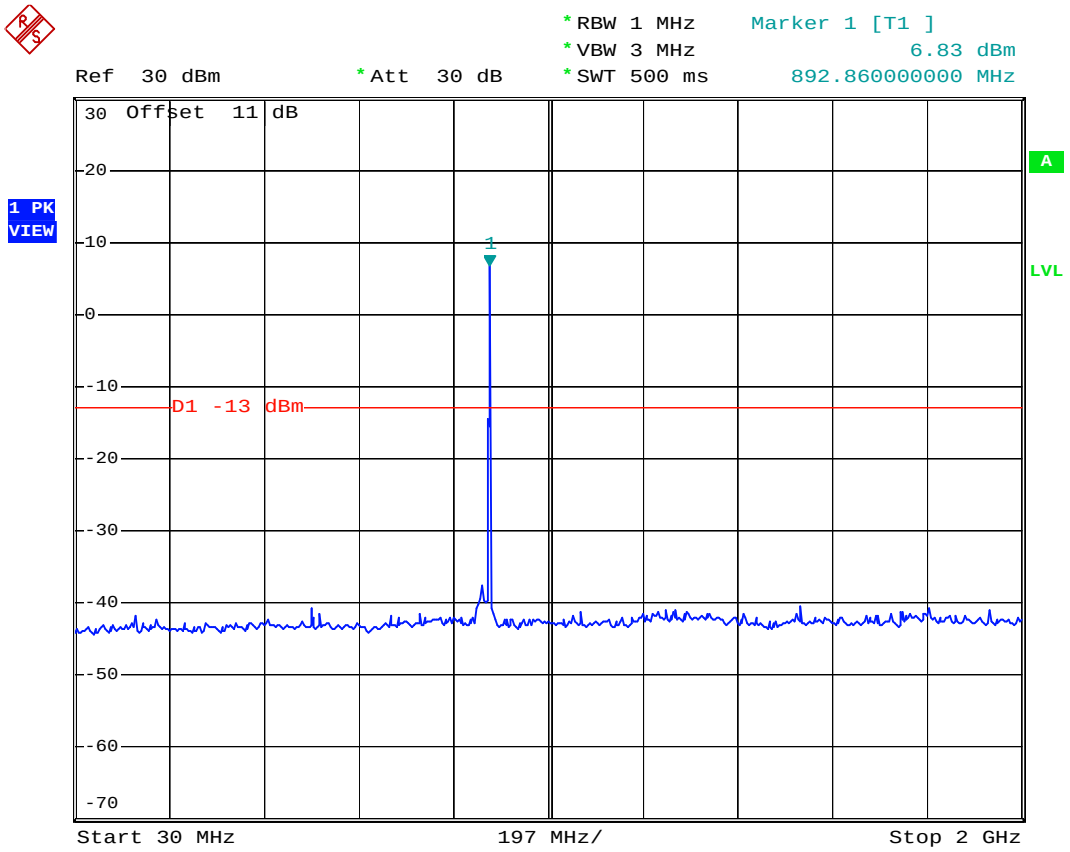
Date: 27.SEP.2006 01:27:46

- Frequency Range: 2G-9G



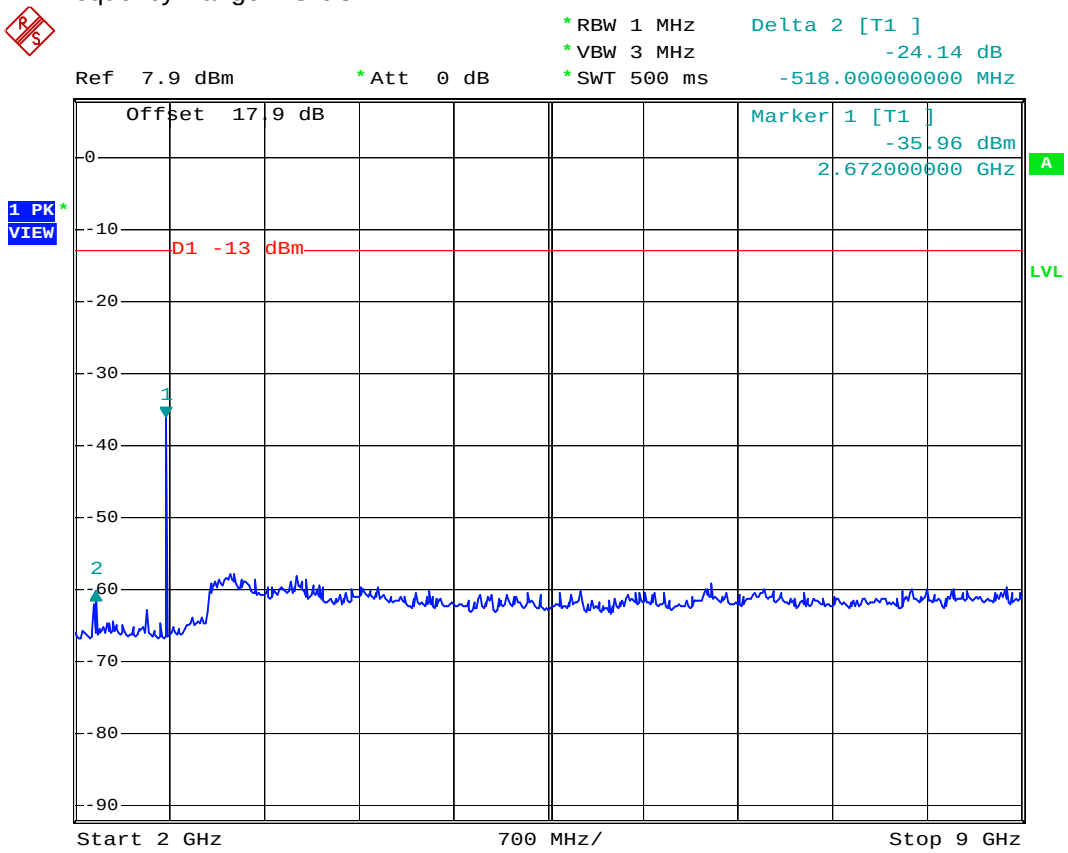
Date: 27.SEP.2006 01:30:08

- Test Mode: CDMA2000 850 893.31MHz Downlink Mode
- Frequency Range: 0.3G-2G



Date: 27.SEP.2006 01:38:58

- Frequency Range: 2G-9G



Date: 27.SEP.2006 01:41:46

4.6 Field Strength of Spurious Radiation

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

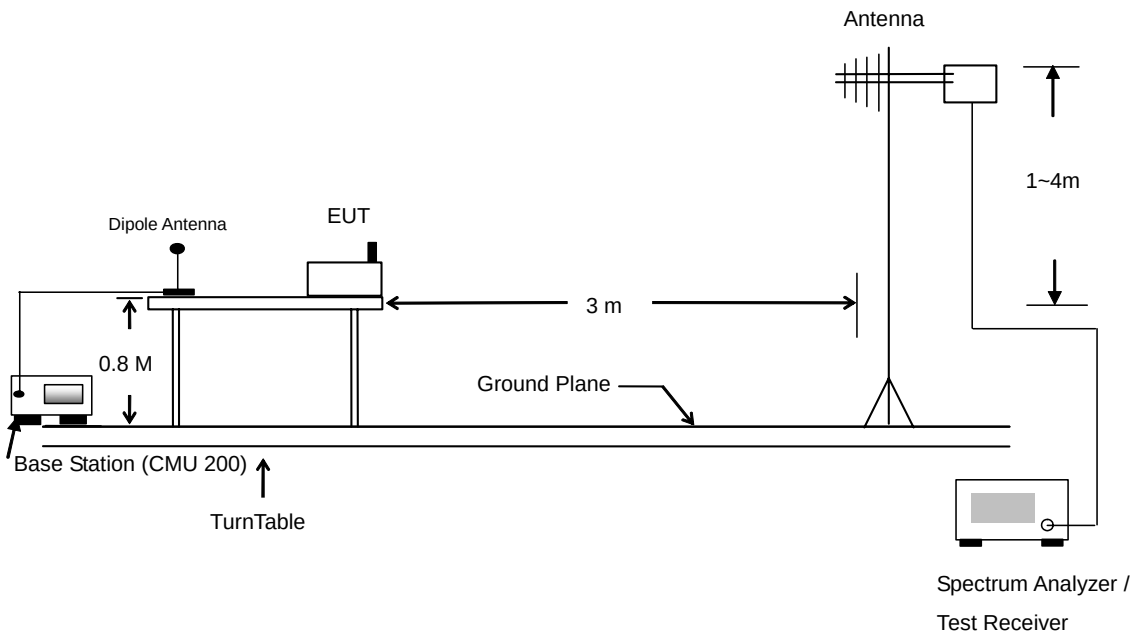
4.6.1 Measurement Instruments

As described in chapter 5 of this test report.

4.6.2 Test Procedure

1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. 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.
5. Taking the record of maximum spurious emission.
6. A Horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the recored of output power at antenna port.
9. Repeat step 7 to step 8 for another polariztion.
10. Emission level (dBm) = output power + substituion Gain.

4.6.3 Test Setup Layout



4.6.4 Test Result

- Test Mode : Mode 1

Test Mode : Mode 1 **CDMA2000 850 824.70MHz Uplink Mode Radiated Spurious ERP**							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
41.340	**-53.920**	**-13**	**-40.92**	87.780	-57.450	-13	-44.45
106.140	-60.210	-13	-47.21	191.190	-60.520	-13	-47.52
176.880	-55.560	-13	-42.56	271.380	-59.980	-13	-46.98
799.800	-65.360	-13	-52.36	726.300	-63.530	-13	-50.53
890.800	-61.440	-13	-48.44	876.800	-62.540	-13	-49.54
1384.000	-56.340	-13	-43.34	1498.000	-59.650	-13	-46.65
1514.000	-57.880	-13	-44.88	1638.000	-59.420	-13	-46.42
1638.000	-59.250	-13	-46.25				

- Test Mode : Mode 2

CDMA2000 850 836.52MHz Uplink Mode Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
107.490	**-60.280**	**-13**	**-47.28**	55.380	-56.540	-13	-43.54
125.040	-61.210	-13	-48.21	103.980	-57.760	-13	-44.76
272.190	-64.550	-13	-51.55	129.090	-59.040	-13	-46.04
756.400	-66.570	-13	-53.57	726.300	-62.260	-13	-49.26
799.800	-66.000	-13	-53.00	756.400	-63.150	-13	-50.15
894.300	-61.830	-13	-48.83	892.900	-61.480	-13	-48.48
1384.000	-57.480	-13	-44.48	1498.000	-58.230	-13	-45.23
1514.000	-57.820	-13	-44.82	1638.000	-59.890	-13	-46.89
1638.000	-59.590	-13	-46.59				

- Test Mode : Mode 3

CDMA2000 850 848.31MHz Uplink Mode Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
106.140	-60.140	-13	-47.14	**84.540**	**-53.290**	**-13**	**-40.29**
124.230	-61.870	-13	-48.87	95.880	-58.540	-13	-45.54
264.630	-63.130	-13	-50.13	271.380	-59.510	-13	-46.51
754.300	-66.580	-13	-53.58	756.400	-63.520	-13	-50.52
890.800	-61.600	-13	-48.60	892.900	-62.330	-13	-49.33
1384.000	-56.900	-13	-43.90	1498.000	-59.140	-13	-46.14
1514.000	-58.600	-13	-45.60	1638.000	-59.670	-13	-46.67
1638.000	-59.420	-13	-46.42				

- Test Mode : Mode 4

CDMA2000 850 869.70MHz Downlink Mode Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
98.580	-58.080	-13	-45.08	**83.730**	**-46.790**	**-13**	**-33.79**
152.040	-64.670	-13	-51.67	98.040	-51.420	-13	-38.42
228.180	-59.270	-13	-46.27	130.980	-48.370	-13	-35.37
630.400	-52.070	-13	-39.07	414.800	-66.020	-13	-53.02
756.400	-66.770	-13	-53.77	726.300	-64.180	-13	-51.18
1384.000	-57.320	-13	-44.32	1498.000	-59.460	-13	-46.46
1508.000	-58.600	-13	-45.60	1638.000	-60.870	-13	-47.87
1688.000	-55.270	-13	-42.27	1738.000	-60.020	-13	-47.02

- Test Mode : Mode 5

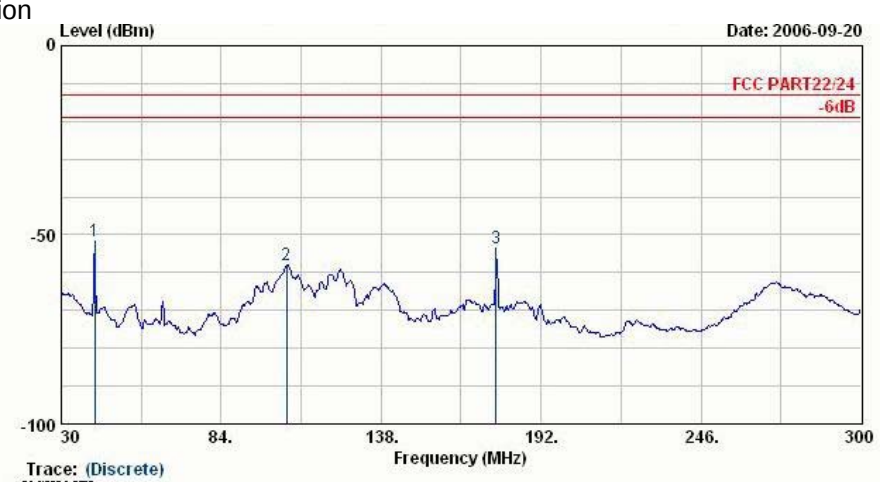
CDMA2000 850 881.52MHz Downlink Mode Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
68.880	-65.790	-13	-52.79	45.930	-57.960	-13	-44.96
98.040	-59.030	-13	-46.03	**83.730**	**-47.630**	**-13**	**-34.63**
149.340	-64.530	-13	-51.53	98.040	-52.350	-13	-39.35
756.400	-66.950	-13	-53.95	378.400	-66.770	-13	-53.77
799.800	-66.920	-13	-53.92	726.300	-63.670	-13	-50.67
1384.000	-57.830	-13	-44.83	1268.000	-60.880	-13	-47.88
1512.000	-59.120	-13	-46.12	1498.000	-60.960	-13	-47.96
1638.000	-60.200	-13	-47.20	1638.000	-60.020	-13	-47.02

- Test Mode : Mode 6

CDMA2000 850 893.31MHz Downlink Mode Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
83.190	-66.280	-13	-53.28	45.930	-58.140	-13	-45.14
98.580	-60.620	-13	-47.62	**83.730**	**-46.760**	**-13**	**-33.76**
147.990	-65.700	-13	-52.70	95.340	-51.840	-13	-38.84
756.400	-66.680	-13	-53.68	418.300	-55.240	-13	-42.24
799.800	-66.410	-13	-53.41	435.800	-61.740	-13	-48.74
1384.000	-57.170	-13	-44.17	1328.000	-60.850	-13	-47.85
1514.000	-58.910	-13	-45.91	1498.000	-60.030	-13	-47.03
1638.000	-59.570	-13	-46.57	1638.000	-59.620	-13	-46.62

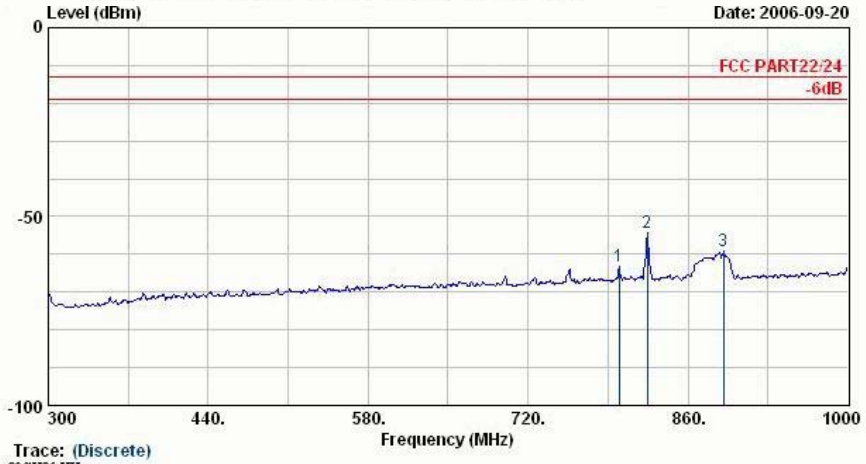
4.6.5 Test Data

Mode 1
Horizontal Polarization



Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor

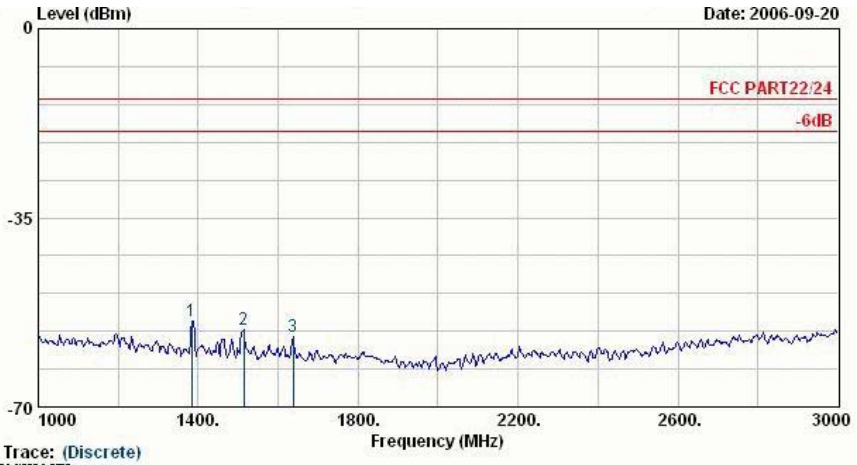
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	41.3	-51.77	-38.77	-13.00	-44.82	-6.95	Peak
2	106.1	-58.06	-45.06	-13.00	-45.75	-12.31	Peak
3	176.9	-53.41	-40.41	-13.00	-40.29	-13.12	Peak



Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor

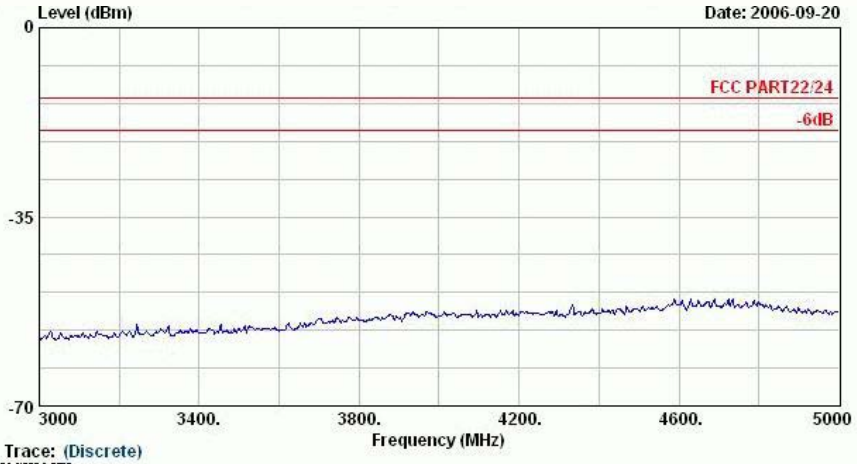
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	799.8	-63.21	-50.21	-13.00	-61.52	-1.69	Peak
2	824.3	-54.25			-52.79	-1.46	Peak
3	890.8	-59.29	-46.29	-13.00	-58.47	-0.82	Peak

Remark: #2 Uplink Signal

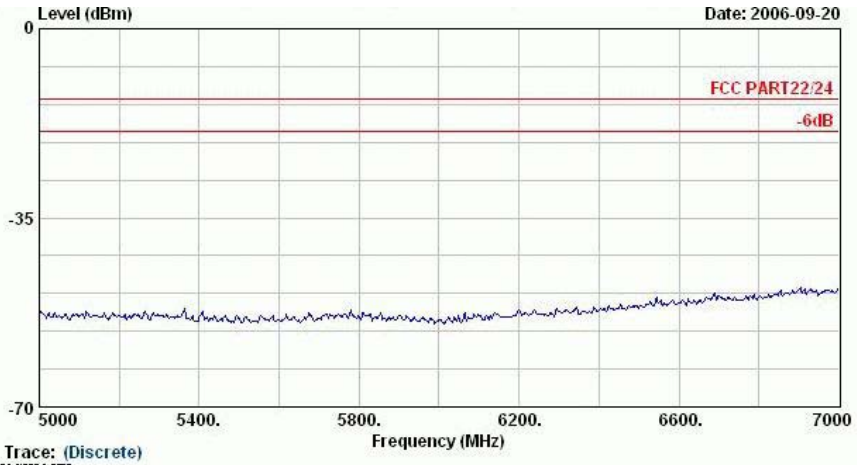


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor

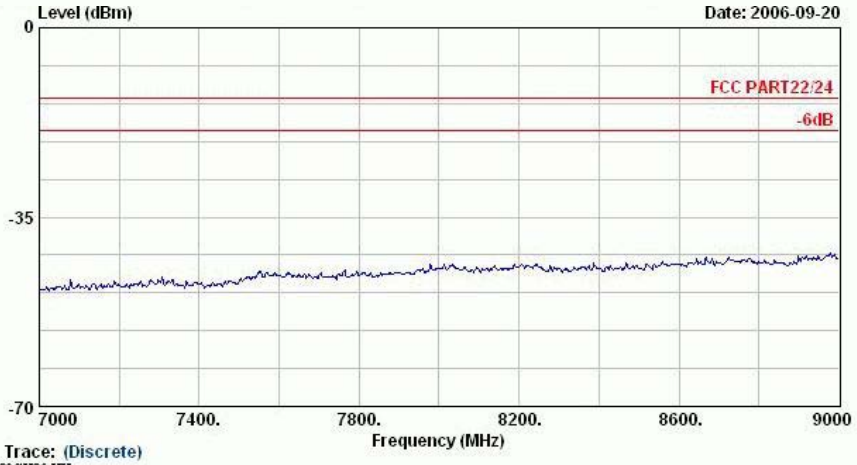
	Freq MHz	Level dBm	Over Limit dB	Limit Line dBm	Read Level dBm	Factor dB	Remark
1	1384.0	-54.19	-41.19	-13.00	-54.93	0.74	Peak
2	1514.0	-55.73	-42.73	-13.00	-56.19	0.45	Peak
3	1638.0	-57.10	-44.10	-13.00	-57.42	0.31	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor

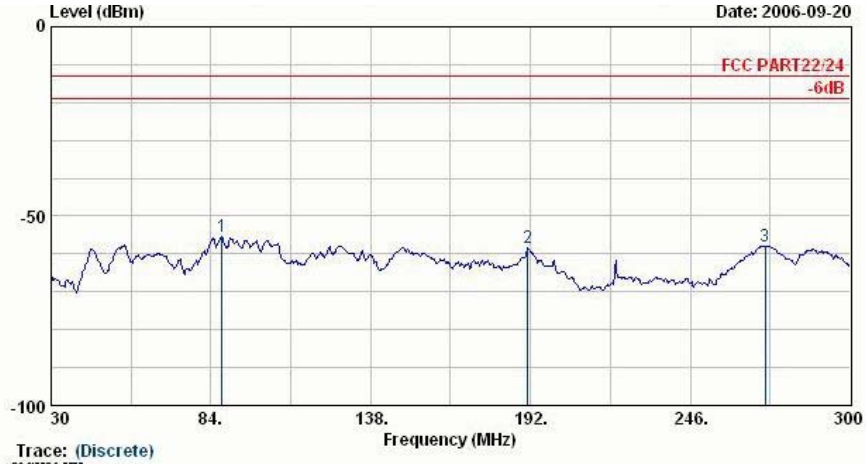


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor

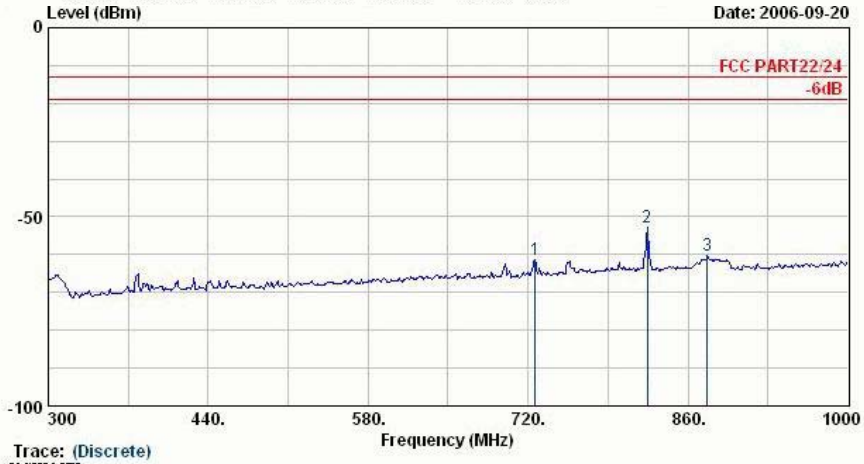
Vertical Polarization



Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	87.8	-55.30	-42.30	-13.00	-45.93	-9.37	Peak
2	191.2	-58.37	-45.37	-13.00	-49.86	-8.51	Peak
3	271.4	-57.83	-44.83	-13.00	-50.77	-7.06	Peak

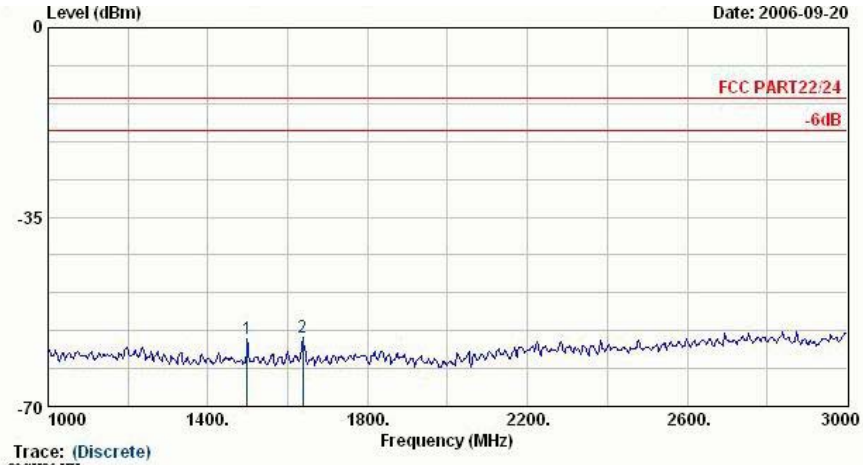


Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor

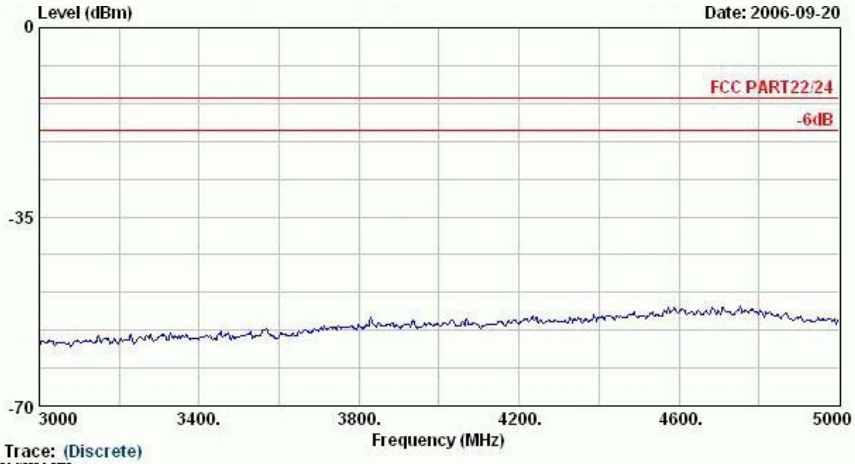
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	726.3	-61.38	-48.38	-13.00	-61.34	-0.04	Peak
2	824.3	-52.81			-54.07	1.26	Peak
3	876.8	-60.39	-47.39	-13.00	-62.07	1.68	Peak

Remark: #2 Uplink Signal

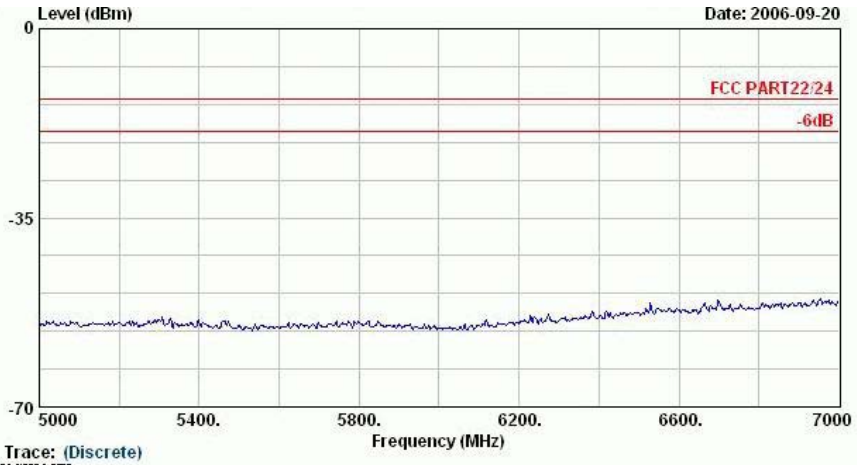


Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor

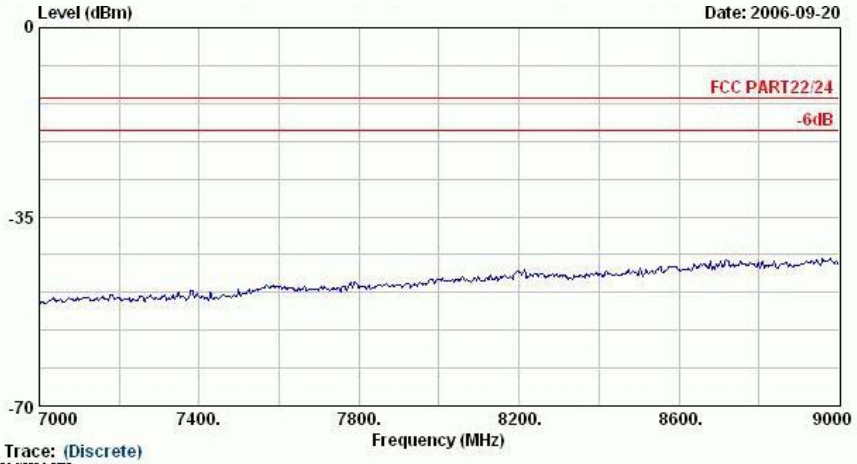
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	1498.0	-57.50	-44.50	-13.00	-56.64	-0.86	Peak
2	1638.0	-57.27	-44.27	-13.00	-56.81	-0.46	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor



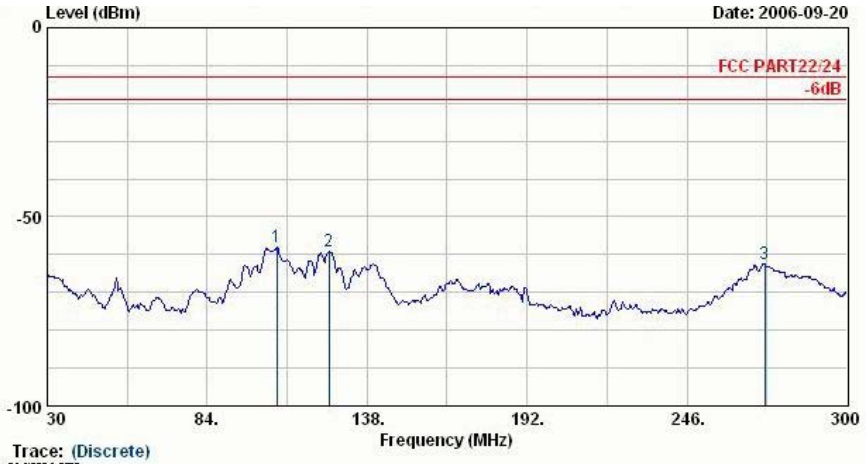
Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 824.7 MHz uplink mode +Adaptor

Remark: There is no more obvious spurious emission except the listings above.

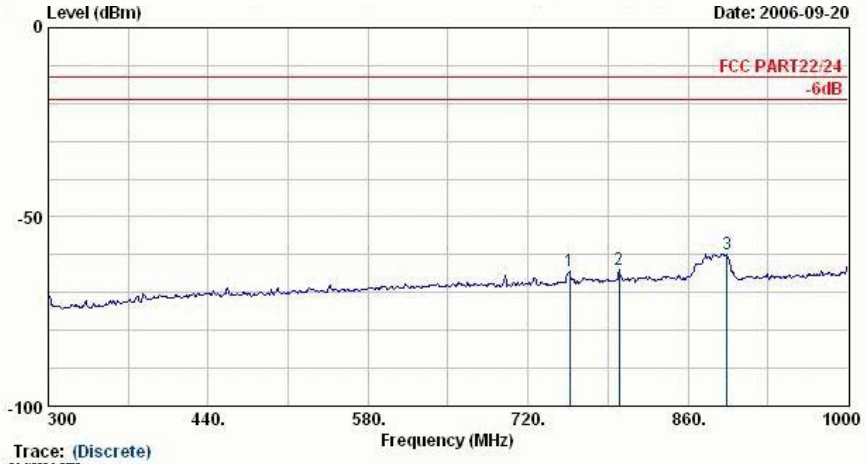
Mode 2
Horizontal Polarization



Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	107.5	-58.13	-45.13	-13.00	-45.80	-12.33	Peak
2 @	125.0	-59.06	-46.06	-13.00	-46.53	-12.53	Peak
3 @	272.2	-62.40	-49.40	-13.00	-51.51	-10.88	Peak

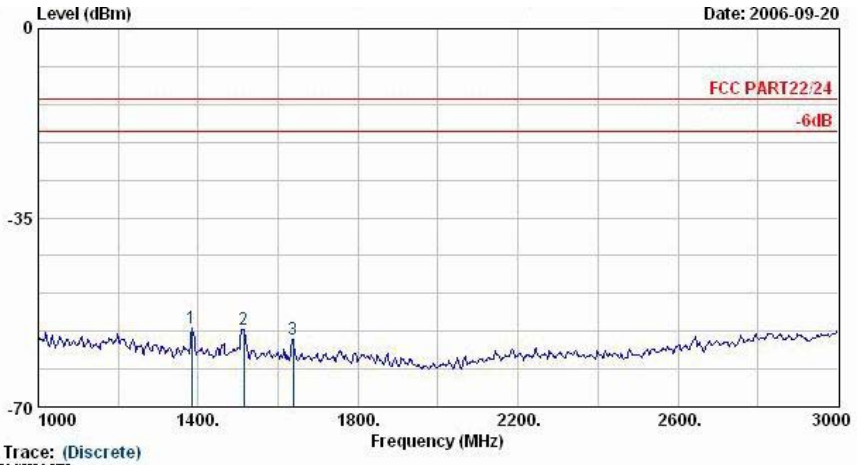


Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor

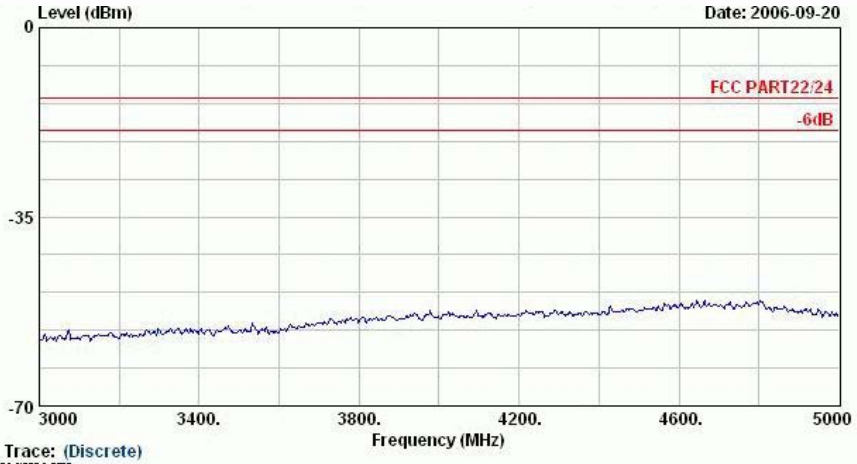
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	756.4	-64.42	-51.42	-13.00	-62.28	-2.14	Peak
2 @	799.8	-63.85			-62.16	-1.69	Peak
3 @	894.3	-59.68	-46.68	-13.00	-58.89	-0.78	Peak

Remark: #2 Uplink Signal

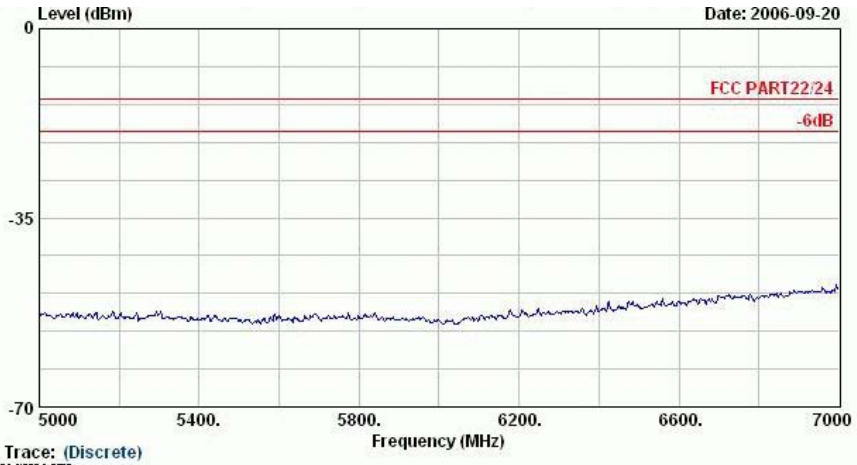


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor

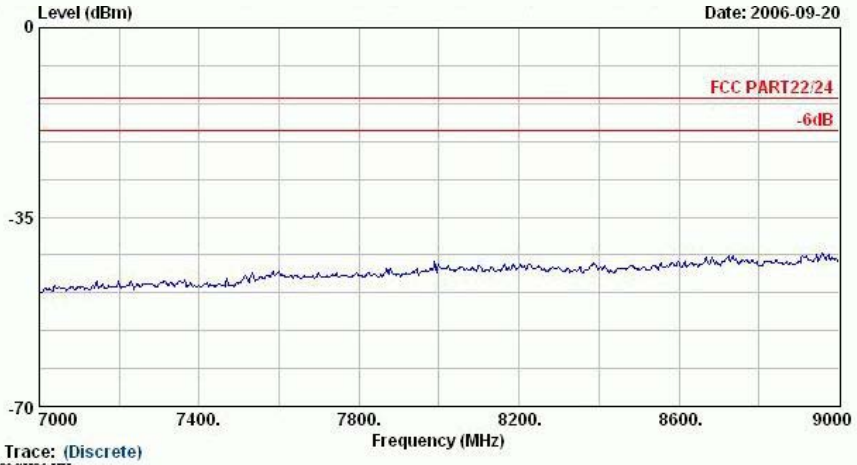
	Freq MHz	Level dBm	Over Limit dB	Limit Line dBm	Read Level dBm	Factor dB	Remark
1 @	1384.0	-55.33	-42.33	-13.00	-56.07	0.74	Peak
2 @	1514.0	-55.67	-42.67	-13.00	-56.13	0.45	Peak
3 @	1638.0	-57.44	-44.44	-13.00	-57.75	0.31	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor

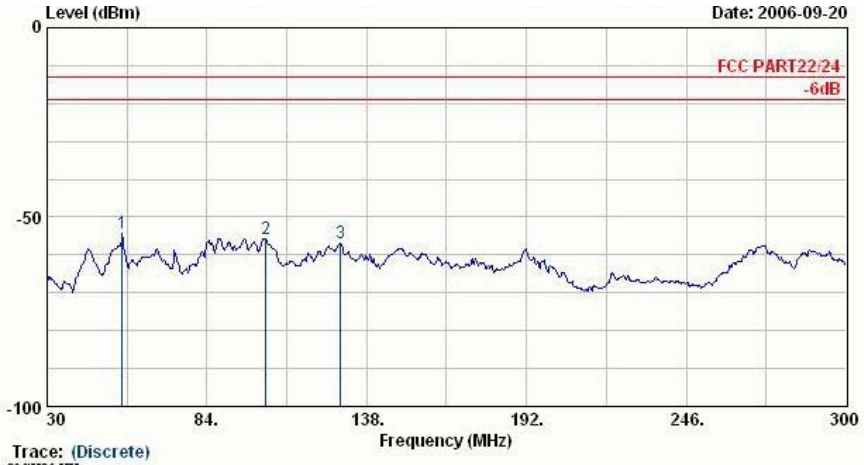


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor

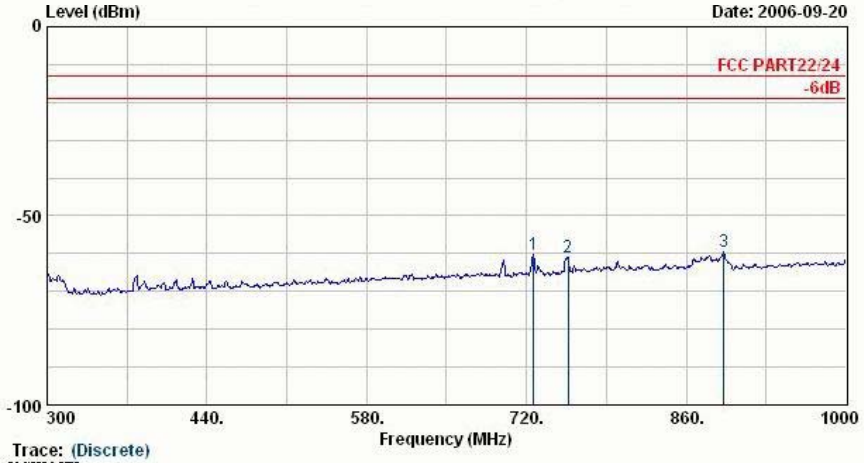
Vertical Polarization



Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	55.4	-54.39	-41.39	-13.00	-40.27	-14.12	Peak
2 @	104.0	-55.61	-42.61	-13.00	-47.89	-7.72	Peak
3 @	129.1	-56.89	-43.89	-13.00	-48.93	-7.95	Peak

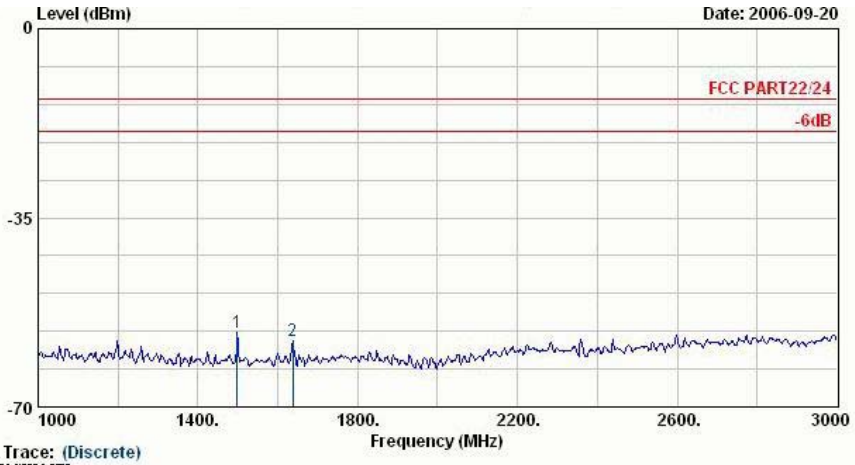


Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor

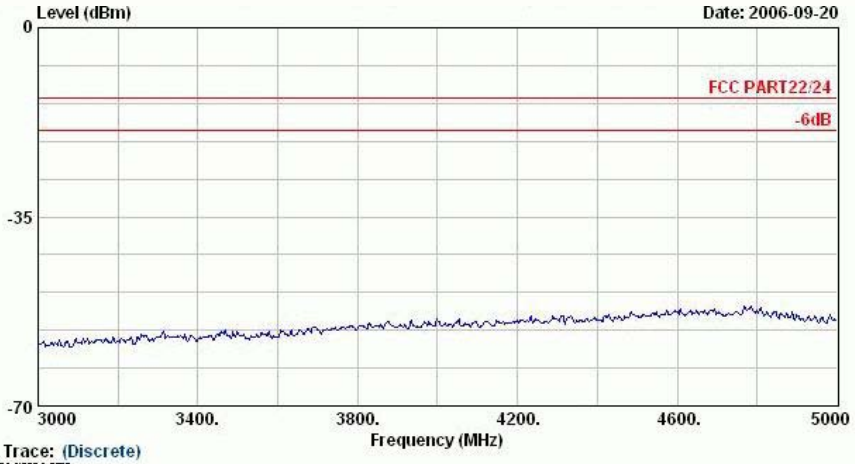
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	726.3	-60.11	-47.11	-13.00	-60.07	-0.04	Peak
2 @	756.4	-61.00			-61.41	0.41	Peak
3 @	892.9	-59.33	-46.33	-13.00	-61.14	1.81	Peak

Remark: #2 Uplink Signal

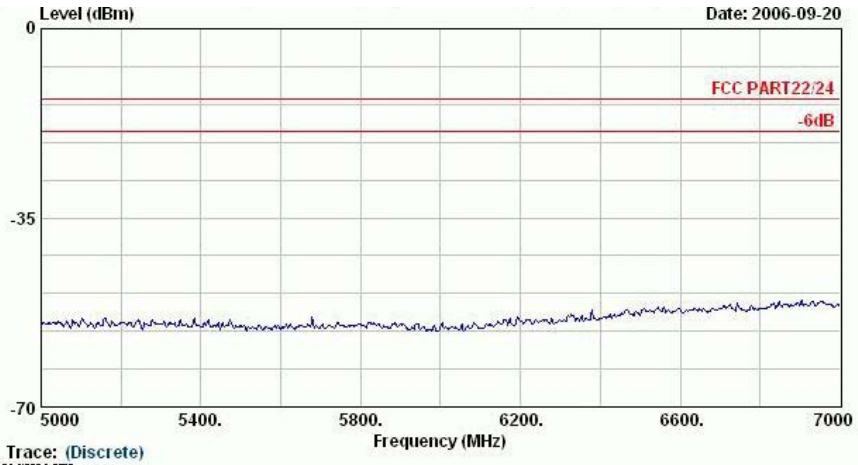


Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor

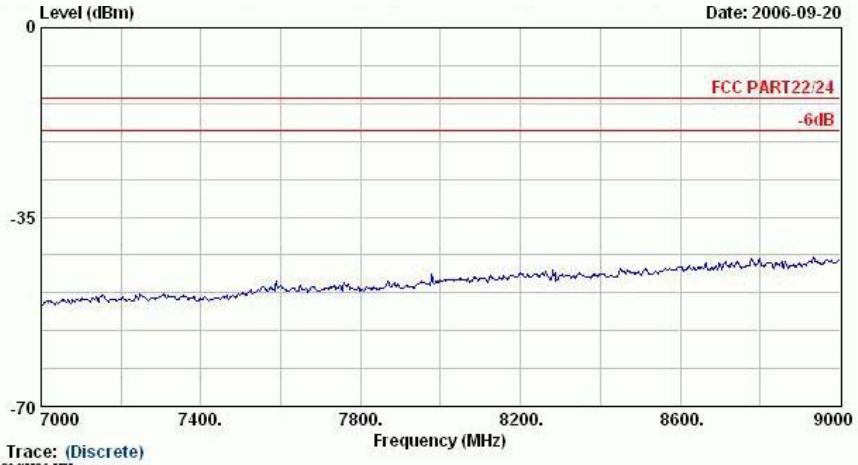
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	1498.0	-56.08	-43.08	-13.00	-55.22	-0.86	Peak
2 @	1638.0	-57.74	-44.74	-13.00	-57.28	-0.46	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor

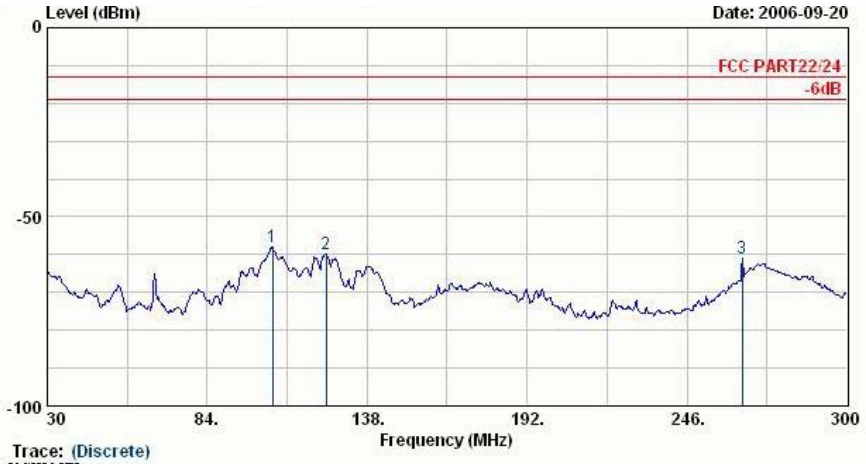


Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 836.5 MHz uplink mode +Adaptor

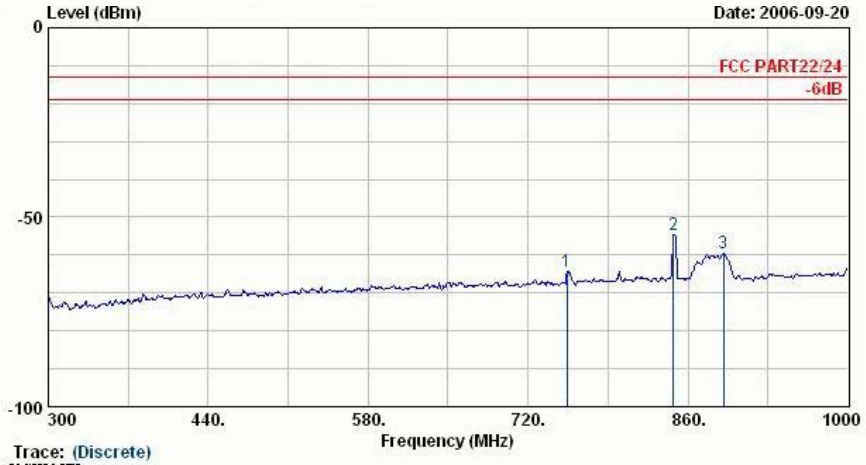
Mode 3
Horizontal Polarization



Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	106.1	-57.99	-44.99	-13.00	-45.68	-12.31	Peak
2	124.2	-59.72	-46.72	-13.00	-47.20	-12.52	Peak
3	264.6	-60.98	-47.98	-13.00	-49.83	-11.15	Peak

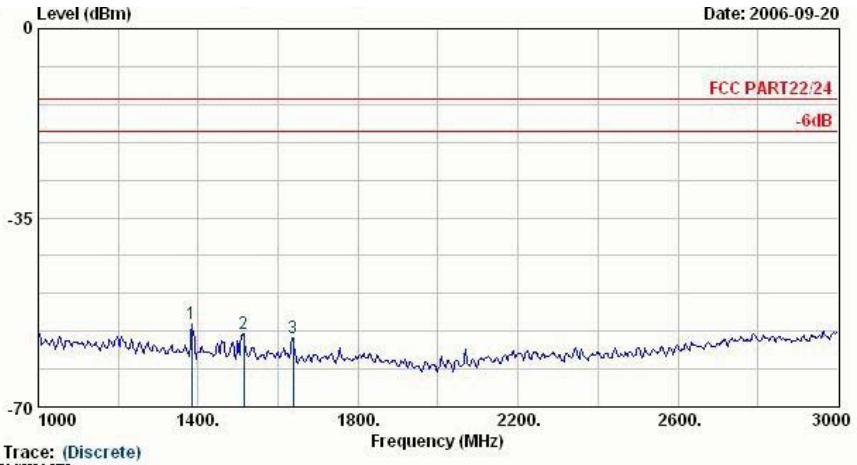


Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor

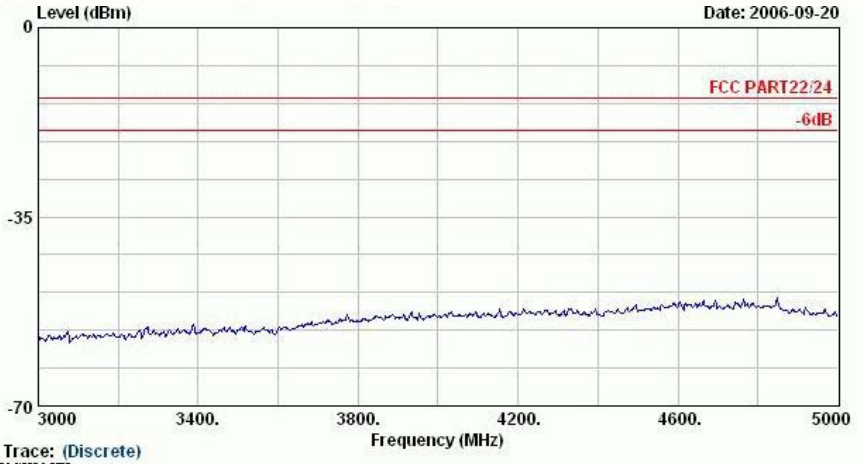
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	754.3	-64.43	-51.43	-13.00	-62.27	-2.16	Peak
2 @	847.4	-54.54			-53.31	-1.23	Peak
3	890.8	-59.45	-46.45	-13.00	-58.63	-0.82	Peak

Remark: #2 Uplink Signal

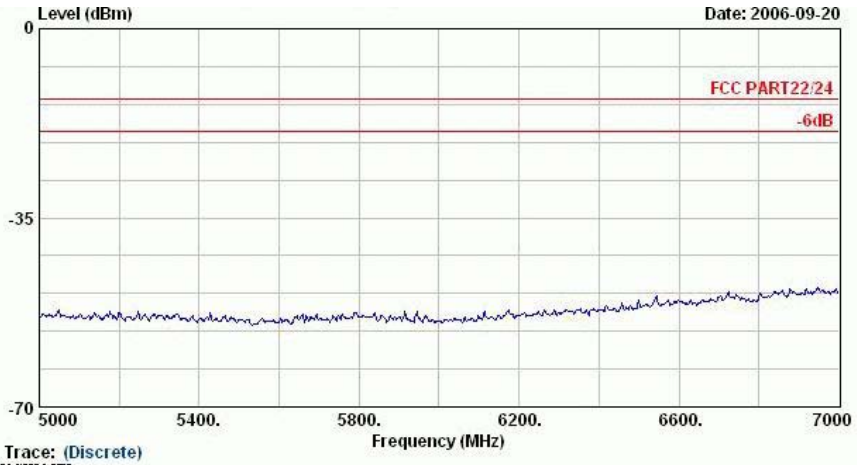


Site : 08CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor

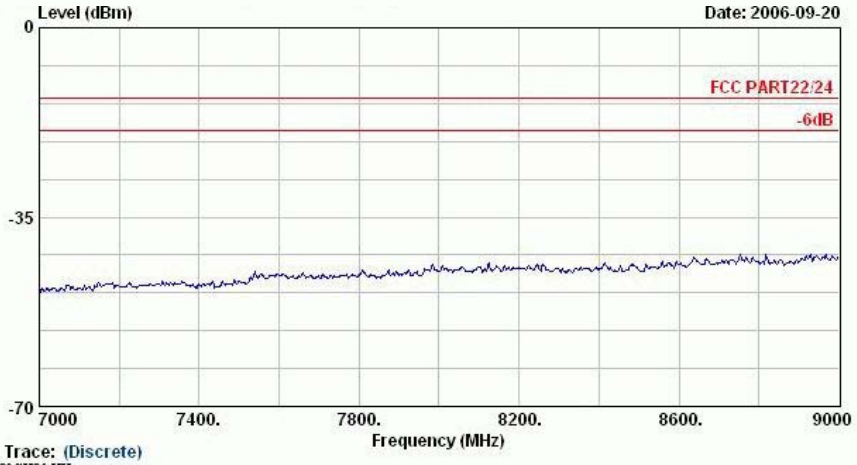
	Freq MHz	Level dBm	Over Limit dB	Limit Line dBm	Read Level dBm	Factor dB	Remark
1 @	1384.0	-54.75	-41.75	-13.00	-55.49	0.74	Peak
2 @	1514.0	-56.45	-43.45	-13.00	-56.90	0.45	Peak
3	1638.0	-57.27	-44.27	-13.00	-57.58	0.31	Peak



Site : 08CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor

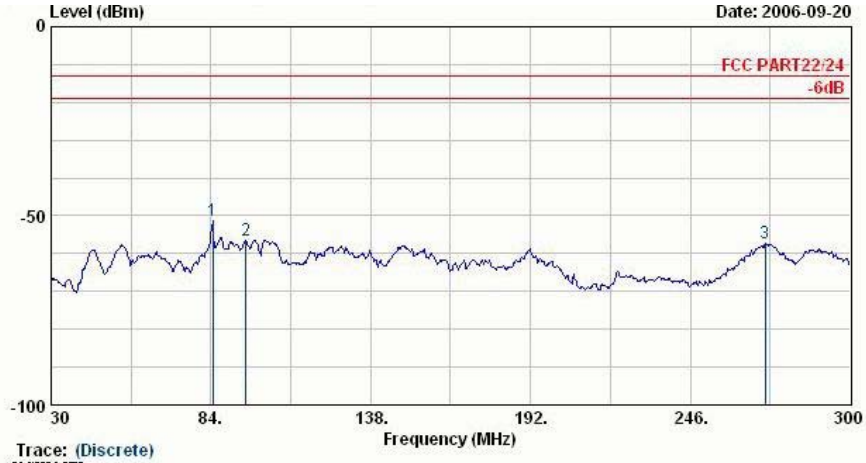


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor

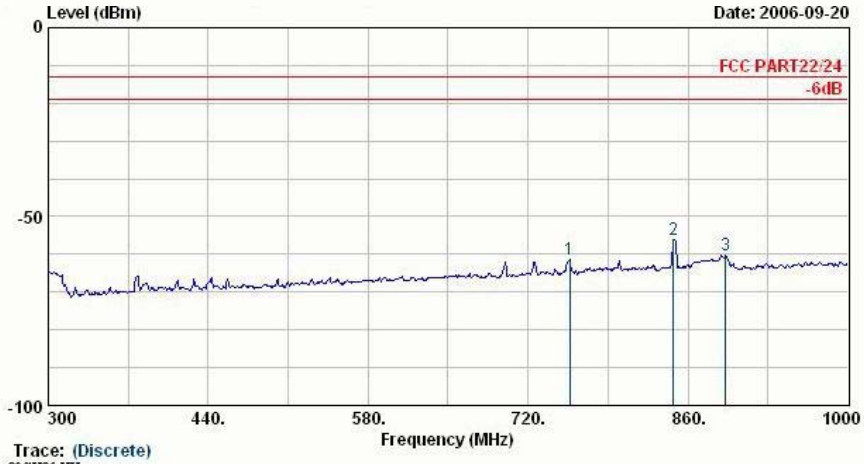
Vertical Polarization



Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	84.5	-51.14	-38.14	-13.00	-41.22	-9.93	Peak
2 @	95.9	-56.39	-43.39	-13.00	-48.14	-8.25	Peak
3	271.4	-57.36	-44.36	-13.00	-50.30	-7.06	Peak

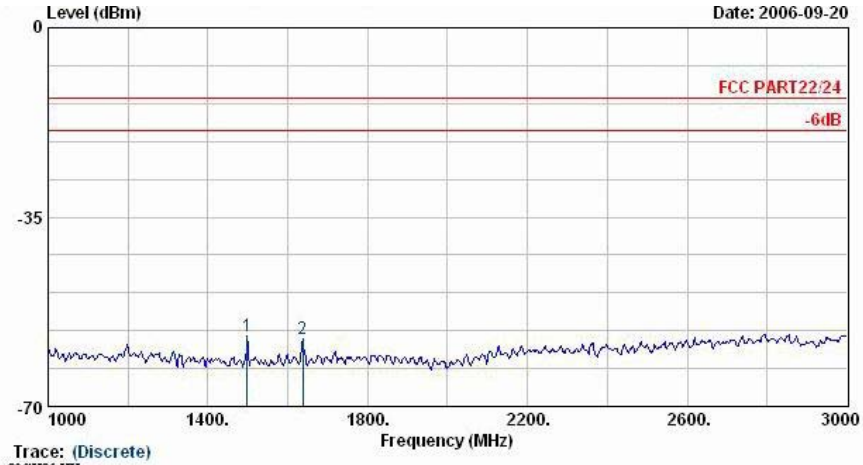


Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor

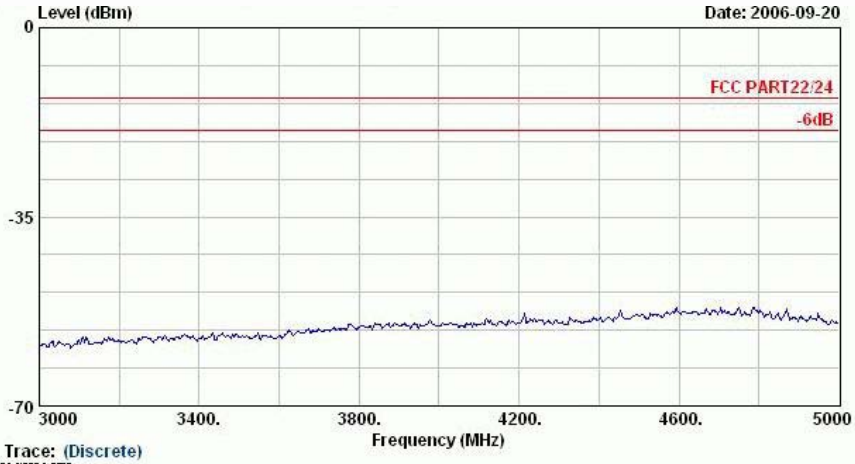
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	756.4	-61.37	-48.37	-13.00	-61.79	0.41	Peak
2 @	847.4	-56.01			-57.46	1.45	Peak
3	892.9	-60.18	-47.18	-13.00	-61.99	1.81	Peak

Remark: #2 Uplink Signal

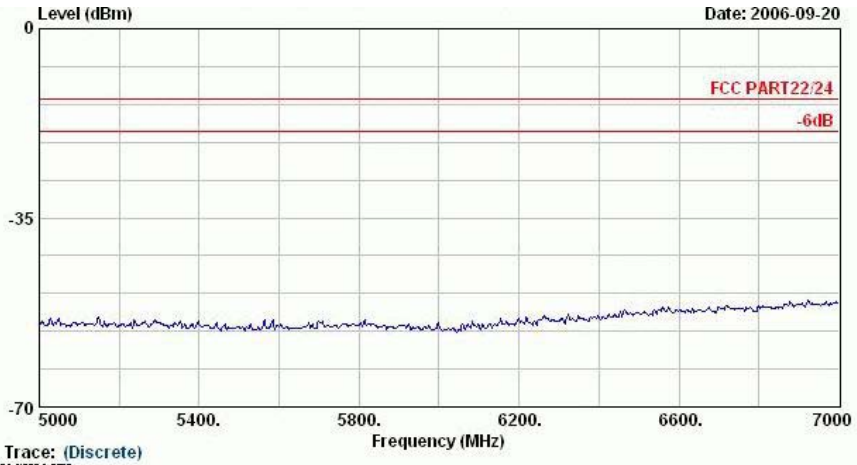


Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor

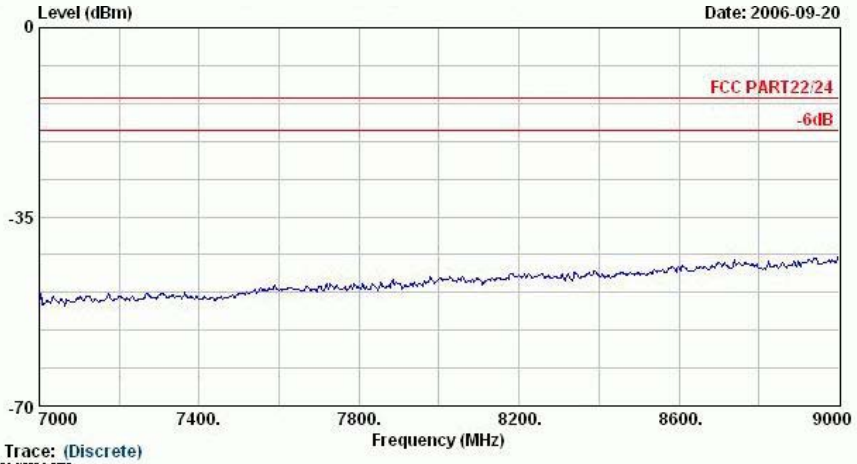
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	1498.0	-56.99	-43.99	-13.00	-56.13	-0.86	Peak
2	1638.0	-57.52	-44.52	-13.00	-57.06	-0.46	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor



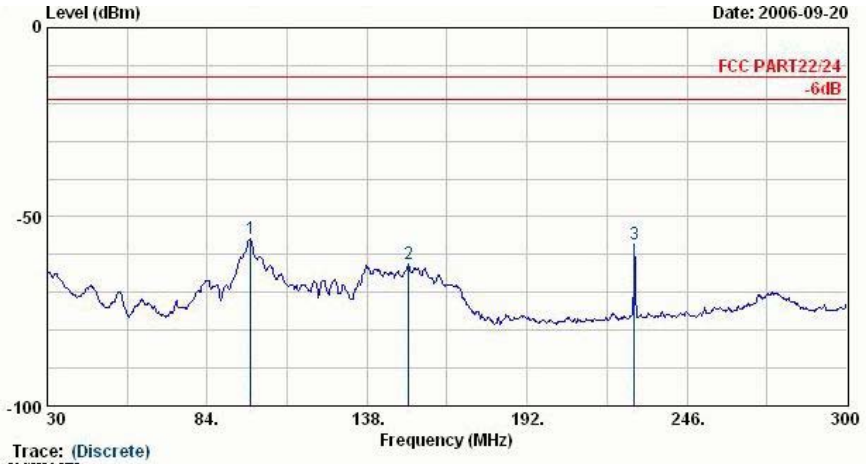
Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 848.31MHz uplink mode +Adaptor

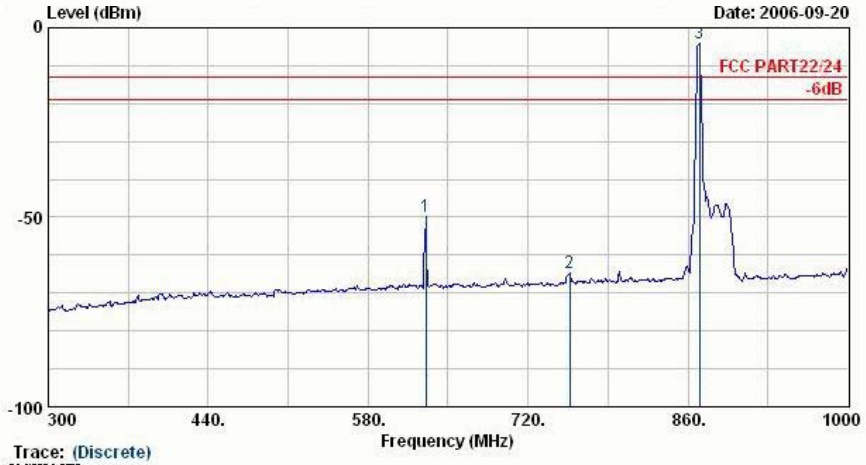
Remark: There is no more obvious spurious emission except the listings above.

Mode 4
Horizontal Polarization



Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor

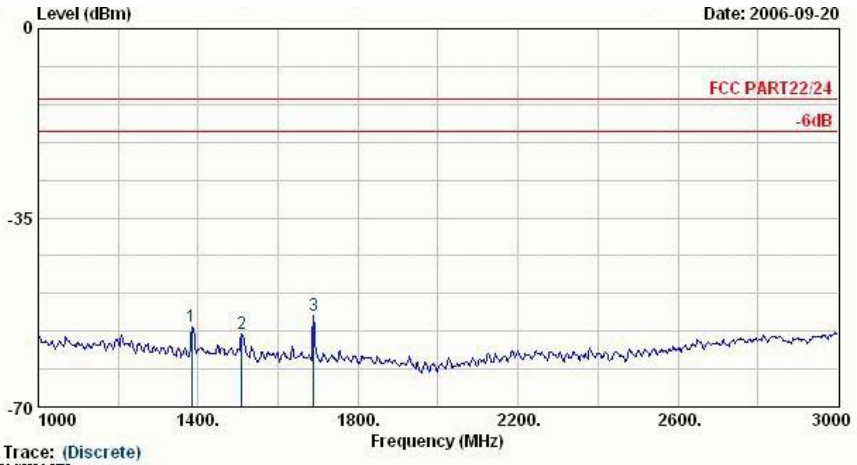
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	98.6	-55.93	-42.93	-13.00	-43.69	-12.24	Peak
2	152.0	-62.52	-49.52	-13.00	-49.68	-12.84	Peak
3	228.2	-57.12	-44.12	-13.00	-44.70	-12.42	Peak



Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor

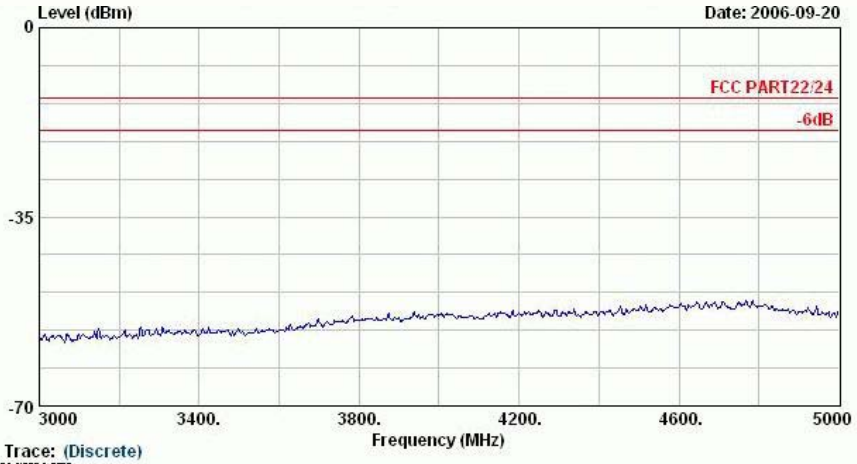
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	630.4	-49.92	-36.92	-13.00	-46.49	-3.43	Peak
2	756.4	-64.62	-51.62	-13.00	-62.48	-2.14	Peak
3 @	869.8	-4.10			-3.08	-1.02	Peak

Remark: #3 Downlink Signal

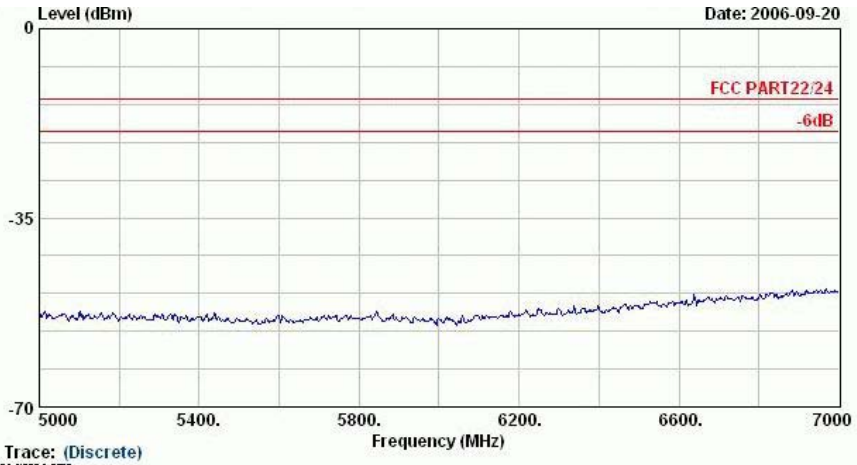


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor

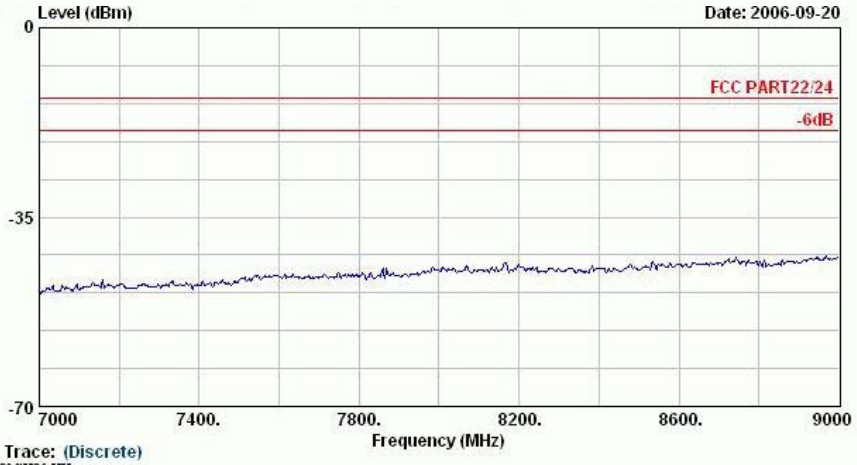
	Freq MHz	Level dBm	Over Limit dB	Limit Line dBm	Read Level dBm	Factor dB	Remark
1 @	1384.0	-55.17	-42.17	-13.00	-55.91	0.74	Peak
2	1508.0	-56.45	-43.45	-13.00	-56.91	0.45	Peak
3 @	1688.0	-53.12	-40.12	-13.00	-53.25	0.13	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor

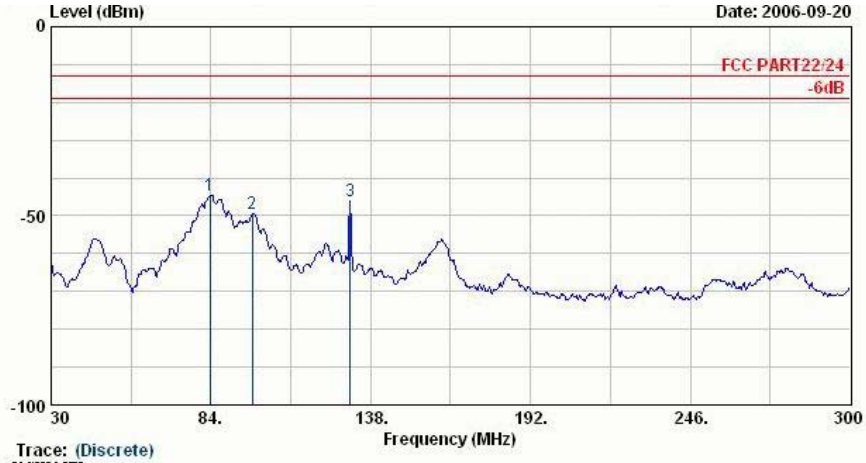


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor

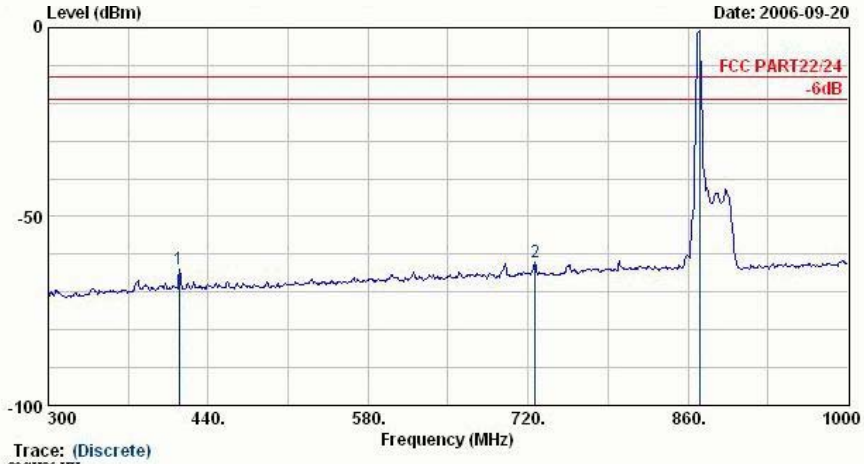
Vertical Polarization



Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	83.7	-44.64	-31.64	-13.00	-34.57	-10.07	Peak
2 @	98.0	-49.27	-36.27	-13.00	-41.30	-7.97	Peak
3 @	131.0	-46.22	-33.22	-13.00	-38.25	-7.97	Peak

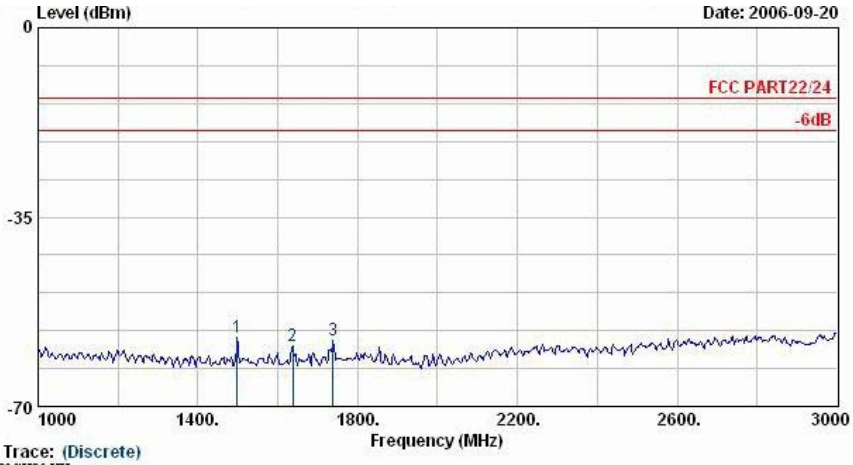


Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor

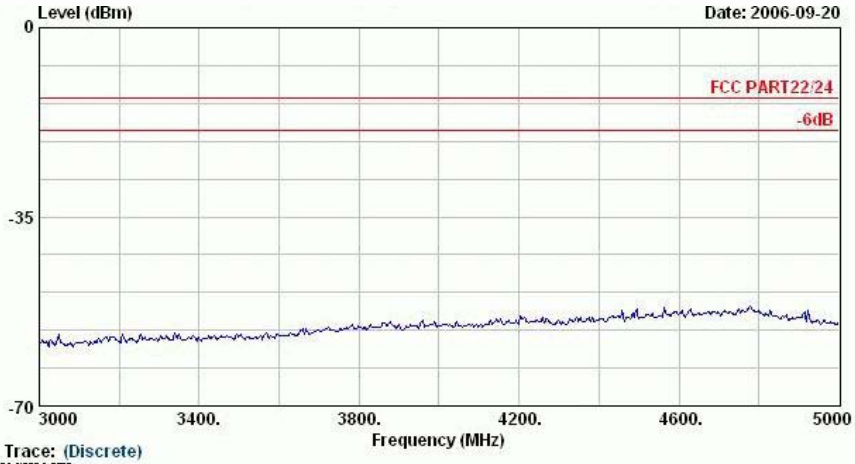
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	414.8	-63.87	-50.87	-13.00	-59.73	-4.14	Peak
2	726.3	-62.03	-49.03	-13.00	-62.00	-0.04	Peak
3 @	869.8	-0.66			-2.29	1.63	Peak

Remark: #3 Downlink Signal

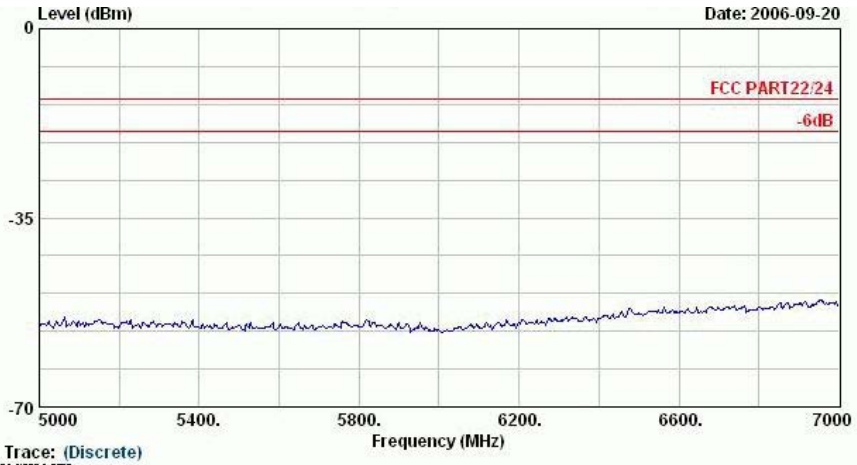


Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor

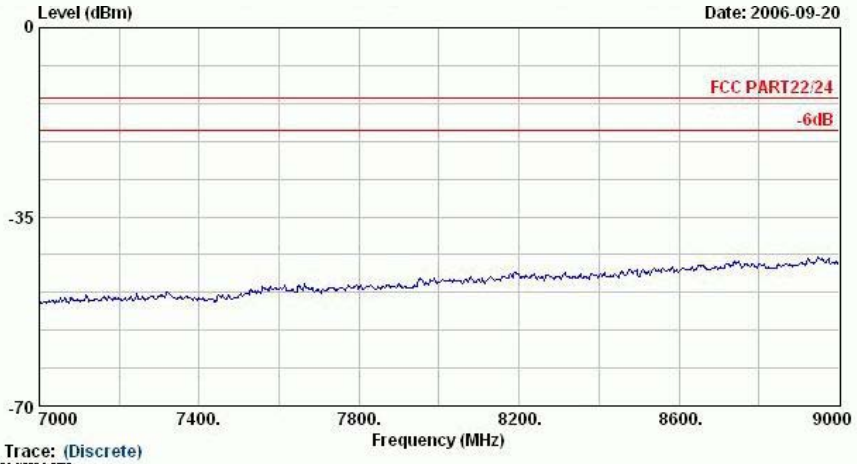
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	1498.0	-57.31	-44.31	-13.00	-56.45	-0.86	Peak
2	1638.0	-58.72	-45.72	-13.00	-58.26	-0.46	Peak
3	1738.0	-57.87	-44.87	-13.00	-57.53	-0.34	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor



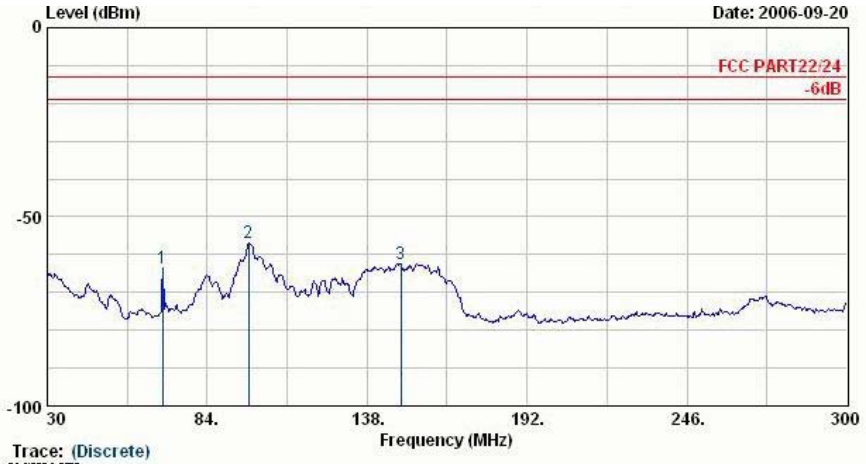
Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA 2000 869.7MHz downlink mode+Adaptor

Remark: There is no more obvious spurious emission except the listings above.

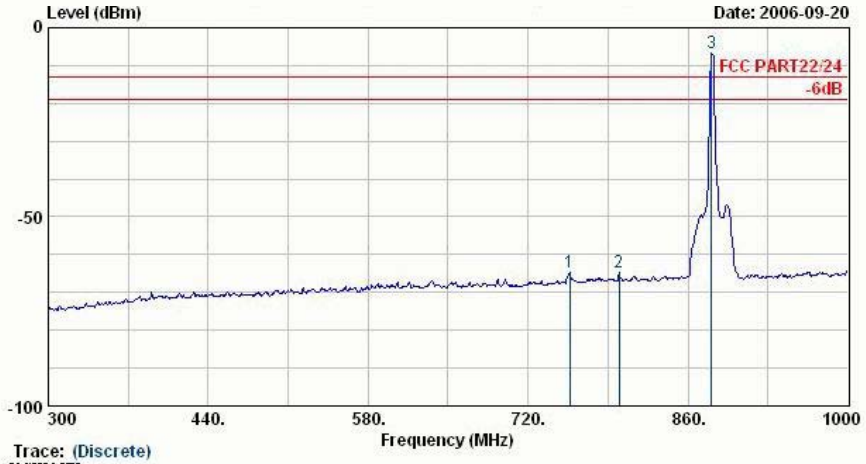
Mode 5
Horizontal Polarization



Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	68.9	-63.64	-50.64	-13.00	-51.28	-12.36	Peak
2 @	98.0	-56.88	-43.88	-13.00	-44.64	-12.25	Peak
3	149.3	-62.38	-49.38	-13.00	-49.57	-12.81	Peak

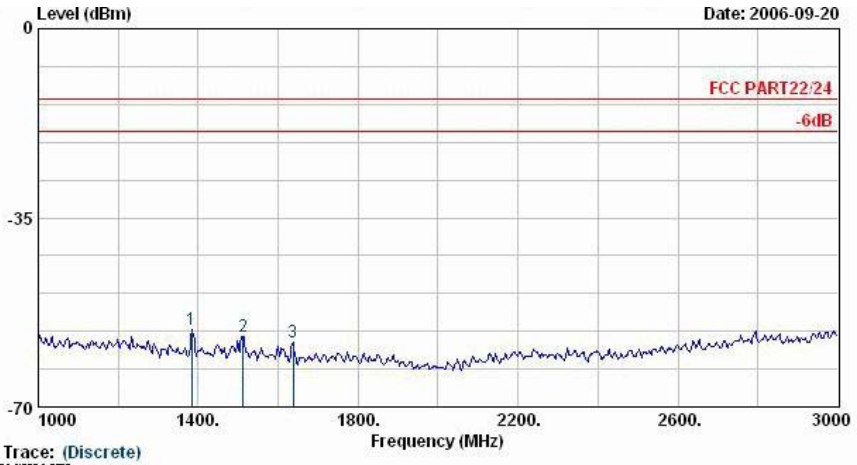


Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor

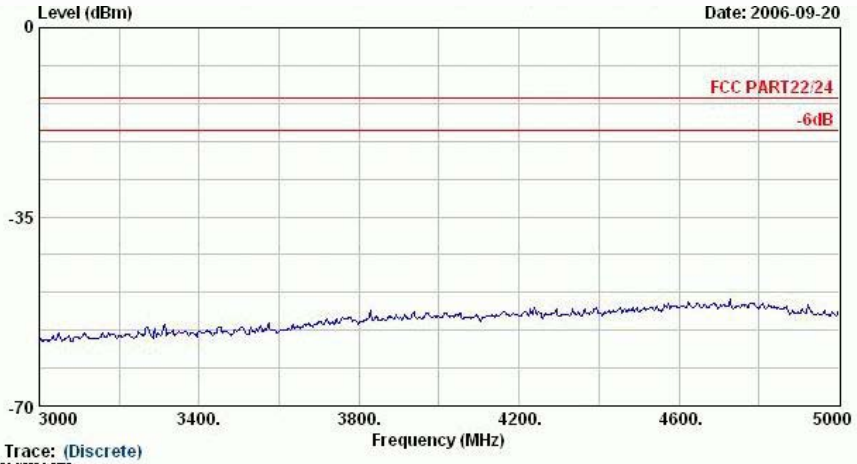
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	756.4	-64.80	-51.80	-13.00	-62.67	-2.14	Peak
2	799.8	-64.77	-51.77	-13.00	-63.08	-1.69	Peak
3 @	880.3	-6.69			-5.78	-0.91	Peak

Remark: #3 Downlink Signal

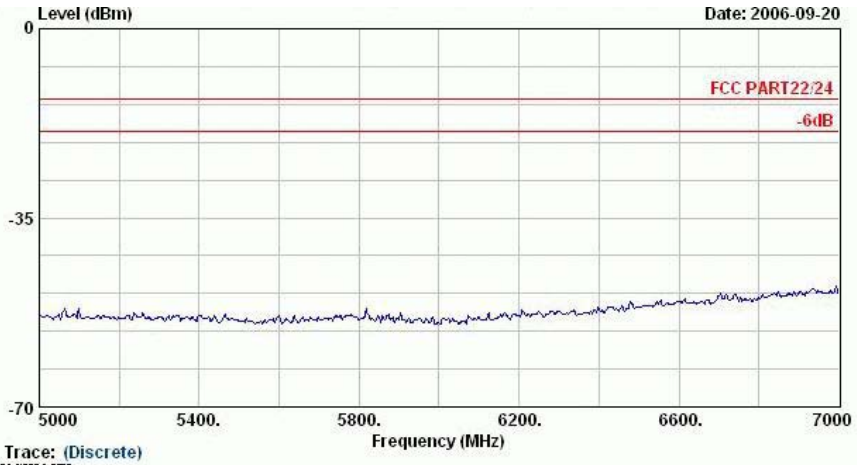


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor

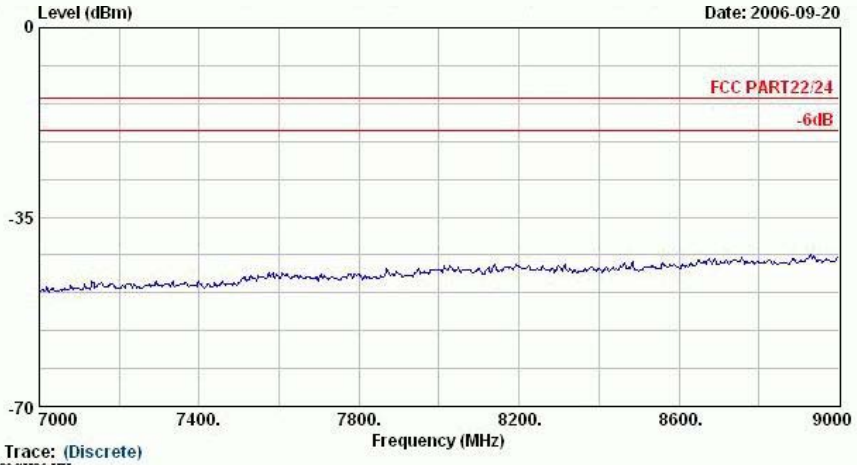
	Freq MHz	Level dBm	Over Limit dB	Limit Line dBm	Read Level dBm	Factor dB	Remark
1 @	1384.0	-55.68	-42.68	-13.00	-56.43	0.74	Peak
2	1512.0	-56.97	-43.97	-13.00	-57.42	0.45	Peak
3	1638.0	-58.05	-45.05	-13.00	-58.36	0.31	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor

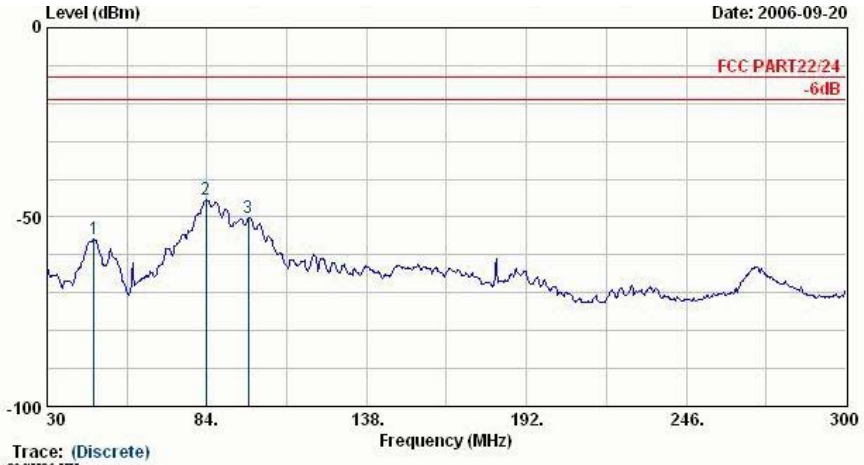


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor

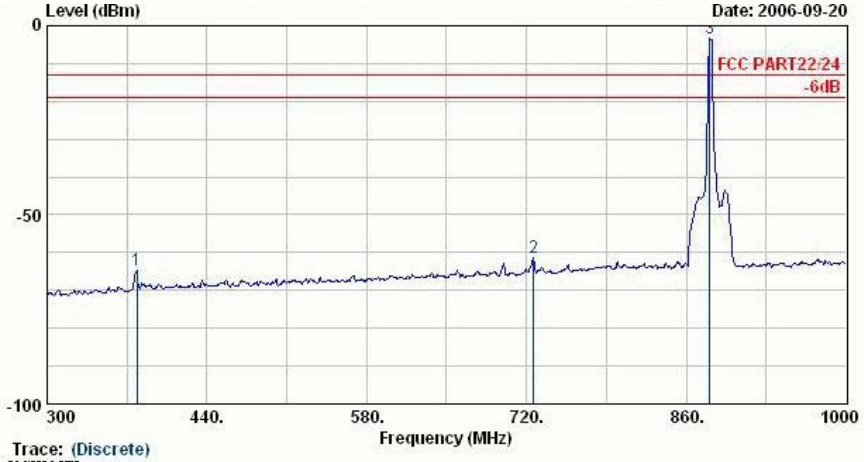
Vertical Polarization



Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1 @	45.9	-55.81	-42.81	-13.00	-42.36	-13.45	Peak
2 @	83.7	-45.48	-32.48	-13.00	-35.41	-10.07	Peak
3 @	98.0	-50.20	-37.20	-13.00	-42.23	-7.97	Peak

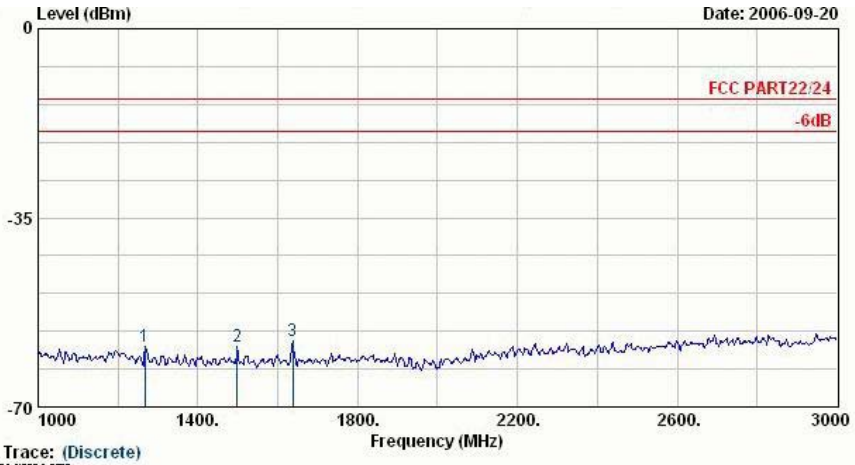


Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor

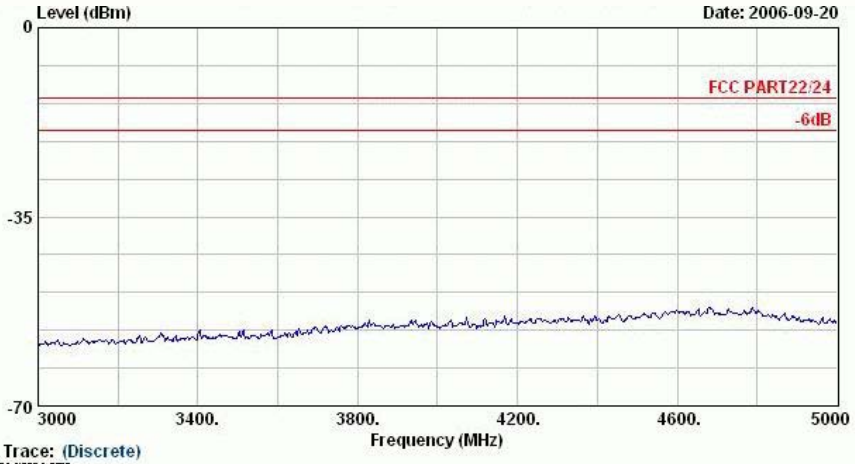
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	378.4	-64.62	-51.62	-13.00	-59.84	-4.78	Peak
2	726.3	-61.52	-48.52	-13.00	-61.48	-0.04	Peak
3 @	880.3	-3.37			-5.08	1.71	Peak

Remark: #3 Downlink Signal

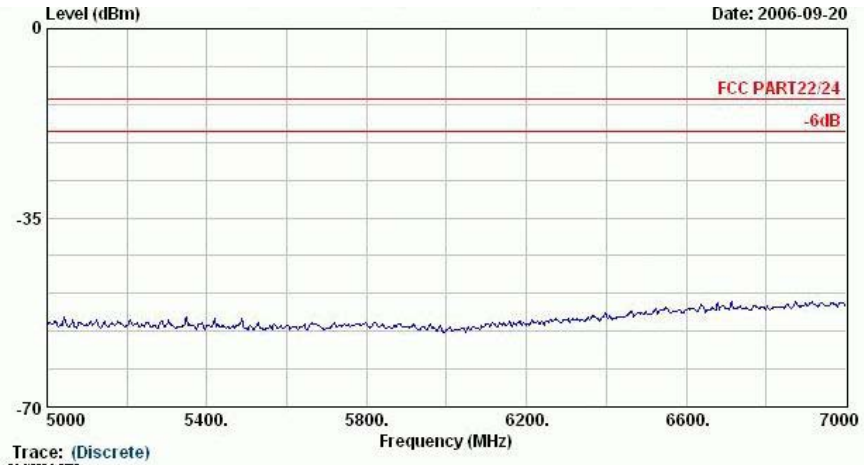


Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor

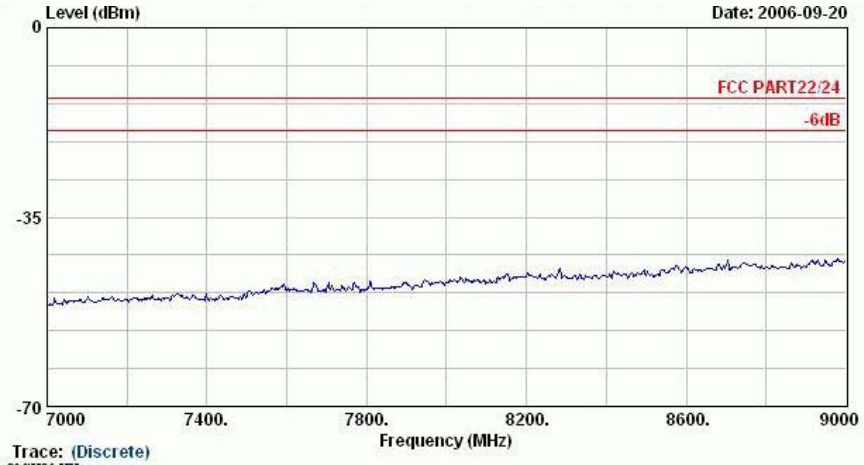
	Freq MHz	Level dBm	Over Limit dB	Limit Line dBm	Read Level dBm	Factor dB	Remark
1	1268.0	-58.73	-45.73	-13.00	-57.90	-0.83	Peak
2	1498.0	-58.81	-45.81	-13.00	-57.95	-0.86	Peak
3	1638.0	-57.87	-44.87	-13.00	-57.41	-0.46	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor



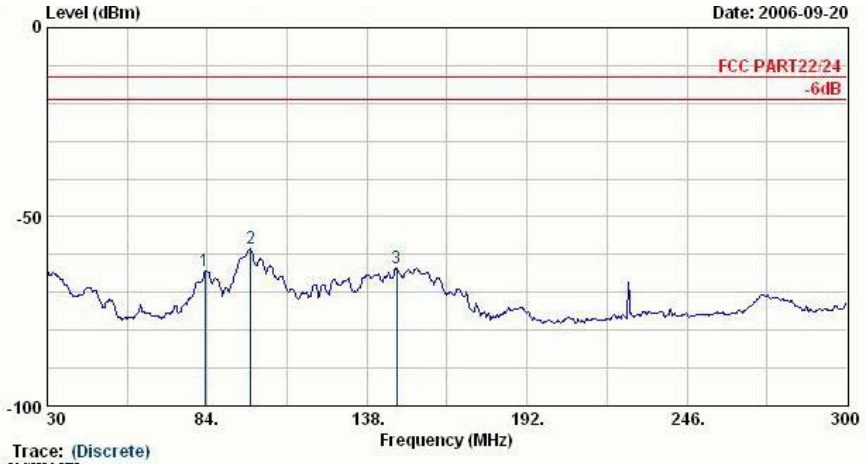
Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 881.52MHz downlink mode+Adaptor

Remark: There is no more obvious spurious emission except the listings above.

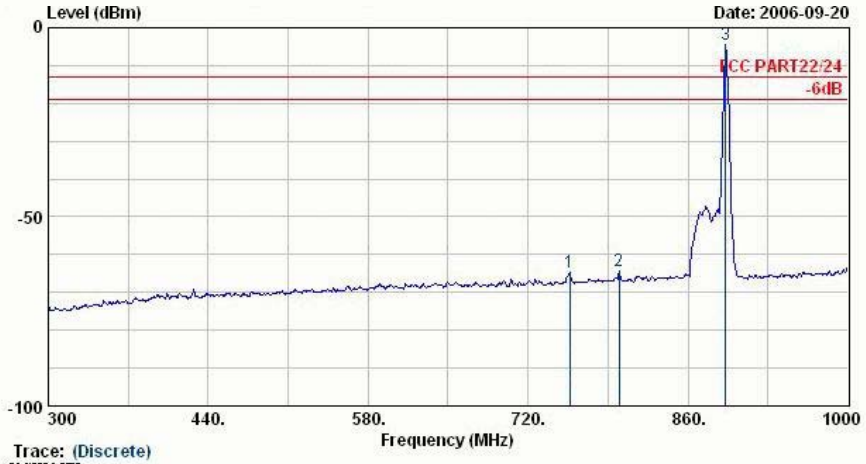
Mode 6
Horizontal Polarization



Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	83.2	-64.13	-51.13	-13.00	-51.83	-12.30	Peak
2	98.6	-58.47	-45.47	-13.00	-46.23	-12.24	Peak
3	148.0	-63.55	-50.55	-13.00	-50.75	-12.80	Peak

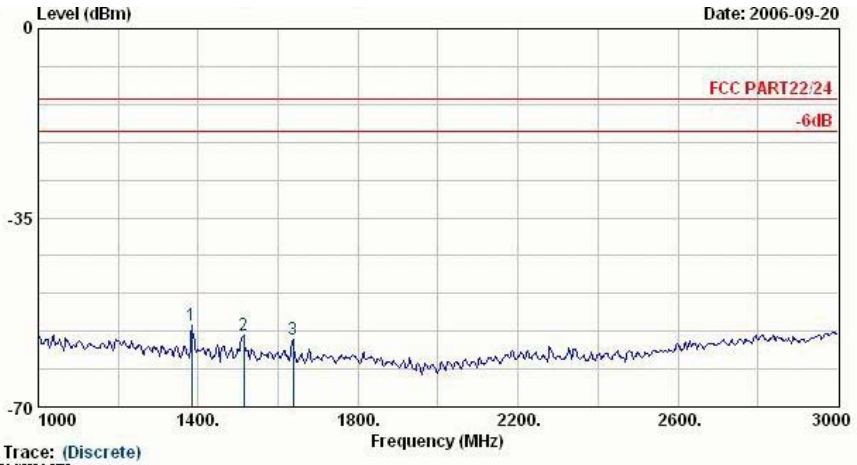


Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor

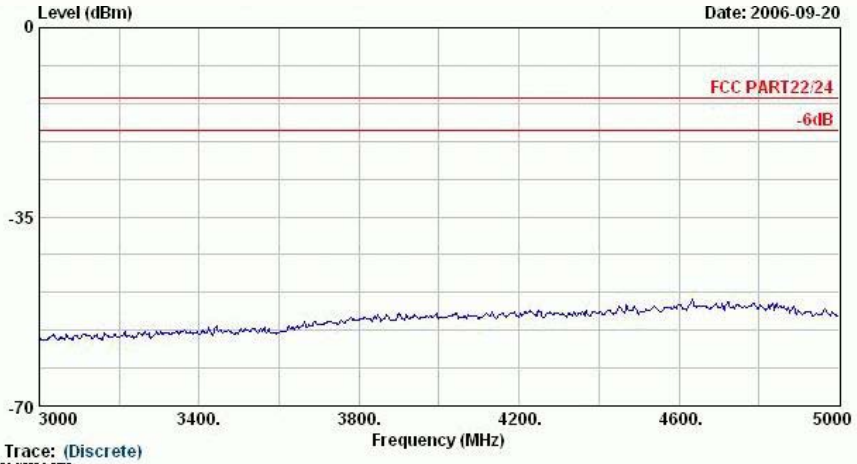
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	756.4	-64.53	-51.53	-13.00	-62.39	-2.14	Peak
2	799.8	-64.26	-51.26	-13.00	-62.57	-1.69	Peak
3 X	892.9	-4.44			-3.65	-0.79	Peak

Remark: #3 Downlink Signal

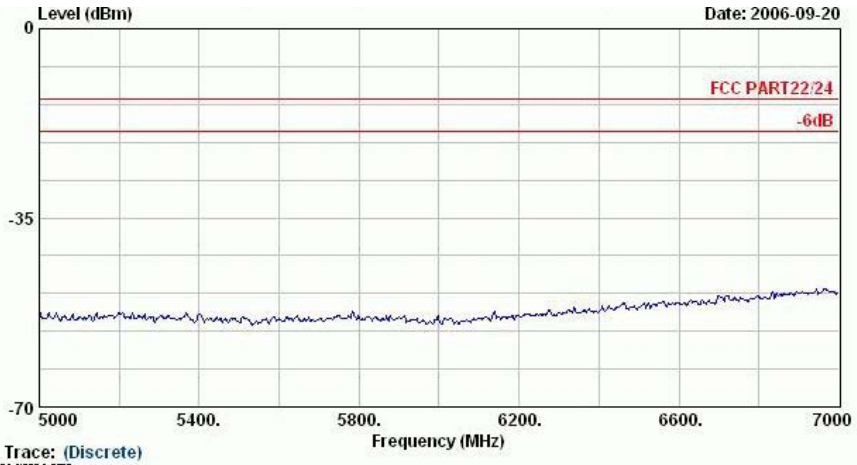


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor

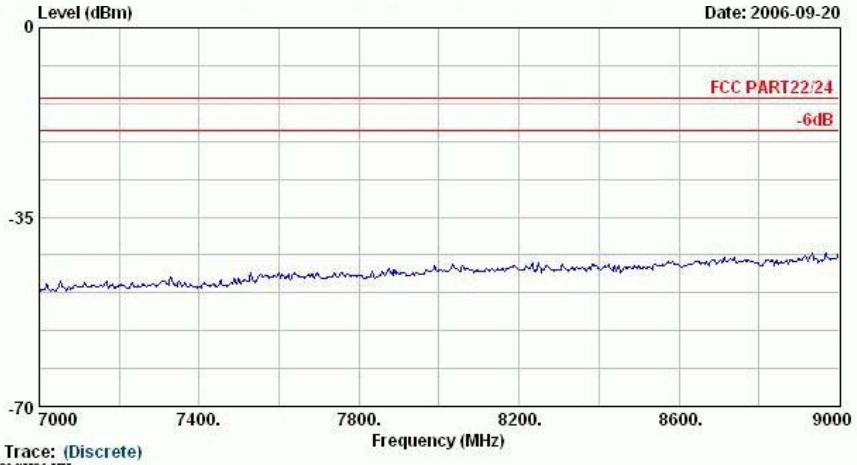
	Freq MHz	Level dBm	Over Limit dB	Limit Line dBm	Read Level dBm	Factor dB	Remark
1	1384.0	-55.02	-42.02	-13.00	-55.76	0.74	Peak
2	1514.0	-56.76	-43.76	-13.00	-57.21	0.45	Peak
3	1638.0	-57.42	-44.42	-13.00	-57.73	0.31	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor

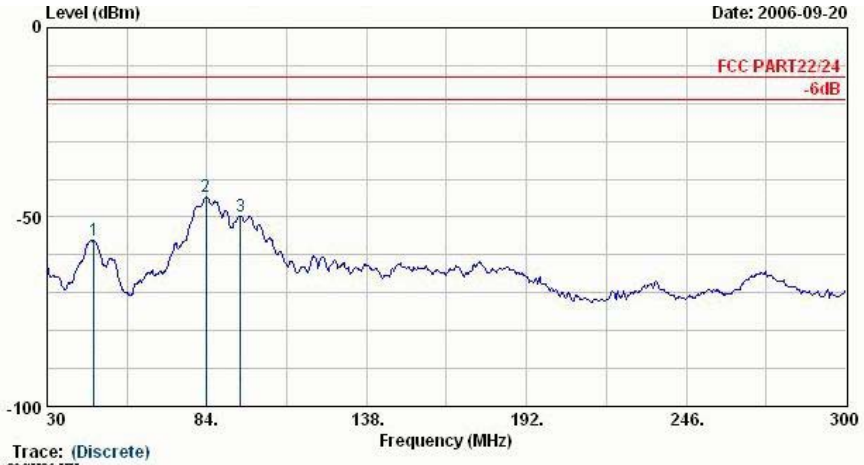


Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor



Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor

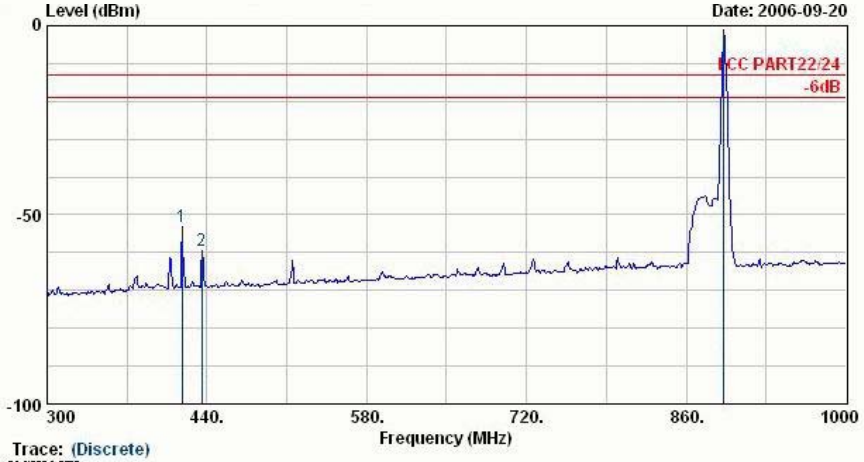
Vertical Polarization



Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	45.9	-55.99	-42.99	-13.00	-42.53	-13.45	Peak
2	83.7	-44.61	-31.61	-13.00	-34.54	-10.07	Peak
3	95.3	-49.69	-36.69	-13.00	-41.30	-8.39	Peak

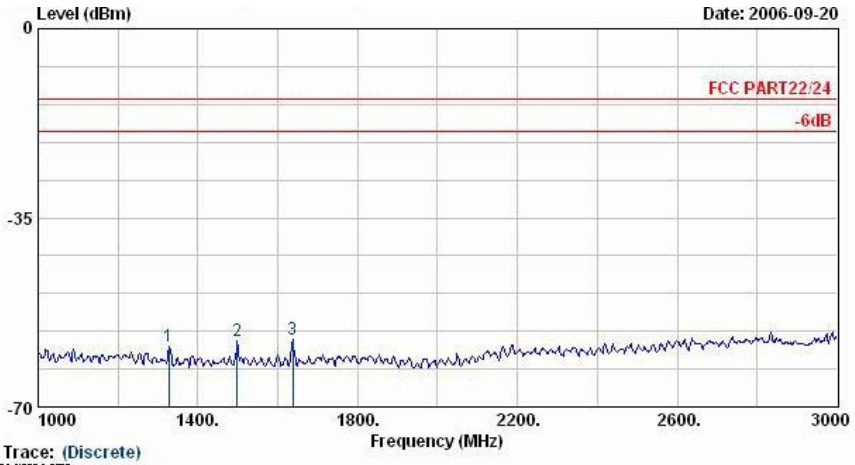


Trace: (Discrete)

Site : 03CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor

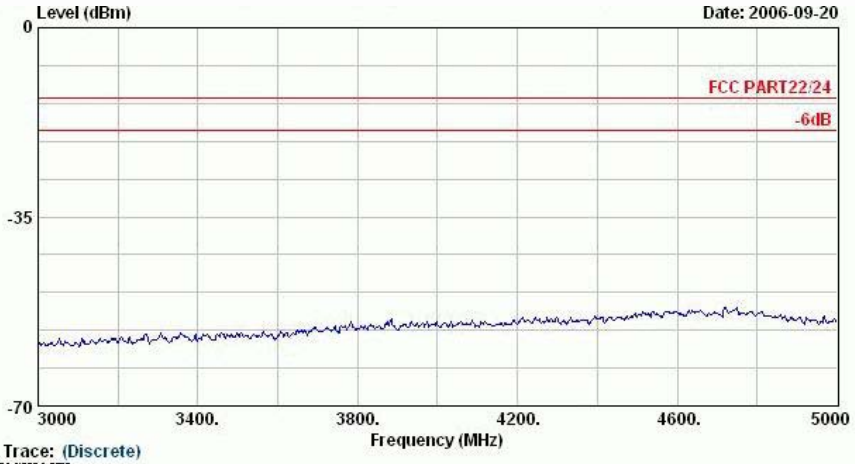
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	418.3	-53.09	-40.09	-13.00	-48.98	-4.11	Peak
2	435.8	-59.59	-46.59	-13.00	-55.69	-3.90	Peak
3 @	892.9	-1.21			-3.02	1.81	Peak

Remark: #3 Downlink Signal

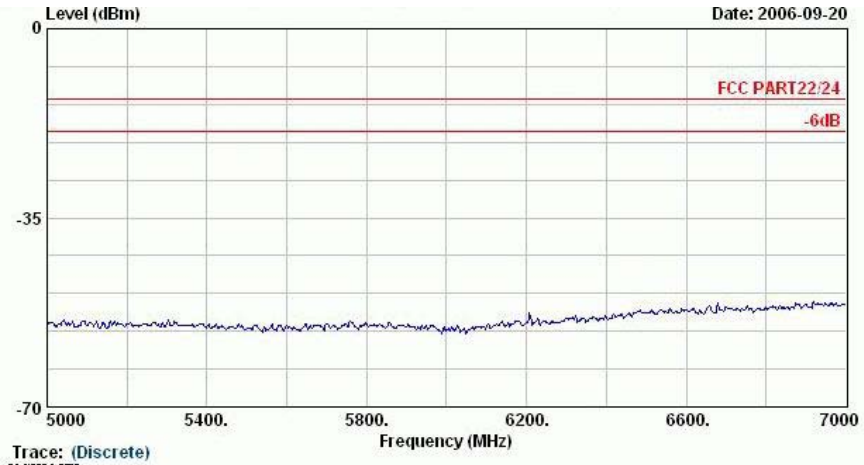


Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor

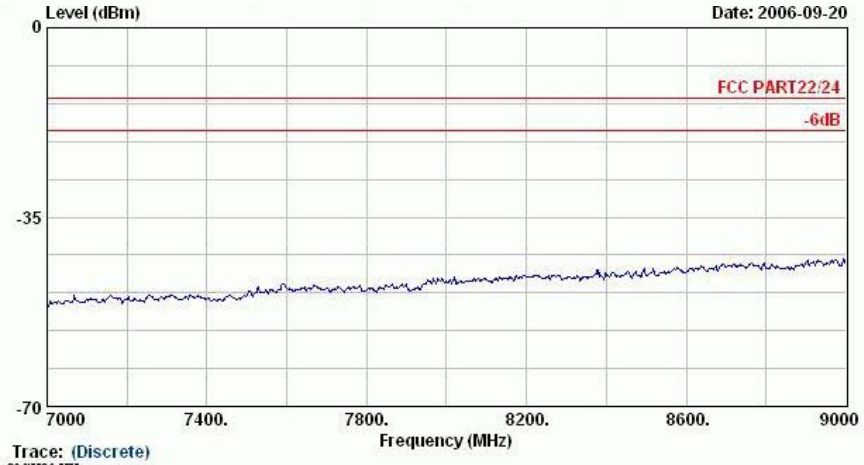
	Freq MHz	Level dBm	Over Limit dB	Limit Line dBm	Read Level dBm	Factor dB	Remark
1	1328.0	-58.70	-45.70	-13.00	-57.90	-0.80	Peak
2	1498.0	-57.88	-44.88	-13.00	-57.02	-0.86	Peak
3	1638.0	-57.47	-44.47	-13.00	-57.02	-0.46	Peak



Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor



Site : 08CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor



Site : 08CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : Repeter
Power : 120Vac/60Hz
Model : FG690517
Memo : CDMA2000 893.31MHz downlink mode+Adaptor

Remark: There is no more obvious spurious emission except the listings above.

5. Maximum Permissible Exposure Test Report

5.1 Introduction

The report has been prepared on behalf of **Coiler Corporation TX-800** to show compliance with the RF Exposure.

5.2 Requirements

Three different categories of transmitters are defined by the FCC in OET Bulletin 65. These categories are fixed installation, mobile and portable and are defined as follows:

- **Fixed installation:** fixed location means that the device, including its antenna, is physically secured at a permanent location and is not able to be easily moved to another location. Additionally, distance to humans form the antenna is maintained to at least 2 meters.
- **Mobile Devices:** a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR 2.1091.
- **Portable Devices:** a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user. Portable device requirements are found in Section 2.1093 of the FCC's Rules (47 CFR 2.1093)

  For this test report the Coiler Corporation TX-800 is being done as a mobile device and the MPE is evaluated at the 20cm test distance.

  The FCC also categorizes the use of the device as based upon the user's awareness and ability to exercise control over his or her exposure. The two categories defined are Occupational/Controlled Exposure and General Population/Uncontrolled Exposure. These two categories are defined as follows:
- **Occupational/controlled Exposure:** In general, occupational/controlled exposure limits are applicable to situation in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure. Awareness of the potential for RF exposure in a workplcae or similar environment can be provided through specific training as part of a RF safety program. If appropriate, warning signs and labels can also be used to establish such awareness by providing prominent information on the risk of potential exposure and instructions on methods to minimize such exposure risks.
- **General Population/Uncontrolled Exposure:** The general population / uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

Since there are no warnings or training associated with this unit and it can be used by anyone, **Broad Band Repeater** is evaluated to the General Population / Uncontrolled Exposure limits.

5.3 Radio Frequency Radiation Exposure Evaluation

According to 1.1310 of the FCC rules, the power density limit for General Population/Uncontrolled Exposure is 1mW/cm^2. As this is a mobile application the MPE shall be calculated at 20cm to show compliance with the power density limit. The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

For this device, the calculation is as follows:

Because the EUT belongs to General Population/ Uncontrolled Exposure, the limit of power density is 1.0 mW/cm².

	Frequency	Antenna Gain (dBi)	Antenna Gain (numberic)	Peak output power (dBm)	Peak output power (mW)	Calculated RF Exposure at 20 cm (mW/cm^2)	Limit (mW/cm^2)
Uplink	824.7	9	7.94	9.86	9.68	0.0153	1
	836.52	9	7.94	9.92	9.82	0.0155	1
	848.31	9	7.94	9.86	9.68	0.0153	1
Downlink	869.7	0	1.00	6.96	4.97	0.0010	1
	881.52	0	1.00	6.93	4.93	0.0010	1
	893.31	0	1.00	6.94	4.94	0.0010	1

Based on the above calculation at 20cm the **Broad Band Repeater** is below the Power Density limit of 1mW/cm^2.

6. List of Measurement Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Jul. 25, 2006	Jul. 24, 2007	Radiation (03CH06-HY)
Spectrum analyzer	R&S	FSP40	100057	9KHz-40GHz	Jun. 15, 2006	Jun. 14, 2007	Radiation (03CH06-HY)
Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jun. 26, 2006	Jun. 25, 2007	Radiation (03CH06-HY)
Controller	CT	SC100	N/A	N/A	N/A	N/A	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Nov. 22, 2004	Nov. 21, 2006	Radiation (03CH06-HY)
Horn Antenna	Com-Power	AH118	071025	1G-18G	Feb. 22, 2006	Feb. 21, 2007	Radiation (03CH06-HY)
HF Amplifier	MITEQ	AFS44	973248	0.1G - 26.5G	Dec. 17, 2005	Dec. 16, 2006	Radiation (03CH06-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	N/A	Radiation (03CH06-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	N/A	Radiation (03CH06-HY)
Network analyzer	Agilent	E8358A	US40260131	300KHz-9GHz	Sep. 16, 2005	Sep. 16, 2006	Radiation (03CH06-HY)

7. 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		$u(x_i)$	Ci	$Ci*u(x_i)$
	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 Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2*Γ3)	+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=2Ue(y)	**4.72**				

END OF TEST REPORT