

FCC PART 22H
MEASUREMENT AND TEST REPORT

For

JDTECK INC

107 South Hoagland Blvd, Kissimmee FL 34741

FCC ID: SQX-JD60-9-850-LC

Report Type: Original Report	Product Type: Wireless Cellular Repeater
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Report Number:	RSZ111102005-00
Report Date:	2012-02-15
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, NIST, or any agency of the Federal Government.

* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk "*" (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *JDTECK INC*'s product, model number: *JD60-9-850-LC* (FCC ID: *SQX-JD60-9-850-LC*) (the "EUT") in this report is a *Wireless Cellular Repeater*, which was measured approximately: 32.5 cm (L) x 24.5 cm (W) x 5.1 cm (H), rated input voltage: DC 12V from adapter.

Adapter information:

Model: GM-120600;

Input: AC 100-240V 50/60Hz;

Output: DC 12V 6.0A

Frequency Range:

GSM/EDGE/CDMA/WCDMA Cellular Band: 824-849 MHz (Uplink); 869-894 MHz (Downlink)

Transmitter Output Power:

GSM

Cellular Band: 20±1 dBm (Uplink); 30±1 dBm (Downlink)

EDGE

Cellular Band: 20±1 dBm (Uplink); 30±1 dBm (Downlink)

CDMA:

Cellular Band: 20±1 dBm (Uplink); 30±1 dBm (Downlink)

WCDMA:

Cellular Band: 20±1 dBm (Uplink); 30±1 dBm (Downlink)

** All measurement and test data in this report was gathered from production sample serial number: 1110119 (Assigned by Shenzhen BACL). The EUT was received on 2011-11-02.*

Objective

This type approval report is prepared on behalf of *JDTECK INC* in accordance with Part 2, Subpart J, Part 22 Subpart H of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability, band edge.

Related Submittal(s)/Grant(s)

No Related Submittal(s)

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services

Applicable Standards: TIA/EIA 603-C, ANSI C63.4-2009.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is 0.96 dB, the uncertainty of any radiation on emissions measurement is 4.0 dB

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D.

The final qualification test was performed with the EUT operating at normal mode.

Equipment Modifications

No modifications were made to the EUT.

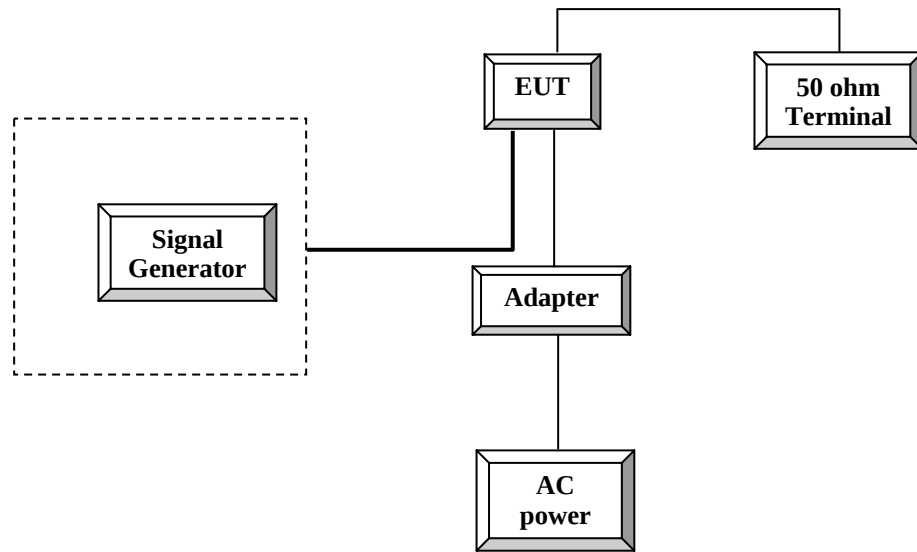
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester (Signal Generator)	CMU200	109038
Agilent	ESG-D Series Signal Generator	E4432B	GB40051703

External I/O Cable

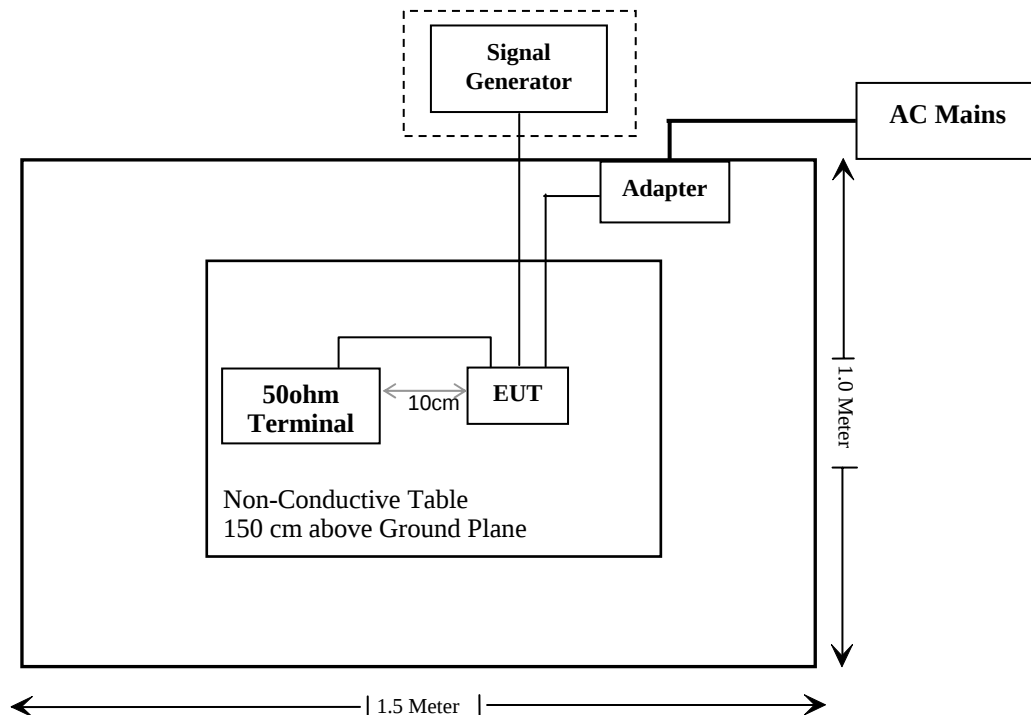
Cable Description	Length (m)	From Port	To
Unshielded Detachable Power Cable	1.70	AC power	Adapter
Unshielded Detachable Power Cable	1.30	Adapter	EUT
Coaxial Cable	1.20	Signal Generator	EUT
Coaxial Cable	1.20	RF Terminal	EUT

Configuration of Test Setup



Block Diagram of Test Setup

Downlink/Uplink:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b)(1), §2.1091	Maximum Permissible exposure (MPE)	Compliance
§2.1046; § 22.913 (a)	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905 § 22.917	99% & 26 dB Occupied Bandwidth	Compliance
§ 2.1051, § 22.917 (a)	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053, § 22.917 (a)	Field Strength of Spurious Radiation	Compliance
§ 22.917 (a)	Out of band emission, Band Edge	Compliance
§ 2.1055, § 22.355	Frequency stability vs. temperature Frequency stability vs. voltage	Not Applicable *

N/A*: The device is an amplifier.

FCC §1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Standard Applicable

According to subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Test Data

Predication of MPE limit at a given distance

$$S = PG/4\pi R^2$$

Where:

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally **numeric** gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

GSM

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
Uplink	836.6	9.5	8.91	20.17	103.99	50	0.0295	0.5577
Downlink	881.6	3.0	2.00	30.16	1037.53	50	0.0661	0.5877

EDGE

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
Uplink	848.8	9.5	8.91	20.34	108.14	50	0.0306	0.5577
Downlink	881.6	3.0	2.00	30.48	1116.86	50	0.0711	0.5877

CDMA

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
Uplink	848.28	9.5	8.91	20.68	116.95	50	0.0332	0.5655
Downlink	869.73	3.0	2.00	30.86	1218.99	50	0.0776	0.5798

WCDMA

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
Uplink	846.6	9.5	8.91	20.92	123.59	50	0.0359	0.5644
Downlink	891.6	3.0	2.00	30.68	1169.50	50	0.0745	0.5944

Result: The device meets FCC MPE limit at 50 cm distance.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC § 2.1046, § 22.913 (a) - RF OUTPUT POWER

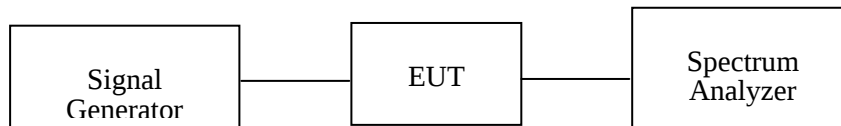
Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of base transmitter and cellular repeater must not exceed 500 watts.

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



Radiated method:

TIA 603-C section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ 26	609358	2011-07-08	2012-07-07
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2011-11-11	2012-11-10
Agilent	ESG-D Series Signal Generator	E4432B	GB40051703	2011-10-28	2012-10-27

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Felix Li on 2012-02-15.

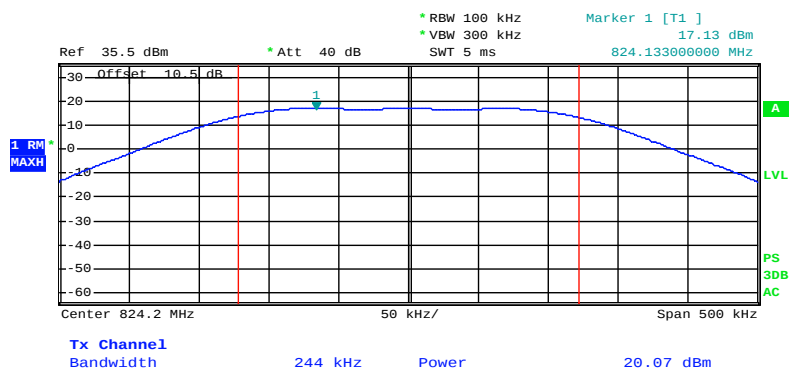
Test mode: Transmitting

GSM

Mode	Channel	Frequency (MHz)	Output Power (dBm)
Uplink	Low Channel	824.2	20.07
	Middle Channel	836.6	20.17
	High Channel	848.8	20.07
Downlink	Low Channel	869.2	30.02
	Middle Channel	881.6	30.16
	High Channel	893.8	30.10

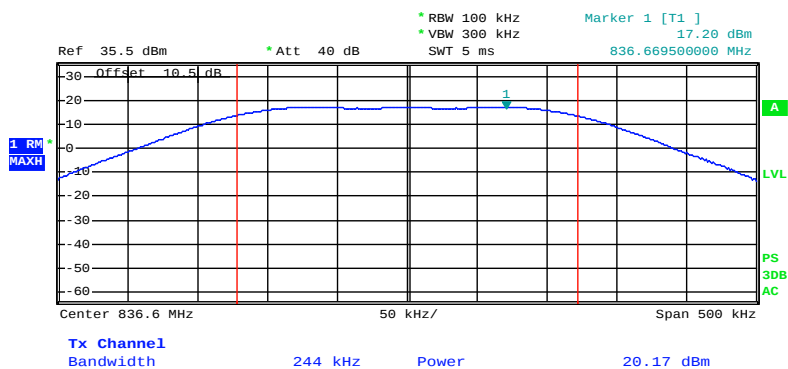
Please refer to the following plots

Uplink, Low Channel



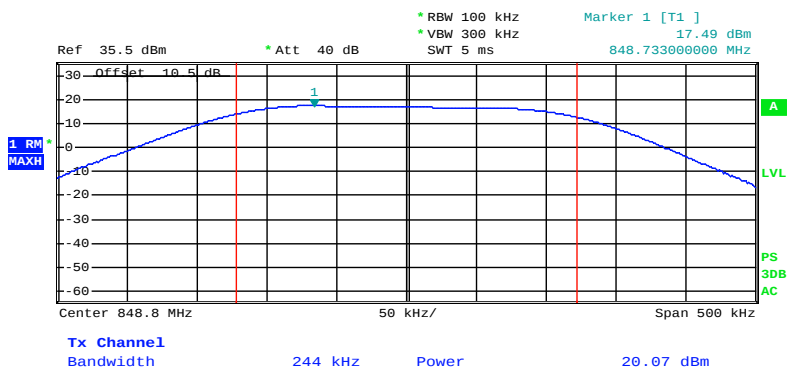
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Uplink, Middle Channel

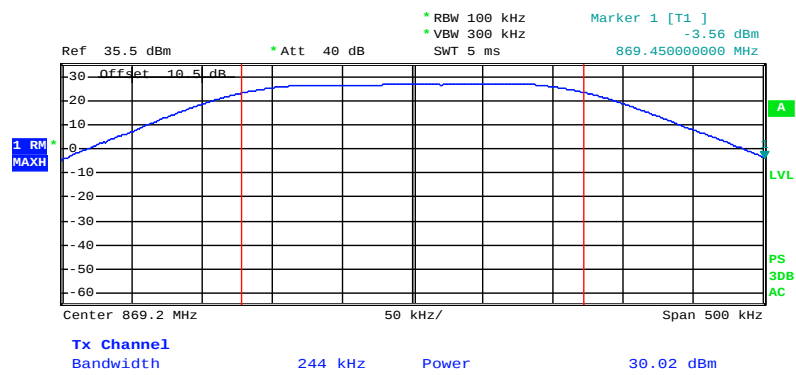


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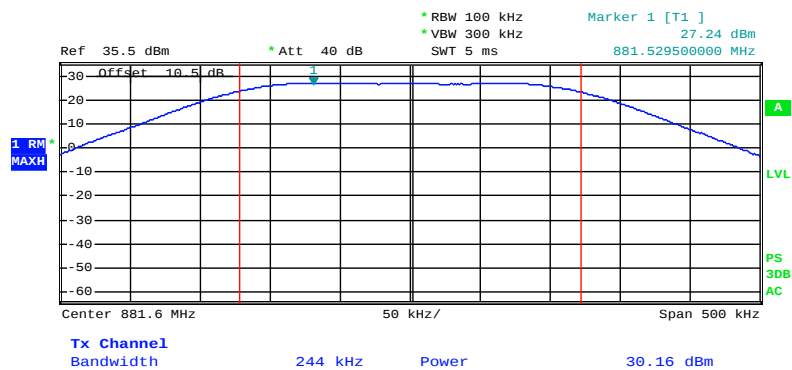
Uplink, High Channel



Date: 15.FEB.2012 10:21:31

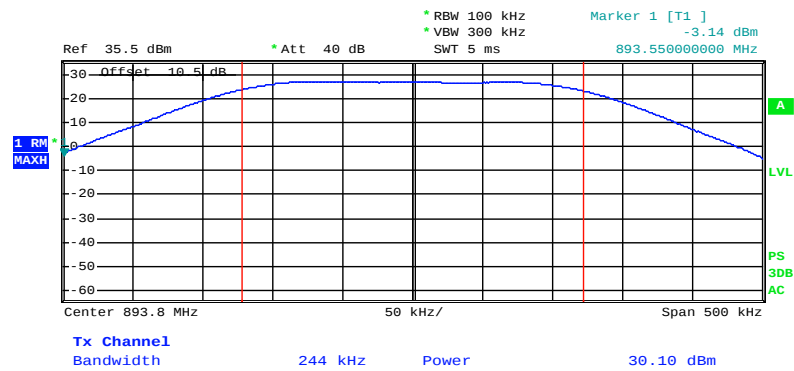
Downlink, Low Channel

Date: 15.FEB.2012 10:16:54

Downlink, Middle Channel

Date: 15.FEB.2012 10:16:15

Downlink, High Channel

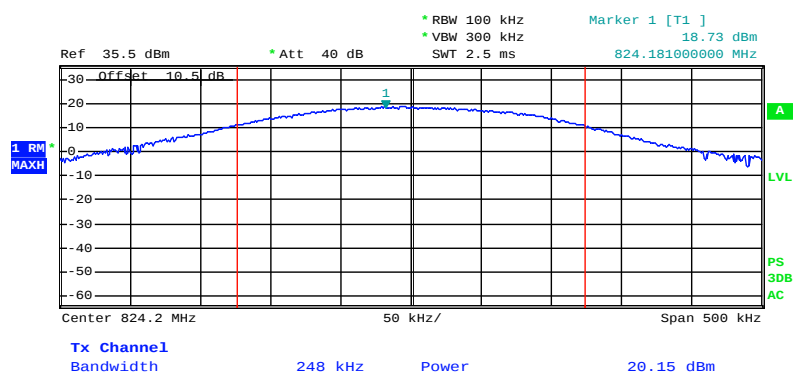


Date: 15.FEB.2012 10:17:32

EDGE

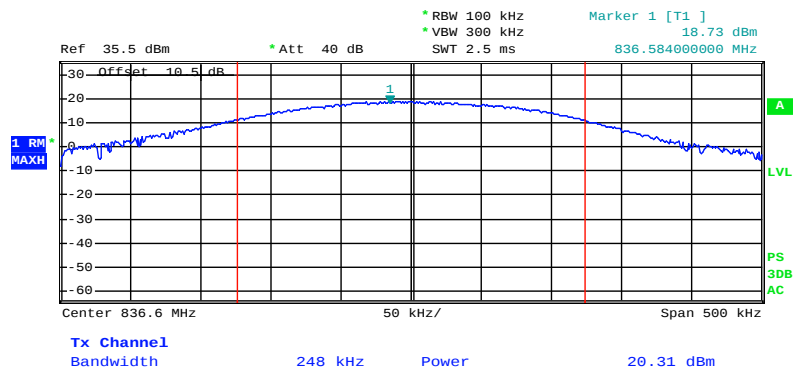
Mode	Channel	Frequency (MHz)	Output Power (dBm)
Uplink	Low Channel	824.2	20.15
	Middle Channel	836.6	20.31
	High Channel	848.8	20.34
Downlink	Low Channel	869.2	30.21
	Middle Channel	881.6	30.48
	High Channel	893.8	30.39

Please refer to the following plots

Uplink, Low Channel

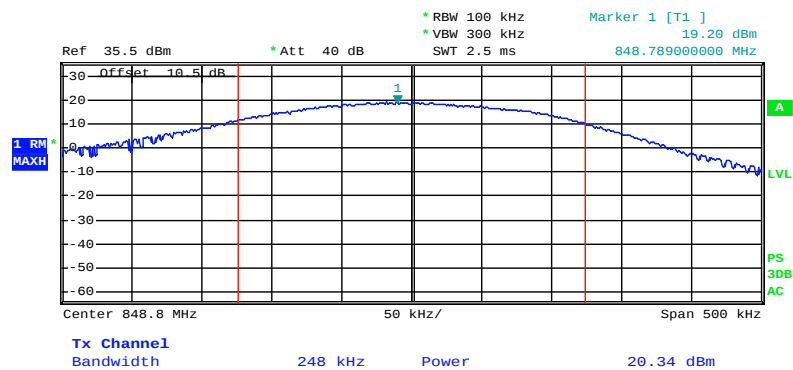
Date: 15.FEB.2012 10:24:52

Uplink, Middle Channel

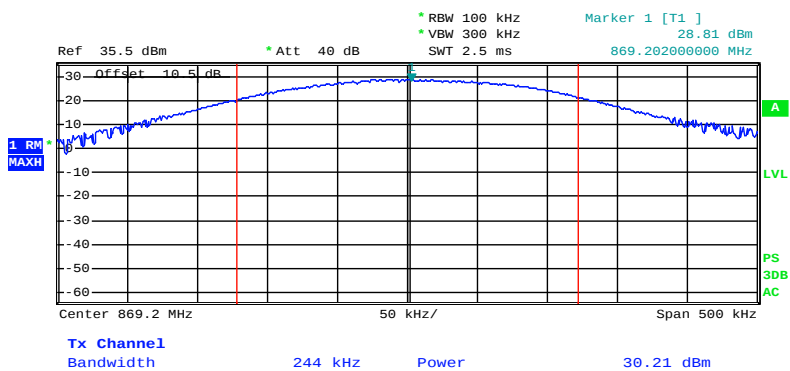


Date: 15.FEB.2012 10:23:35

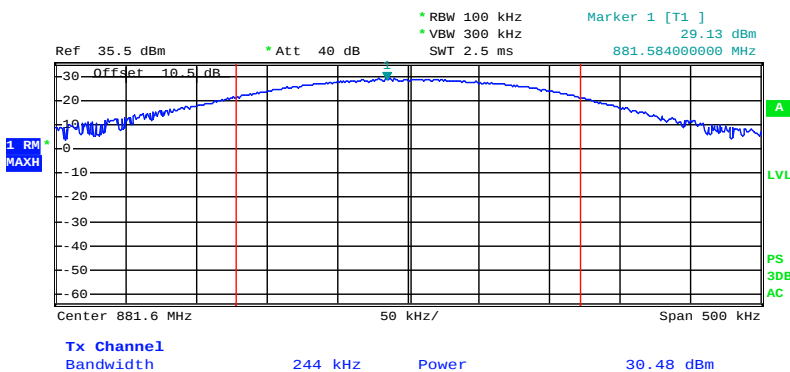
Uplink, High Channel



Date: 15.FEB.2012 10:22:37

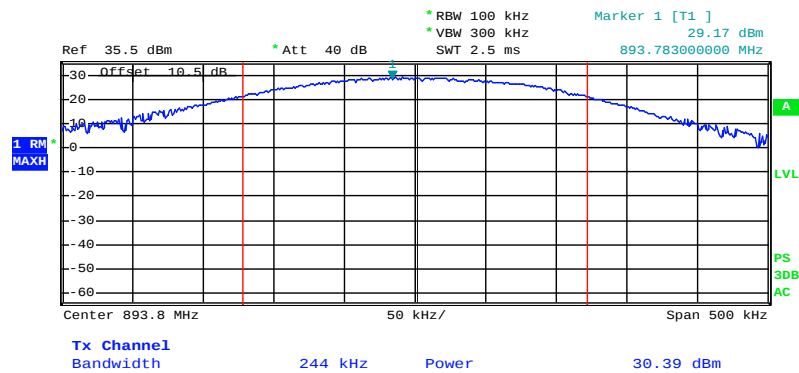
Downlink, Low Channel

Date: 15.FEB.2012 10:28:35

Downlink, Middle Channel

Date: 15.FEB.2012 10:27:55

Downlink, High Channel

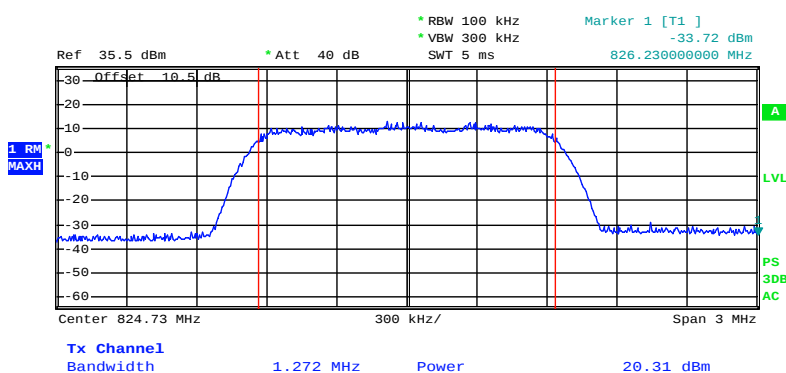


Date: 15.FEB.2012 10:29:15

CDMA

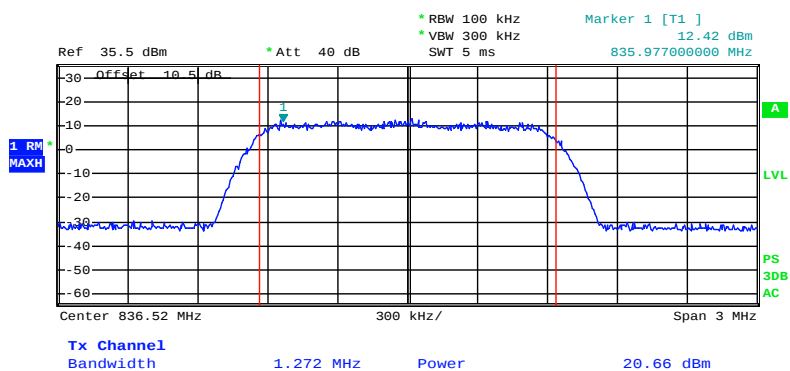
Mode	Channel	Frequency (MHz)	Output Power (dBm)
Uplink	Low Channel	824.73	20.31
	Middle Channel	836.52	20.66
	High Channel	848.28	20.61
Downlink	Low Channel	869.73	30.42
	Middle Channel	881.52	30.86
	High Channel	893.28	30.45

Please refer to the following plots,

Uplink, Low Channel

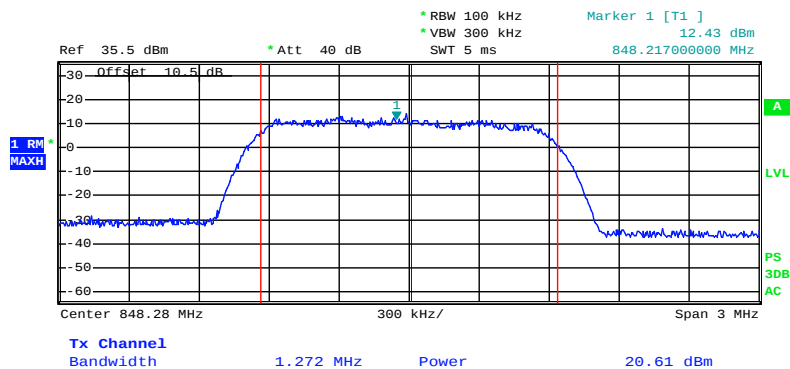
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Uplink, Middle Channel

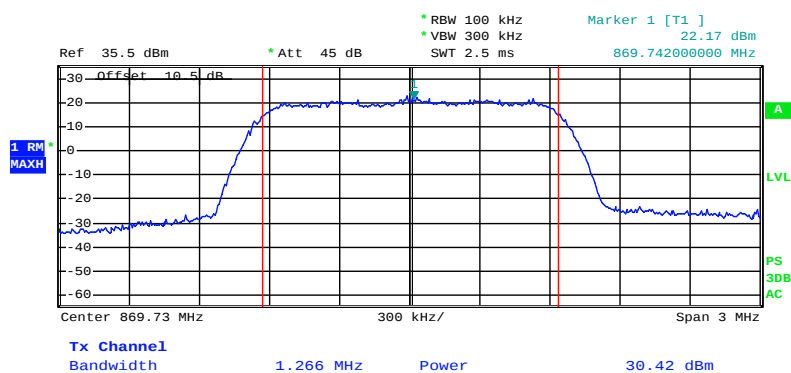


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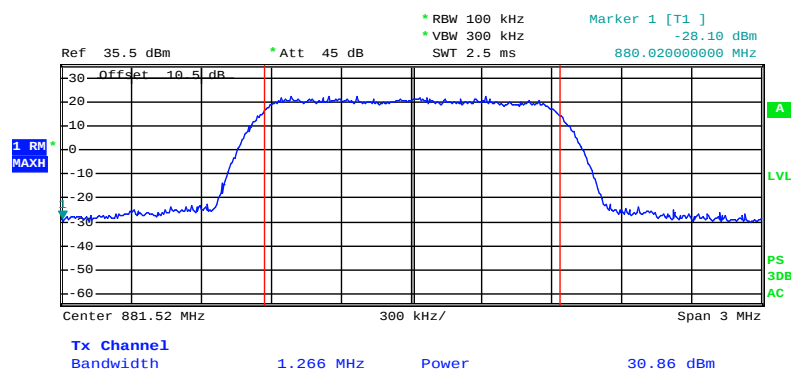
Uplink, High Channel



Date: 15.FEB.2012 10:41:24

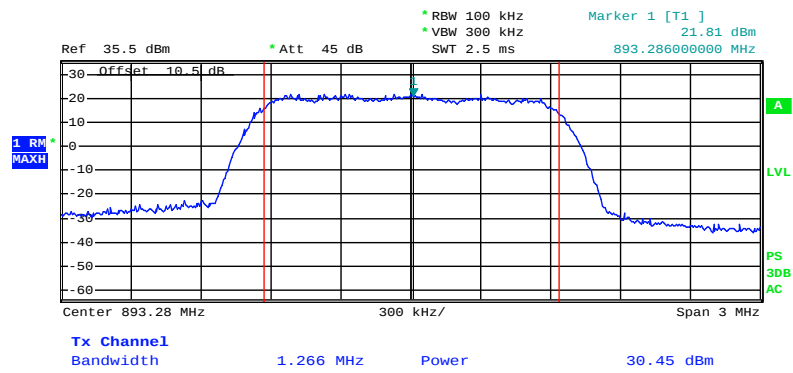
Downlink, Low Channel

Date: 15.FEB.2012 18:06:03

Downlink, Middle Channel

Date: 15.FEB.2012 18:06:36

Downlink, High Channel

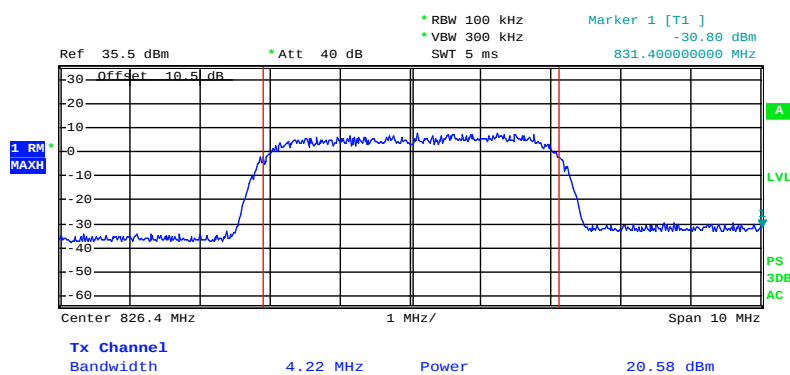


Date: 15.FEB.2012 18:07:11

WCDMA:

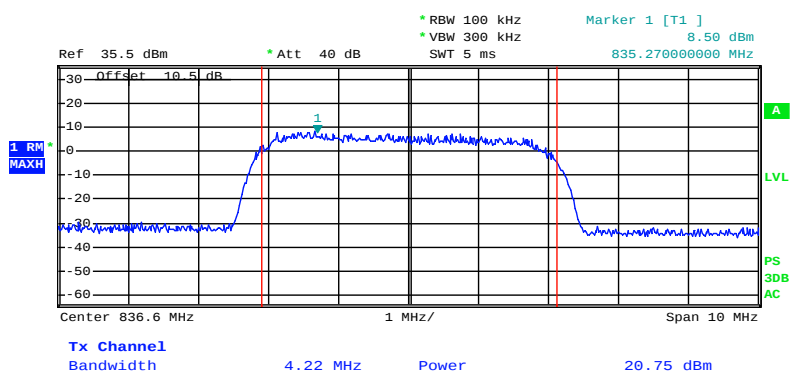
Mode	Channel	Frequency (MHz)	Output Power (dBm)
Uplink	Low Channel	826.4	20.58
	Middle Channel	836.6	20.75
	High Channel	846.6	20.92
Downlink	Low Channel	871.4	30.50
	Middle Channel	881.6	30.54
	High Channel	891.6	30.68

Please refer to the following plots

Uplink, Low Channel

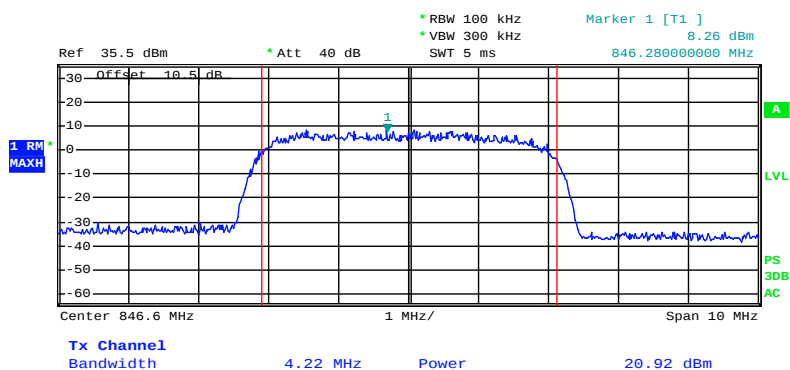
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Uplink, Middle Channel



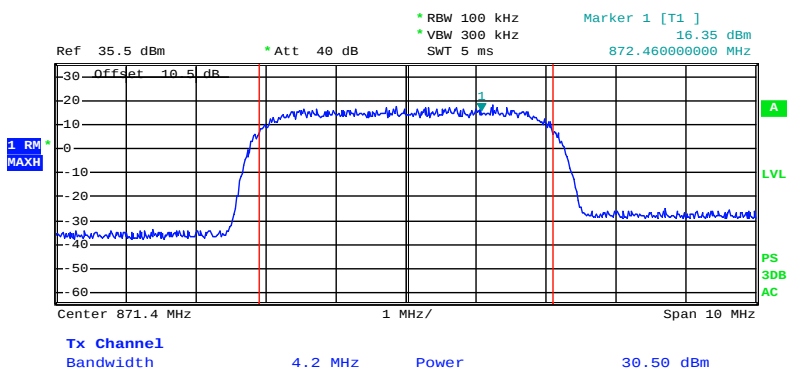
Date: 15.FEB.2012 10:49:23

Uplink, High Channel



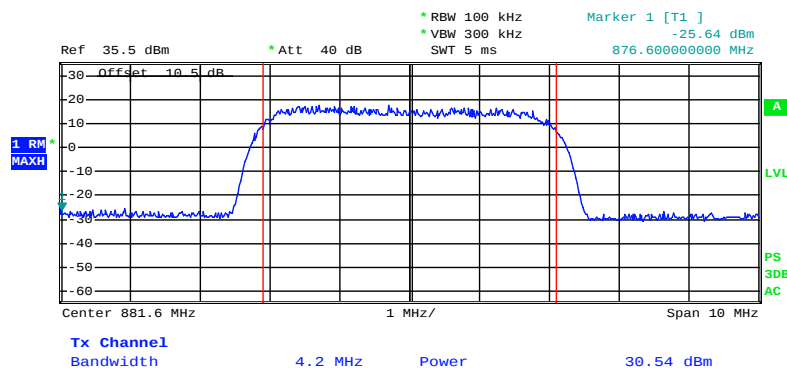
Date: 15.FEB.2012 10:52:03

Downlink, Low Channel



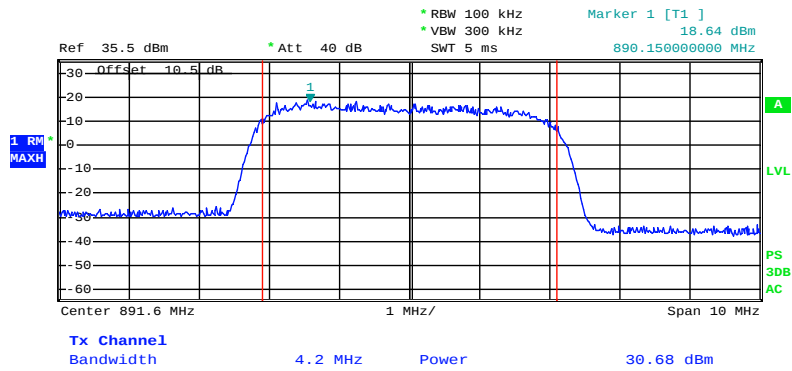
Date: 15.FEB.2012 10:56:40

Downlink, Middle Channel



Date: 15.FEB.2012 10:54:48

Downlink, High Channel



Date: 15.FEB.2012 10:57:33

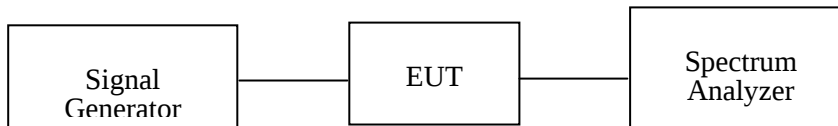
FCC §2.1049, §22.917, §22.905 - OCCUPIED BANDWIDTH**Applicable Standards**

FCC§2.1049, §22.917, §22.905.

Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at least 1% of the bandwidth (Cellular /PCS) and the 26 dB & 99% bandwidth were recorded.

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2011-11-11	2012-11-10
Rohde & Schwarz	Signal Analyzer	FSIQ 26	609358	2011-07-08	2012-07-07
Agilent	ESG-D Series Signal Generator	E4432B	GB40051703	2011-10-28	2012-10-27

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Felix Li on 2011-11-16 to 2011-12-03.

GSM**Input signal**

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Uplink (824-849MHz)			
Middle Channel	836.6	0.2440	0.3120
Downlink (869-894MHz)			
Middle Channel	881.6	0.2420	0.3140

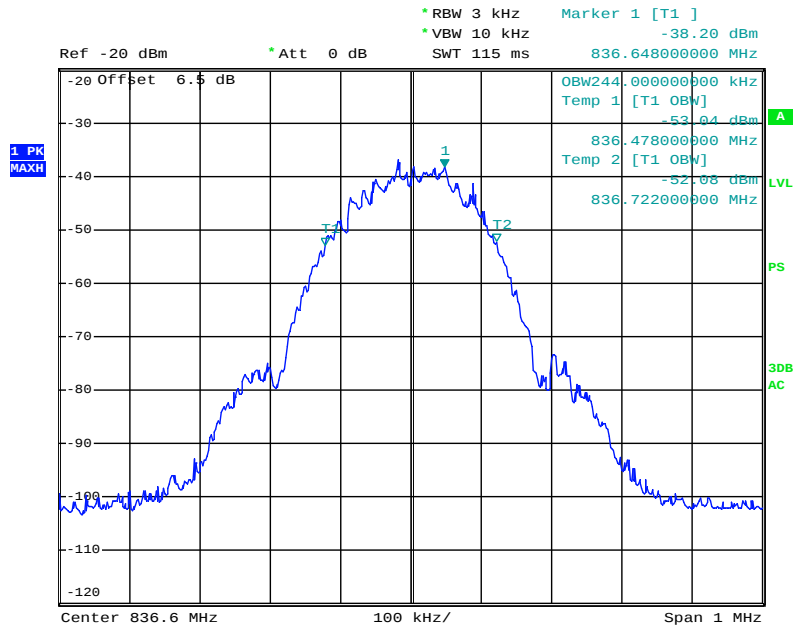
Output signal

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Uplink (824-849MHz)			
Middle Channel	836.6	0.2440	0.3160
Downlink (869-894MHz)			
Middle Channel	881.6	0.2440	0.3160

Please refer to the following plots

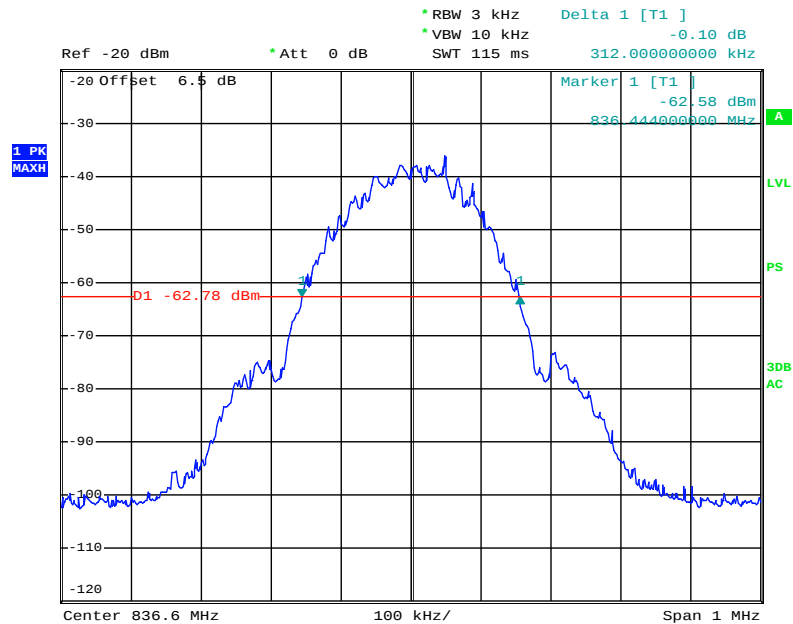
Uplink mode:

Input Signal, 99% Occupied Bandwidth, Middle Channel



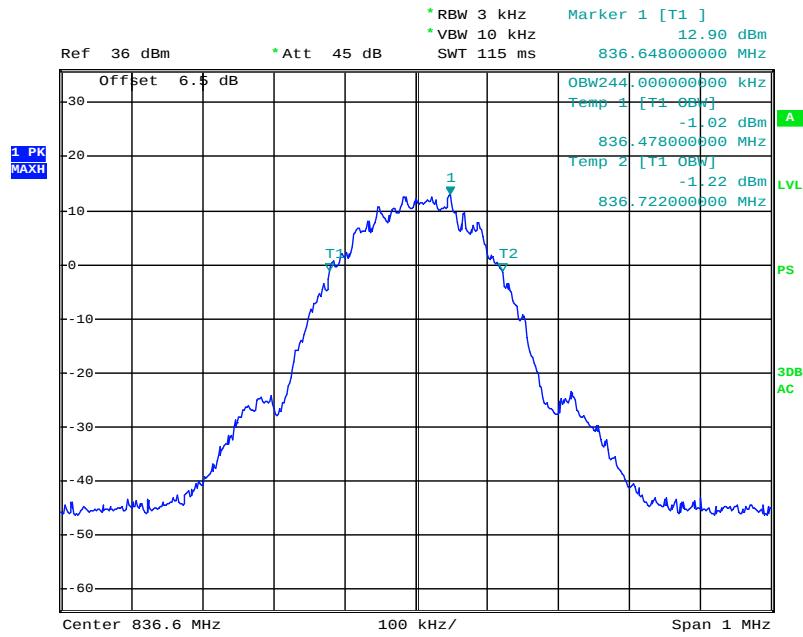
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Input Signal, 26 dB Occupied Bandwidth, Middle Channel



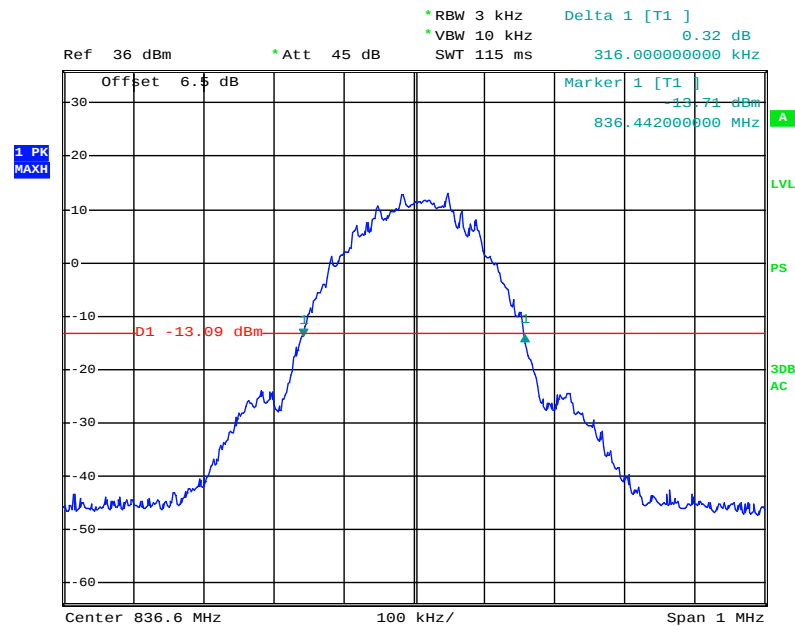
Date: 16.NOV.2011 16:01:25

Output Signal, 99% Occupied Bandwidth, Middle Channel



Date: 28.NOV.2011 09:30:14

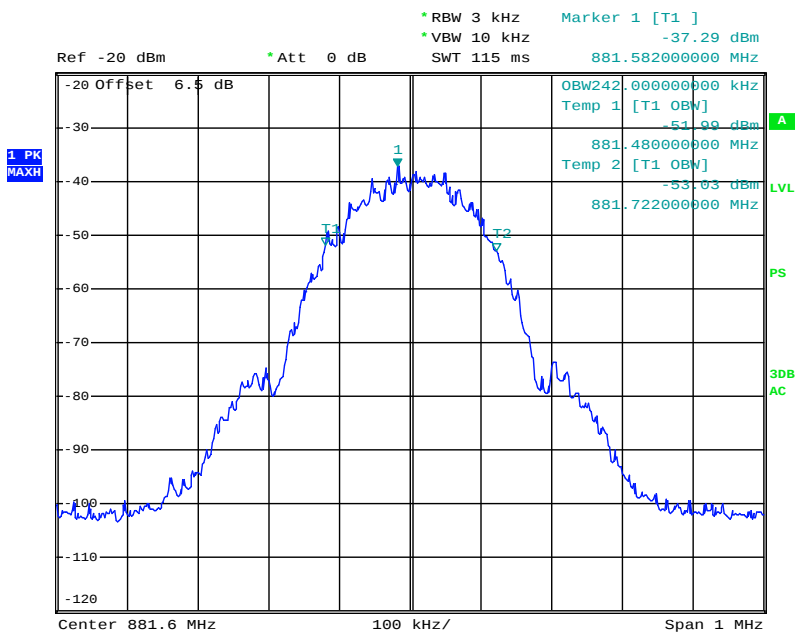
Output Signal, 26 dB Occupied Bandwidth, Middle Channel



Date: 28.NOV.2011 09:25:52

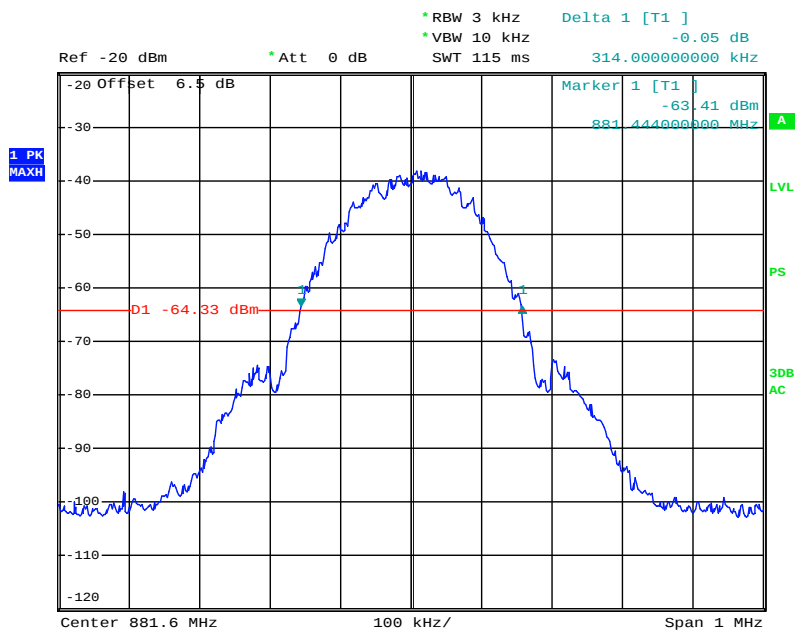
Downlink mode:

Input Signal, 99% Occupied Bandwidth, Middle Channel



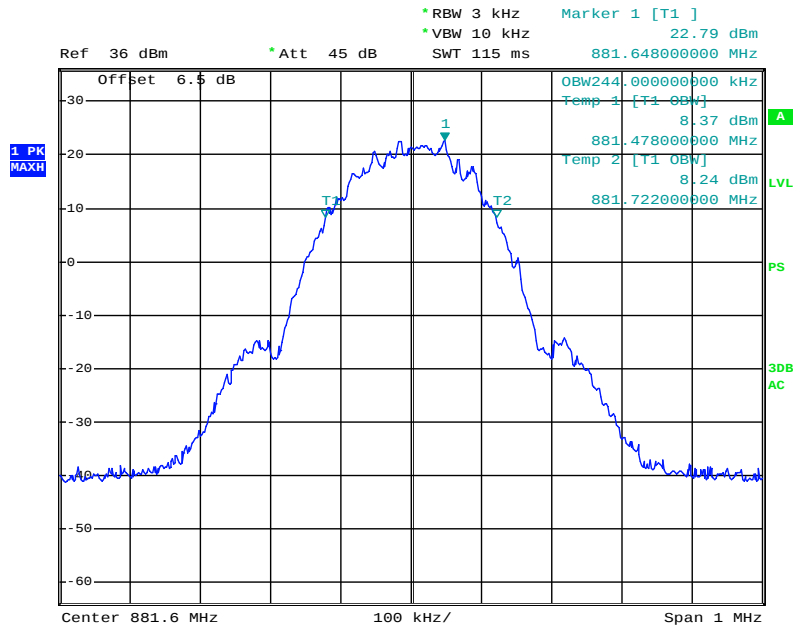
Date: 16.NOV.2011 16:15:32

Input Signal, 26 dB Occupied Bandwidth, Middle Channel



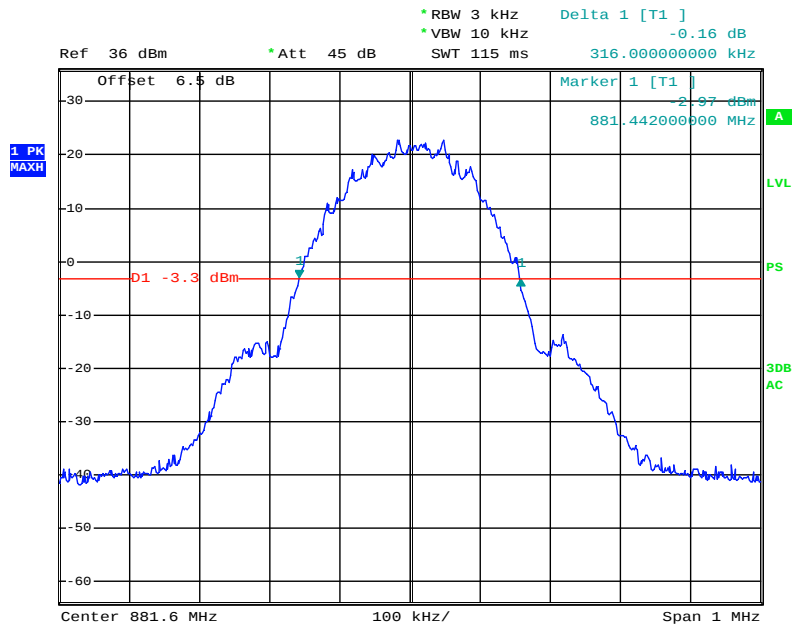
Date: 16.NOV.2011 16:20:27

Output Signal, 99% Occupied Bandwidth, Middle Channel



Date: 28.NOV.2011 09:03:33

Output Signal, 26 dB Occupied Bandwidth, Middle Channel



Date: 28.NOV.2011 09:07:15

EDGE**Input signal**

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Uplink (824-849MHz)			
Middle Channel	836.6	0.2480	0.3160
Downlink (869-894MHz)			
Middle Channel	881.6	0.2480	0.320

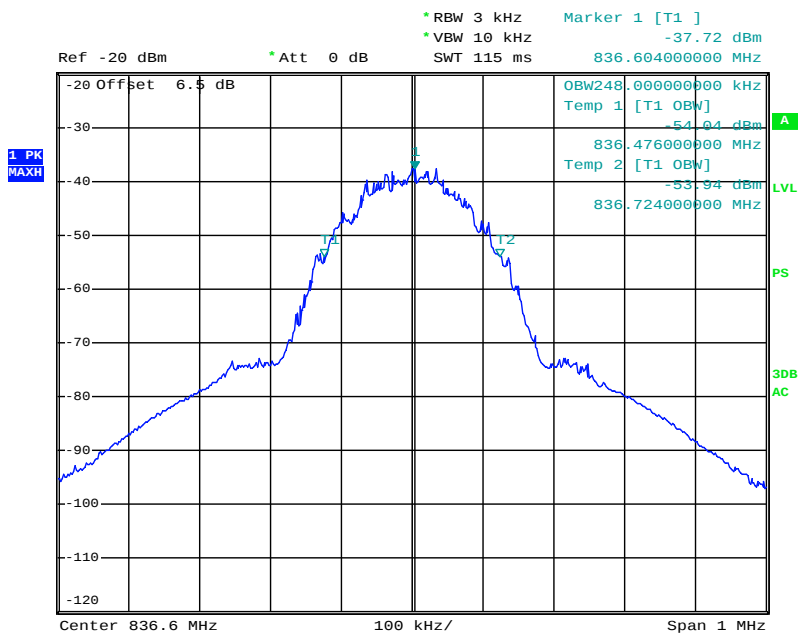
Output signal

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Uplink (824-849MHz)			
Middle Channel	836.6	0.2480	0.3200
Downlink (869-894MHz)			
Middle Channel	881.6	0.2440	0.310

Please refer to the following plots

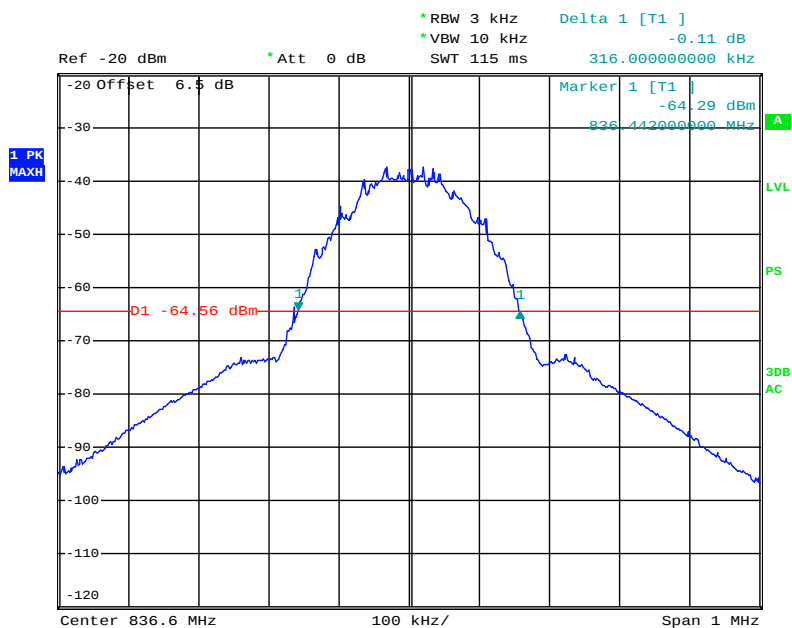
Uplink mode:

Input Signal, 99% Occupied Bandwidth, Middle Channel

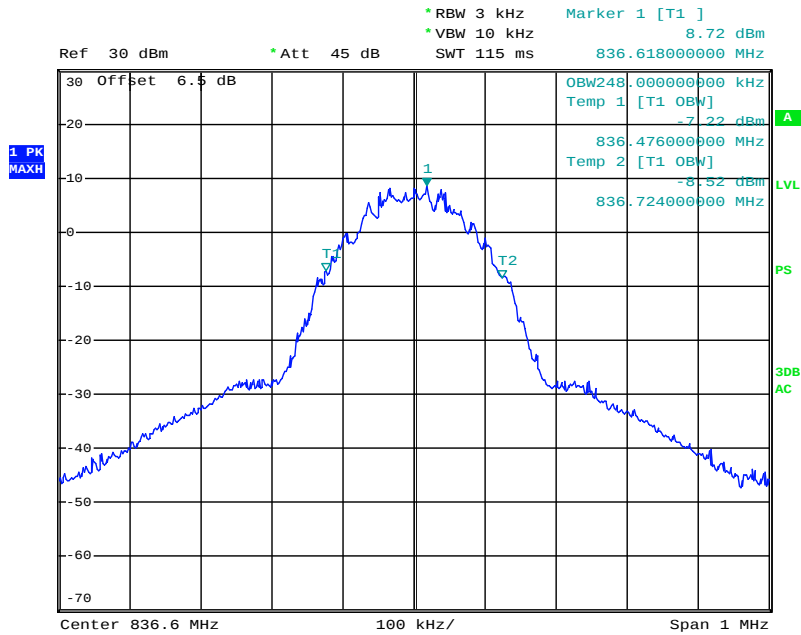


Date: 28.NOV.2011 13:32:43

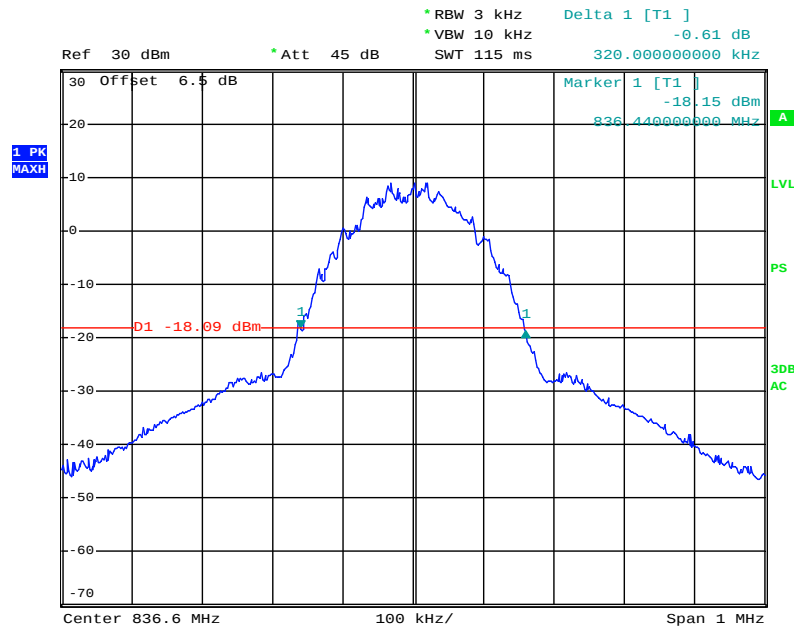
Input Signal, 26 dB Occupied Bandwidth, Middle Channel



Date: 28.NOV.2011 14:05:05

Output Signal, 99% Occupied Bandwidth, Middle Channel

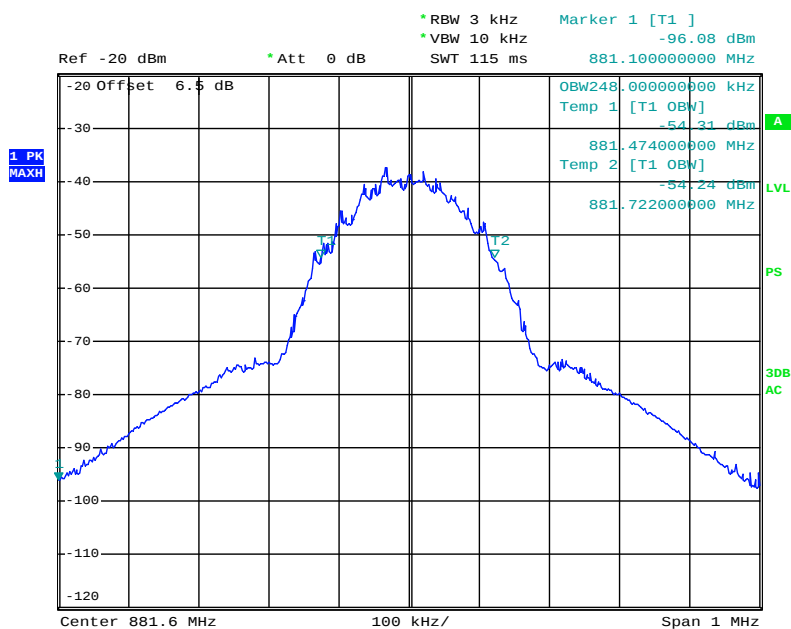
Date: 28.NOV.2011 11:52:22

Output Signal, 26 dB Occupied Bandwidth, Middle Channel

Date: 28.NOV.2011 11:51:05

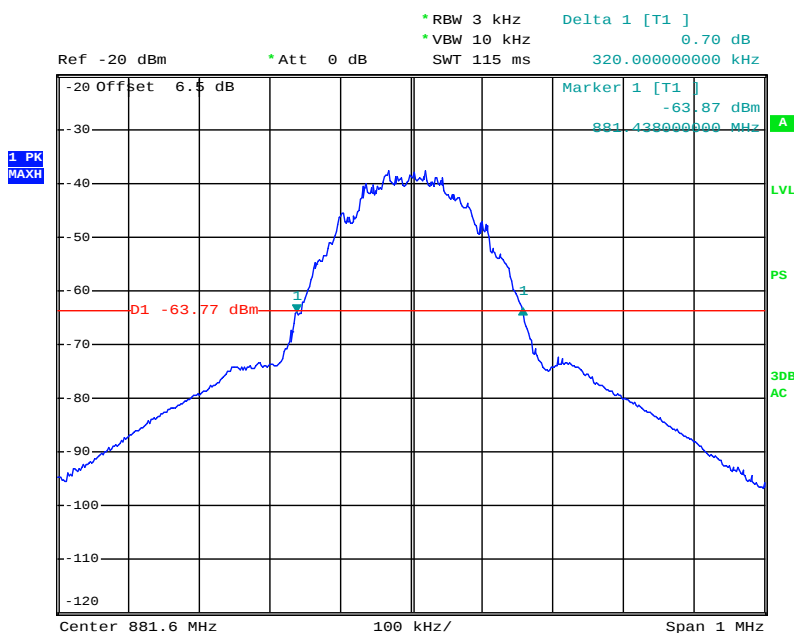
Downlink mode:

Input Signal, 99% Occupied Bandwidth, Middle Channel

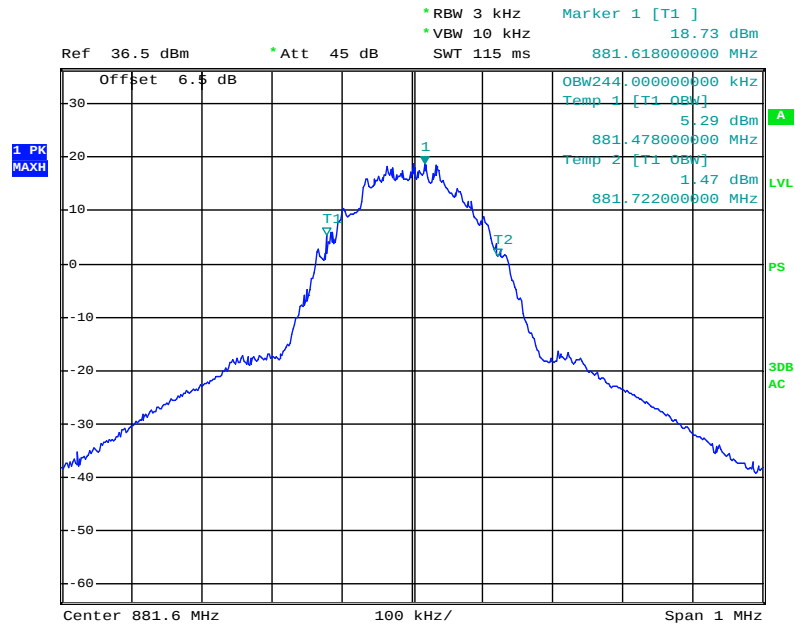


Date: 28.NOV.2011 13:43:14

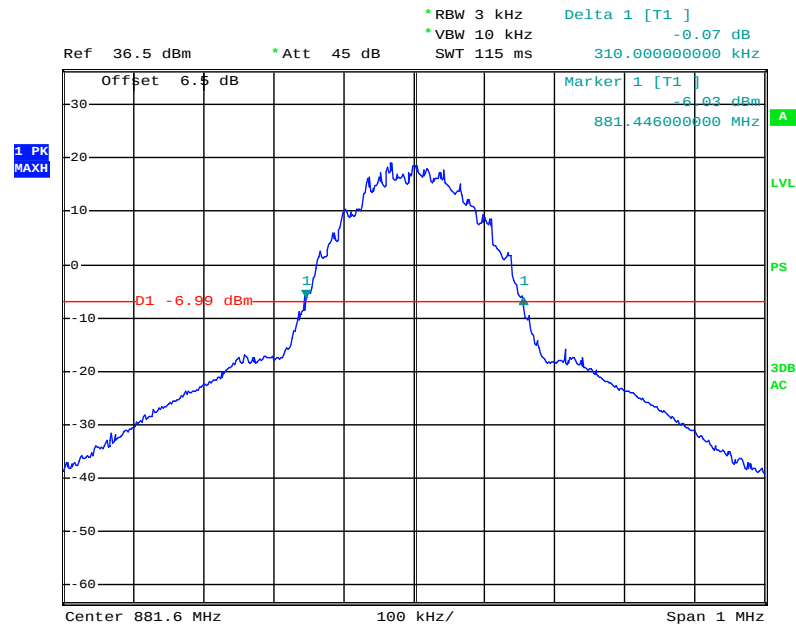
Input Signal, 26 dB Occupied Bandwidth, Middle Channel



Date: 28.NOV.2011 13:50:08

Output Signal, 99% Occupied Bandwidth, Middle Channel

Date: 28.NOV.2011 12:38:03

Output Signal, 26 dB Occupied Bandwidth, Middle Channel

Date: 28.NOV.2011 12:36:38

CDMA Cellular Band**Input signal**

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Uplink (824-849MHz)			
Middle Channel	836.52	1.2660	1.4280
Downlink (869-894MHz)			
Middle Channel	881.52	1.2660	1.4340

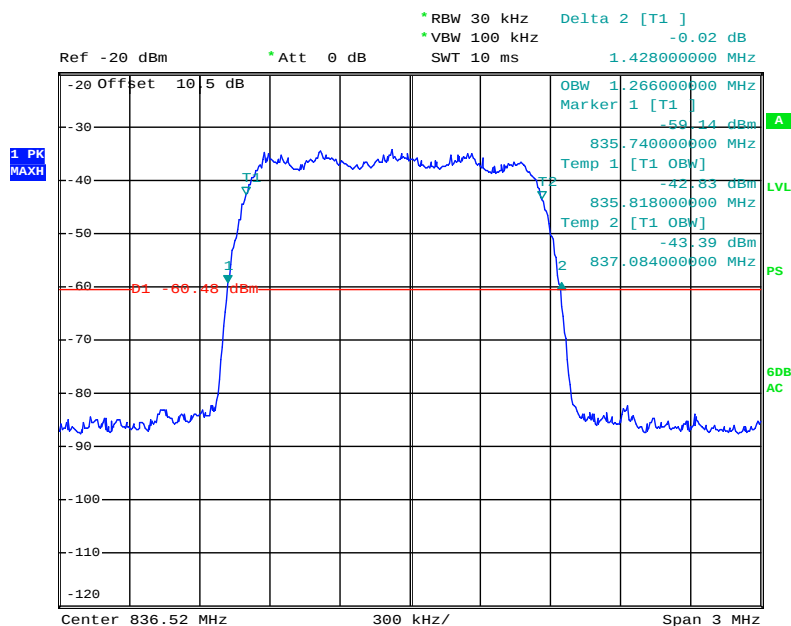
Output signal

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Uplink (824-849MHz)			
Middle Channel	836.52	1.2720	1.4340
Downlink (869-894MHz)			
Middle Channel	881.52	1.2660	1.4340

Please refer to the following plots.

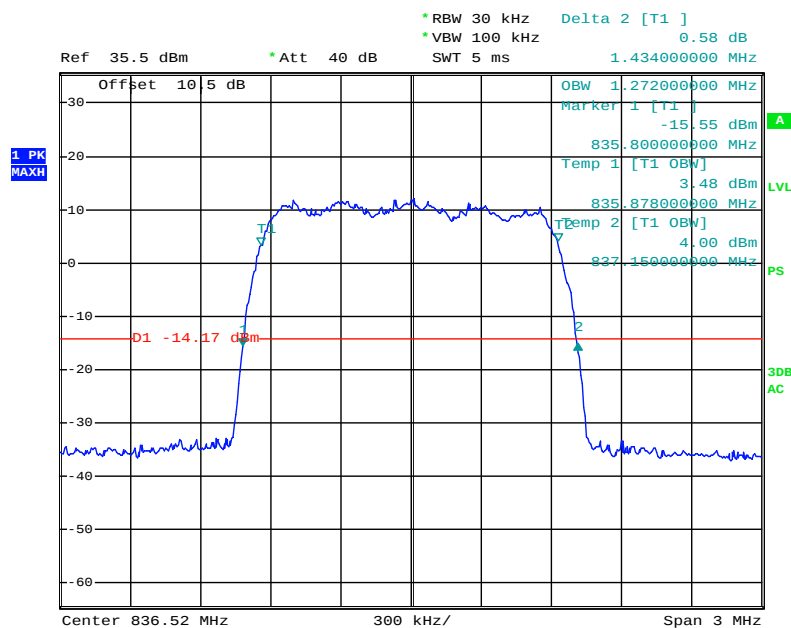
Uplink mode:

Input Signal, 99% &26 dB Occupied Bandwidth, Middle Channel



Date: 3.DEC.2011 14:12:07

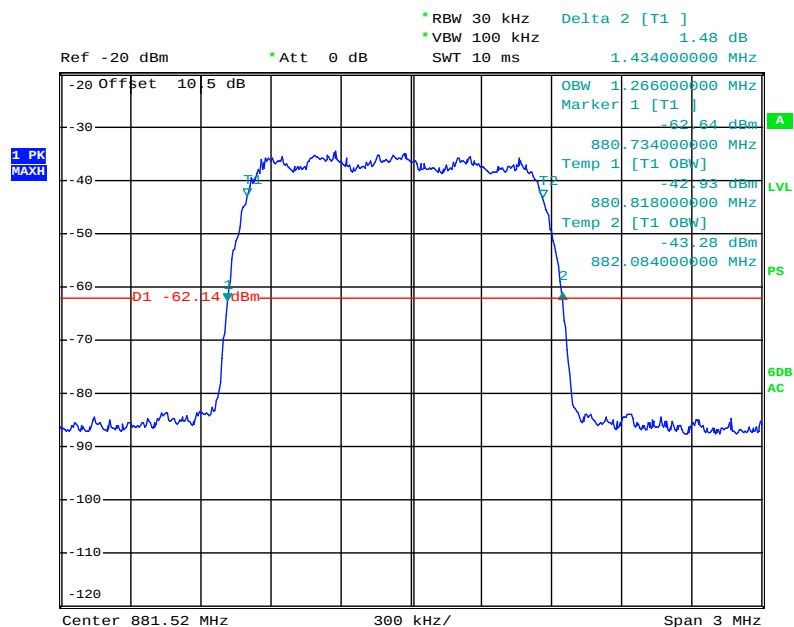
Output Signal, 99% &26 dB Occupied Bandwidth, Middle Channel



Date: 3.DEC.2011 10:32:19

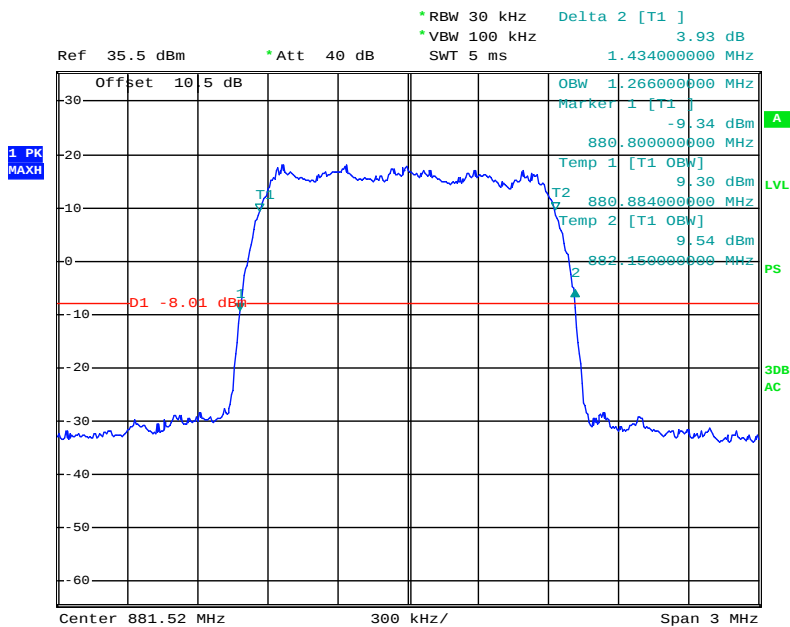
Downlink mode:

Input Signal, 99% &26 dB Occupied Bandwidth, Middle Channel



Date: 3.DEC.2011 14:05:21

Output Signal, 99% &26 dB Occupied Bandwidth, Middle Channel



Date: 3.DEC.2011 10:18:34

WCDMA**Input signal**

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Uplink (824-849MHz)			
Middle Channel	836.6	4.2200	4.7400
Downlink (869-894MHz)			
Middle Channel	881.6	4.2000	4.7400

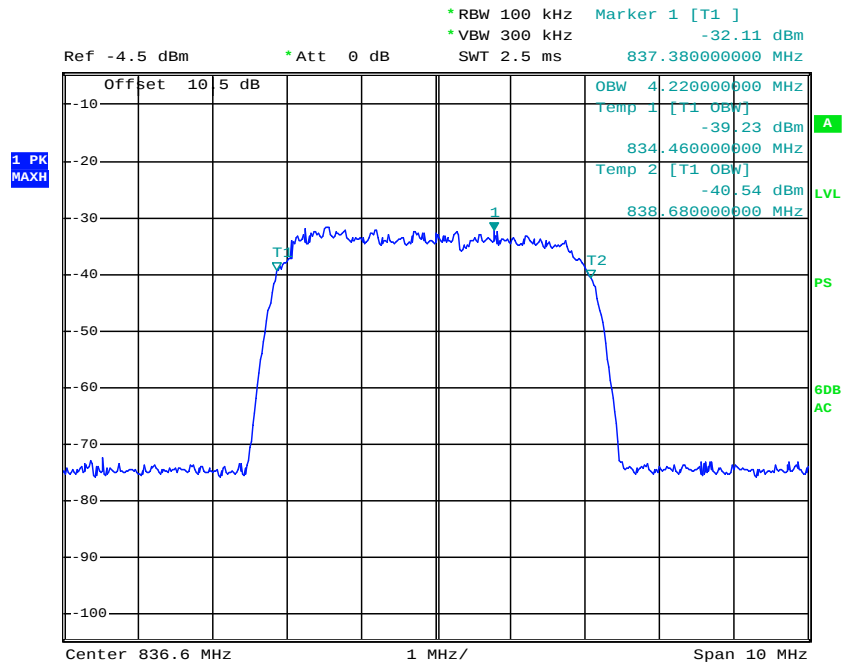
Output signal

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Uplink (824-849MHz)			
Middle Channel	836.6	4.2200	4.7200
Downlink (869-894MHz)			
Middle Channel	881.6	4.2000	4.7400

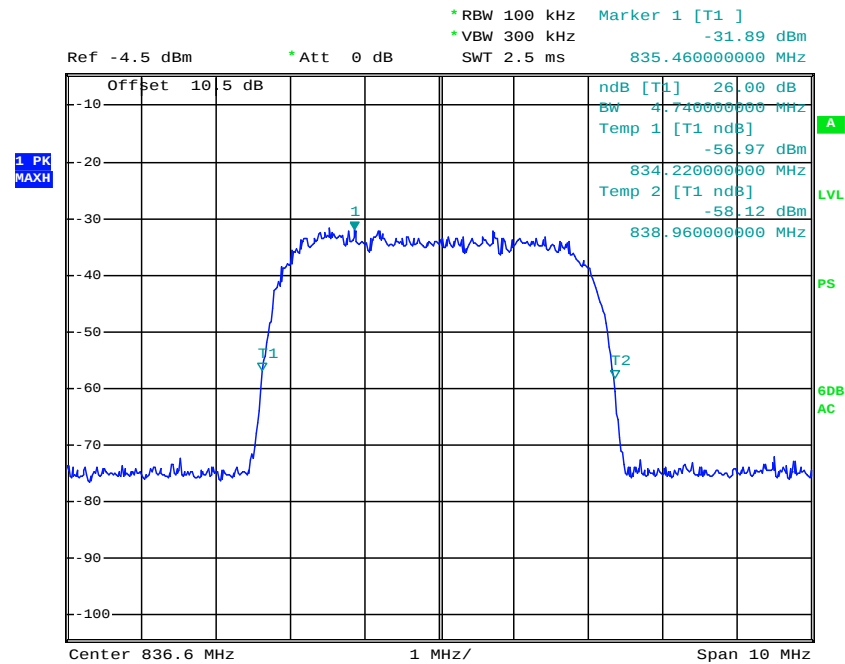
Please refer to the following plots

Uplink mode:

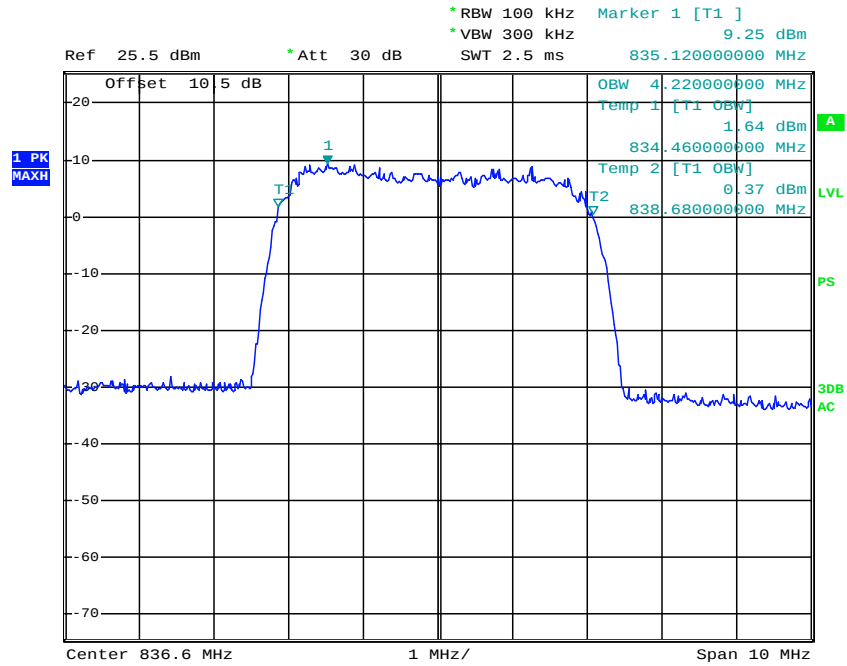
Input Signal, 99% Occupied Bandwidth, Middle Channel



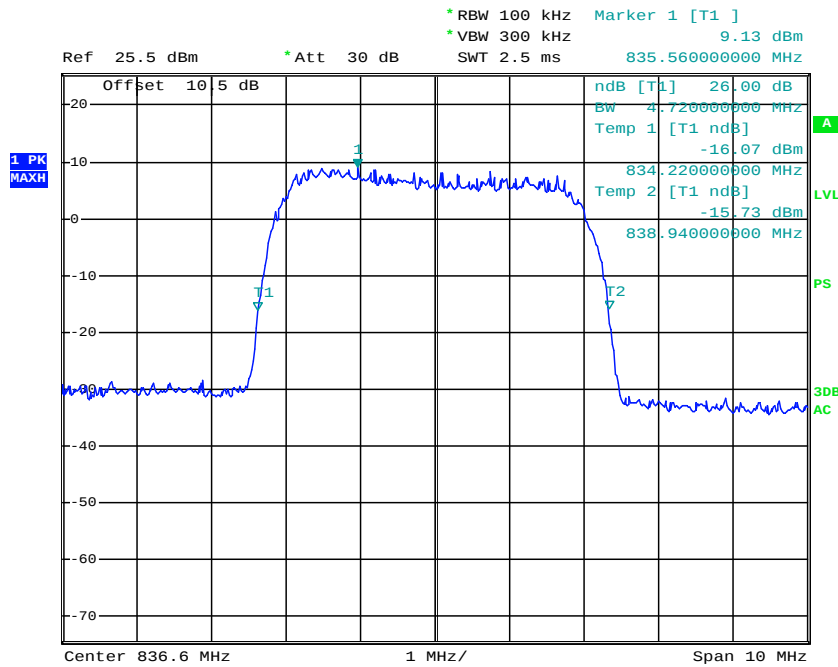
Input Signal, 26 dB Occupied Bandwidth, Middle Channel



Output Signal, 99% Occupied Bandwidth, Middle Channel

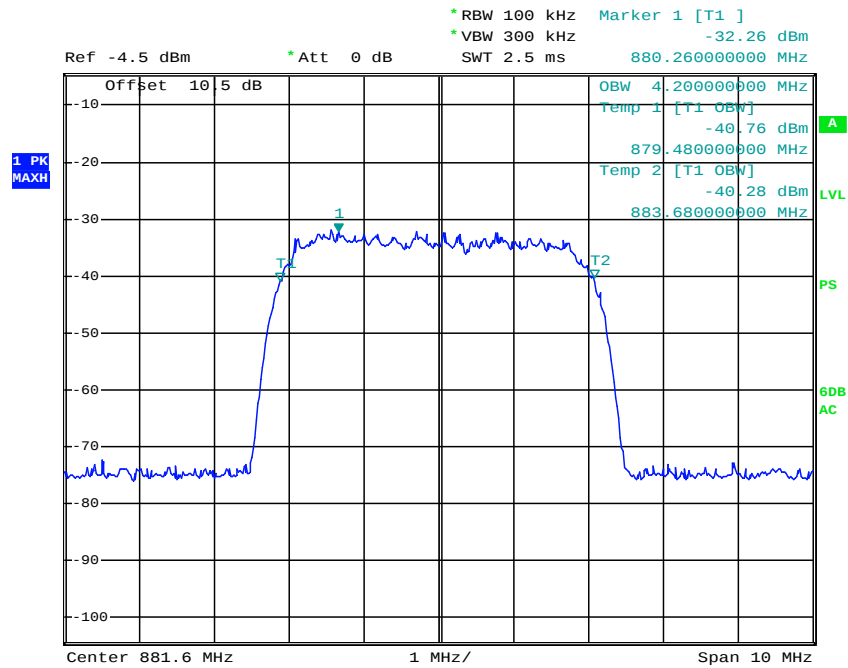


Output Signal, 26 dB Occupied Bandwidth, Middle Channel

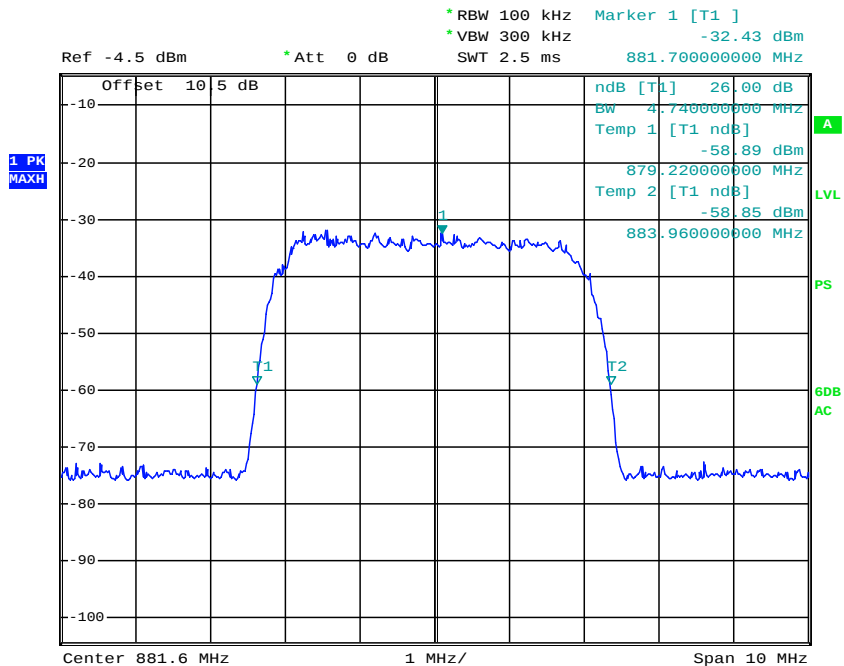


Downlink mode:

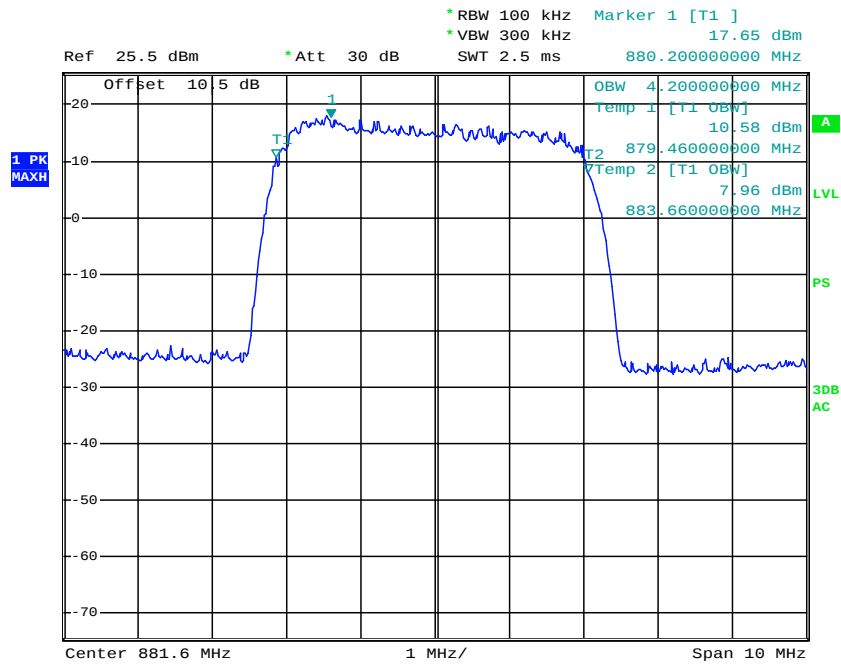
Input Signal, 99% Occupied Bandwidth, Middle Channel



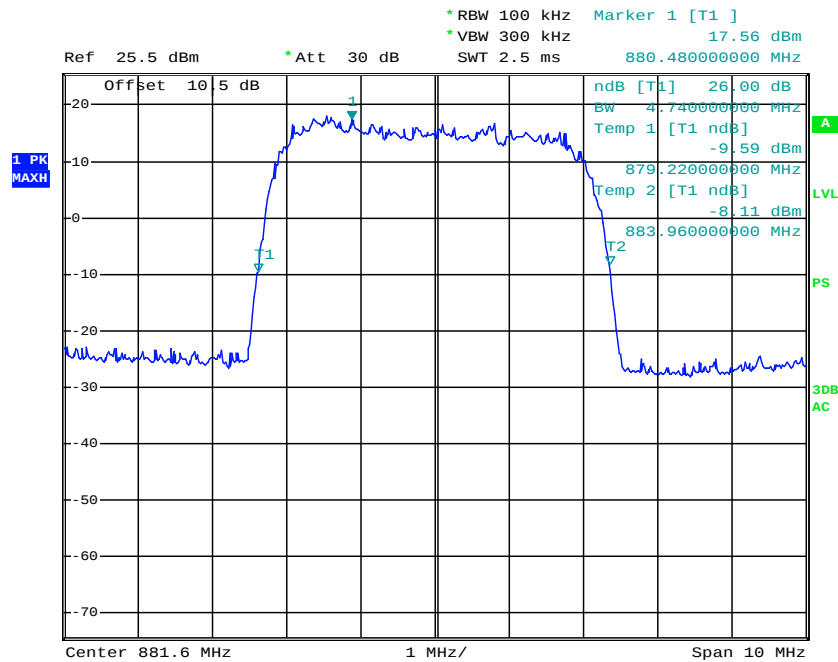
Input Signal, 26 dB Occupied Bandwidth, Middle Channel



Output Signal, 99% Occupied Bandwidth, Middle Channel



Output Signal, 26 dB Occupied Bandwidth, Middle Channel



FCC §2.1051, §22.917(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standards

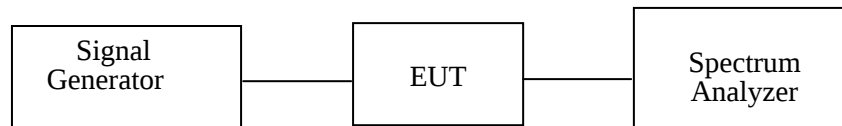
FCC§2.1051, §22.917(a).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

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 Procedure

The RF output of the EUT system was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at as following table. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ 26	609358	2011-07-08	2012-07-07
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2011-10-28	2012-10-27
Agilent	PSA Series Spectrum Analyzer	E4443A	MY45300749	2011-10-28	2012-10-27
Agilent	ESG-D Series Signal Generator	E4432B	GB40051703	2011-10-28	2012-10-27

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

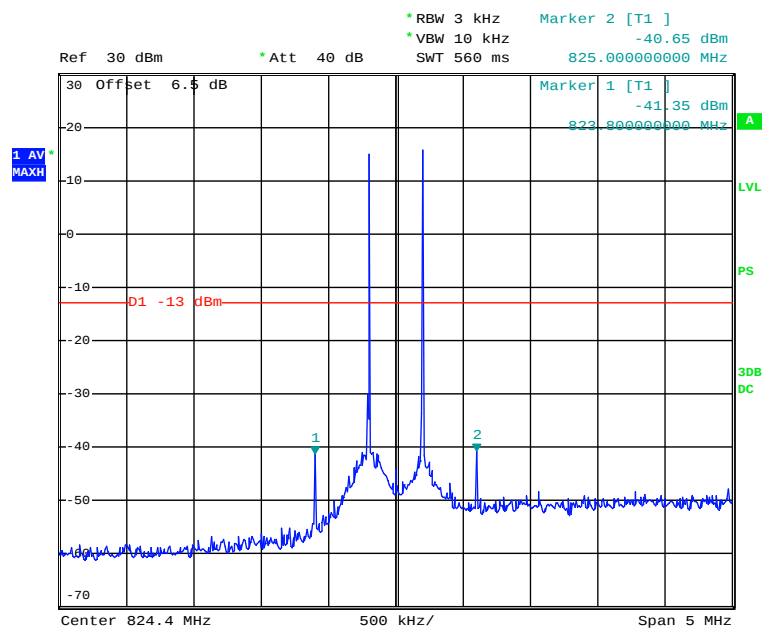
Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Felix Li on 2011-11-26 to 2012-01-17.

Please refer to the following plots.

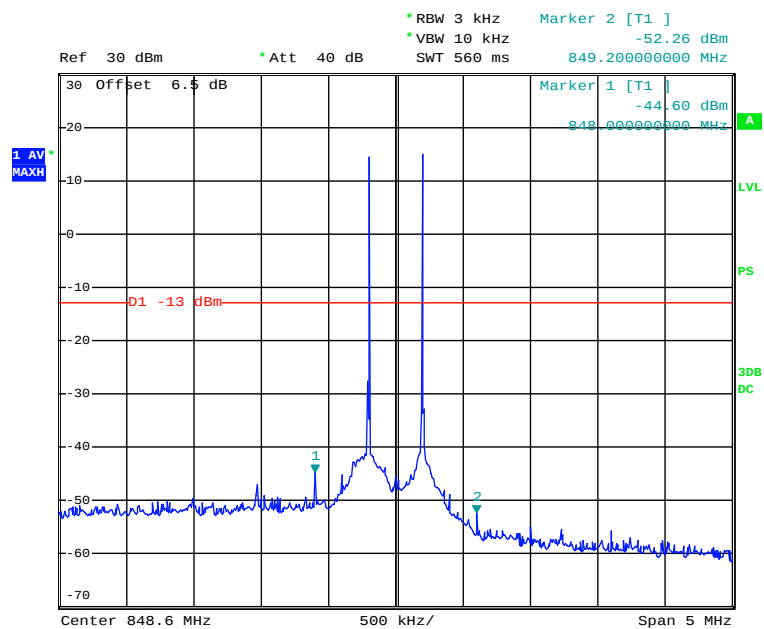
GSM Cellular Band (Part 22H)

Uplink, Inter-modulation, Low-band edge



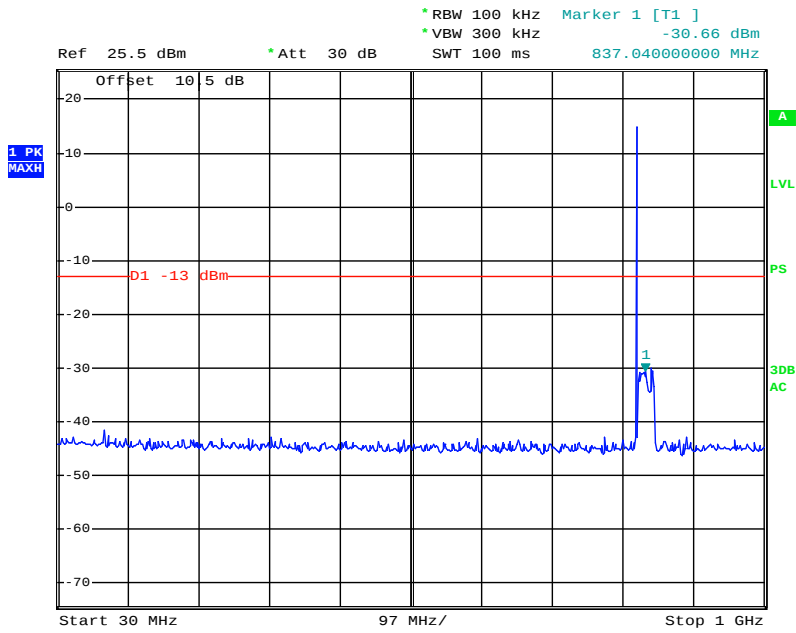
Date: 17.JAN.2012 18:27:06

Uplink, Inter-modulation, High -band edge

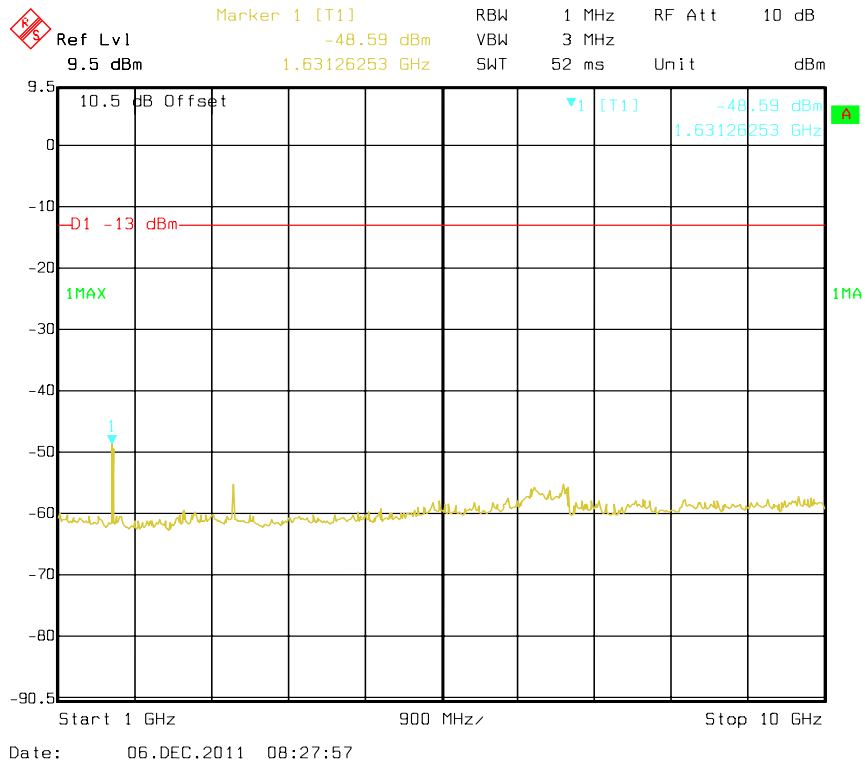


Date: 17.JAN.2012 18:29:13

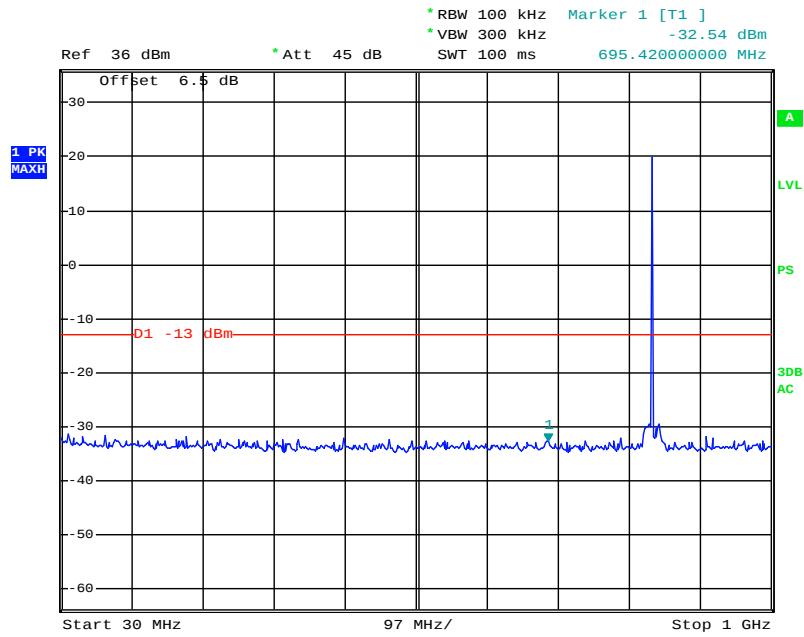
Uplink, Spurious Emissions at Antenna Terminal, Low Channel



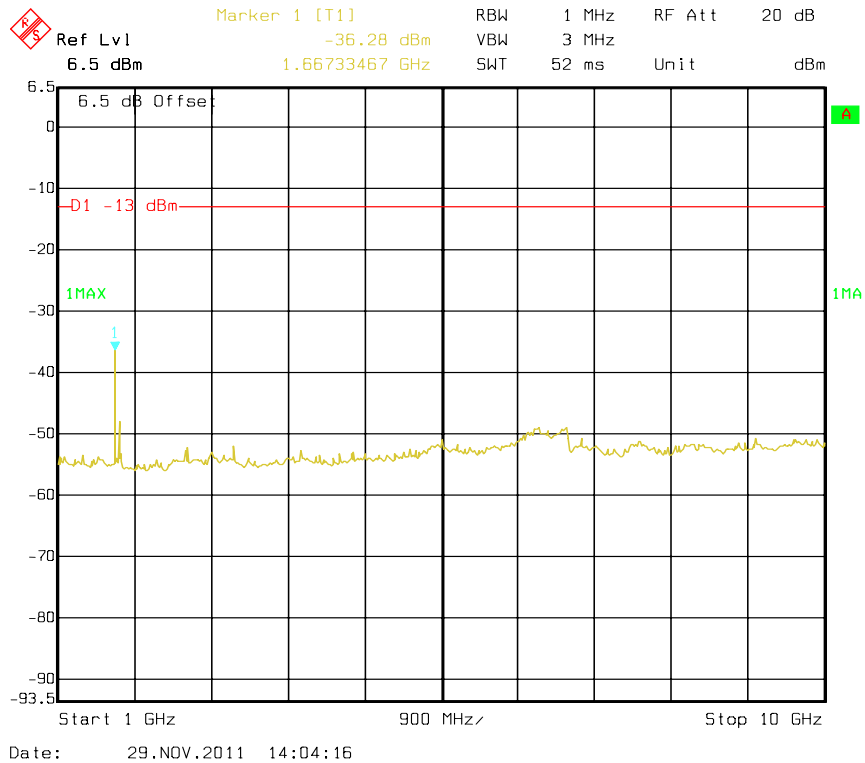
Date: 4.DEC.2011 16:24:13



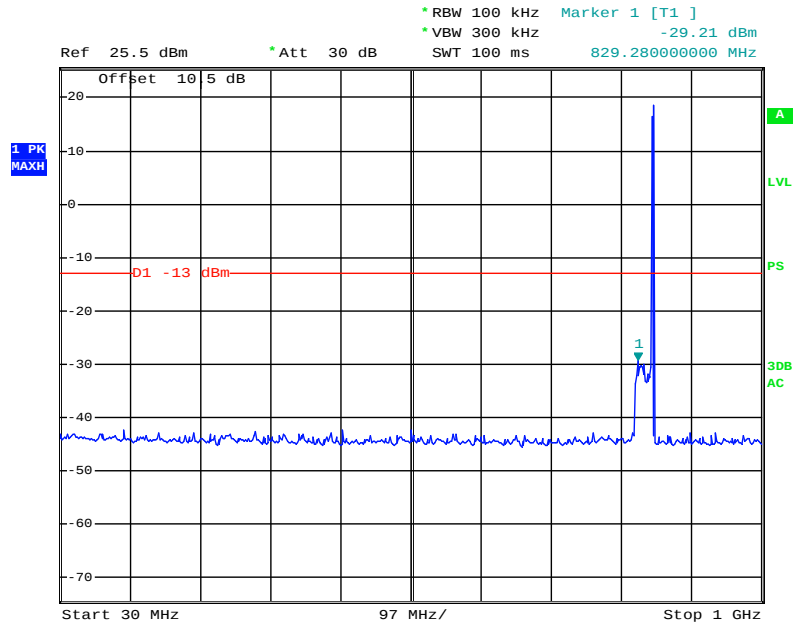
Uplink, Spurious Emissions at Antenna Terminal, Middle Channel



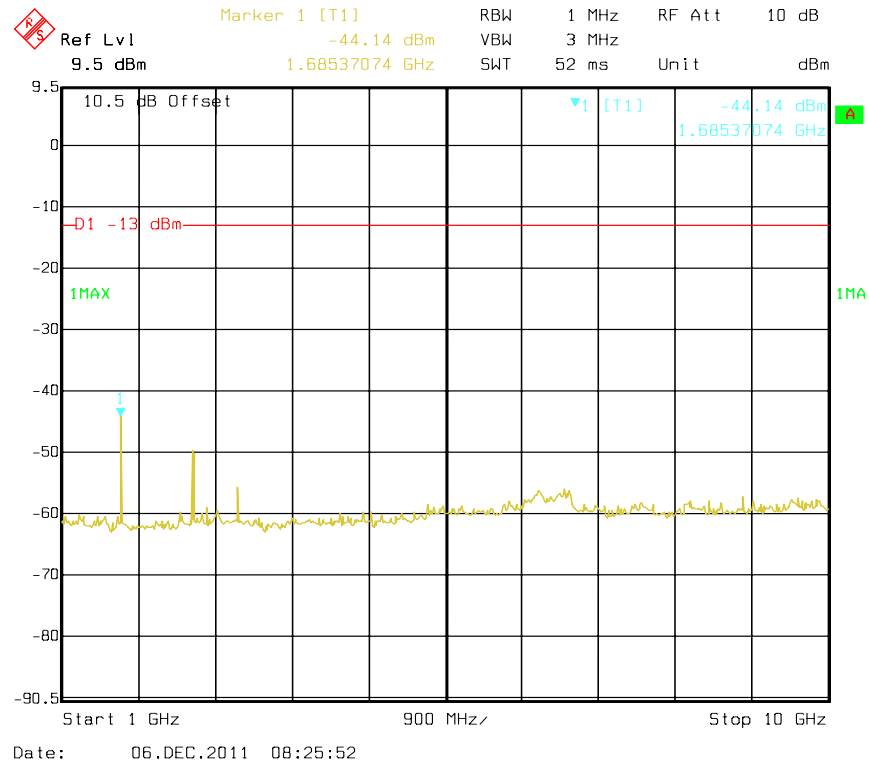
Date: 28.NOV.2011 09:41:45

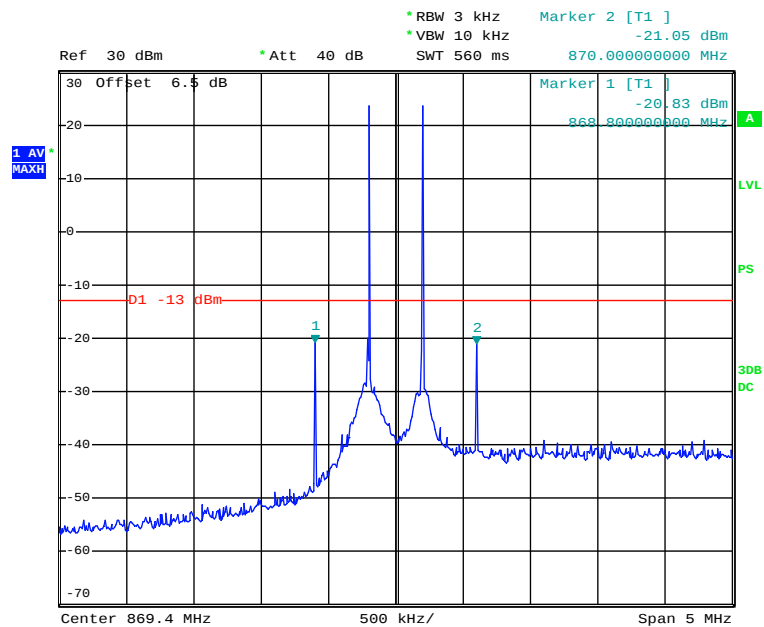


Uplink, Spurious Emissions at Antenna Terminal, High Channel

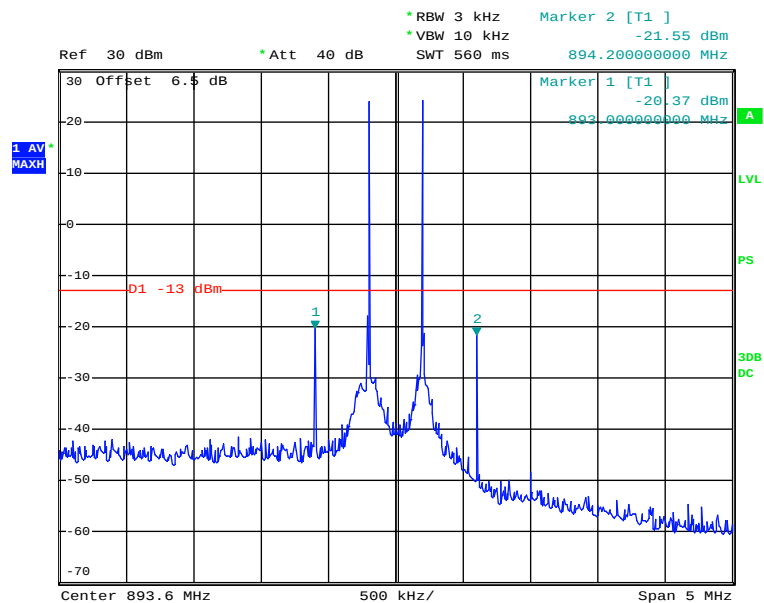


Date: 4.DEC.2011 16:25:39



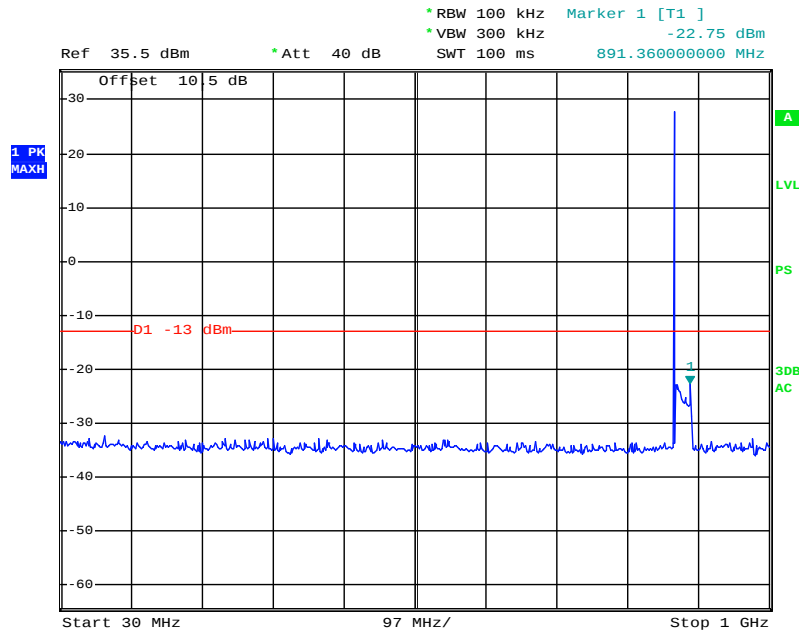
Downlink, Inter-modulation, Low-band edge

Date: 17.JAN.2012 18:34:02

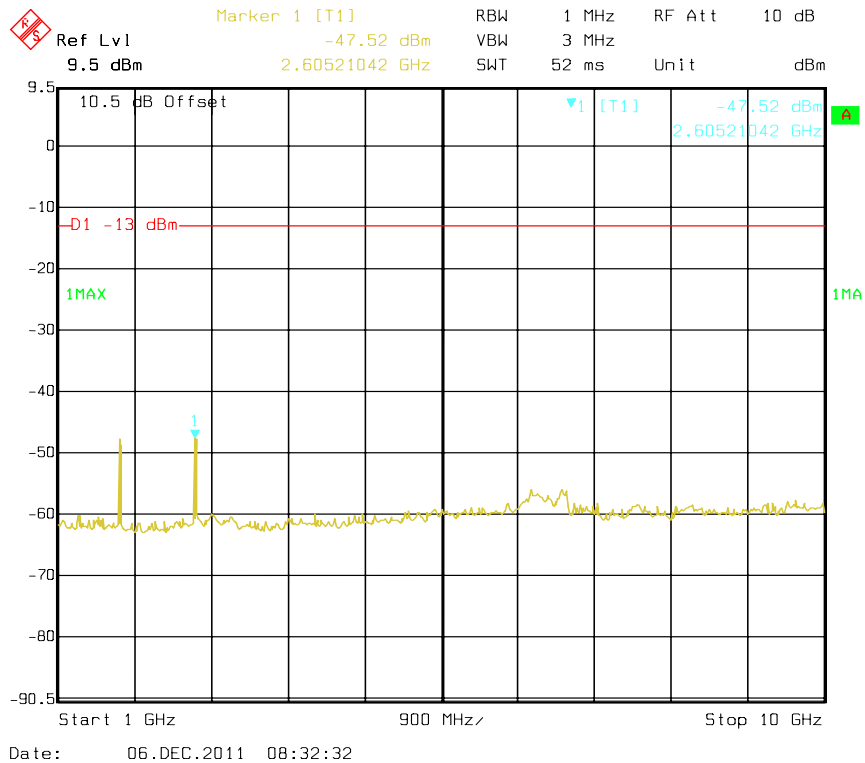
Downlink, Inter-modulation, High-band edge

Date: 17.JAN.2012 18:36:49

Downlink, Spurious Emissions at Antenna Terminal, Low Channel

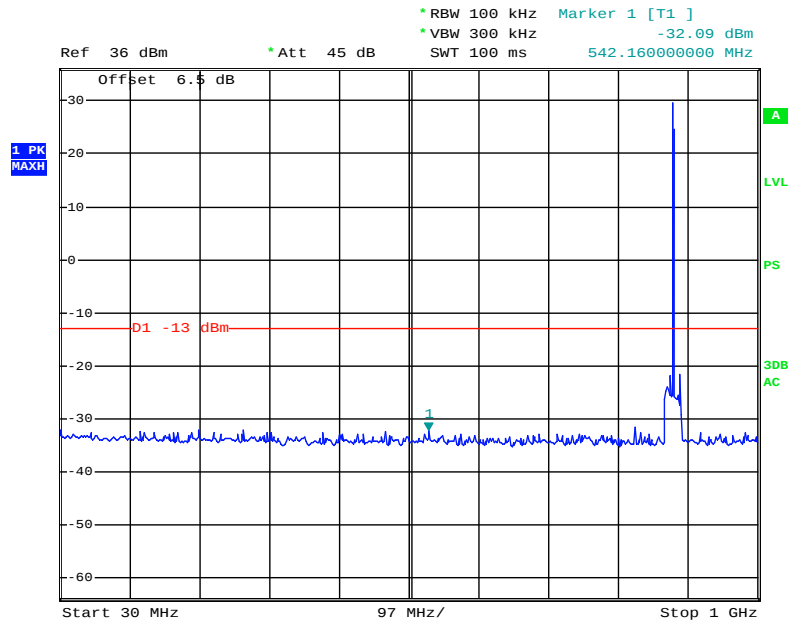


Date: 4.DEC.2011 16:28:42

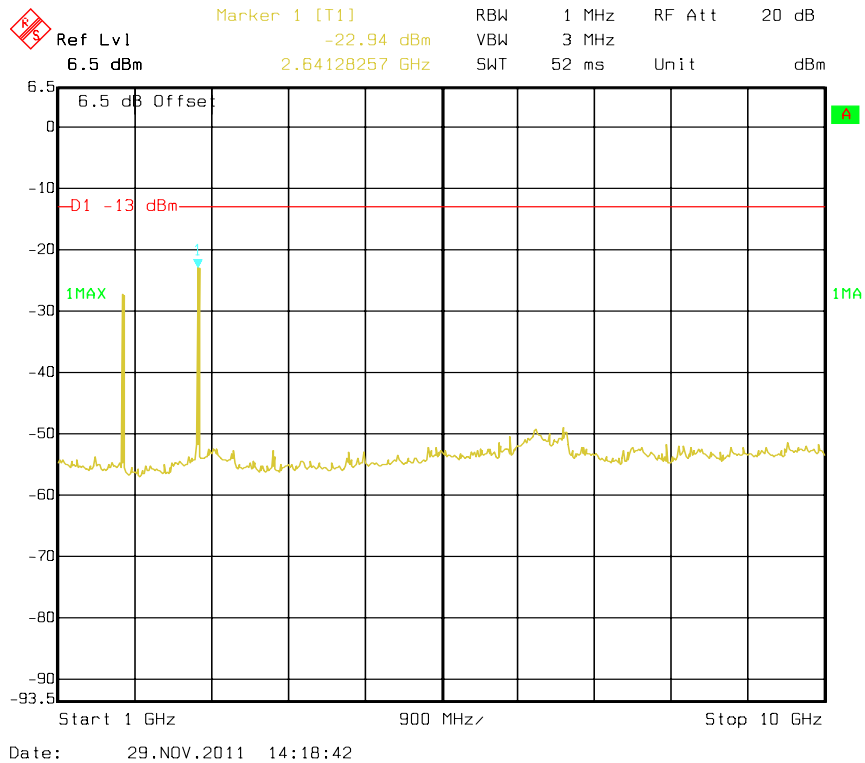


Date: 06.DEC.2011 08:32:32

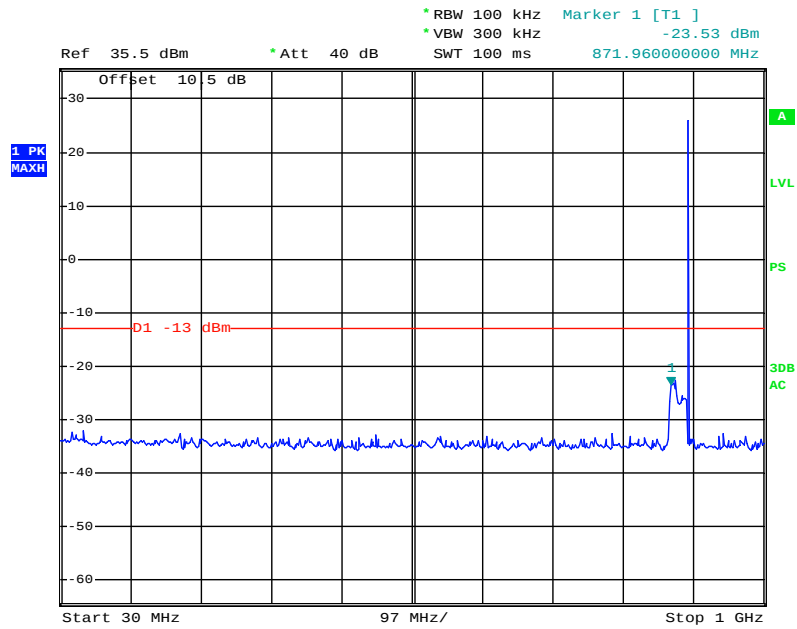
Downlink, Spurious Emissions at Antenna Terminal, Middle Channel



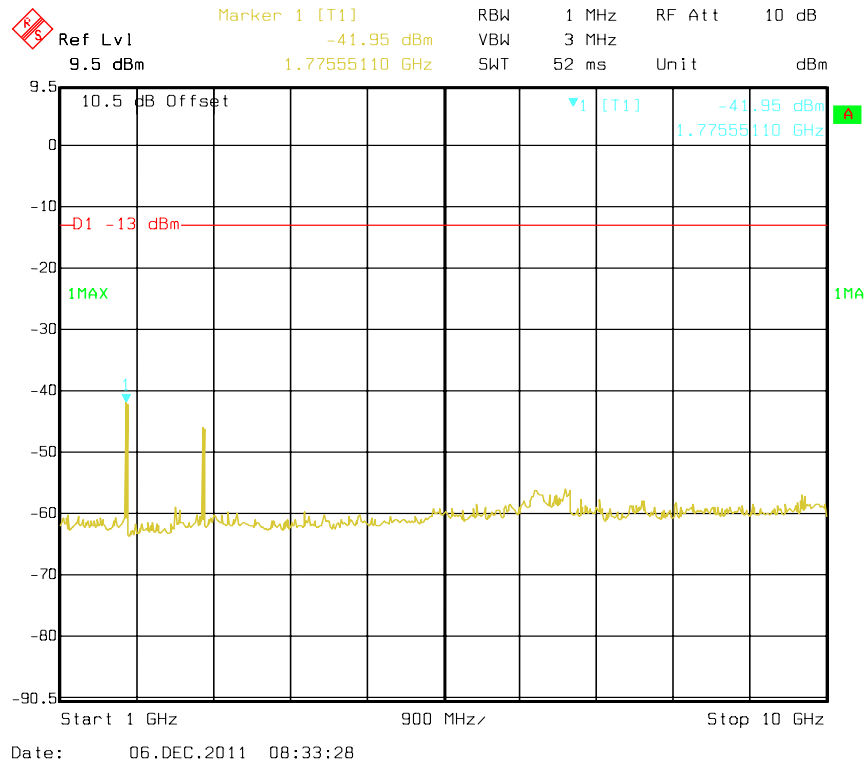
Date: 28.NOV.2011 09:44:54



Downlink, Spurious Emissions at Antenna Terminal, High Channel



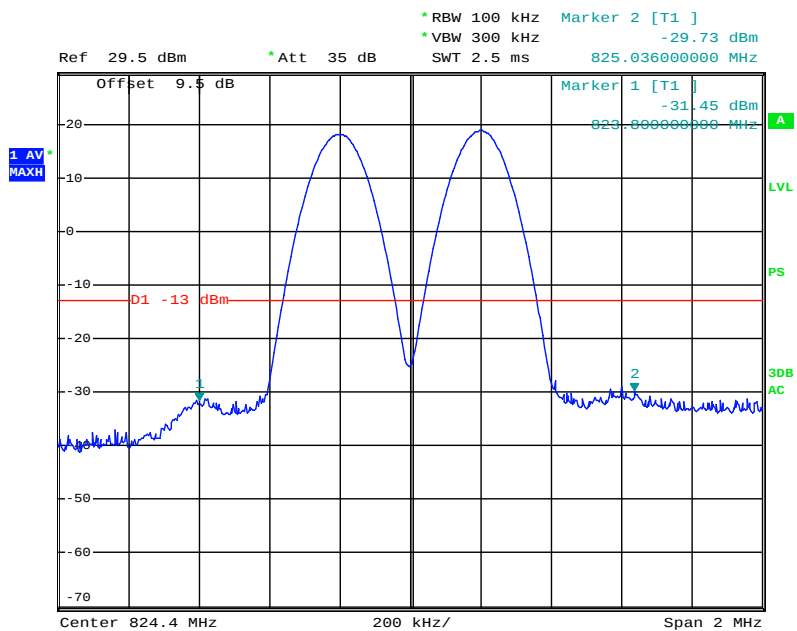
Date: 4.DEC.2011 16:29:28



Date: 06.DEC.2011 08:33:28

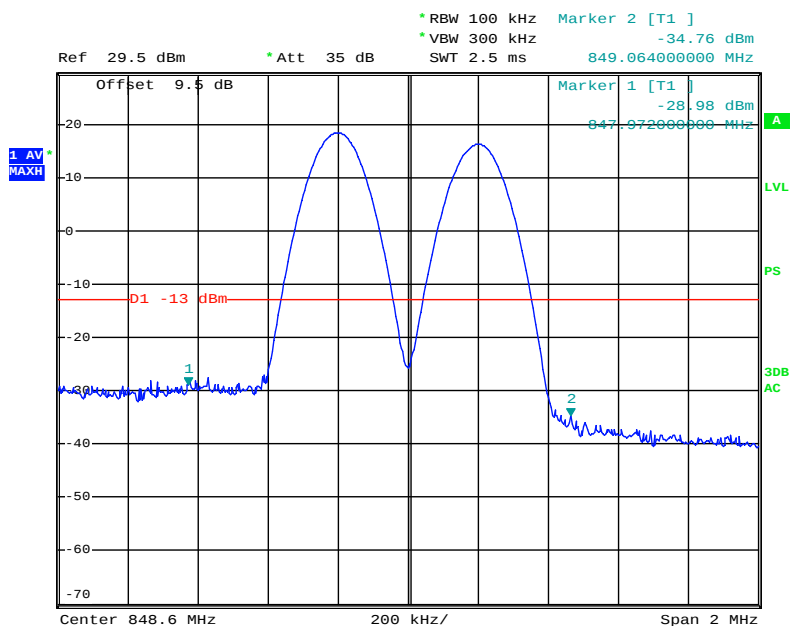
EDGE Cellular Band (Part 22H)

Uplink, Inter-modulation, Low-band edge



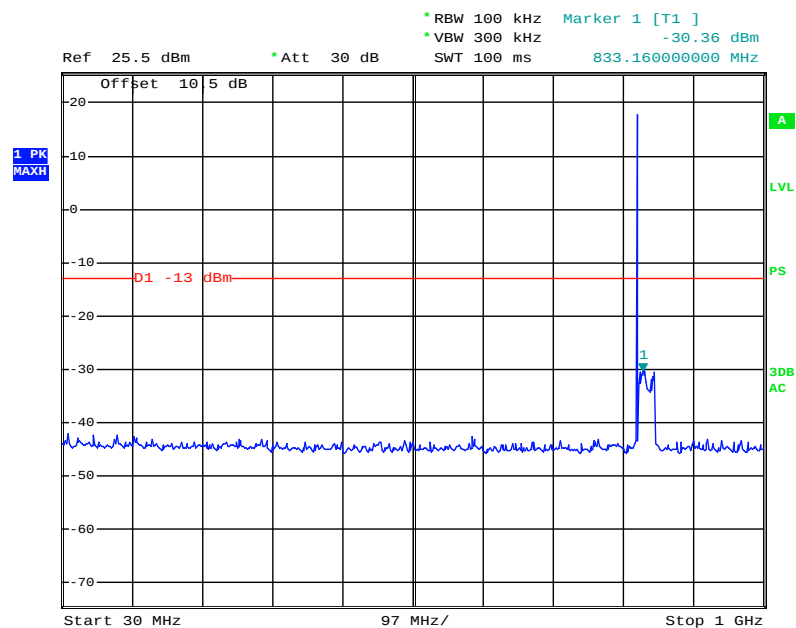
Date: 28.NOV.2011 15:38:02

Uplink, Inter-modulation, High-band edge

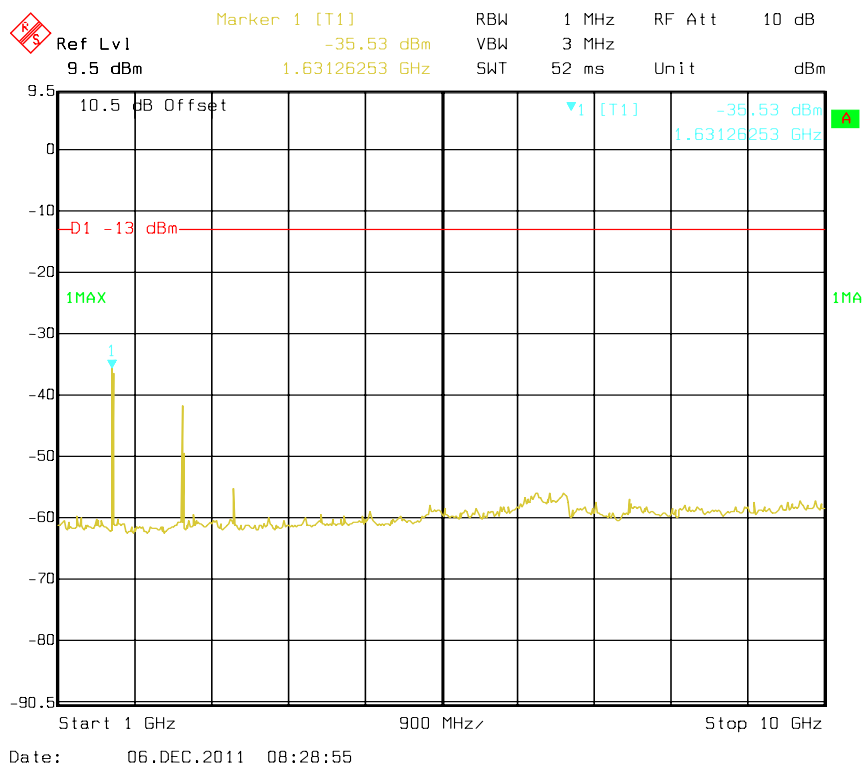


Date: 28.NOV.2011 15:36:37

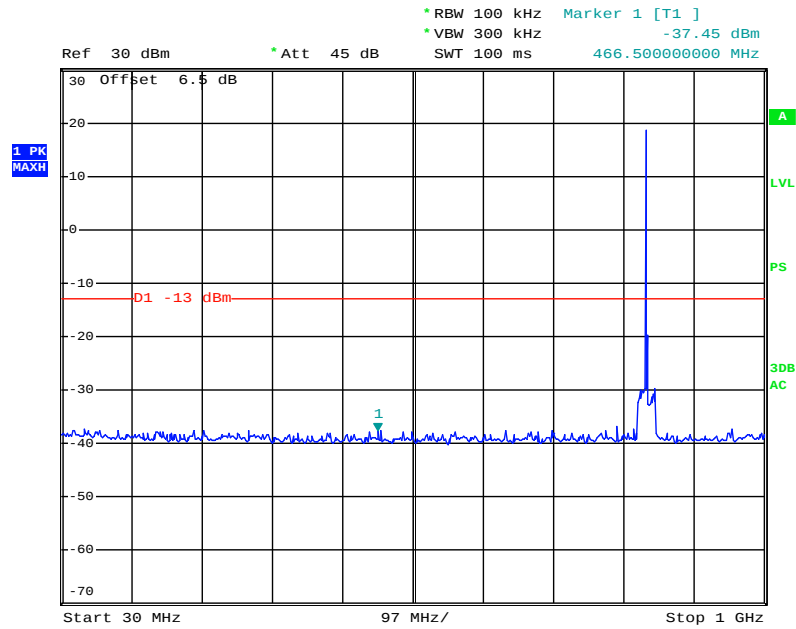
Uplink, Spurious Emissions at Antenna Terminal, Low Channel



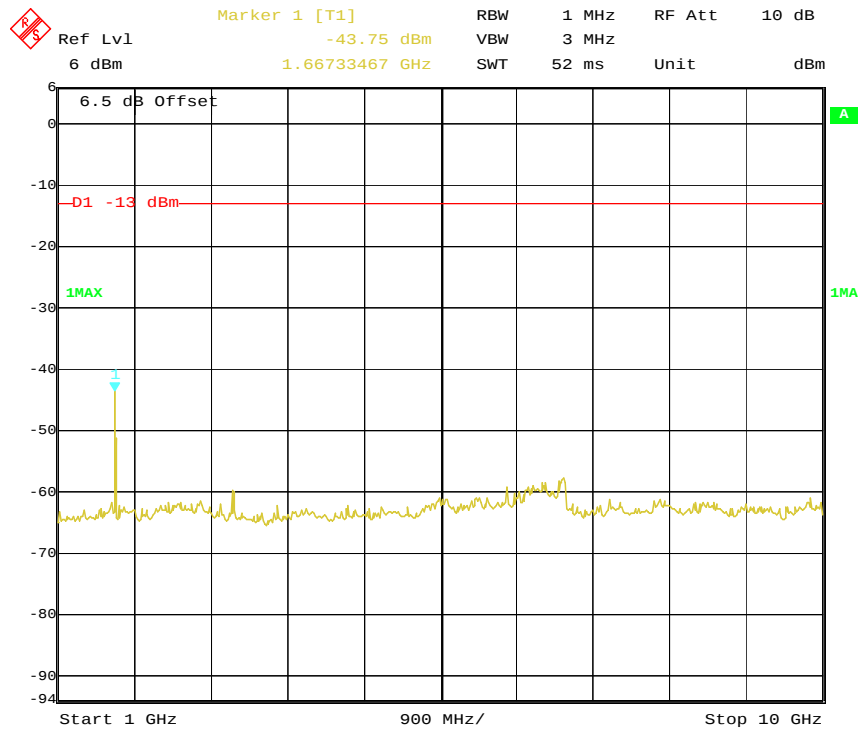
Date: 4.DEC.2011 16:22:56



Uplink, Spurious Emissions at Antenna Terminal, Middle Channel

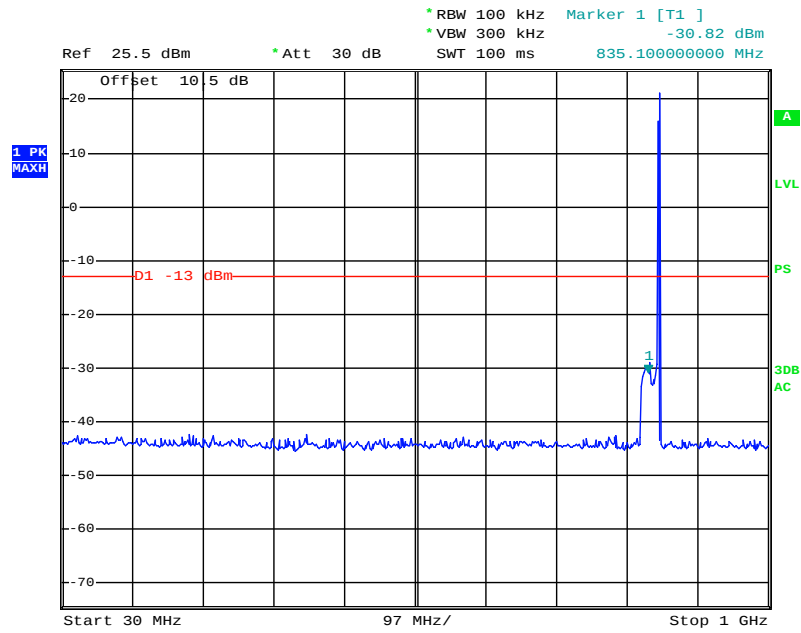


Date: 28.NOV.2011 12:03:37

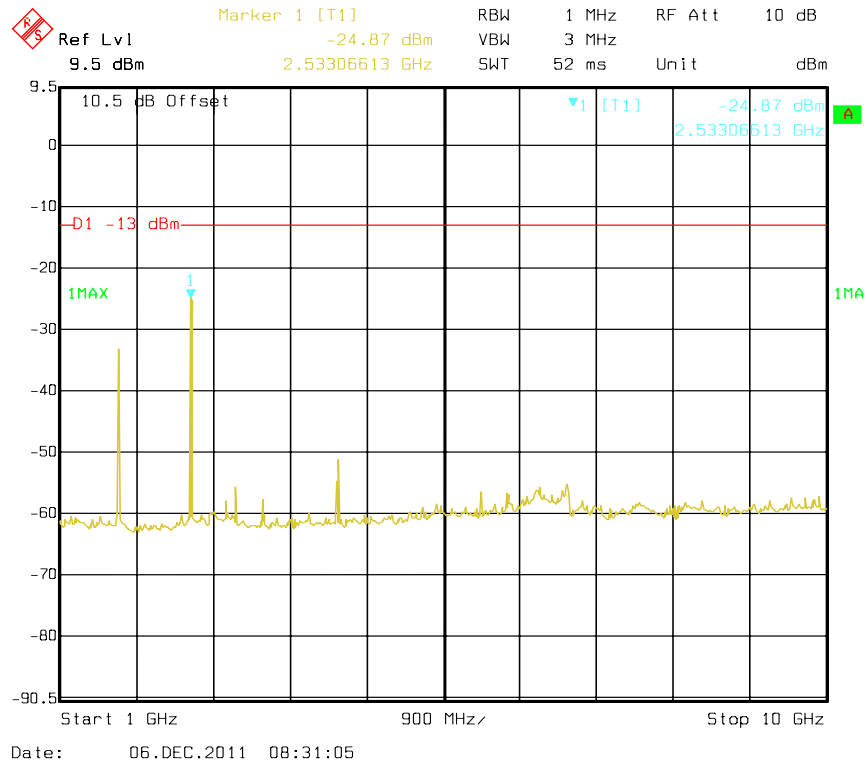


Date: 29.NOV.2011 17:45:29

Uplink, Spurious Emissions at Antenna Terminal, High Channel

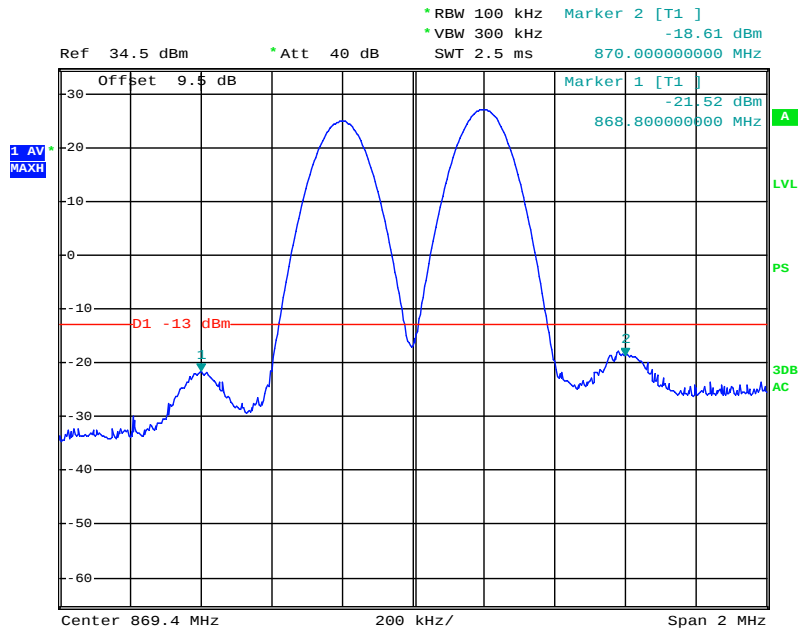


Date: 4.DEC.2011 16:21:03



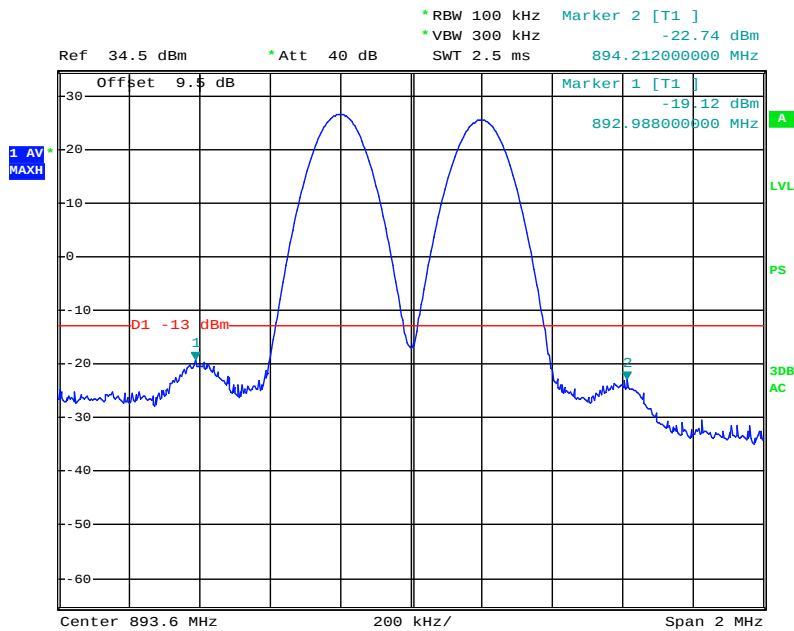
Date: 06.DEC.2011 08:31:05

Downlink, Inter-modulation, Low-band edge



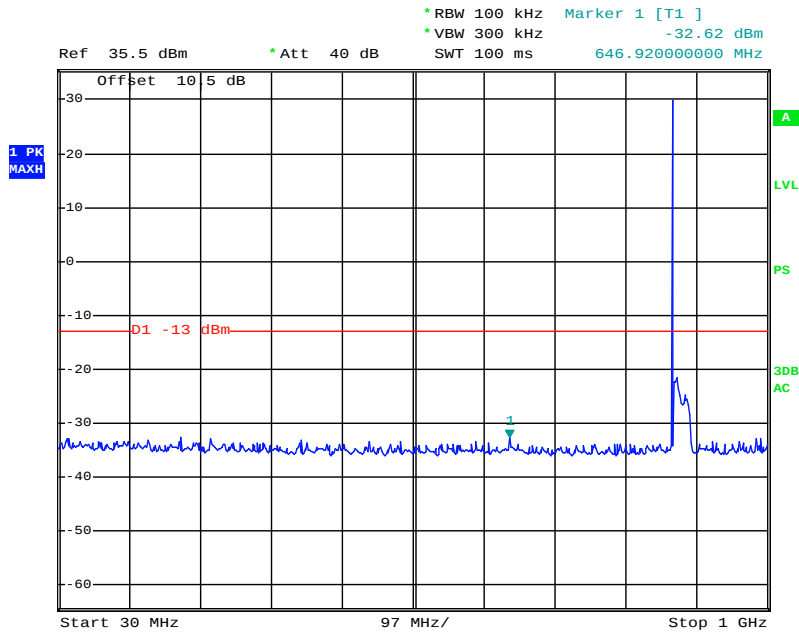
Date: 28.NOV.2011 15:43:19

Downlink, Inter-modulation, High-band edge

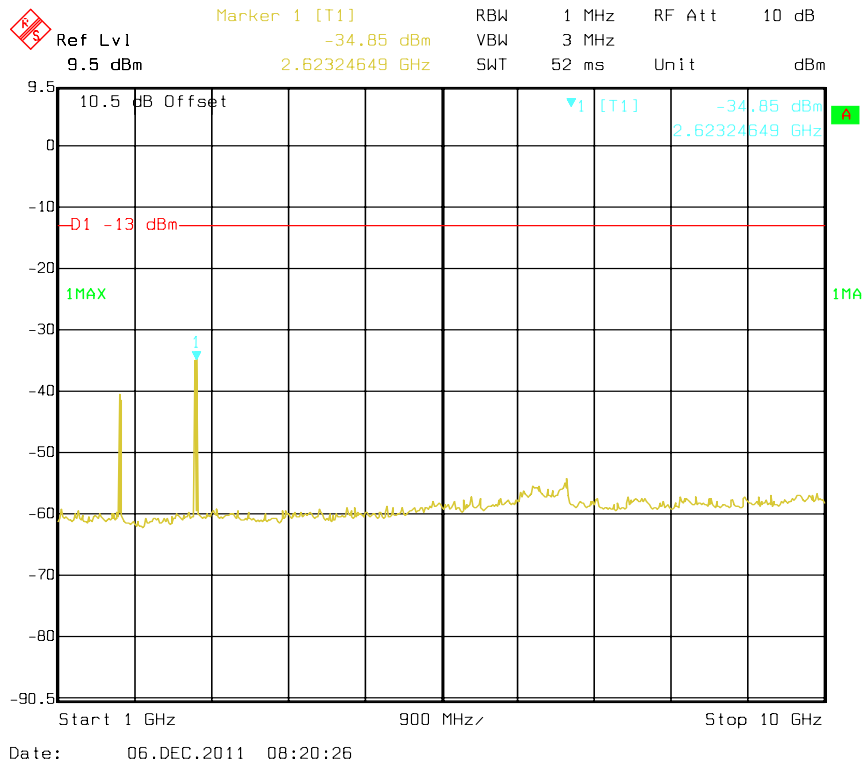


Date: 28.NOV.2011 15:46:03

Downlink, Spurious Emissions at Antenna Terminal, Low Channel

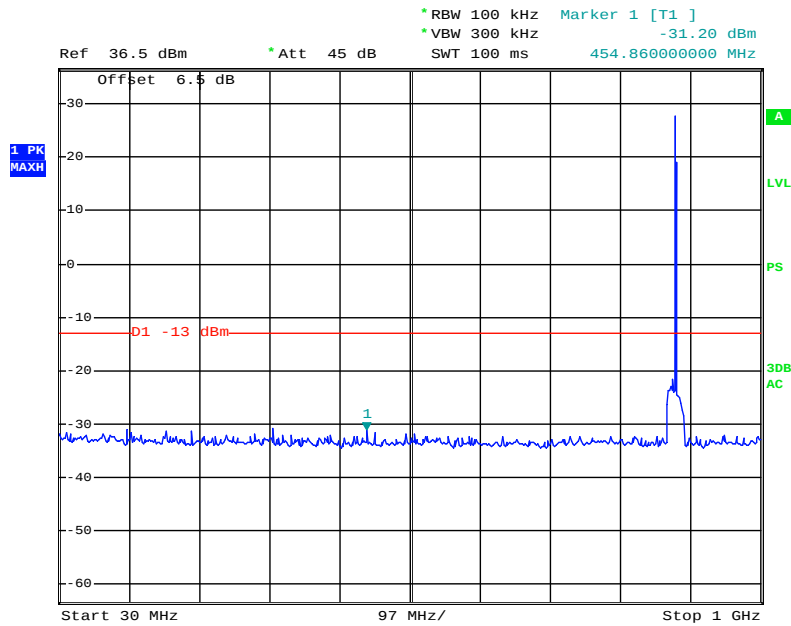


Date: 4.DEC.2011 16:34:57

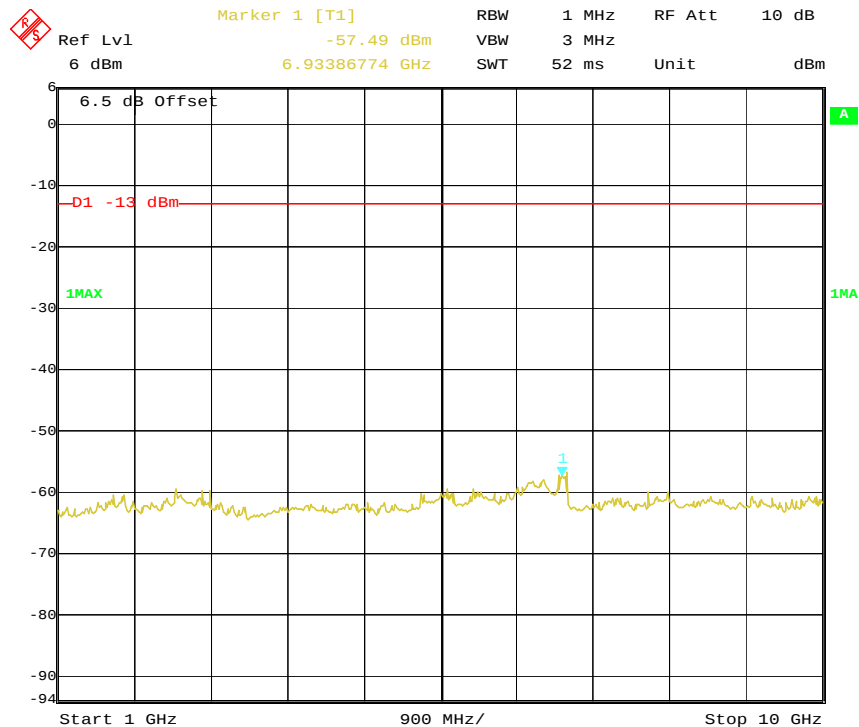


Date: 06.DEC.2011 08:20:26

Downlink, Spurious Emissions at Antenna Terminal, Middle Channel

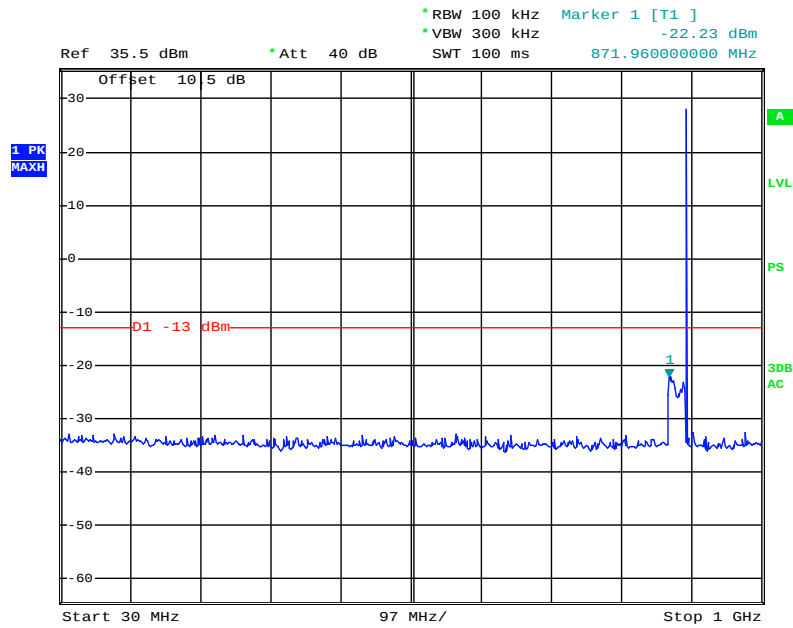


Date: 28.NOV.2011 13:02:46

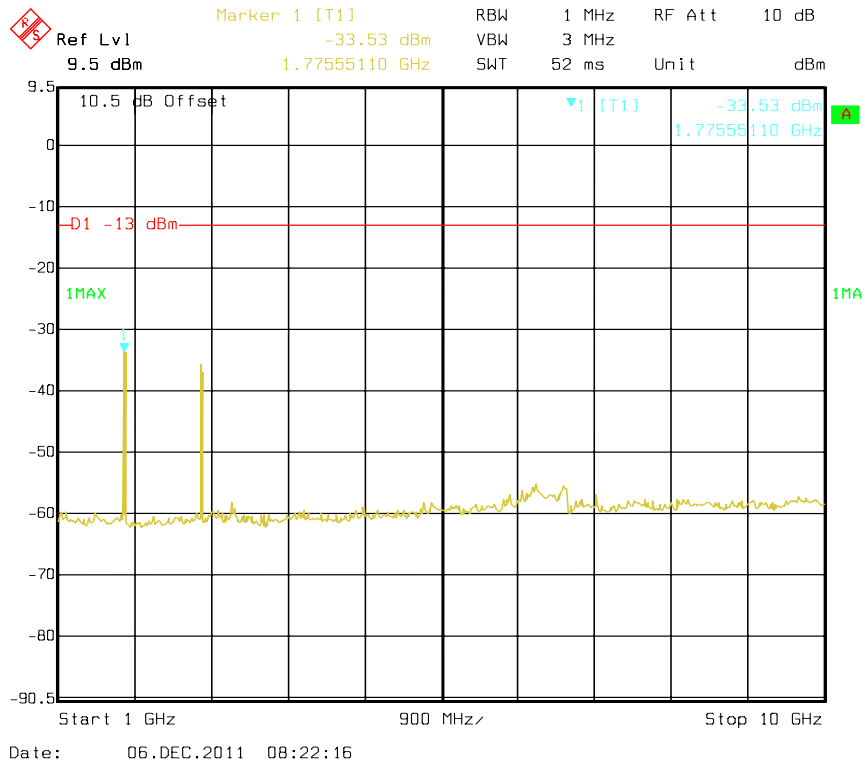


Date: 29.NOV.2011 17:51:49

Downlink, Spurious Emissions at Antenna Terminal, High Channel

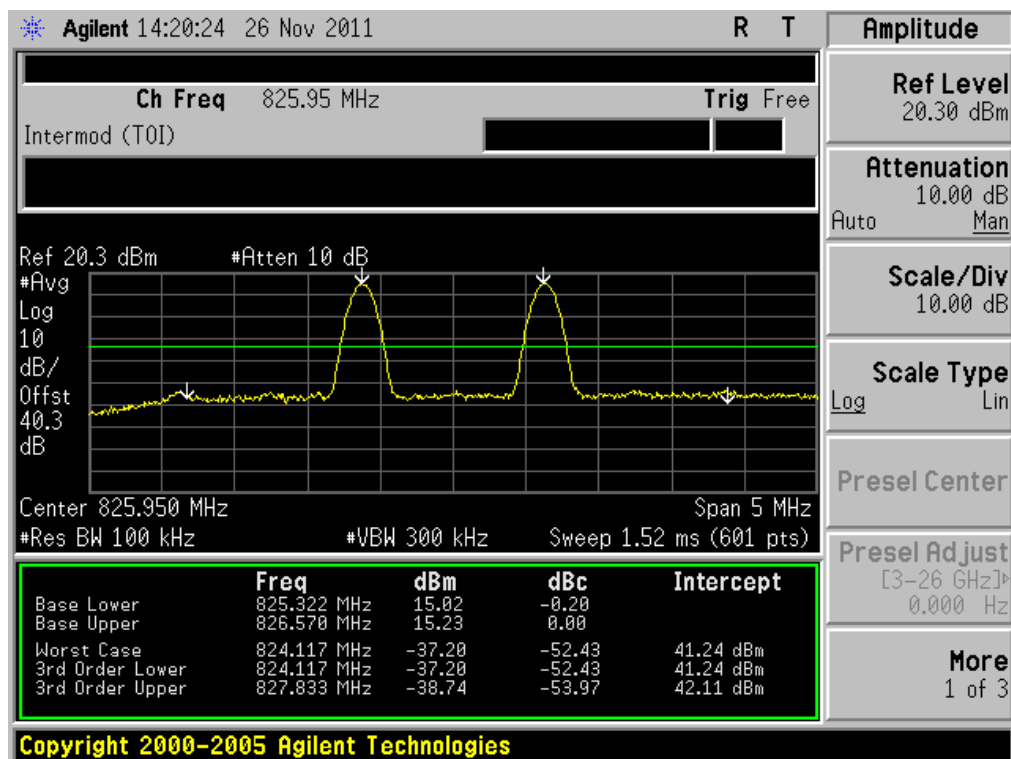


Date: 4.DEC.2011 16:30:18

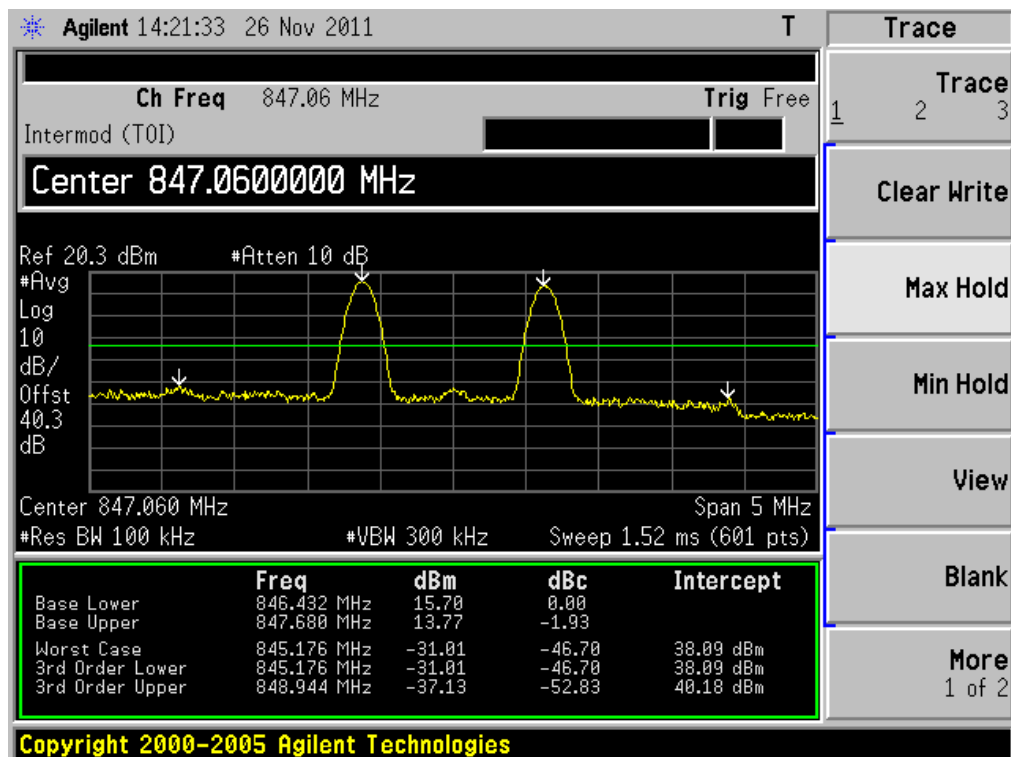


CDMA Cellular Band (Part 22H)

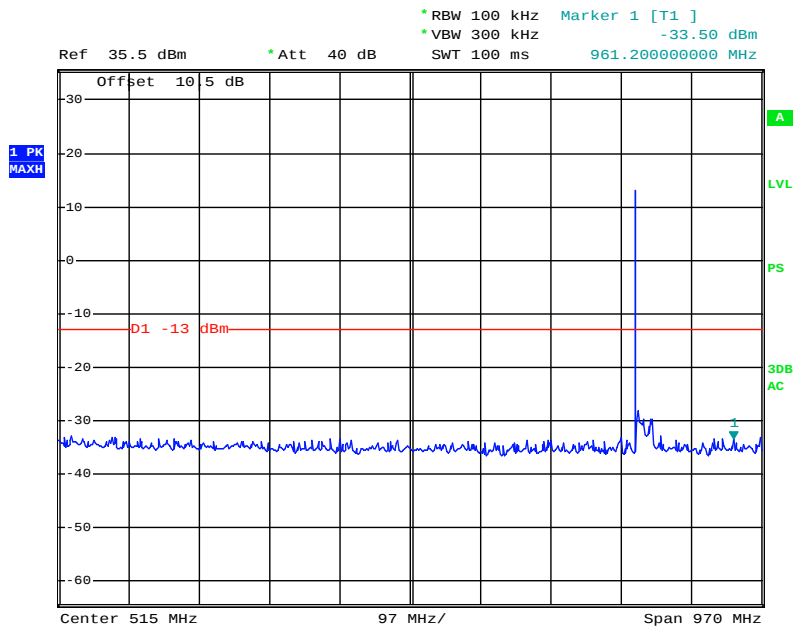
Uplink, Inter-modulation, Low-band edge



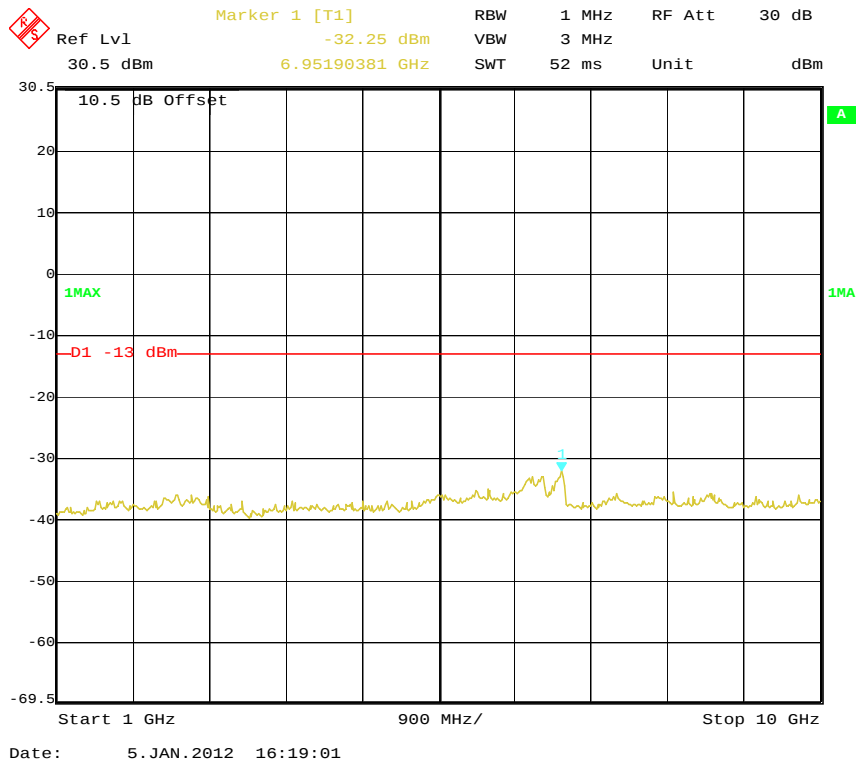
Uplink, Inter-modulation, High-band edge



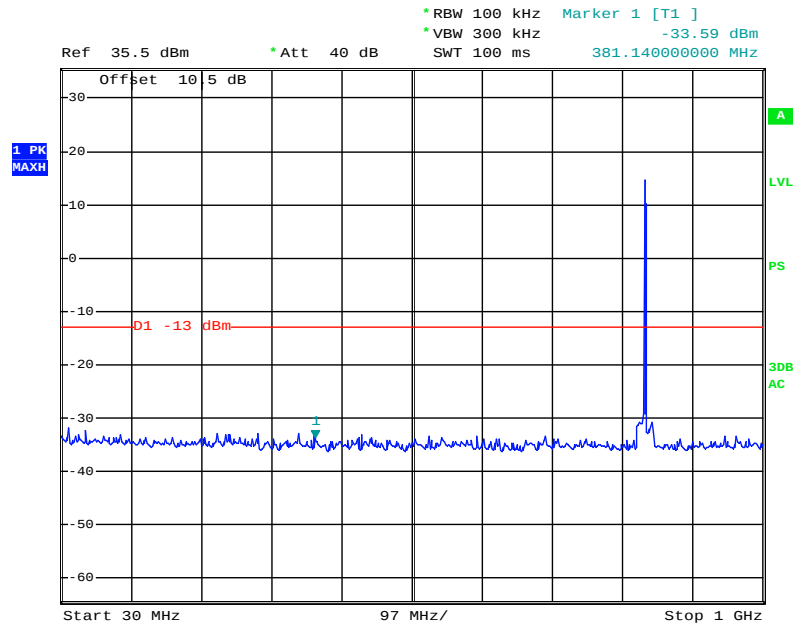
Uplink, Spurious Emissions at Antenna Terminal, Low Channel



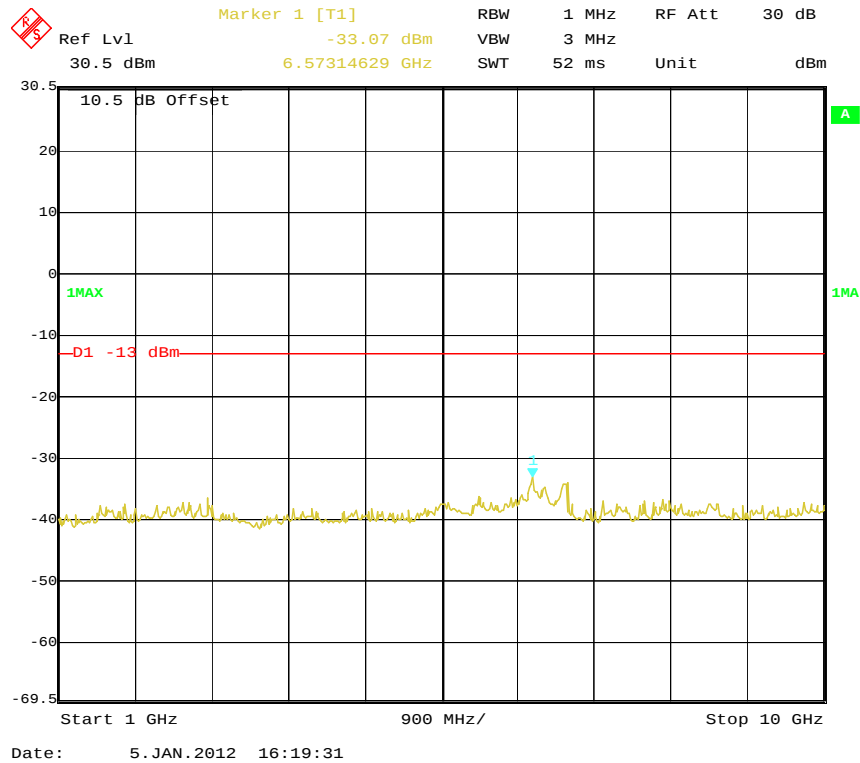
Date: 3.DEC.2011 10:35:38



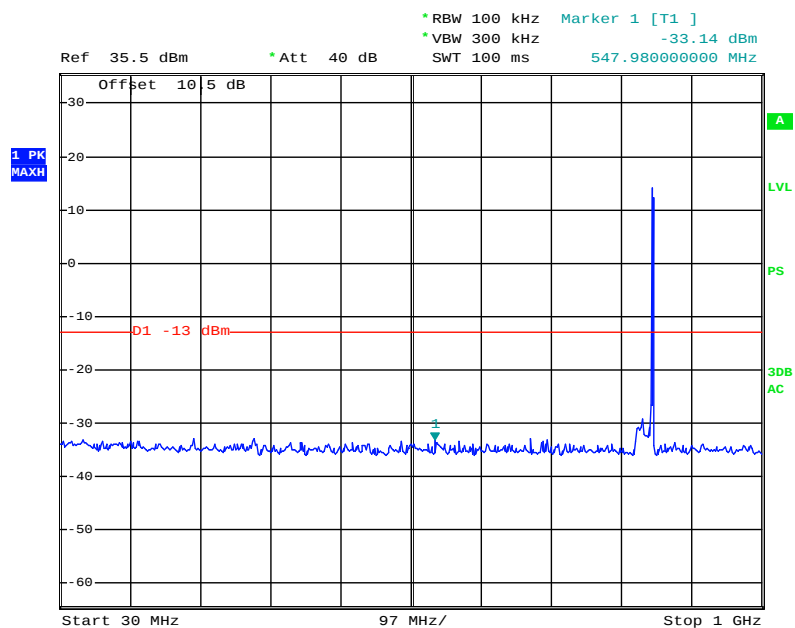
Uplink, Spurious Emissions at Antenna Terminal, Middle Channel



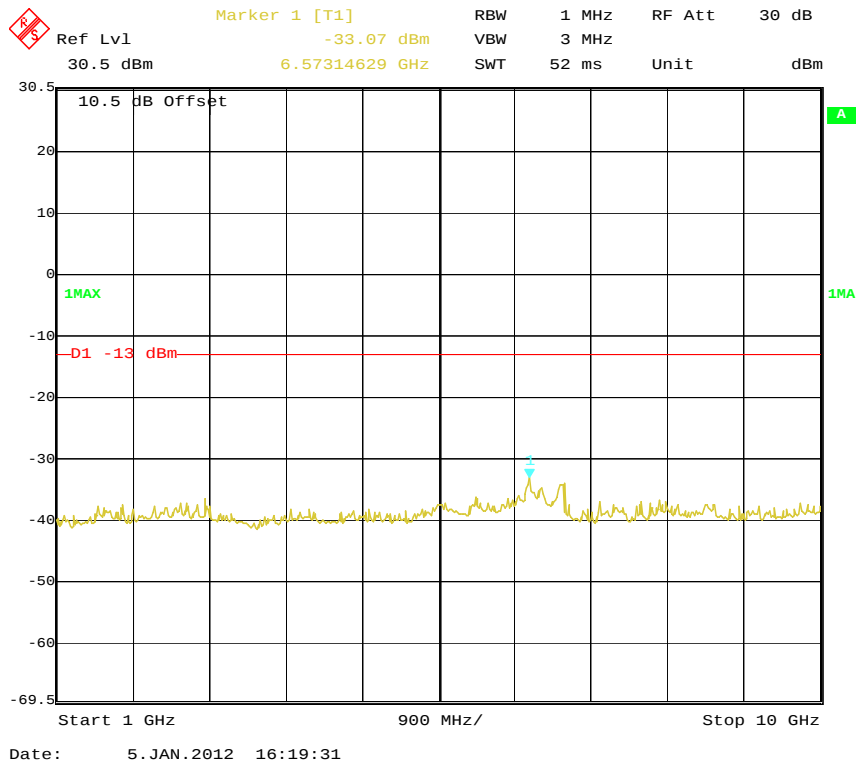
Date: 3.DEC.2011 10:35:10



Uplink, Spurious Emissions at Antenna Terminal, High Channel

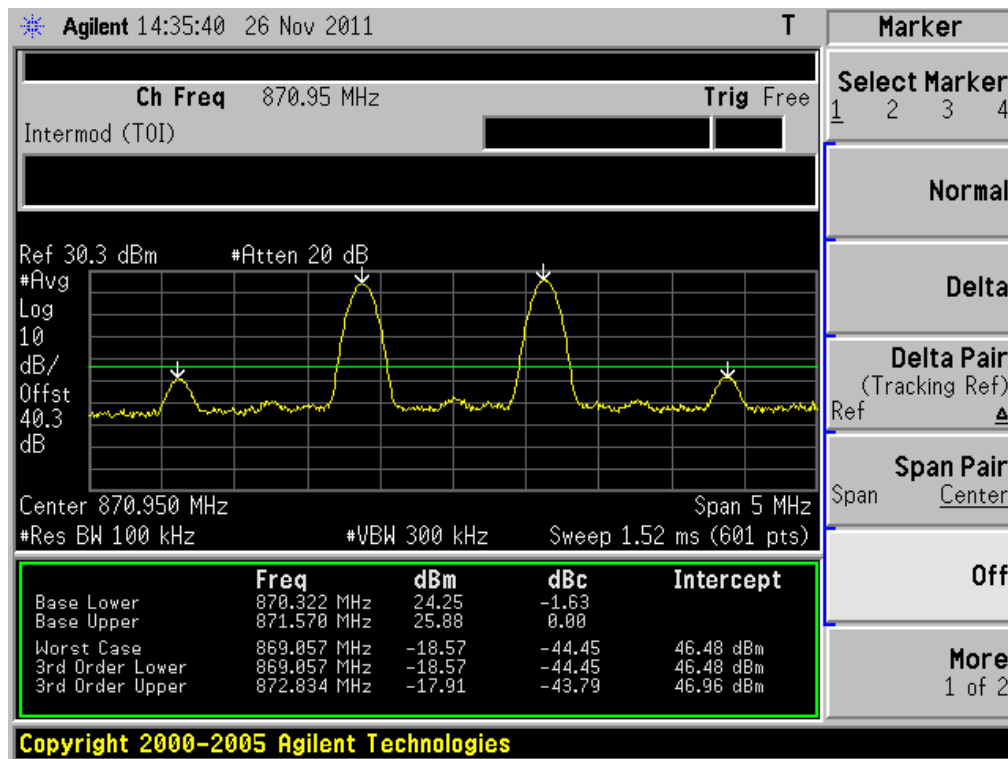


Date: 3.DEC.2011 10:34:16

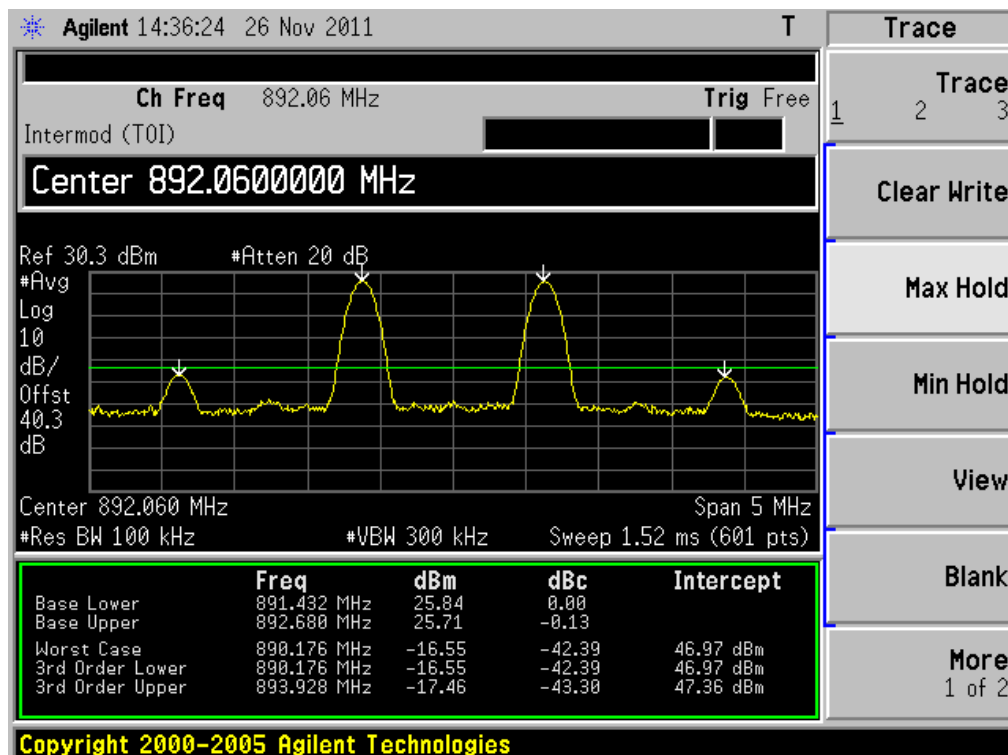


Date: 5.JAN.2012 16:19:31

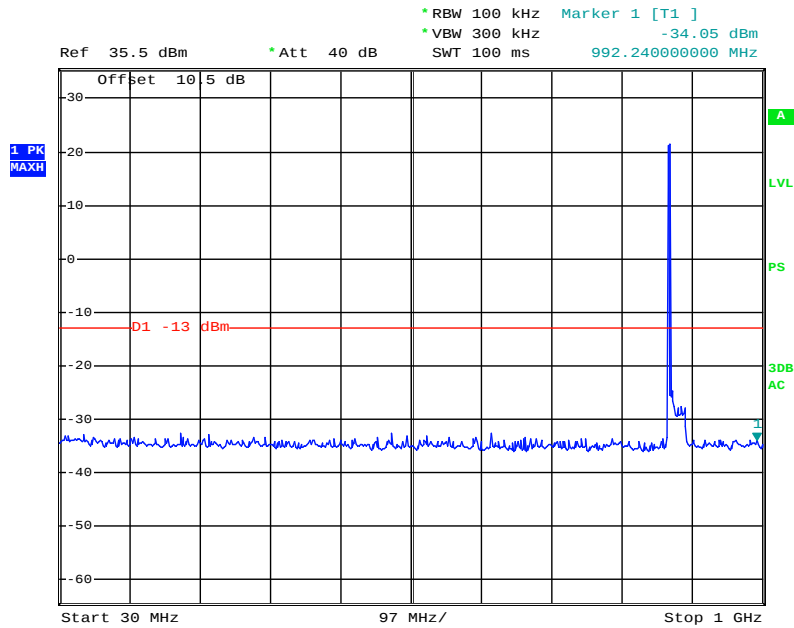
Downlink, Inter-modulation, Low-band edge



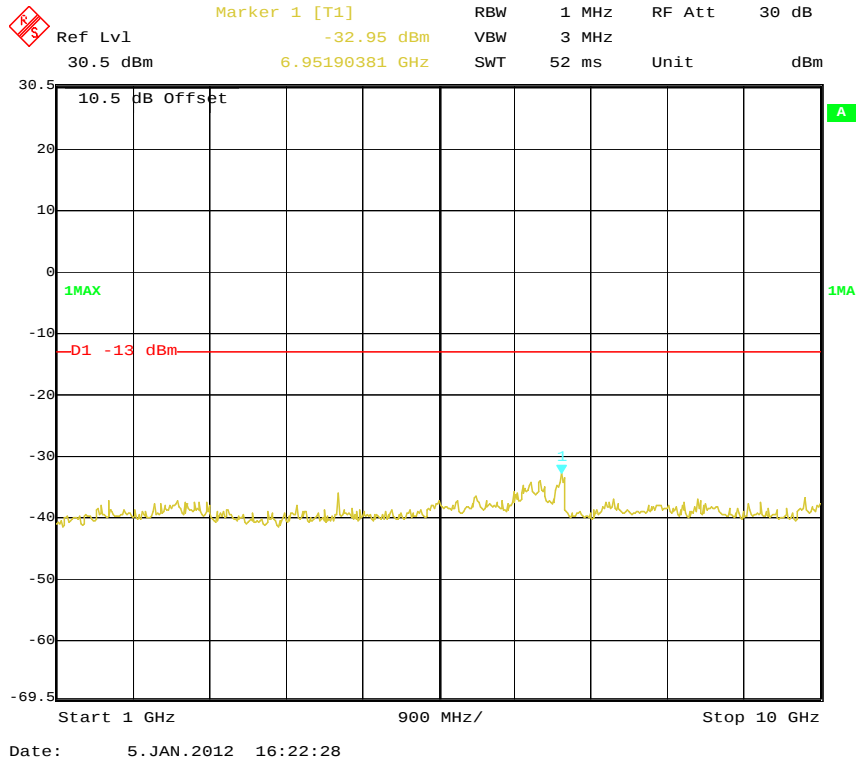
Downlink, Inter-modulation, High-band edge



Downlink, Spurious Emissions at Antenna Terminal, Low Channel

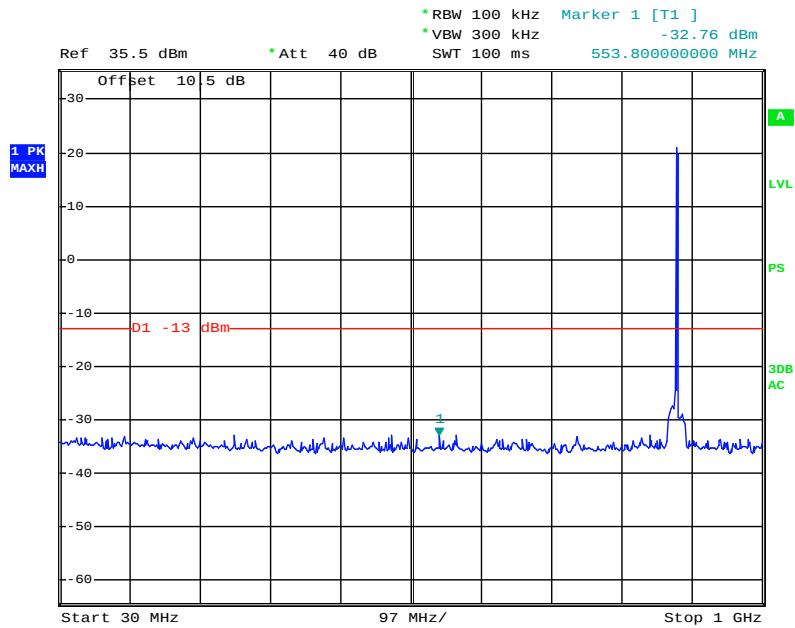


Date: 3.DEC.2011 10:10:44

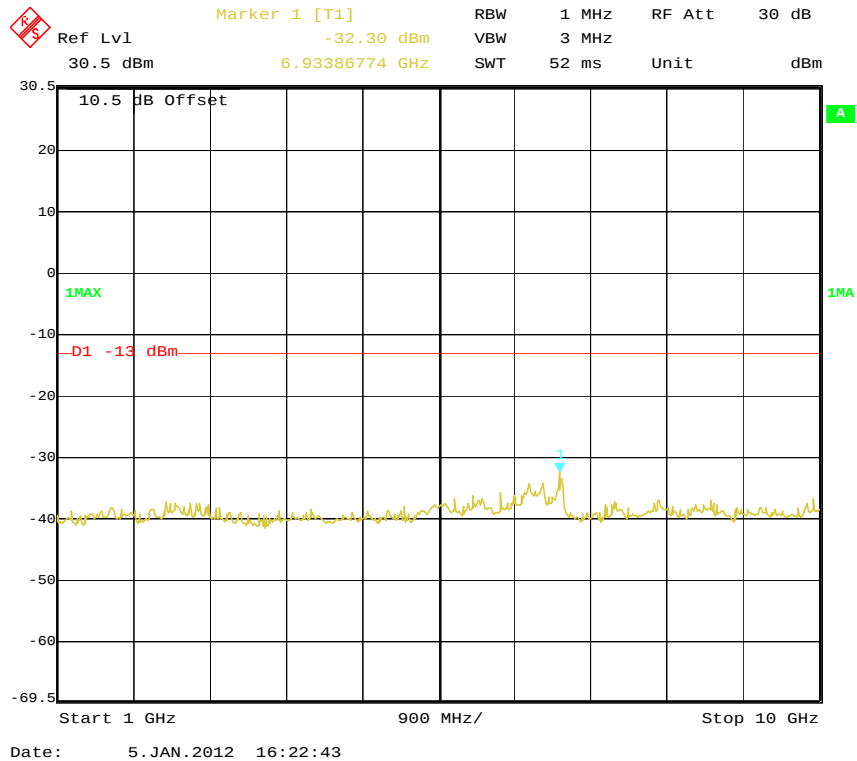


Date: 5.JAN.2012 16:22:28

Downlink, Spurious Emissions at Antenna Terminal, Middle Channel



Date: 3.DEC.2011 10:11:39



Date: 5.JAN.2012 16:22:43

Ref 35.5 dBm * Att 40 dB * RBW 100 kHz * VBW 300 kHz * SWT 100 ms Marker 1 [T1] -32.69 dBm 590.660000000 MHz

Offset 10 5 dB

1 PK MAXH

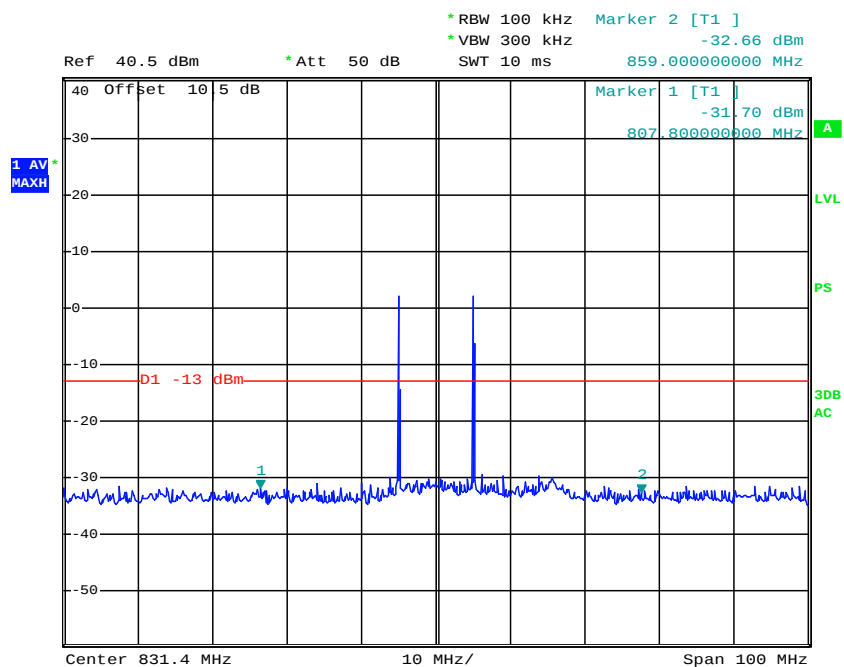
D1 -13 dBm

Start 30 MHz 97 MHz/ Stop 1 GHz

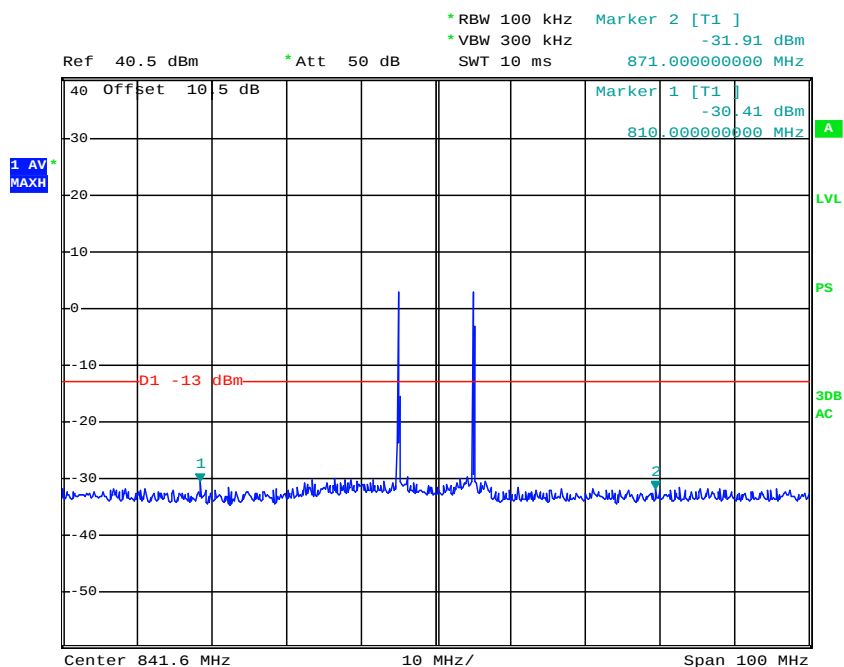
K&S
 Ref Lvl 30.5 dBm
 Marker 1 [T1] -33.64 dBm
 6.91583166 GHz
 RBW 1 MHz
 VBW 3 MHz
 SWT 52 ms
 RF Att 30 dB
 Unit dBm
 10.5 dB Offset
 1MAX
 -D1 -13 dBm
 Start 1 GHz 900 MHz/ Stop 10 GHz
 Date: 5.JAN.2012 16:22:12

WCDMA Cellular Band (Part 22H)

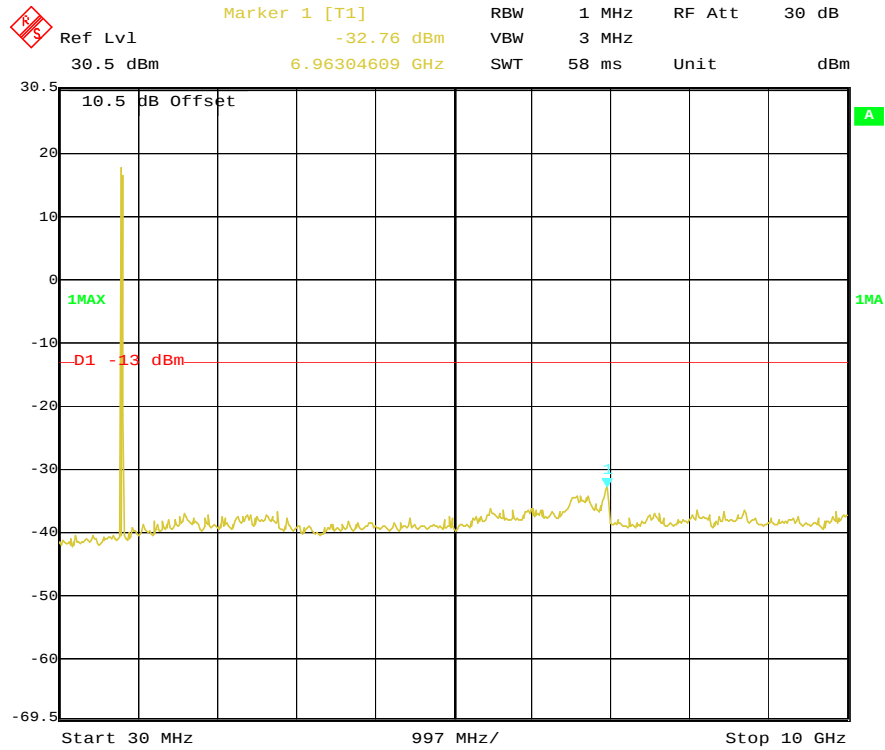
Uplink, Inter-modulation, Low-band edge



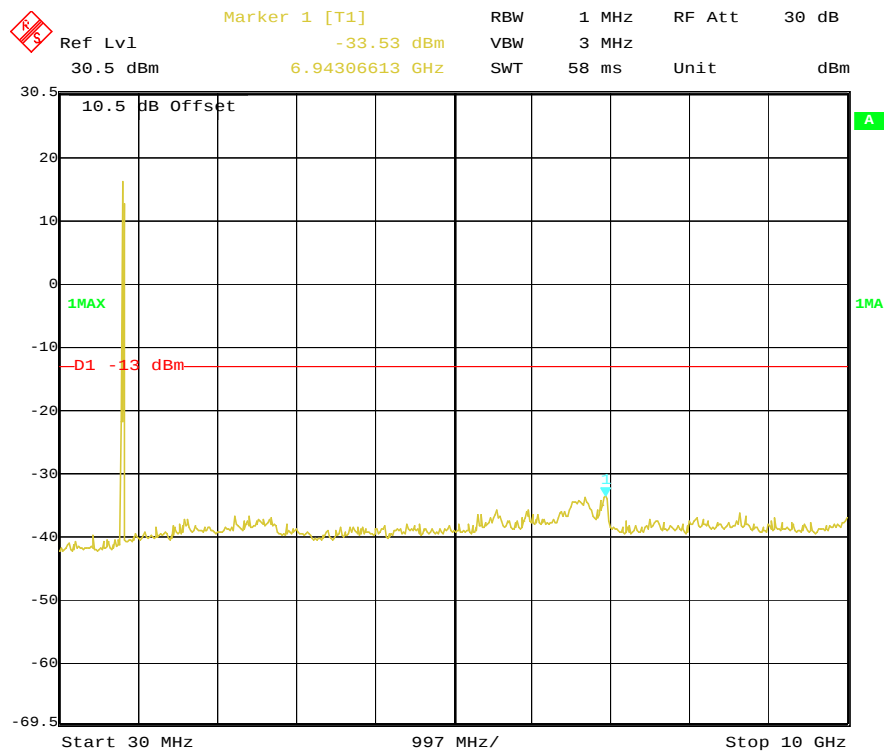
Uplink, Inter-modulation, High-band edge



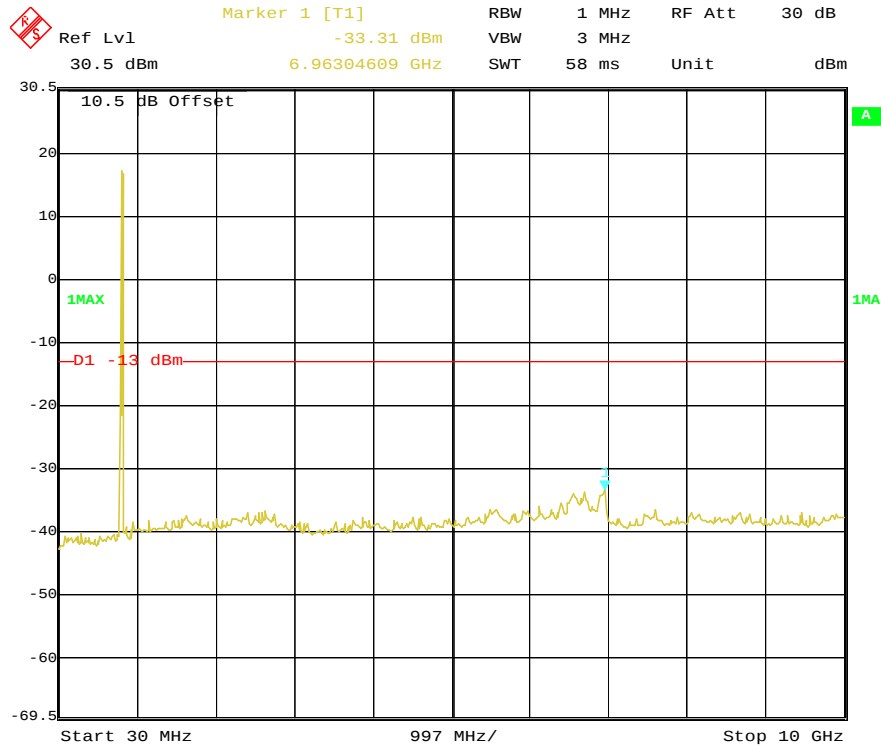
Uplink, Spurious Emissions at Antenna Terminal, Low Channel



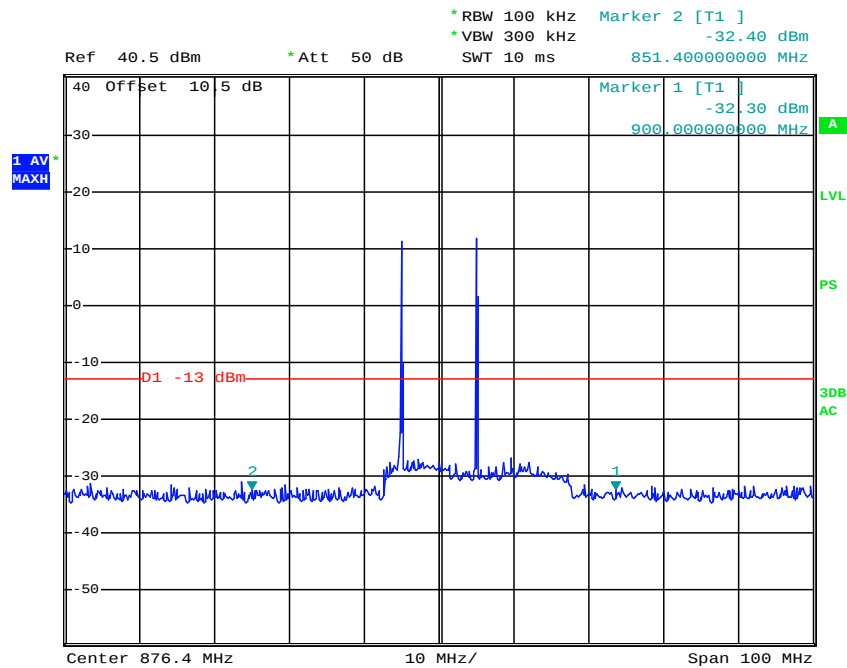
Uplink, Spurious Emissions at Antenna Terminal, Middle Channel



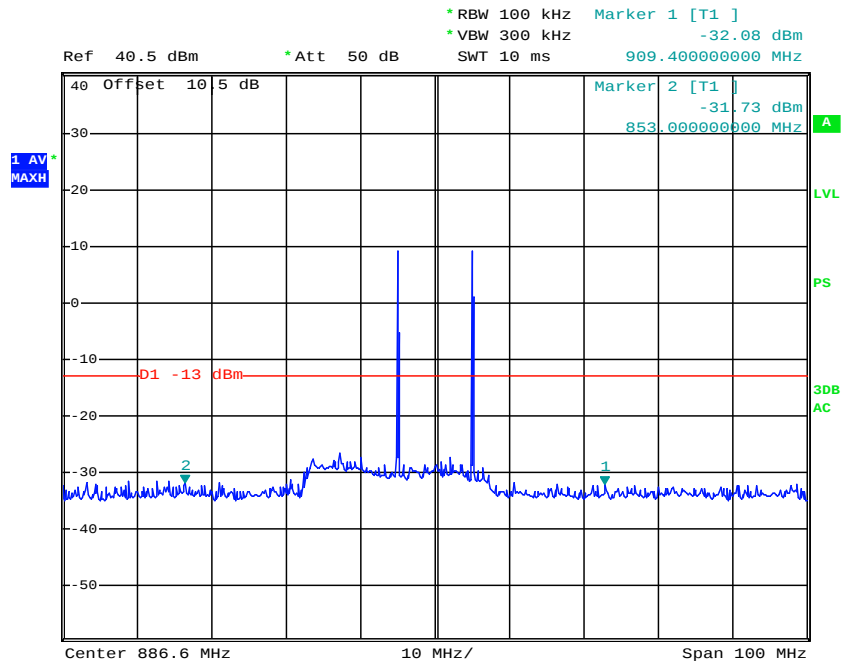
Uplink, Spurious Emissions at Antenna Terminal, High Channel



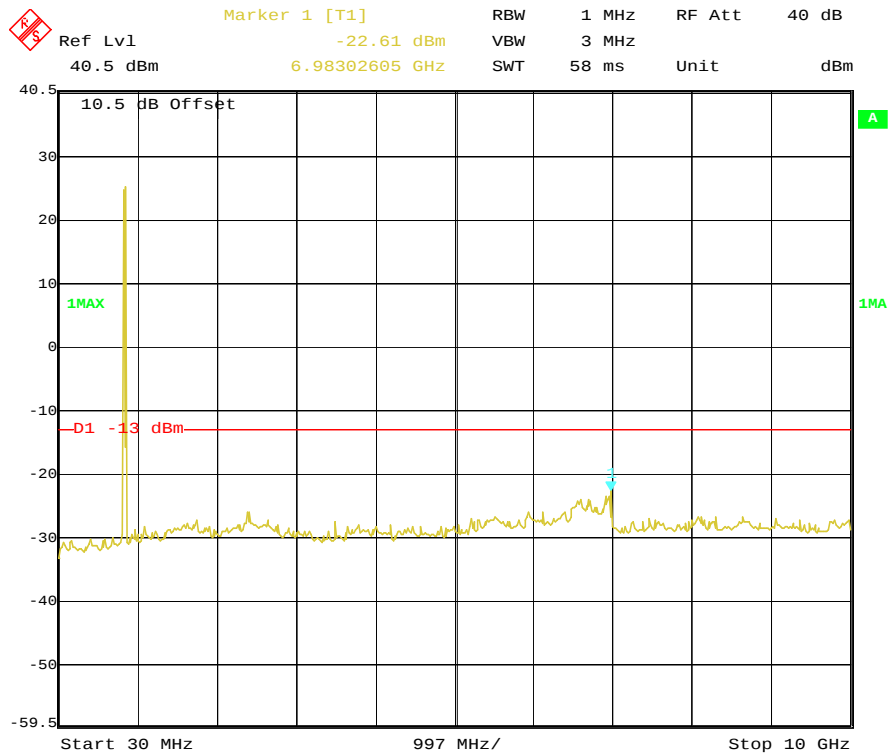
Downlink, Inter-modulation, Low-band edge



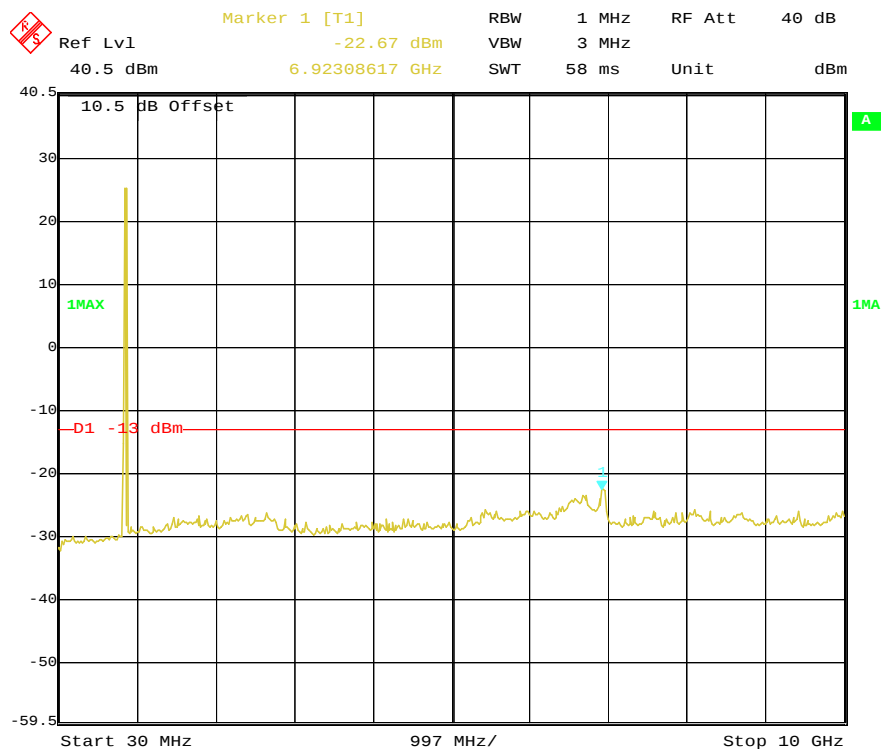
Downlink, Inter-modulation, High-band edge



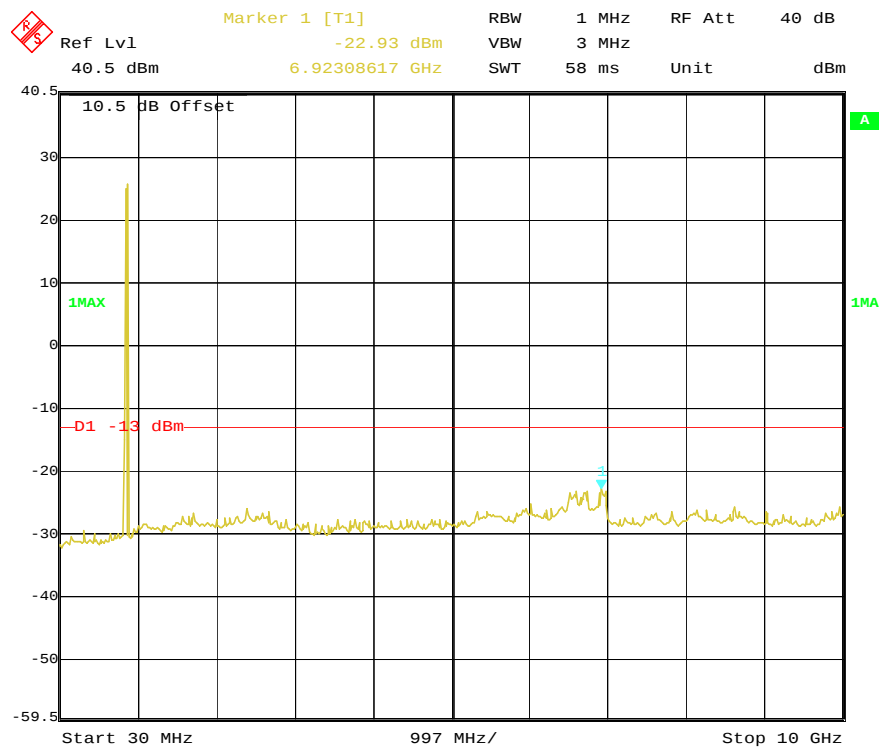
Downlink, Spurious Emissions at Antenna Terminal, Low Channel



Downlink, Spurious Emissions at Antenna Terminal, Middle Channel



Downlink, Spurious Emissions at Antenna Terminal, High Channel



FCC §2.1053, §22.917 - SPURIOUS RADIATED EMISSIONS

Applicable Standards

FCC § 2.1053, §22.917.

Test Procedure

The EUT system was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \lg (\text{TXpwr in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \text{ Log}_{10} (\text{power out in Watts})$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-05-05	2012-05-04
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2011-07-05	2012-07-04
Rohde & Schwarz	Signal Analyzer	FSIQ 26	609358	2011-07-08	2012-07-07
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2011-03-08	2012-03-07
HP	Signal Generator	HP8657A	2849U00982	2011-10-28	2012-10-27
HP	Amplifier	HP8447D	2944A09795	2011-08-02	2012-08-02
HP	Synthesized Sweeper	8341B	2624A00116	2011-04-11	2012-04-10
COM POWER	Dipole Antenna	AD-100	041000	2011-04-25	2012-04-24
A.H. System	Horn Antenna	SAS-200/571	135	2011-03-07	2012-03-06
Agilent	ESG-D Series Signal Generator	E4432B	GB40051703	2011-10-28	2012-10-27
Electro-Mechanics	Horn Antenna	3116	9510-2270	2011-10-11	2012-10-10

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Felix Li on 2011-12-05.

Test mode: Transmitting (Worst case mode: CDMA)

Indicated		Table Angle Degree	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain (dB)	Cable Loss (dB)			
Uplink mode											
63.25	50.15	32	1.8	V	63.25	-45.1	0	0.1	-45.2	-13	32.20
76.22	48.83	124	1.5	V	76.22	-46.4	0	0.1	-46.5	-13	33.50
62.21	48.51	55	1.5	H	62.21	-46.7	0	0.1	-46.8	-13	33.80
76.22	46.63	154	1.5	H	76.22	-48.6	0	0.1	-48.7	-13	35.70
3798.61	36.85	148	1.7	V	3798.61	-53.4	6.7	1.5	-48.2	-13	35.20
2509.56	37.25	174	1.8	V	2509.56	-56.2	7.2	1.21	-50.21	-13	37.21
3798.61	35.64	253	1.7	H	3798.61	-58.8	6.7	1.5	-53.6	-13	40.60
2509.56	38.76	185	1.6	H	2509.56	-62.8	7.2	1.21	-56.81	-13	43.81
Downlink mode											
76.22	58.95	108	1.4	V	76.22	-36.3	0	0.1	-36.4	-13	23.40
76.22	46.72	305	1.5	H	76.22	-48.5	0	0.1	-48.6	-13	35.60
3184.52	39.51	214	1.6	V	3184.52	-50.75	6.9	1.35	-45.2	-13	32.20
3184.52	38.85	76	1.8	H	3184.52	-53.05	6.9	1.35	-47.5	-13	34.50
1763.04	39.56	265	2.0	V	1763.04	-55.6	6.1	1	-50.5	-13	37.50
1763.04	40.12	324	1.9	H	1763.04	-58.2	6.1	1	-53.1	-13	40.10

FCC §22.917(a) - BAND EDGES

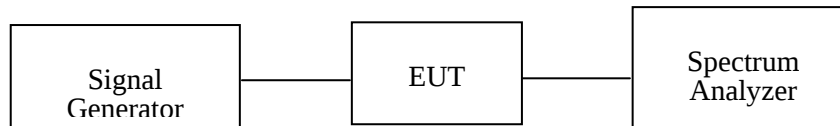
Applicable Standards

According to § 22.917(a), the power of any emissions 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 Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency, RBW set to 3 kHz.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ 26	609358	2011-07-08	2012-07-07
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2011-11-11	2012-11-10
Agilent	ESG-D Series Signal Generator	E4432B	GB40051703	2011-10-28	2012-10-27

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

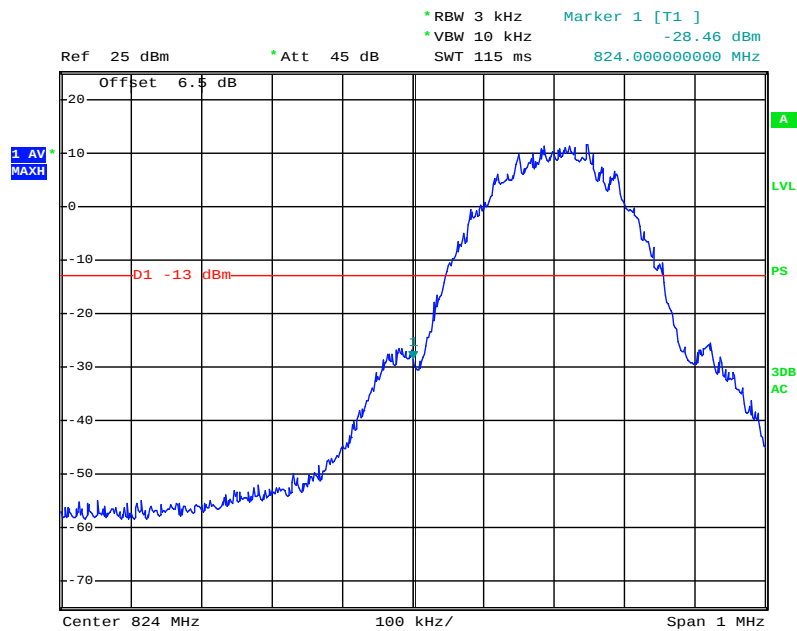
The testing was performed by Felix Li on 2011-11-28 to 2011-12-03.

Test mode: Transmitting

Please refer to the following tables and plots.

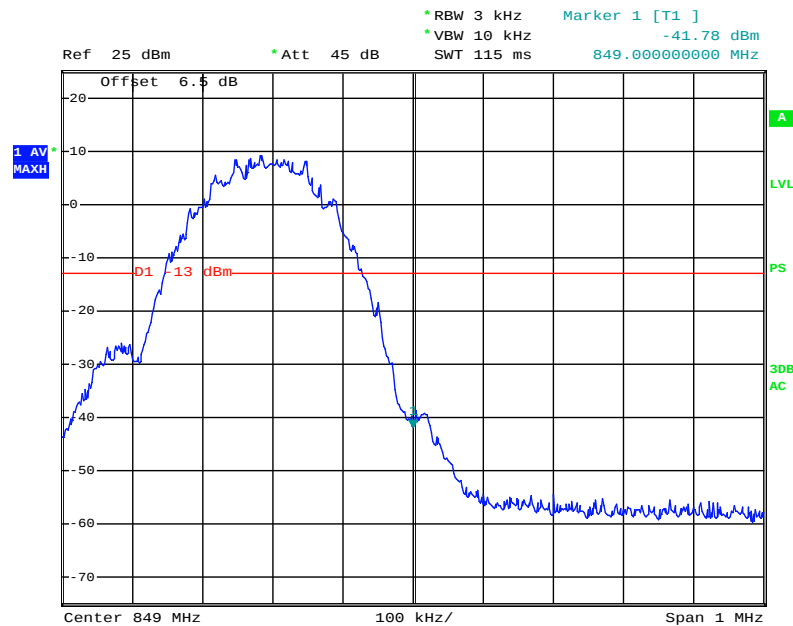
GSM Cellular Band (Part 22H)

Mode	Frequency (MHz)	Emission (dBm)	Limit (dBm)
Uplink	824.0	-26.98	-13
	849.0	-26.32	-13
Downlink	869.0	-22.65	-13
	894.0	-20.16	-13

Uplink, Left Band Edge

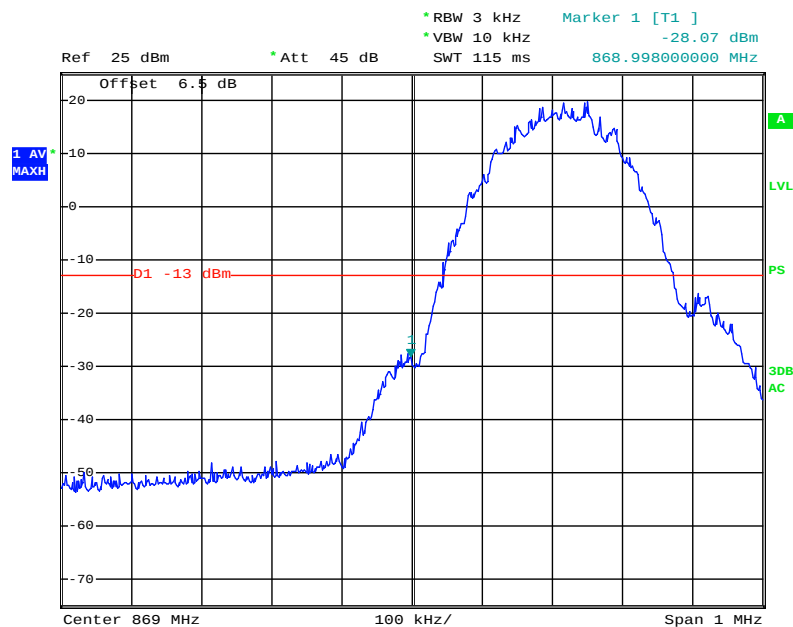
Date: 28.NOV.2011 09:54:29

Uplink, Right Band Edge



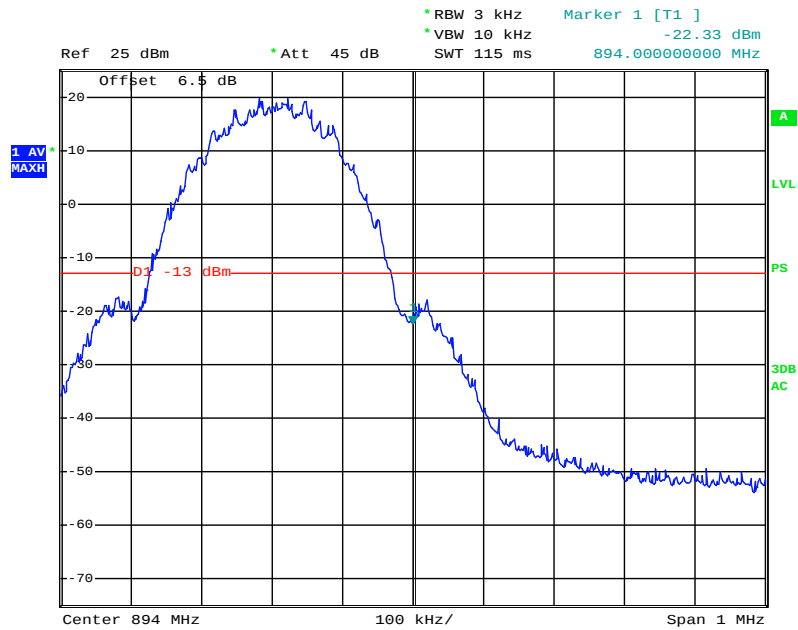
Date: 28.NOV.2011 09:56:07

Downlink, Left Band Edge



Date: 28.NOV.2011 09:50:04

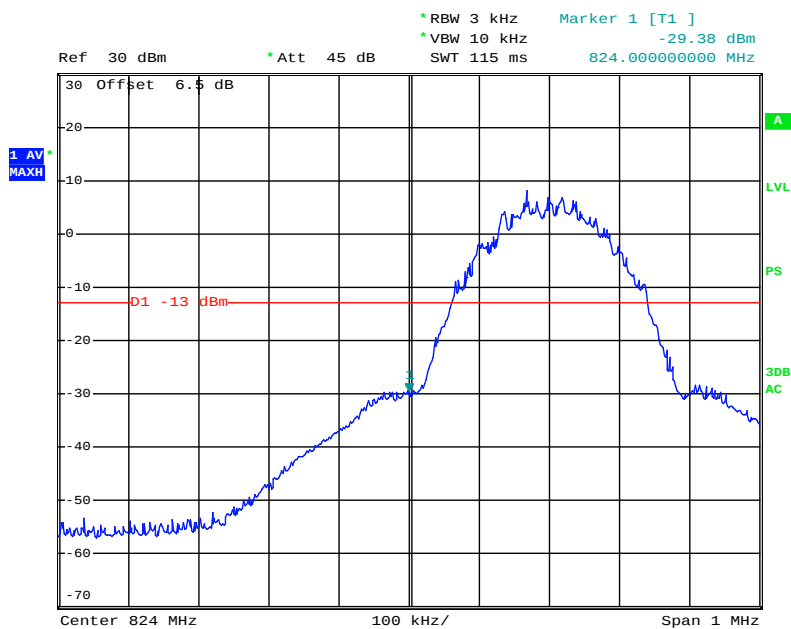
Downlink, Right Band Edge



Date: 28.NOV.2011 09:52:19

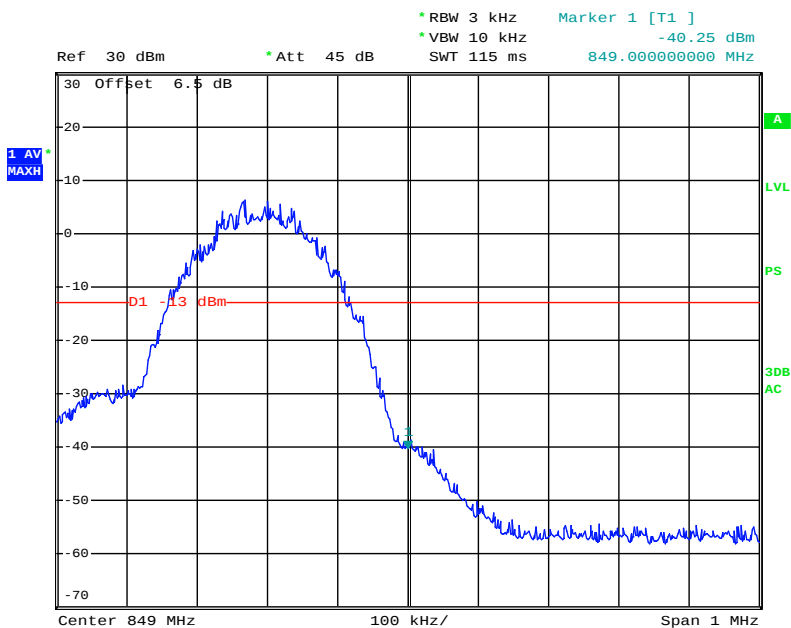
EDGE Cellular Band (Part 22H)

Mode	Frequency (MHz)	Emission (dBm)	Limit (dBm)
Uplink	824.0	-26.98	-13
	849.0	-26.32	-13
Downlink	869.0	-22.65	-13
	894.0	-20.16	-13

Uplink, Left Band Edge

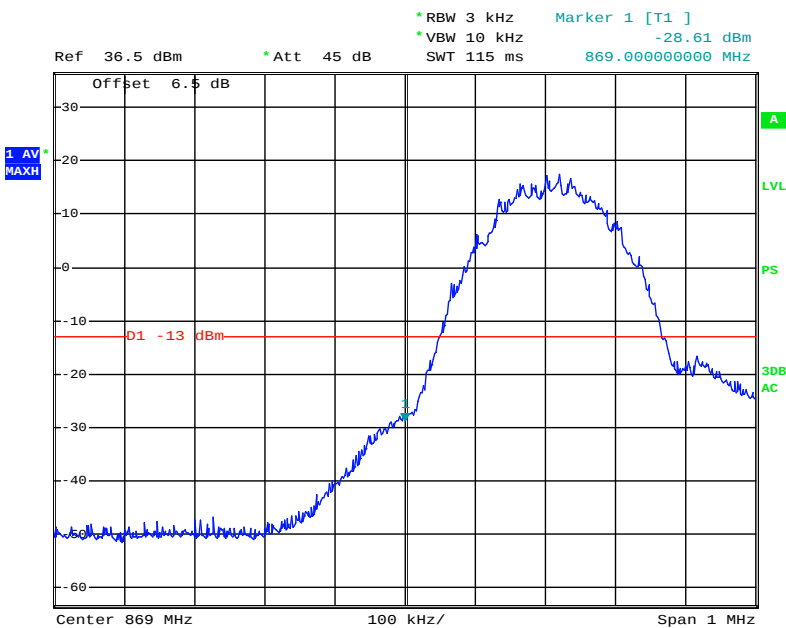
Date: 28.NOV.2011 12:09:47

Uplink, Right Band Edge



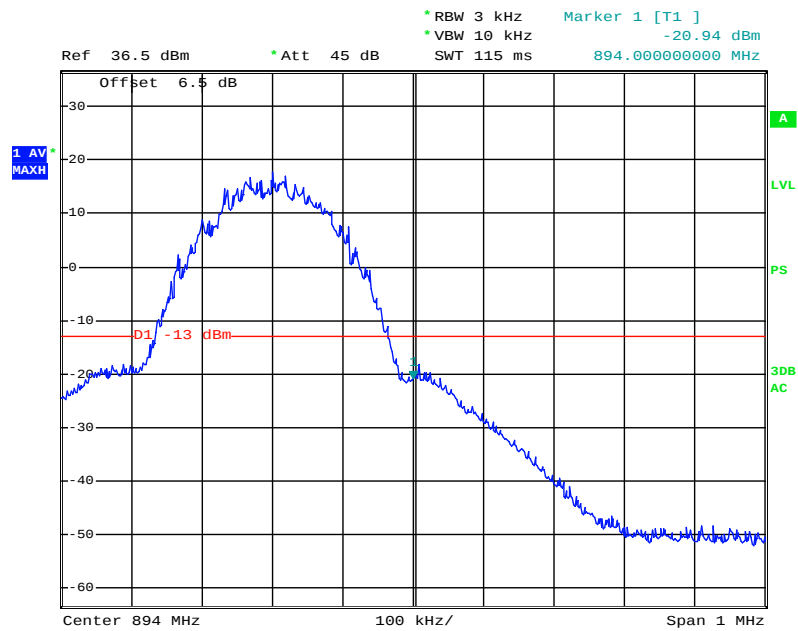
Date: 28.NOV.2011 12:11:21

Downlink, Left Band Edge



Date: 28.NOV.2011 12:53:34

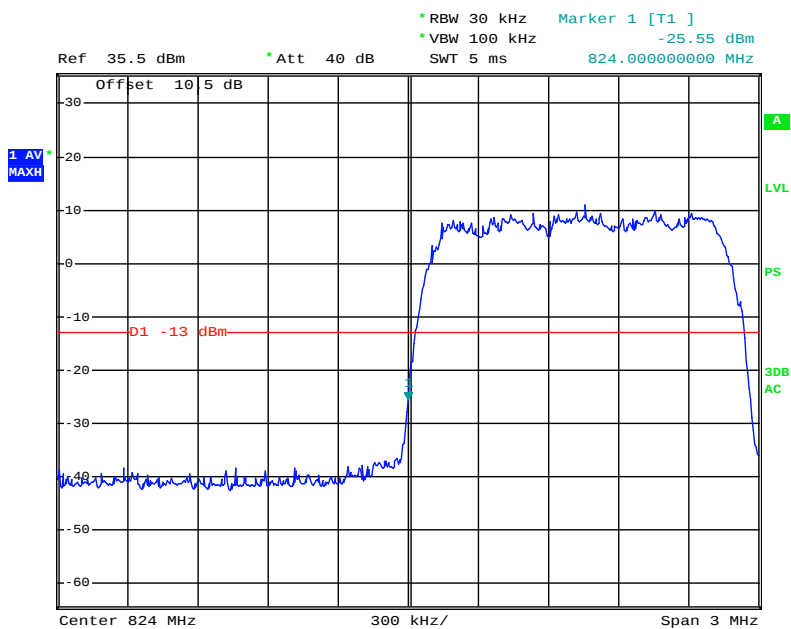
Downlink, Right Band Edge



Date: 28.NOV.2011 12:55:48

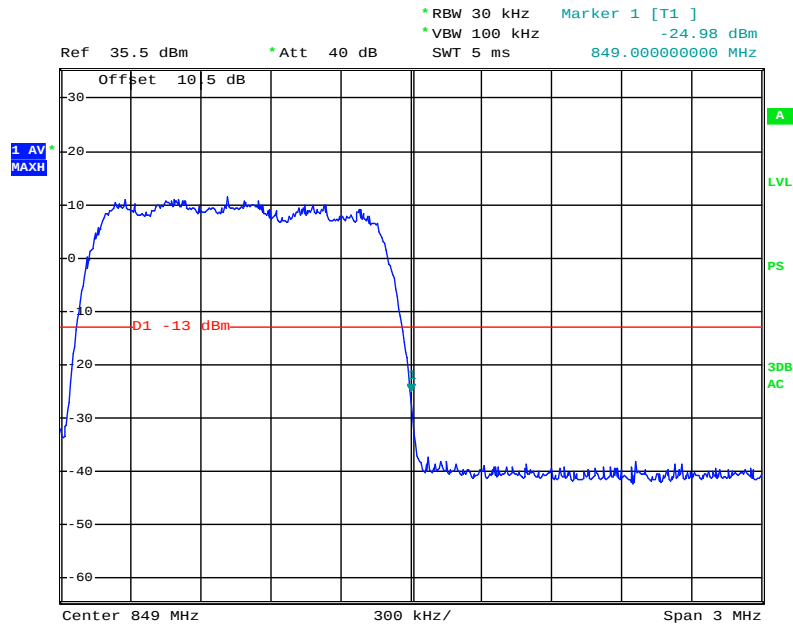
CDMA Cellular Band (Part 22H)

Mode	Frequency (MHz)	Emission (dBm)	Limit (dBm)
Uplink	824.0	-26.98	-13
	849.0	-26.32	-13
Downlink	869.0	-22.65	-13
	894.0	-20.16	-13

Uplink, Left Band Edge

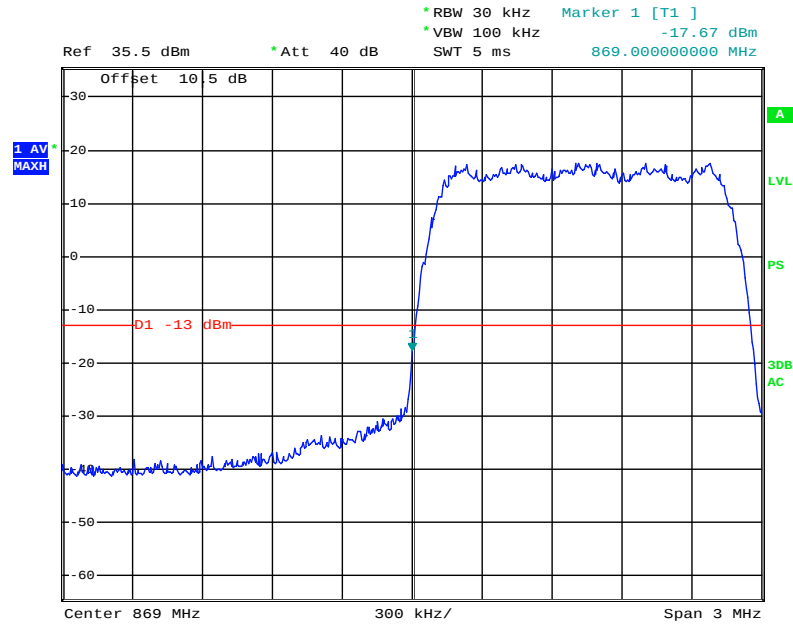
Date: 3.DEC.2011 10:29:15

Uplink, Right Band Edge



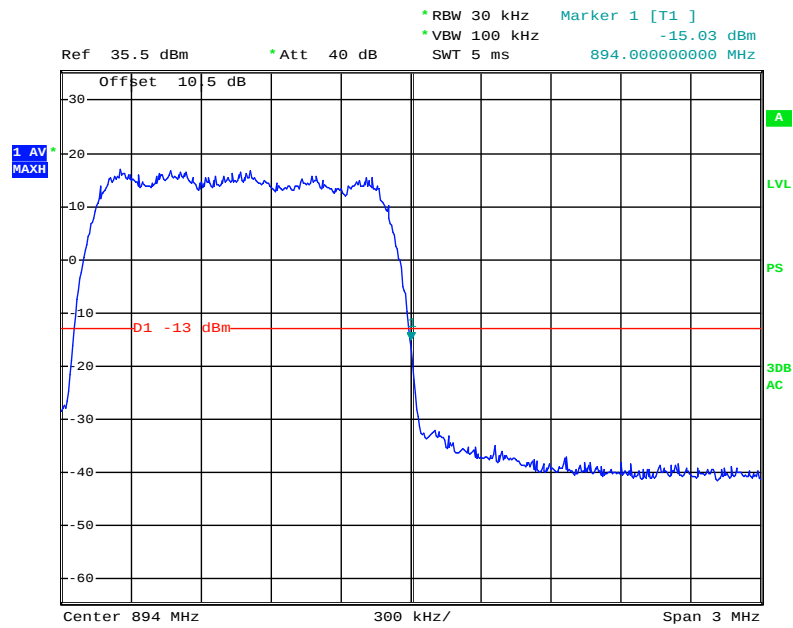
Date: 3.DEC.2011 10:28:25

Downlink, Left Band Edge



Date: 3.DEC.2011 10:07:08

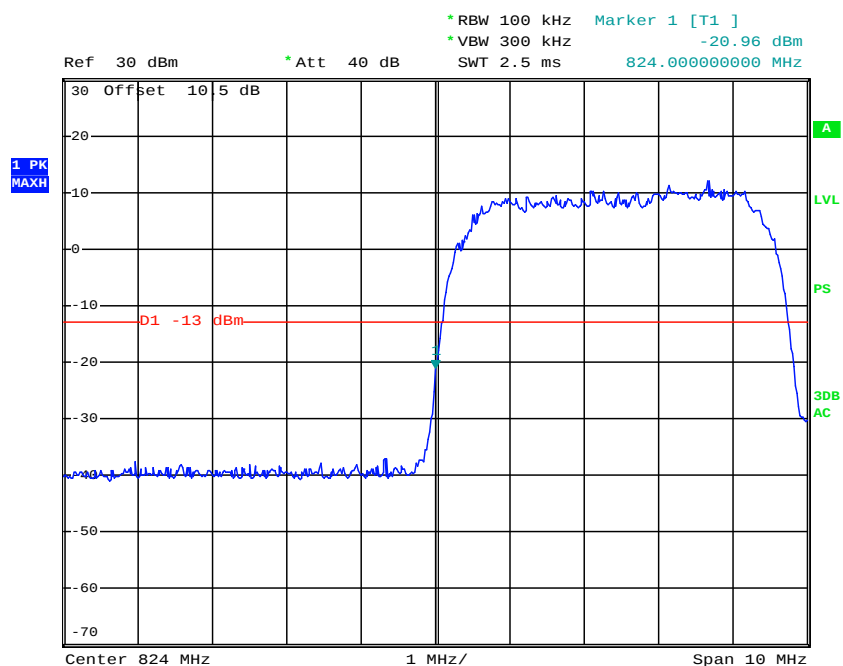
Downlink, Right Band Edge



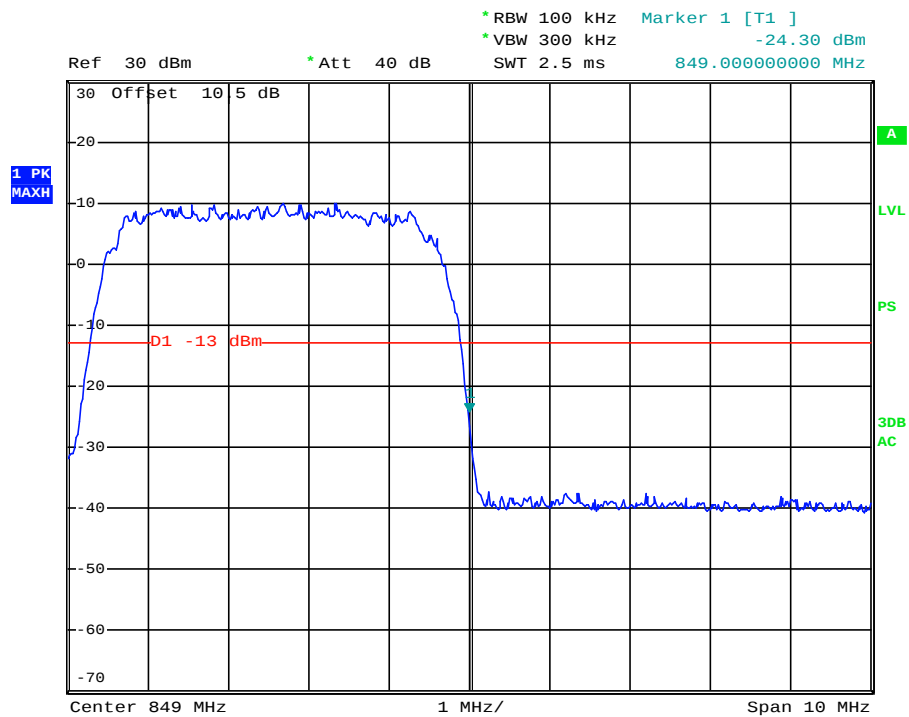
Date: 3.DEC.2011 10:08:03

WCDMA Cellular Band (Part 22H)

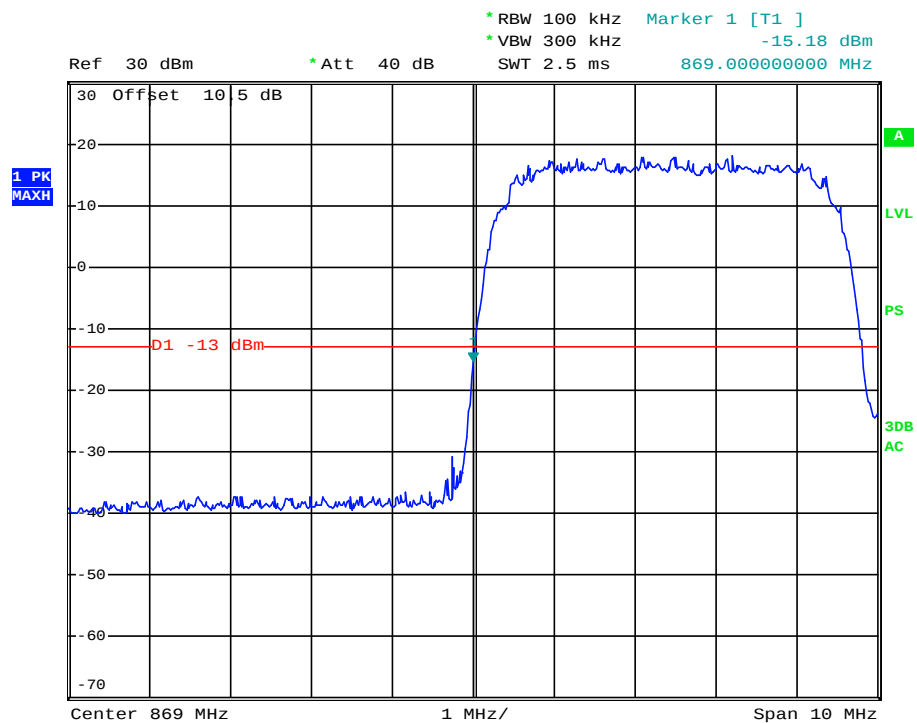
Mode	Frequency (MHz)	Emission (dBm)	Limit (dBm)
Uplink	824.0	-20.96	-13
	849.0	-24.30	-13
Downlink	869.0	-15.18	-13
	894.0	-15.61	-13

Uplink, Left Band Edge

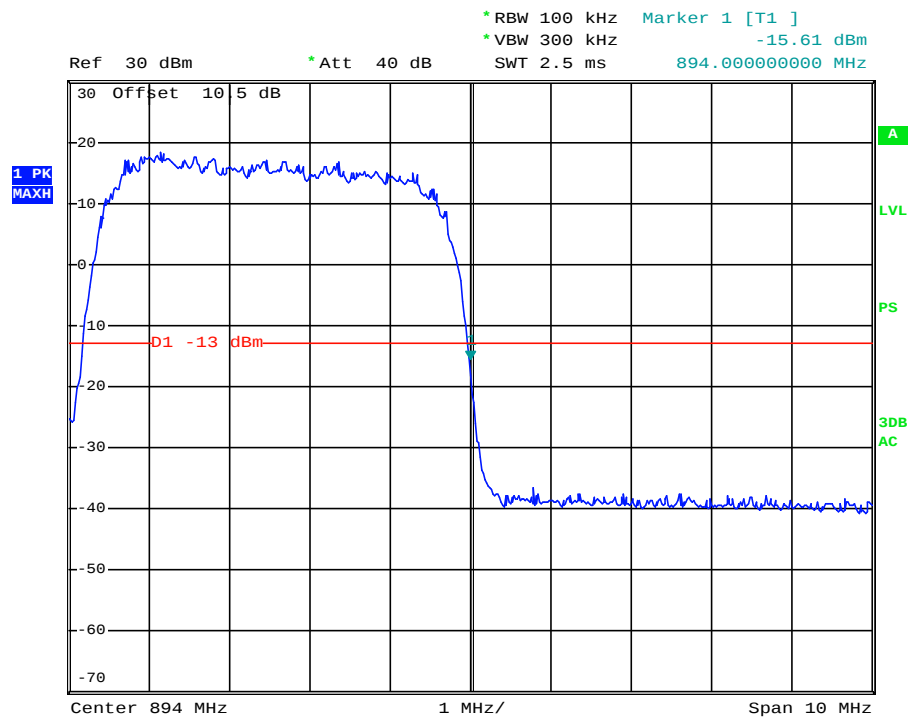
Uplink, Right Band Edge



Downlink, Left Band Edge



Downlink, Right Band Edge



***** END OF REPORT *****