



Nemko

Test Report: 5W46145, Issue 2

Applicant: Spotwave Wireless Inc.
1 Hines Rd.
Ottawa, Ontario
K2K 3C7

Apparatus: SpotCell 2500Xe

FCC ID: P3YSPOTCELL0015
P3YSPOTCELL0014

In Accordance With: FCC Part 22,
Subpart H – Cellular Radiotelephone Service
FCC Part 24,
Subpart E - Broadband PCS

Tested By: Nemko Canada Inc.
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Ottawa, Ontario
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Authorized By: 
Jason Nixon, Telecommunications Specialist

Date: August 9, 2005

Total Number of Pages: 79

Report Summary

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 22, Subpart H – Cellular Radiotelephone Service and FCC Part 24, Subpart E - Broadband PCS. Conducted measurements were performed in accordance with ANSI TIA-603-B-2002. Radiated tests were conducted in accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

The assessment summary is as follows:

Apparatus Assessed:	SpotCell 2500Xe
Specification:	FCC Part 22, Subpart H – Cellular Radiotelephone Service FCC Part 24, Subpart E - Broadband PCS
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None
Report Release History:	Issue 2-updated emission designator

Author: Xu Jin, Wireless Specialist

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025.

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Section 1: Equipment Under Test

1.1 Product Identification

The Equipment Under Test was identified as follows:

SpotCell 2500Xe

1.2 Samples Submitted for Assessment

The following samples of the apparatus have been submitted for type assessment:

Sample No.	Description	Serial No.
1	DU	050006270018
4	CU	050005590005

The first samples were received on: June, 27, 2005

1.3 Theory of Operation

The SpotCell 2500Xe is a dual band (Cellular Band and PCS band) or split band (PCS band and PCS band) adaptive repeater, which operates in the 800MHz Cellular band and in the 1900MHz PCS bands, for indoor RF signal enhancement.

The indoor Coverage Unit (CU) consists of two adaptive sub-modules, one for the Cellular band and another one for the PCS band, all in one PWB assembly. The 800MHz Cellular adaptive sub-module controls the carrier power and the maximum composite rated RF output power in the 800MHz band. The 1900MHz adaptive sub-module controls the carrier power and the maximum composite rated RF output power in the PCS band. Both bands can be operated simultaneously.

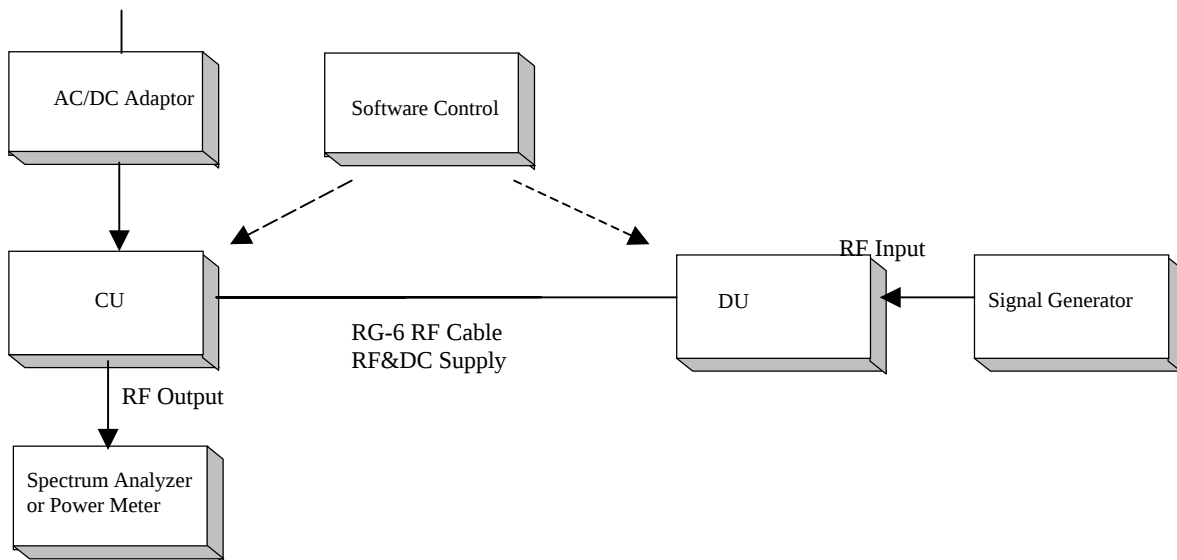
The Donor Unit (DU) consists of two adaptive sub-modules, one for the Cellular band and another one for the PCS band. All the sub-modules are assembled in one PCB board.. The adaptive processor in the DU uses an IF frequency to perform gain control and filtering functions in both the downlink and uplink directions for the Cellular and PCS bands

1.4 Technical Specifications of the EUT

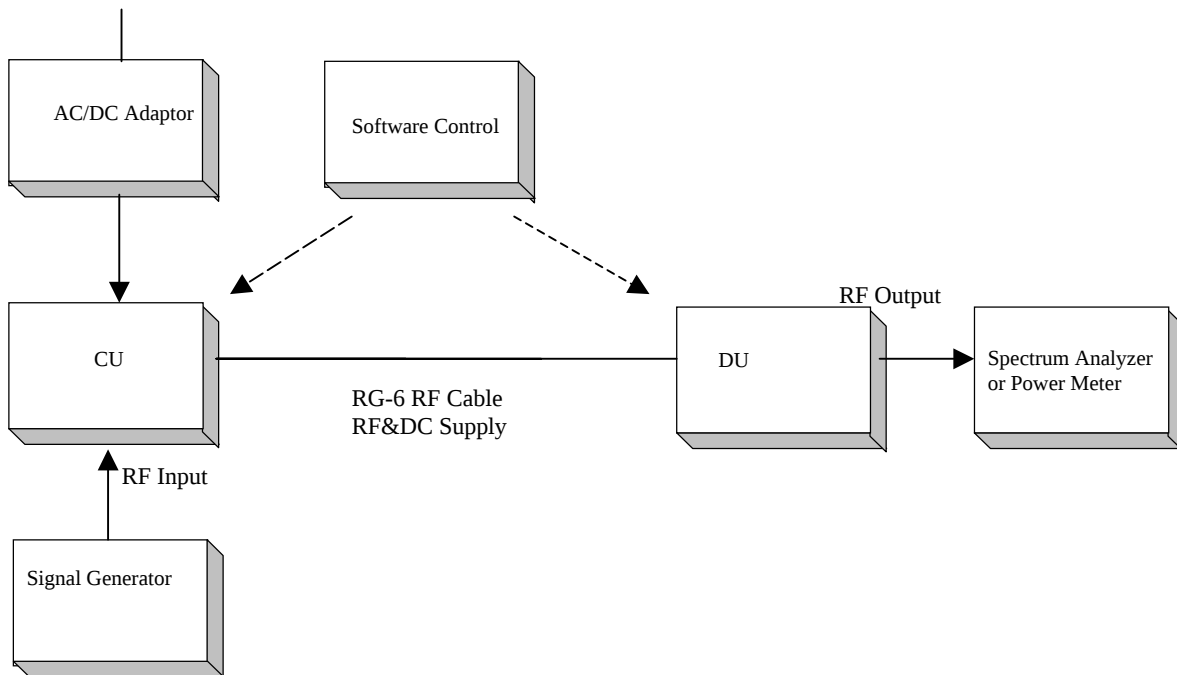
Manufacturer:	Spotwave Wireless Inc.
Operating Frequency:	Cellular Band A: DL 869-891.5MHz Cellular Band A: UL 824-846.5MHz Cellular Band B: DL 880-894MHz Cellular Band B: UL 835-849MHz PCS Band: DL 1930-1990MHz PCS Band: UL 1850-1910MHz
Emission Designator:	F7W, G7W, D7W
Rated Power:	Cellular Band: DL 10dBm Cellular Band: UL 20dBm PCS Band: DL 10dBm PCS Band: UL 18dBm
Modulation:	CDMA 1XRTT, CDMA 3XRTT, GSM, WCDMA, TDMA
Power Source:	120VAC

1.5 Test Set Up Configuration of the EUT

Down Link Test Configuration



Up Link Test Configuration



Section 2 : Test Conditions

2.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 2 Subpart J, Equipment Authorization Procedures
FCC Part 22, Public Mobile Services
FCC Part 24, Personal Communication Services
FCC 2-11-04/EAB/RF Amplifier, Booster, and Repeater Reminder Sheet

2.2 Deviations From Laboratory Test Procedures

No deviations were made from laboratory test procedures.

2.3 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	:	15 – 30 °C
Humidity range	:	20 - 75 %
Pressure range	:	86 - 106 kPa
Power supply range	:	+/- 5% of rated voltages

2.4 Test Equipment

EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
Spectrum Analyzer	Rohde & Schwarz	FSP	FA001920	Mar 22/05	Mar 22/06
Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	May 18/05	May 18/06
Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	May 18/05	May 18/06
0.1 – 1300 MHz Amplifier	Hewlett Packard	8447D	FA001909	Jan. 13/05	Jan. 13/06
1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	COU	COU
2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	COU	COU
4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	COU	COU
5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	COU	COU
18.0 – 26.0 GHz Amplifier	Narda	BBS-1826N612	FA001550	COU	COU
Biconical Antenna	EMCO	3109	FA000904	Aug. 03/04	Aug. 03/05
Horn Antenna #1	EMCO	3115	FA000649	Dec. 22/04	Dec. 22/05
Log Periodic Antenna	EMCO	LPA-25	FA000477	Aug. 26/04	Aug. 26/05
18.0 – 40.0GHz Horn Antenna	EMCO	3116	FA001847	April 25/05	April 25/06
Climate Chamber	Thermotron	SM-16C	15649-S	COU	COU

Section 3: Observations

3.1 Modifications Performed During Assessment

No modifications were performed during assessment.

3.2 Record Of Technical Judgements

No technical judgements were made during the assessment.

3.3 EUT Parameters Affecting Compliance

The user of the apparatus could not alter parameters that would affect compliance.

3.4 Test Deleted

No Tests were deleted from this assessment.

Section 4: Results Summary

This section contains the following:

FCC Part 22: Test Results

FCC Part 24: Test Result

The column headed 'Required' indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N No: not applicable / not relevant.

Y Yes: Mandatory i.e. the apparatus shall conform to these tests.

N/T Not Tested, mandatory but not assessed. (See section 3.4 Test deleted)

The results contained in this section are representative of the operation of the apparatus as originally submitted.

4.1 FCC Part 22/24: Test Results

Section	Clause FCC Part 22	Clause FCC Part 24	Test Method	Test Description	Required	Result
1	22.913	24.232	2.1046	RF Power Output	Y	Complied
2	2-11-04/EAB/RF		2.1049	Occupied Bandwidth	Y	Complied
3	22.917	24.238	2.1051	Spurious Emissions at Antenna Terminals	Y	Complied
4	22.917	24.238	2.1053	Field Strength of Spurious Emissions	Y	Complied
5	2-11-04/EAB/RF			Out of band rejection	Y	Complied
6	22.355	24.135	2.1055	Frequency Stability	Y	Complied

Appendix A: Test Results

Section 1. RF Output Power

Criteria: Clause 22.913

(a) Maximum ERP. In general, the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts.

Test Conditions:

Sample Number:	1 &4	Temperature:	23
Date:	June 27, 2005	Humidity:	51
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Wireless Lab

Test Results: See attached tables

Note:

The Maximum RF output power is within $\pm 1\text{dB}$ of the manufacturer's rating. The composite RF output power is de-rated according to the number of channels and is equal to the $P_{\text{max}} - 10\log N$.

P_{max} =Maximum Composite RF Output Power
 N =Number of Channels

The EUT was operated at the maximum output level via AGC control.

Cellular Band A---Down Link

Channel Frequency (MHZ)	Measured Power (dBm)	Rated Max. Power (dBm)
869.0	10.49	10
875.0	10.00	10
879.0	10.10	10
890.7	10.01	10

Cellular Band A ---Up Link

Channel Frequency (MHZ)	Measured Power (dBm)	Rated Max. Power (dBm)
824.0	19.71	20
830.0	20.73	20
834.0	20.69	20
845.7	19.86	20

Cellular Band B----Down Link

Channel Frequency (MHZ)	Measured Power (dBm)	Rated Max. Power (dBm)
881.0	9.96	10
885.0	10.02	10
889.0	10.07	10
892.7	10.02	10

Cellular Band B---Up Link

Channel Frequency (MHZ)	Measured Power (dBm)	Rated Max. Power (dBm)
836.0	20.45	20
840.0	20.15	20
844.0	20.46	20
847.7	19.23	20

Criteria: Clause 24.232

In no case may the peak output power of a base station transmitter exceed 100 watts.

Test Conditions:

Sample Number:	1 &4	Temperature:	23
Date:	June 27, 2005	Humidity:	51
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Wireless Lab

Test Results: See attached tables.

Note:

The Maximum RF output power is within $\pm 1\text{dB}$ of the manufacturer's rating. The composite RF output power is de-rated according to the number of channels and is equal to the $P_{\text{max}} - 10\log N$.

P_{max} = Maximum Composite RF Output Power
N = Number of Channels

The EUT was operated at the maximum output level via AGC control.

PCS Band Downlink

Channel Frequency (MHZ)	Measured Power (dBm)	Rated Max. Power (dBm)
1937.5	10.18	10
1960.0	10.14	10
1982.5	9.96	10

PCS Band Uplink

Channel Frequency (MHZ)	Measured Power (dBm)	Rated Max. Power (dBm)
1857.5	17.27	18
1880.0	17.77	18
1902.5	17.99	18

Power Measurement under Extreme Voltage Conditions

Test Method: The average power was verified under voltage extreme conditions using a wide band power meter with thermocouple detector.

Extreme Voltage: 15% of AC Mains

Test Result: No major change was noticed during the test.
Refer to the attached tables.

Frequency Band	Frequency (MHz)	Measured Power at 120VAC	Measured Power at 102VAC (-15%)	Measured Power at 138VAC (+15%)
Cellular Band A DL	875	9.92	9.90	9.88
Cellular Band A UL	830	20.33	20.30	20.27
Cellular Band B DL	885	10.05	10.02	10.01
Cellular Band B UL	840	20.02	19.97	19.96
PCS DL	1960	10.53	10.50	10.54
PCS UL	1880	17.65	17.52	17.43

Section 2. Occupied Bandwidth**Criteria: Clause 2-11-04/EAB/RF**

Using an RBW of 300Hz or 1% of the emission bandwidth, The spectral shape of the output should look similar to the input for all modulations.

Test Conditions:

Sample Number:	1 &4	Temperature:	23
Date:	June 28, 2005	Humidity:	51
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Wireless Lab

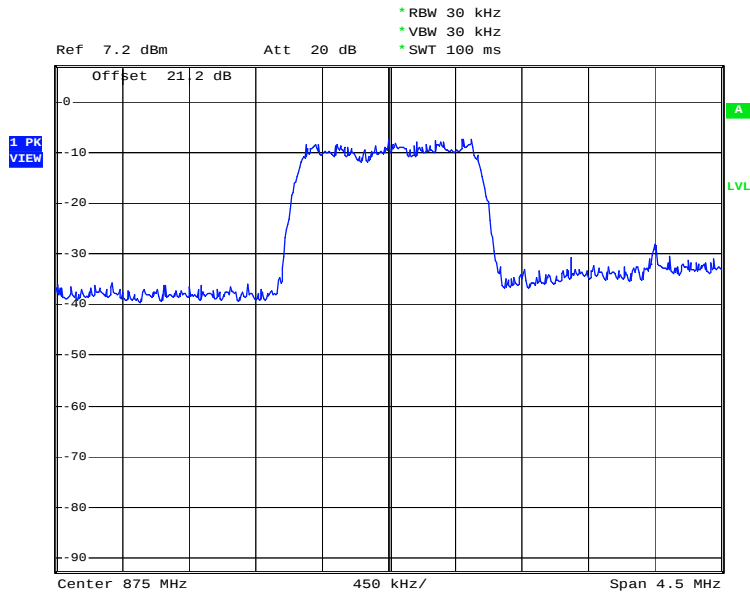
Test Results:

See Attached Plots.

Note: The occupied bandwidth was measured by comparison of input from the signal generator to the output signal from the amplifier. This was done in order to determine if there was any degradation to the output signal due to the amplification and conversion through the repeater.

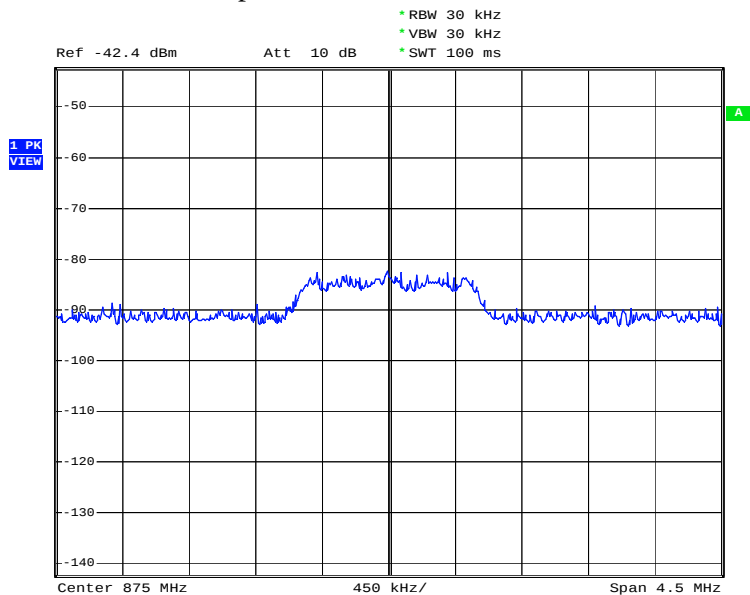
Cellular Band---Down Link

CDMA_IS95---Output



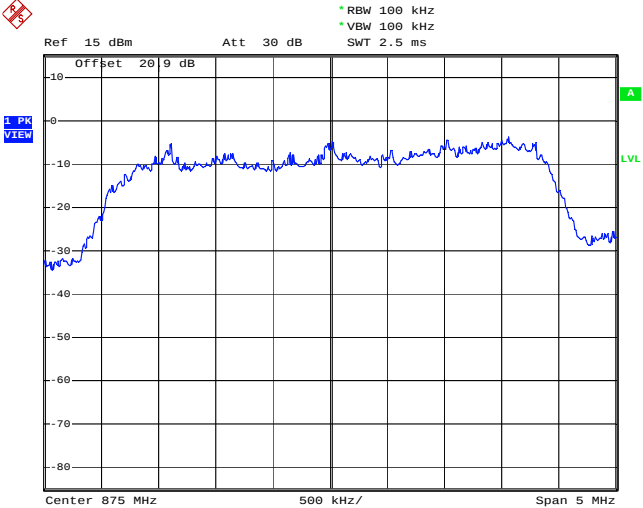
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CDMA_IS95---Input



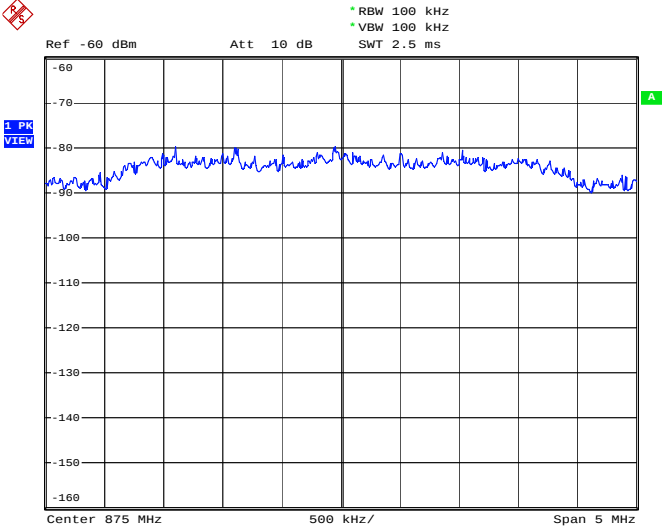
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3XRTT---Output



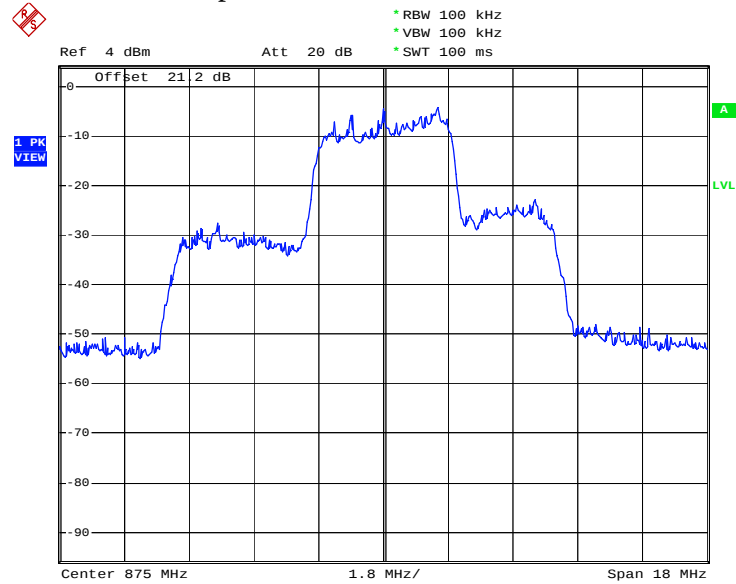
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3XRTT---Input



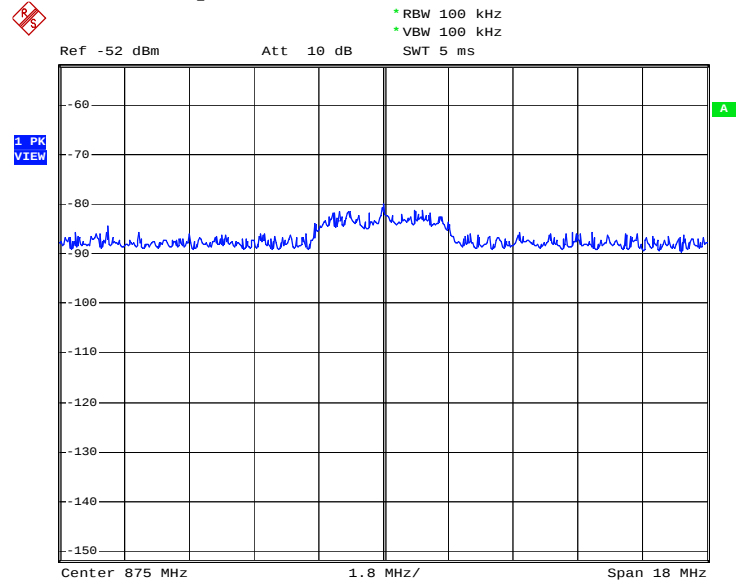
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WCDMA---Output



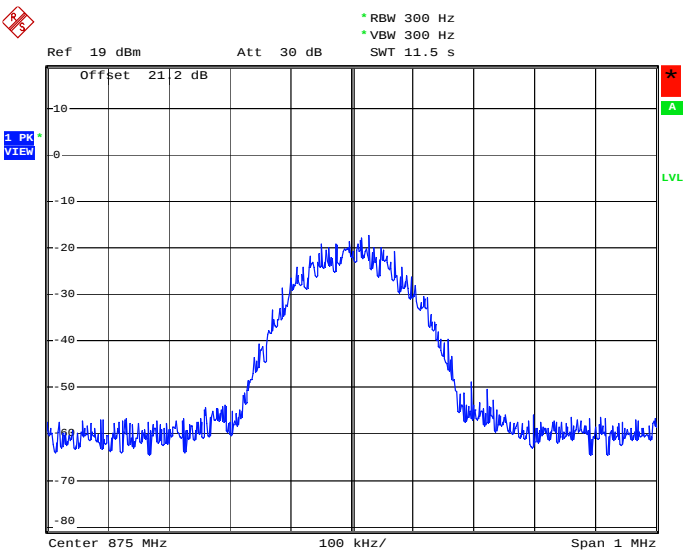
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WCDMA---Input



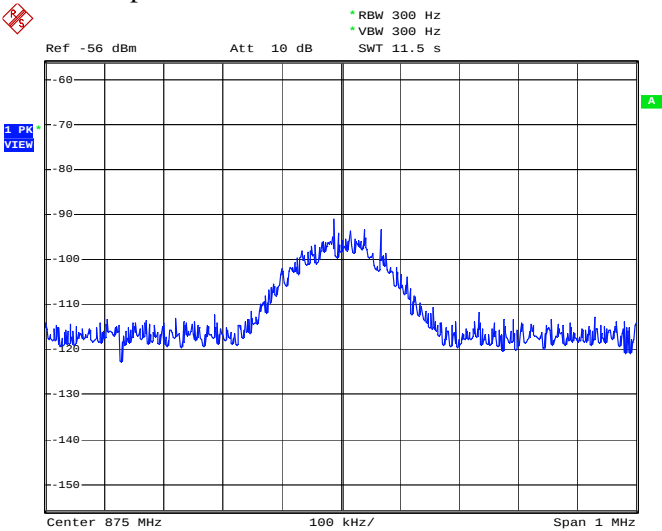
Date: 28.JUN.2005 15:48:36

GSM---Output



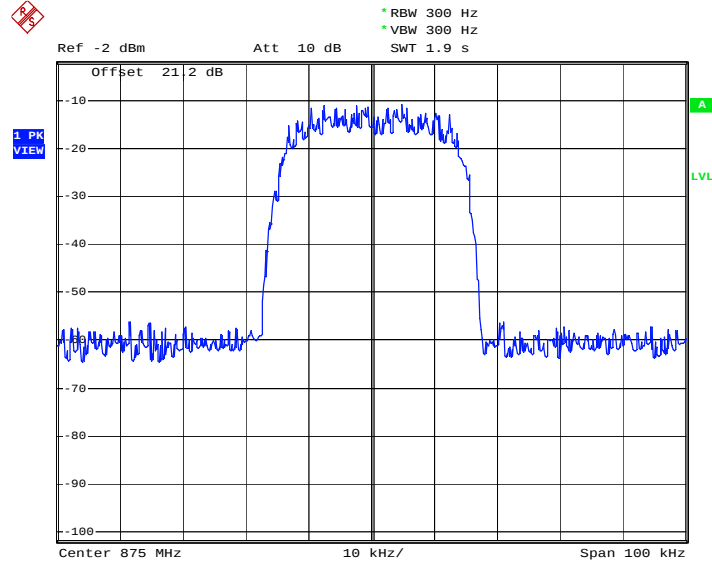
Date: 28.JUN.2005 15:58:30

GSM---Input



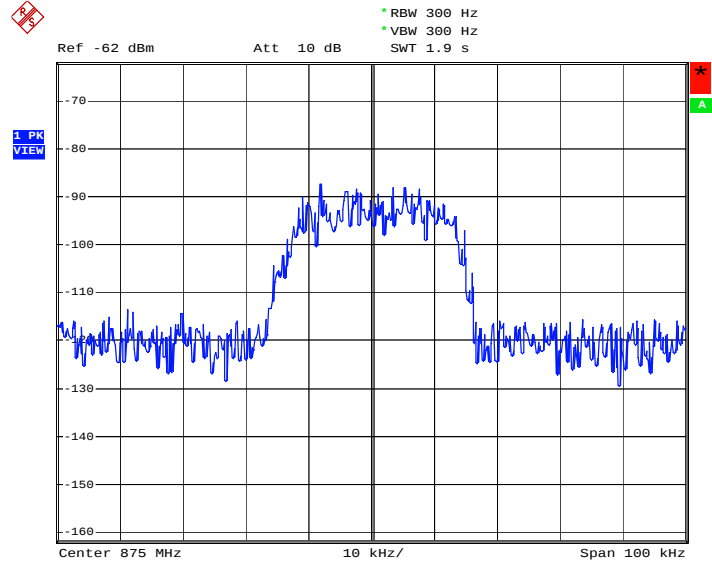
Date: 28.JUN.2005 16:00:32

TDMA---Output



Date: 28.JUN.2005 16:20:32

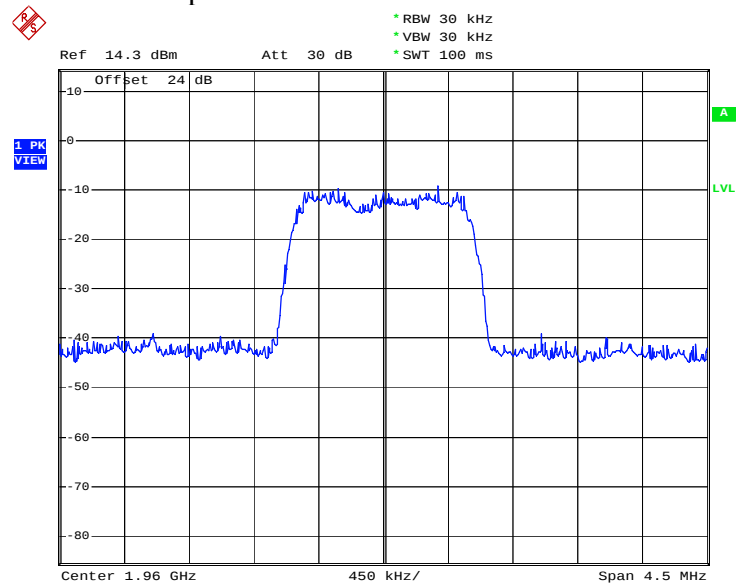
TDMA---Input



Date: 28.JUN.2005 16:23:27

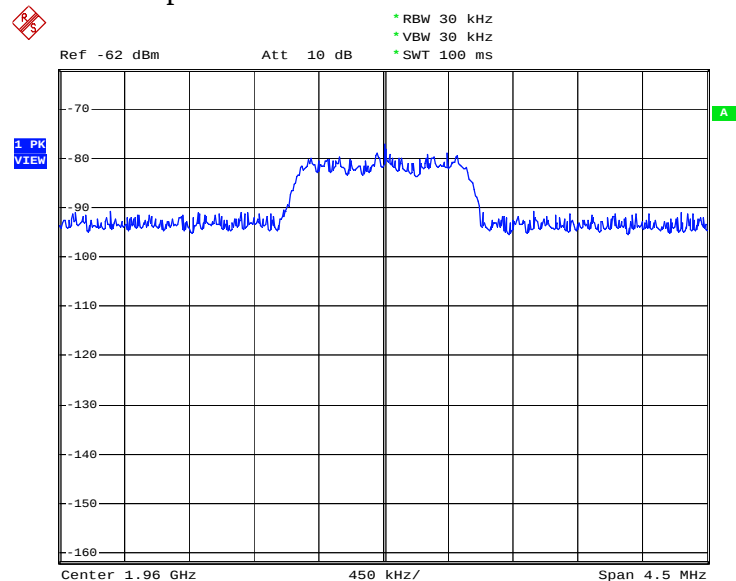
PSC Band--- Down Link

CDMA---Output



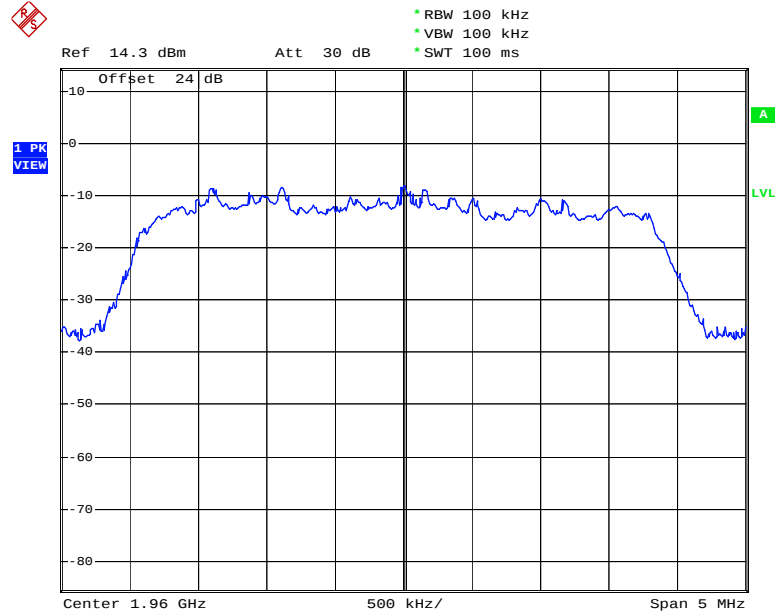
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CDMA---Input



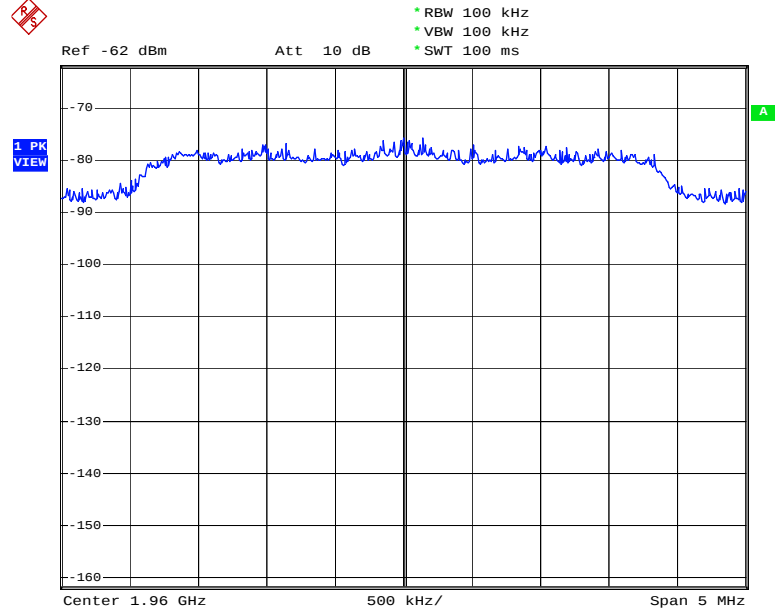
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3XRTT---Output



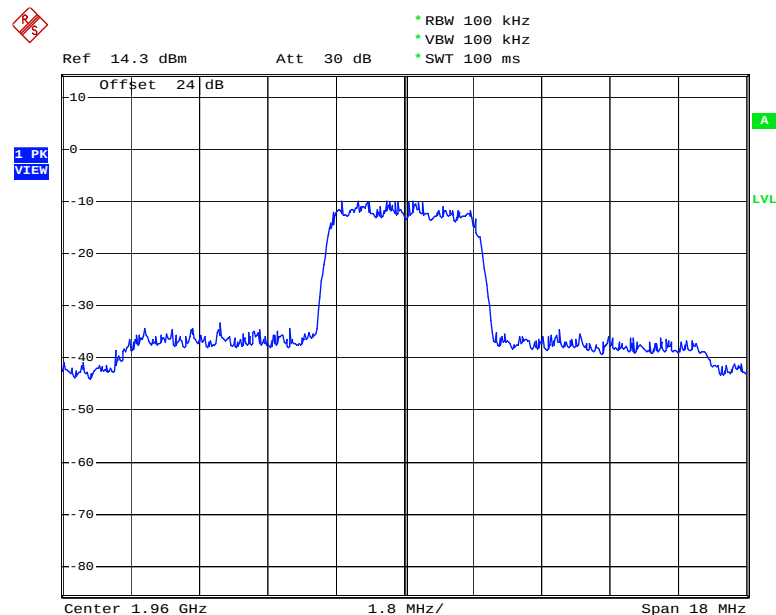
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3XRTT---Input



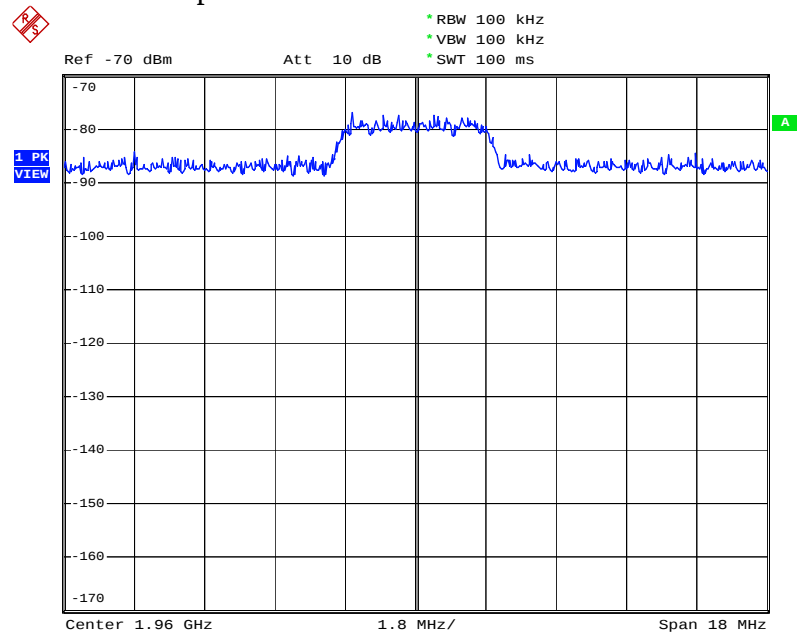
Date: 29.JUN.2005 15:47:09

WCDMA---Output



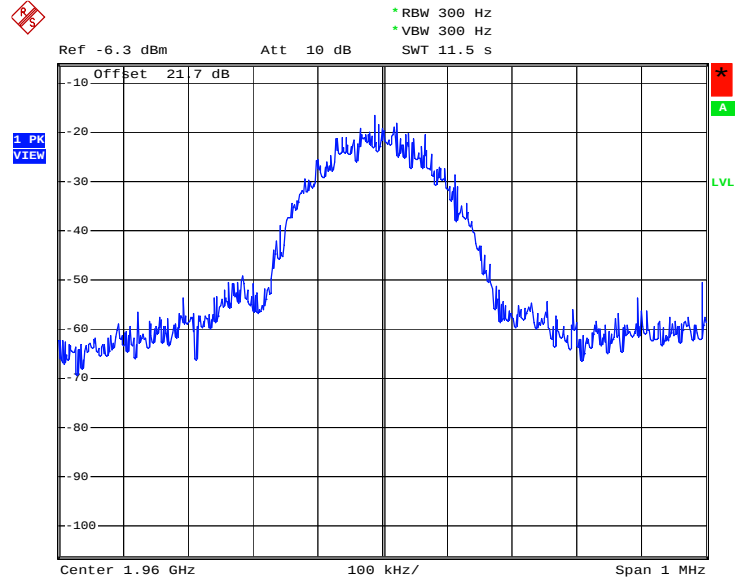
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WCDMA---Input



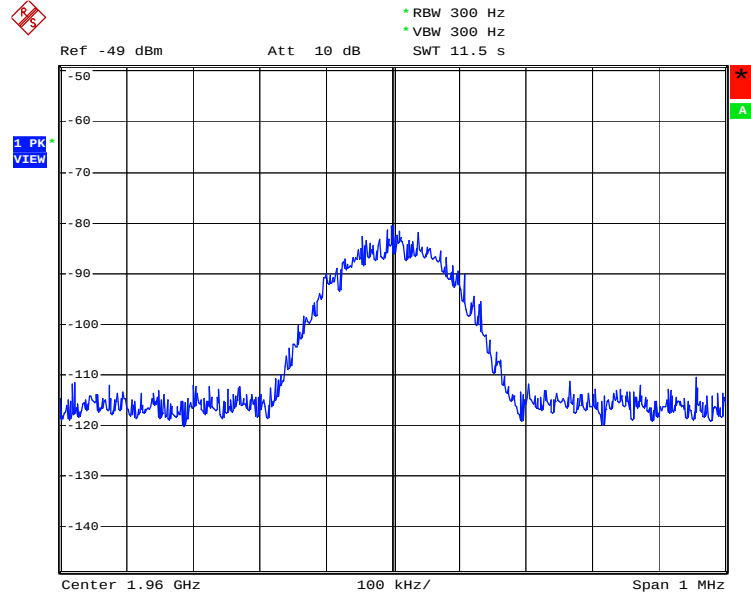
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GSM---Output



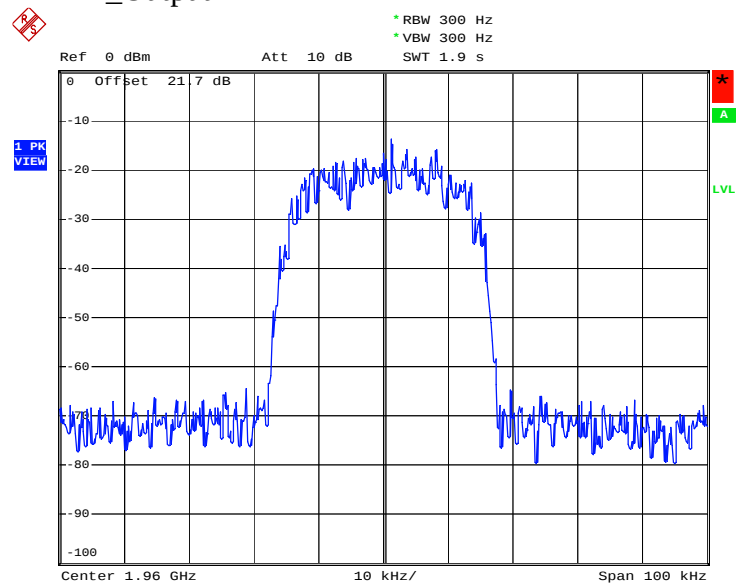
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GSM---Input



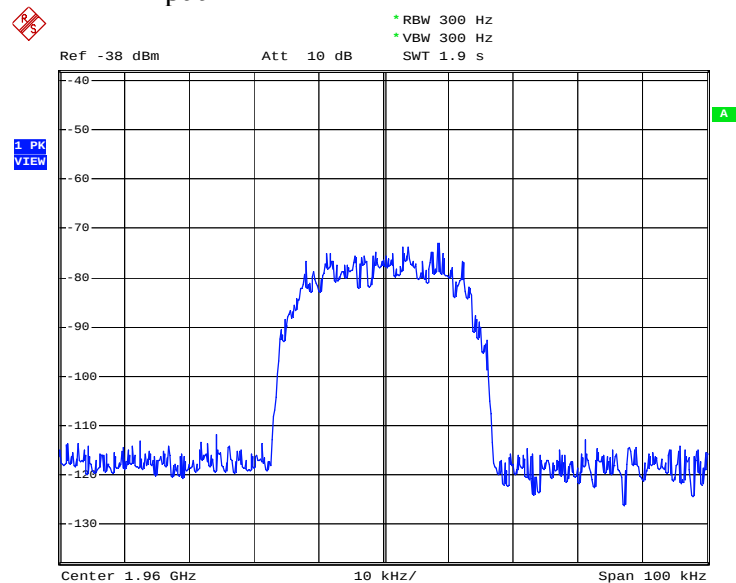
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TDMA_Output



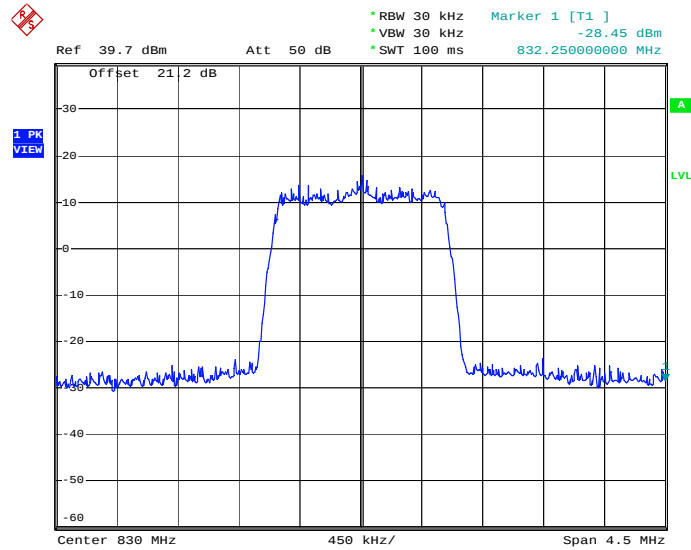
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TDMA---Input



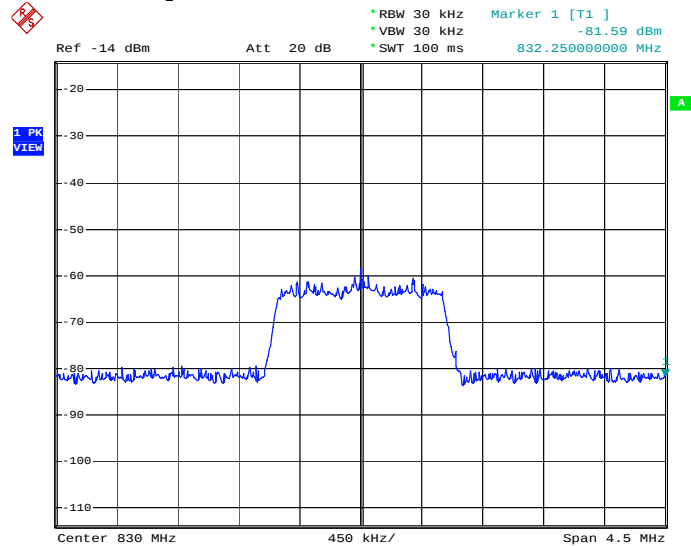
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Cellular Band ---Up Link CDMA ---Output



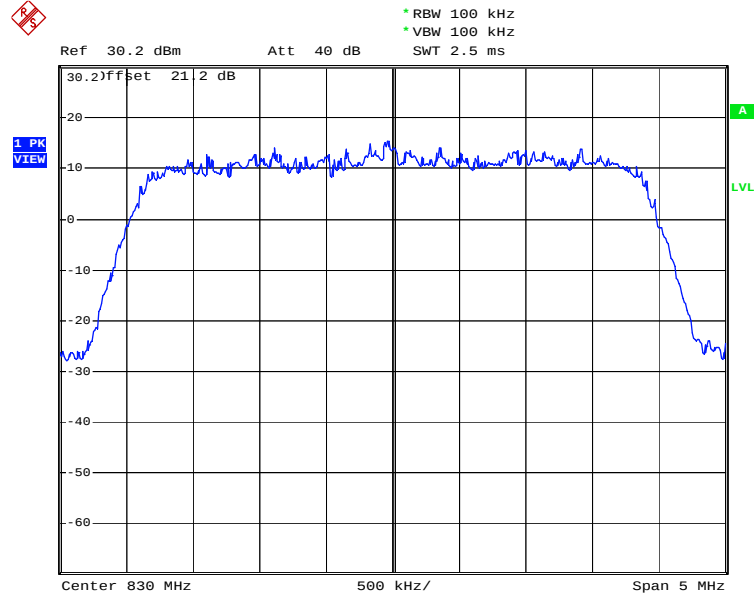
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CDMA---Input



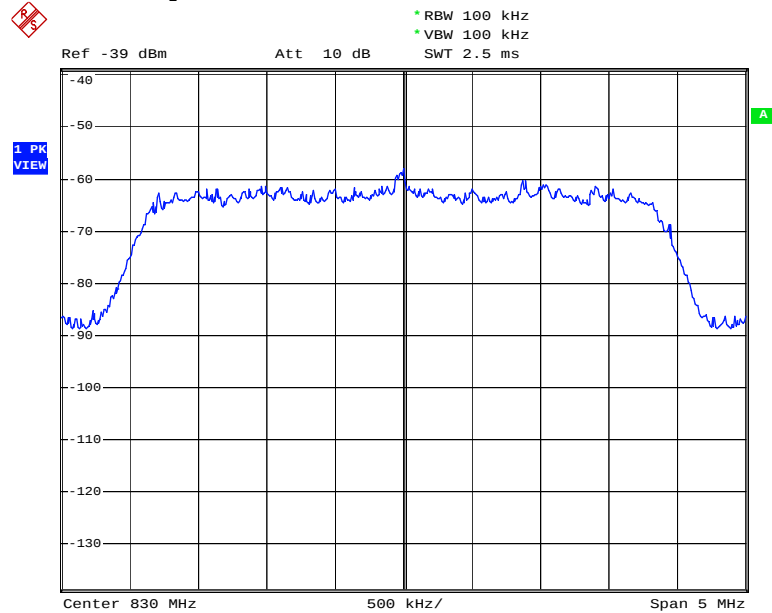
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3XRTT---Output



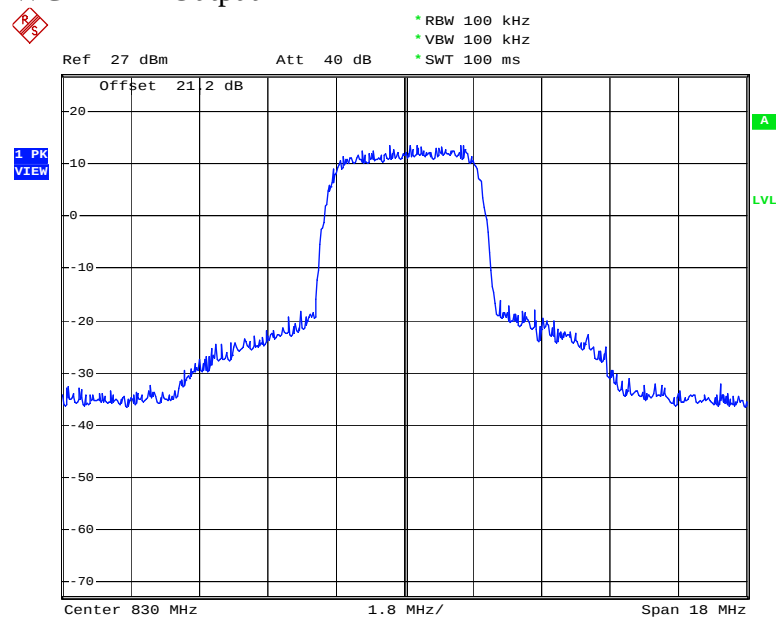
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3XRTT---Input



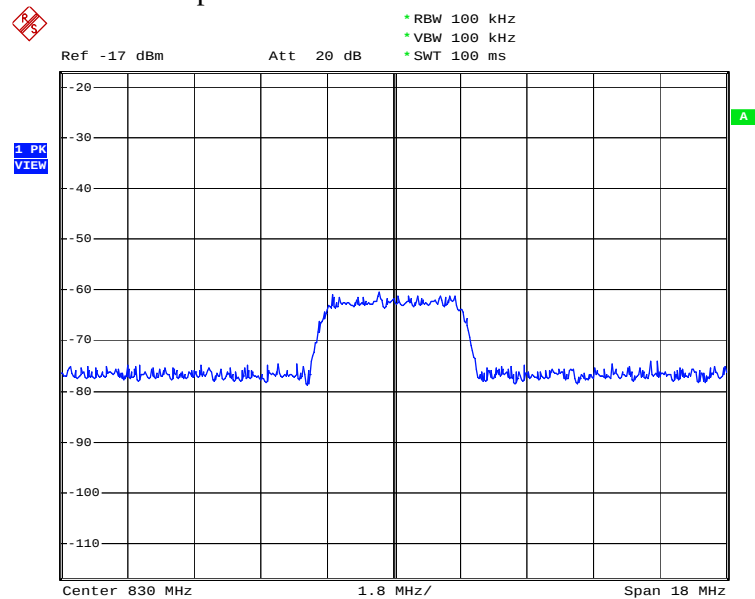
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WCDMA---Output



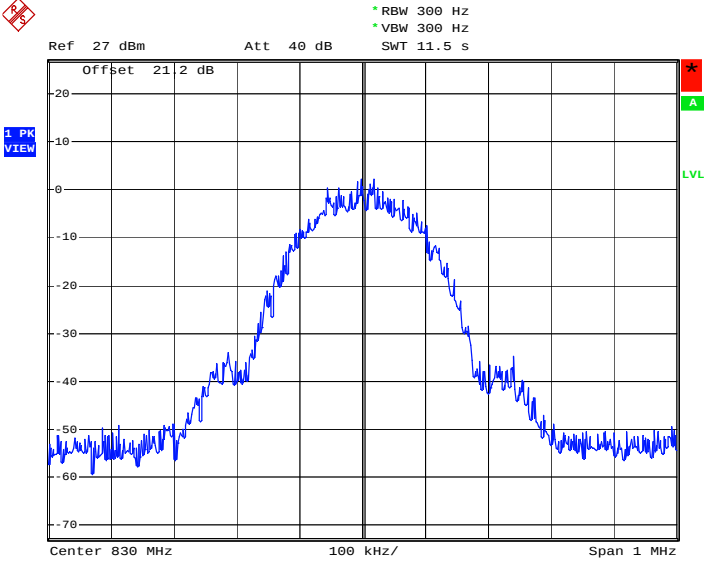
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WCDMA---Input



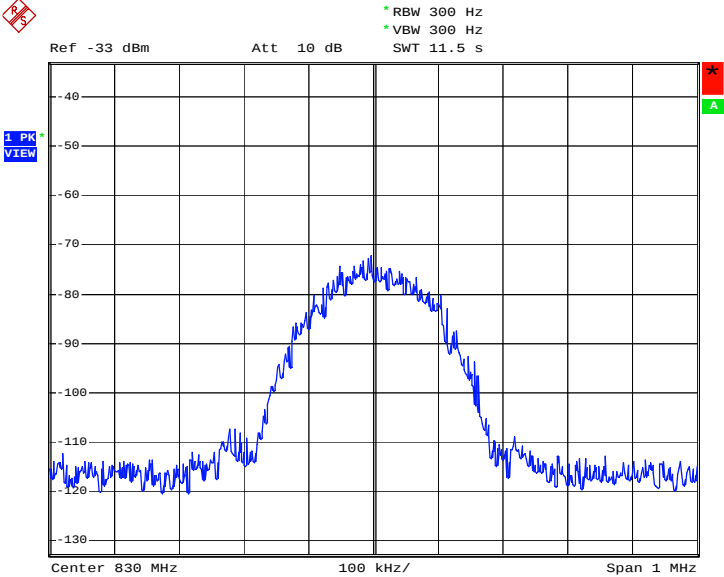
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GSM---Output



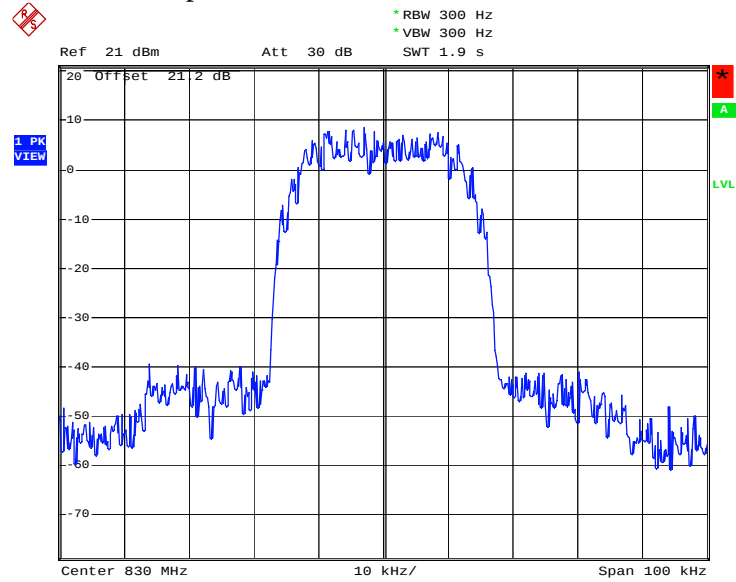
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GSM---Input



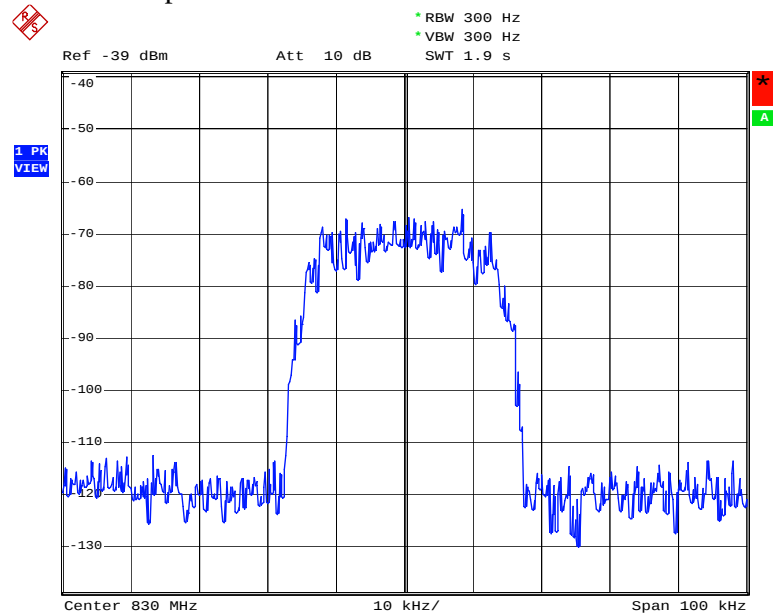
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TDMA---Output



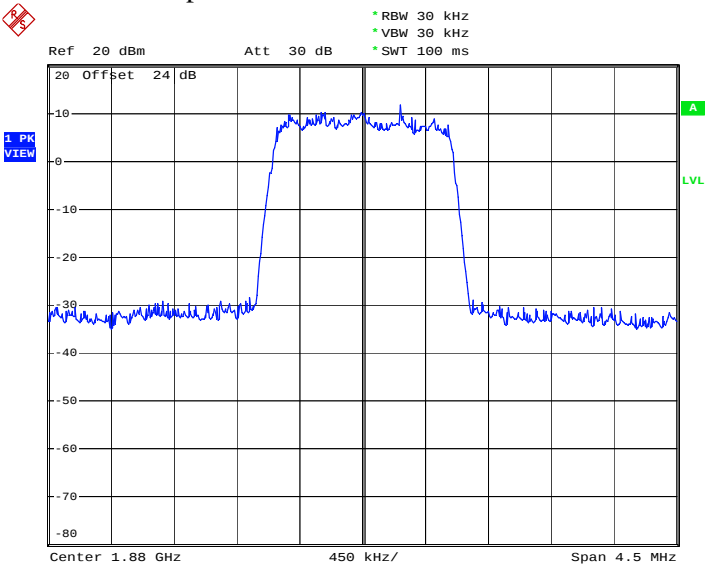
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TDMA---Input



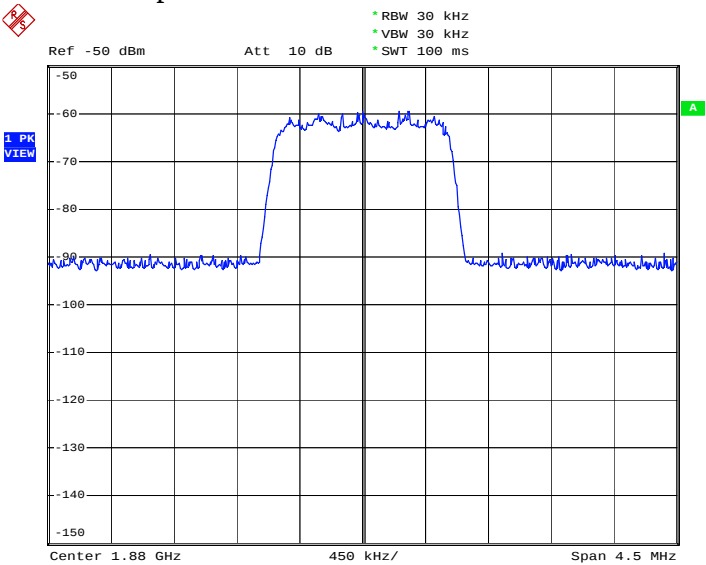
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PCS Band ---Up Link
CDMA ---Output



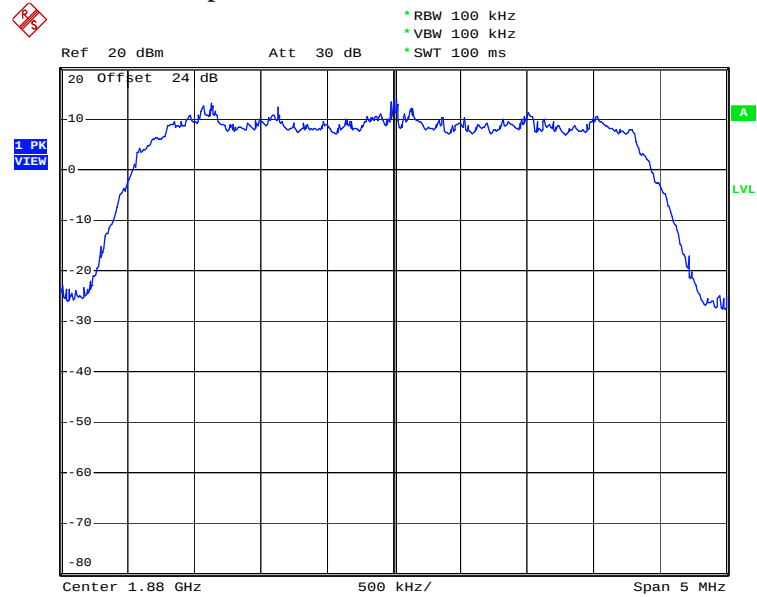
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CDMA---Input



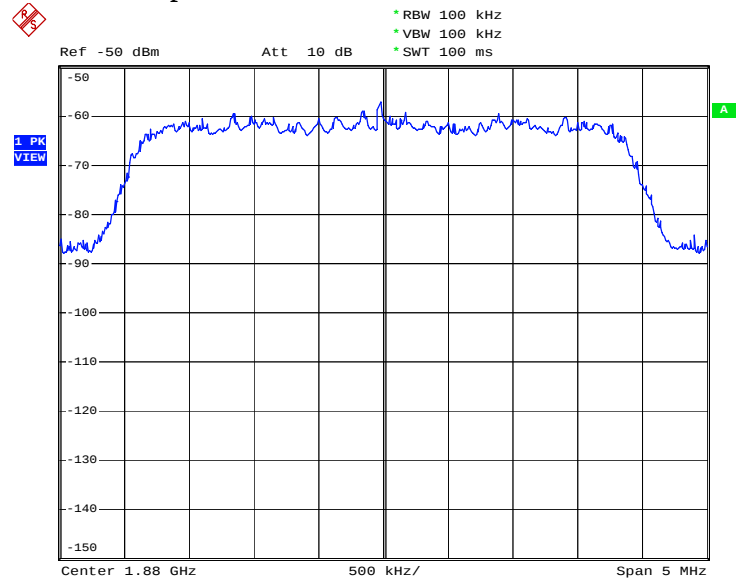
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3XRTT --- Output



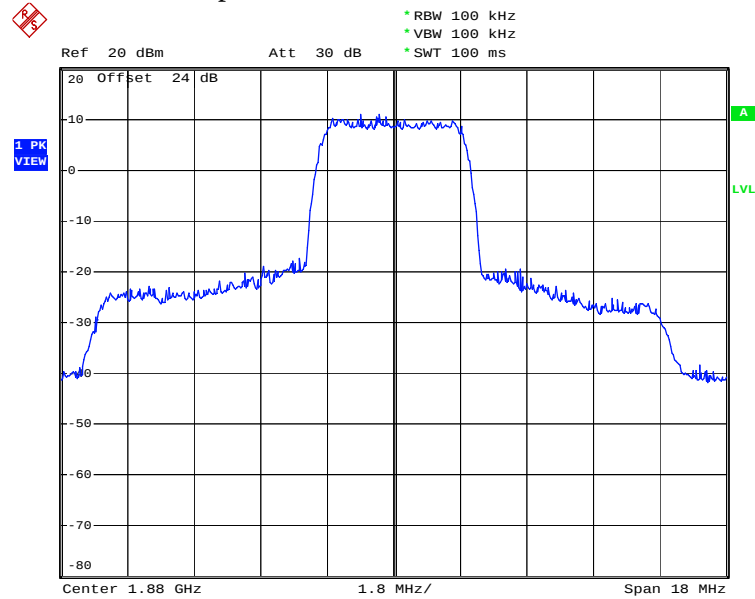
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3XRTT---Input



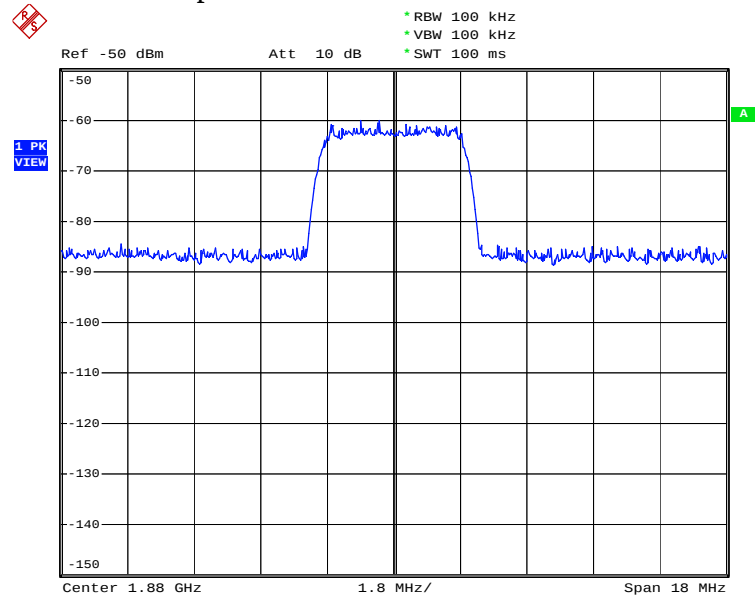
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WCDMA---Output



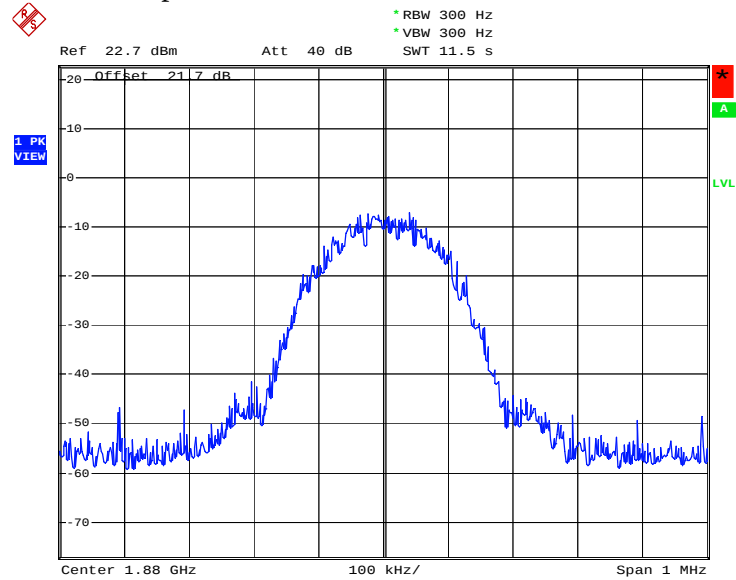
Date: 29.JUN.2005 15:31:24

WCDMA---Input



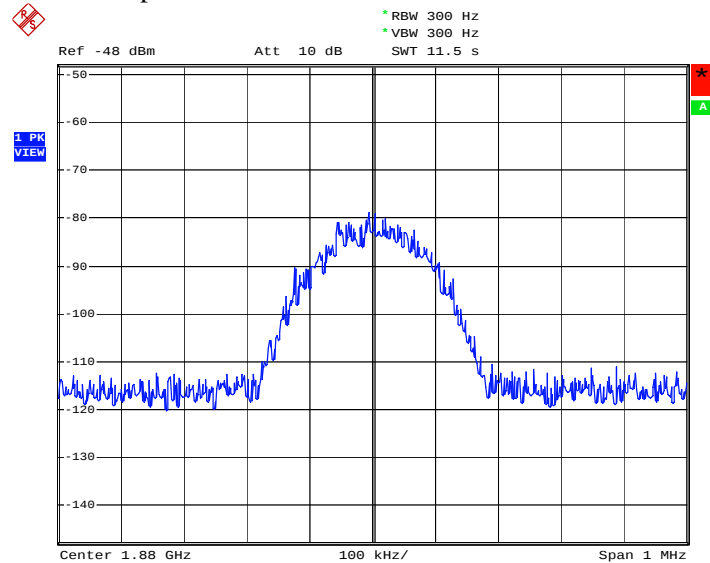
Date: 29.JUN.2005 15:42:02

GSM---Output



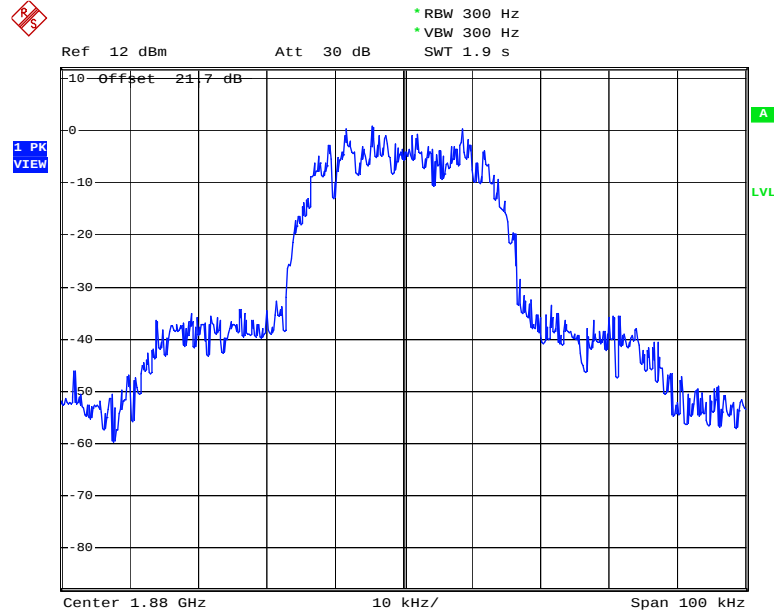
Date: 28.JUN.2005 21:01:43

GSM---Input



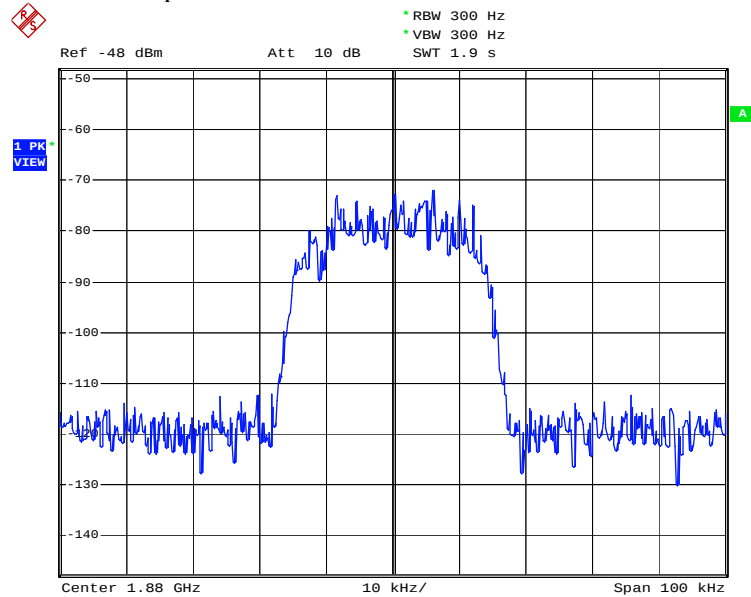
Date: 28.JUN.2005 21:04:17

TDMA---Output



Date: 28.JUN.2005 21:07:54

TDMA---Input



Date: 28.JUN.2005 21:05:41

Section 3. Spurious Emissions at Antenna Terminals**Criteria: Clause 22.917 / Clause 24.238**

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

Test Conditions:

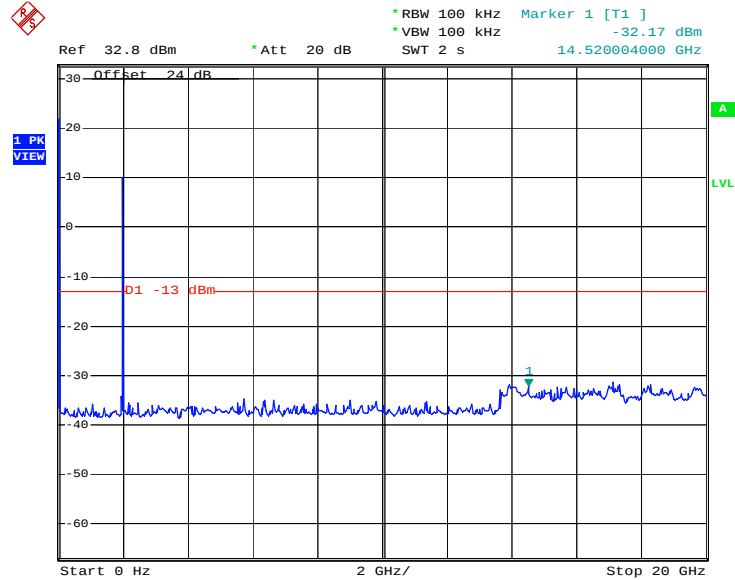
Sample Number:	1 &4	Temperature:	23
Date:	June 29 2005	Humidity:	51
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Wireless Lab

Test Results:

See Attached Plots.

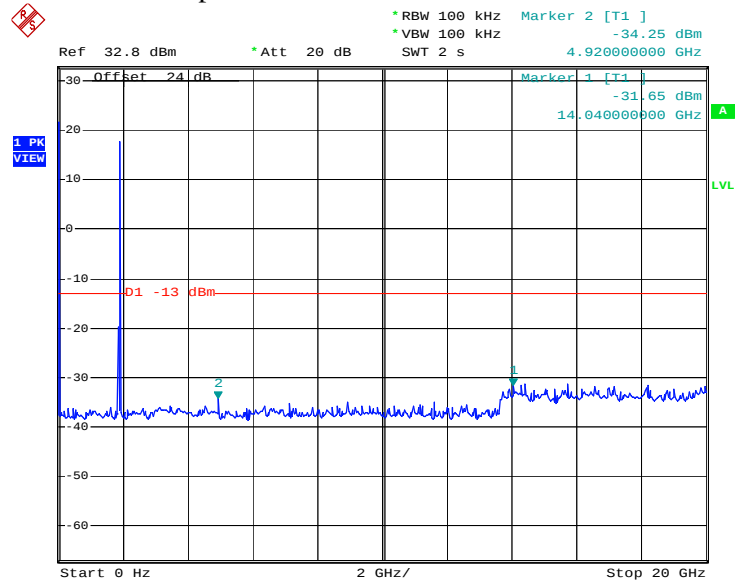
Conducted Spurious Emissions

PCS Band--- Down Link



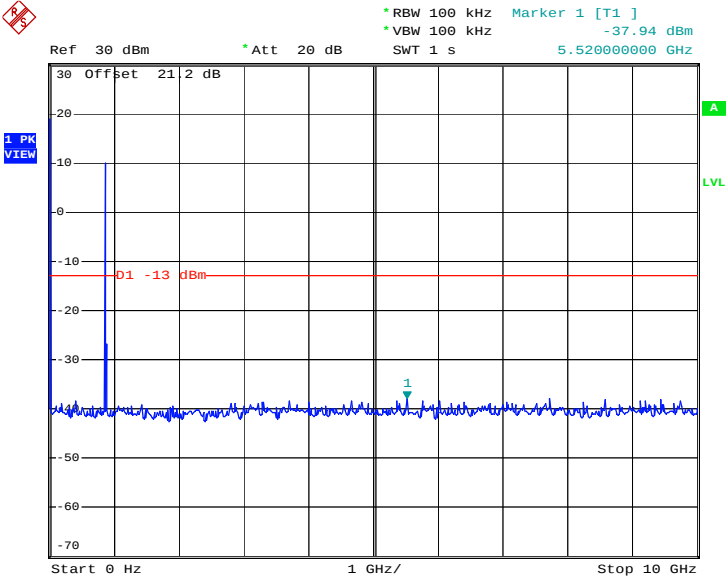
Date: 4.JUL.2005 15:25:01

PCS Band---Up Link



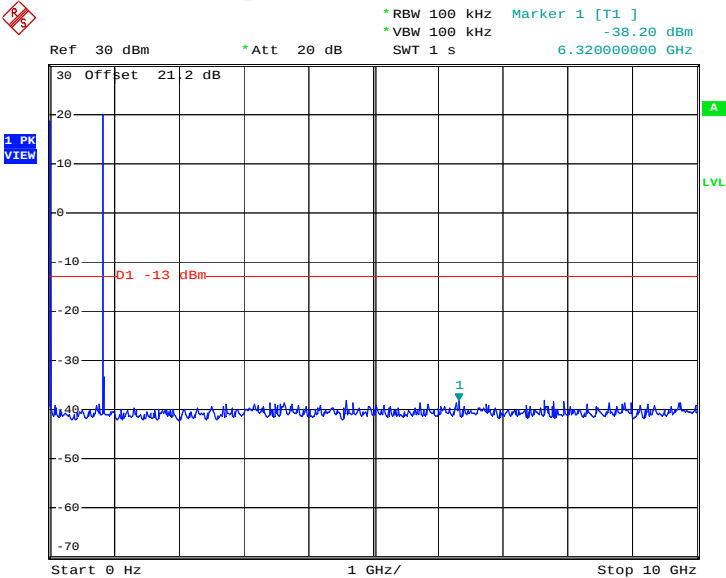
Date: 4.JUL.2005 15:16:27

Cellular Band--- Down Link



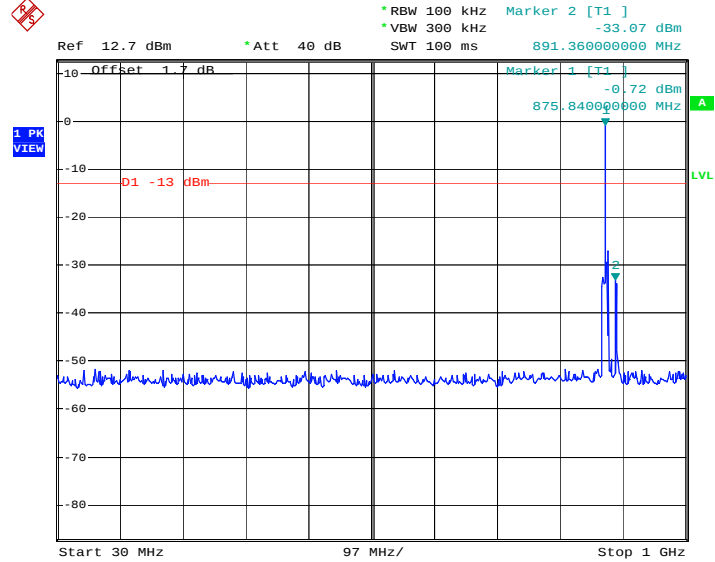
Date: 4.JUL.2005 15:29:47

Cellular Band--- Up Link

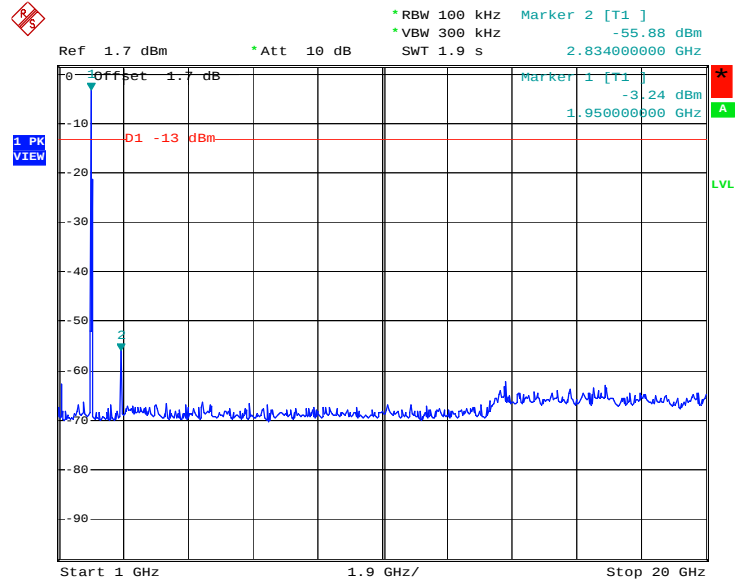


Date: 4.JUL.2005 15:09:34

Conducted Spurious Emissions PCS Down Link and Cellular Band Down Link Operate Simultaneously

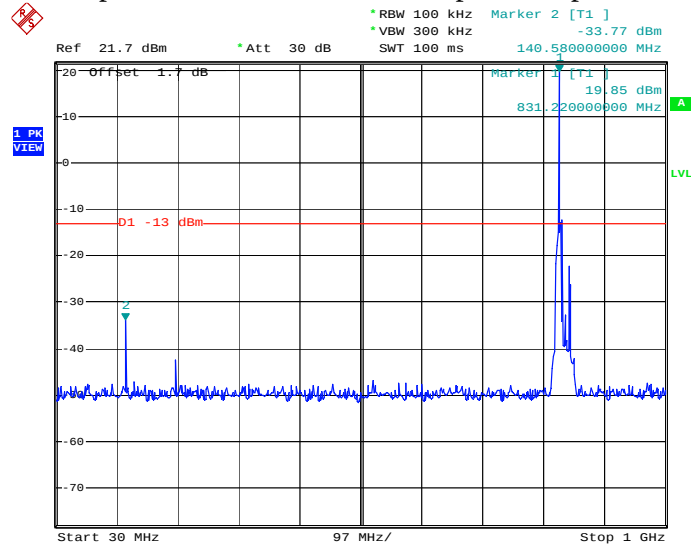


Date: 13.JUL.2005 16:39:20

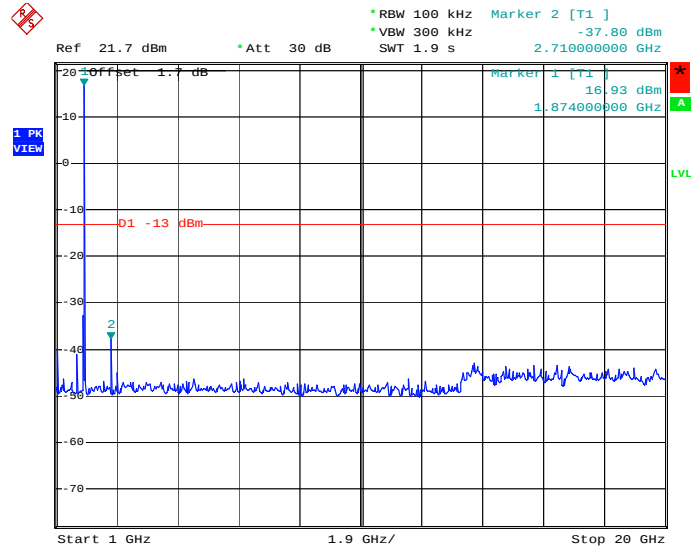


Date: 13.JUL.2005 16:46:35

PCS Up Link and Cellular Band Up Link Operate Simultaneously



Date: 14.JUL.2005 17:49:25

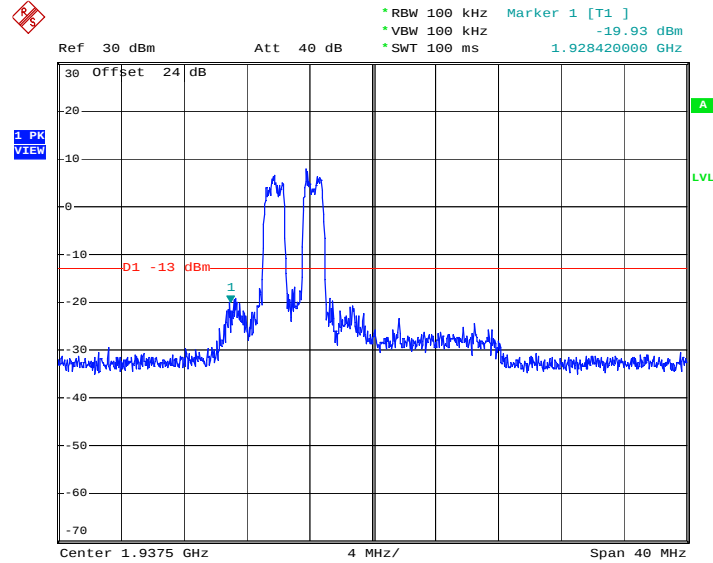


Date: 14.JUL.2005 17:50:30

3rd Order Inter-modulation Plots

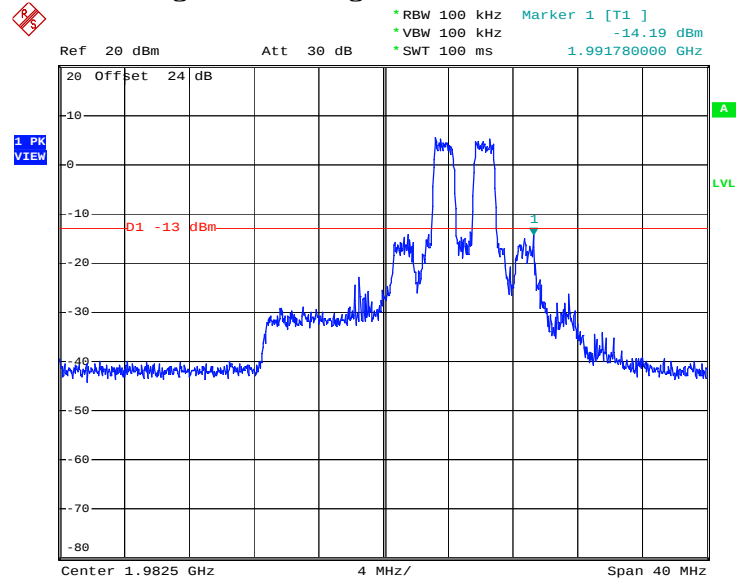
PCS Band---Down Link

CDMA---Lower Band Edge



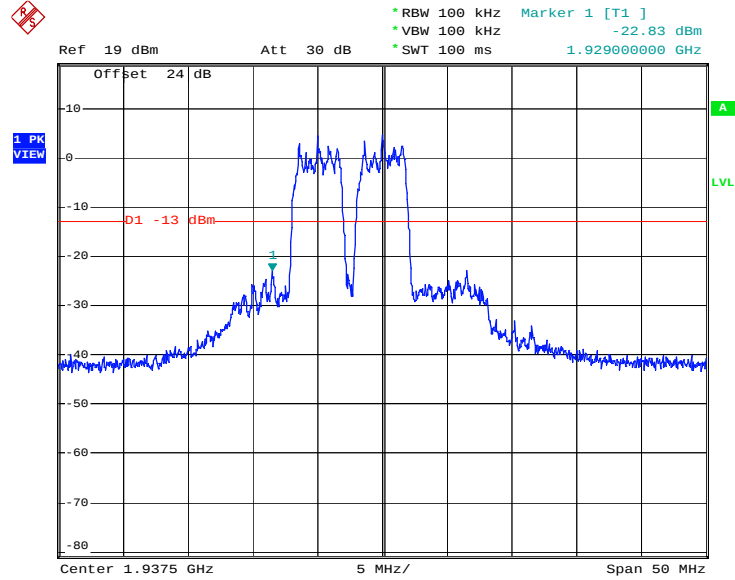
Date: 29.JUN.2005 16:56:30

CDMA---Higher Band Edge



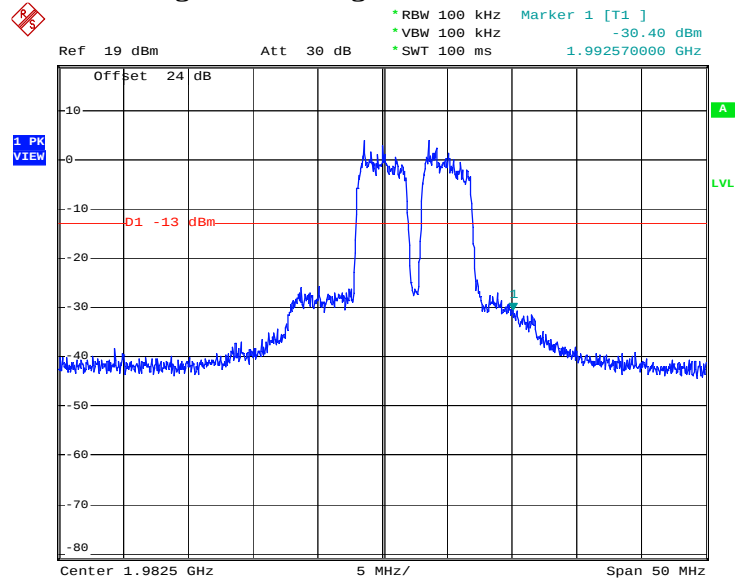
Date: 29.JUN.2005 17:04:24

3XRTT --- Lower Band Edge



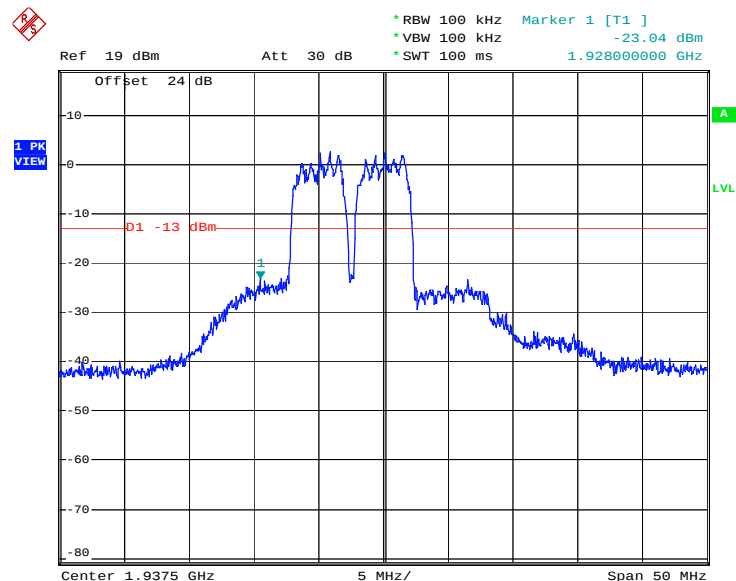
Date: 29.JUN.2005 19:10:51

3XRTT---Higher Band Edge



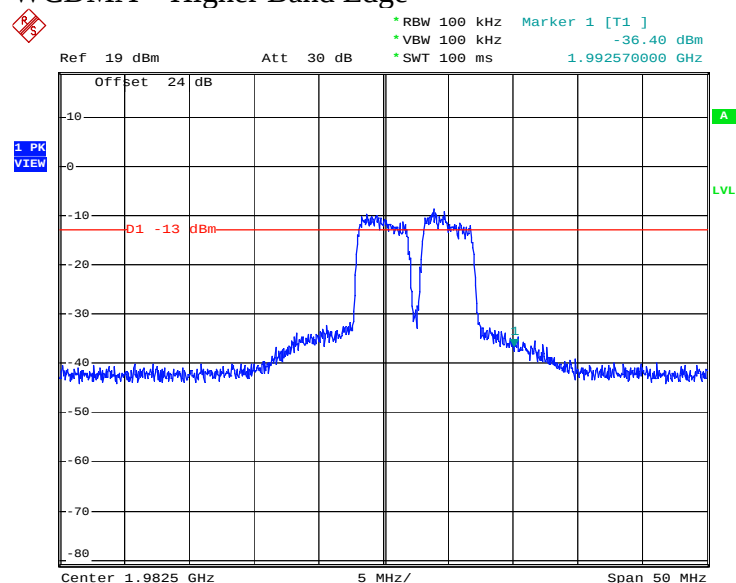
Date: 29.JUN.2005 17:33:39

WCDMA---Lower Band Edge



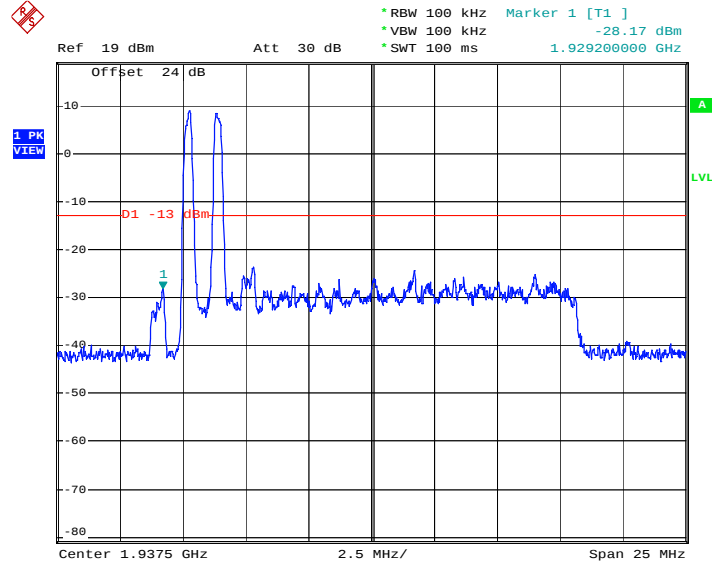
Date: 29.JUN.2005 19:13:38

WCDMA---Higher Band Edge



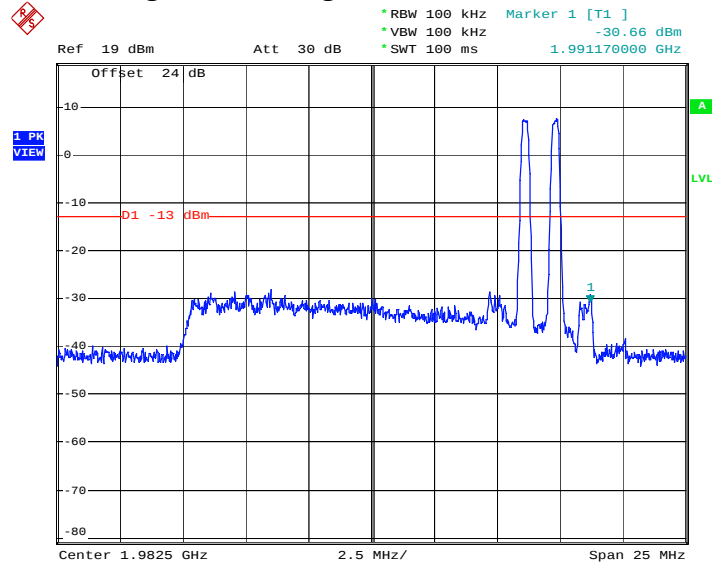
Date: 29.JUN.2005 17:40:41

GSM---Lower Band Edge



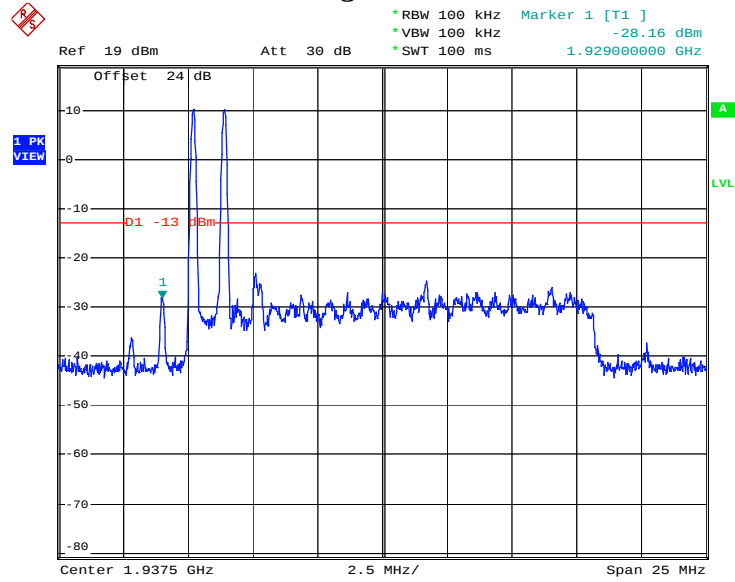
Date: 29.JUN.2005 18:10:02

GSM---Higher Band Edge



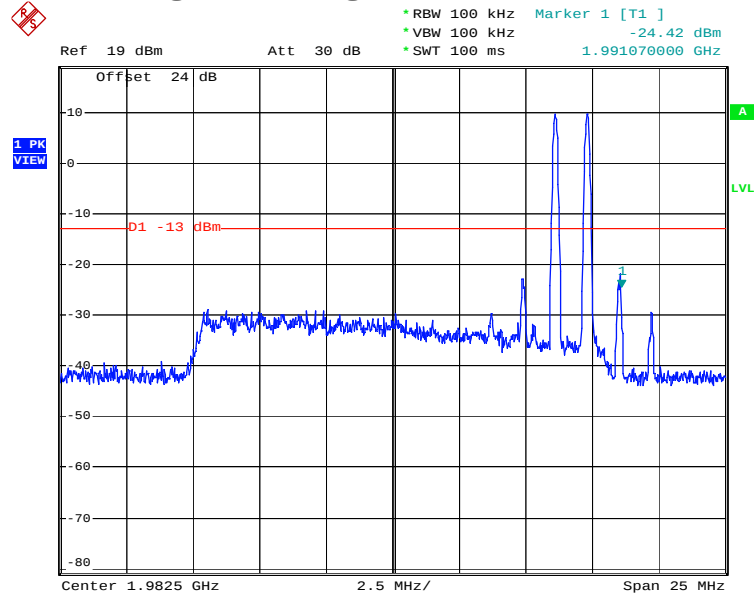
Date: 29.JUN.2005 17:53:55

TDMA---Lower Band Edge



Date: 29.JUN.2005 18:05:02

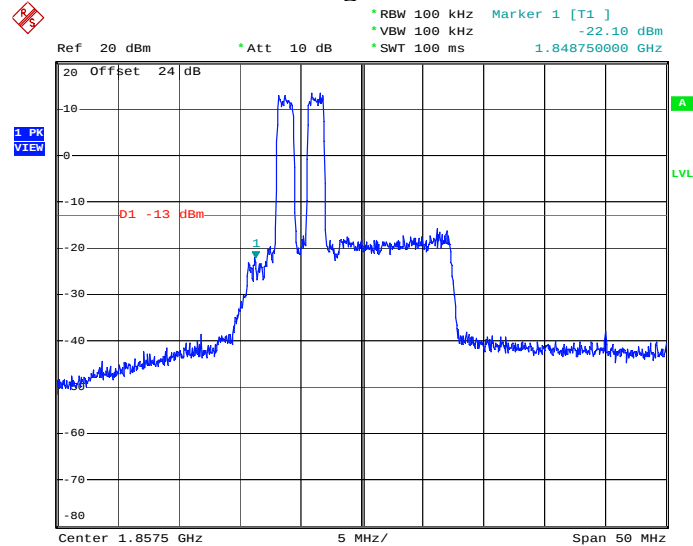
TDMA---Higher Band Edge



Date: 29.JUN.2005 17:58:03

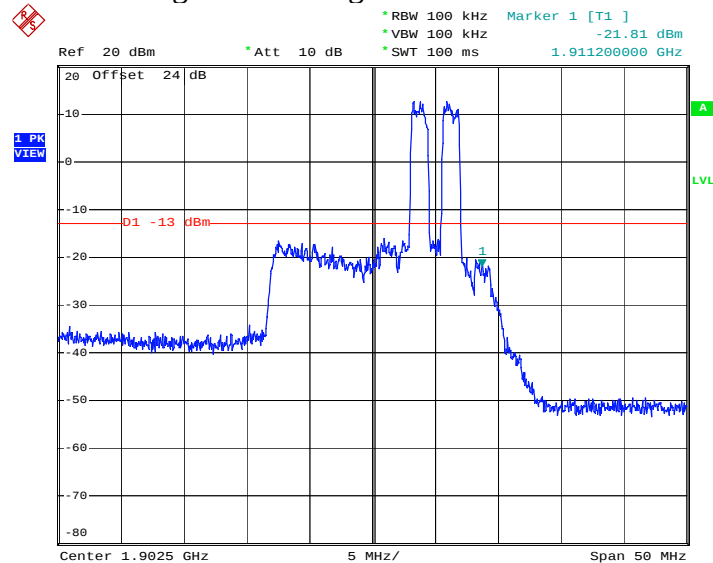
PCS Band---Up Link

CDMA---Lower Band Edge



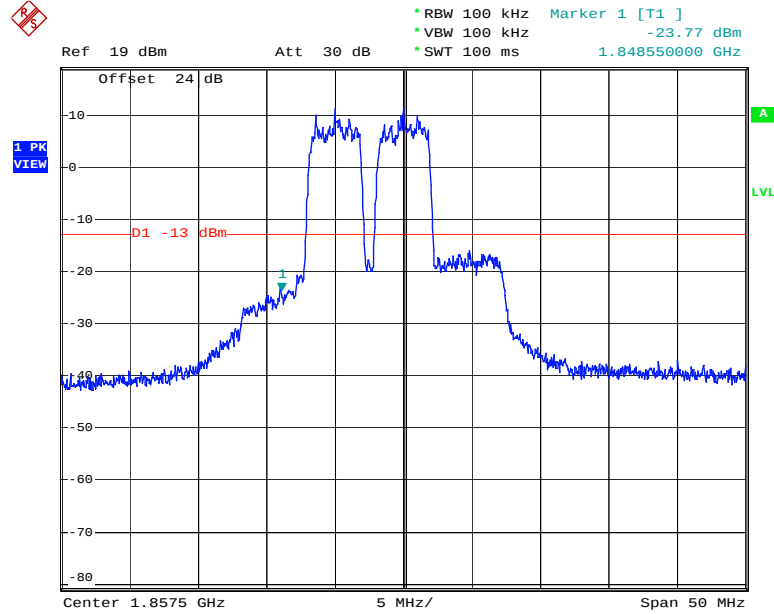
Date: 29.JUN.2005 19:40:41

CDMA---Higher Band Edge



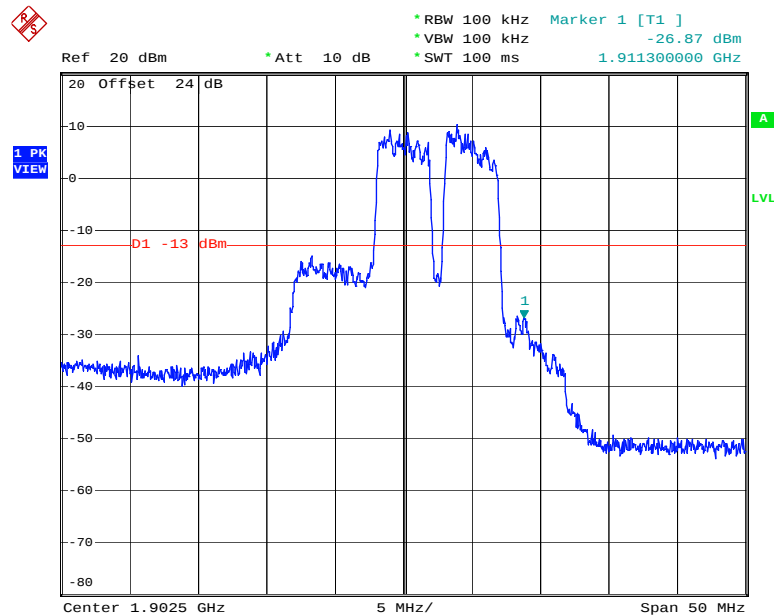
Date: 29.JUN.2005 20:44:49

3XRTT---Lower Band Edge



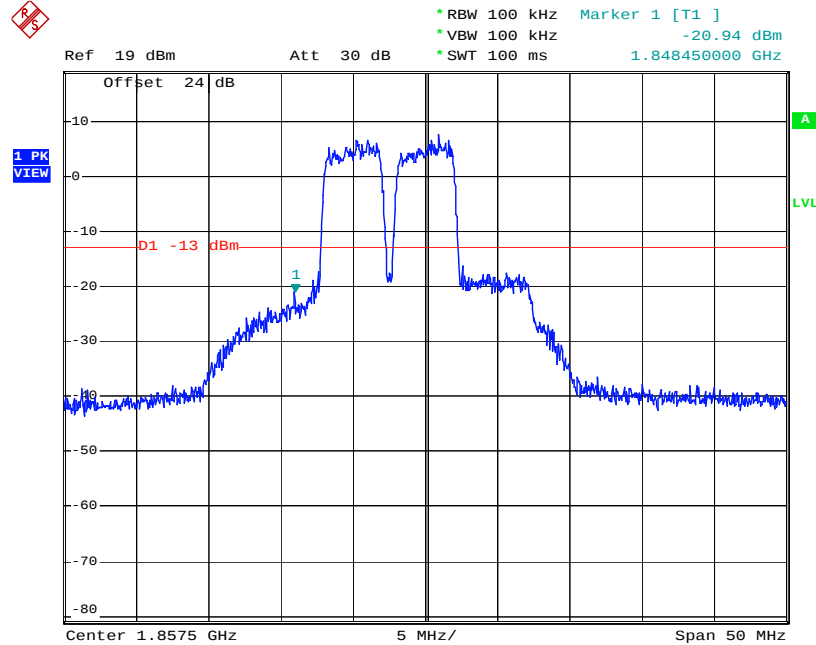
Date: 29.JUN.2005 19:32:33

3XRTT---Higher Band Edge



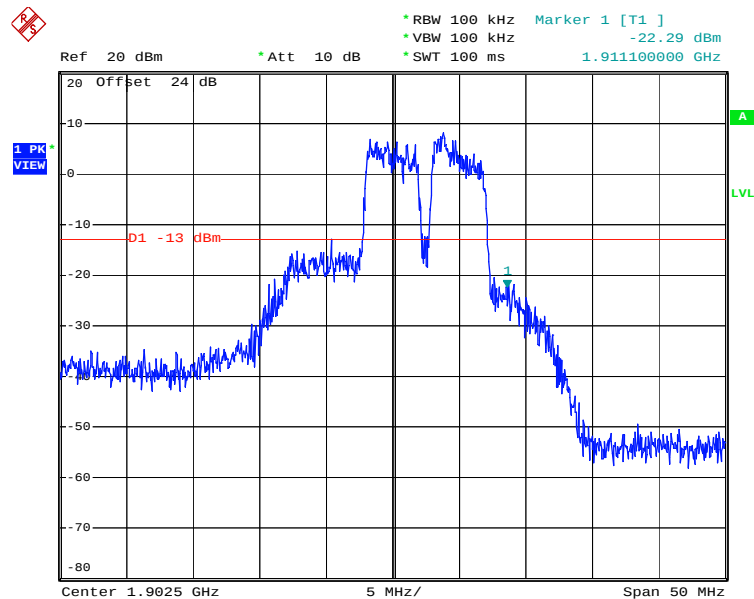
Date: 29.JUN.2005 20:48:52

WCDMA---Lower Band Edge



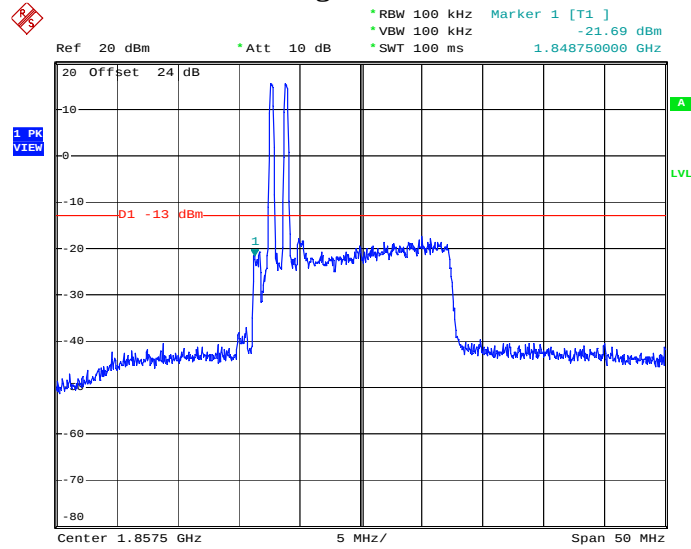
Date: 29.JUN.2005 19:29:29

WCDMA---Higher Band Edge



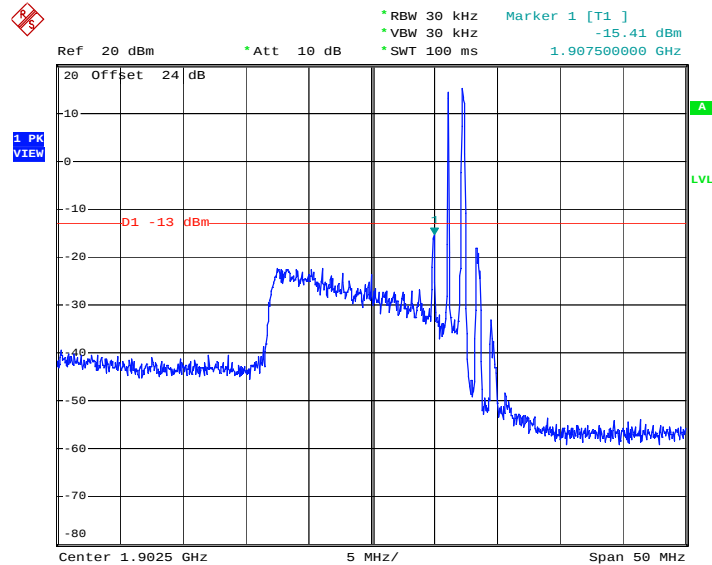
Date: 29.JUN.2005 20:52:19

GSM---Lower Band Edge



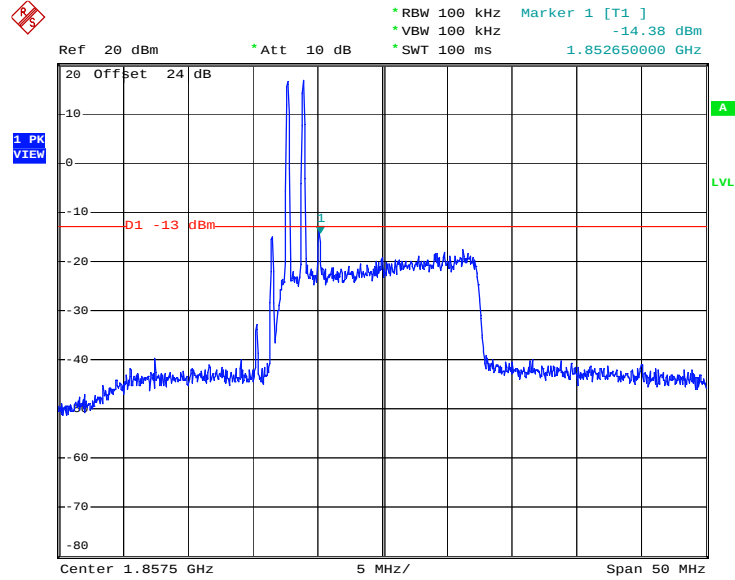
Date: 29.JUN.2005 19:45:12

GSM---Higher Band Edge



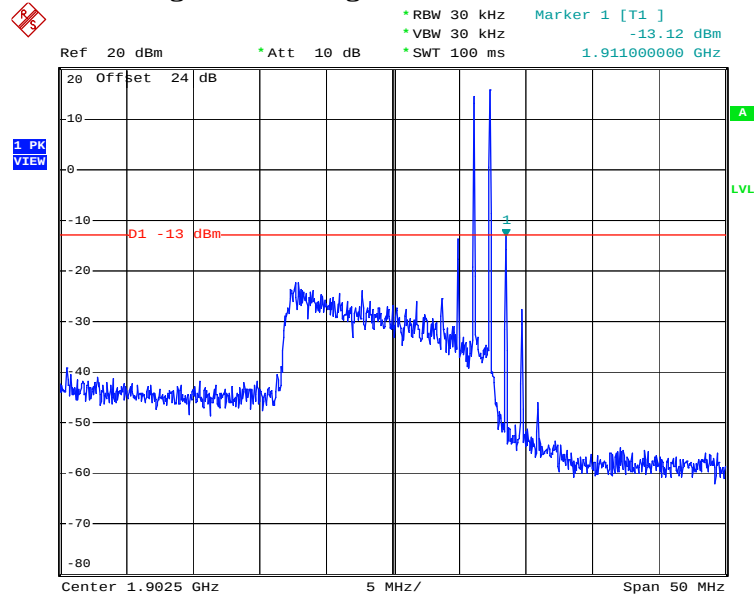
Date: 29.JUN.2005 20:20:14

TDMA---Lower Band Edge



Date: 29.JUN.2005 19:50:03

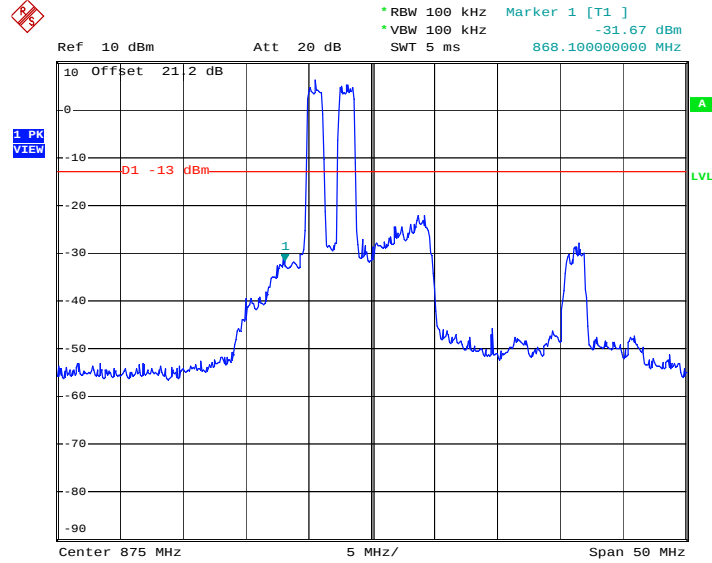
TDMA---Higher Band Edge



Date: 29.JUN.2005 20:31:13

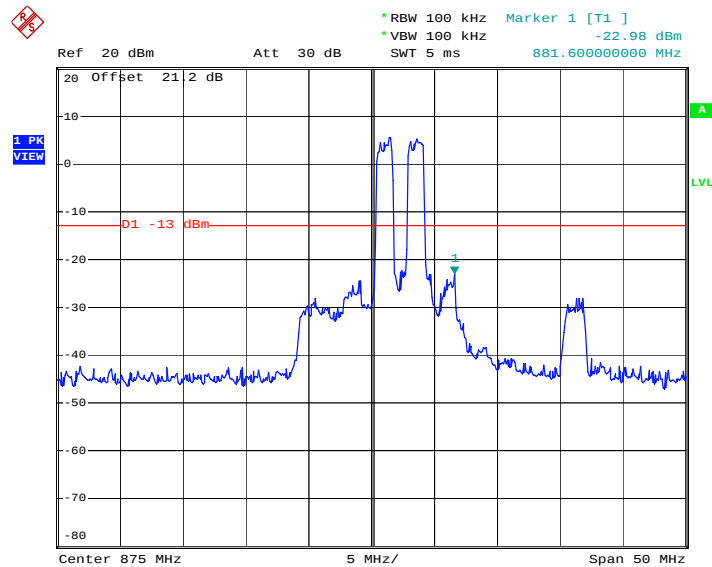
Cellular Band A---DL

CDMA---Lower Band Edge



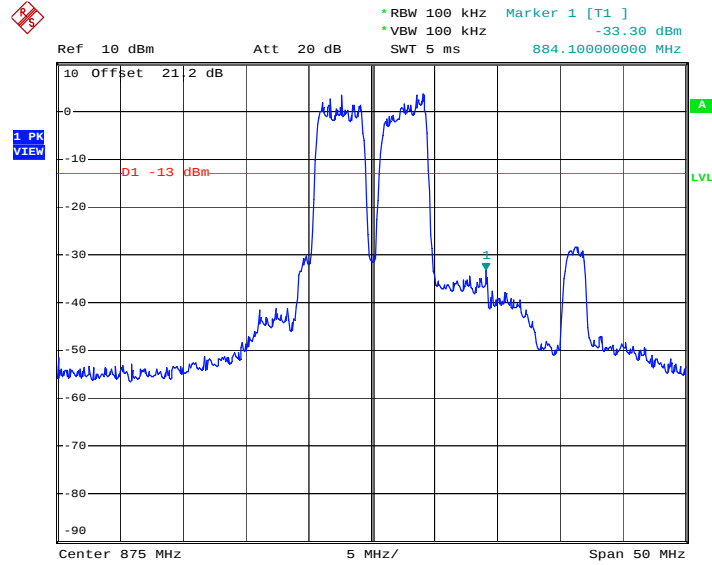
Date: 30.JUN.2005 16:28:49

CDMA---Higher Band Edge



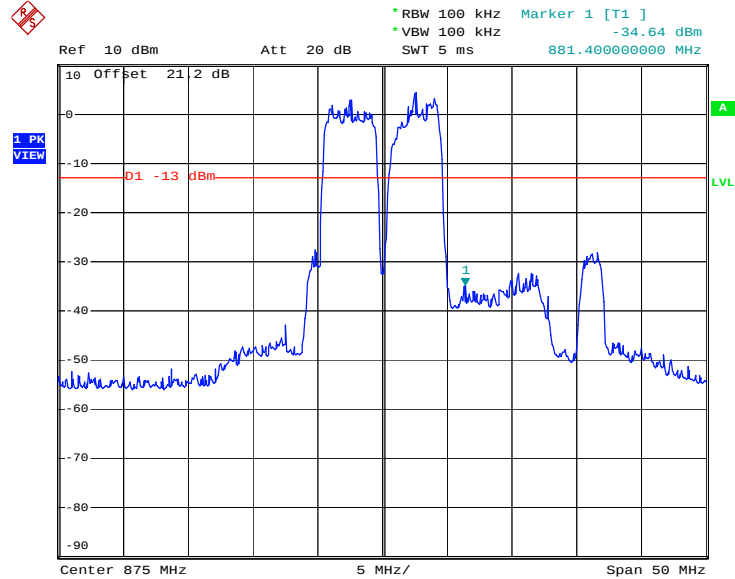
Date: 30.JUN.2005 16:35:16

3XRTT



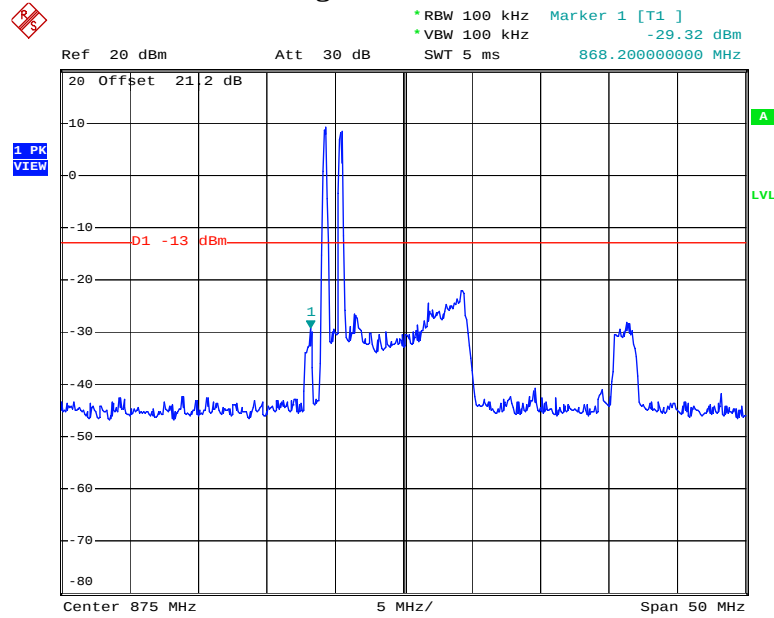
Date: 30.JUN.2005 16:22:00

WCDMA



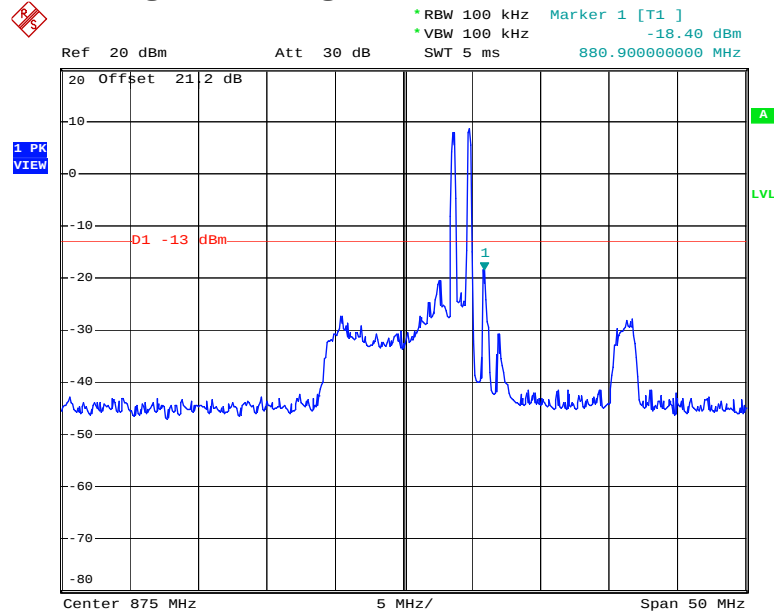
Date: 30.JUN.2005 16:18:51

GSM---Lower Band Edge



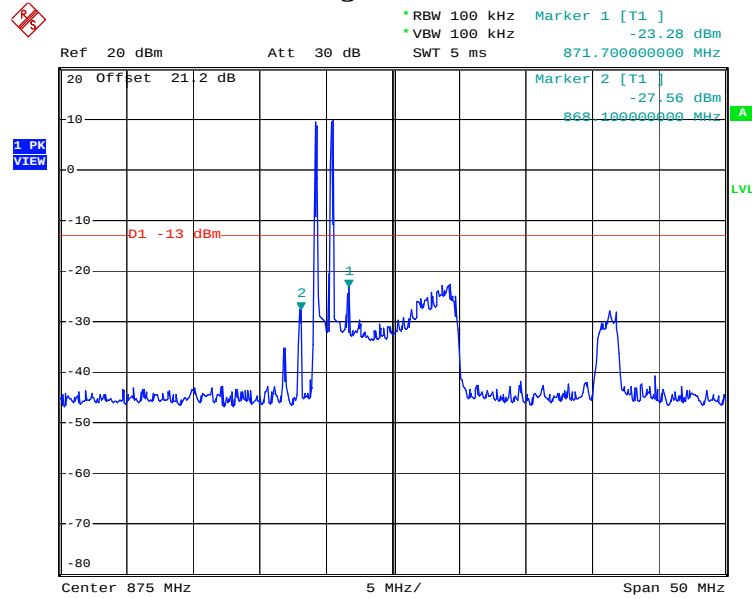
Date: 30.JUN.2005 16:41:30

GSM---Higher Band Edge



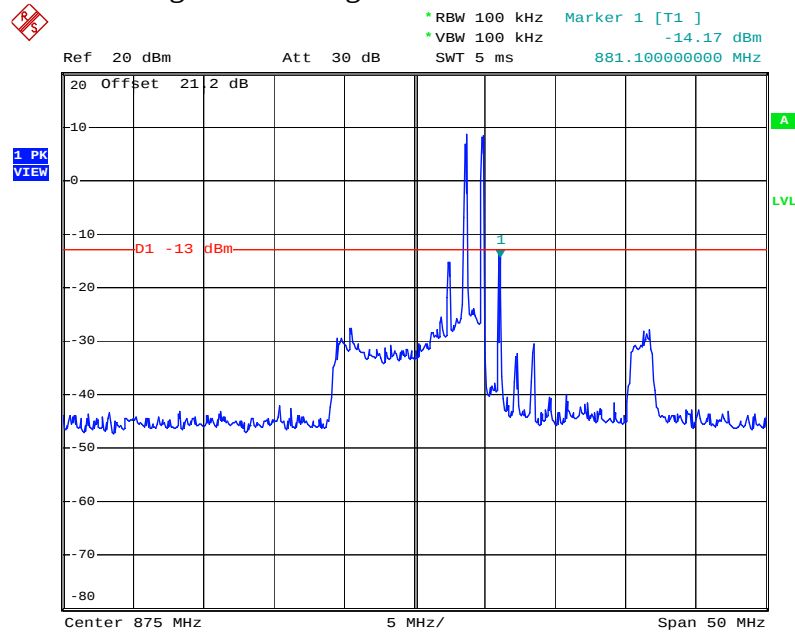
Date: 30.JUN.2005 16:44:59

TDMA---Lower Band Edge



Date: 30.JUN.2005 16:52:19

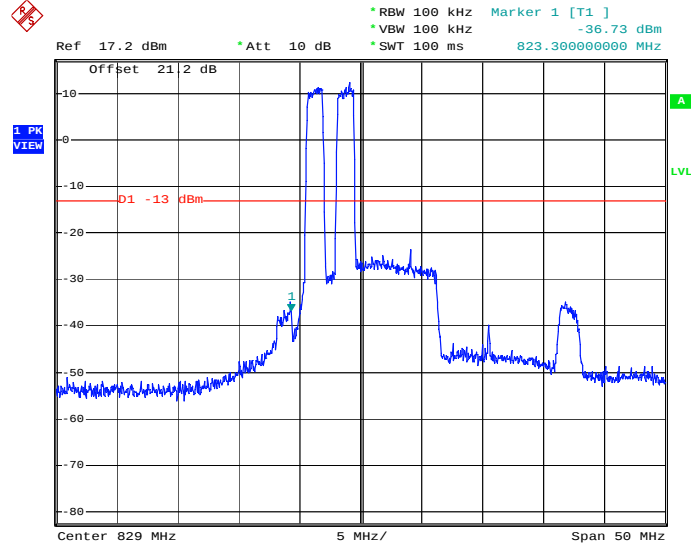
TDMA---Higher Band Edge



Date: 30.JUN.2005 16:49:25

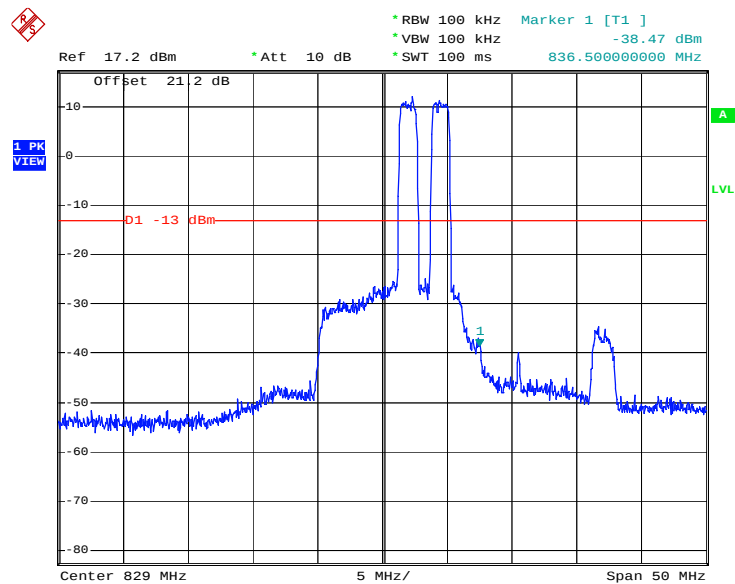
Cellular Band A---Up Link

CDMA---Lower Band Edge



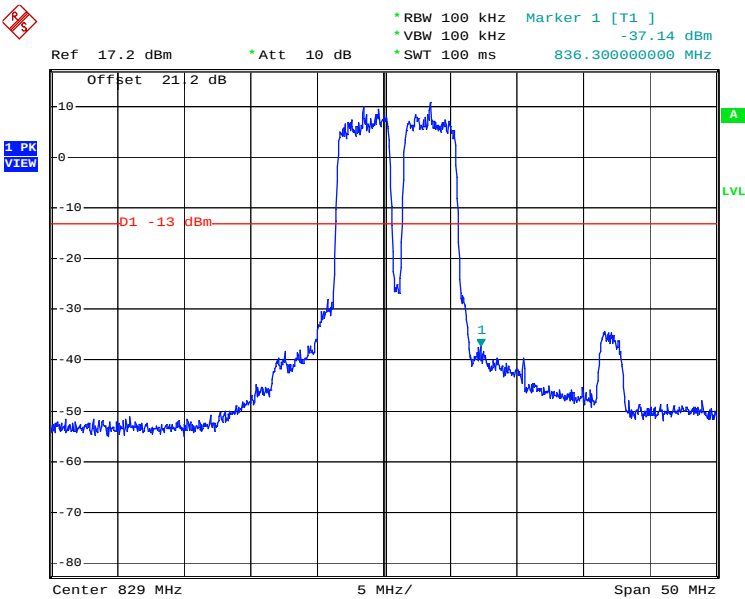
Date: 29.JUN.2005 21:25:25

CDMA---Higher Band Edge



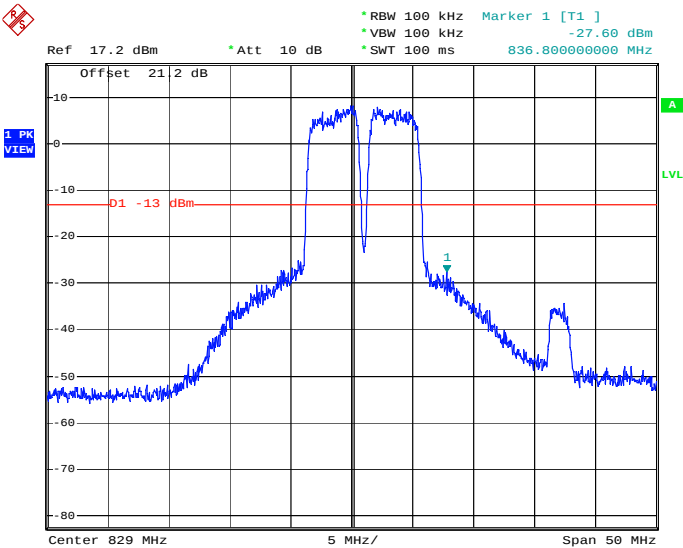
Date: 29.JUN.2005 21:33:26

3XRTT



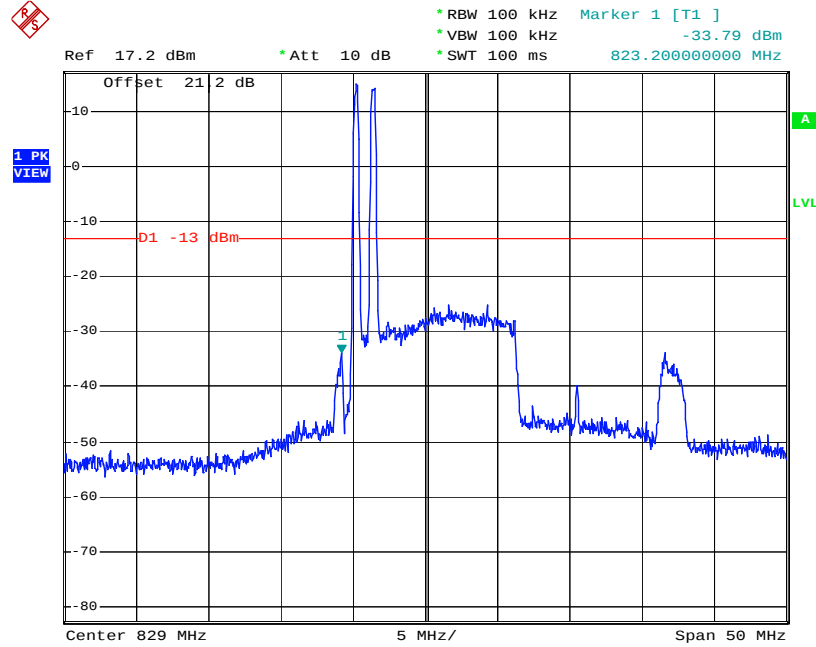
Date: 29.JUN.2005 21:19:06

WCDMA



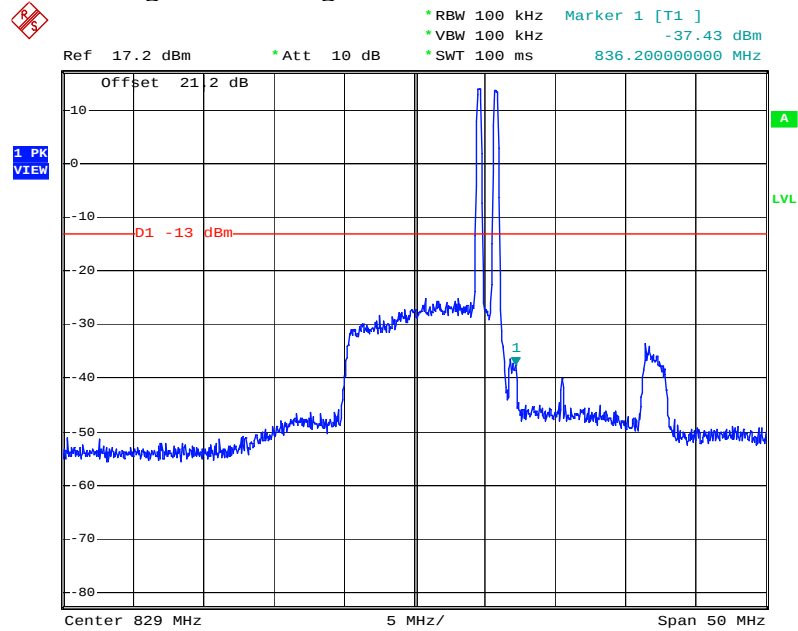
Date: 29.JUN.2005 21:15:14

GSM---Lower Band Edge



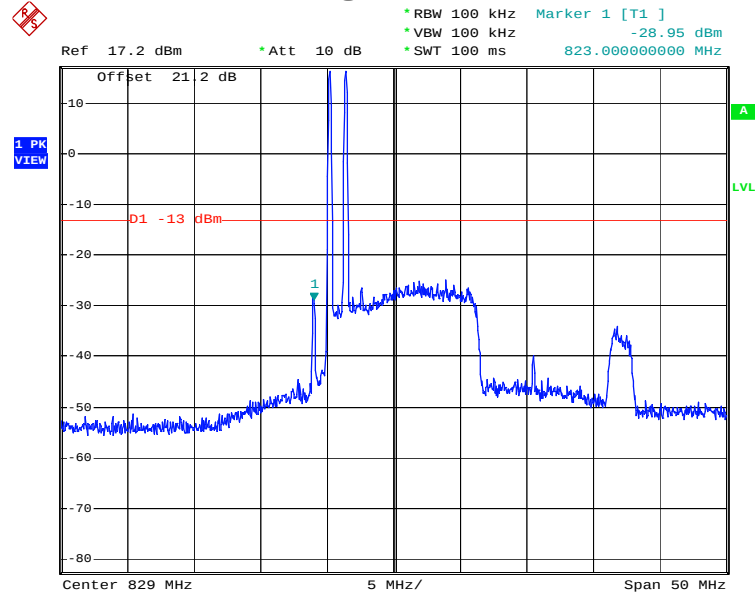
Date: 29.JUN.2005 21:40:30

GSM---Higher Band Edge



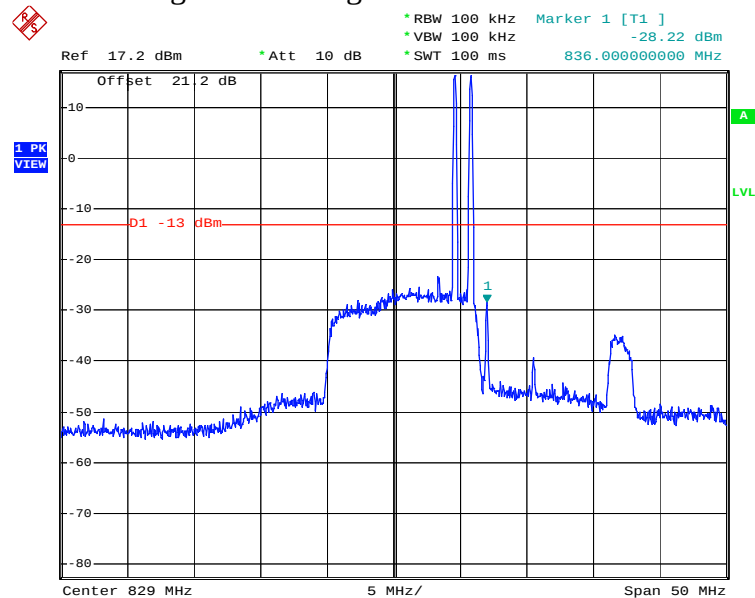
Date: 29.JUN.2005 21:37:09

TDMA---Lower Band Edge



Date: 29.JUN.2005 21:42:57

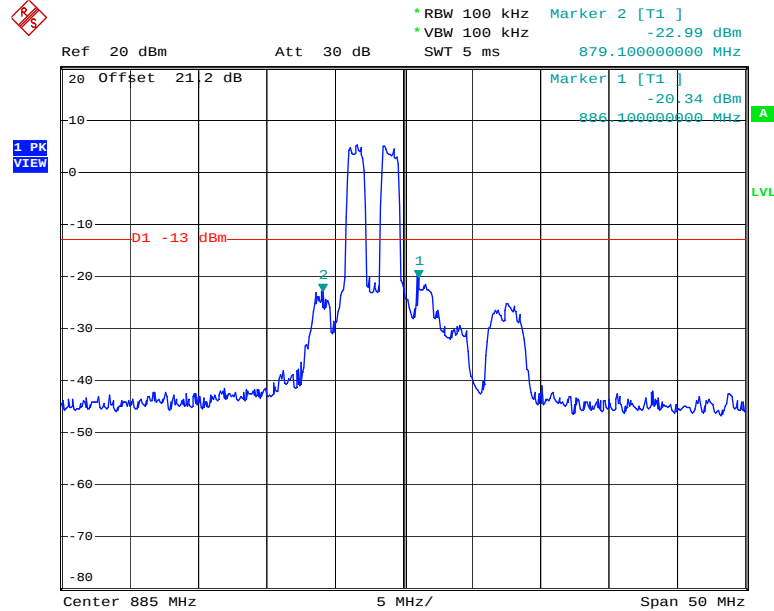
TDMA---Higher Band Edge



Date: 29.JUN.2005 21:45:12

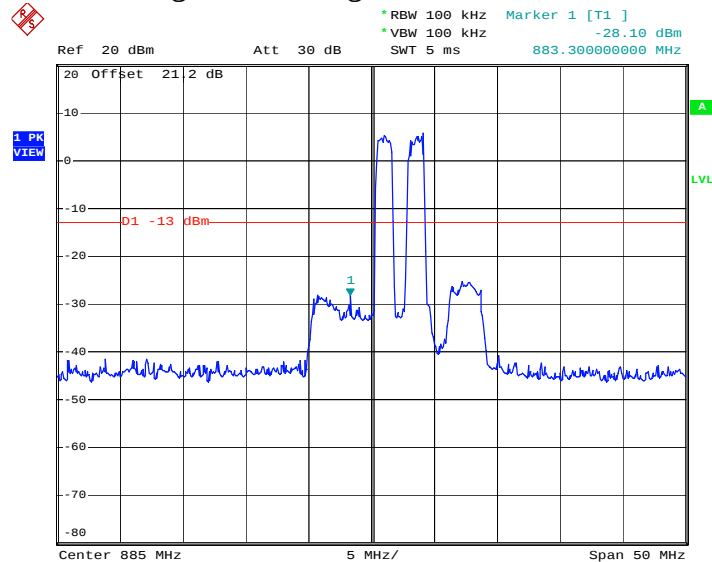
Cellular Band B---Down Link

CDMA---Lower Band Edge



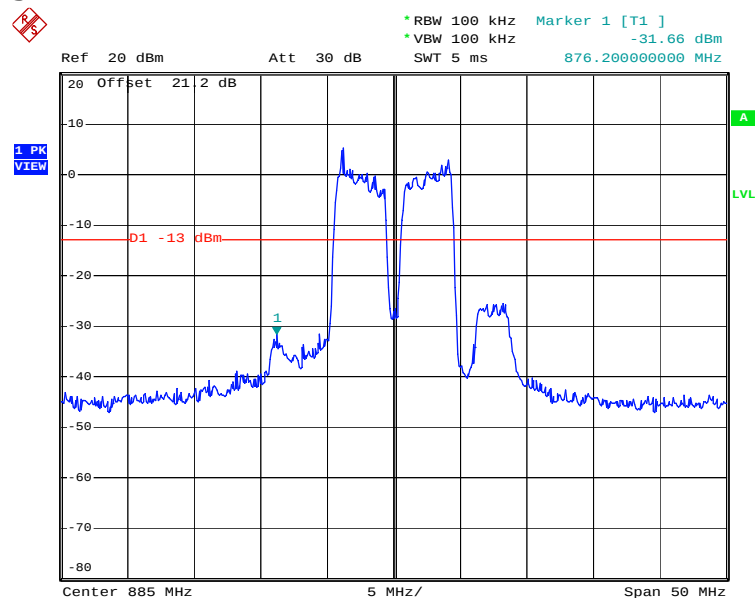
Date: 30.JUN.2005 17:12:33

CDMA---Higher Band Edge



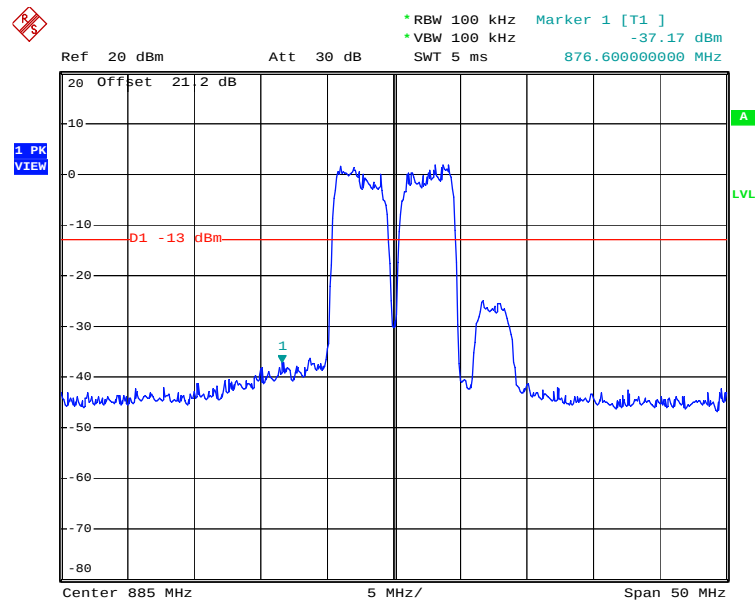
Date: 30.JUN.2005 17:14:52

3XRTT



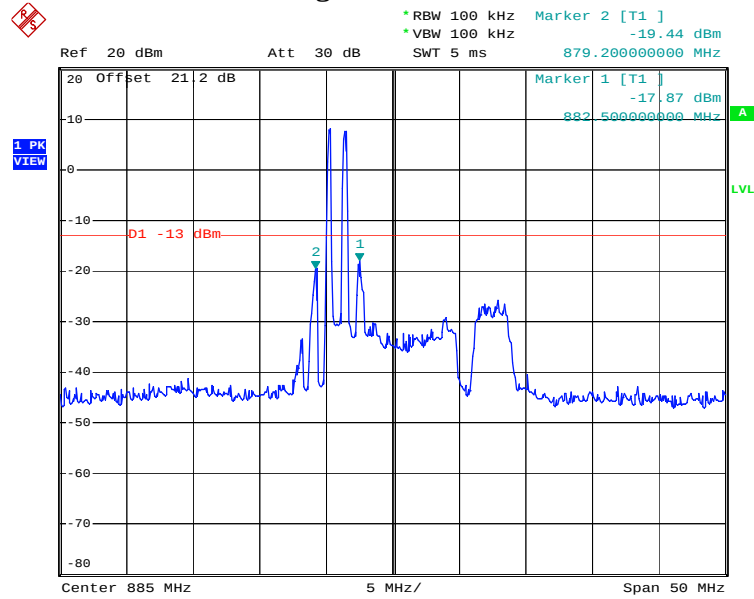
Date: 30.JUN.2005 17:18:36

WCDMA



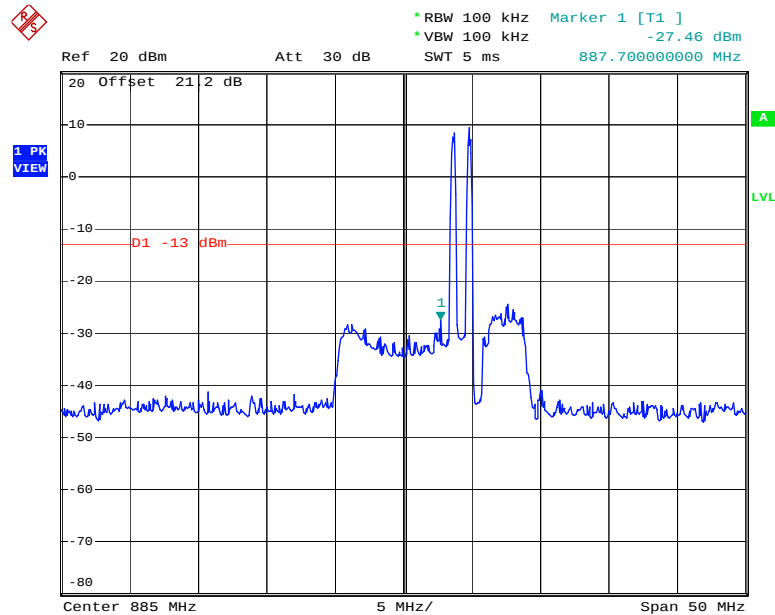
Date: 30.JUN.2005 17:21:08

GSM---Lower Band Edge



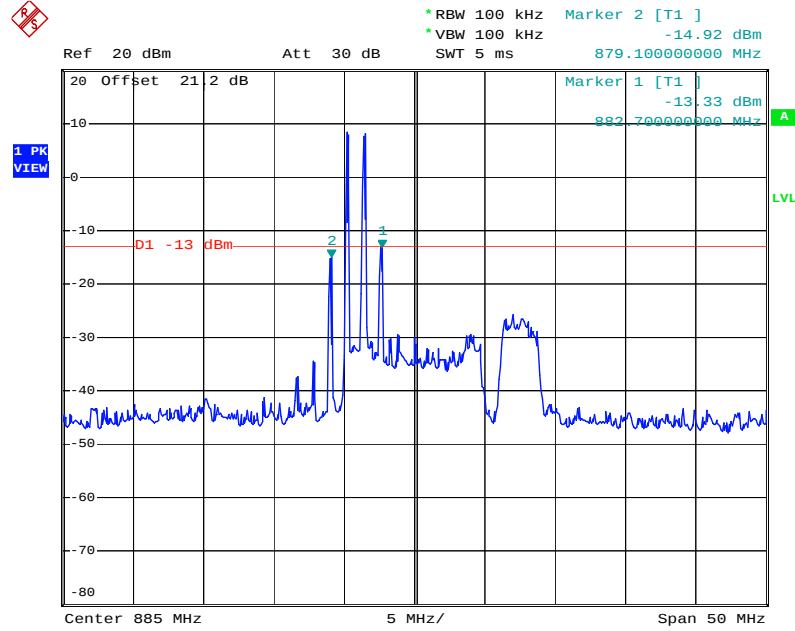
Date: 30.JUN.2005 17:07:22

GSM---Higher Band Edge



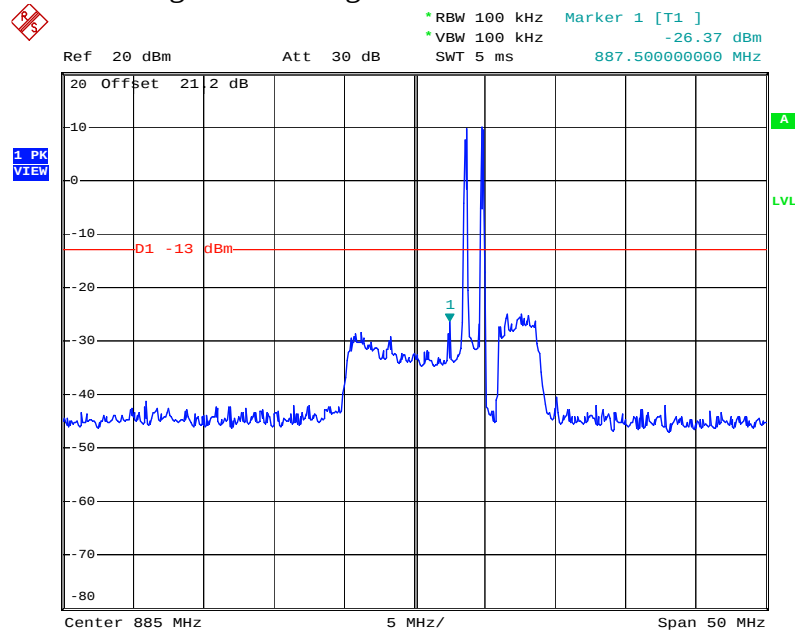
Date: 30.JUN.2005 17:04:44

TDMA---Lower Band Edge



Date: 30.JUN.2005 17:00:07

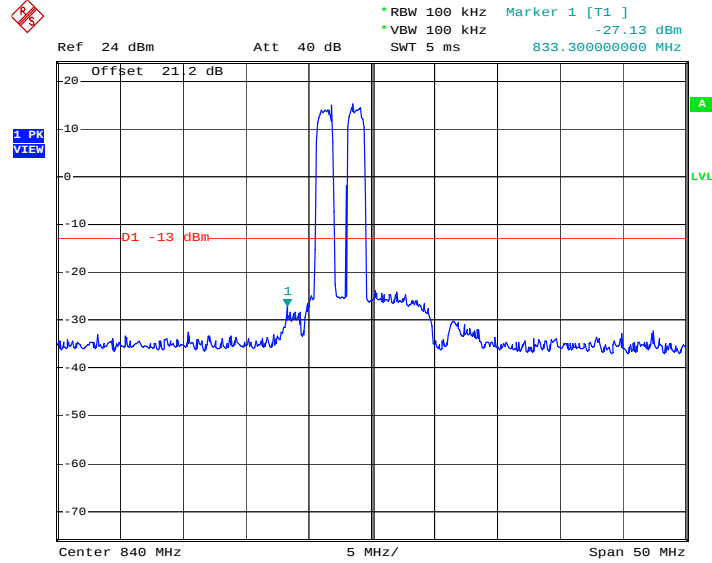
TDMA---Higher Band Edge



Date: 30.JUN.2005 17:02:39

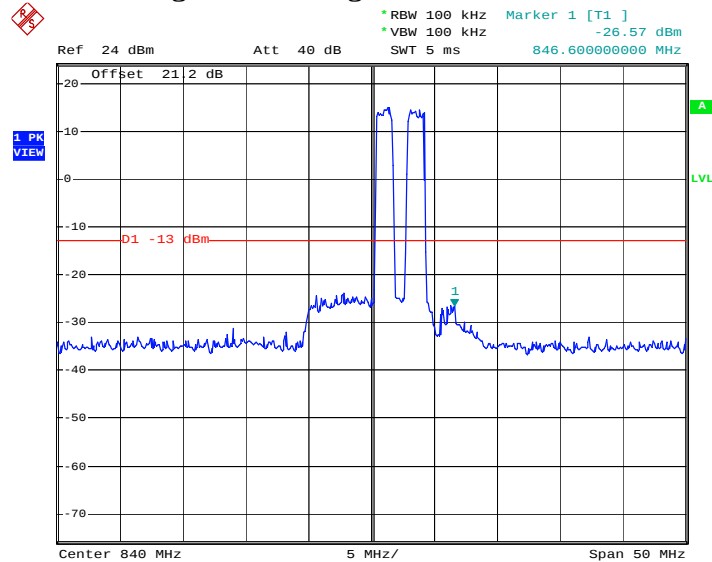
Cellular Band B---Up Link

CDMA---Lower Band Edge



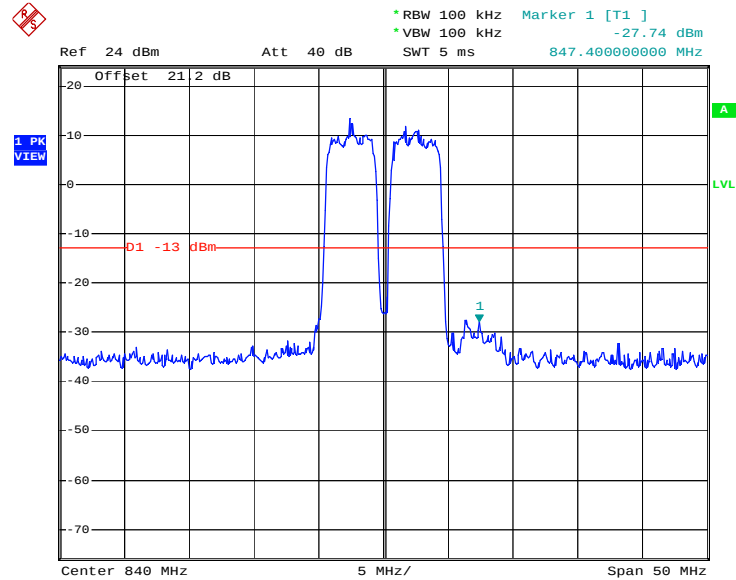
Date: 30.JUN.2005 15:50:23

CDMA---Higher Band Edge



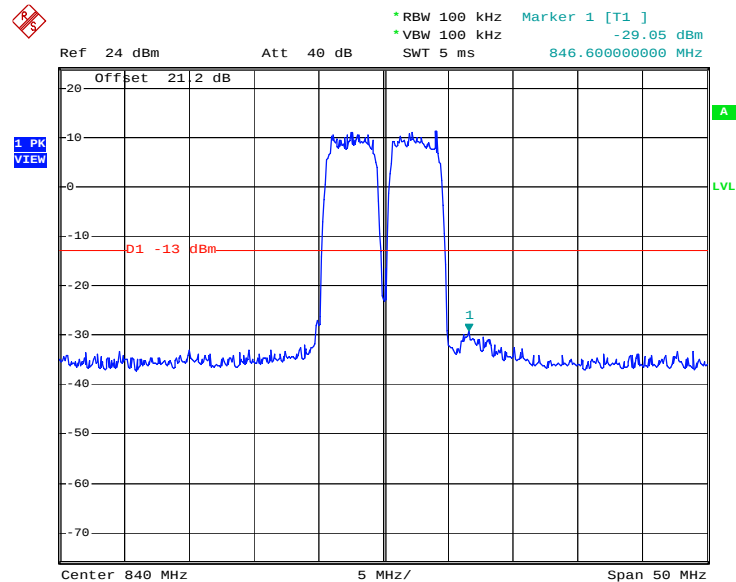
Date: 30.JUN.2005 15:53:48

3XRTT



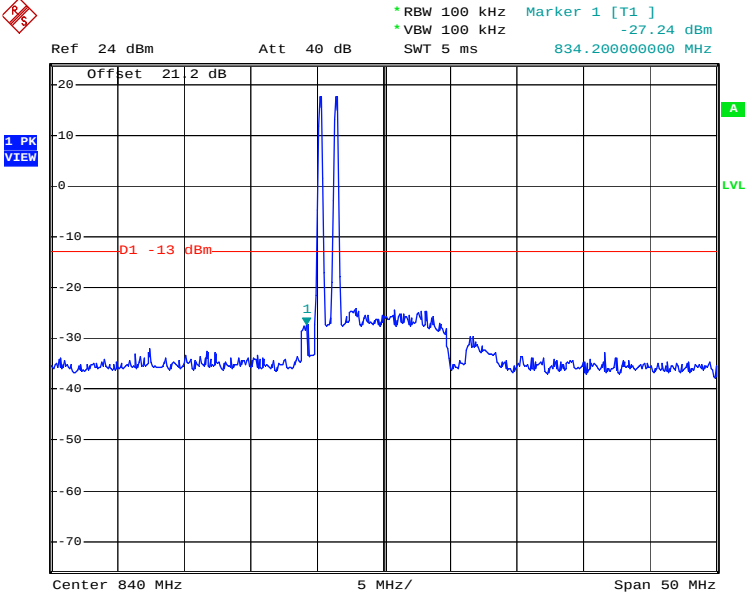
Date: 30.JUN.2005 16:03:34

WCDMA



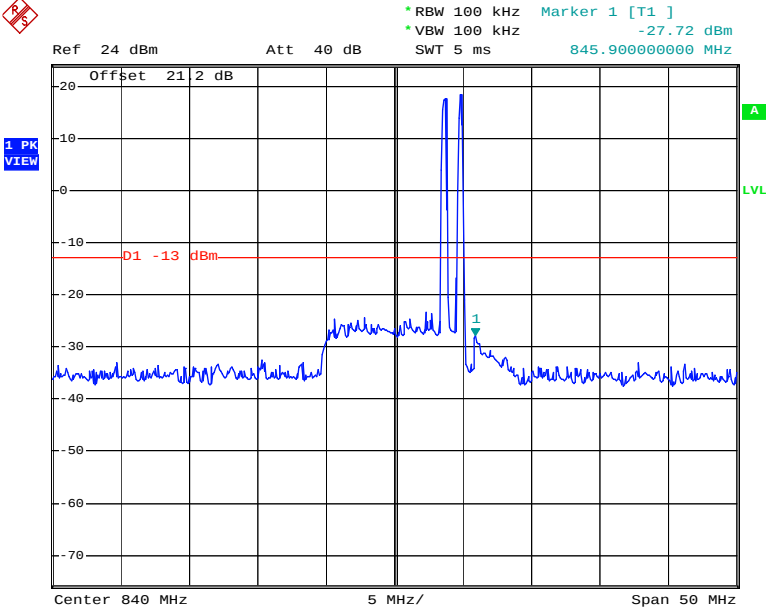
Date: 30.JUN.2005 16:05:36

GSM---Lower Band Edge



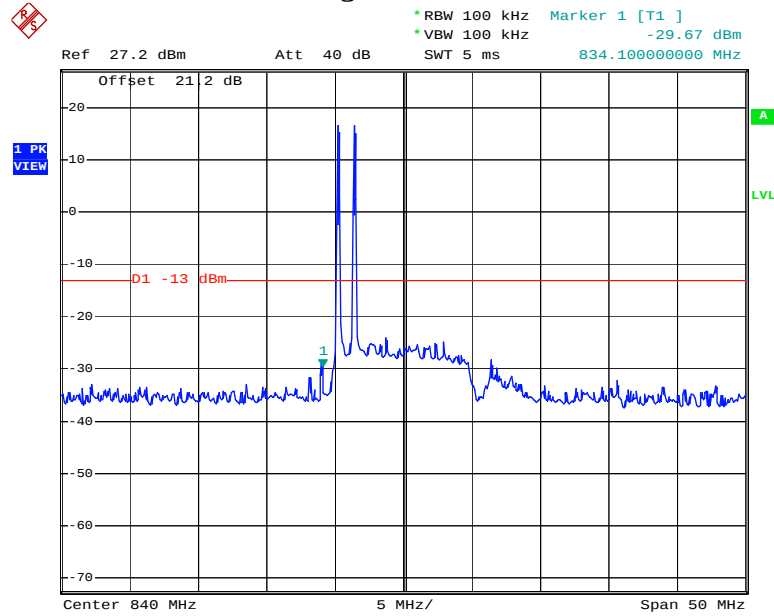
Date: 30.JUN.2005 15:43:05

GSM---Higher Band Edge



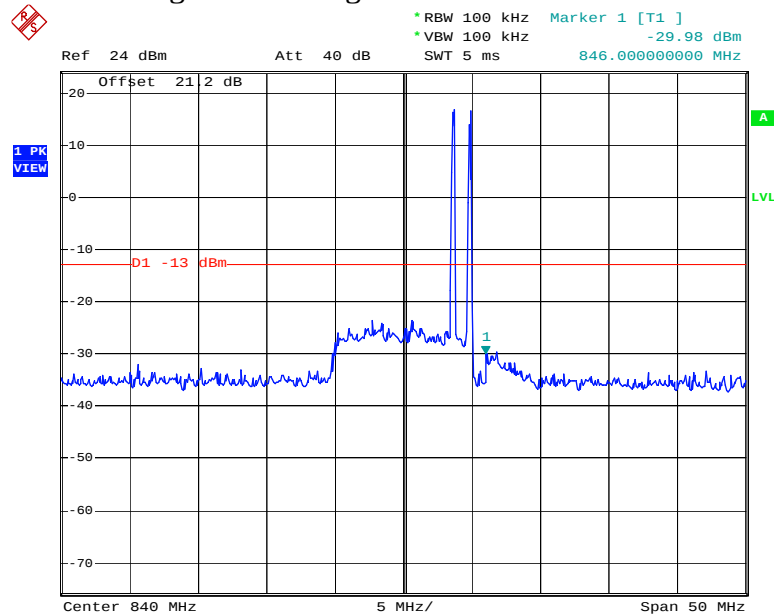
Date: 30.JUN.2005 15:39:51

TDMA---Lower Band Edge



Date: 30.JUN.2005 15:27:28

TDMA---Higher Band Edge



Date: 30.JUN.2005 15:36:26

Section 4. Radiated Spurious Emissions**Criteria: Clause 22.917 / Clause 24.238**

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

Test Conditions:

Sample Number:	1 &4	Temperature:	23
Date:	June 27, 2005	Humidity:	51
Modification State:	0	Tester:	Xu Jin
		Laboratory:	OATS

Test Results:

See Attached Table for Results.

All measurements were performed using a Peak Detector with 100kHz RBW below 1GHz and a 1MHz RBW above 1GHz at a distance of 3 meters.

The EUT was searched from 30MHz to the 10th harmonic at both UpLink and DownLink directions in all frequency bands, including PCS band and cellular band. The case when the PCS band and Cellular band operated simultaneously has also been accessed.

Only worst case has been presented.

Test Date: July 8, 2005								
Engineer's Name: Xu Jin								
Temperature (C°): Indoor: 23, Outdoor: 27						Humidity %: Indoor: 51, Outdoor: 64		
Tested as per Table Top								
Test Distance (meters): 3						Range: 1		
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Sig Sub. Factor (dB)	Signal Substitution Power (dBm)	Limit (dBm)	Margin (dB)	Detector
152.6122	BC1	H	23.1	-84.7	-61.6	-13	-48.6	Peak
152.6122	BC1	V	36.6	-80.4	-43.8	-13	-30.8	Peak
153.1033	BC1	V	37.6	-80.4	-42.8	-13	-29.8	Peak
153.1033	BC1	H	40.8	-84.8	-44.0	-13	-31.0	Peak
211.0000	BC1	H	65.2	-83.2	-18.0	-13	-5.0	Peak
211.0000	BC1	V	58.9	-78.6	-19.8	-13	-6.8	Peak
2100.0000	Horn	H	73.5	-124.4	-50.9	-13	-37.9	Peak
2100.0000	Horn	V	70.8	-123.2	-52.5	-13	-39.5	Peak
4022.0000	Horn	H	86.1	-113.9	-27.9	-13	-14.9	Peak
4022.0000	Horn	V	76.7	-112.7	-36.0	-13	-23.0	Peak
4200.0000	Horn	V	68.3	-113.1	-44.8	-13	-31.8	Peak
4200.0000	Horn	H	74.3	-114.3	-40.0	-13	-27.0	Peak
6300.0000	Horn	H	67.7	-108.4	-40.8	-13	-27.8	Peak
6300.0000	Horn	V	64.1	-108.3	-44.1	-13	-31.1	Peak
Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole								
Note 2: Detector Legend: Q-Peak = 120 kHz RBW, Average = 1.0 MHz RBW								
Below 1GHz, Peak detector with 100 kHz RBW, 100KHz VBW								
Above 1GHz, Peak detector with 1.0MHz RBW, 1.0MHz VBW								

Section 5. Out of Band Rejection**Criteria: Clause 2-11-04/EAB/RF Out of Band Rejection**

Plots showing the filter frequency response.
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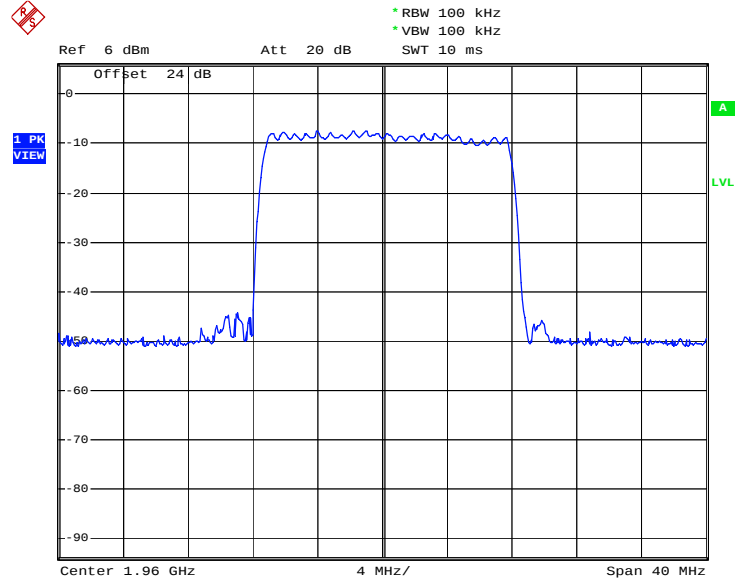
Test Conditions:

Sample Number:	1 &4	Temperature:	23
Date:	June 30, 2005	Humidity:	51
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Wireless Lab

Test Results:

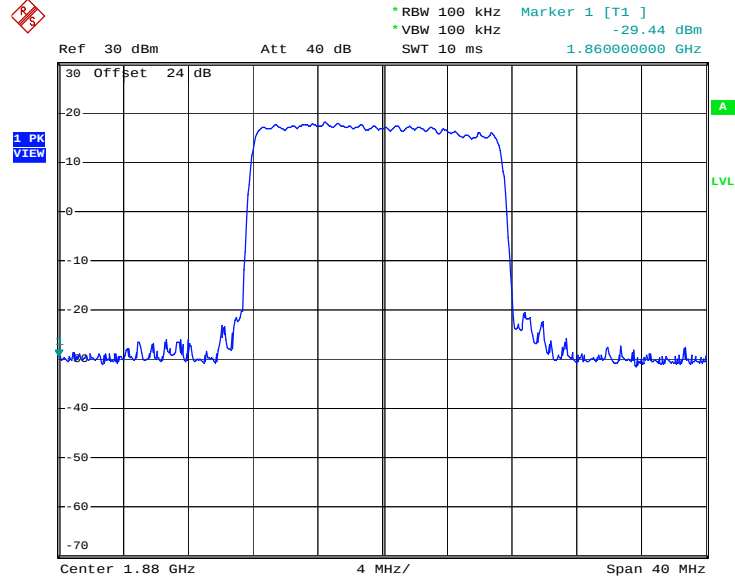
See Attached Plots.

PCS Band --- Down Link



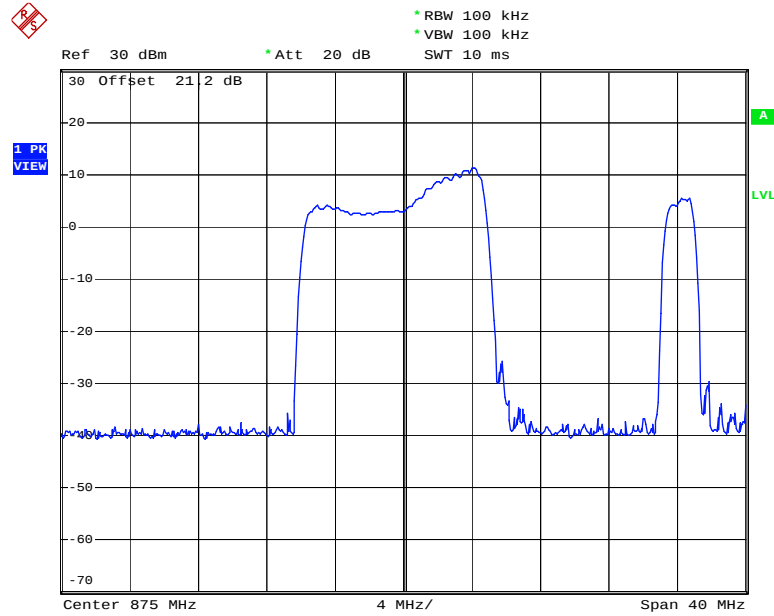
Date: 30.JUN.2005 20:25:00

PCS Band ---Up Link



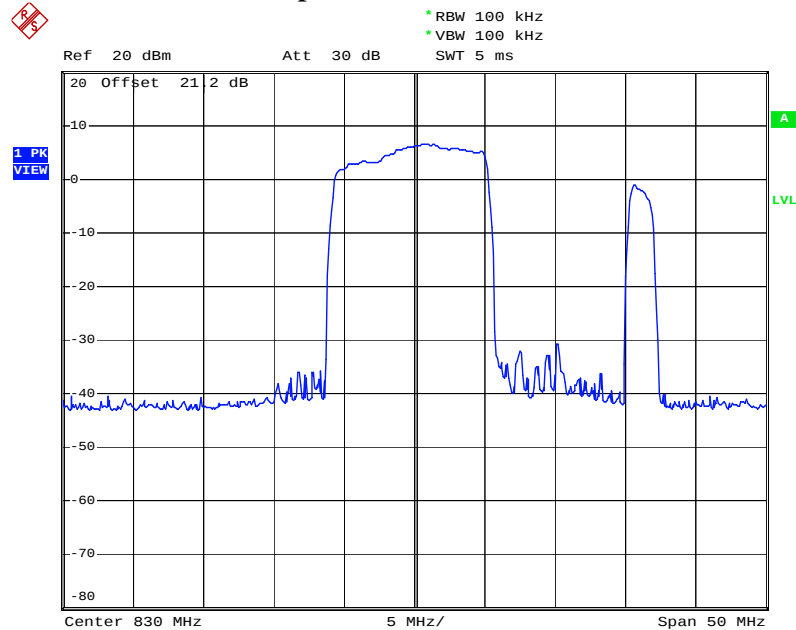
Date: 30.JUN.2005 21:15:32

Cellular Band A --- Down Link



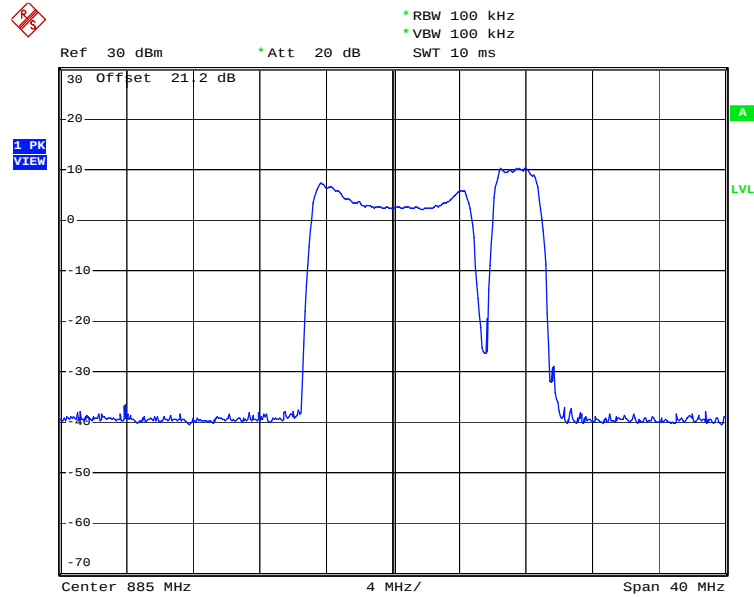
Date: 4.JUL.2005 15:45:54

Cellular Band A ---Up Link



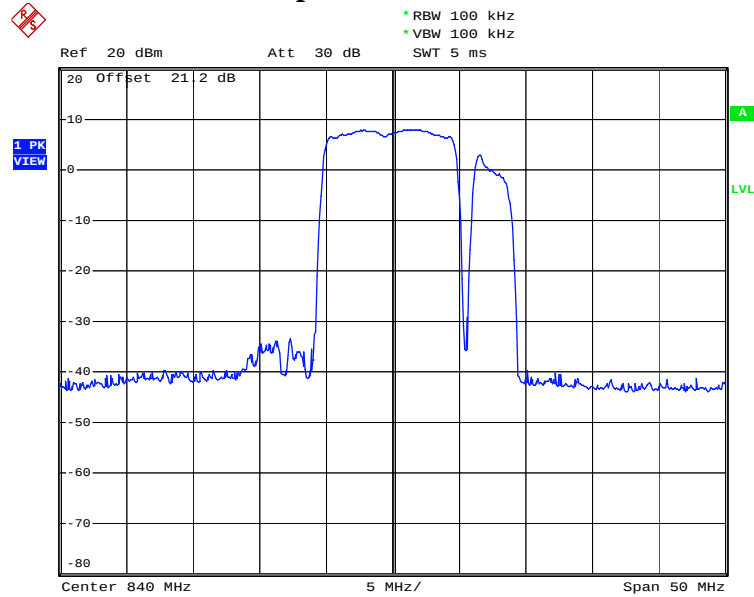
Date: 30.JUN.2005 19:16:07

Cellular Band B --- Down Link



Date: 4.JUL.2005 15:54:53

Cellular Band B ---Up Link



Date: 30.JUN.2005 19:05:26

Section 6: Frequency Stability**Criteria: Clause 22.355**

Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Criteria: Clause 24.235

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Criteria: Clause 2.1055

(a) The frequency stability shall be measured

1) From -30° to +50° centigrade for all equipment except that specified in paragraphs (a)(2) and (3) of this section.

Test Conditions:

Sample Number:	1 &4	Temperature:	50
Date:	July. 5, 2005	Humidity:	23
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Environment Chamber

Test Results: See Attached Table.

Test Conditions Ambient Temperature: 23°C
Relative Humidity: 40%
Extreme Temperature: -30°C to +50°C (Outdoor Unit---DU)
0°C to +50°C (Indoor Unit---CU)
Extreme Voltage Conditions: +/-15% of AC Mains

Test Data: See Attached tables

Note: The frequency drift was measured at the EUT input vs EUT output under the ambient temperature with extreme voltage supply and under extreme temperature conditions.

**Frequency Tolerance Test at Extreme Voltage Under Ambient Temperature
(+23°C)**

Frequency Band	Nominal Carrier Frequency (MHz)	Measured Frequency at EUT Input	Measured Frequency at EUT Output at 120VAC	Frequency Deviation from EUT Output to EUT Input (PPM)
Cellular Band A DL	875	874.999742	874.999722	-0.023
Cellular Band A UL	830	829.999992	829.999992	0
Cellular Band B DL	885	884.999778	884.999733	-0.051
Cellular Band B UL	840	839.999994	839.999992	-0.002
PCS DL	1960	1959.999552	1959.999538	-0.007
PCS UL	1880	1879.999985	1879.999984	-0.001

Frequency Band	Nominal Carrier Frequency (MHz)	Measured Frequency at EUT Input	Measured Frequency at EUT Output at 102VAC (-15%)	Frequency Deviation from EUT Output to EUT Input (PPM)
Cellular Band A DL	875	874.999742	874.999727	-0.017
Cellular Band A UL	830	829.999992	829.999992	0
Cellular Band B DL	885	884.999778	884.999774	-0.004
Cellular Band B UL	840	839.999994	839.999992	-0.002
PCS DL	1960	1959.999552	1959.999544	-0.004
PCS UL	1880	1879.999985	1879.999985	0

Frequency Band	Nominal Carrier Frequency (MHz)	Measured Frequency at EUT Input	Measured Frequency at EUT Output at 138VAC (+15%)	Frequency Deviation from EUT Output to EUT Input (PPM)
Cellular Band A DL	875	874.999742	874.999729	-0.015
Cellular Band A UL	830	829.999992	829.999992	0
Cellular Band B DL	885	884.999778	884.999774	-0.004
Cellular Band B UL	840	839.999994	839.999992	-0.002
PCS DL	1960	1959.999552	1959.999547	-0.002
PCS UL	1880	1879.999985	1879.999985	0

Frequency Tolerance Test at Extreme Temperature with Standards AC Power Supply

Measurement Data at High Temperature (+50°C)---(DU & CU)

Frequency Band	Nominal Carrier Frequency (MHz)	Measured Frequency at EUT Input	Measured Frequency at EUT Output (+50°C)	Frequency Deviation from EUT Output to EUT Input (PPM)
Cellular Band A DL	875	874.999893	874.999894	0.001
Cellular Band A UL	830	829.9999932	829.9999932	0
Cellular Band B DL	885	884.999897	884.999897	0
Cellular Band B UL	840	839.9999932	839.9999932	0
PCS DL	1960	1959.999748	1959.999748	0
PCS UL	1880	1879.999984	1879.999984	0

Measurement Data at Low Temperature (-30°C)---DU

Frequency Band	Nominal Carrier Frequency (MHz)	Measured Frequency at EUT Input	Measured Frequency at EUT Output (-30°C)	Frequency Deviation from EUT Output to EUT Input (PPM)
Cellular Band A DL	875	874.999883	874.999885	+0.002
Cellular Band A UL	830	829.9999928	829.9999928	0
Cellular Band B DL	885	884.999877	884.999875	-0.002
Cellular Band B UL	840	839.999992	839.9999992	+0.008
PCS DL	1960	1959.999780	1959.999772	-0.004
PCS UL	1880	1879.999982	1879.999983	+0.001

Measurement Data at Low Temperature (0°C)---CU

Frequency Band	Nominal Carrier Frequency (MHz)	Measured Frequency at Amplifier input	Measured Frequency at Amplifier Output (-30°C)	Frequency Deviation from EUT Output to EUT Input (PPM)
Cellular Band A DL	875	874.9999924	824.9999924	0
Cellular Band A UL	830	829.999944	829.999943	-0.001
Cellular Band B DL	885	884.9999924	884.9999924	0
Cellular Band B UL	840	839.999955	839.999956	+0.001
PCS DL	1960	1959.999982	1959.999982	0
PCS UL	1880	1879.999863	1879.999866	+0.002

Appendix B : Setup Photographs

Radiated Spurious Emissions Setup:

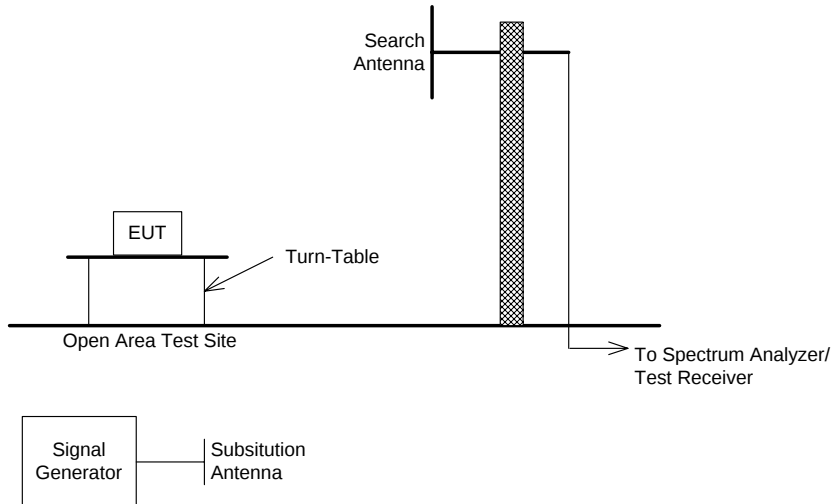


Appendix C : Block Diagram of Test Set-ups

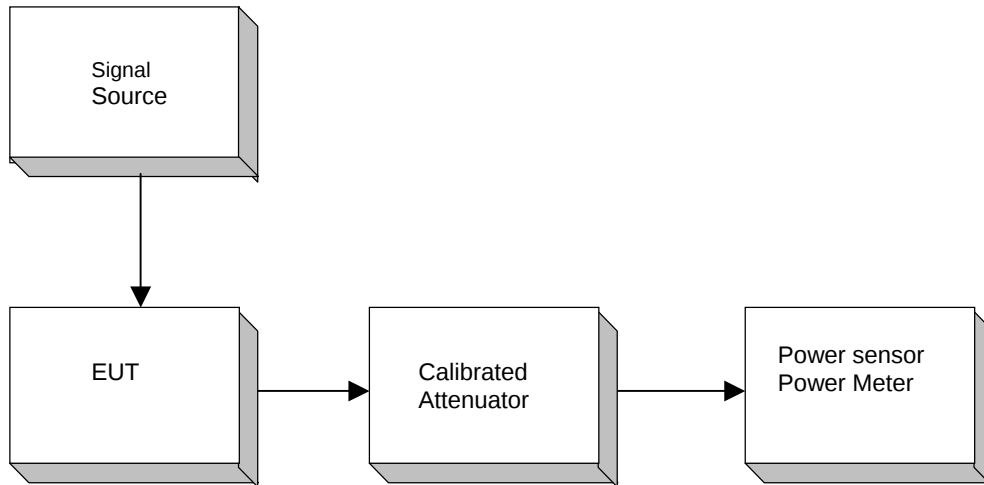
Test Site for Radiated Emissions

Para No.2.1053-Field Strength of Spurious Radiation

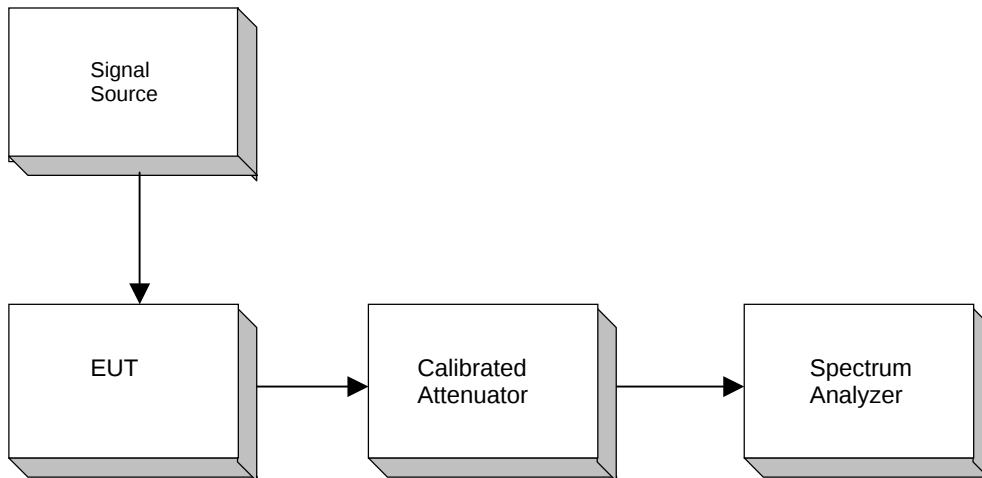
TIA/EIA 603
Effective Radiated Power
Spurious Emissions



Para No. 2.1046 – RF Power Output



Para No.2.1049 – Occupied Bandwidth



Para. No. 2.1051 - Spurious Emissions at Antenna Terminals

