NVLAP LAB CODE 200707-0

FCC PART 22H

MEASUREMENT AND TEST REPORT

For

Bravo Tech (Shenzhen) Co., Ltd.

No.8 Building, The 3rd Zone, Tangtou Industrial Park, Shiyan, Baoan District,

Shenzhen, Guangdong, P .R. of China

FCC ID: WBKMBSC081921-08

Report Type:	**Product Type:**
Class Ⅱ Permissive Change	Multi-Band,Multi-Standard, Multi-Carrier Coverage System (Cellular 850)

Test Engineer:	Alvin Huang
Report Number:	RSZ10062805-22H
Report Date:	2010-08-20
Reviewed By:	Merry Zhao EMC Engineer
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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 *Bravo Tech (Shenzhen) Co., Ltd 's* product, model number: *mBSC081921-12 (Cellular 850, FCC ID: WBKMBSC081921-08)* or the "EUT" as referred to in this report is a *Multi-Band, Multi-Standard, Multi-Carrier Coverage System*, which measures approximately: 50 cm (L) x 25 cm (W) x 12 cm (H), rated input voltage: AC 120V power source.

Frequency Range:

Cellular Band: 869-894 MHz (Downlink)

Transmitter Output Power:

Cellular Band: 46±1 dBm (Downlink).

** All measurement and test data in this report was gathered from production sample serial number: 1006083 (Assigned by BACL). The EUT was received on 2010-06-28.*

Objective

This type approval report is prepared on behalf of *Bravo Tech (Shenzhen) Co., Ltd.* 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 and radiated margin.

This is the C2PC application of the device. It is requesting for the additional Cellular 850 band without any hardware changes to the previously approved products, The new modulation is 850 GSM & EDGE modulation (869-894 MHz), the test of 850 GSM & EDGE modulations were performed

Related Submittal(s)/Grant(s)

None.

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 C63.4-2003.

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.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located in 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 November 21, 2007. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

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 a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

NVLAP 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-C.

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

Equipment Modifications

No modifications were made to the EUT.

Local Support Equipment List and Details

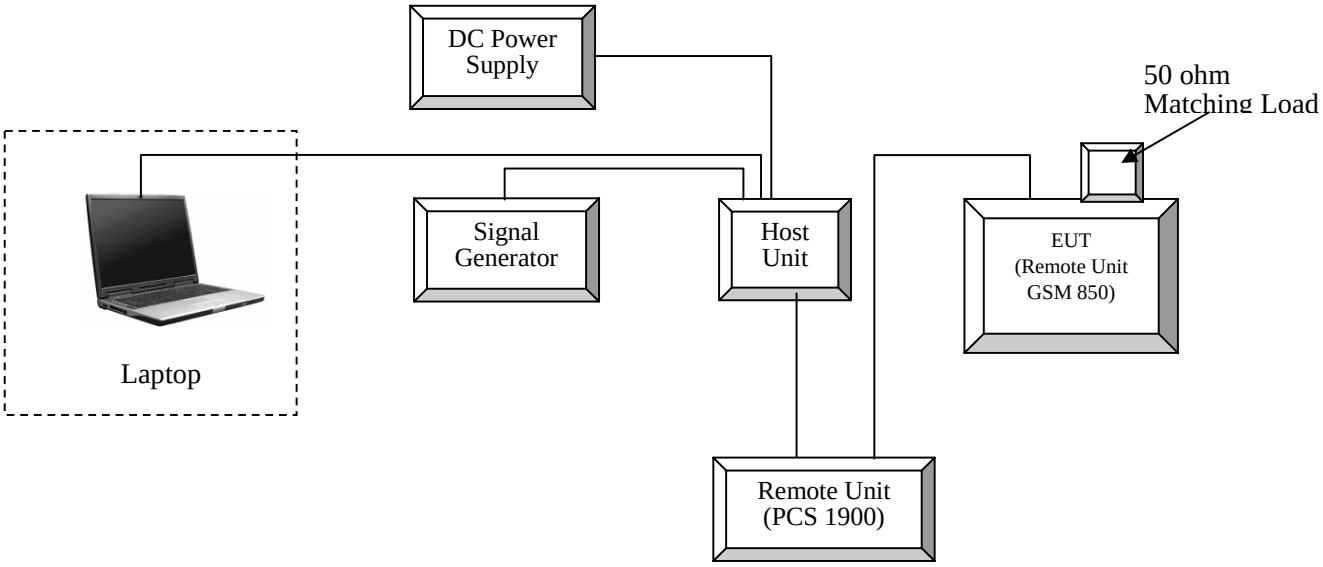
Manufacturer	Description	Model	Serial Number	FCC ID
AEROFLEX	Signal Generator	IFR3416	3410051025	N/A
ASTEC	DC Power Supply	JF101B-9000-0000	BY4748	N/A
IBM	Laptop	T400	GTVQC-2KWCD-VXM8V-KPRM9-KKVDB	DoC
Bravo	Multi-Band, Multi-Standard, Multi-Carrier Coverage System (Host Unit)	mBSC081921-12 (Host Unit)	N/A	N/A

External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded Detachable AC Cable	7.0	LISN/AC mains	EUT
Unshielded Detachable Fiber Cable	1.2	Host Unit/Fiber Port	Remote Unit (AWS 2100 Unit)
Shielded Detachable Blue RF Cable	1.5	Host Unit/SMA Port	Remote Unit
Shielded Detachable Yellow RF Cable	3.0	Signal Generator/ SMA Port	Remote Unit
Unshielded Detachable DC Cable	1.3	DC Supply/DC Port	Host Unit
Unshielded Detachable Network Cable	10.0	Laptop/Network Port	Host Unit

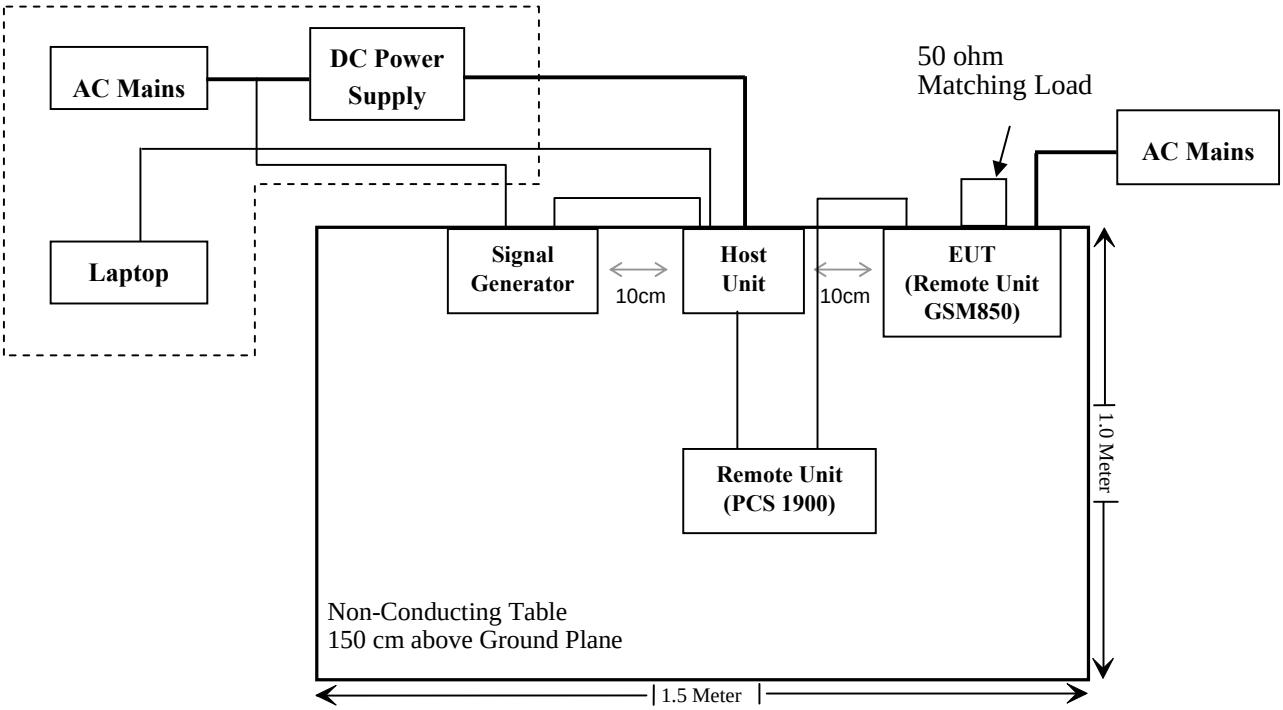
Configuration of Test Setup

For Downlink mode:



Block Diagram of Test Setup

For Downlink mode:



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	N/A
§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	Compliance

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

Applicable Standard

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 Occupational/Controlled Exposures

Limits for Occupational/Controlled Exposures				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mw/cm^2)**	**Averaging Time (Minutes)**
0.3-3.0	614	1.63	*(100)	6
3.0-30.0	1824/f	4.89/f	*(900/f\2\)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5.0	6

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/cm^2)
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)

MPE Predication:

Maximum peak output power at antenna input terminal: 45.71 (dBm)
Maximum peak output power at antenna input terminal: 37239.17 (mW)
Prediction safety distance: 400 (cm)
Predication frequency: 893.5 (MHz)
Antenna Gain (typical): 11 (dBi)
Antenna Gain (typical): 12.59 (numeric)
Power density predication frequency at 400 cm: 0.23 (mW/cm^2)
MPE limit for general population exposure at prediction frequency: F/300 (mW/cm^2) =893.5/300=2.98 (mW/cm^2)

Result: Compliance

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

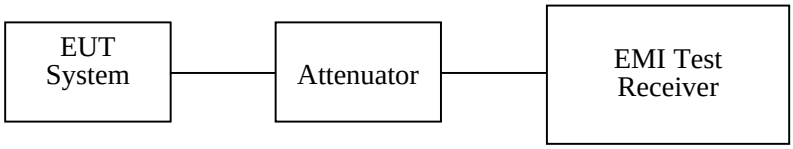
Applicable Standards

FCC §2.1046 and §22.913 (a).

Test Procedure

Conducted method:

The RF output of the EUT system was connected to the wireless test set and the EMI test receiver 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	EMI Test Receiver	ESCI	100224	2009-11-24	2010-11-24

*** 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 Alvin Huang on 2010-08-18.

GSM:

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Output Power (dBm)	Result
Downlink	One Carrier			
	Low	869.2	45.29	Compliance
	Middle	881.6	45.62	Compliance
	High	893.8	45.64	Compliance
	Two Carriers			
	Low	869.5	45.43	Compliance
	Middle	881.6	45.42	Compliance
	High	893.5	45.60	Compliance
	Three Carriers			
	Low	869.8	45.65	Compliance
	Middle	881.6	45.65	Compliance
	High	893.2	45.45	Compliance
	Four Carriers			
	Low	870.1	45.53	Compliance
	Middle	881.6	45.62	Compliance
	High	892.9	45.63	Compliance

EDGE:

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Output Power (dBm)	Result
Downlink	One Carrier			
	Low	869.2	45.42	Compliance
	Middle	881.6	45.29	Compliance
	High	893.8	45.24	Compliance
	Two Carriers			
	Low	869.5	45.52	Compliance
	Middle	881.6	45.60	Compliance
	High	893.5	45.71	Compliance
	Three Carriers			
	Low	869.8	45.60	Compliance
	Middle	881.6	45.59	Compliance
	High	893.2	45.58	Compliance
	Four Carriers			
	Low	870.1	45.29	Compliance
	Middle	881.6	45.37	Compliance
	High	892.9	45.37	Compliance

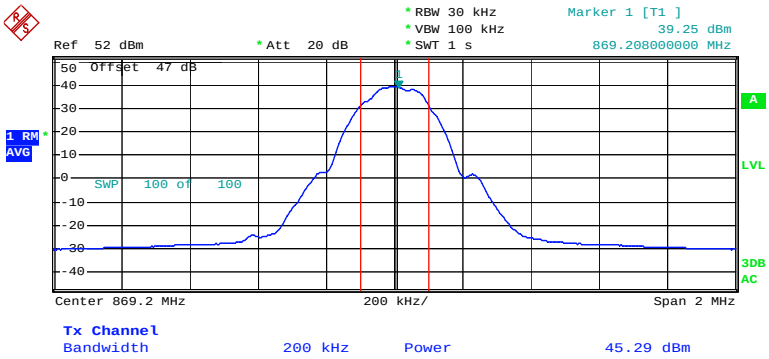
Note: The antenna gain for GSM 850 is less than 11 dBi.

Plots of Conducted Output Power

GSM 850:

Downlink mode (One carrier):

Low Channel



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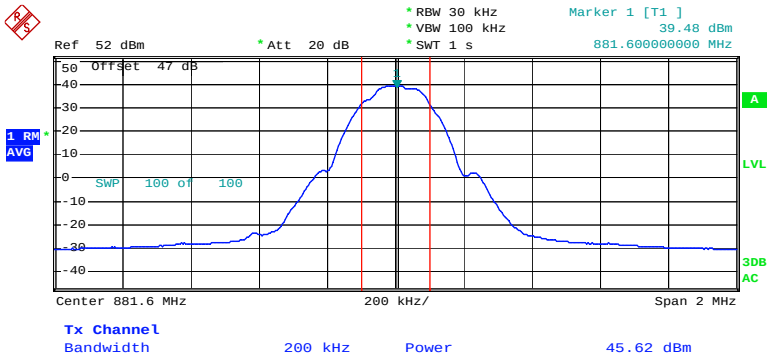
Middle Channel



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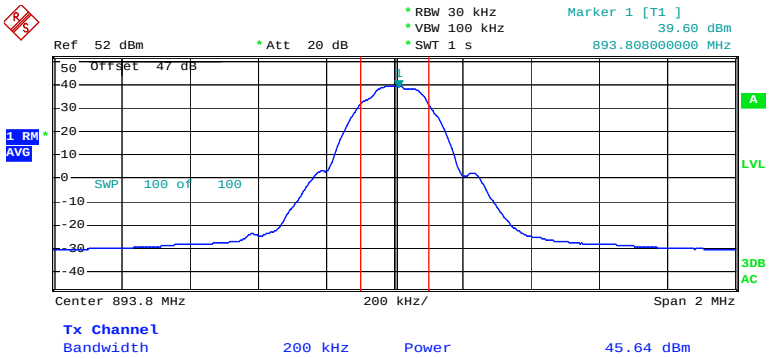

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Downlink mode (Two carriers):

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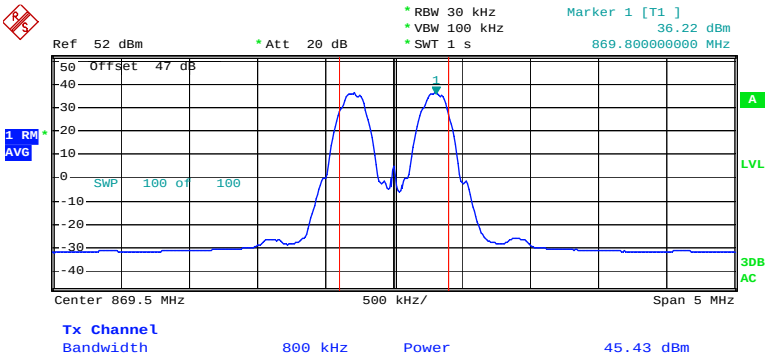

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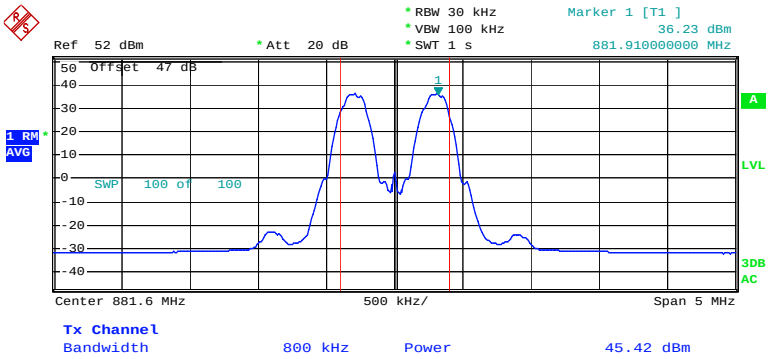

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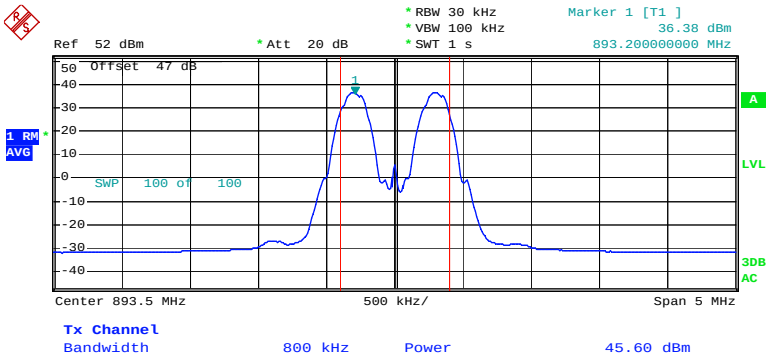

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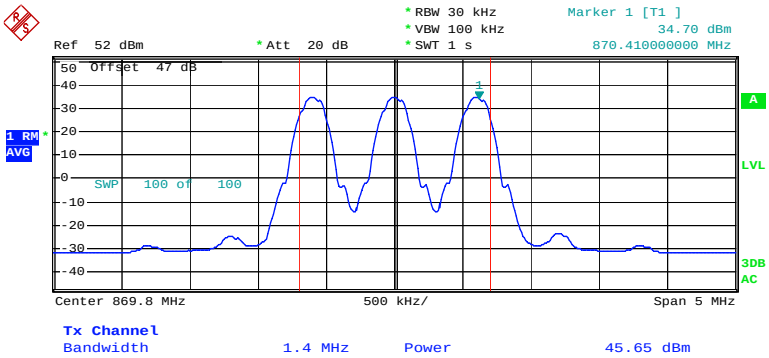
Downlink mode (Three carriers):

Low Channel



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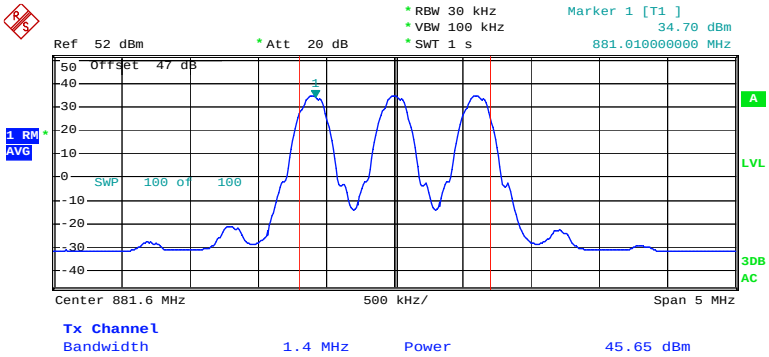

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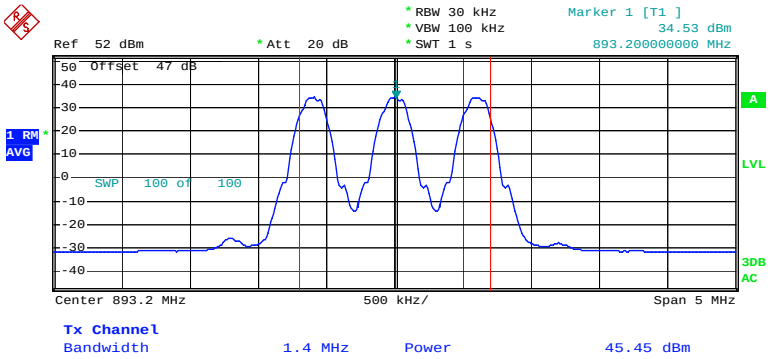

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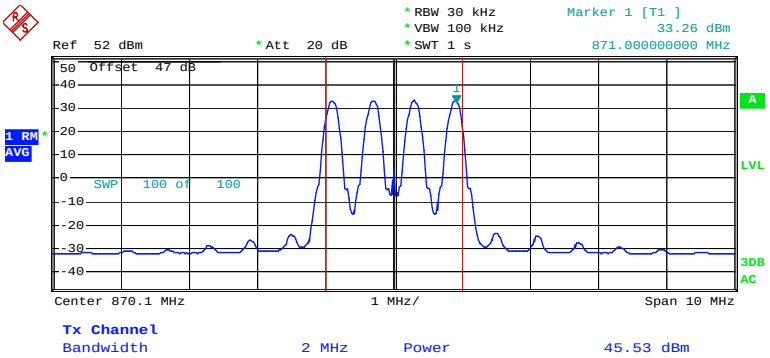
Downlink mode (Four carriers):

Low Channel



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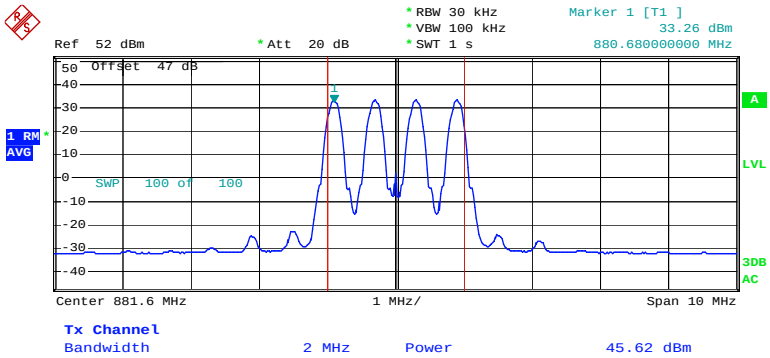

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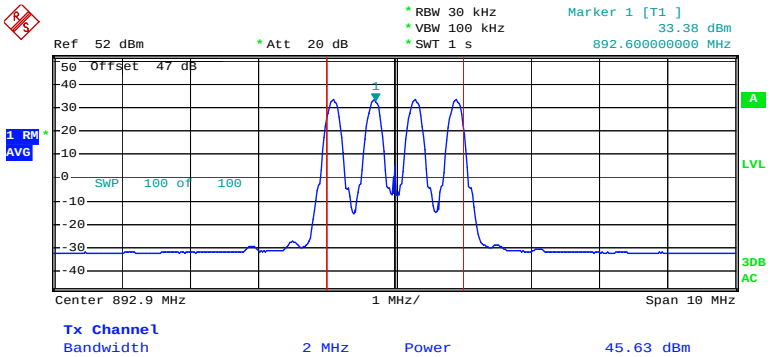

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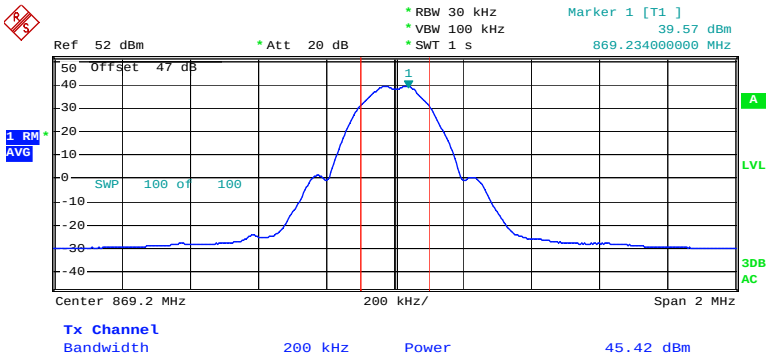
EDGE:

Downlink mode (One carrier):

Low Channel



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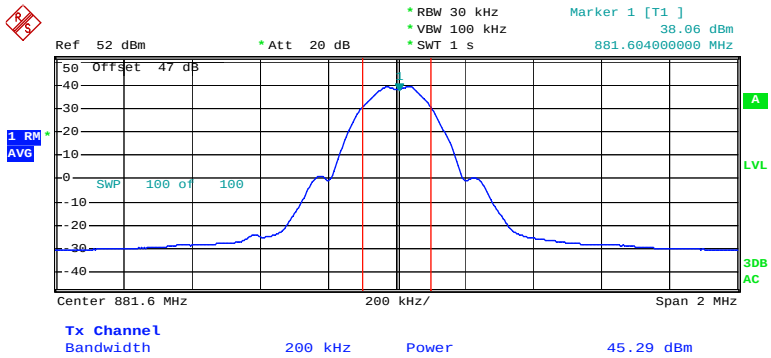

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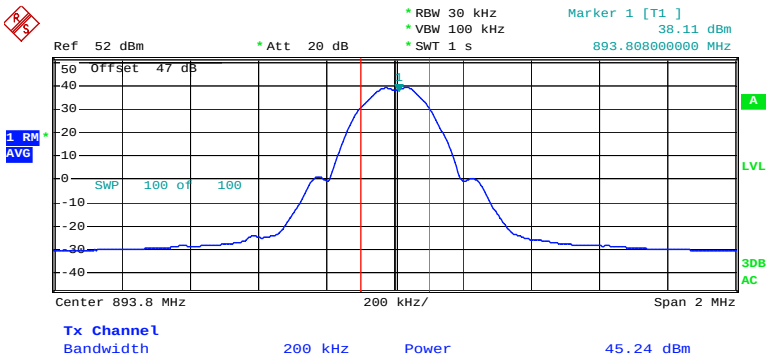

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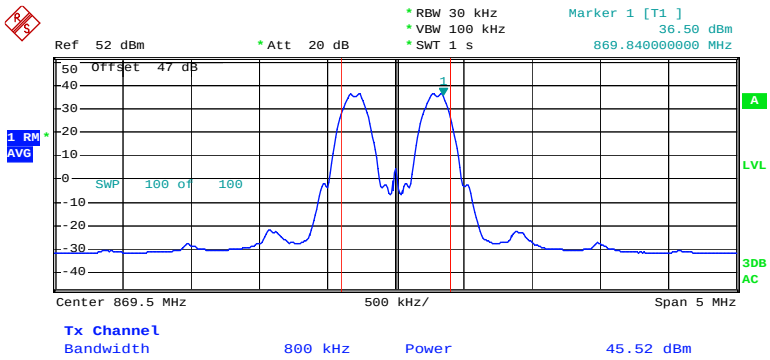
Downlink mode (Two carriers):

Low Channel



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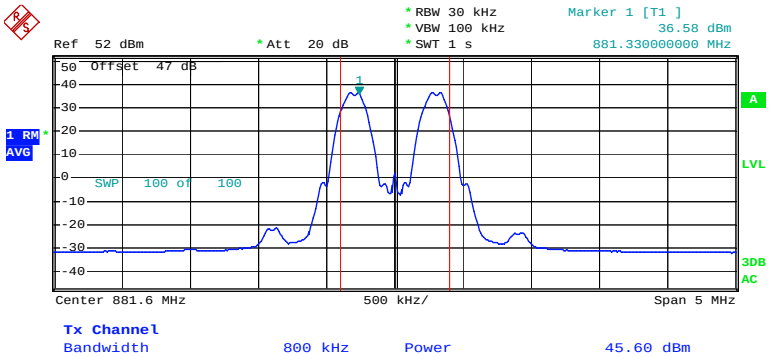

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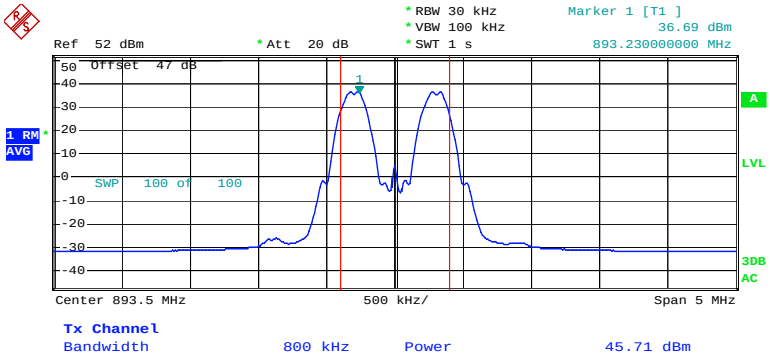

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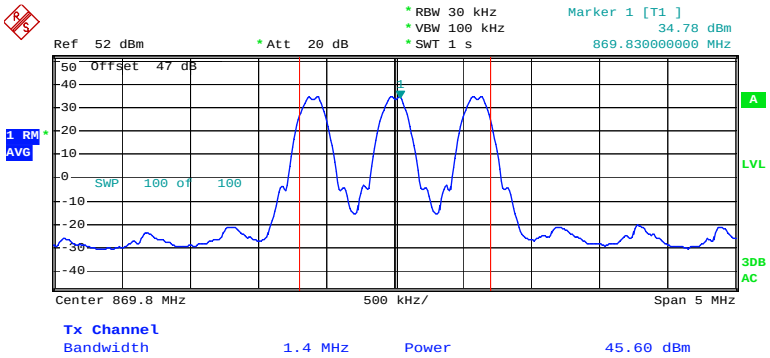
Downlink mode (Three carriers):

Low Channel



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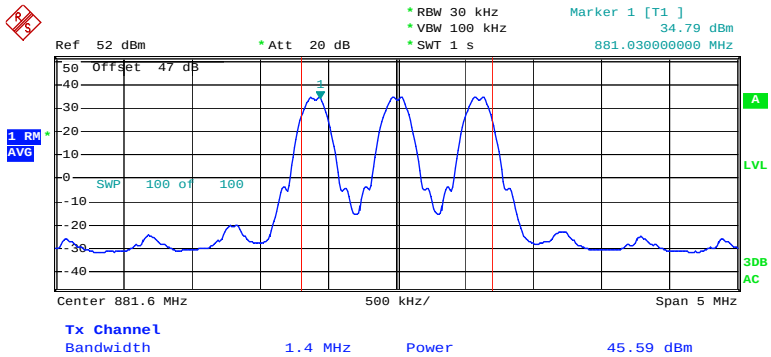
Middle Channel



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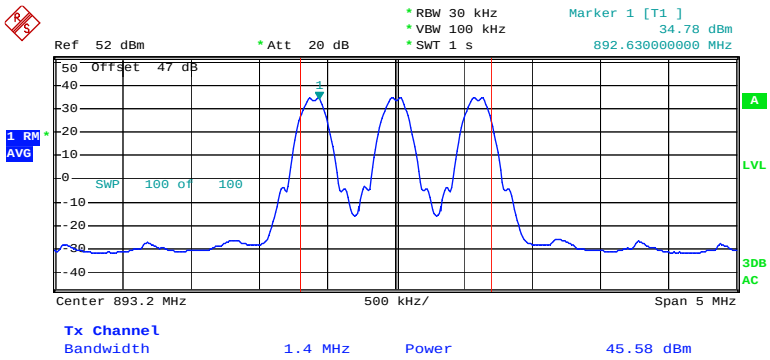
High Channel



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Downlink mode (Four carriers):

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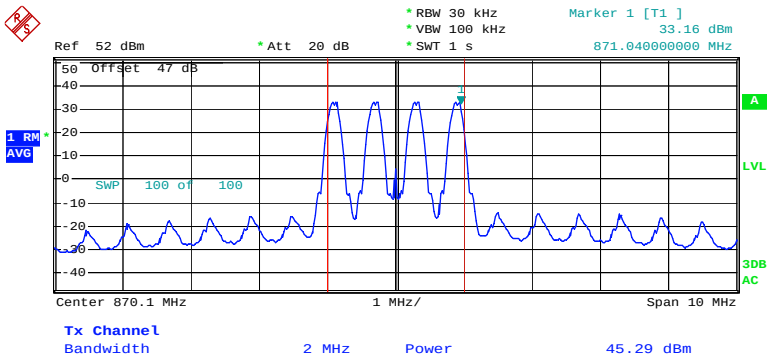

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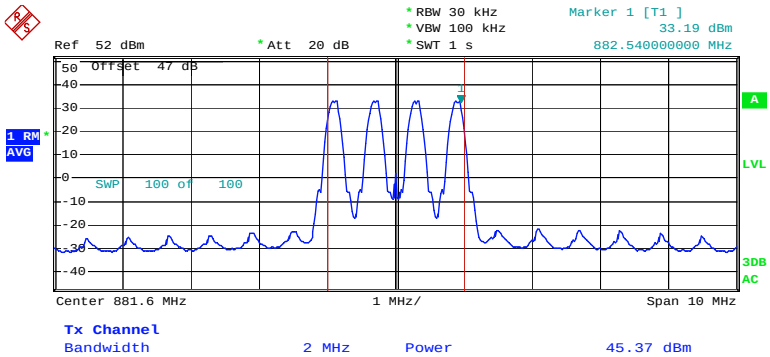
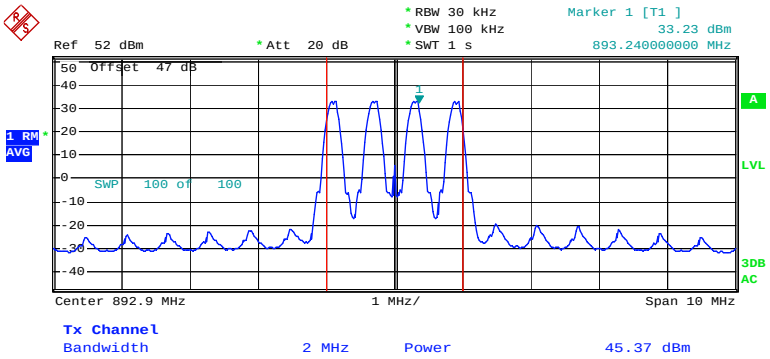
Middle Channel



Date: 18.AUG.2010 22:32:55

High Channel



Date: 18.AUG.2010 22:28:26

FCC §2.1049, §22.917 & §22.905 - OCCUPIED BANDWIDTH

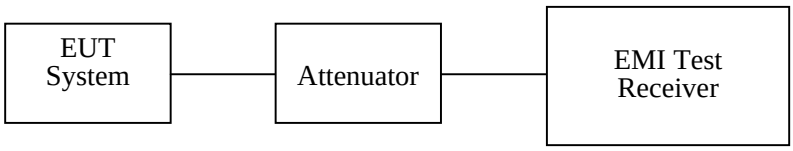
Applicable Standards

FCC §2.1049, §22.917, §22.905.

Test Procedure

The RF output of the EUT system was connected to the simulator and the EMI test receiver through sufficient attenuation.

The resolution bandwidth of the EMI test receiver was set at 30 kHz (Cellular) and the 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2009-11-24	2010-11-24

*** 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 Alvin Huang from 2010-08-18 to 2010-08-19.

GSM 850:

Mode	Channel	Frequency (MHz)	26 dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
Downlink	One Carrier			
	Low	869.2	0.336	0.256
	Mid	881.6	0.336	0.256
	High	893.8	0.336	0.256
	Two Carriers			
	Low	869.5	0.940	0.840
	Mid	881.6	0.940	0.840
	High	893.5	0.940	0.840
	Three Carriers			
	Low	869.8	1.540	1.420
	Mid	881.6	1.540	1.420
	High	893.2	1.540	1.420
	Four Carriers			
	Low	870.1	2.140	2.000
	Mid	881.6	2.140	2.000
	High	892.9	2.140	2.000

EDGE:

Mode	Channel	Frequency (MHz)	26 dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
Downlink	One Carrier			
	Low	869.2	0.324	0.244
	Mid	881.6	0.324	0.244
	High	893.8	0.324	0.240
	Two Carriers			
	Low	869.5	0.930	0.820
	Mid	881.6	0.930	0.820
	High	893.5	0.930	0.820
	Three Carriers			
	Low	869.8	1.530	1.420
	Mid	881.6	1.530	1.410
	High	893.2	1.530	1.410
	Four Carriers			
	Low	870.1	2.140	2.000
	Mid	881.6	2.140	2.000
	High	892.9	2.140	2.000

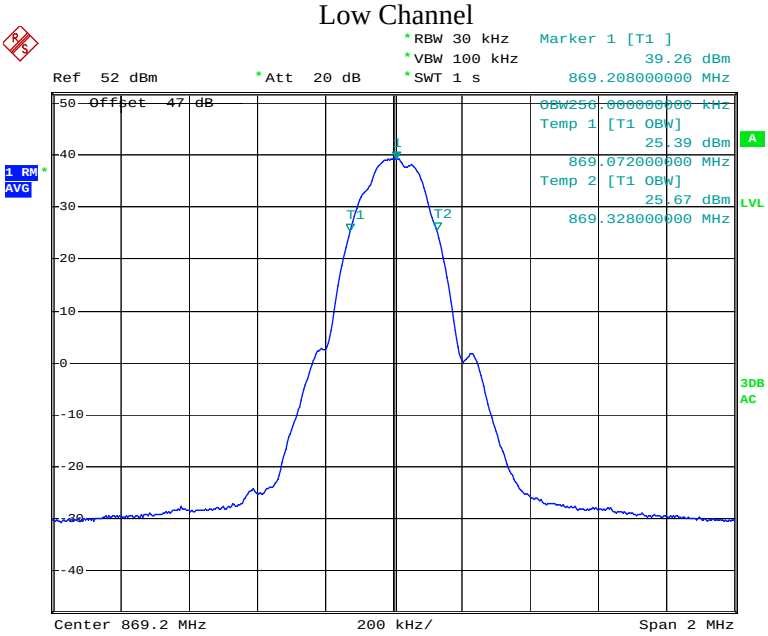
Please refer to the following plots.

GSM850:

Downlink mode (One carrier):

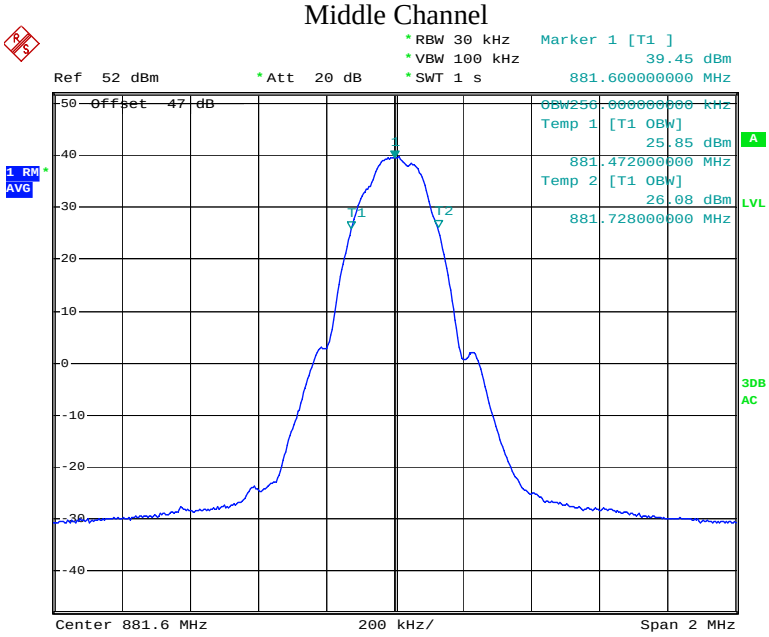
99% Occupied Bandwidth

Low Channel



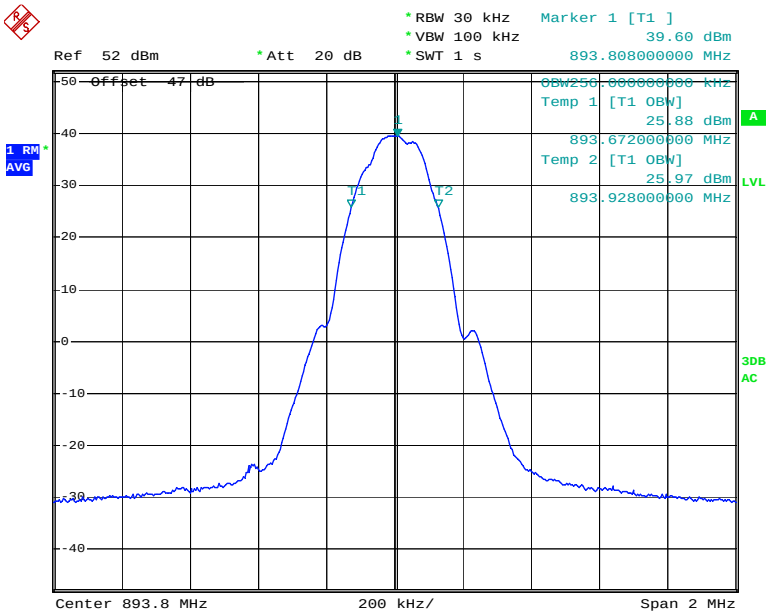
Date: 18.AUG.2010 19:30:34

Middle Channel



Date: 18.AUG.2010 19:27:09

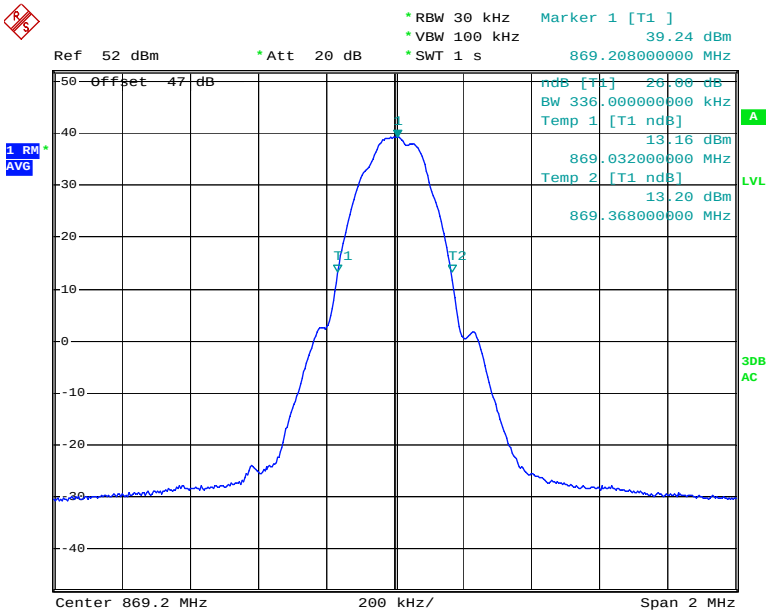
High Channel



Date: 18.AUG.2010 21:12:27

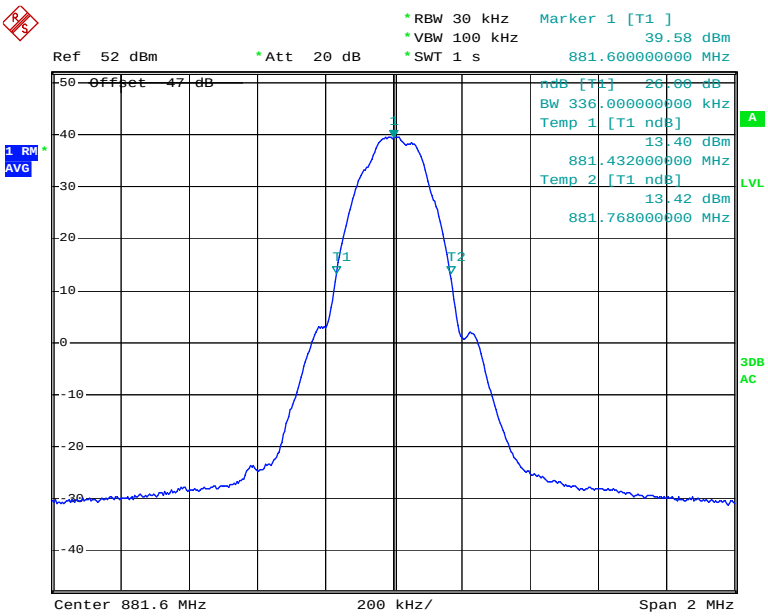
26 dB Bandwidth

Low Channel



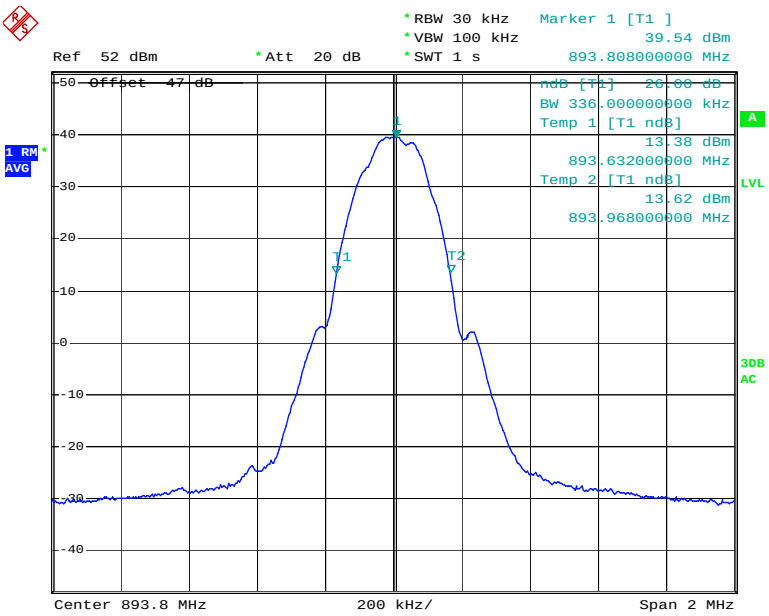
Date: 18.AUG.2010 19:30:46

Middle Channel



Date: 18.AUG.2010 19:27:23

High Channel

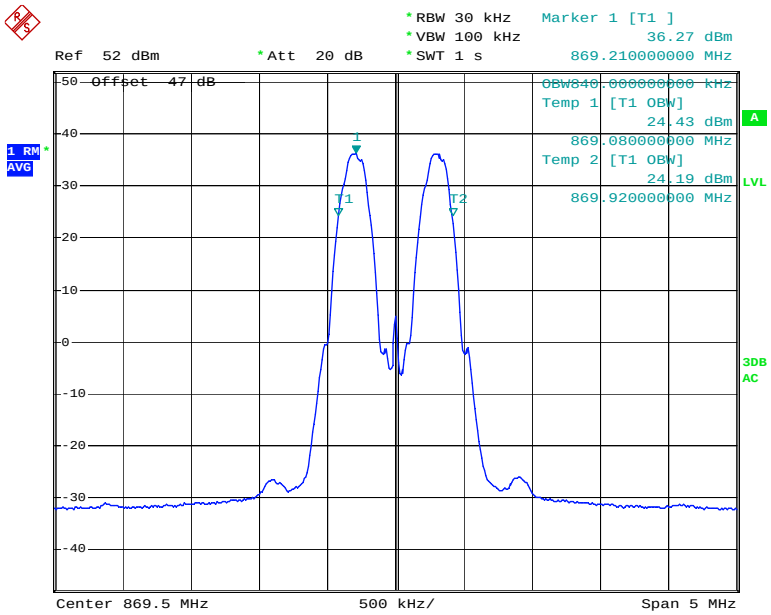


Date: 18.AUG.2010 21:12:38

Downlink mode (Two carriers):

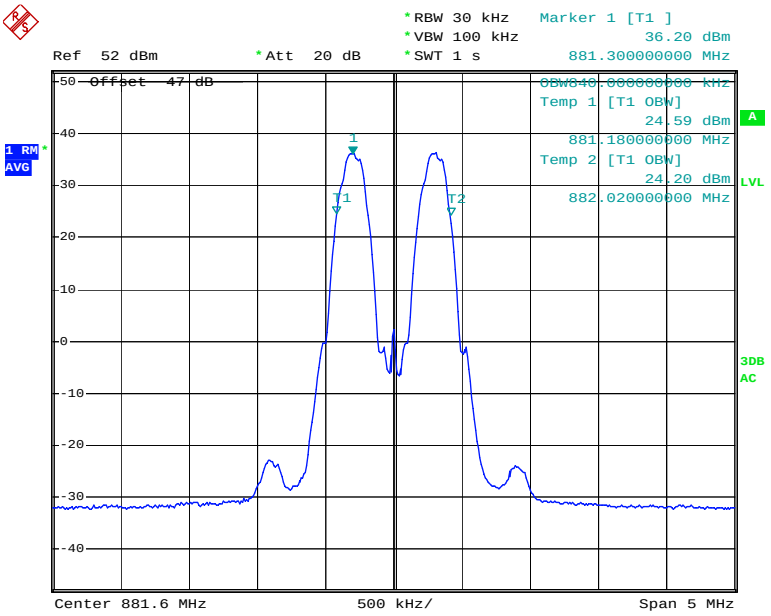
99% Occupied Bandwidth

Low Channel



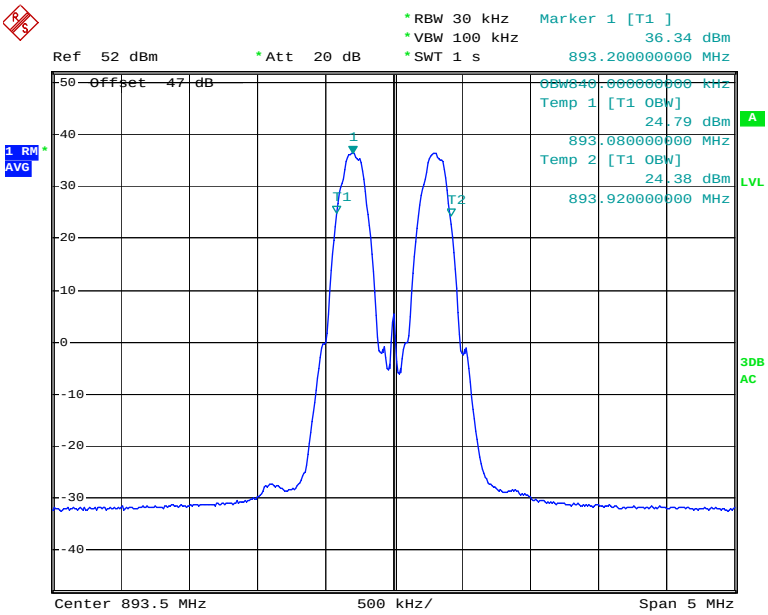
Date: 18.AUG.2010 21:30:34

Middle Channel



Date: 18.AUG.2010 21:34:09

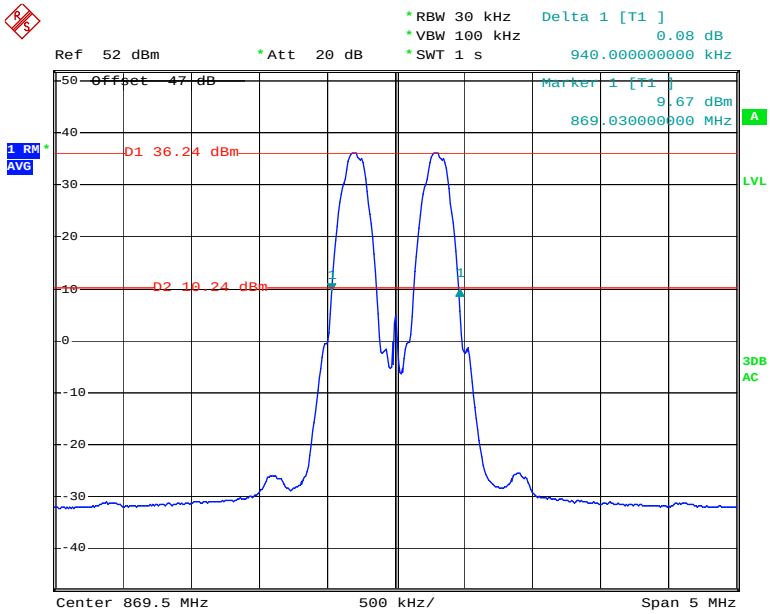
High Channel



Date: 18.AUG.2010 21:38:19

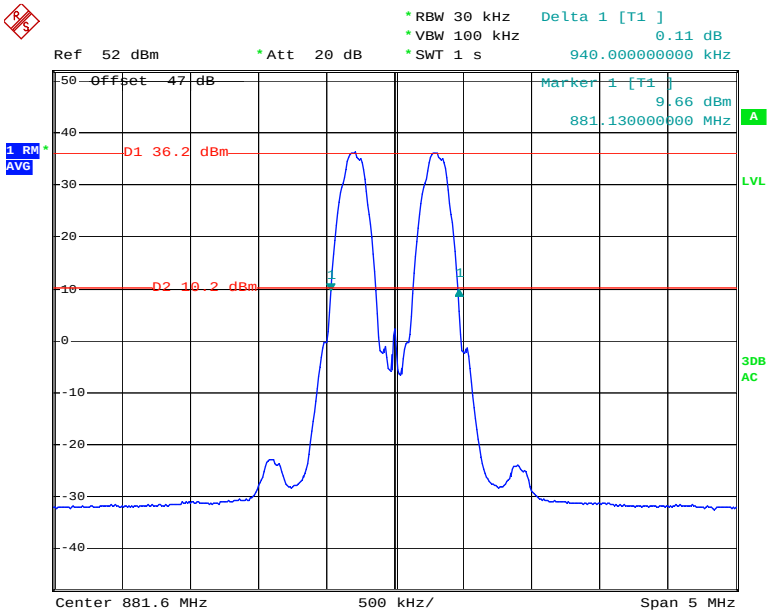
26 dB Bandwidth

Low Channel



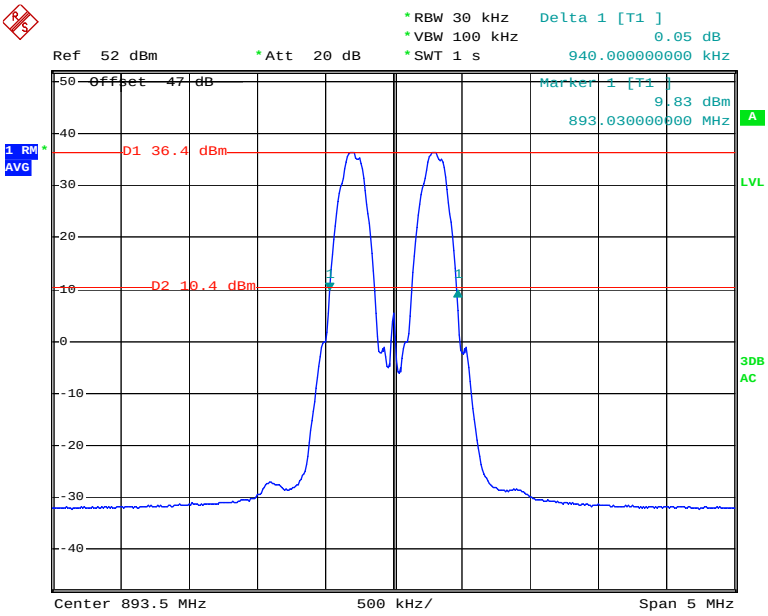
Date: 18.AUG.2010 21:31:23

Middle Channel



Date: 18.AUG.2010 21:35:07

High Channel

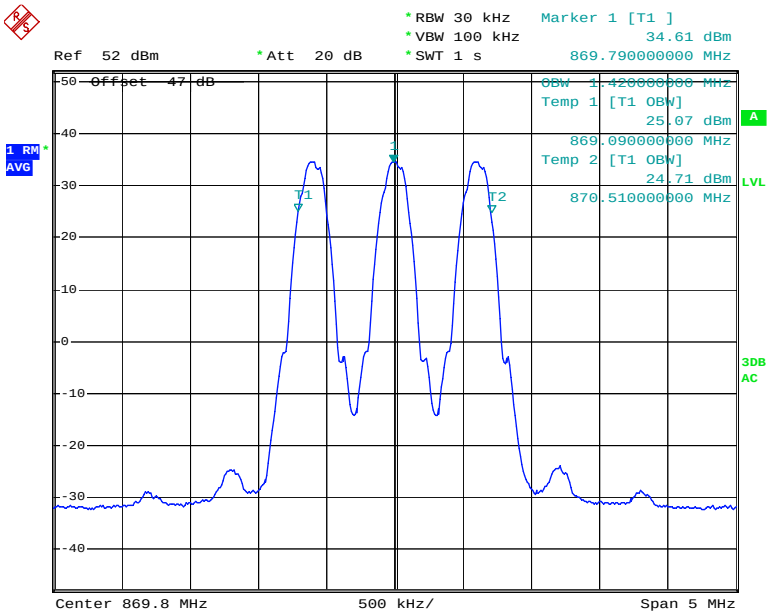


Date: 18.AUG.2010 21:39:02

Downlink mode (Three carriers):

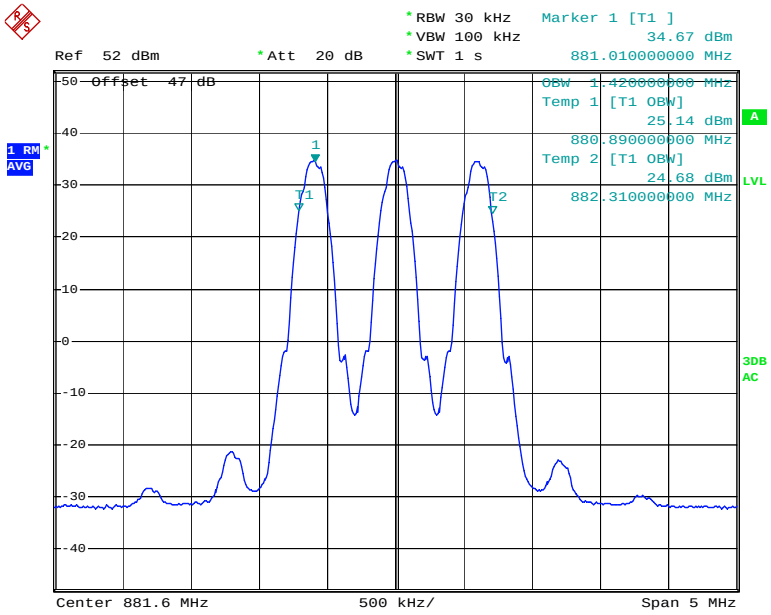
99% Occupied Bandwidth

Low Channel



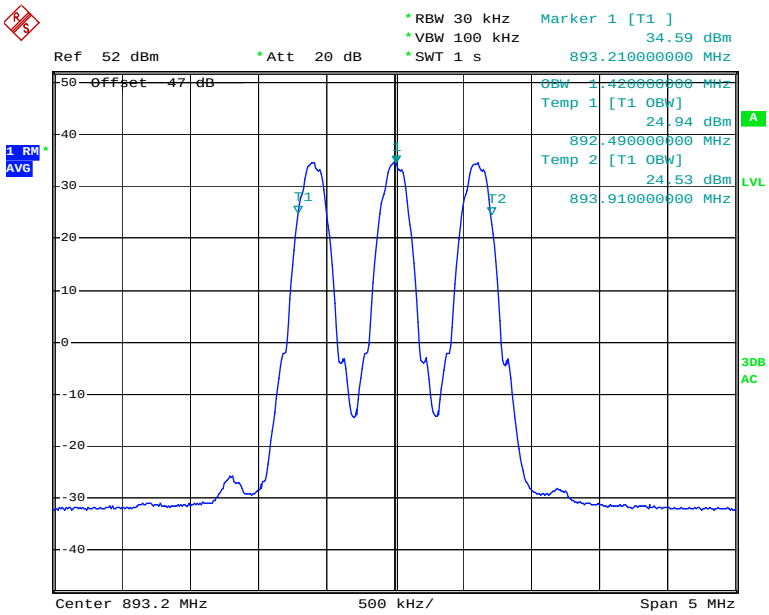
Date: 18.AUG.2010 22:09:41

Middle Channel



Date: 18.AUG.2010 22:07:08

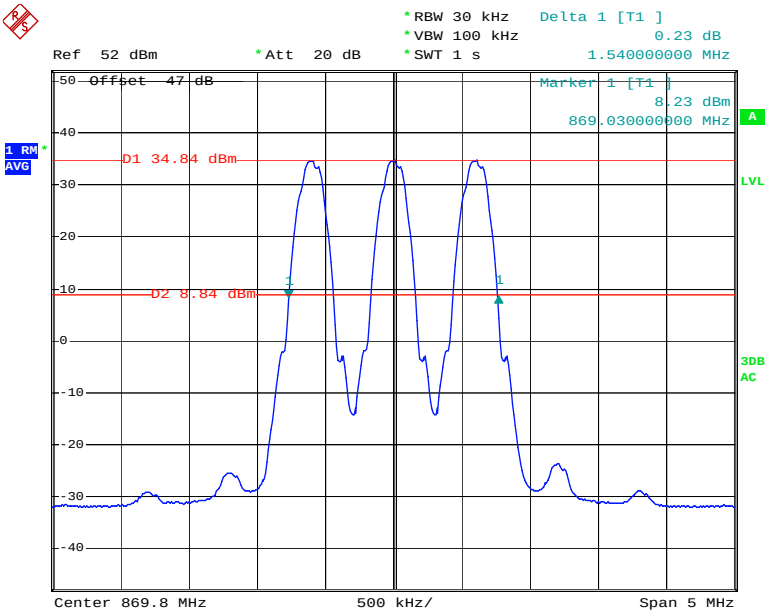
High Channel



Date: 18.AUG.2010 22:02:33

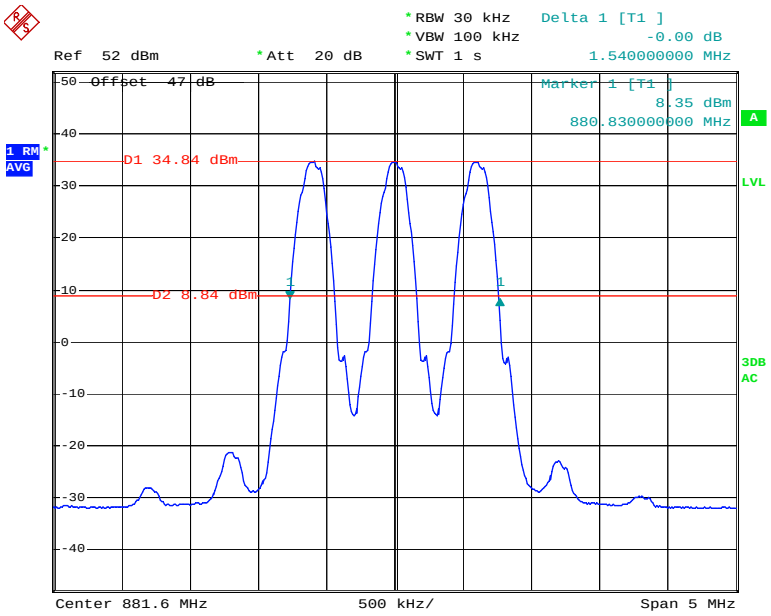
26 dB Bandwidth

Low Channel



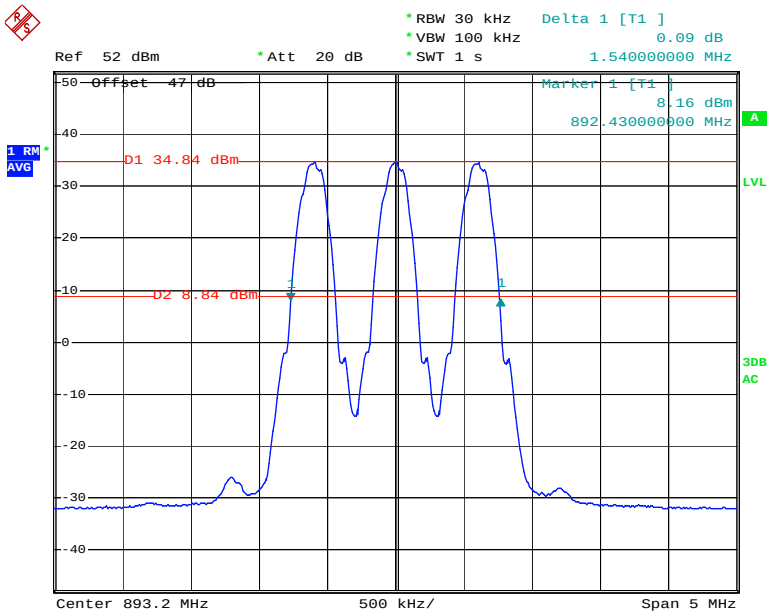
Date: 18.AUG.2010 22:09:03

Middle Channel



Date: 18.AUG.2010 22:07:43

High Channel

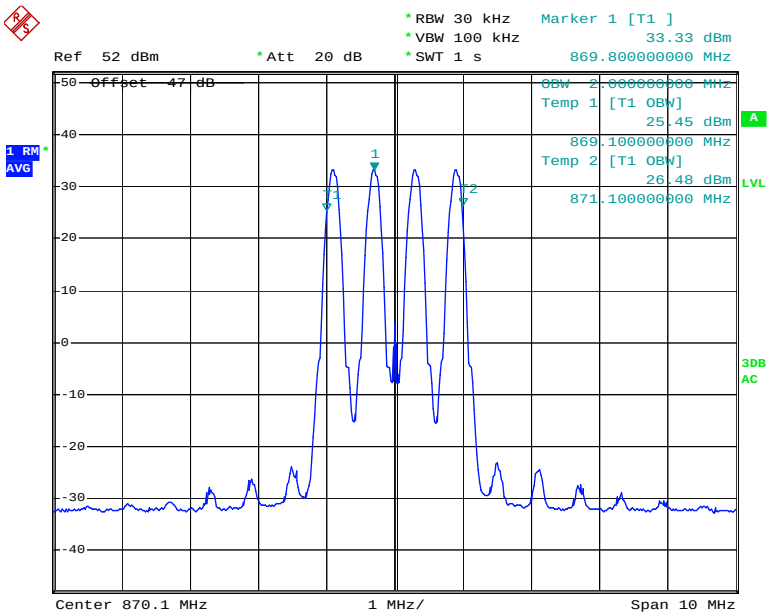


Date: 18.AUG.2010 22:01:36

Downlink mode (Four carriers):

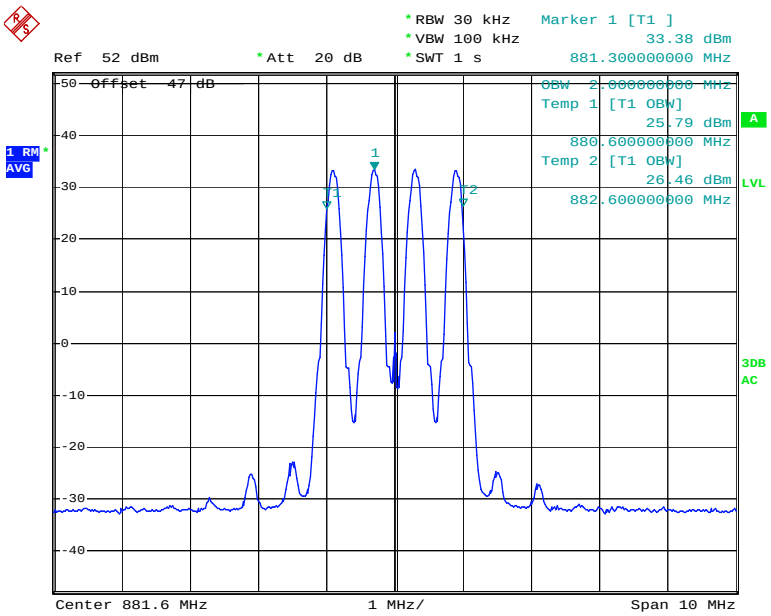
99% Occupied Bandwidth

Low Channel



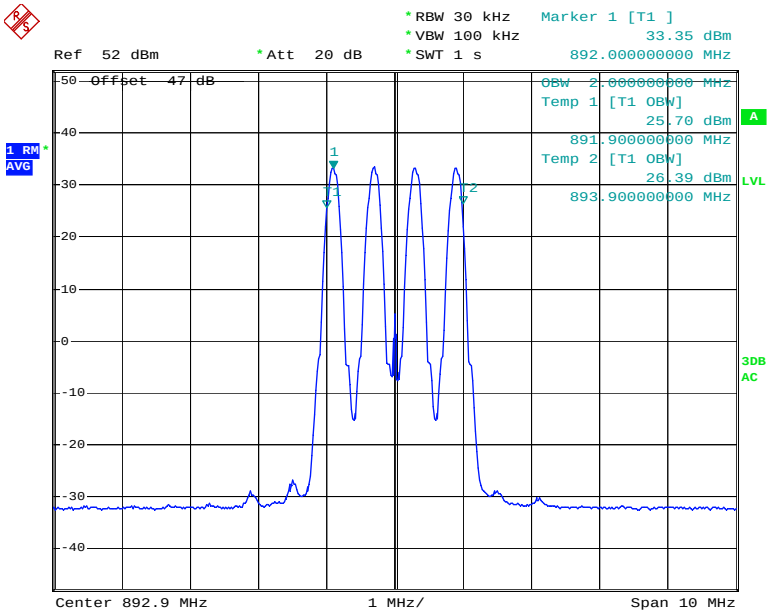
Date: 18.AUG.2010 22:15:33

Middle Channel



Date: 18.AUG.2010 22:17:43

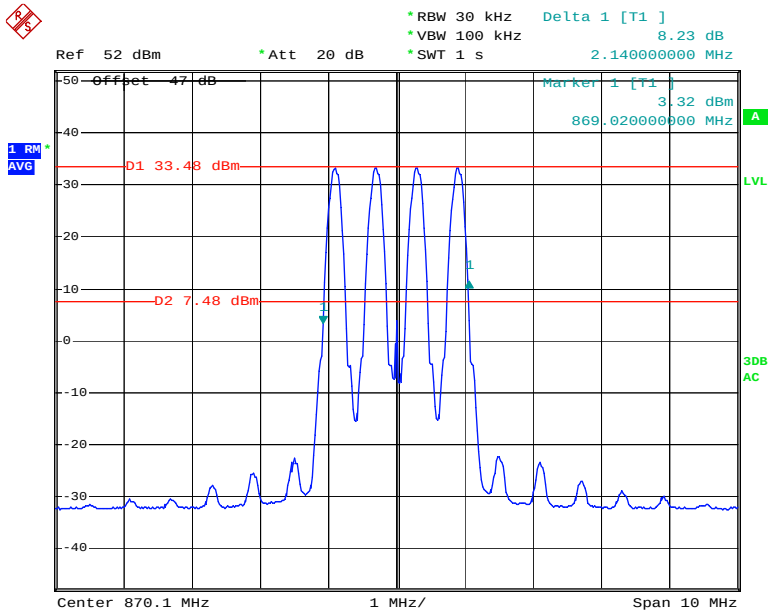
High Channel



Date: 18.AUG.2010 22:25:01

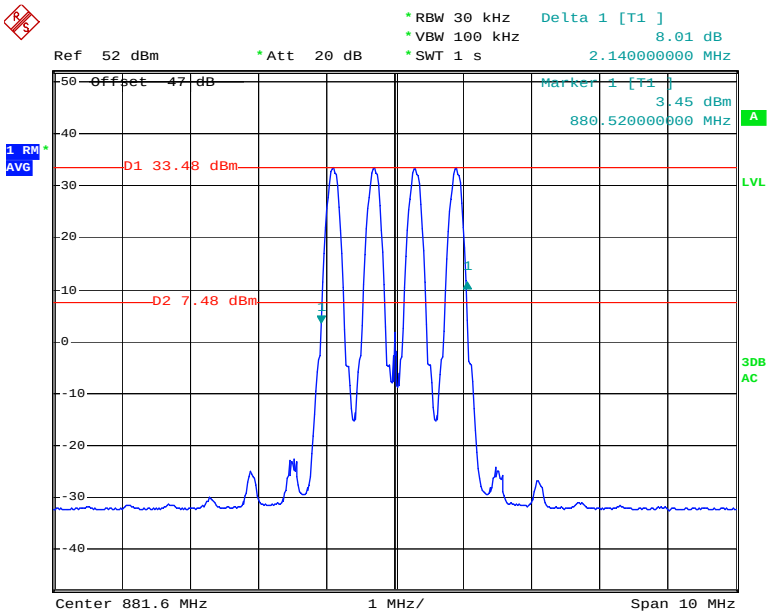
26 dB Bandwidth

Low Channel



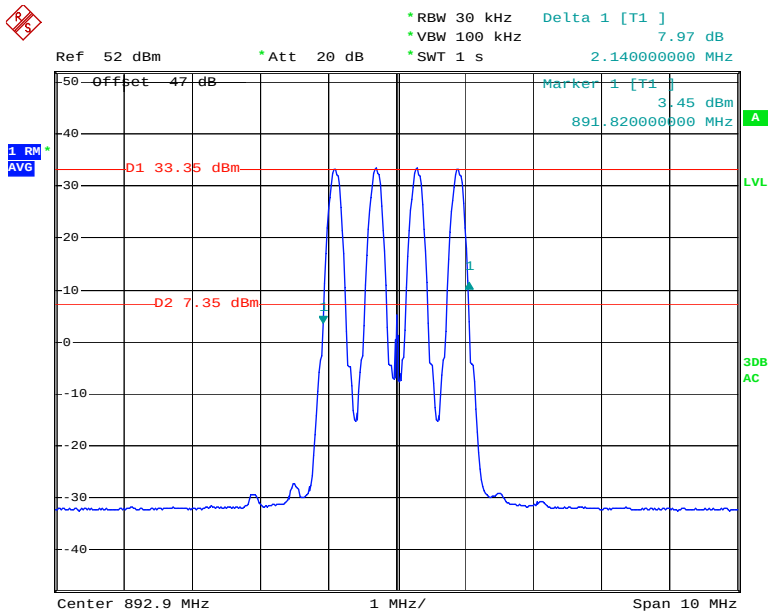
Date: 18.AUG.2010 22:16:26

Middle Channel



Date: 18.AUG.2010 22:17:22

High Channel

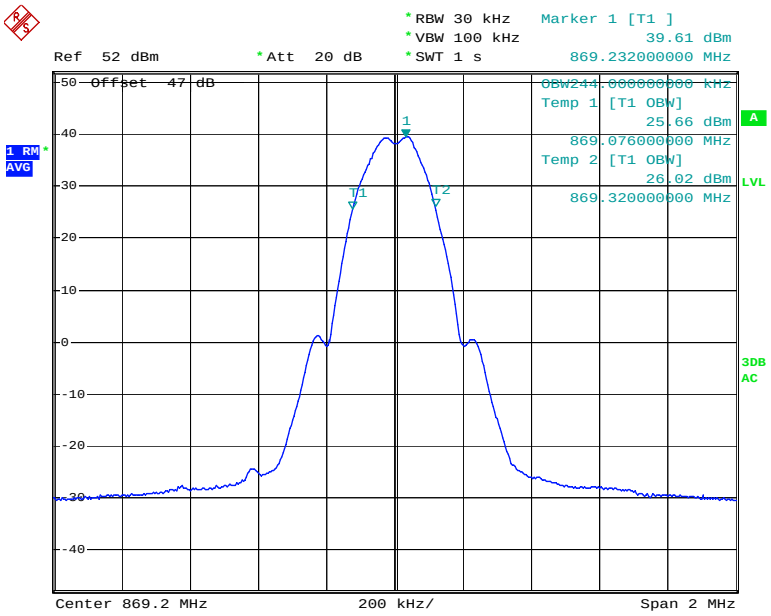


Date: 18.AUG.2010 22:25:49

EDGE:

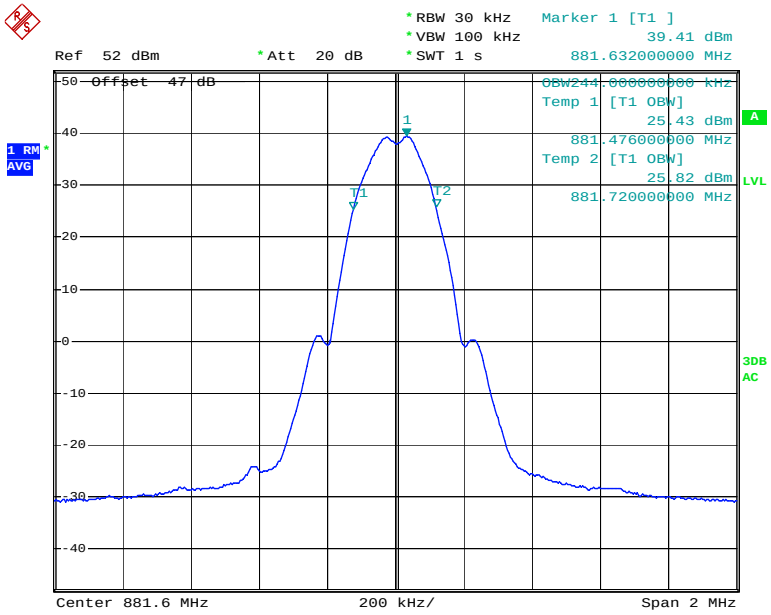
Downlink mode (One carrier):

99% Occupied Bandwidth



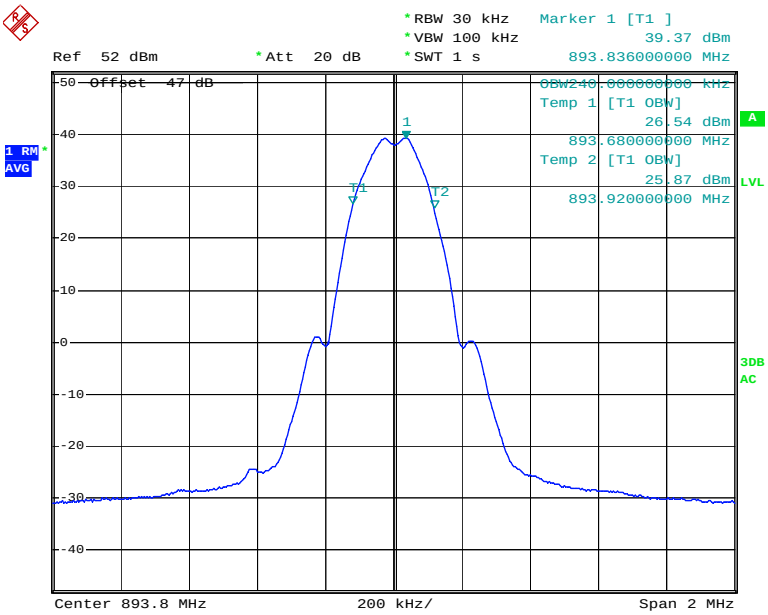
Date: 18.AUG.2010 21:24:55

Middle Channel



Date: 18.AUG.2010 21:18:54

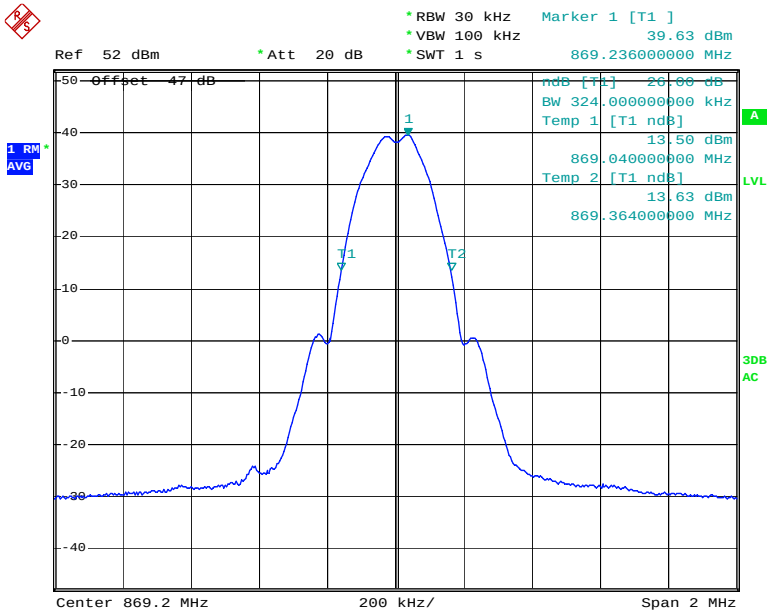
High Channel



Date: 18.AUG.2010 21:15:29

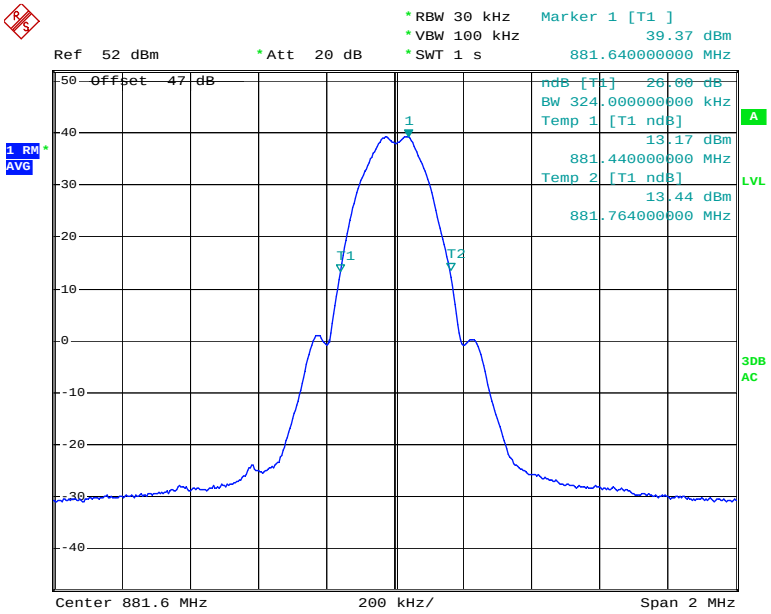
26 dB Bandwidth

Low Channel



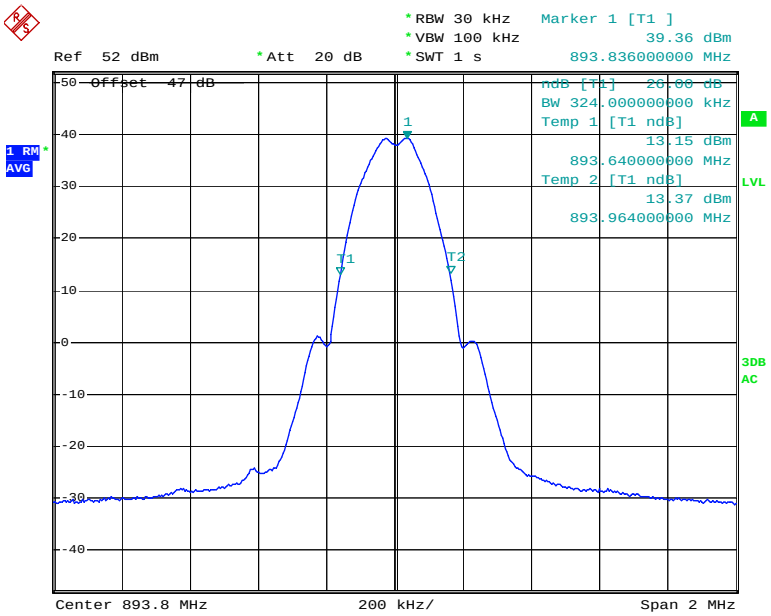
Date: 18.AUG.2010 21:25:11

Middle Channel



Date: 18.AUG.2010 21:19:08

High Channel

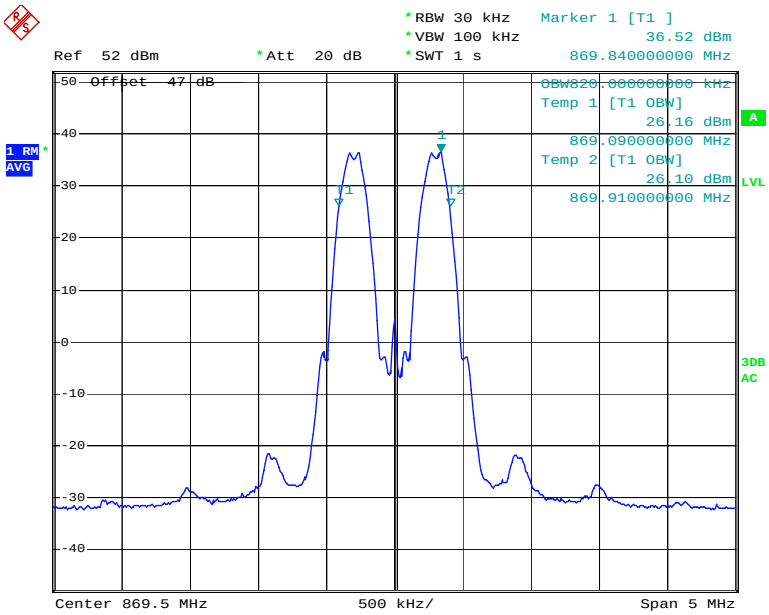


Date: 18.AUG.2010 21:15:45

Downlink mode (Two carriers):

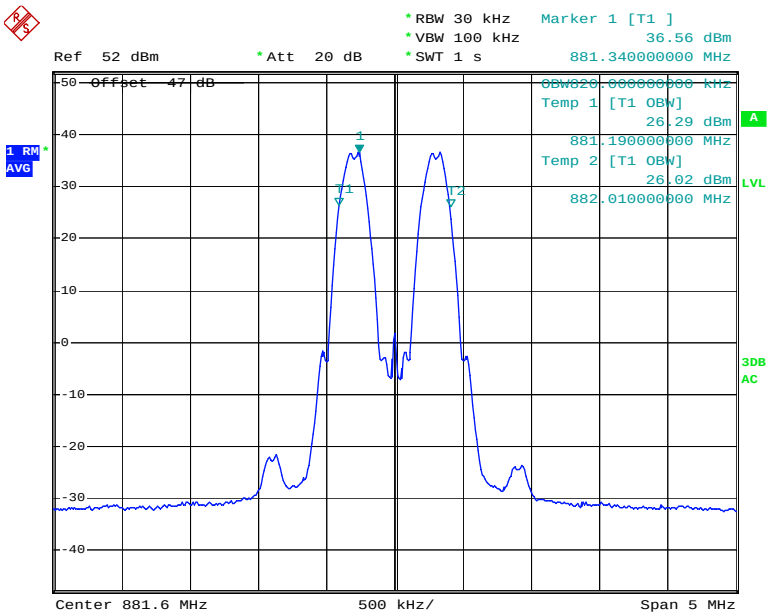
99% Occupied Bandwidth

Low Channel



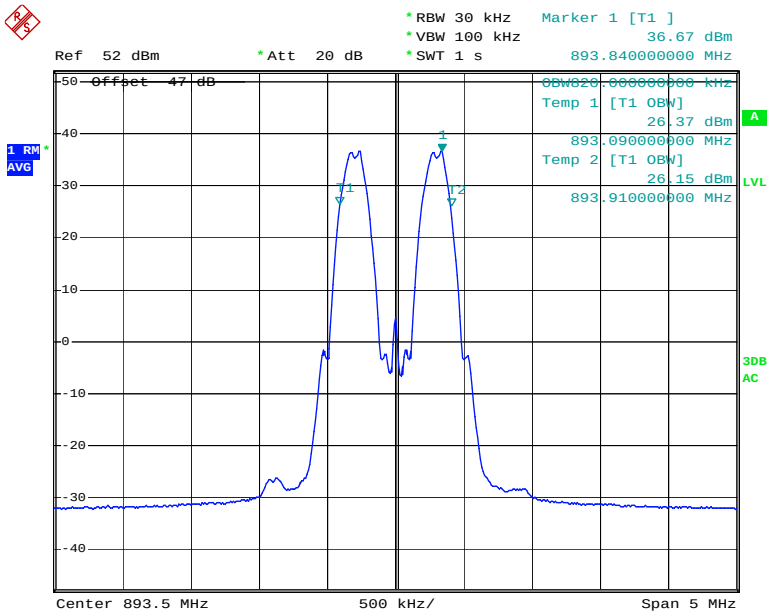
Date: 18.AUG.2010 21:49:00

Middle Channel



Date: 18.AUG.2010 21:45:46

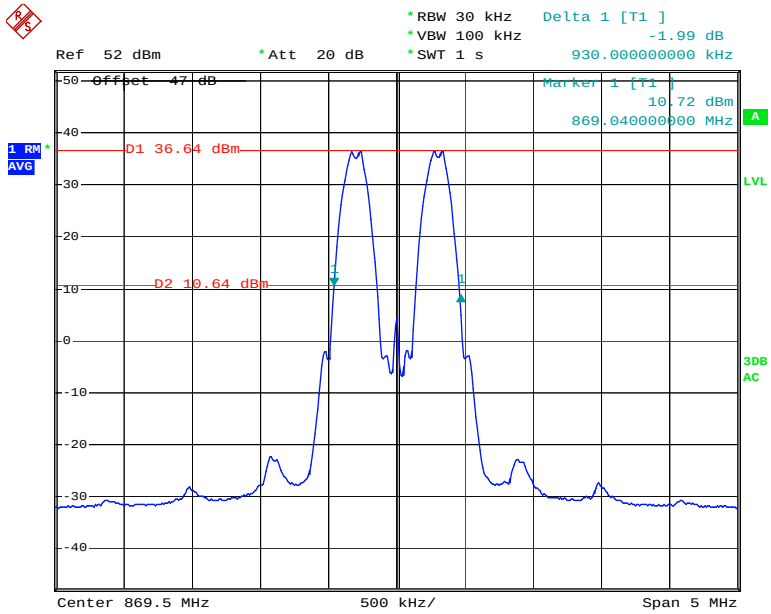
High Channel



Date: 18.AUG.2010 21:42:10

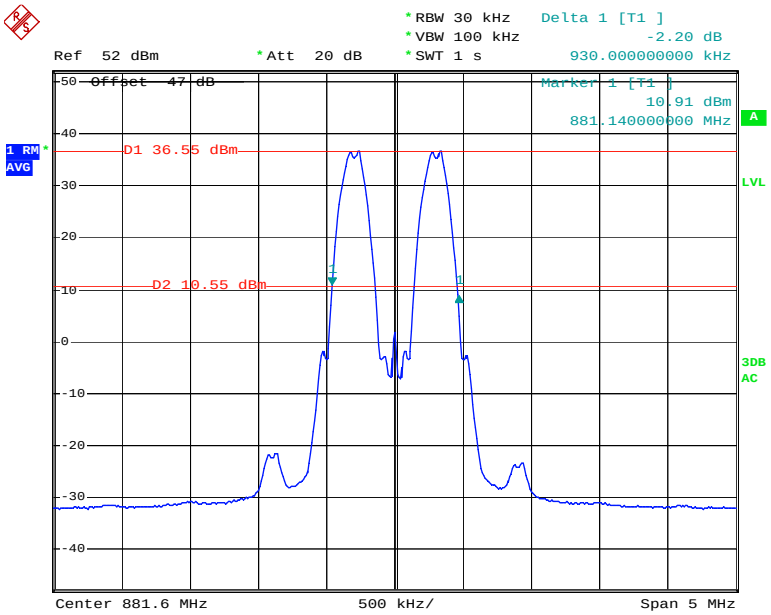
26 dB Bandwidth

Low Channel



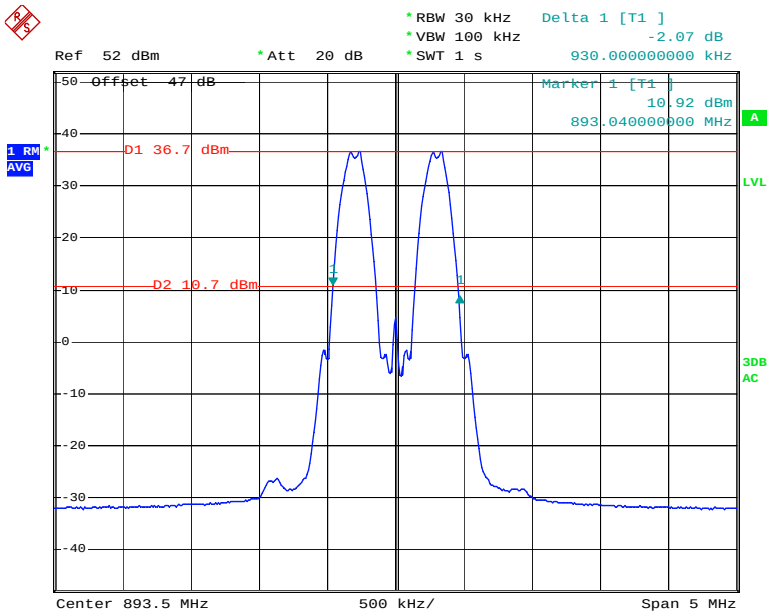
Date: 18.AUG.2010 21:49:33

Middle Channel



Date: 18.AUG.2010 21:46:24

High Channel

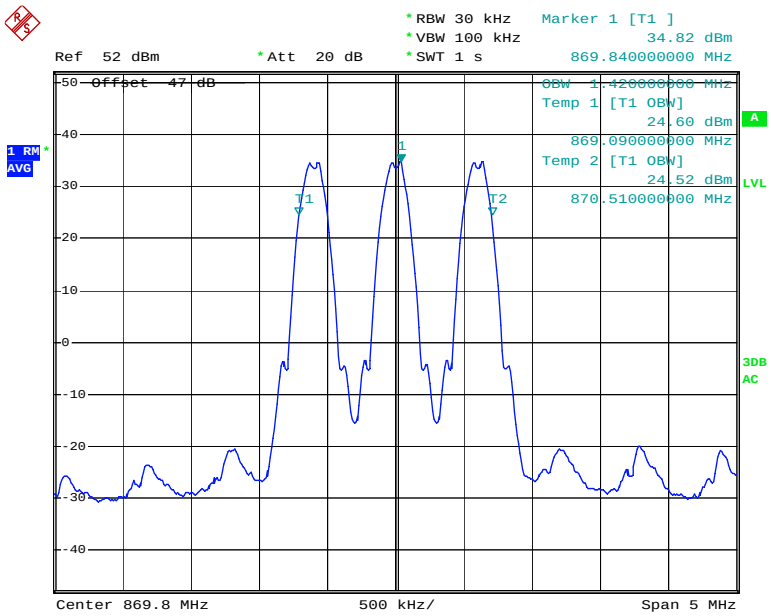


Date: 18.AUG.2010 21:43:04

Downlink mode (Three carriers):

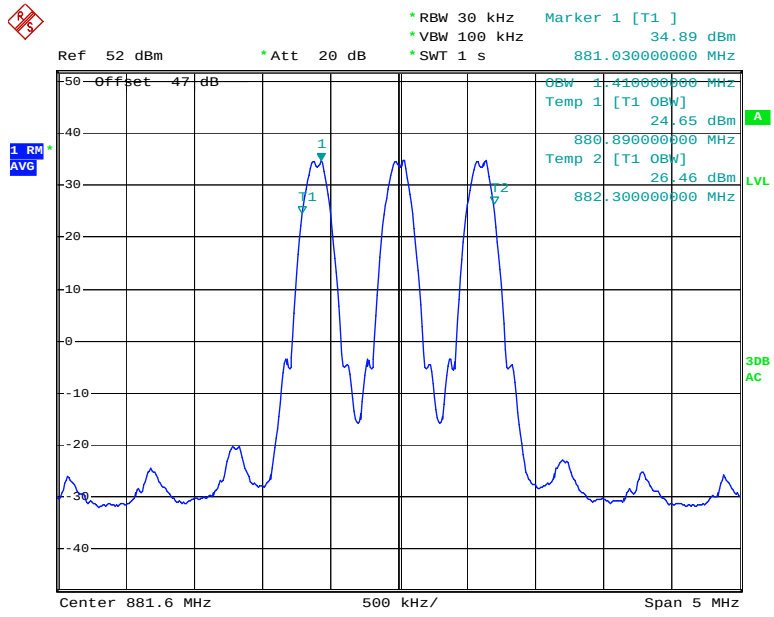
99% Occupied Bandwidth

Low Channel



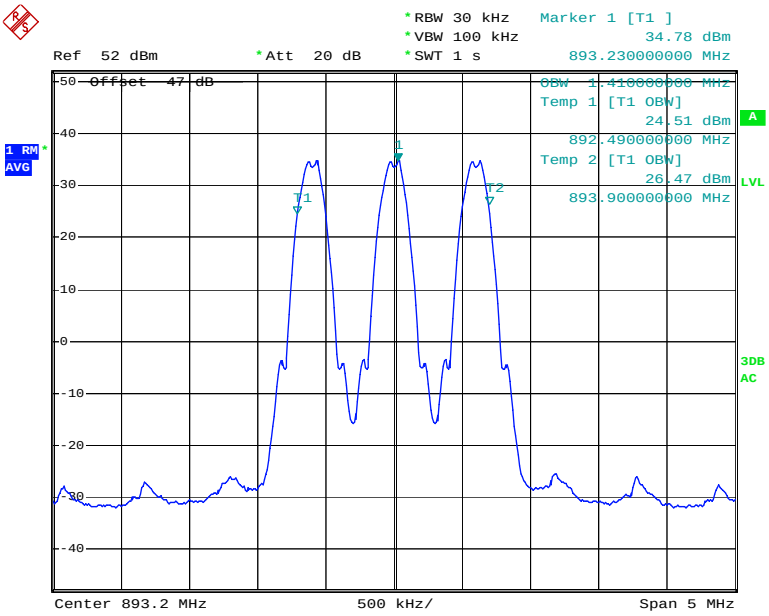
Date: 18.AUG.2010 21:52:40

Middle Channel



Date: 18.AUG.2010 21:55:06

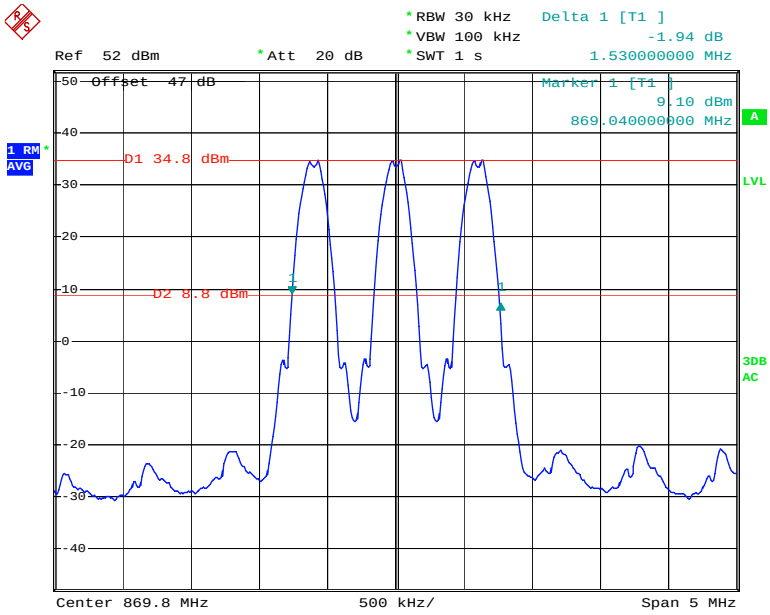
High Channel



Date: 18.AUG.2010 21:59:44

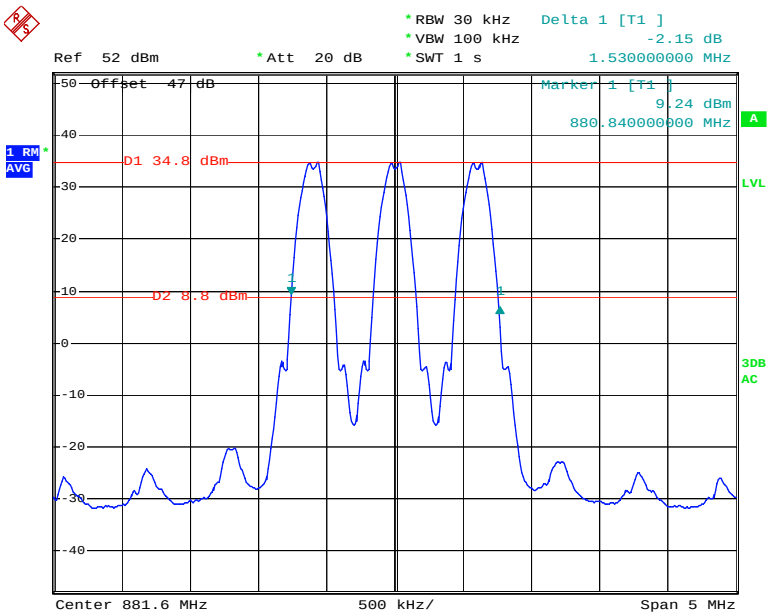
26 dB Bandwidth

Low Channel



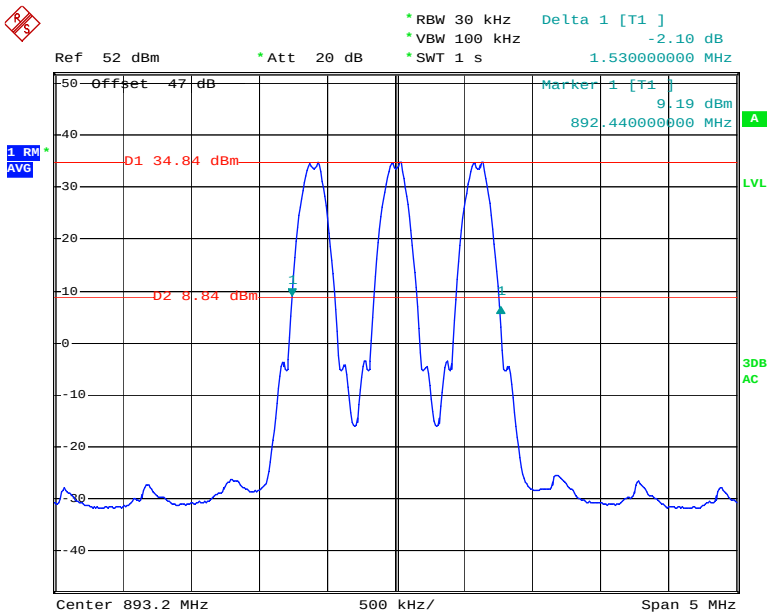
Date: 18.AUG.2010 21:53:35

Middle Channel



Date: 18.AUG.2010 21:54:44

High Channel

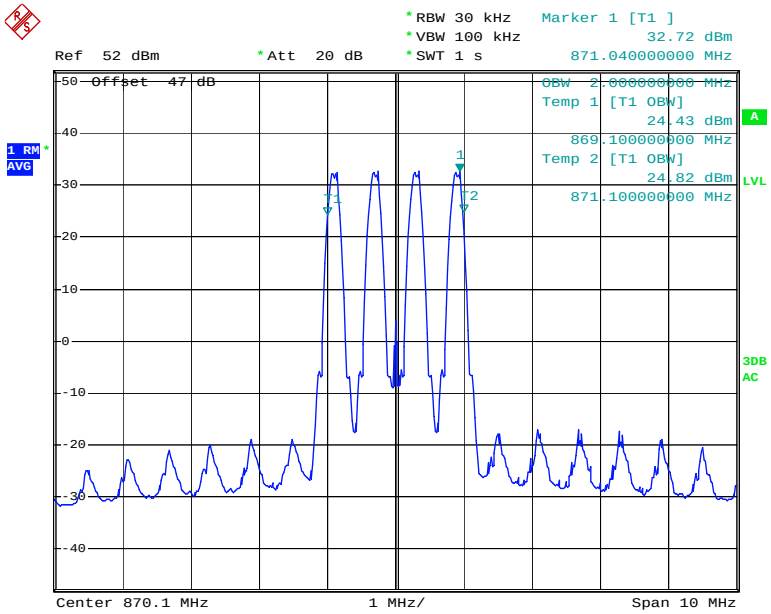


Date: 18.AUG.2010 22:00:22

Downlink mode (Four carriers):

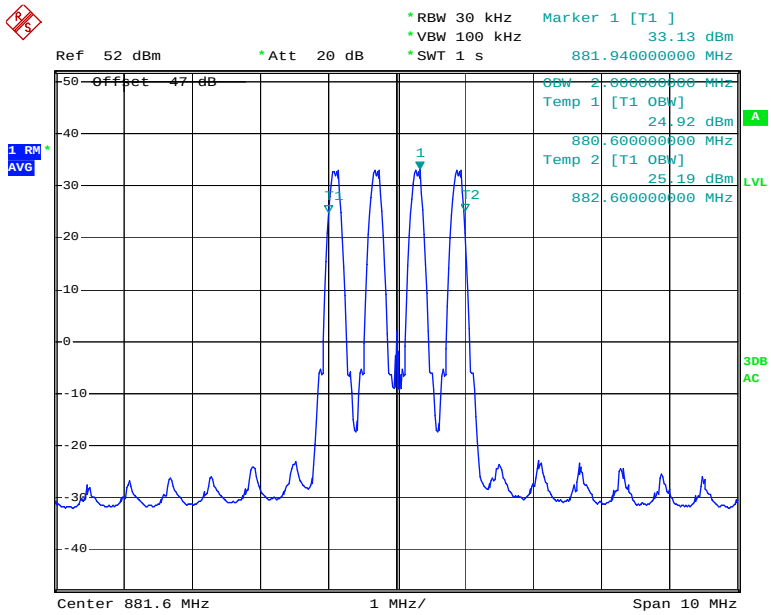
99% Occupied Bandwidth

Low Channel



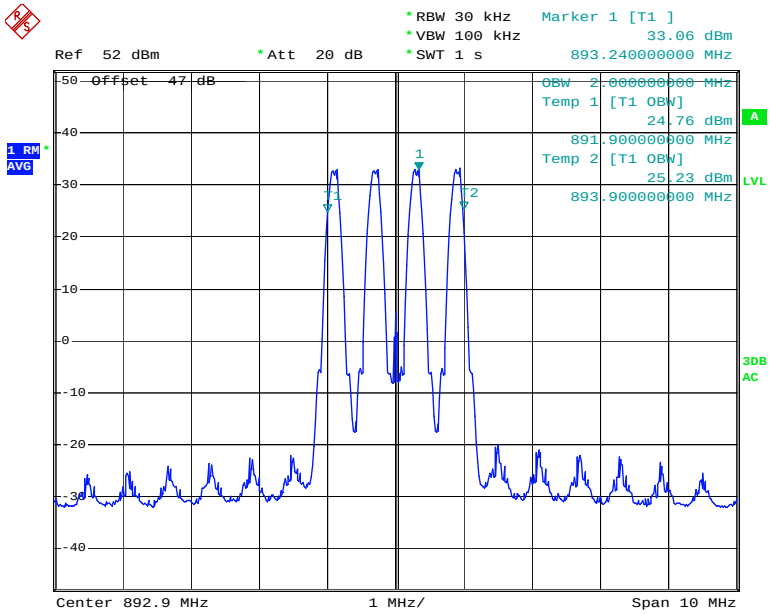
Date: 18.AUG.2010 22:36:02

Middle Channel



Date: 18.AUG.2010 22:30:59

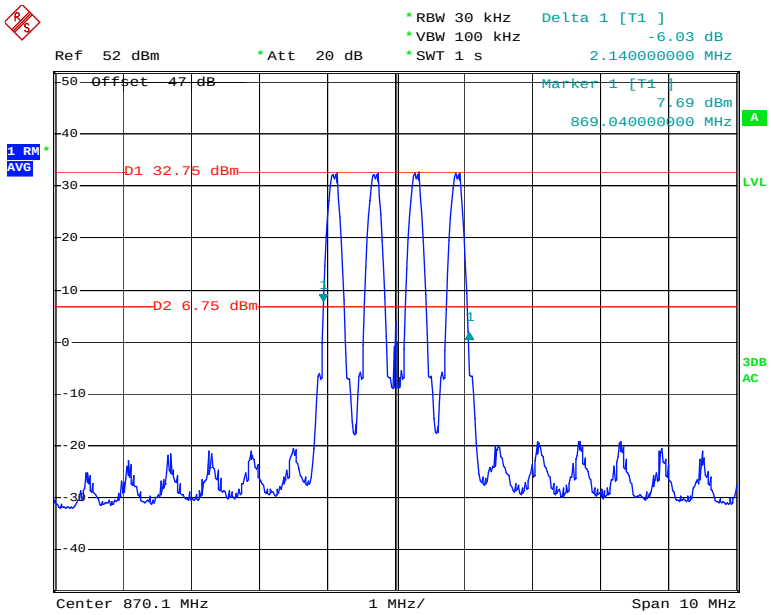
High Channel



Date: 18.AUG.2010 22:28:46

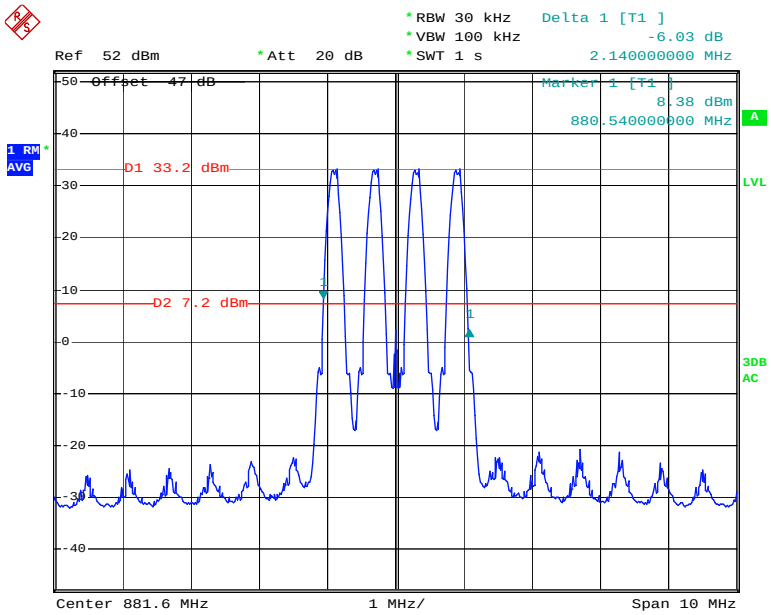
26 dB Bandwidth

Low Channel



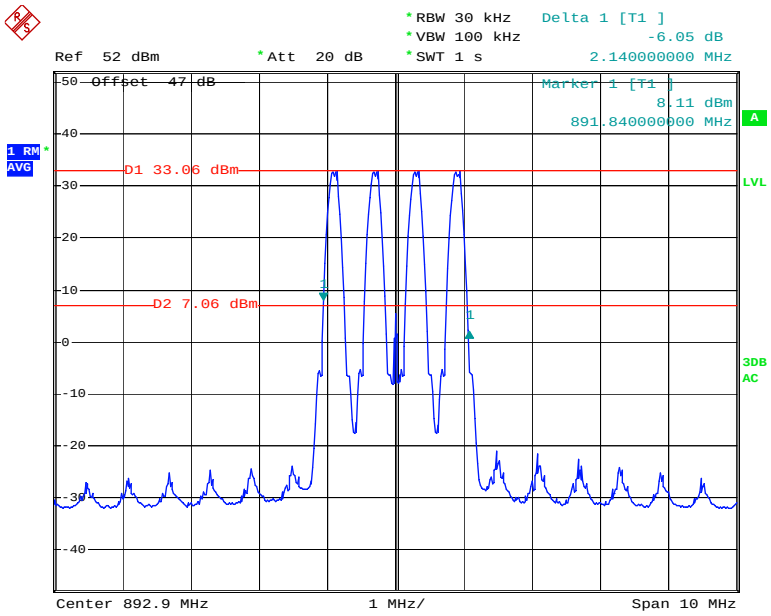
Date: 18.AUG.2010 22:39:26

Middle Channel



Date: 18.AUG.2010 22:30:22

High Channel



Date: 18.AUG.2010 22:29:19

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

Applicable Standards

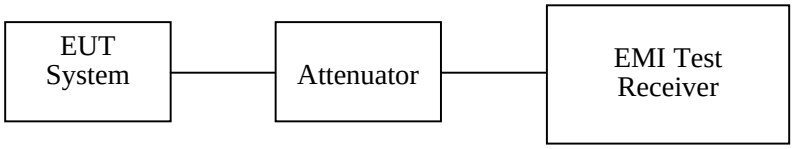
FCC §2.1051 and §22.917(a).

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

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.

Frequency	RBW	VBW
9kHz ～ 150kHz	1kHz	3kHz
150kHz ～ 30MHz	10kHz	30kHz
30MHz ～ 1GHz	100kHz	300kHz
Above 1GHz	1MHz	3MHz



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-07
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2009-11-24	2010-11-24

*** 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

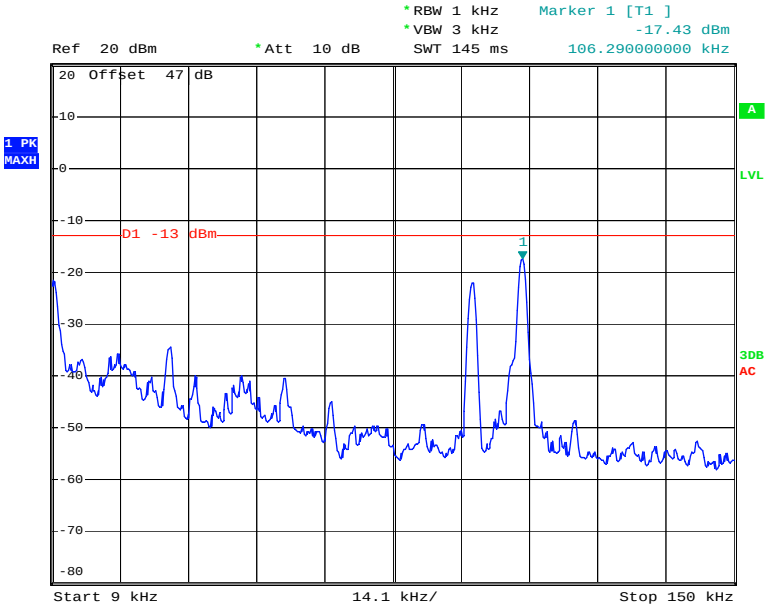
Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Alvin Huang from 2010-07-13 to 2010-07-24.

GSM850:

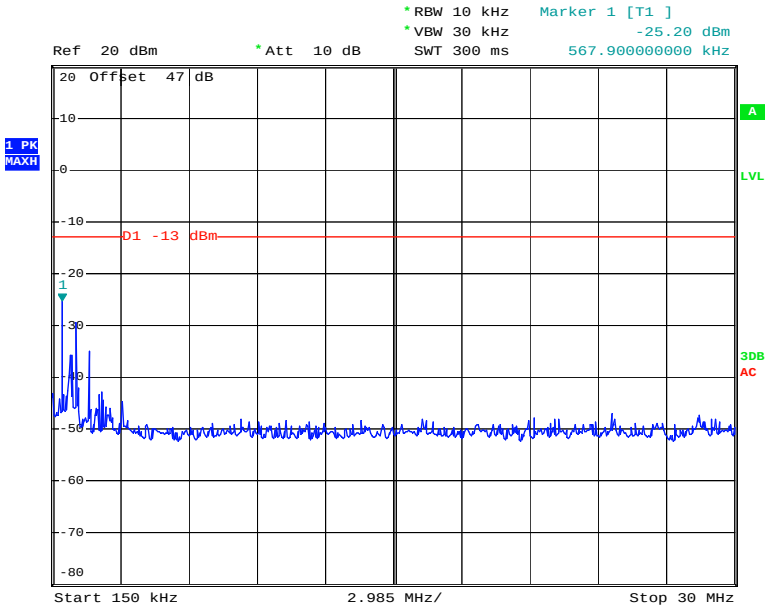
Downlink mode (worse case):

9 kHz – 150 kHz - Middle Channel



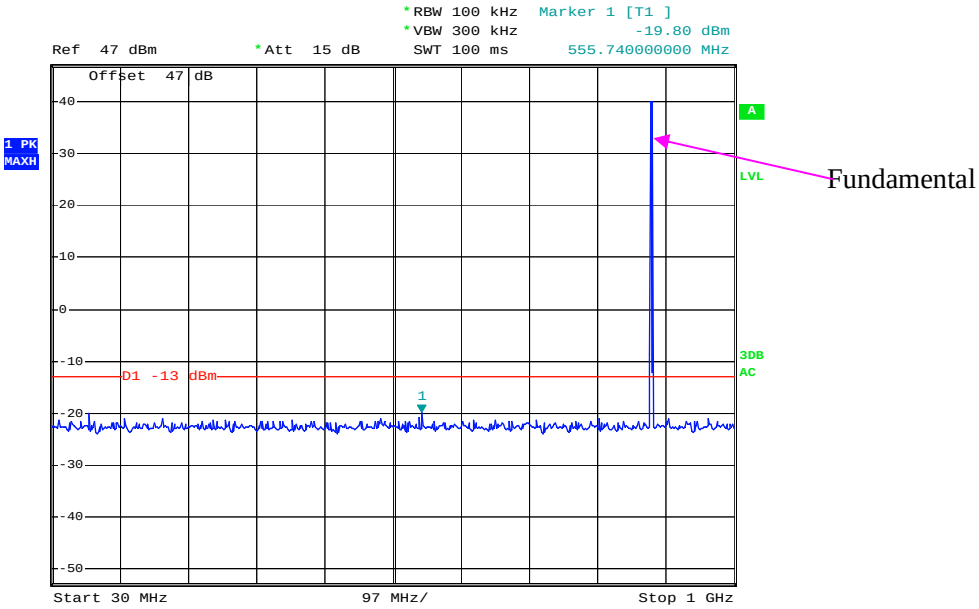
Date: 14.JUL.2010 21:40:17

150 kHz – 30 MHz - Middle Channel



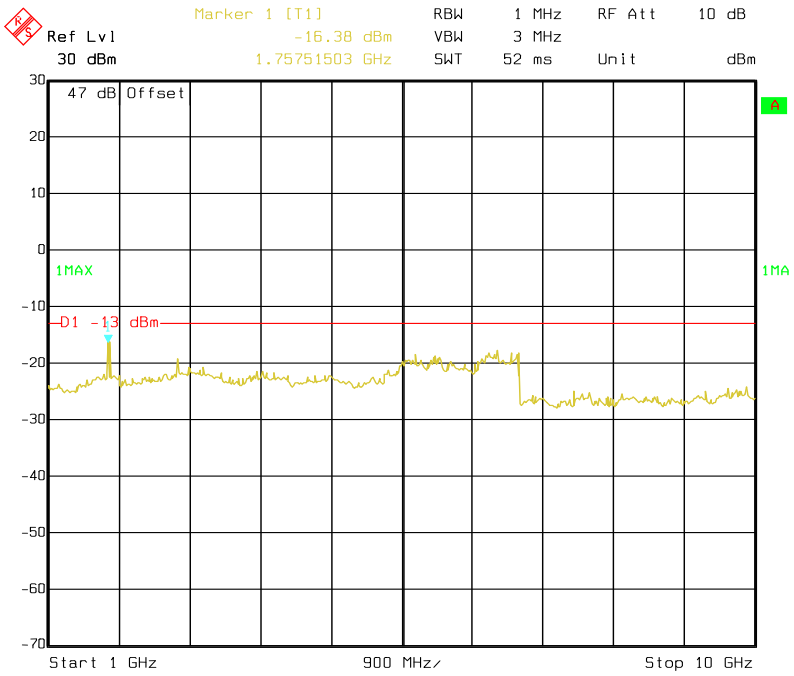
Date: 14.JUL.2010 21:40:40

30 – 1000 MHz - Middle Channel



Date: 14.JUL.2010 21:42:21

1 – 10 GHz - Middle Channel

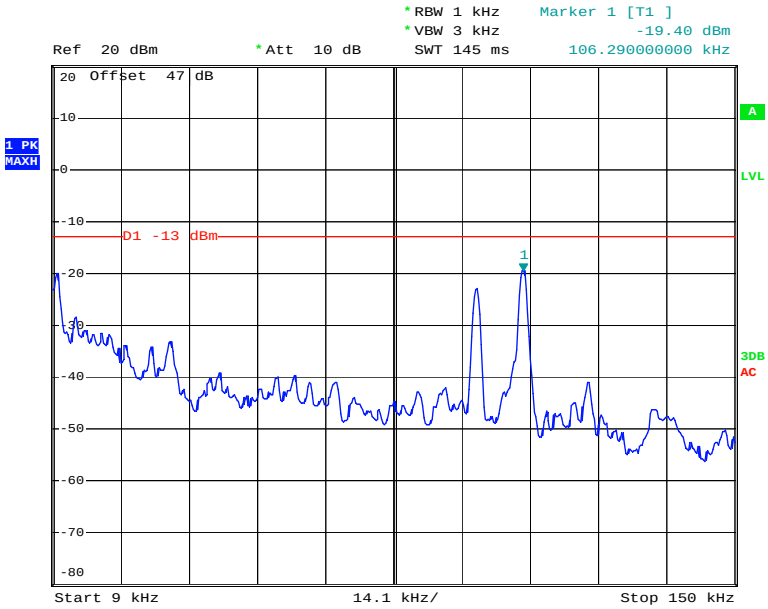


Date: 20.JUL.2010 19:42:06

EDGE:

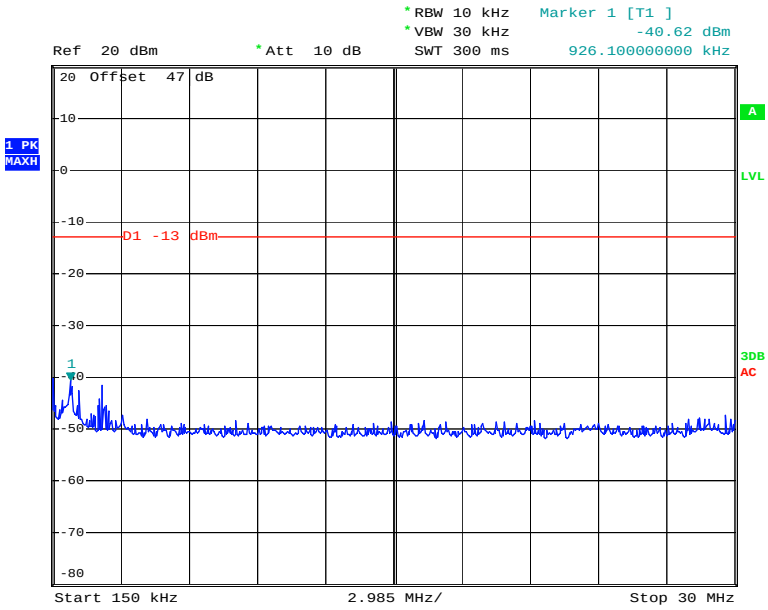
Downlink mode (worse case):

9 kHz – 150 kHz - Middle Channel



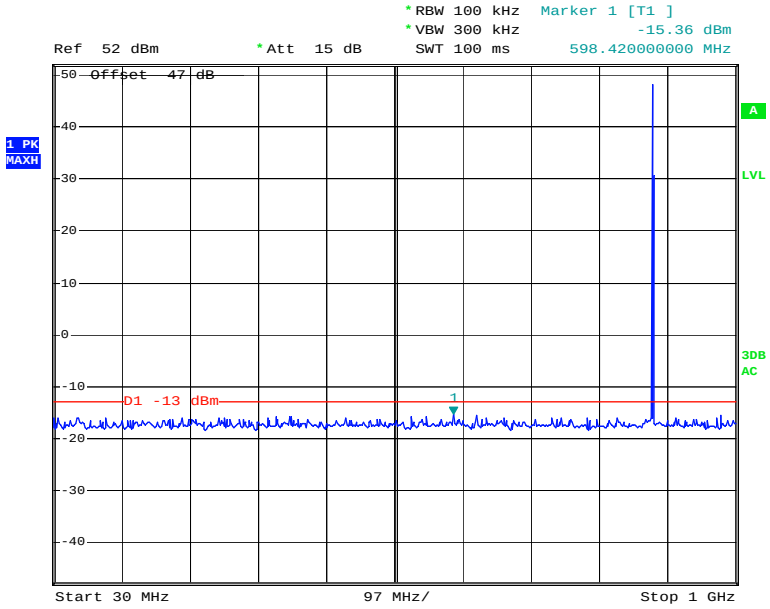
Date: 14.JUL.2010 19:01:47

150 kHz – 30 MHz - Middle Channel



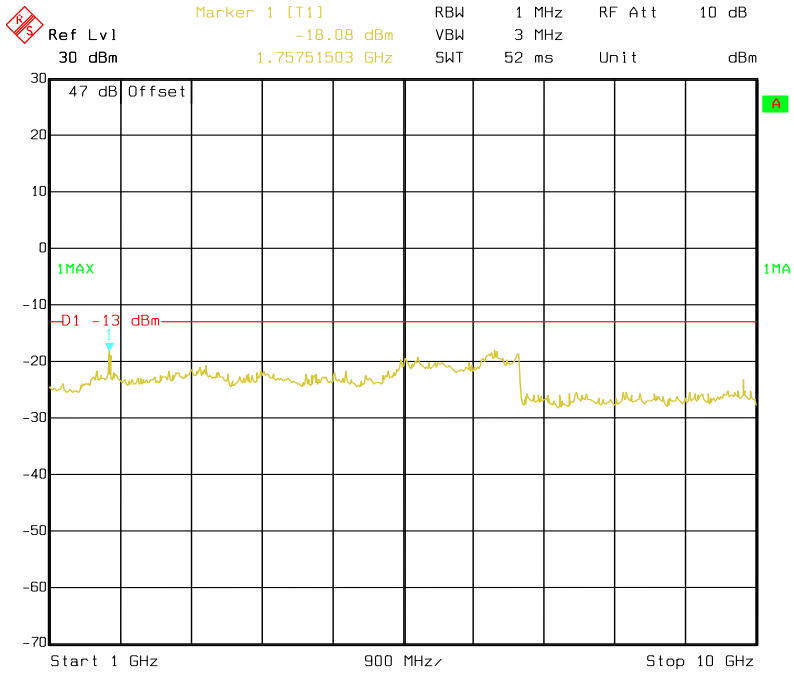
Date: 14.JUL.2010 19:02:14

30 – 1000 MHz - Middle Channel



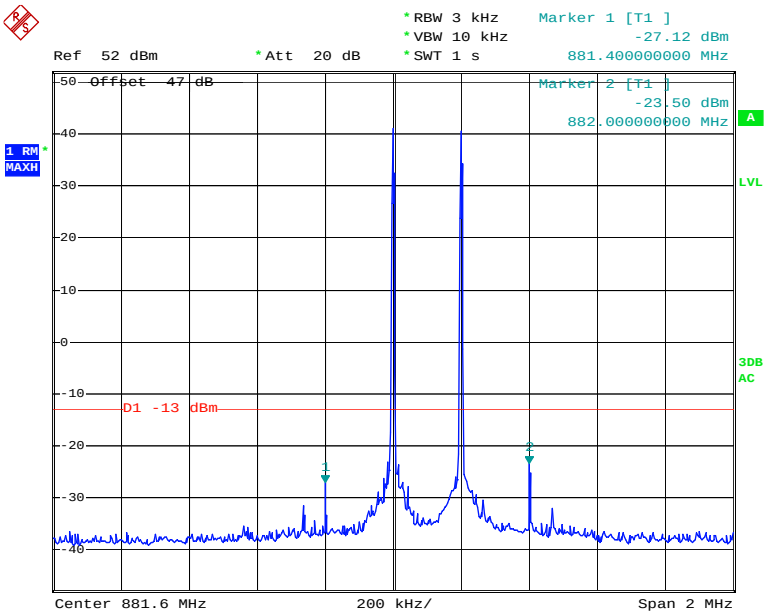
Date: 14.JUL.2010 19:06:50

1 – 10 GHz - Middle Channel



Date: 20.JUL.2010 19:37:21

Two tone Inter modulation:



Date: 19.AUG.2010 04:49:54

FCC §2.1053 & §22.917 - SPURIOUS RADIATED EMISSIONS

Applicable Standards

FCC §2.1053 and §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 (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (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	2010-05-05	2011-05-04
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-03-11	2011-03-11
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-07
HP	Amplifier	2VA-213+	T-E27H	2010-03-08	2011-03-07
HP	Signal Generator	HP8657A	2849U00982	2009-10-28	2010-10-27
HP	Amplifier	HP8447D	2944A09795	2009-08-02	2010-08-02
HP	Synthesized Sweeper	8341B	2624A00116	2010-03-03	2011-03-02
COM POWER	Dipole Antenna	AD-100	041000	2009-09-25	2010-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2010-05-17	2011-05-17

*** 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 Alvin Huang on 2010-07-25.

Test mode: Transmitting

GSM850:

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 (dBi)	Cable Loss (dB)			
30 MHz -10 GHz Middle Channel (worse case)											
101.92	65.67	324	1.9	V	101.92	-31.2	0	0.3	-31.5	-13	18.5
101.92	60.37	156	2.2	H	101.92	-36.4	0	0.3	-36.7	-13	23.7
1763.2	38.14	167	2.0	V	1763.2	-64.6	6.2	1.0	-59.4	-13	46.4
1763.2	38.85	50	2.1	H	1763.2	-65.7	6.2	1.0	-60.5	-13	47.5

EDGE:

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 (dBi)	Cable Loss (dB)			
30 MHz -10 GHz Middle Channel (worse case)											
47.50	64.61	318	1.5	V	47.50	-32.0	0	0.2	-32.9	-13	19.9
101.92	57.64	101	2.0	H	101.92	-38.6	0	0.3	-36.3	-13	23.3
1763.2	42.41	92	2.3	H	1763.2	-62.1	6.2	1.0	-56.4	-13	43.4
1763.2	42.41	124	1.8	V	1763.2	-61.0	6.2	1.0	-57.3	-13	44.3

FCC §22.917(a) - BAND EDGES

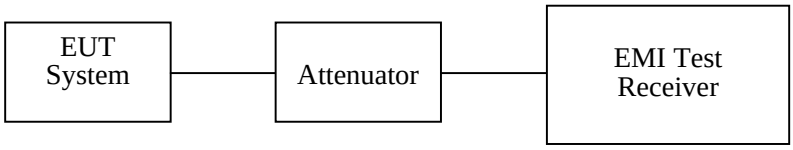
Applicable Standards

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 EUT system 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 10 kHz.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2009-11-24	2010-11-24

*** 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 Alvin Huang from 2010-08-19 and 2010-08-20.

Please refer to the following tables and plots.

GSM850:

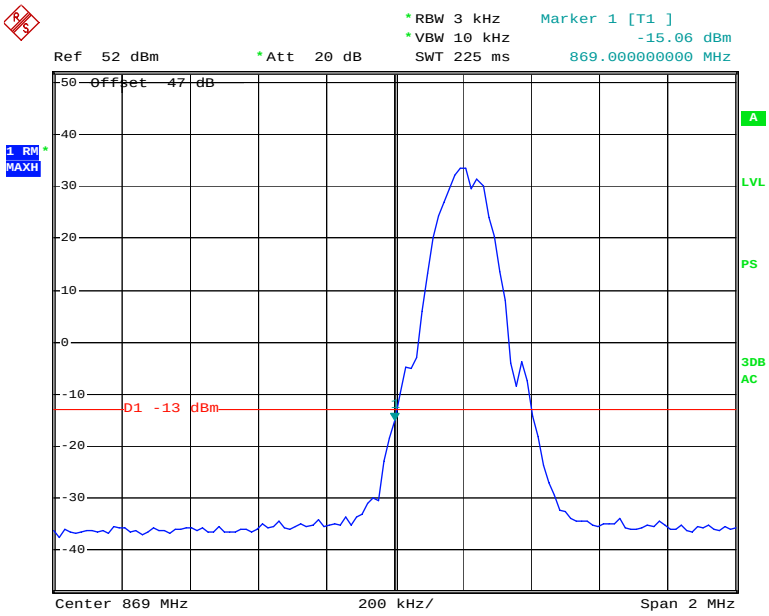
Mode	Channel	Frequency (MHz)	Emission (dBm)	Limit (dBm)
Downlink	One Carrier			
	Lowest	869	-15.06	-13
	Highest	894	-16.07	-13
	Two Carriers			
	Lowest	869	-16.73	-13
	Highest	894	-16.99	-13
	Three Carriers			
	Lowest	869	-17.54	-13
	Highest	894	-17.33	-13
	Four Carriers			
	Lowest	869	-19.07	-13
	Highest	894	-19.00	-13

EDGE:

Mode	Channel	Frequency (MHz)	Emission (dBm)	Limit (dBm)
Downlink	One Carrier			
	Lowest	869	-16.96	-13
	Highest	894	-14.24	-13
	Two Carriers			
	Lowest	869	-17.87	-13
	Highest	894	-18.37	-13
	Three Carriers			
	Lowest	869	-19.79	-13
	Highest	894	-18.07	-13
	Four Carriers			
	Lowest	869	-20.45	-13
	Highest	894	-21.88	-13

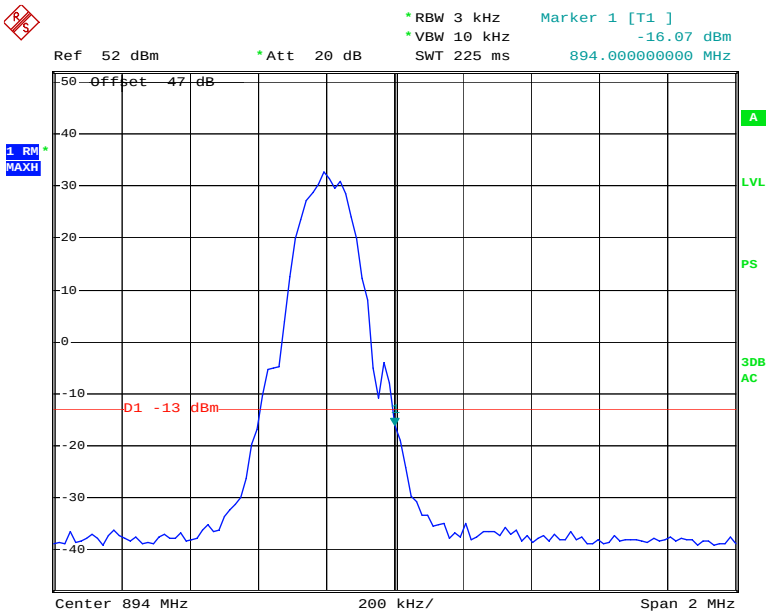
GSM850:

Downlink mode (One carrier), Lowest Channel



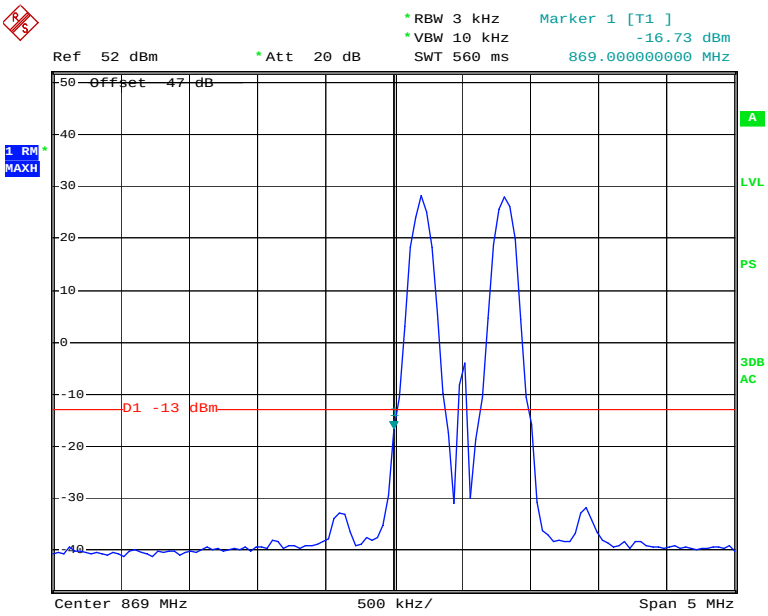
Date: 19.AUG.2010 23:21:34

Downlink mode (One carrier), Highest Channel



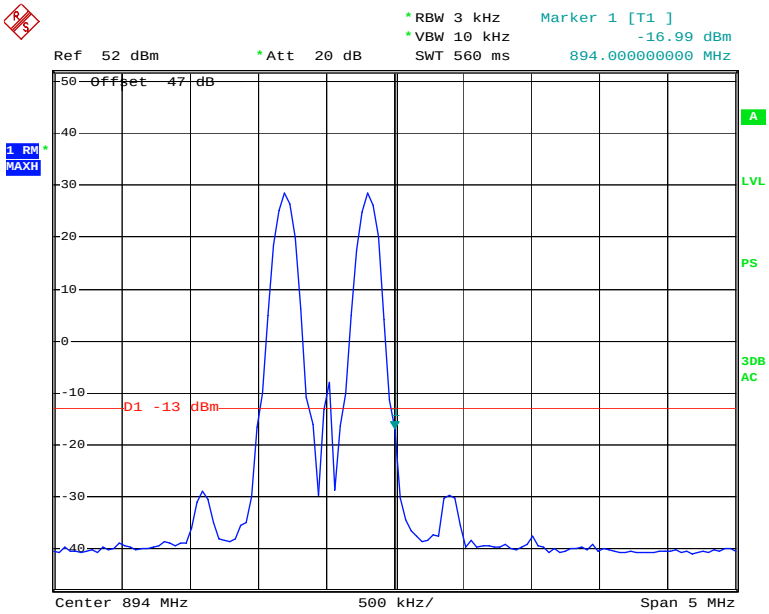
Date: 19.AUG.2010 23:25:18

Downlink mode (Two carriers), Lowest Channel



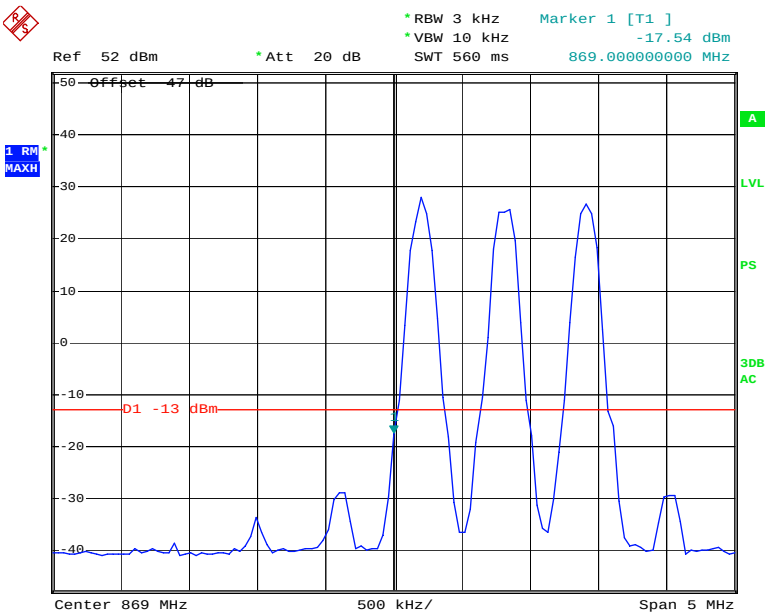
Date: 19.AUG.2010 23:37:27

Downlink mode (Two carriers), Highest Channel



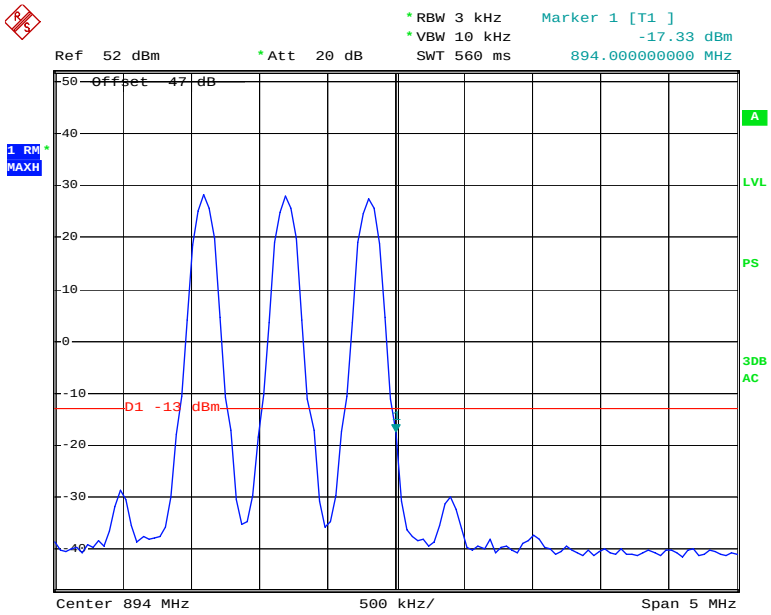
Date: 19.AUG.2010 23:39:16

Downlink mode (Three carriers), Lowest Channel



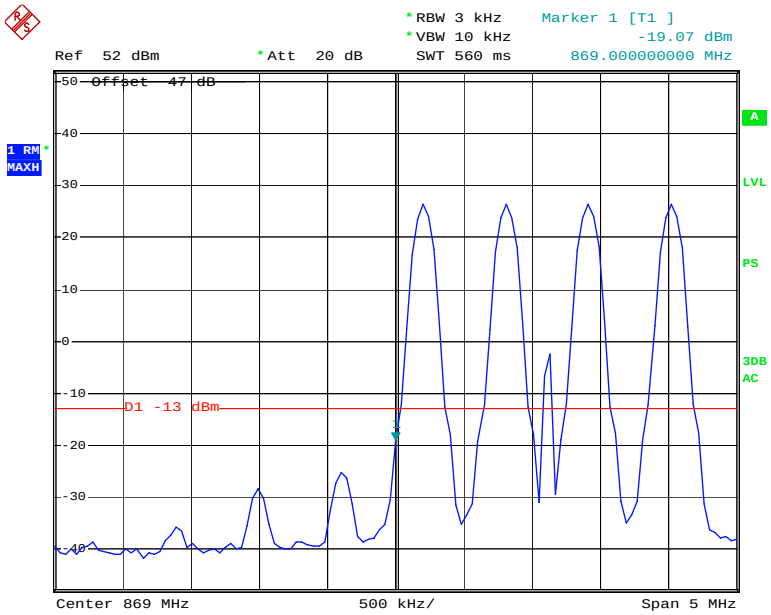
Date: 20.AUG.2010 00:01:06

Downlink mode (Three carriers), Highest Channel



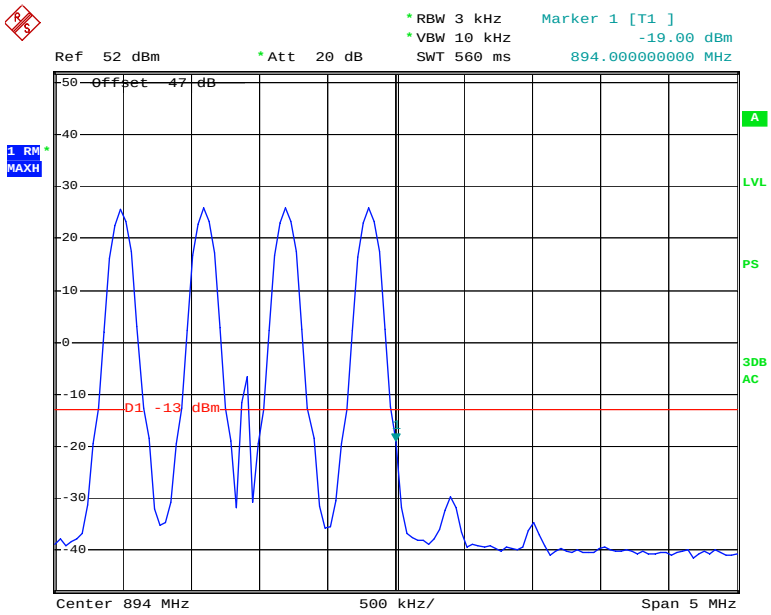
Date: 20.AUG.2010 00:02:51

Downlink mode (Four carriers), Lowest Channel



Date: 20.AUG.2010 00:19:27

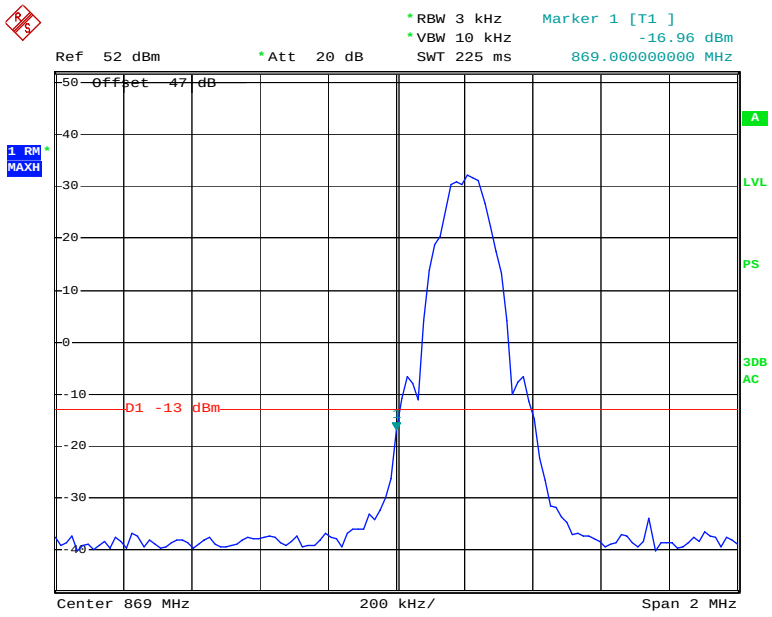
Downlink mode (Four carriers), Highest Channel



Date: 20.AUG.2010 00:18:12

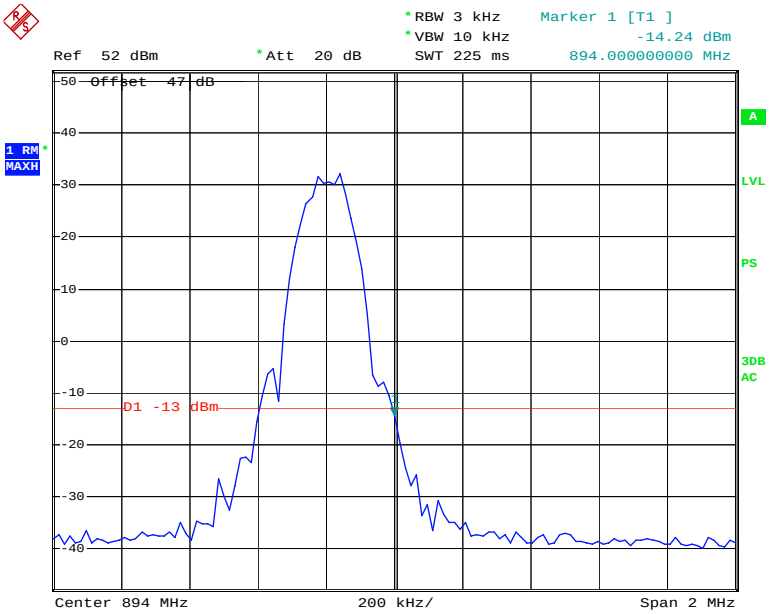
EDGE:

Downlink mode (One carrier), Lowest Channel



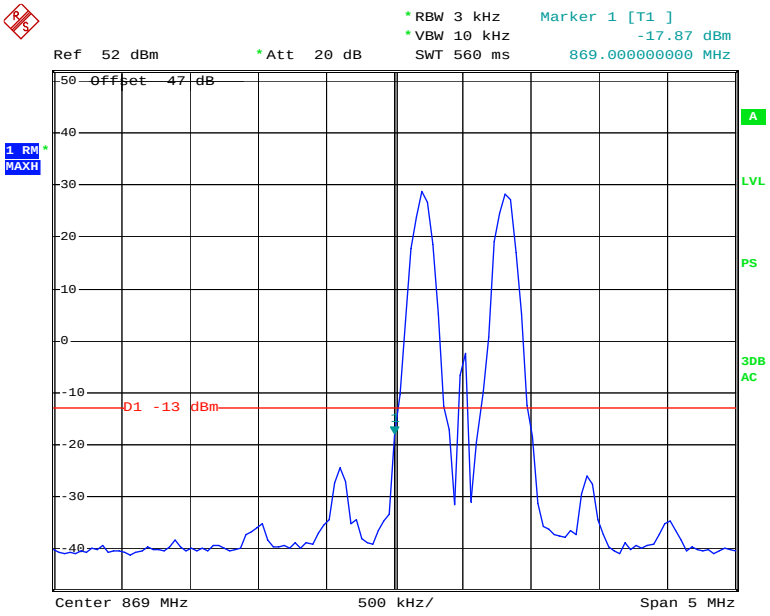
Date: 19.AUG.2010 23:31:28

Downlink mode (One carrier), Highest Channel



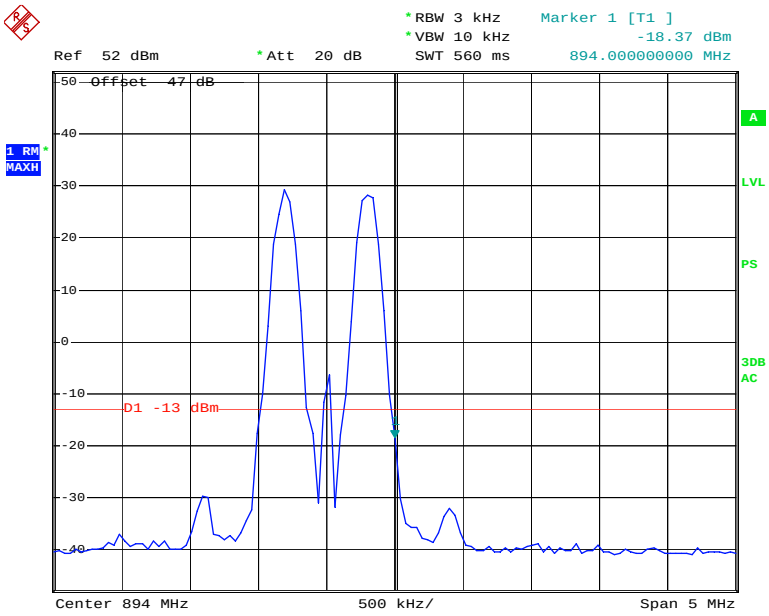
Date: 20.AUG.2010 02:45:45

Downlink mode (Two carriers), Lowest Channel



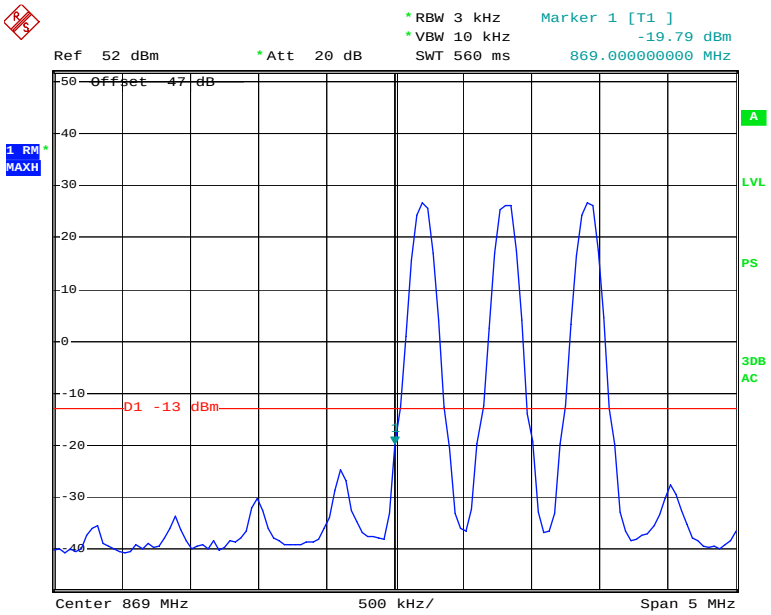
Date: 19.AUG.2010 23:47:09

Downlink mode (Two carriers), Highest Channel



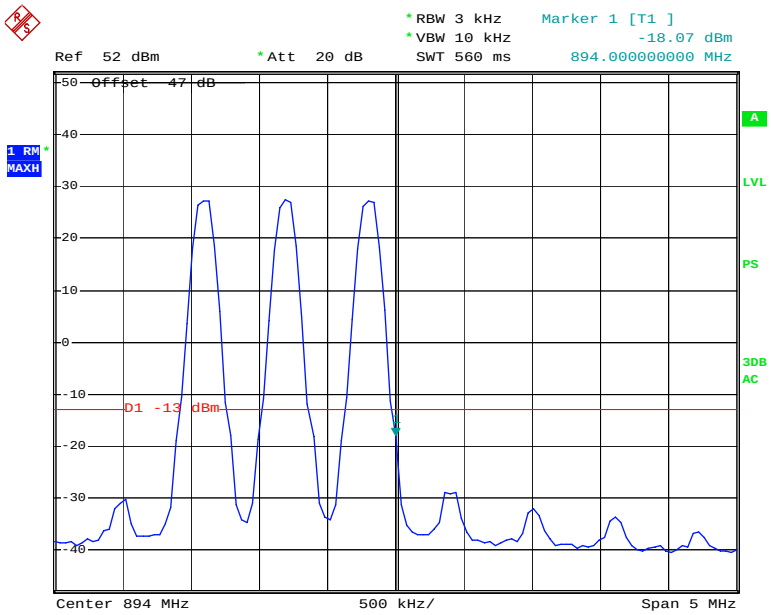
Date: 19.AUG.2010 23:45:07

Downlink mode (Three carriers), Lowest Channel



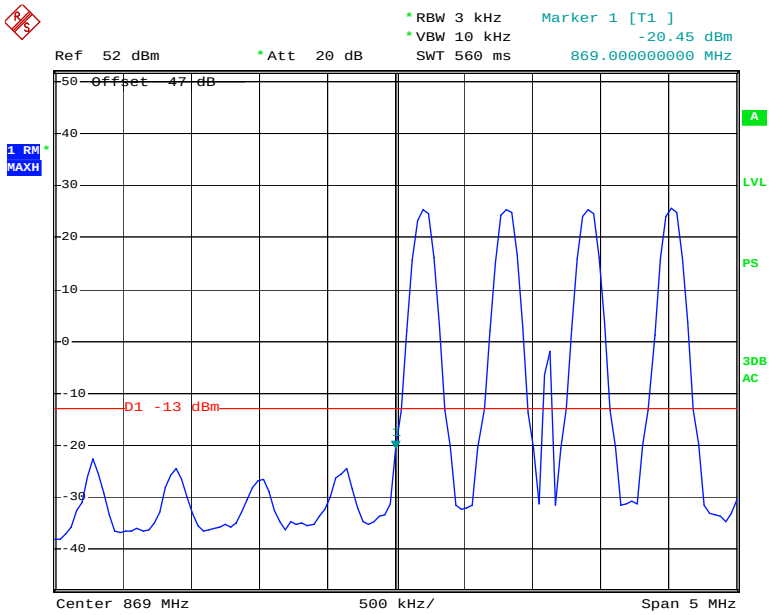
Date: 19.AUG.2010 23:59:21

Downlink mode (Three carriers), Highest Channel



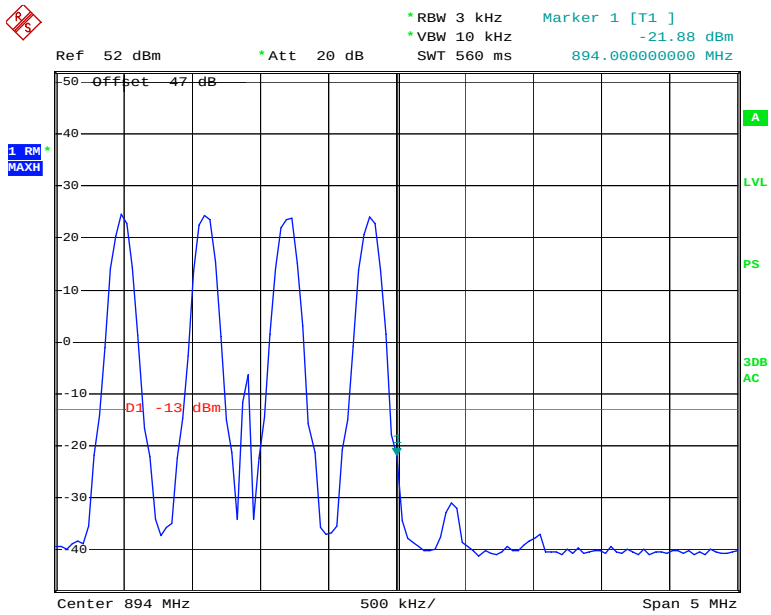
Date: 20.AUG.2010 00:04:31

Downlink mode (Four carriers), Lowest Channel



Date: 20.AUG.2010 00:20:19

Downlink mode (Four carriers), Highest Channel



Date: 20.AUG.2010 00:17:01

FCC §2.1055 & §22.355 - FREQUENCY STABILITY

Applicable Standard

FCC §2.1055 (a), § 2.1055(d) and §22.355

According to FCC §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

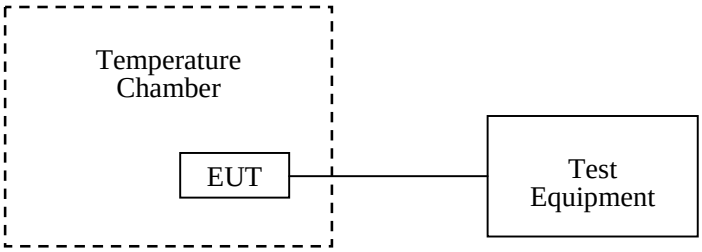
Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
WUHUAN	Temperature & Humidity Chamber	HTP205	20021115	2010-05-09	2011-05-09
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2009-11-24	2010-11-24

*** 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 Alvin Huang on 2010-07-27.

Middle Channel, f_o = 881.5 MHz				
Temperature (^{O}C)	Power Supplied (Vac) RU Unit	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	102	5	0.005672	1.5
	120	1	0.001134	1.5
	138	6	0.006807	1.5
-20	102	7	0.007941	1.5
	120	2	0.002269	1.5
	138	4	0.004538	1.5
-10	102	0	0	1.5
	120	5	0.005672	1.5
	138	3	0.003403	1.5
0	102	4	0.004538	1.5
	120	2	0.002269	1.5
	138	5	0.005672	1.5
10	102	4	0.004538	1.5
	120	5	0.005672	1.5
	138	4	0.004538	1.5
20	102	3	0.003403	1.5
	120	6	0.006807	1.5
	138	4	0.004538	1.5
30	102	5	0.005672	1.5
	120	1	0.001134	1.5
	138	2	0.002269	1.5
40	102	3	0.003403	1.5
	120	4	0.004538	1.5
	138	1	0.001134	1.5
50	102	2	0.002269	1.5
	120	3	0.003403	1.5
	138	2	0.002269	1.5

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