Lab Code: 200707-0

FCC PART 22H, PART 24E

MEASUREMENT AND TEST REPORT

For

Nexpro International Limitada

San Jose-Goicoechea, Guadalupe, Barrio Tournon, Frente Al Hotel Villas Tournon,

Oficinas Del Bufete Facio Y Canas, Costa Rica

FCC ID: ZYPES980

Report Type:	Product Type:
Original Report	Mobile Phone

Test Engineer:	Ares Liu
Report Number:	R1DG120710004-00D
Report Date:	2012-07-23
Reviewed By:	Ivan Cao EMC Engineer
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Nexpro International Limitada*'s product, model number: *EVE (FCC ID: ZYPES980)* (the "EUT") in this report was a Mobile Phone, named as EVE by applicant, which was measured approximately: 11.0cm (L) x 6.0cm (W) x 1.5cm (H), rated input voltage: DC 3.7V Lithium battery or DC 5.0V from adapter.

Adapter Information:
MODEL NO:C325A50070
ADAPTADER AC/DC
INPUT: 100-240V, 50/60 Hz, 120mA
OUTPUT: 5V, 700mA.

Frequency Range:
GSM 850: 824-849 MHz (Tx), 869-894 MHz (Rx)
PCS 1900: 1850-1910 MHz (Tx), 1930-1990 MHz (Rx)
WCDMA Band II 1850-1910 MHz (Tx), 1930-1990 MHz (Rx)
WCDMA Band V 824-849 MHz (Tx), 869-894 MHz (Rx)
BT: 2400-2483.5 MHz
WIFI: 2412-2462 MHz

Modulation Mode: GMSK (GSM/GPRS)
GMSK, 8PSK (EGPRS)
QPSK/BPSK (WCDMA)
16-QAM (HSDPA)
DSSS, OFDM (Wi-Fi)
GFSK, 8-DPSK, π/4-DQPSK (Bluetooth)

Transmitter Output Power:
GSM/GPRS Cellular Band: 31.94 dBm (Conducted)
WCDMA Band V: 22.73 dBm (Conducted)
GSM/GPRS PCS Band: 29.52 dBm (Conducted)
WCDMA Band II: 22.82 dBm (Conducted)
BT: 7.09 dBm (Conducted)
Wi-Fi: 13.62 dBm (Conducted)

** All measurement and test data in this report was gathered from production sample serial number: 120710004 (Assigned by BACL, Shenzhen). The EUT was received on 2012-07-11.*

Objective

This report is prepared on behalf of *Nexpro International Limitada* in accordance with Part 2-Subpart J, Part 22-Subpart H, and Part 24-Subpart E of the Federal Communication Commissions rules.

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

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submission with FCC ID: ZYPES980.
FCC Part 15C DSS submission with FCC ID: ZYP ES980 for BT.
FCC Part 15C DTS submission with FCC ID: ZYP ES980 for WIFI.

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
Part 24 Subpart E - Personal Communication Services

Applicable Standards: TIA/EIA 603-D-2010, 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).

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-D-2010.

The GSM /GPRS/EGPRS/WCDMA/HSDPA/HSUPA item test was performed with the EUT operating at testing mode.

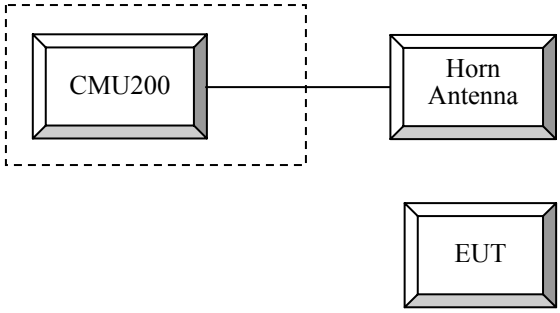
Equipment Modifications

No modification was made to the EUT.

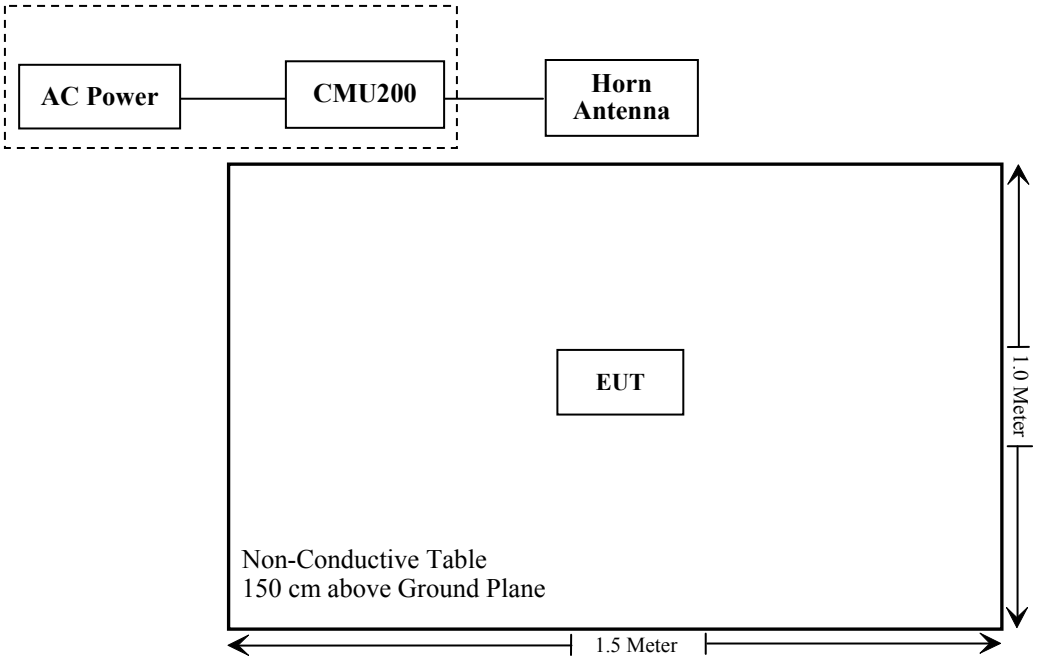
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R & S	Universal Radio Communication Tester	CMU200	109038

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307, §2.1093	RF Exposure (SAR)	Compliance*
§2.1046; § 22.913 (a); § 24.232 (c)	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905 § 22.917; § 24.238	Occupied Bandwidth	Compliance
§ 2.1051, § 22.917 (a); § 24.238 (a)	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053 § 22.917 (a); § 24.238 (a)	Field Strength of Spurious Radiation	Compliance
§ 22.917 (a); § 24.238 (a)	Out of band emission, Band Edge	Compliance
§ 2.1055 § 22.355; § 24.235	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

Note: * Please refer to SAR report released by BACL, report number: R1207245-SAR

FCC §1.1307 & §2.1093 - RF EXPOSURE

Applicable Standard

FCC§1.1307 and §2.1093.

Test Result

Compliance, please refer to the SAR report: R1207245-SAR

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC §2.1046, §22.913 (a) & §24.232 (c) - RF OUTPUT POWER

Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications..

Test Procedure

Test Configuration:

GSM:

Function: Menu select > GSM Mobile Station > GSM 850/1900
Press Connection control to choose the different menus
Press RESET > choose all the reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM + only
MS Signal
> 33 dBm for GSM 850
> 30 dBm for GSM 1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stabe)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]
Channel Type > Off
P0 > 4 dB
TCH > choose desired test channel
Hopping > Off
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection Press Signal on to turn on the signal and change settings

GPRS/EGPRS:

Function: Menu select > GSM Mobile Station > GSM 850/1900
Press Connection control to choose the different menus
Press RESET > choose all the reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM + GPRS or GSM + EGSM
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting
> Slot configuration > Uplink/Gamma
> 33 dBm for GPRS 850
> 30 dBm for GPRS 1900
> 27 dBm for EGPRS 850
> 26 dBm for EGPRS 1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stabe)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off
P0 > 4 dB
Slot Config > Unchanged (if already set under MS signal)
TCH > choose desired test channel
Hopping > Off
Main Timeslot > 3
Network Coding Scheme > CS4 (GPRS) and MCS9 (EGPRS)
Bit Stream > 2E9-1 PSR Bit Stream
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection Press Signal on to turn on the signal and change settings

UMTS Rel 99

	Mode	Rel99
	Subtest	-
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	HSDPA FRC	Not Applicable
	HSUPA Test	Not Applicable
	Power Control Algorithm	Algorithm2
	βc	Not Applicable
	βd	Not Applicable
	βec	Not Applicable
	βc/βd	8/15
	βhs	Not Applicable
	βed	Not Applicable

UMTS Rel 6 HSDPA

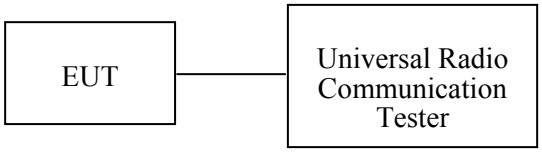
	Mode	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	HSUPA Test	Not Applicable			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βec	-	-	-	-
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	βed	Not Applicable			
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs = βhs/βc	30/15			

UMTS Rel 6 HSPA (HSDPA & HSUPA)

	Mode	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/βd	11/15	6/15	15/9	2/15	-
	βhs	22/15	12/15	30/15	4/15	5/15
	βed	1309/225	94/75	47/15 47/15	56/75	47/15
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	12
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	67
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27	

Conducted method:

The RF output of the transmitter was connected to Universal Radio Communication Tester through sufficient attenuation.



Radiated method:

ANSI/TIA 603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-1	2012-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
HP	Signal Generator	HP8657A	3217A04699	2011-12-19	2012-12-18
HP	Synthesized Sweeper	8341B	2624A00116	2012-04-11	2013-04-10
COM POWER	Dipole Antenna	AD-100	041000	2012-02-11	2013-02-10
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2013-02-10

*** 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 Ares Liu on 2012-07-18.

Conducted Power:

GSM/GPRS/EDGE

Band	Channel No.	Test Result (dBm)								
		GSM	GPRS 1 TX Slot	GPRS 2 TX Slots	GPRS 3 TX Slots	GPRS 4 TX Slots	EDGE 1 TX Slot	EDGE 2 TX Slots	EDGE 3 TX Slots	EDGE 4 TX Slots
Cellular	128	31.94	31.8	31.14	29.51	28.7	27.02	25.76	23.36	22.03
	190	31.94	31.81	31.15	29.49	28.71	26.83	26.08	23.48	22.15
	251	31.94	31.82	31.12	29.46	28.69	26.92	25.39	23.42	22.01
PCS	512	29.45	29.59	28.66	27.03	26.23	25.53	24.33	22.31	20.76
	661	29.41	29.55	28.66	27.02	26.21	25.42	24.28	22.48	20.64
	810	29.52	29.65	28.76	27.15	26.37	25.34	24.06	21.74	20.37

Note: Output power measured is peak.

WCDMA Band V

Mode	3GPP Sub test	Test Result					
		Low CH (Ave. Power) (dBm)	Low CH PAR (dB)	Mid CH (Ave. Power) (dBm)	Mid CH PAR (dB)	High CH (Ave. Power) (dBm)	High CH PAR (dB)
Rel 99	1	22.48	5.15	22.73	4.45	22.37	4.56
Rel 6 HSDPA	1	22.14	4.13	22.44	4.20	22.03	4.57
	2	22.05	4.50	22.25	4.30	21.76	3.46
	3	21.82	4.56	22.02	3.95	21.34	4.23
	4	21.35	5.28	21.79	3.81	21.14	3.84
Rel 6 HSUPA	1	21.83	4.49	21.78	3.79	21.66	4.15
	2	20.26	4.20	20.03	4.25	20.45	3.87
	3	20.82	4.76	20.84	4.95	20.67	4.40
	4	20.54	4.61	20.35	4.61	20.61	4.81
	5	21.81	4.77	21.42	4.53	21.53	4.71

WCDMA Band II

Mode	3GPP Sub test	Test Result					
		Low CH (Ave. Power) (dBm)	Low CH PAR (dB)	Mid CH (Ave. Power) (dBm)	Mid CH PAR (dB)	High CH (Ave. Power) (dBm)	High CH PAR (dB)
Rel 99	1	22.64	4.15	22.63	4.16	22.82	4.05
Rel 6 HSDPA	1	22.51	4.66	22.31	4.12	22.70	4.46
	2	22.12	3.72	21.84	4.23	22.34	4.82
	3	22.07	3.81	21.81	3.39	22.22	4.36
	4	21.97	3.62	21.63	4.16	22.14	4.26
Rel 6 HSUPA	1	21.82	3.61	21.64	4.26	21.79	4.03
	2	20.12	3.49	20.71	3.82	20.82	3.68
	3	20.64	3.72	20.89	4.59	21.12	4.10
	4	20.12	3.71	20.11	4.36	20.25	4.21
	5	21.98	3.80	21.90	4.13	21.84	4.06

Note: peak-to-average ratio (PAR)

ERP & EIRP

ERP for Cellular Band (Part 22H)

Frequency (MHz)	Ant. Polar (H/V)	S.A. Reading (dBµV)	S.G. Level (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	H	90.28	22.2	0.0	3.3	18.9	38.4
	V	103.05	35.0	0.0	3.3	31.7	38.4
836.6	H	91.42	19.6	0.0	3.3	16.3	38.4
	V	105.11	35.7	0.0	3.3	**32.4**	38.4
848.8	H	91.48	19.5	0.0	3.3	16.2	38.4
	V	103.54	35.3	0.0	3.3	32.0	38.4

EIRP for PCS Band (Part 24E)

Frequency (MHz)	Ant. Polar (H/V)	S.A. Reading (dBµV)	S.G. Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	H	89.26	22.30	8.0	0.9	29.4	33.0
	V	88.07	18.67	8.0	0.9	25.8	33.0
1880.0	H	89.87	23.79	8.0	0.9	30.9	33.0
	V	87.97	19.54	8.0	0.9	26.6	33.0
1909.8	H	89.62	24.42	8.4	0.9	**31.9**	33.0
	V	88.46	20.69	8.4	0.9	28.2	33.0

WCDMA Band V

Frequency (MHz)	Ant. Polar (H/V)	S.A. Reading (dBµV)	S.G. Level (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	H	78.92	12.7	0.0	3.3	9.4	38.4
	V	89.85	23.7	0.0	3.3	20.3	38.4
836.6	H	77.85	11.7	0.0	3.3	8.3	38.4
	V	90.91	24.7	0.0	3.3	21.4	38.4
846.6	H	79.66	13.5	0.0	3.3	10.2	38.4
	V	91.50	26.1	0.0	3.3	**22.8**	38.4

WCDMA Band II

Frequency (MHz)	Ant. Polar (H/V)	S.A. Reading (dBµV)	S.G. Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	H	85.73	18.77	8.0	0.9	25.9	33.0
	V	84.23	14.83	8.0	0.9	21.9	33.0
1880.0	H	84.99	18.91	8.0	0.9	**26.0**	33.0
	V	84.15	15.72	8.0	0.9	22.8	33.0
1907.6	H	83.31	18.11	8.4	0.9	25.6	33.0
	V	84.30	16.53	8.4	0.9	24.0	33.0

FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH

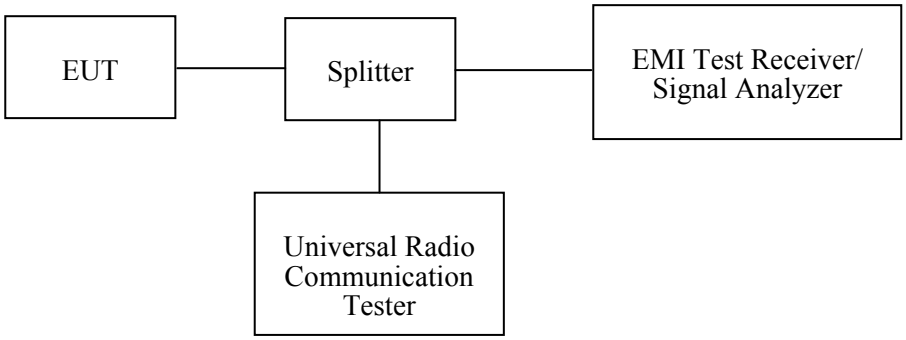
Applicable Standard

FCC §2.1049, §22.917, §22.905 and §24.238.

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 3 kHz (Cellular /PCS) 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	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16

*** 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

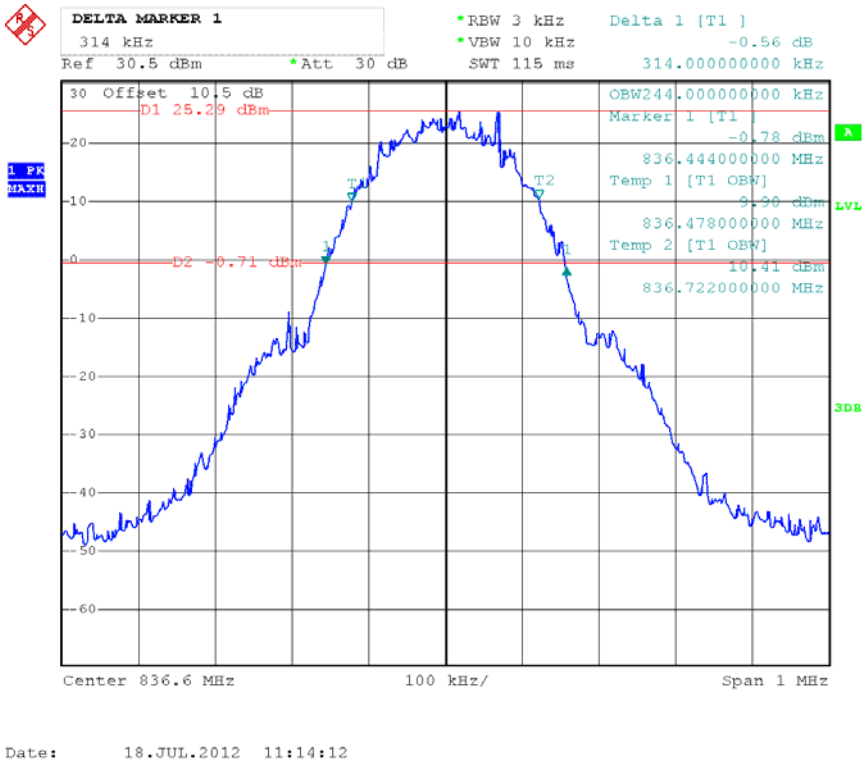
The testing was performed by Ares Liu from 2012-07-18 to 2012-09-06.

GSM/GPRS, GMSK, Cellular & PCS Band

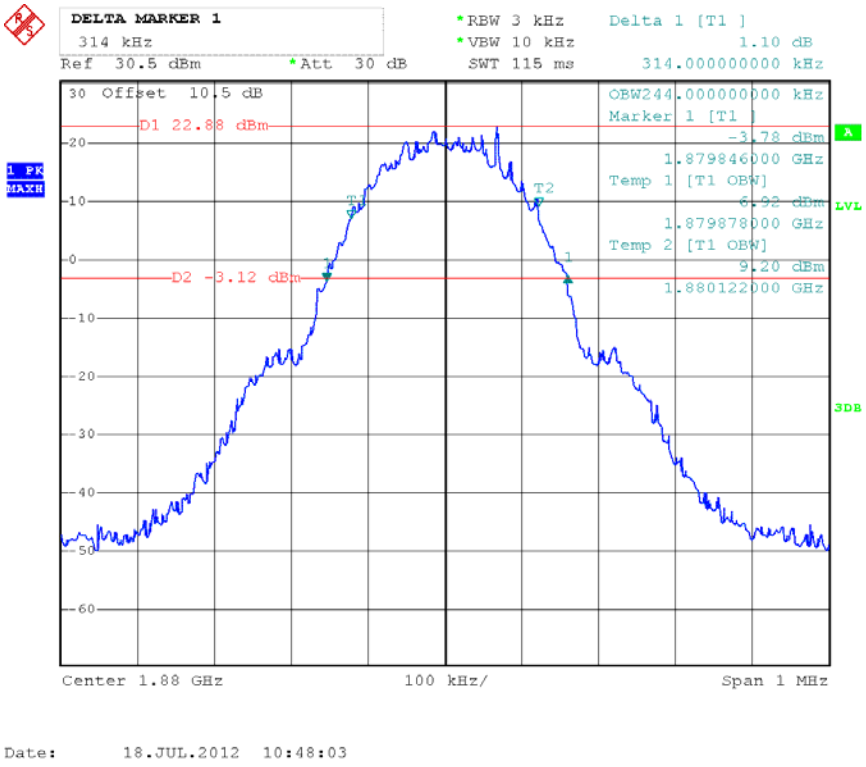
Band	Channel No.	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
Cellular	190	244	314
PCS	661	244	314

Please refer to the following plots.

Cellular Band (Part 22H)



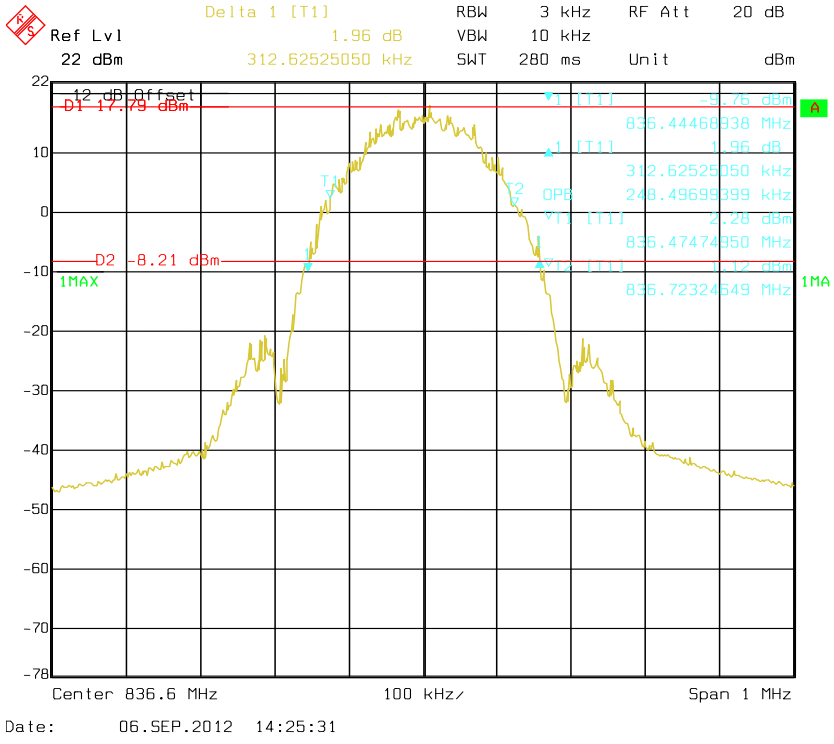
PCS Band (Part 24E)



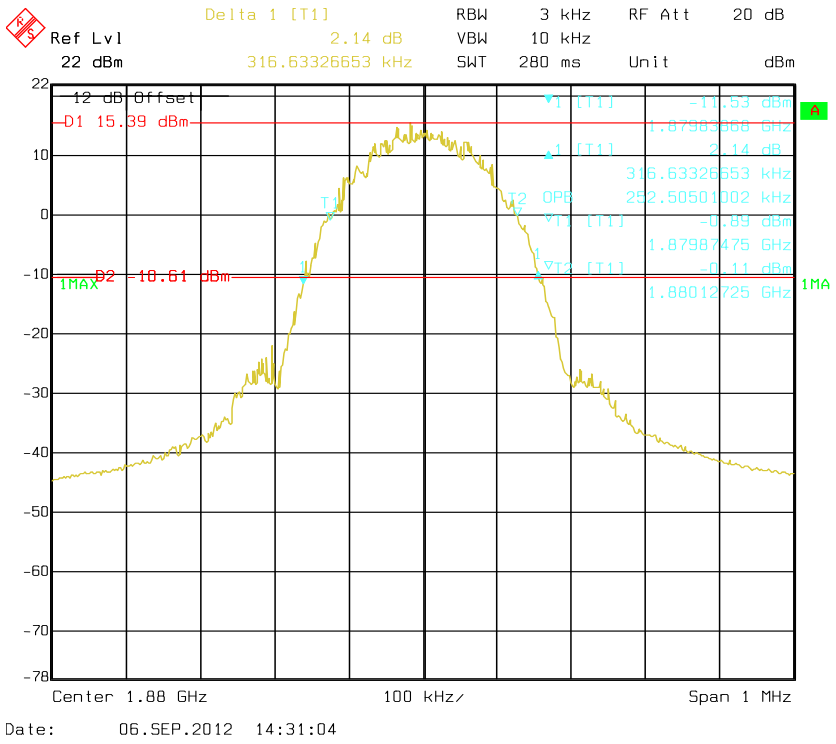
EGPRS, 8PSK, Cellular & PCS Band

Band	Channel No.	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
Cellular	190	248	312
PCS	661	252	316

Cellular Band (Part 22H)



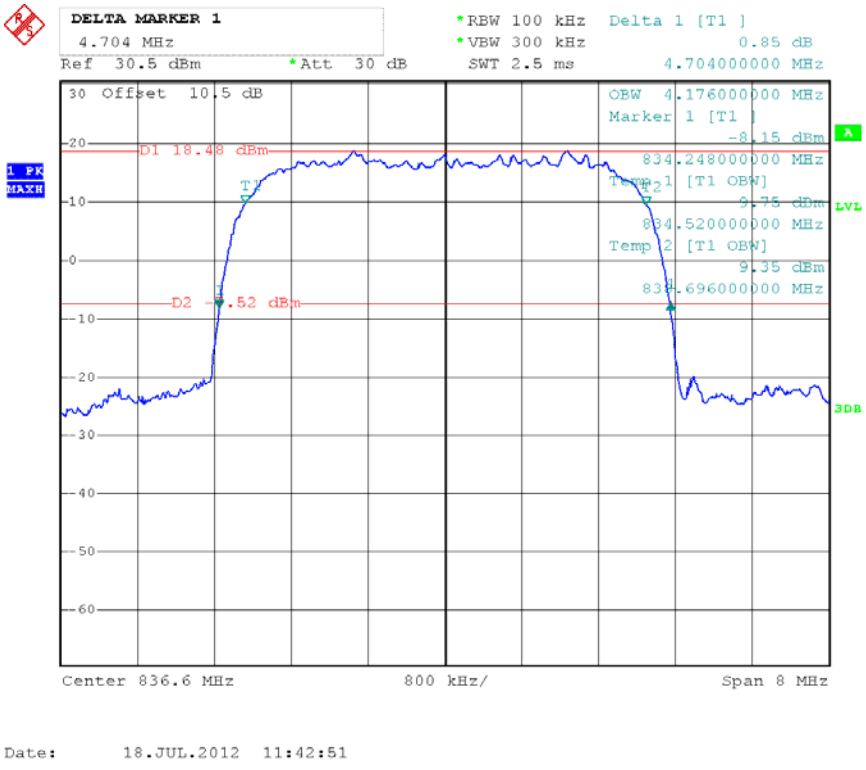
PCS Band (Part 24E)



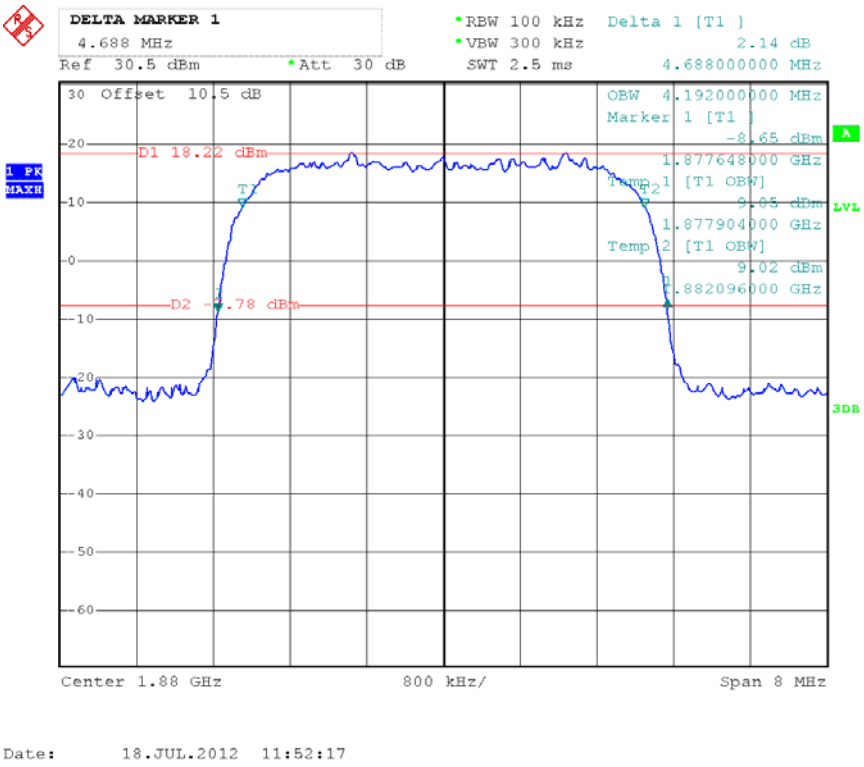
UMTS Rel 99, Cellular & PCS Band

Band	Channel No.	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
Cellular	4183	4176	4704
PCS	9400	4192	4688

WCDMA Band V



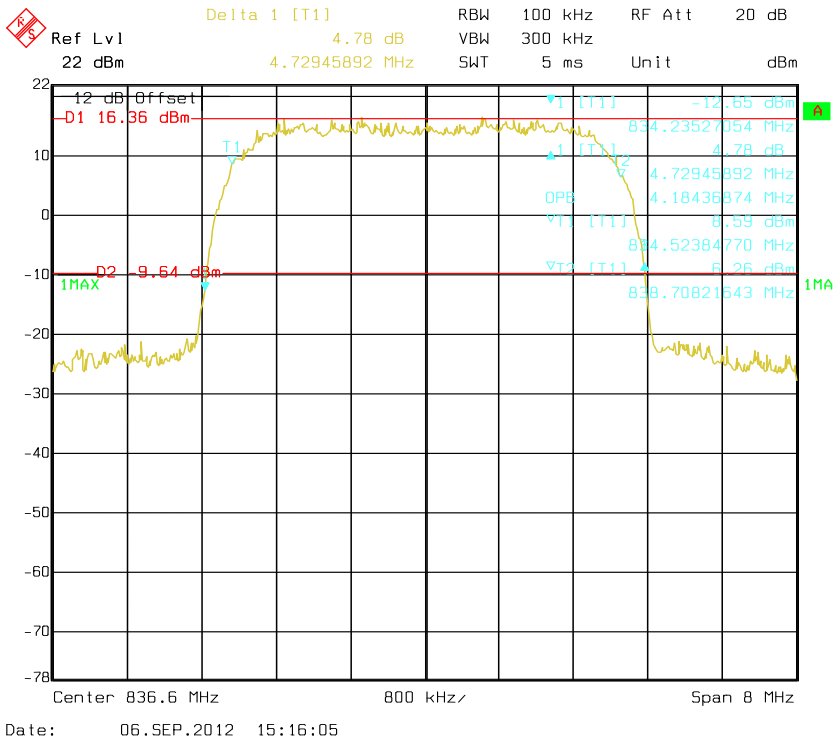
WCDMA Band II



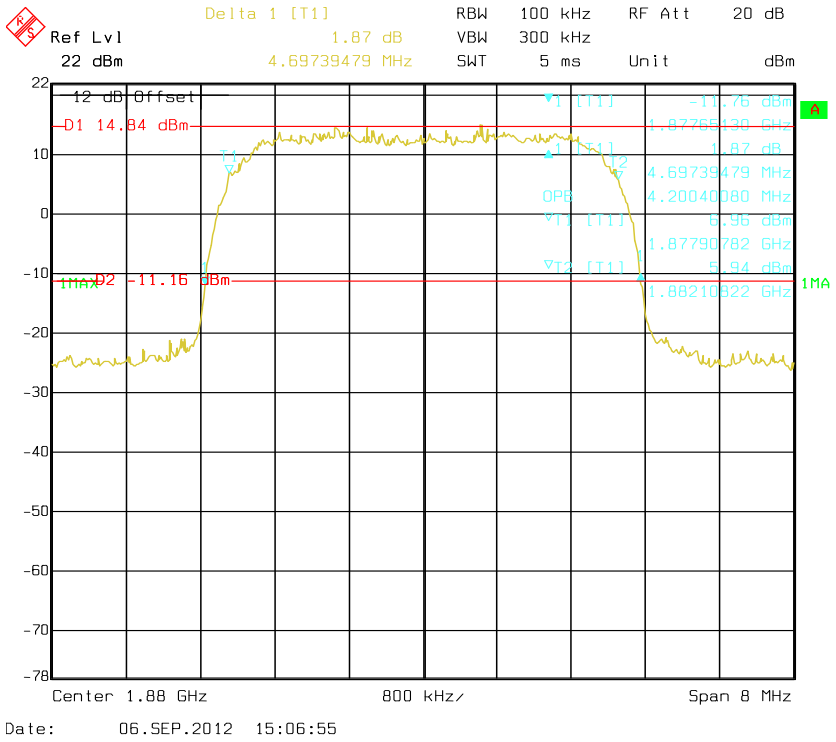
UMTS Rel 6, HSDPA, Cellular & PCS Band

Band	Channel No.	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
Cellular	4183	4729	4184
PCS	9400	4697	4200

WCDMA Band V



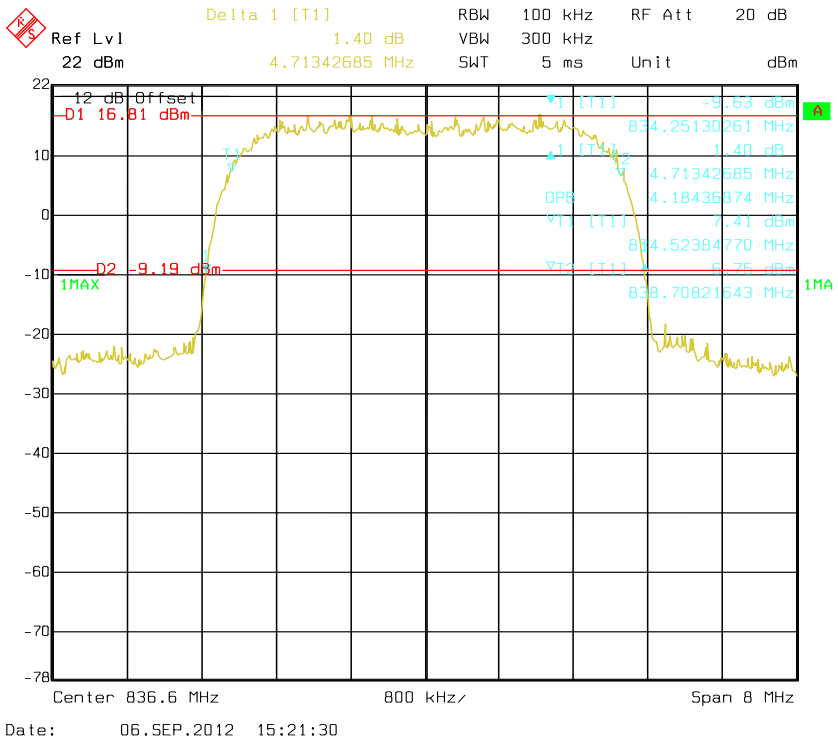
WCDMA Band II



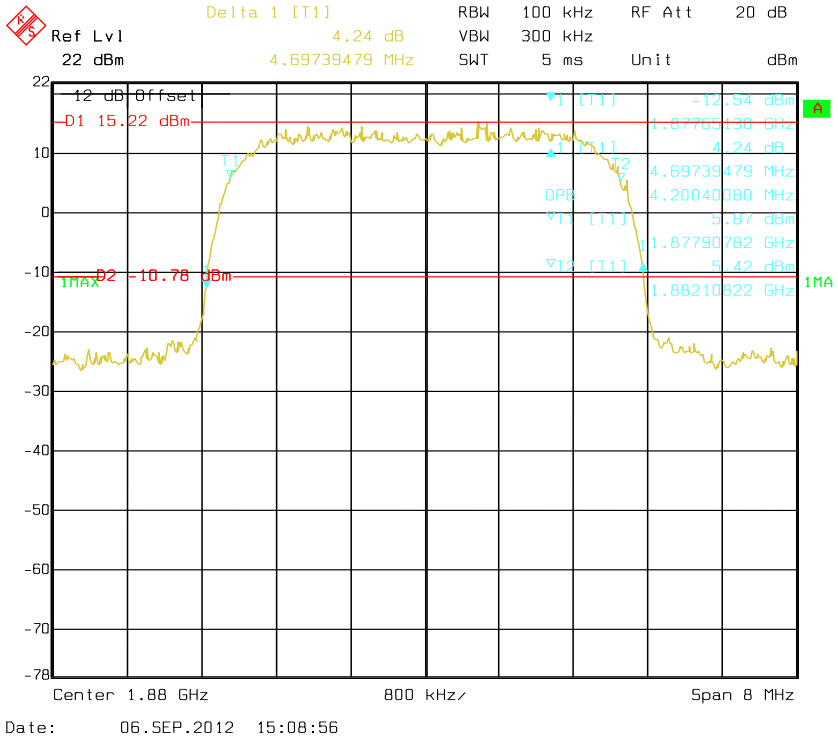
UMTS Rel 6, HSUPA, Cellular & PCS Band

Band	Channel No.	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
Cellular	4183	4713	4184
PCS	9400	4697	4200

WCDMA Band V



WCDMA Band II



FCC §2.1051, §22.917(a) & §24.238(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

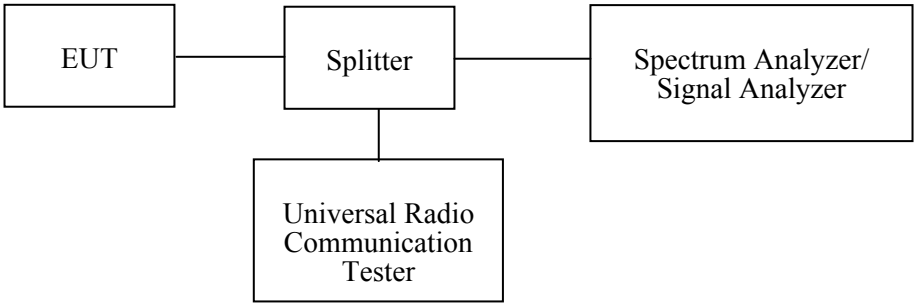
Applicable Standard

FCC §2.1051, §22.917(a) and §24.238(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 transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz for part 22 and 1 MHz for part 24. 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	8386001028	2011-11-24	2012-11-23

*** 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

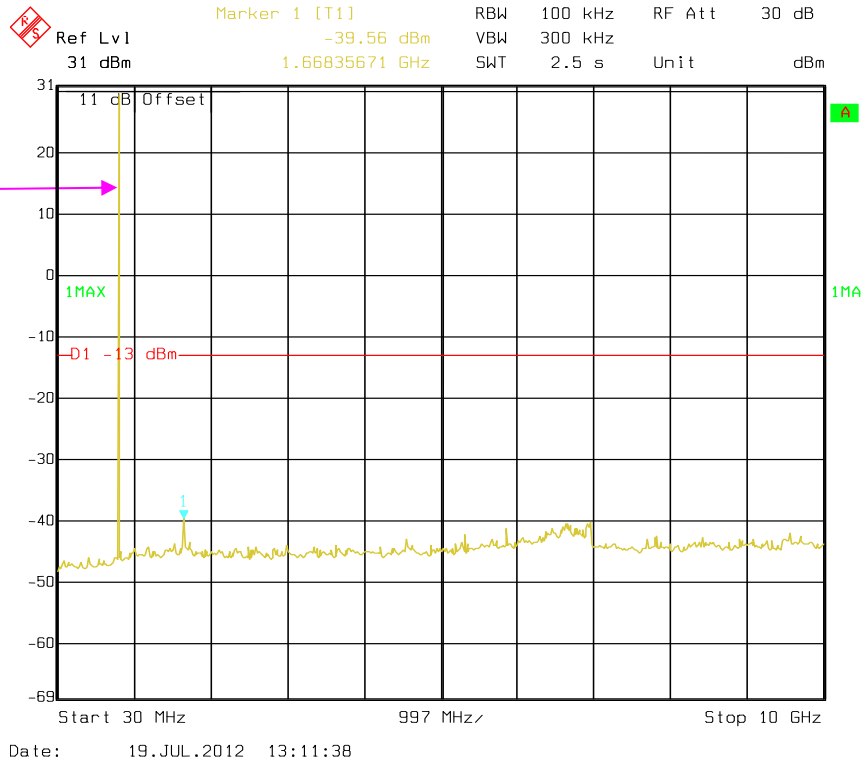
Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Ares Liu on 2012-07-19.

Please refer to the following plots.

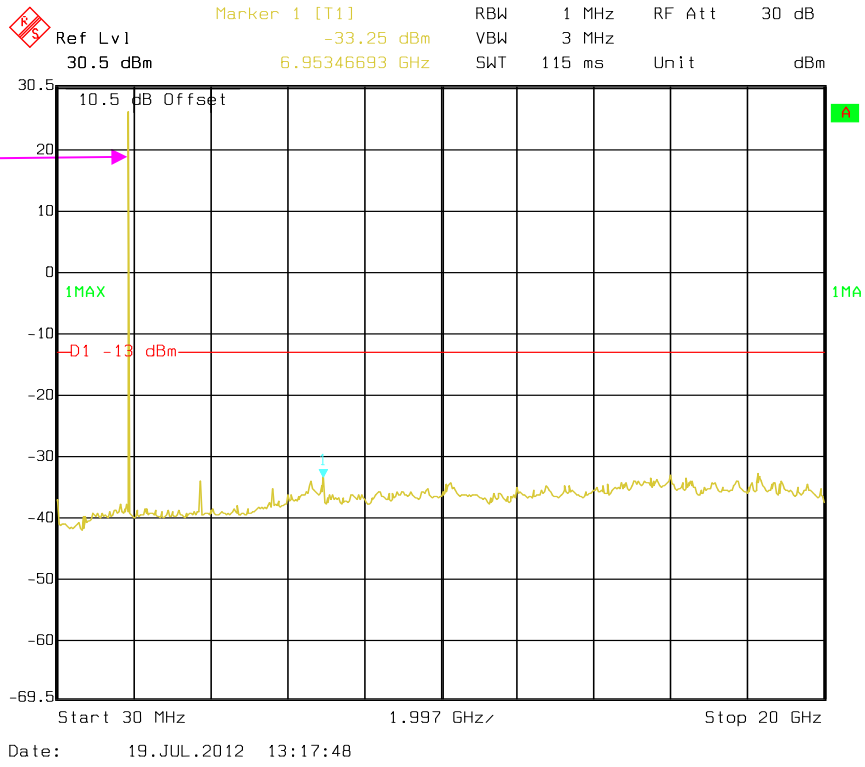
Cellular Band (Part 22H) — Middle Channel

Fundamental

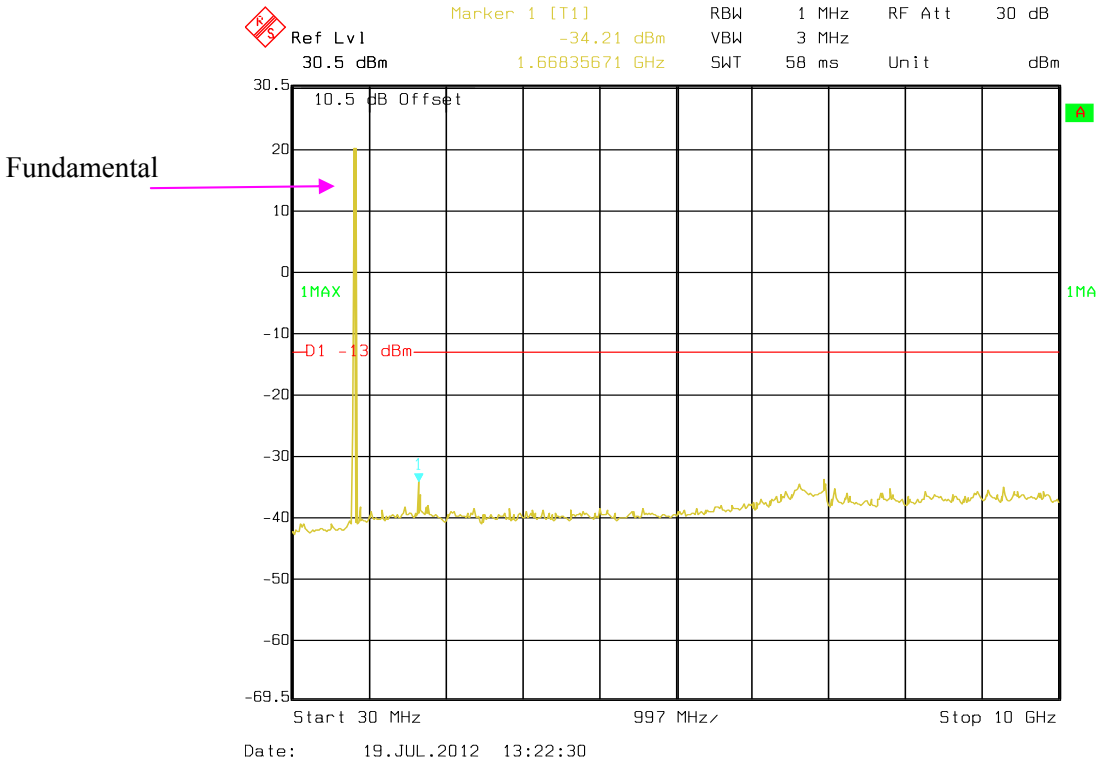


PCS Band (Part 24E) — Middle Channel

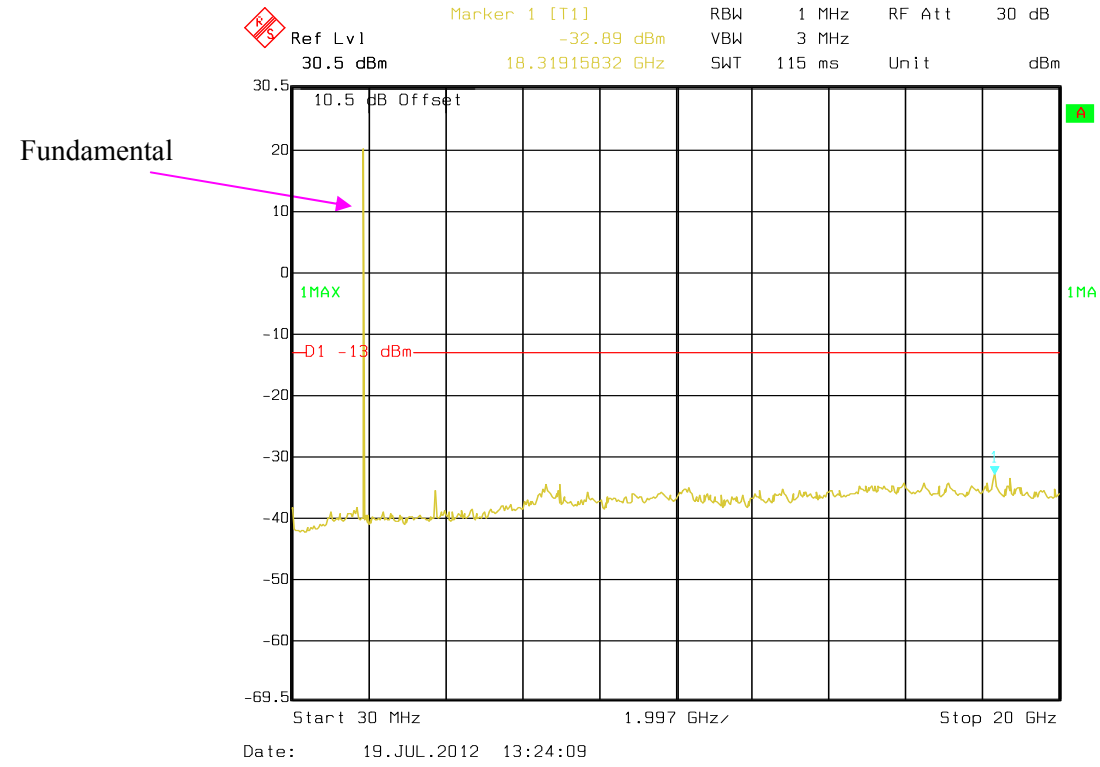
Fundamental



WCDMA Band V - Middle Channel



WCDMA Band II – Middle Channel



FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §22.917 and § 24.238.

Test Procedure

The transmitter 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	A052304	2011-12-1	2012-11-30
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
Rohde & Schwarz	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23
DUCOMMUN Technologies	Pre-amp	ALN-09173030-01	991396-01	2011-11-24	2012-11-23
HP	Signal Generator	HP8657A	3217A04699	2011-12-19	2012-12-18
HP	Amplifier	HP8447E	1937A01046	2011-11-24	2012-11-23
HP	Synthesized Sweeper	8341B	2624A00116	201204-11	2013-04-10
COM POWER	Dipole Antenna	AD-100	041000	N/A	N/A
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2013-02-10
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-1	2012-11-30

*** 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 Ares Liu on 2012-07-19.

EUT Operation Mode: Transmitting

Cellular Band (Part 22H)

30 MHz-10 GHz:

Frequency (MHz)	Ant. Polar (H/V)	S.A Reading (dBµV)	S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Low Channel, f_c = 824.2 MHz								
1648.400	H	51.22	-49.7	7.3	0.9	-43.3	-13.0	30.3
2472.600	H	42.09	-56.4	9.8	0.9	-47.4	-13.0	34.4
1648.400	V	51.28	-49.7	7.3	0.9	-43.2	-13.0	30.2
2472.600	V	42.07	-56.4	9.8	0.9	-47.4	-13.0	34.4
Middle Channel, f_c = 836.6 MHz								
1673.200	H	46.07	-54.9	7.3	0.9	-48.4	-13.0	35.4
2509.800	H	39.38	-59.4	10.1	0.9	-50.1	-13.0	37.1
1673.200	V	43.73	-57.2	7.3	0.9	-50.8	-13.0	37.8
2509.800	V	38.69	-60.1	10.1	0.9	-50.8	-13.0	37.8
High Channel, f_c = 848.8 MHz								
1697.600	H	44.32	-56.6	7.3	0.9	-50.2	-13.0	37.2
2546.400	H	40.87	-57.9	10.1	0.9	-48.6	-13.0	35.6
1697.600	V	45.06	-55.9	7.3	0.9	-49.4	-13.0	36.4
2546.400	V	39.54	-59.2	10.1	0.9	-50.0	-13.0	37.0

PCS Band (Part 24E)

30 MHz-20 GHz:

Frequency (MHz)	Ant. Polar (H/V)	S.A Reading (dBµV)	S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Low Channel, f_c = 1850.2 MHz								
3700.400	H	56.51	-39.6	10.0	1.1	-30.7	-13.0	17.7
5550.600	H	41.63	-52.6	11.3	1.5	-42.8	-13.0	29.8
3700.400	V	55.79	-40.3	10.0	1.1	-31.4	-13.0	18.4
5550.600	V	41.32	-52.9	11.3	1.5	-43.1	-13.0	30.1
Middle Channel, f_c = 1880.0 MHz								
3760.000	H	53.88	-42.2	10.0	1.1	-33.3	-13.0	20.3
5640.000	H	45.27	-48.9	11.2	1.5	-39.1	-13.0	26.1
3760.000	V	55.16	-40.9	10.0	1.1	-32.0	-13.0	19.0
5640.000	V	47.13	-47.0	11.2	1.5	-37.3	-13.0	24.3
High Channel, f_c = 1909.8 MHz								
3819.600	H	55.04	-40.9	9.8	1.1	-32.1	-13.0	19.1
5729.400	H	45.63	-48.4	11.1	1.5	-38.8	-13.0	25.8
3819.600	V	53.49	-42.5	9.8	1.1	-33.7	-13.0	20.7
5729.400	V	45.94	-48.1	11.1	1.5	-38.5	-13.0	25.5

FCC §22.917(a) & §24.238(a) - BAND EDGES

Applicable Standard

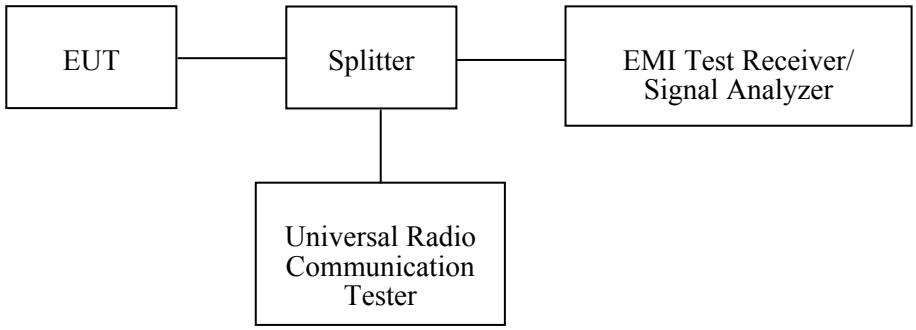
According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §24.238(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	FSIQ26	8386001028	2011-11-24	2012-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16

*** 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 Ares Liu from 2012-07-18 to 2012-09-06.

Please refer to the following tables and plots.

GSM mode:

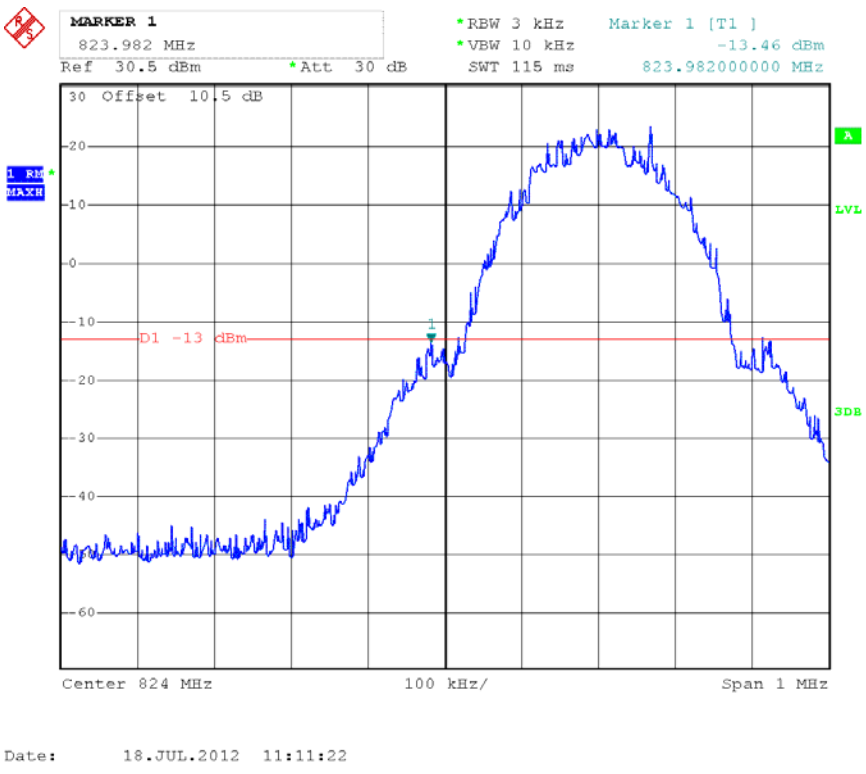
GSM/GPRS, Cellular Band (Part 22H)

Channel	Emission (dBm)	Limit (dBm)
128	-13.46	-13
251	-14.47	-13

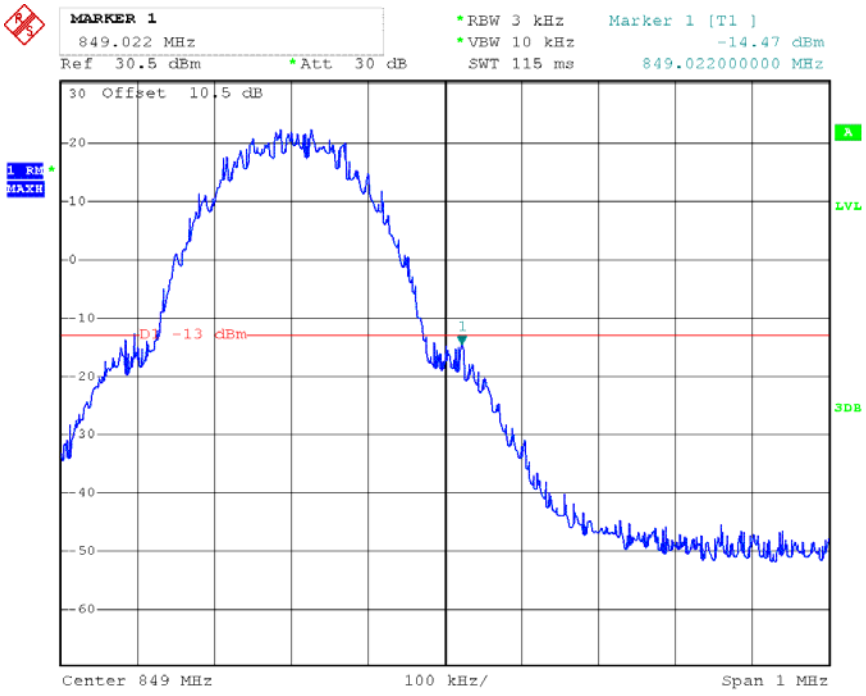
GSM/GPRS, PCS Band (Part 24E)

Channel	Emission (dBm)	Limit (dBm)
512	-13.94	-13
810	-14.41	-13

Cellular Band, Left Band Edge



Cellular Band, Right Band Edge



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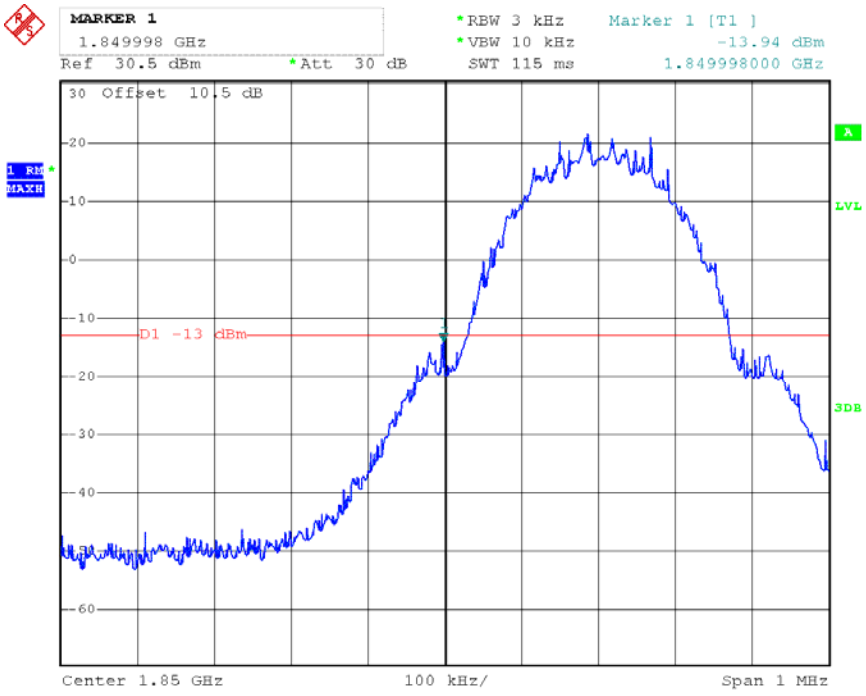
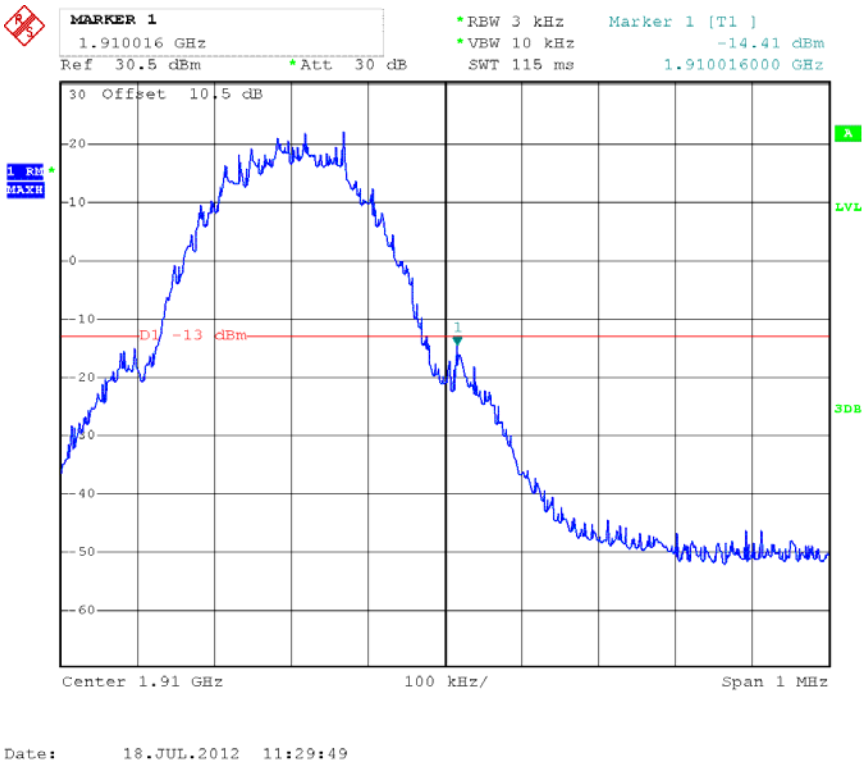
PCS Band, Left Band Edge



Date: 18.JUL.2012 11:31:13

PCS Band, Right Band Edge



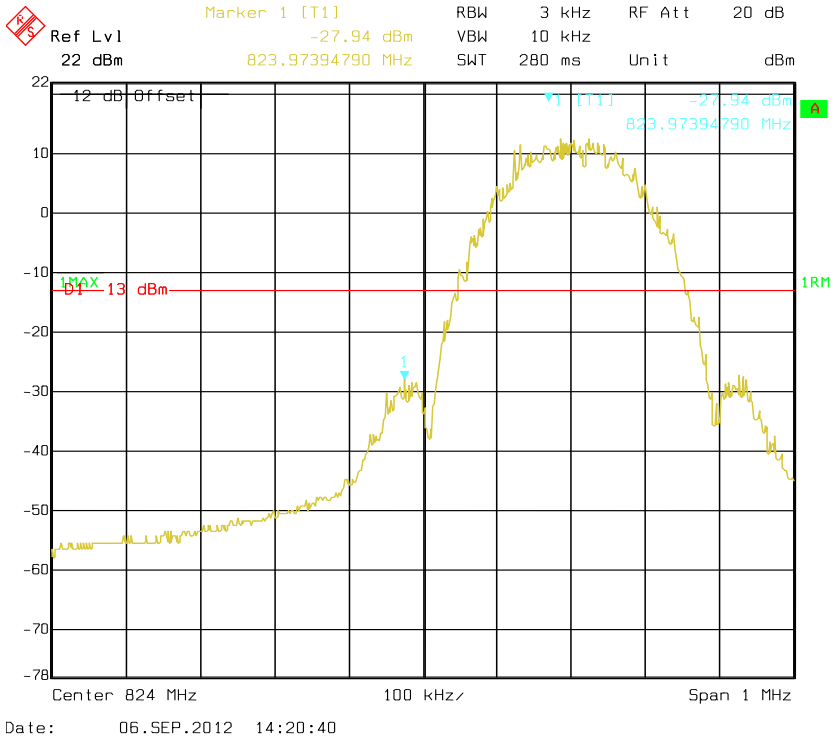
EGPRS - Cellular Band (Part 22H)

Channel	Emission (dBm)	Limit (dBm)
128	-27.94	-13
251	-27.68	-13

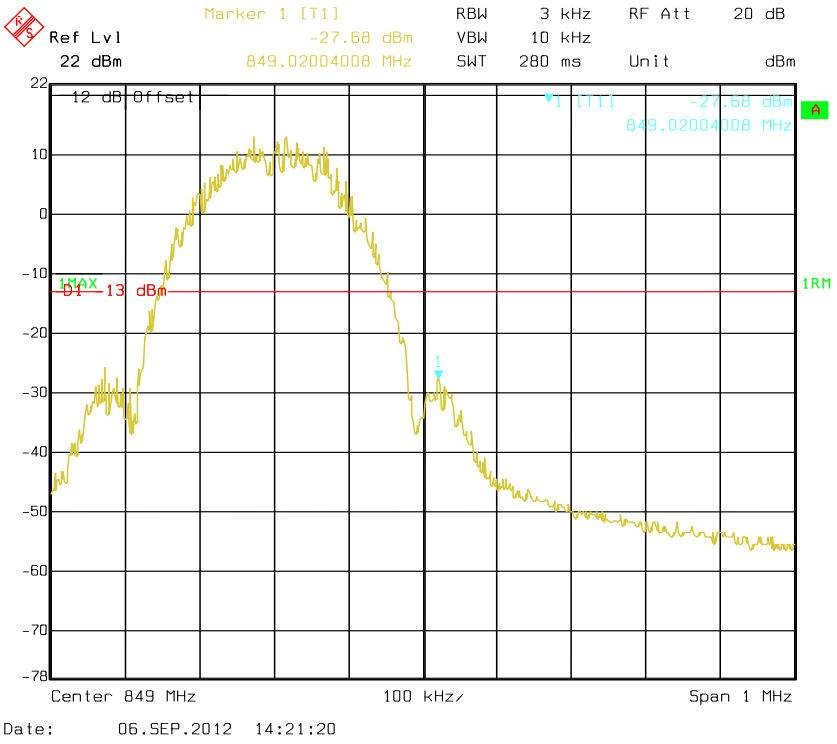
EGPRS - PCS Band (Part 24E)

Channel	Emission (dBm)	Limit (dBm)
512	-27.04	-13
810	-31.77	-13

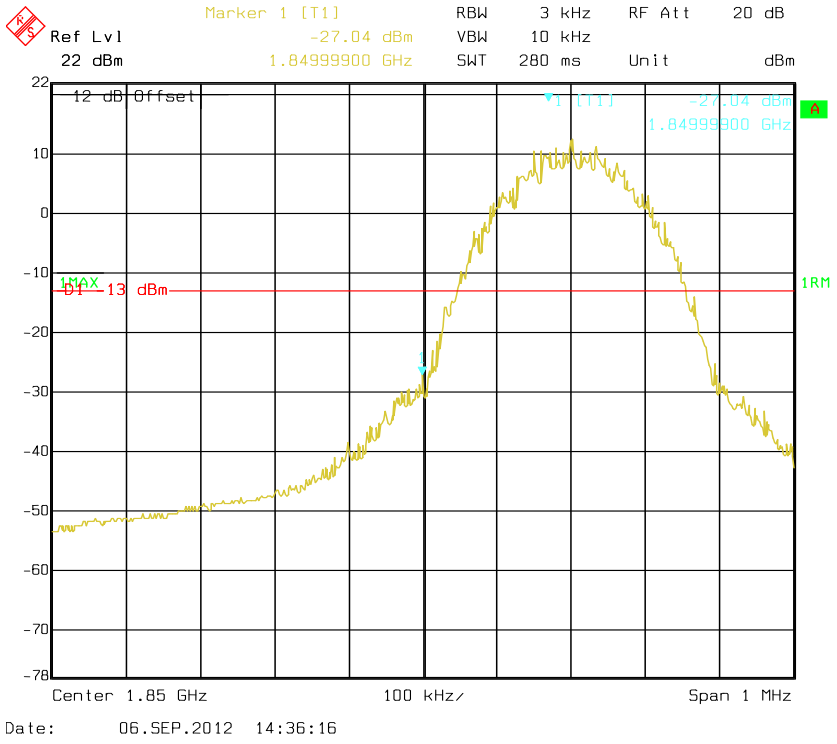
Cellular Band, Left Band Edge



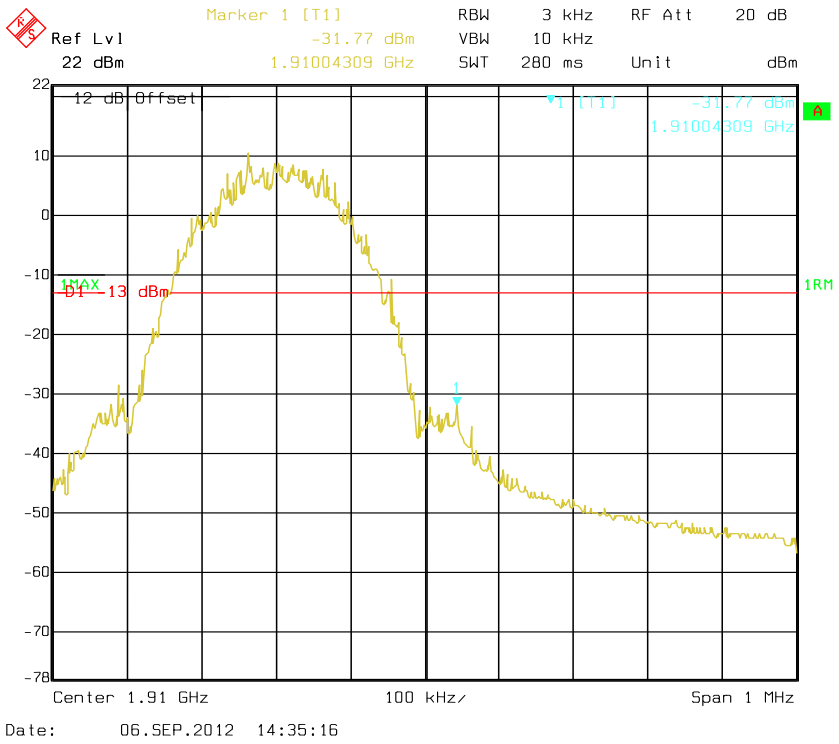
Cellular Band, Right Band Edge



PCS Band, Left Band Edge



PCS Band, Right Band Edge



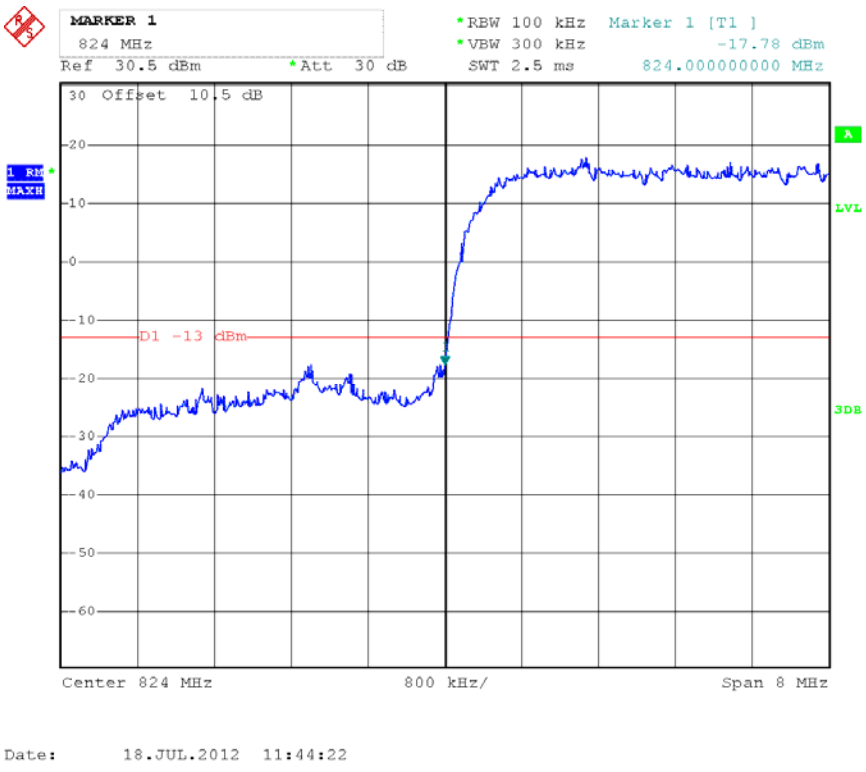
WCDMA Band V (Part 22H)

Channel	Emission (dBm)	Limit (dBm)
4132	-17.78	-13
4233	-18.08	-13

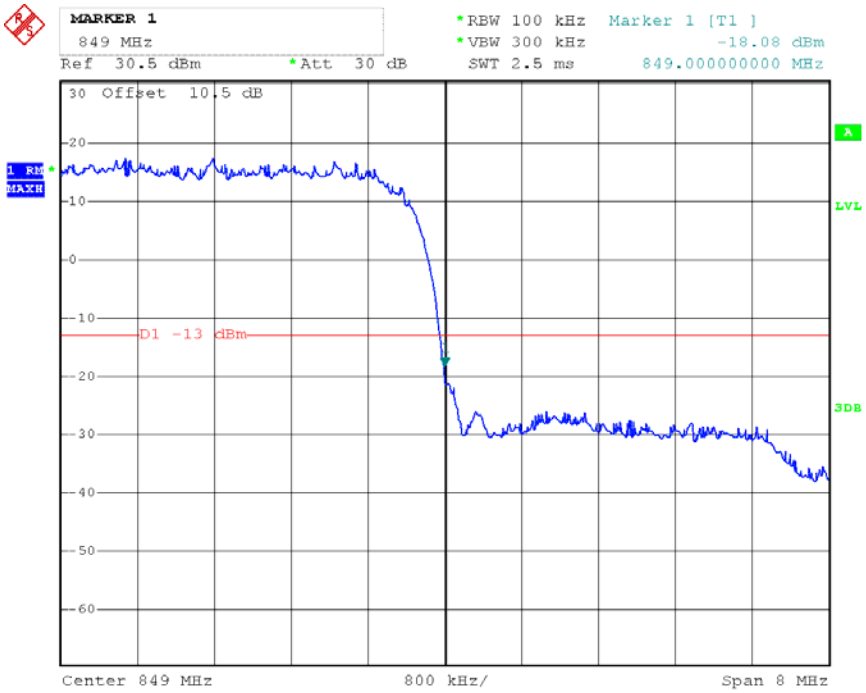
WCDMA Band II (Part 24E)

Channel	Emission (dBm)	Limit (dBm)
9262	-17.98	-13
9538	-15.93	-13

WCDMA 850, Left Band Edge

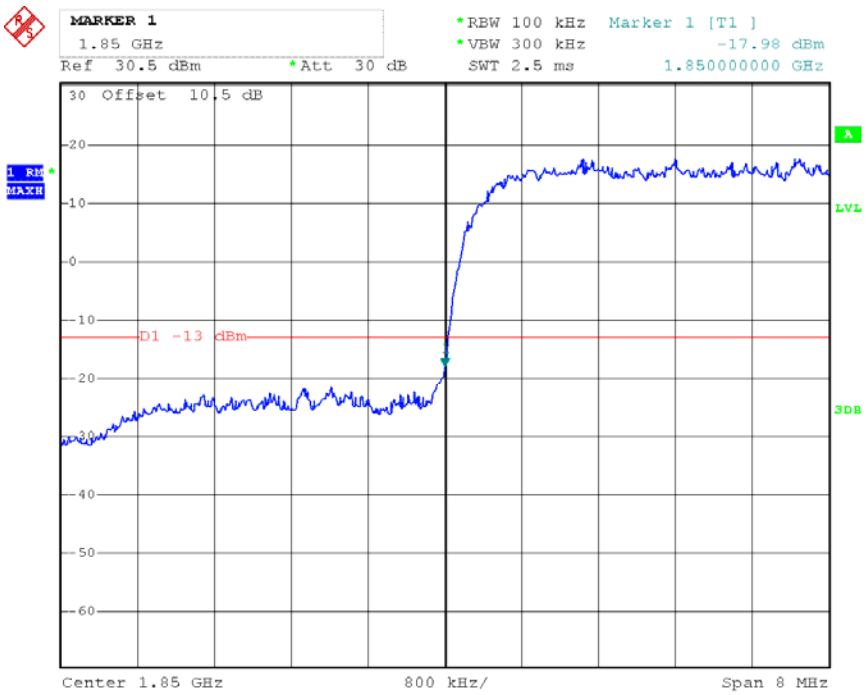


WCDMA 850, Right Band Edge



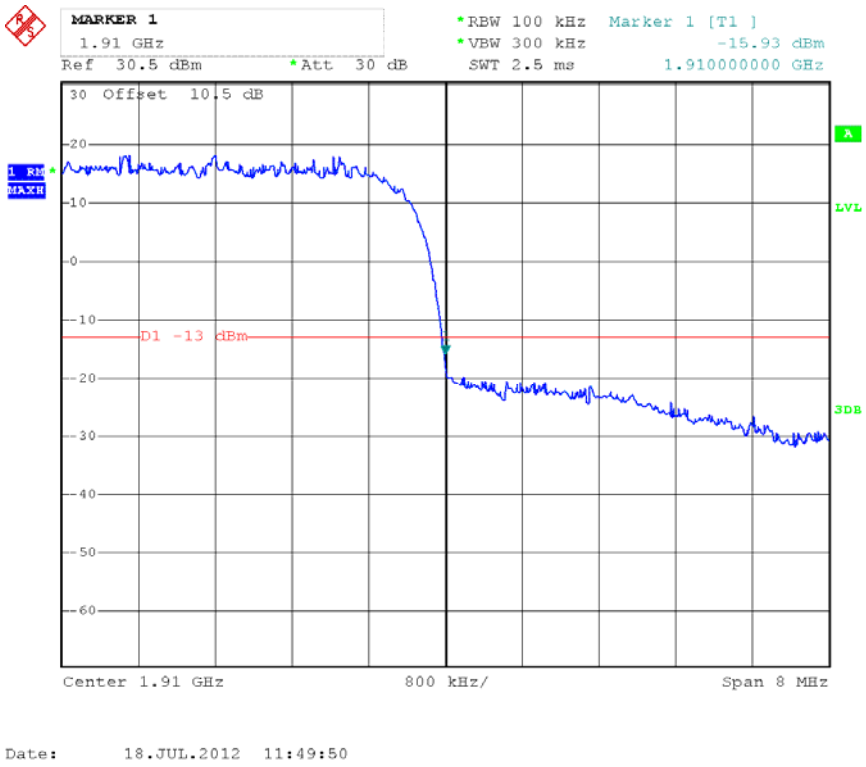
Date: 18.JUL.2012 11:44:59

WCDMA 1900, Left Band Edge



Date: 18.JUL.2012 11:49:09

WCDMA 1900, Right Band Edge



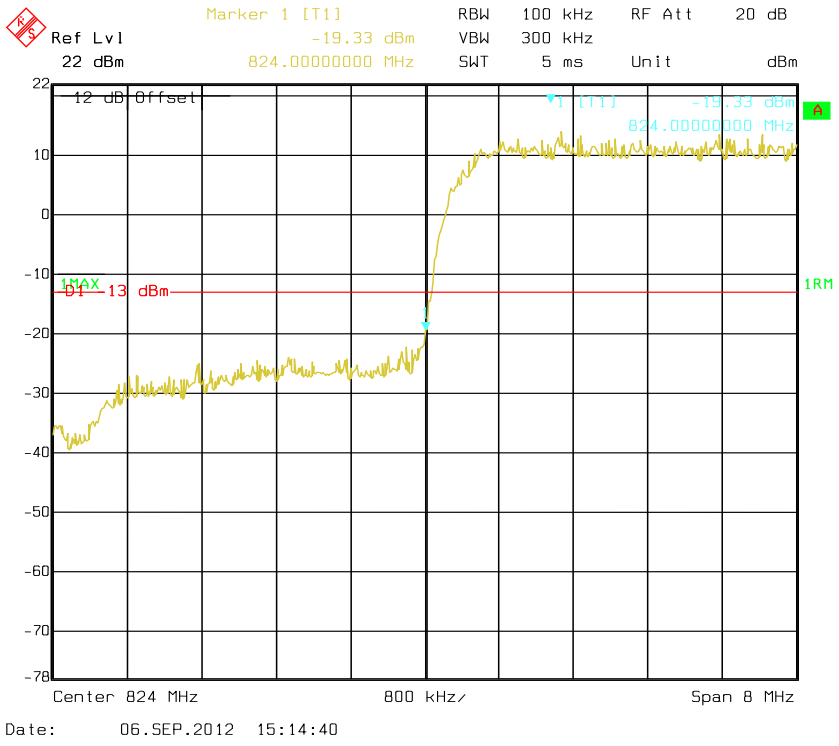
HSDPA - WCDMA Band V (Part 22H)

Channel	Emission (dBm)	Limit (dBm)
4132	-19.33	-13
4233	-21.23	-13

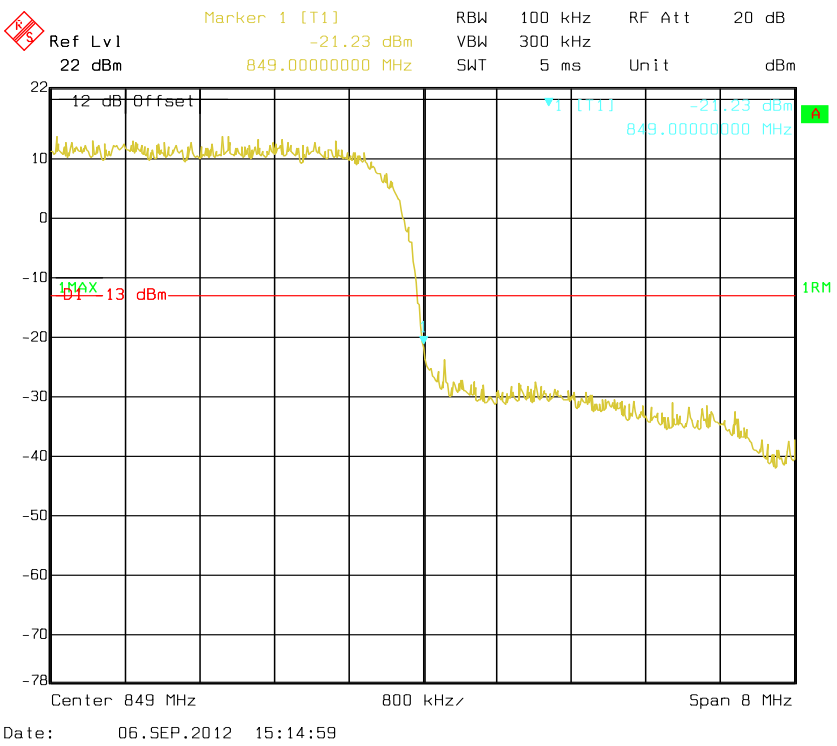
HSDPA - WCDMA Band II (Part 24E)

Channel	Emission (dBm)	Limit (dBm)
9262	-21.48	-13
9538	-22.51	-13

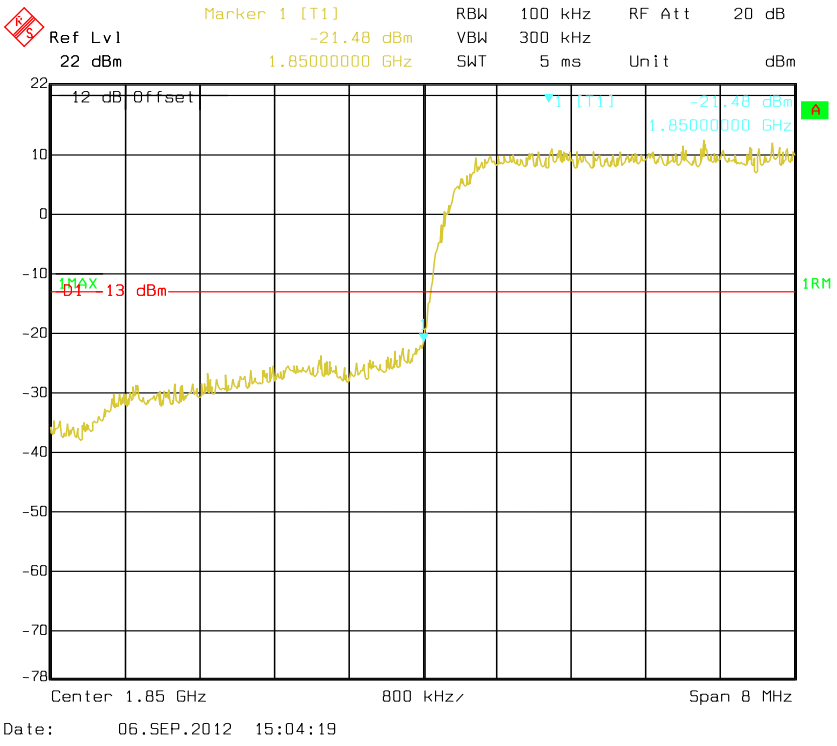
Band V, Left Band Edge



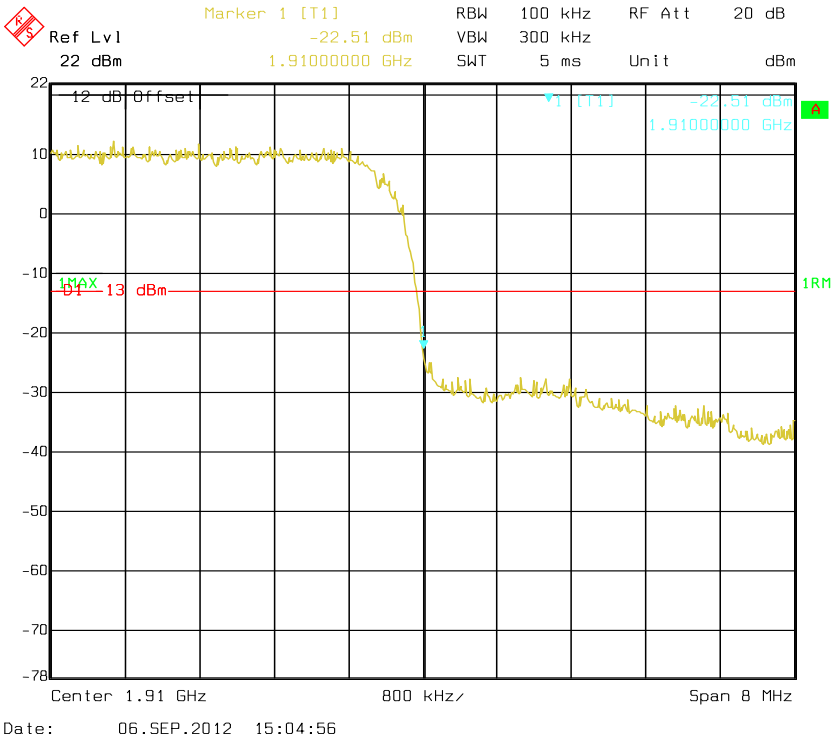
Band V, Right Band Edge



Band II, Left Band Edge



Band II, Right Band Edge



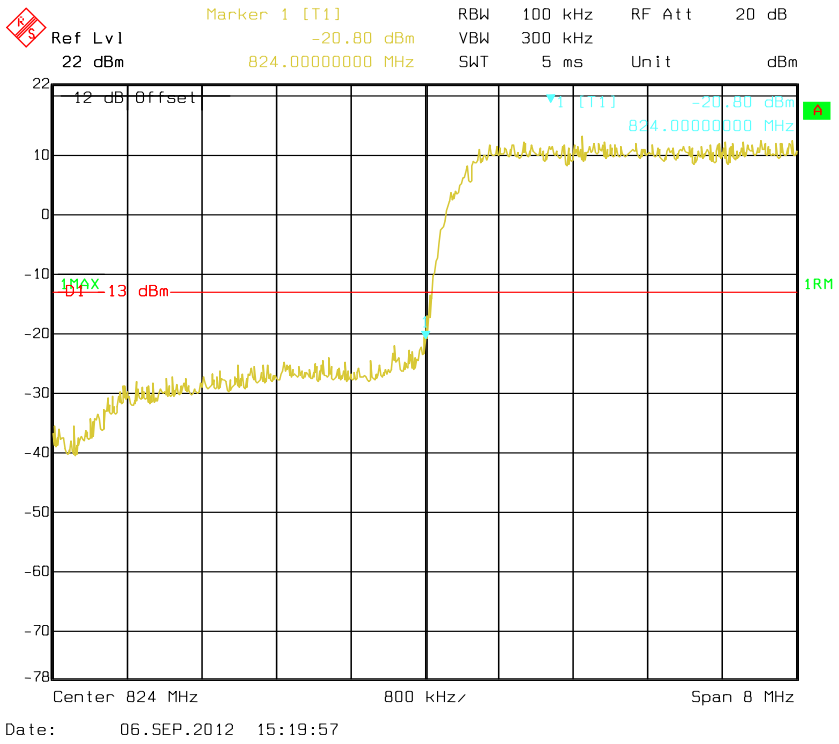
HSUPA - WCDMA Band V (Part 22H)

Channel	Emission (dBm)	Limit (dBm)
4132	-20.80	-13
4233	-20.92	-13

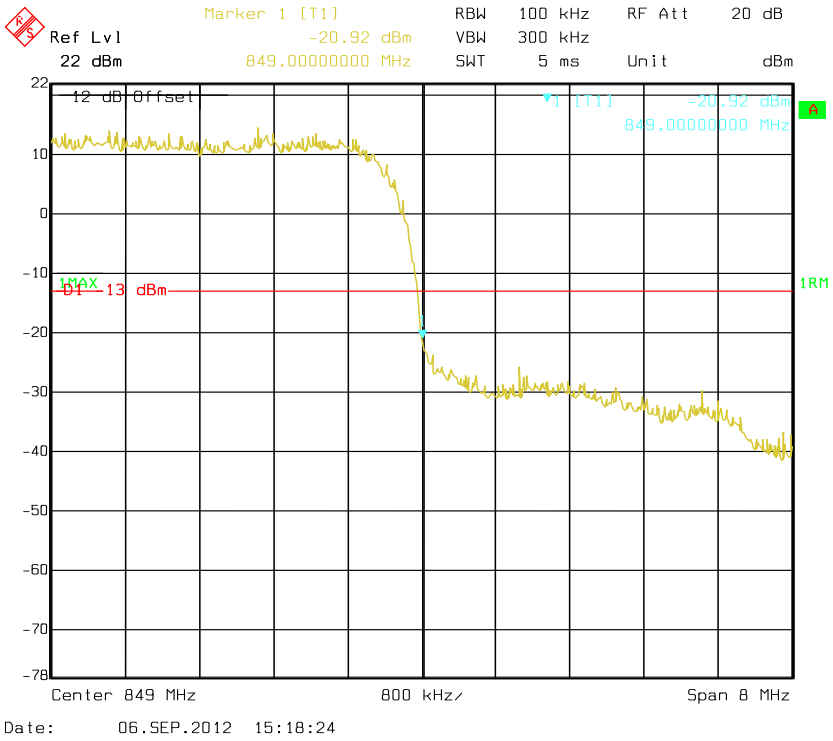
HSUPA - WCDMA Band II (Part 24E)

Channel	Emission (dBm)	Limit (dBm)
9262	-21.48	-13
9538	-21.33	-13

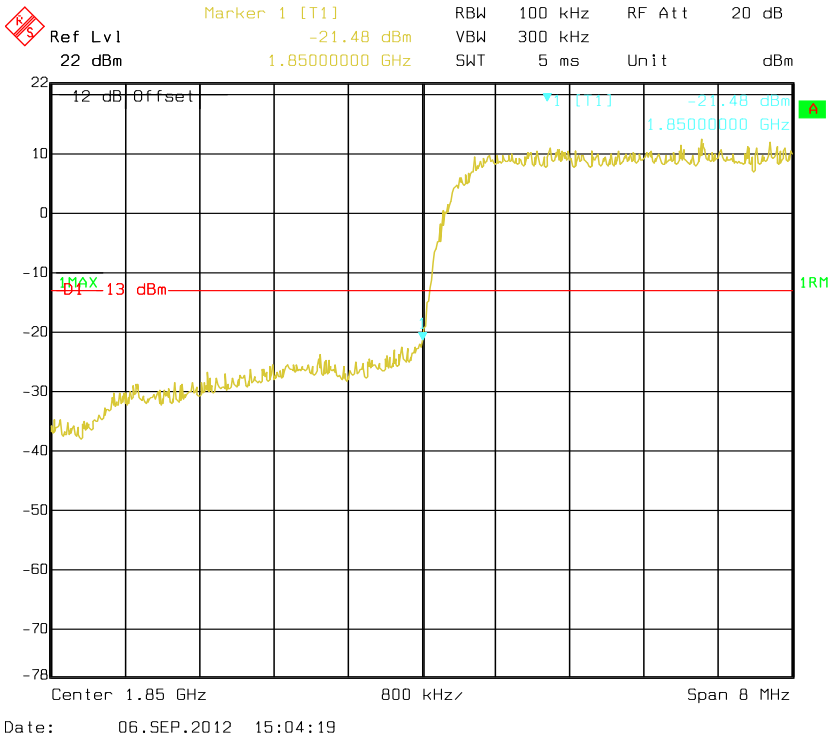
Band V, Left Band Edge



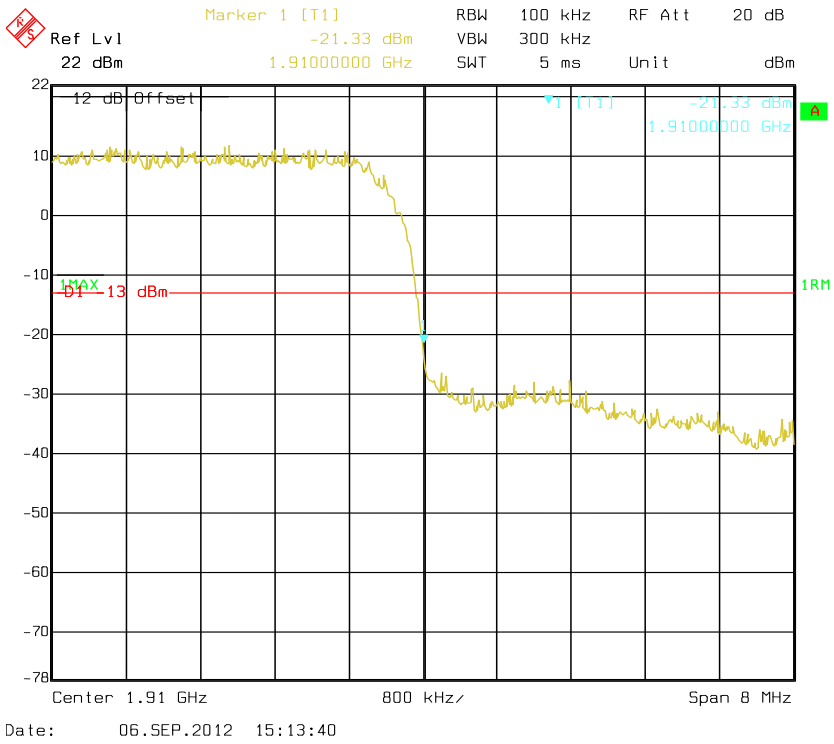
Band V, Right Band Edge



Band II, Left Band Edge



Band II, Right Band Edge



FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY

Applicable Standard

FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235

According to §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

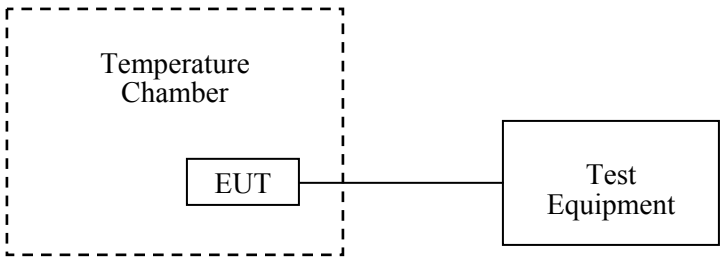
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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	2011-06-04	2012-06-03
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	109038	2011-04-11	2012-04-10

*** 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 Ares Liu on 2012-07-17.

Cellular Band (Part 22H)

Middle Channel, f_c = 836.6 MHz				
Temperature (^{O}C)	**Voltage (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	10	0.012	2.5
-20	3.7	9	0.011	2.5
-10	3.7	9	0.011	2.5
0	3.7	5	0.006	2.5
10	3.7	6	0.007	2.5
20	3.7	3	0.004	2.5
30	3.7	4	0.005	2.5
40	3.7	-5	-0.006	2.5
50	3.7	-9	-0.011	2.5
25	$V_{end\ point}$ = 3.5	11	0.013	2.5

PCS Band (Part 24E)

Middle Channel, f_c = 1880.0 MHz				
Temperature (^{O}C)	**Voltage (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	13	0.007	Pass
-20	3.7	9	0.005	Pass
-10	3.7	7	0.004	Pass
0	3.7	5	0.003	Pass
10	3.7	4	0.002	Pass
20	3.7	2	0.001	Pass
30	3.7	-3	-0.002	Pass
40	3.7	-6	-0.003	Pass
50	3.7	-9	-0.005	Pass
25	$V_{end\ point}$ = 3.5	-15	-0.008	Pass

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