LABCODE: 500069-0

FCC PART 22H, PART 24E

MEASUREMENT AND TEST REPORT

For

ITALCOM GROUP

1728 Coral Way, Coral Gables, Miami, Florida 33145, USA

FCC ID: YPVITALCOMFLYMINI

Report Type:	Product Type:
Original Report	Mobile Phone

Test Engineer:	Ares Liu
Report Number:	RSZ140304015-00C
Report Date:	2014-03-19
Reviewed By:	Ivan Cao RF Leader
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *ITALCOM GROUP*'s product, model number: *FLY MINI (FCC ID: YPVITALCOMFLYMINI)* (the "EUT") in this report was a *Mobile Phone,* which was measured approximately: 11.8 cm (L) x 6.3 cm (W) x 1.0 cm (H), rated input voltage: DC 3.7 V from lithium battery or DC 4.2V charging from adapter.

Adapter information:
Input: AC 100-250V, 50-60Hz
Output: DC 4.2V±0.5V, 500mA

** All measurement and test data in this report was gathered from production sample serial number: 140304015 (Assigned by BACL.Dongguan). The EUT was received on 2014-03-07.*

Objective

This report is prepared on behalf of *ITALCOM GROUP* in accordance with Part 2-Subpart J, Part 22-Subpart H, and Part 24-Subpart E of the Federal Communications Commission's 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 submissions with FCC ID: YPVITALCOMFLYMINI
FCC Part15C DSS submissions with FCC ID: YPVITALCOMFLYMINI
FCC Part15C DTS submissions with FCC ID: YPVITALCOMFLYMINI

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 C63.4-2003.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp.(Dongguan).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications 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 February 02, 2012. 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.: 273710. 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. (Dongguan) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 500069-0).

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The current scope of accreditations can be found at http://ts.nist.gov/standards/scopes/5000690.htm

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D-2010.

The test items were performed with the EUT operating at testing mode.

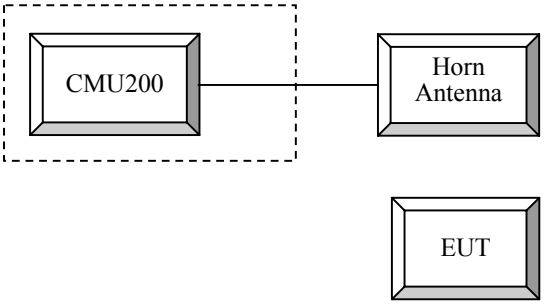
Equipment Modifications

No modification was made to the EUT.

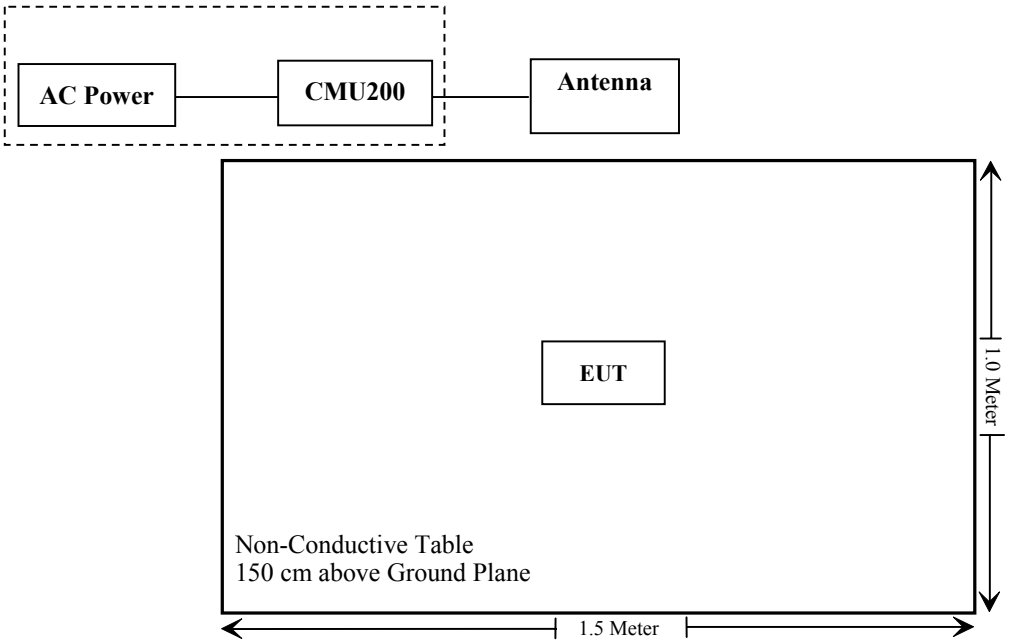
Support Equipment List and Details

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
§1.1310, §2.1093	RF Exposure	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

FCC §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ140304015-20.

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

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
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
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 stable)
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)
	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	

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
HP	Signal Generator	8648A	3426A00831	2013-11-06	2014-11-05
Sunol Sciences	Antenna	JB3	A060611-1	2011-09-06	2014-09-05
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
HP	Amplifier	8447E	2434A02181	2013-09-06	2014-09-05
R&S	EMI Test Receiver	ESCI	100224	2013-05-06	2014-05-05
Giga	Signal Generator	1026	320408	2013-05-09	2014-05-08
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-18
TDK RF	Horn Antenna	HRN-0118	130 084	2012-09-06	2015-09-05
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-05
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	19.4 °C
Relative Humidity:	67 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu on 2014-03-12.

Conducted Power

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)
GSM	128	824.2	32.32	38.45
	190	836.6	32.38	38.45
	251	848.8	32.36	38.45

Mode	Channel	Frequency (MHz)	Peak Output Power(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.33	31.59	30.15	29.42	38.45
	190	836.6	32.36	31.67	30.20	29.46	38.45
	251	848.8	32.38	31.66	30.18	29.46	38.45

WCDMA Band V:

Mode	3GPP Sub Test	Ave. Conducted Output Power (dBm)					
		Low Channel (Ave. Power)	Low Channel (PAR)	Middle Channel (Ave. Power)	Middle Channel (PAR)	High Channel (Ave. Power)	High Channel (PAR)
Rel 99	1	22.34	2.89	22.14	2.98	22.31	3.05
HSDPA	1	21.46	3.31	21.02	3.31	21.48	3.40
	2	21.42	3.41	21.04	3.29	21.47	3.38
	3	21.35	3.77	20.81	3.67	21.42	3.77
	4	21.44	3.44	21.04	3.32	21.48	3.35
HSUPA	1	21.45	3.34	21.03	3.31	21.48	3.33
	2	21.44	3.31	20.94	3.24	21.45	3.38
	3	21.33	3.95	20.69	3.70	21.46	3.65
	4	21.46	3.32	21.00	3.26	21.50	3.41
	5	21.43	3.40	20.96	3.40	21.51	3.47

Note: peak-to-average ratio (PAR) <13 dB

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	29.36	33
	661	1880.0	29.46	33
	810	1909.8	29.57	33

Mode	Channel	Frequency (MHz)	Peak Output Power(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.36	28.60	26.99	26.17	33
	661	1880.0	29.41	28.70	27.13	26.34	33
	810	1909.8	29.54	28.85	27.38	26.54	33

WCDMA Band II:

Mode	3GPP Sub Test	Ave. Conducted Output Power (dBm)					
		Low Channel (Ave. Power)	Low Channel (PAR)	Middle Channel (Ave. Power)	Middle Channel (PAR)	High Channel (Ave. Power)	High Channel (PAR)
Rel 99	1	22.31	2.83	22.21	2.85	22.01	2.75
HSDPA	1	21.31	3.14	21.26	3.21	21.05	3.21
	2	21.24	3.26	21.21	3.33	20.97	3.25
	3	21.24	3.48	21.16	3.58	20.92	3.56
	4	21.30	3.14	21.25	3.19	21.06	3.16
HSUPA	1	21.32	3.14	21.29	3.17	21.02	3.33
	2	21.26	3.30	21.26	3.16	21.04	3.26
	3	21.23	3.45	21.14	3.56	20.86	3.62
	4	21.34	3.07	21.26	3.26	20.96	3.31
	5	21.27	3.24	21.20	3.34	21.04	3.19

Note: peak-to-average ratio (PAR) <13 dB

ERP & EIRP

GSM:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Cellular band								
824.200	H	91.26	16.2	0.0	1.0	15.2	38.4	23.2
824.200	V	102.41	30.5	0.0	1.0	29.5	38.4	8.9
836.600	H	90.16	15.2	0.0	1.0	14.2	38.4	24.2
836.600	V	102.73	30.9	0.0	1.0	29.9	38.4	8.5
848.800	H	90.77	15.9	0.0	1.0	14.9	38.4	23.5
848.800	V	103.28	31.6	0.0	1.0	30.6	38.4	7.8
PCS band								
1850.200	H	83.58	11.7	11.4	1.4	21.7	33.0	11.3
1850.200	V	87.49	15.6	11.4	1.4	25.6	33.0	7.4
1880.000	H	83.17	11.6	11.7	1.4	21.9	33.0	11.1
1880.000	V	87.98	16.5	11.7	1.4	26.8	33.0	6.2
1909.800	H	83.24	11.9	11.8	1.4	22.3	33.0	10.7
1909.800	V	88.76	17.7	11.8	1.4	28.1	33.0	4.9

WCDMA Band V:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
826.400	H	80.84	5.8	0.0	1.0	4.8	38.4	33.6
826.400	V	93.07	21.2	0.0	1.0	20.2	38.4	18.2
836.600	H	78.78	3.9	0.0	1.0	2.9	38.4	35.5
836.600	V	91.91	20.1	0.0	1.0	19.1	38.4	19.3
846.600	H	80.38	5.5	0.0	1.0	4.5	38.4	33.9
846.600	V	92.69	21.0	0.0	1.0	20.0	38.4	18.4

WCDMA Band II:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1852.400	H	72.53	0.7	11.5	1.4	10.8	33.0	22.2
1852.400	V	81.14	9.2	11.5	1.4	19.3	33.0	13.7
1880.000	H	71.98	0.4	11.7	1.4	10.7	33.0	22.3
1880.000	V	80.77	9.3	11.7	1.4	19.6	33.0	13.4
1907.600	H	71.91	0.5	11.8	1.4	10.9	33.0	22.1
1907.600	V	80.75	9.7	11.8	1.4	20.1	33.0	12.9

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

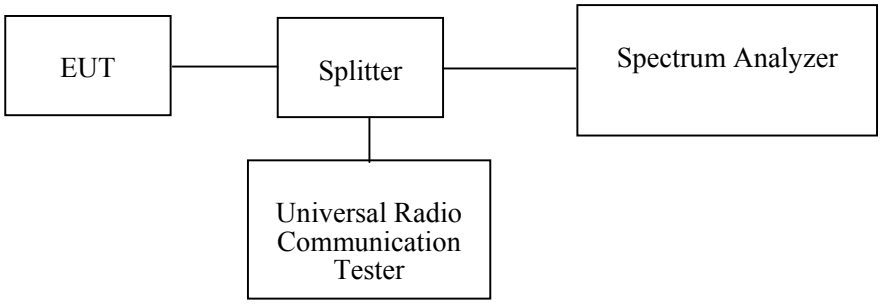
Applicable Standard

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 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSP 38	100478	2013-06-16	2014-06-15

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22.4 °C
Relative Humidity:	67 %
ATM Pressure:	101.2 kPa

The testing was performed by Ares Liu on 2014-03-13.

Cellular Band (Part 22H)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM	836.6	246.0	316.0

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA	836.6	4.17	4.70

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
HSUPA	836.6	4.17	4.67

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
HSDPA	836.6	4.17	4.68

PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM	1880.0	247.0	312.0

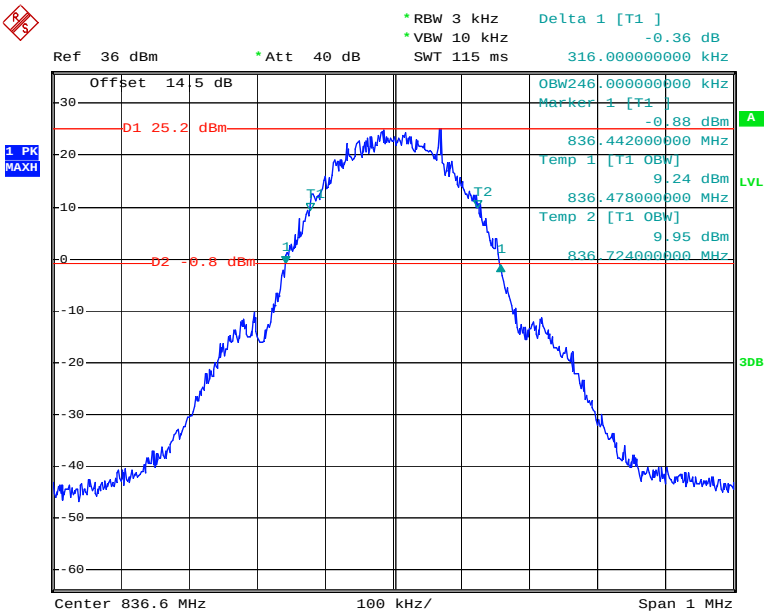
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA	1880.0	4.16	4.71

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
HSUPA	1880.0	4.17	4.68

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
HSDPA	1880.0	4.15	4.68

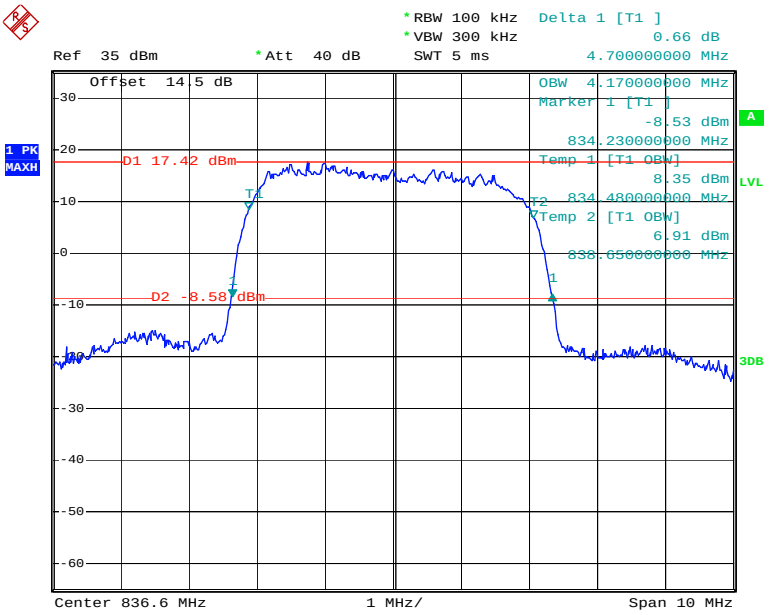
Cellular Band (Part 22H)

99% Occupied & 26 dB Emissions Bandwidth for GSM Mode



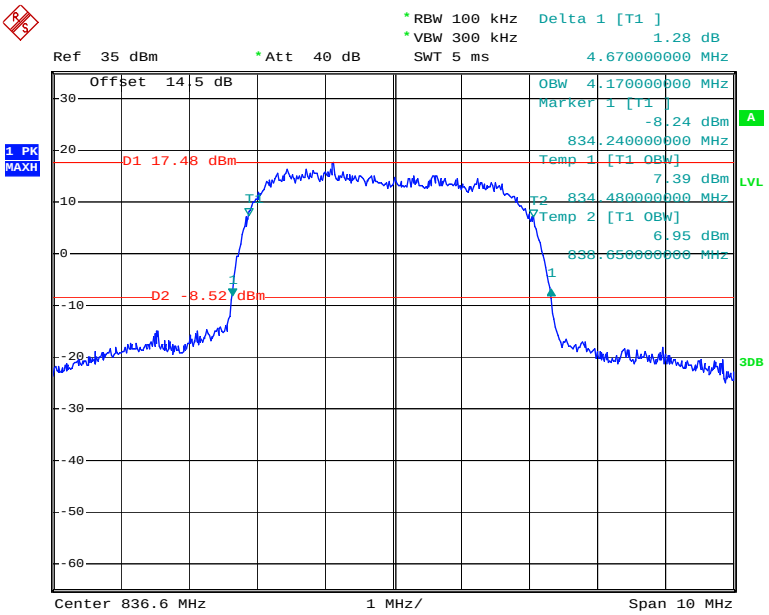
Date: 13.MAR.2014 09:53:35

99% Occupied & 26 dB Emissions Bandwidth for WCDMA Mode



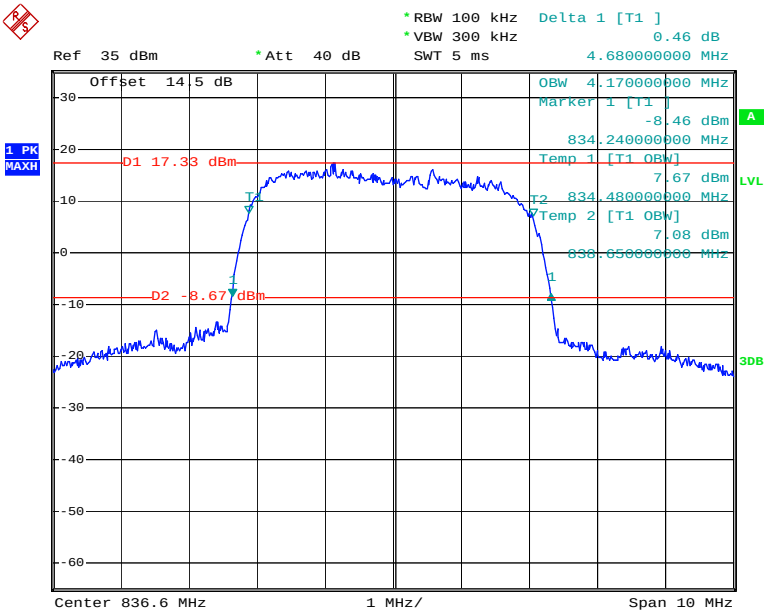
Date: 13.MAR.2014 11:20:34

99% Occupied & 26 dB Emissions Bandwidth for HSUPA Mode



Date: 13.MAR.2014 11:35:19

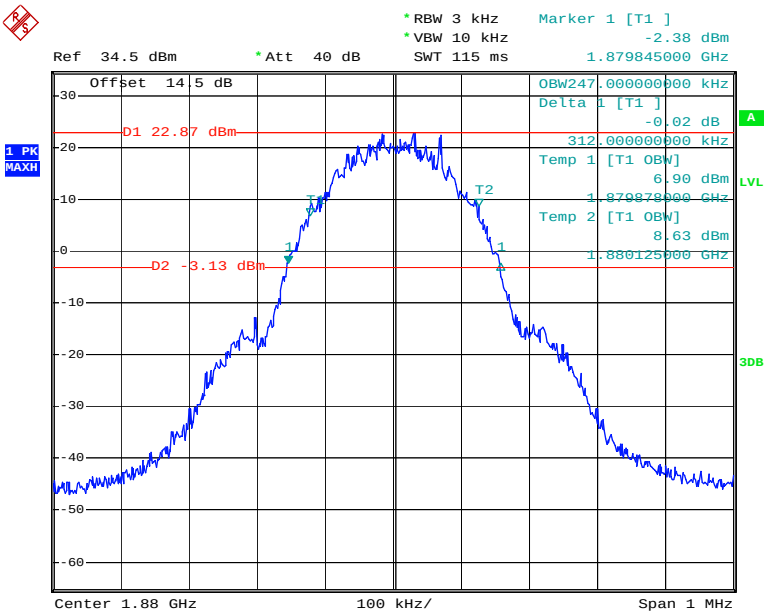
99% Occupied & 26 dB Emissions Bandwidth for HSDPA Mode



Date: 13.MAR.2014 11:31:57

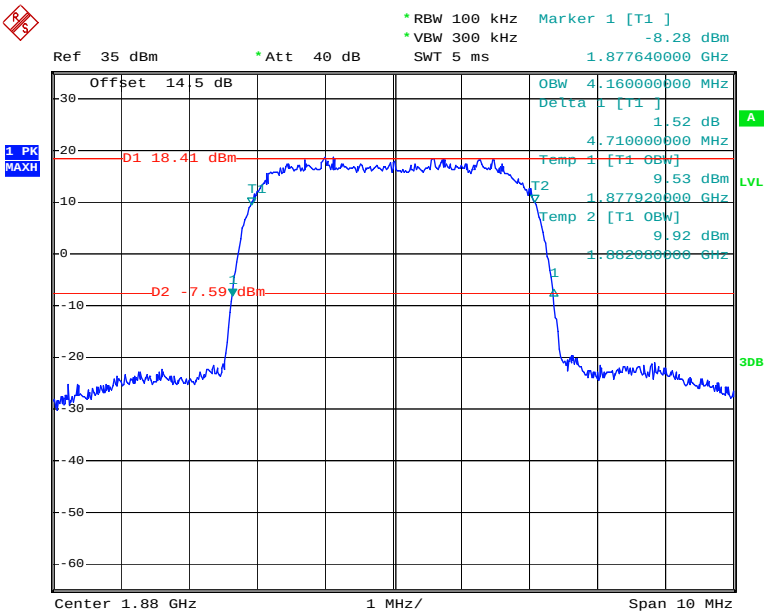
PCS Band (Part 24E)

99% Occupied & 26 dB Emissions Bandwidth for GSM Mode



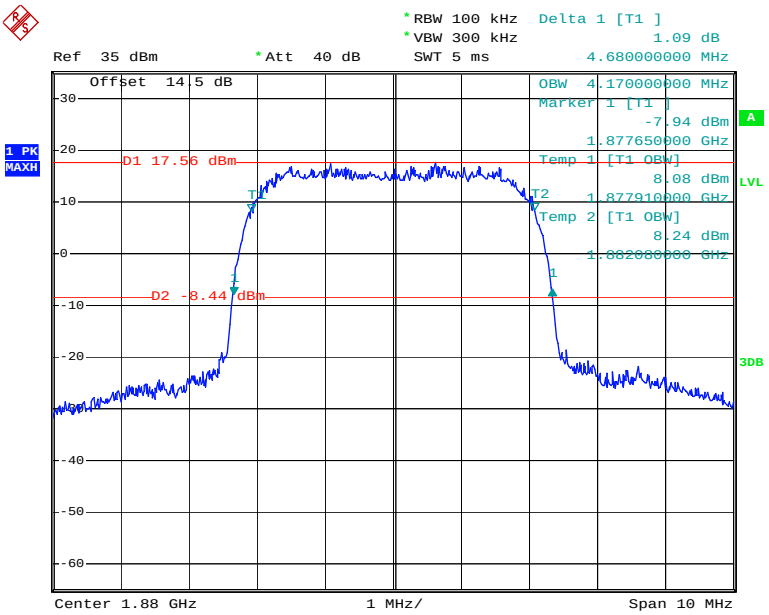
Date: 13.MAR.2014 10:26:52

99% Occupied & 26 dB Emissions Bandwidth for WCDMA Mode



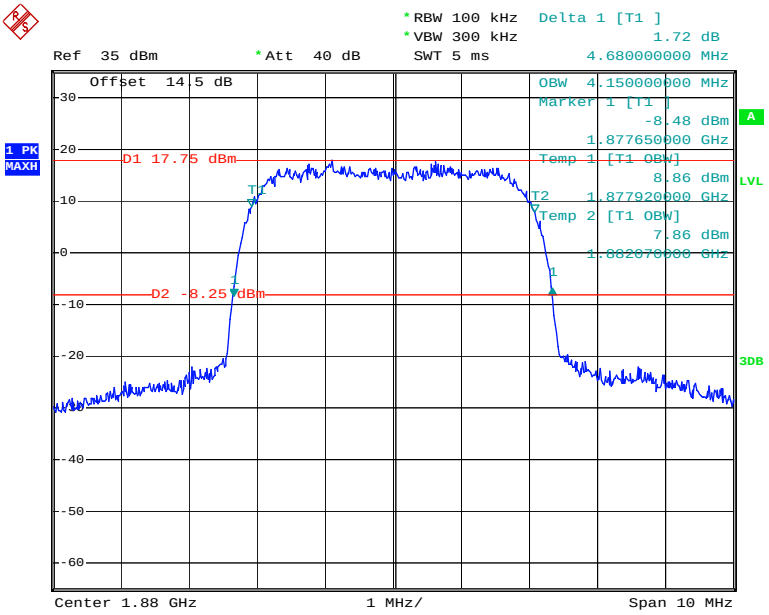
Date: 13.MAR.2014 13:17:43

99% Occupied & 26 dB Emissions Bandwidth for HSUPA Mode



Date: 13.MAR.2014 12:00:16

99% Occupied & 26 dB Emissions Bandwidth for HSDPA Mode



Date: 13.MAR.2014 13:41:51

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

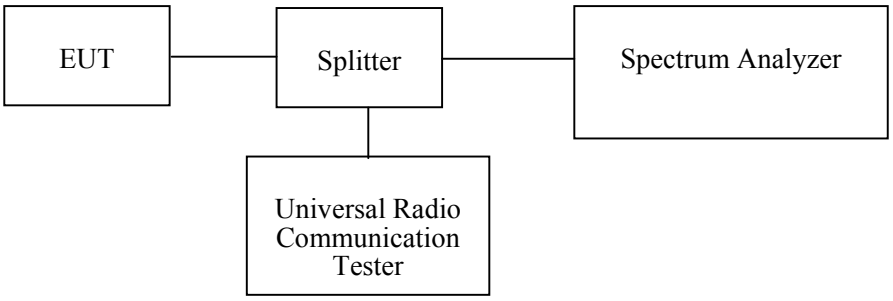
Applicable Standard

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. 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
R&S	Spectrum analyzer	FSP 38	100478	2013-06-16	2014-06-15

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

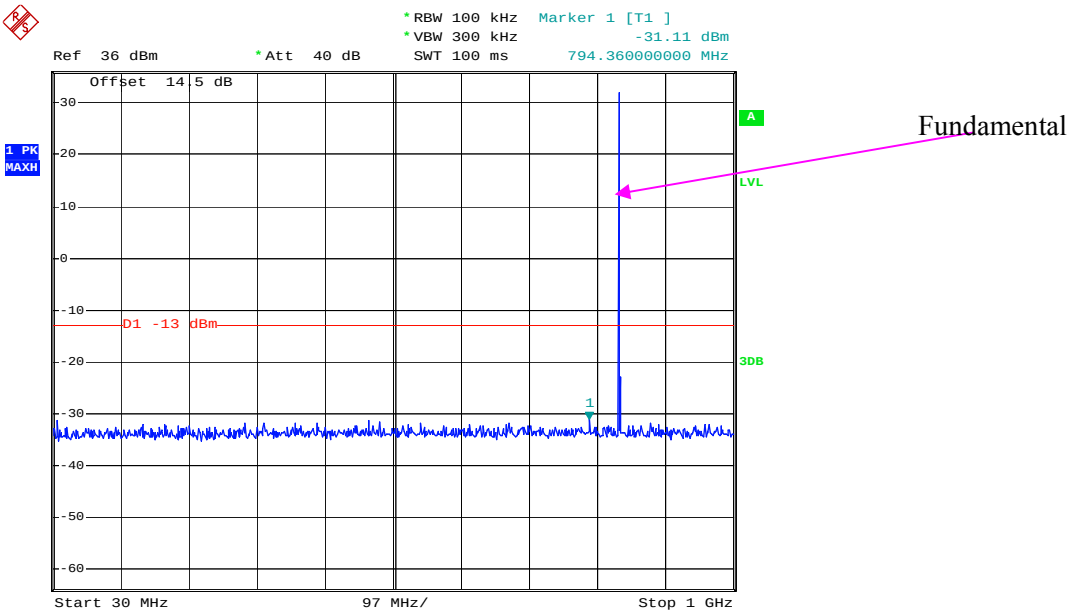
Temperature:	22.4 °C
Relative Humidity:	67 %
ATM Pressure:	101.2 kPa

The testing was performed by Ares Liu on 2014-03-13.

Please refer to the following plots.

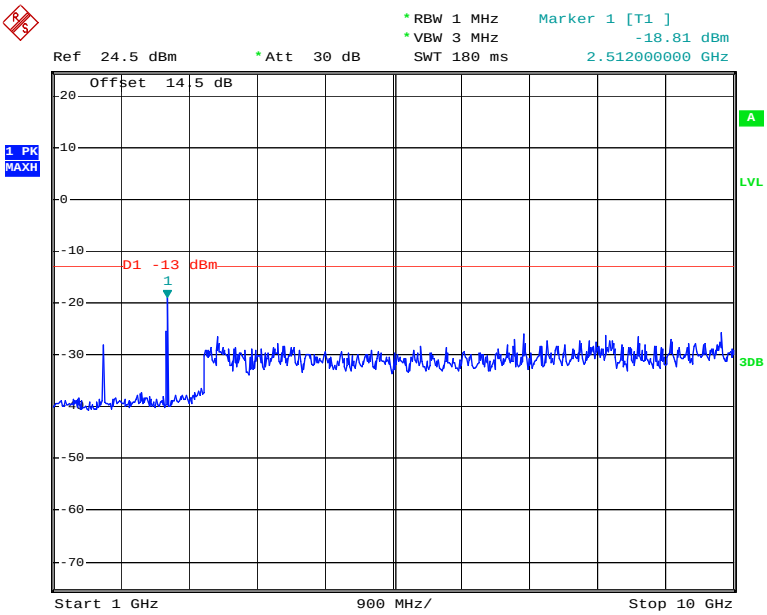
Cellular Band (Part 22H)

30 MHz – 1 GHz (GSM Mode)



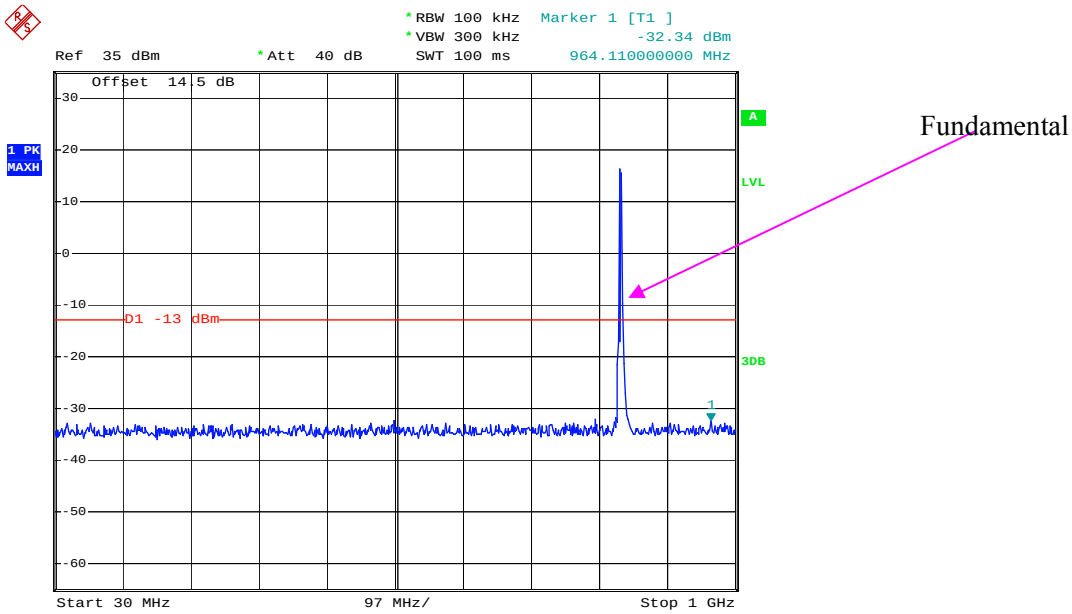
Date: 13.MAR.2014 10:03:20

1 GHz – 10 GHz (GSM Mode)



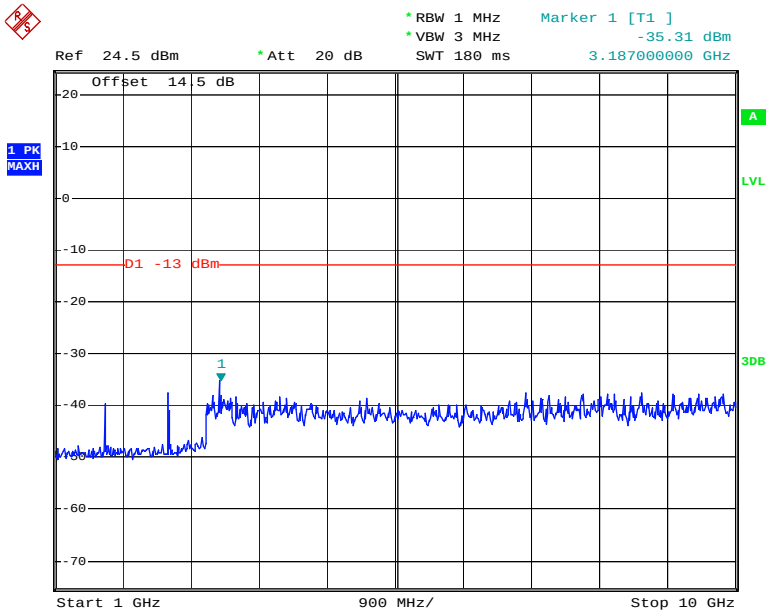
Date: 13.MAR.2014 10:01:50

30 MHz – 1 GHz (WCDMA Mode)



Date: 13.MAR.2014 11:21:54

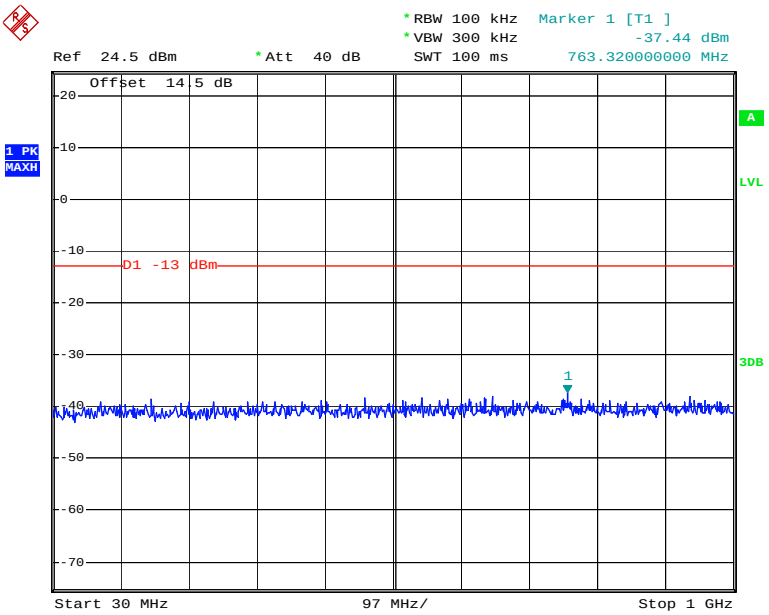
1 GHz – 10 GHz (WCDMA Mode)



Date: 13.MAR.2014 11:25:09

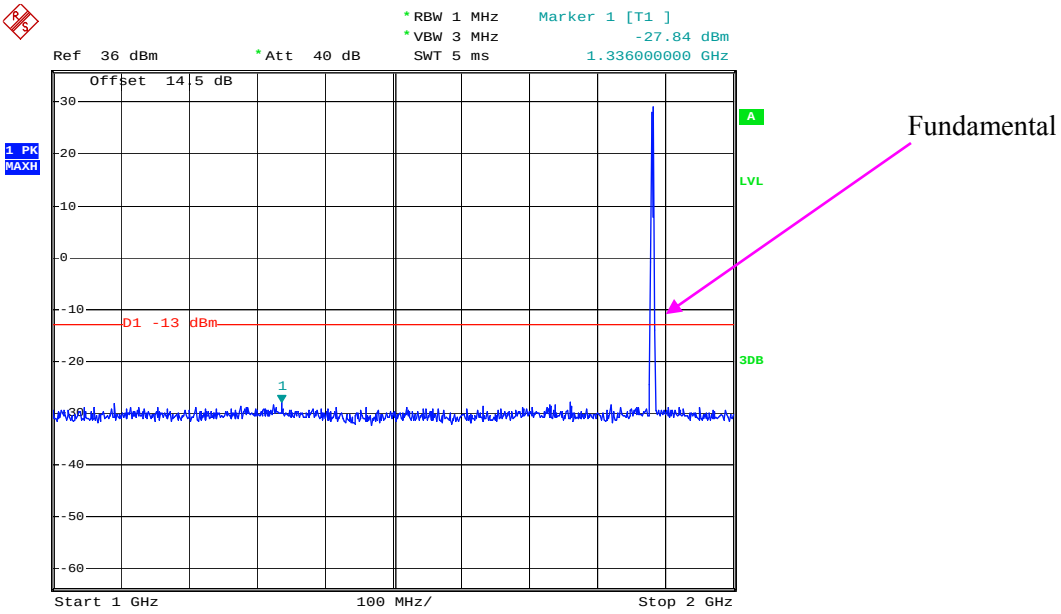
PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)



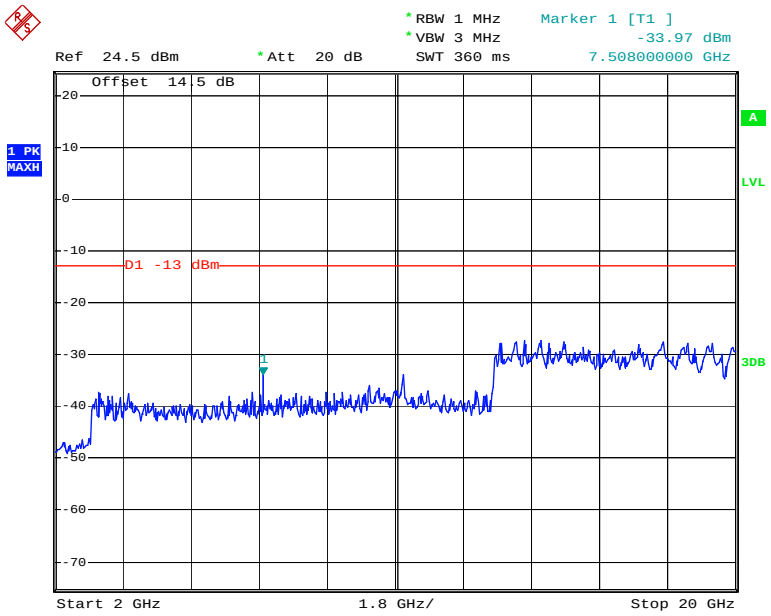
Date: 13.MAR.2014 10:56:32

1 GHz – 2 GHz (GSM Mode)



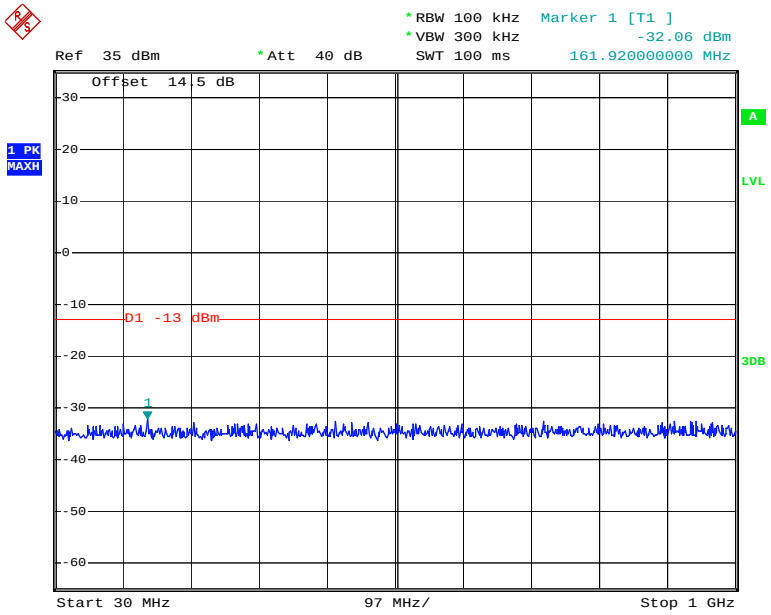
Date: 13.MAR.2014 10:42:08

2 GHz – 20 GHz (GSM Mode)



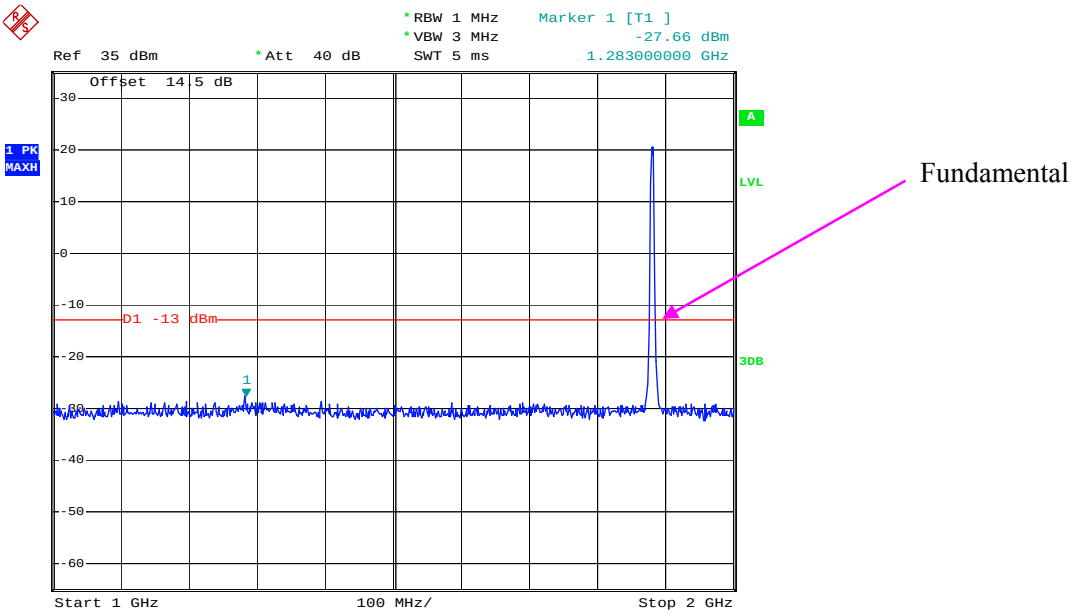
Date: 13.MAR.2014 10:58:57

30 MHz – 1 GHz (WCDMA Mode)



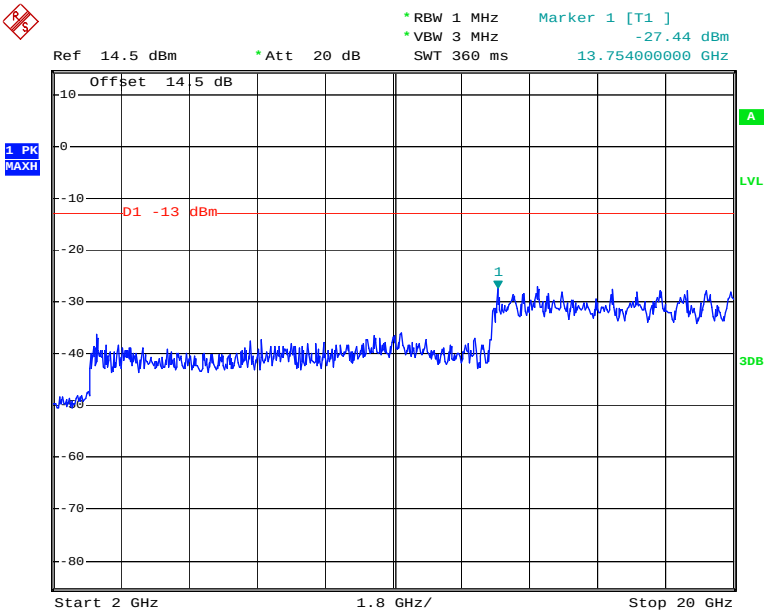
Date: 13.MAR.2014 13:20:13

1 GHz – 2 GHz (WCDMA Mode)



Date: 13.MAR.2014 13:33:04

2 GHz – 20 GHz (WCDMA Mode)



Date: 13.MAR.2014 13:28:22

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
HP	Signal Generator	8648A	3426A00831	2013-11-06	2014-11-05
Sunol Sciences	Antenna	JB3	A060611-1	2011-09-06	2014-09-05
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
HP	Amplifier	8447E	2434A02181	2013-09-06	2014-09-05
R&S	EMI Test Receiver	ESCI	100224	2013-05-06	2014-05-05
Giga	Signal Generator	1026	320408	2013-05-09	2014-05-08
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-18
TDK RF	Horn Antenna	HRN-0118	130 084	2012-09-06	2015-09-05
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-05
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	20.2 °C
Relative Humidity:	70 %
ATM Pressure:	101.2 kPa

The testing was performed by Ares Liu on 2014-03-13.

EUT Operation Mode: Transmitting

GSM 850

Frequency	Polar	S.A Reading	S.G. Level	Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
MHz	H/V	dBµV	dBm	dBd/dBi	dB	dBm	dBm	dB
Low Channel, fo = 824.2 MHz								
1648.400	H	45.29	-55.8	10.5	1.5	-46.8	-13.0	33.8
1648.400	V	49.36	-52.2	10.5	1.5	-43.2	-13.0	30.2
2472.600	H	45.05	-53.0	12.9	2.6	-42.7	-13.0	29.7
2472.600	V	46.53	-50.2	12.9	2.6	-39.9	-13.0	26.9
3296.800	H	39.22	-58.1	13.6	1.7	-46.2	-13.0	33.2
3296.800	V	40.32	-56.6	13.6	1.7	-44.7	-13.0	31.7
Middle Channel, fo = 836.6 MHz								
1673.200	H	45.05	-56.0	10.6	1.5	-46.9	-13.0	33.9
1673.200	V	49.53	-51.8	10.6	1.5	-42.7	-13.0	29.7
2509.800	H	44.11	-53.9	13.1	2.8	-43.6	-13.0	30.6
2509.800	V	47.01	-50.1	13.1	2.8	-39.8	-13.0	26.8
3346.400	H	39.37	-58.0	13.8	1.7	-45.9	-13.0	32.9
3346.400	V	40.41	-56.7	13.8	1.7	-44.6	-13.0	31.6
High Channel, fo = 848.8 MHz								
1697.600	H	45.13	-55.9	10.8	1.5	-46.6	-13.0	33.6
1697.600	V	48.99	-52.2	10.8	1.5	-42.9	-13.0	29.9
2546.400	H	44.58	-52.0	13.1	2.8	-41.7	-13.0	28.7
2546.400	V	46.94	-50.2	13.1	2.8	-39.9	-13.0	26.9
3395.200	H	39.02	-58.5	14.1	1.8	-46.2	-13.0	33.2
3395.200	V	41.28	-56.0	14.1	1.8	-43.7	-13.0	30.7

GSM 1900

Frequency	Polar	S.A.Reading	S.G.Level	Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
MHz	H/V	dBµV	dBm	dBd/dBi	dB	dBm	dBm	dB
Low Channel, fo = 1850.2 MHz								
3700.400	H	46.03	-48.7	14.0	2.5	-37.2	-13.0	24.2
3700.400	V	40.21	-54.2	14.0	2.5	-42.7	-13.0	29.7
5550.600	H	42.15	-48.7	14.0	2.2	-36.9	-13.0	23.9
5550.600	V	39.47	-51.9	14.0	2.2	-40.1	-13.0	27.1
7400.800	H	52.53	-35.5	13.3	3	-25.2	-13.0	12.2
7400.800	V	55.42	-32.3	13.3	3	-22.0	-13.0	9.0
Middle Channel, fo = 1880.0 MHz								
3760.000	H	46.72	-47.6	13.8	2.9	-36.7	-13.0	23.7
3760.000	V	40.85	-52.2	13.8	2.9	-41.3	-13.0	28.3
5640.000	H	41.96	-49.7	14.0	2.1	-37.8	-13.0	24.8
5640.000	V	40.39	-51.3	14.0	2.1	-39.4	-13.0	26.4
7520.000	H	52.91	-34.7	13.2	2.9	-24.4	-13.0	11.4
7520.000	V	56.13	-31.3	13.2	2.9	-21.0	-13.0	8.0
High Channel, fo = 1909.8 MHz								
3819.600	H	46.12	-47.7	13.6	3.3	-37.4	-13.0	24.4
3819.600	V	40.09	-52.1	13.6	3.3	-41.8	-13.0	28.8
3819.600	H	42.29	-51.5	13.6	3.3	-41.2	-13.0	28.2
3819.600	V	40.20	-52.0	13.6	3.3	-41.7	-13.0	28.7
7639.200	H	52.65	-34.8	13.3	3.2	-24.7	-13.0	11.7
7639.200	V	55.70	-31.8	13.3	3.2	-21.7	-13.0	8.7

WCDMA Band V

Frequency	Polar	S.A.Reading	S.G.Level	Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
MHz	H/V	dBµV	dBm	dBd/dBi	dB	dBm	dBm	dB
Low Channel, fo = 826.400 MHz								
1652.800	H	47.41	-53.7	10.5	1.5	-44.7	-13.0	31.7
1652.800	V	51.97	-49.6	10.5	1.5	-40.6	-13.0	27.6
2479.200	H	43.37	-54.8	12.9	2.6	-44.5	-13.0	31.5
2479.200	V	43.23	-53.6	12.9	2.6	-43.3	-13.0	30.3
3305.600	H	41.99	-55.3	13.6	1.7	-43.4	-13.0	30.4
3305.600	V	46.23	-50.7	13.6	1.7	-38.8	-13.0	25.8
Middle Channel, fo = 836.600 MHz								
1673.200	H	46.87	-54.2	10.6	1.5	-45.1	-13.0	32.1
1673.200	V	52.60	-48.8	10.6	1.5	-39.7	-13.0	26.7
2509.800	H	44.17	-53.9	13.1	2.8	-43.6	-13.0	30.6
2509.800	V	44.30	-52.8	13.1	2.8	-42.5	-13.0	29.5
3346.400	H	40.69	-56.7	13.8	1.7	-44.6	-13.0	31.6
3346.400	V	46.00	-51.1	13.8	1.7	-39.0	-13.0	26.0
High Channel, fo = 846.600 MHz								
1693.200	H	46.36	-54.7	10.7	1.5	-45.5	-13.0	32.5
1693.200	V	52.16	-49.1	10.7	1.5	-39.9	-13.0	26.9
2539.800	H	43.75	-53.1	13.1	2.8	-42.8	-13.0	29.8
2539.800	V	44.26	-52.8	13.1	2.8	-42.5	-13.0	29.5
3386.400	H	40.55	-57	14.0	1.8	-44.8	-13.0	31.8
3386.400	V	45.32	-52	14.0	1.8	-39.8	-13.0	26.8

WCDMA Band II

Frequency	Polar	S.A.Reading	S.G.Level	Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
MHz	H/V	dBµV	dBm	dBd/dBi	dB	dBm	dBm	dB
Low Channel, fo = 1852.4 MHz								
3704.800	H	40.75	-54.0	13.9	2.5	-42.6	-13.0	29.6
3704.800	V	42.64	-51.6	13.9	2.5	-40.2	-13.0	27.2
5557.200	H	37.70	-53.3	14.0	2.2	-41.5	-13.0	28.5
5557.200	V	38.36	-53.1	14.0	2.2	-41.3	-13.0	28.3
Middle Channel, fo = 1880.0 MHz								
3760.000	H	41.64	-52.7	13.8	2.9	-41.8	-13.0	28.8
3760.000	V	42.94	-50.1	13.8	2.9	-39.2	-13.0	26.2
5640.000	H	37.83	-53.9	14.0	2.1	-42.0	-13.0	29.0
5640.000	V	38.92	-52.7	14.0	2.1	-40.8	-13.0	27.8
High Channel, fo = 1907.6 MHz								
3815.200	H	41.80	-52.0	13.6	3.3	-41.7	-13.0	28.7
3815.200	V	42.87	-49.3	13.6	3.3	-39.0	-13.0	26.0
5722.800	H	37.71	-54.2	13.9	2.4	-42.7	-13.0	29.7
5722.800	V	38.60	-53.1	13.9	2.4	-41.6	-13.0	28.6

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

Applicable Standard

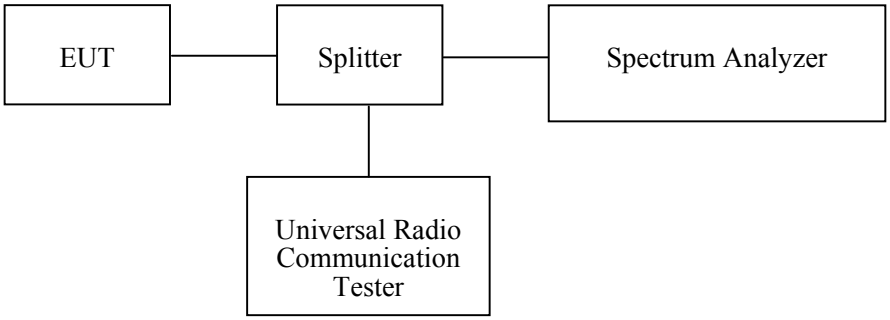
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSP 38	100478	2013-6-16	2014-6-15

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22.4 °C
Relative Humidity:	67 %
ATM Pressure:	101.2 kPa

The testing was performed by Ares Liu on 2014-03-13.

Please refer to the following tables and plots.

Cellular Band (Part 22H)

Mode	Band Edge	Emission (dBm)	Limit (dBm)
GSM	Left	-13.87	≤-13
	Right	-13.38	≤-13

Mode	Band Edge	Emission (dBm)	Limit (dBm)
WCDMA	Left	-15.46	≤-13
	Right	-14.86	≤-13

Mode	Band Edge	Emission (dBm)	Limit (dBm)
HSUPA	Left	-15.43	≤-13
	Right	-15.21	≤-13

Mode	Band Edge	Emission (dBm)	Limit (dBm)
HSDPA	Left	-14.84	≤-13
	Right	-15.35	≤-13

PCS Band (Part 24E)

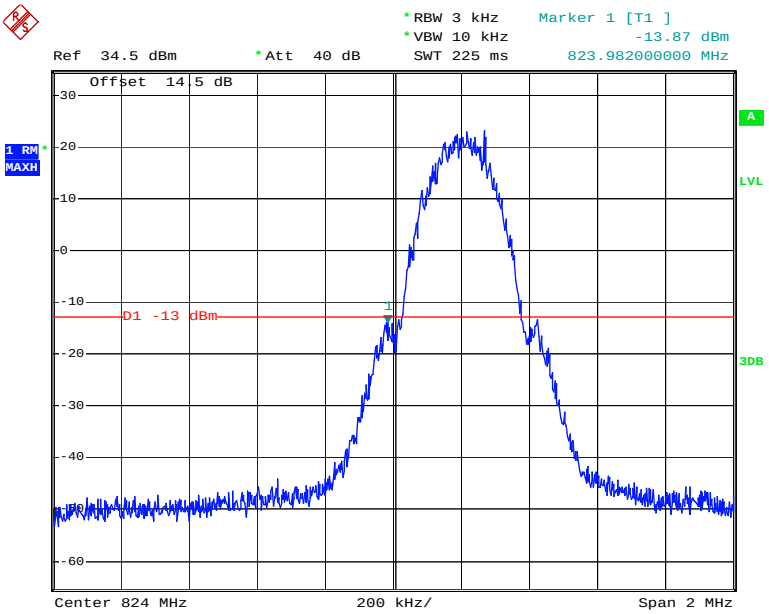
Mode	Band Edge	Emission (dBm)	Limit (dBm)
GSM	Left	-13.62	≤-13
	Right	-15.63	≤-13

Mode	Band Edge	Emission (dBm)	Limit (dBm)
WCDMA	Left	-15.66	≤-13
	Right	-15.46	≤-13

Mode	Band Edge	Emission (dBm)	Limit (dBm)
HSUPA	Left	-17.41	≤-13
	Right	-19.87	≤-13

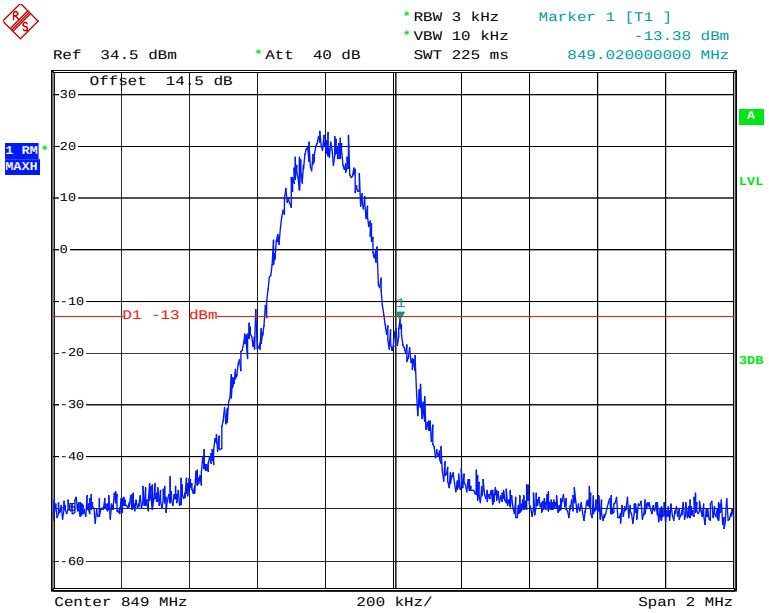
Mode	Band Edge	Emission (dBm)	Limit (dBm)
HSDPA	Left	-16.98	≤-13
	Right	-19.79	≤-13

Cellular Band, Left Band Edge for GSM Mode



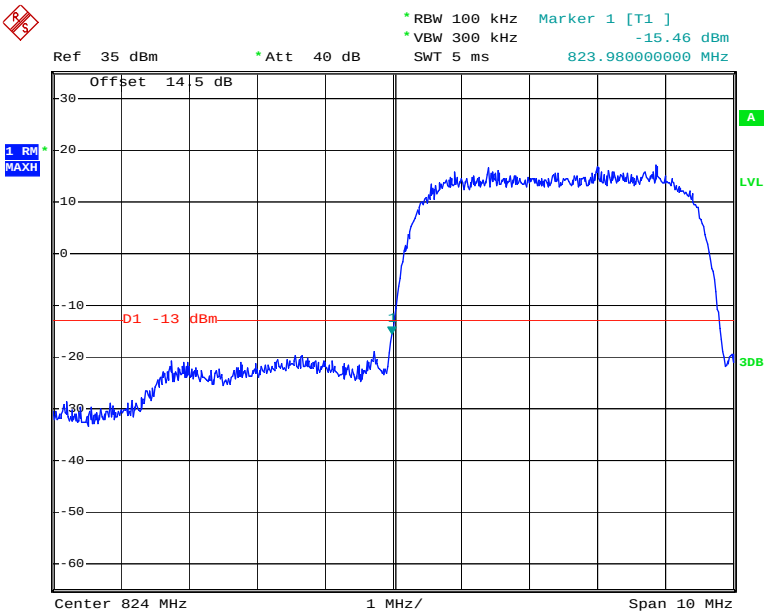
Date: 13.MAR.2014 10:22:08

Cellular Band, Right Band Edge for GSM Mode



Date: 13.MAR.2014 10:20:21

Cellular Band, Left Band Edge for WCDMA Mode



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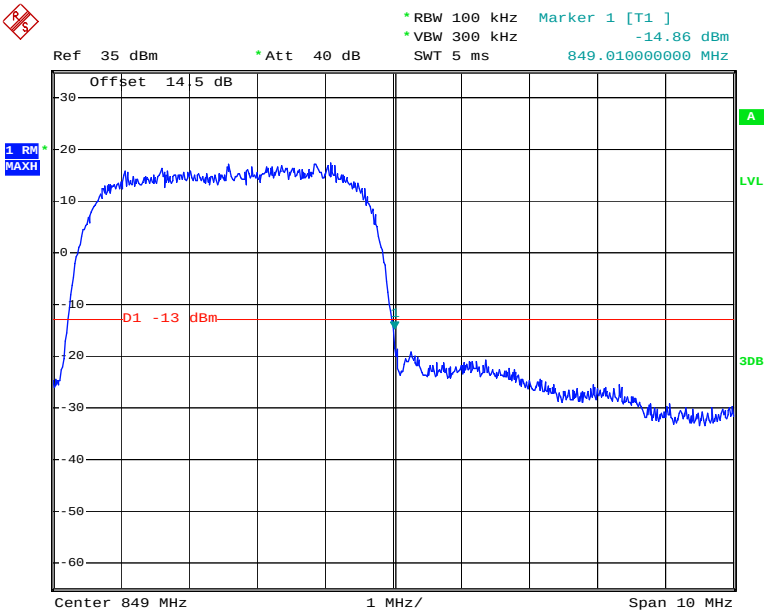
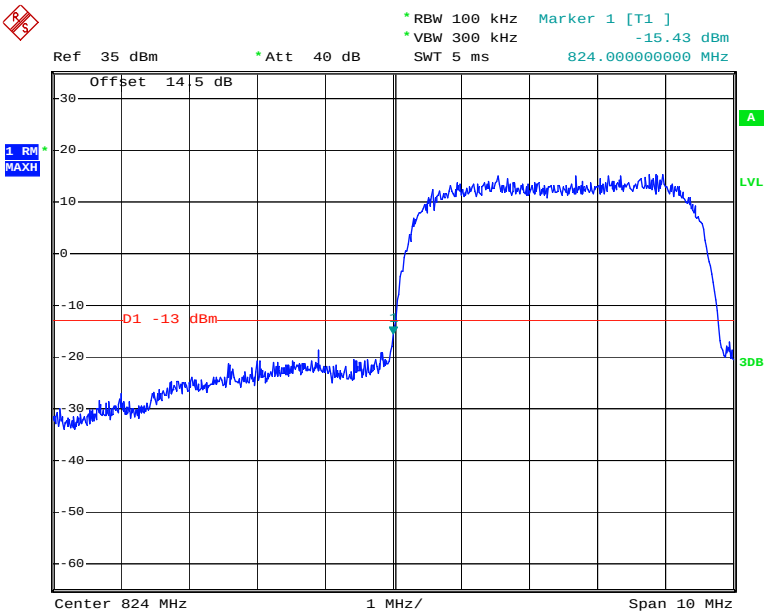
Cellular Band, Right Band Edge for WCDMA Mode



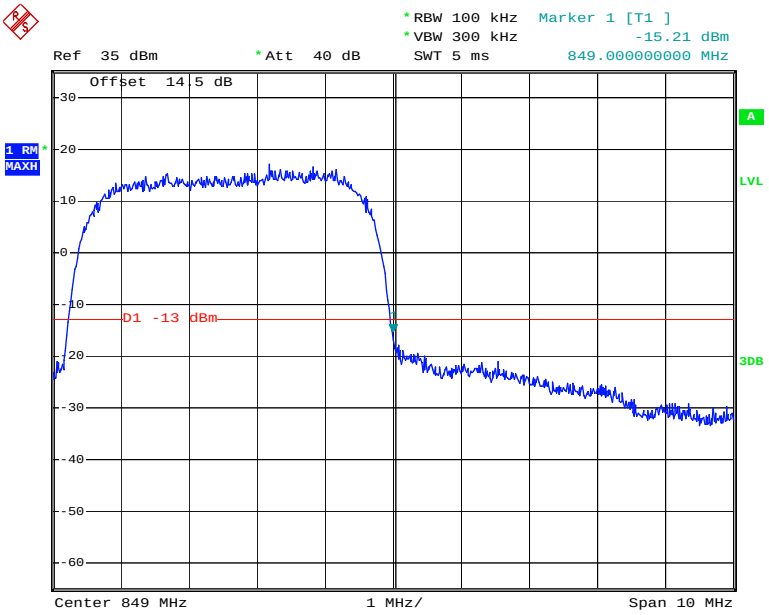
Date: 13.MAR.2014 11:16:10

Cellular Band, Left Band Edge for HSUPA Mode



Date: 13.MAR.2014 11:39:41

Cellular Band, Right Band Edge for HSUPA Mode



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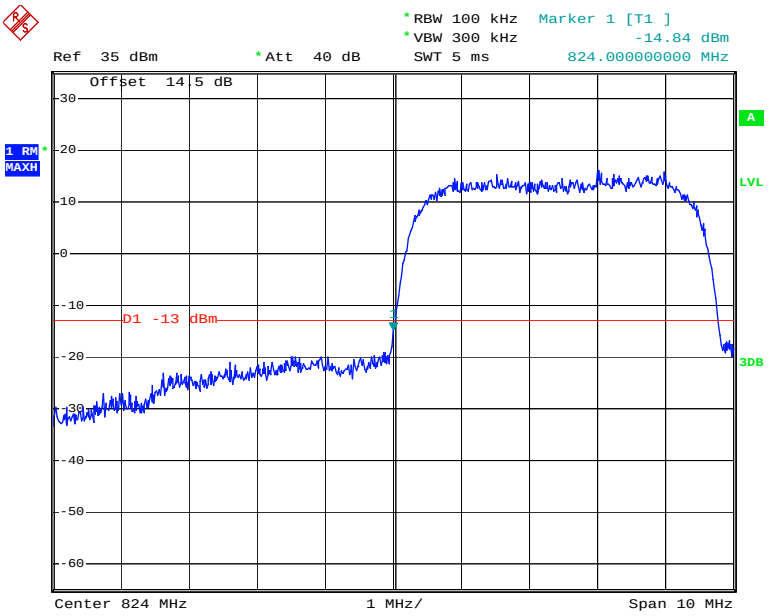
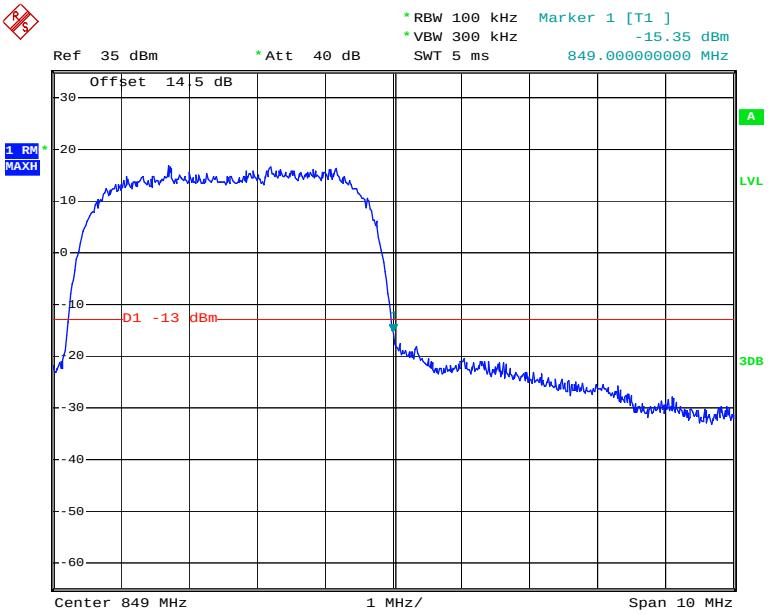
Cellular Band, Left Band Edge for HSDPA Mode



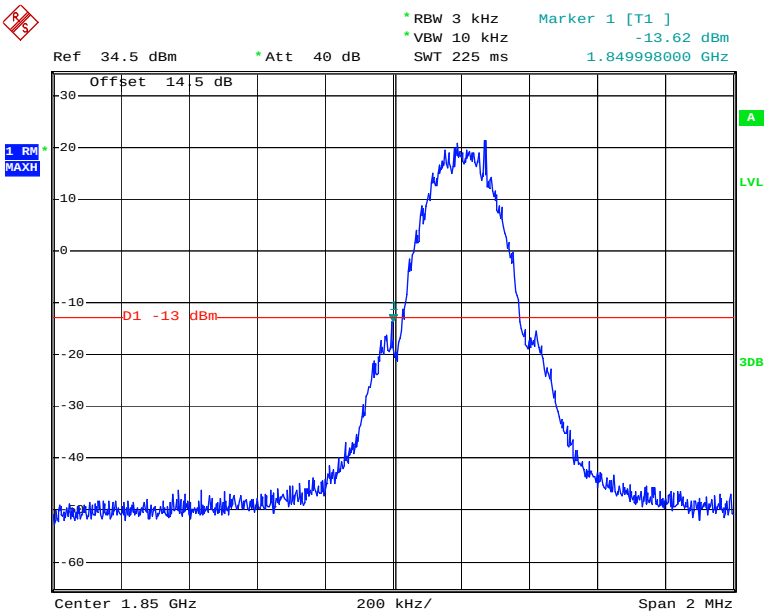
Date: 13.MAR.2014 11:38:50

Cellular Band, Right Band Edge for HSDPA Mode



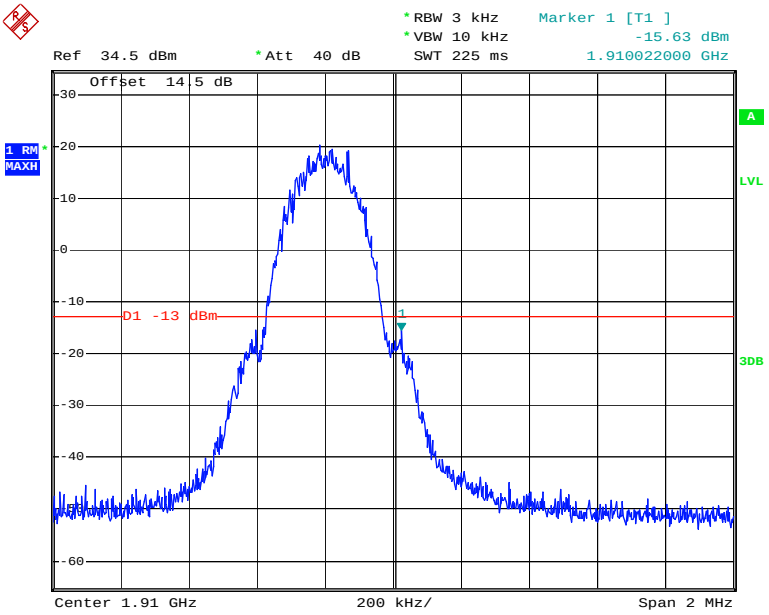
Date: 13.MAR.2014 11:46:54

PCS Band, Left Band Edge for GSM Mode



Date: 13.MAR.2014 10:31:51

PCS Band, Right Band Edge for GSM Mode



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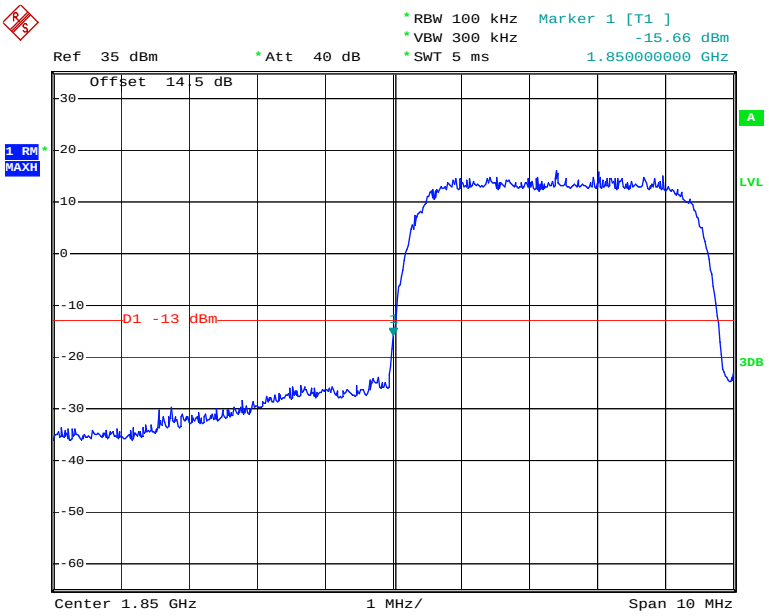
PCS Band, Left Band Edge for WCDMA Mode



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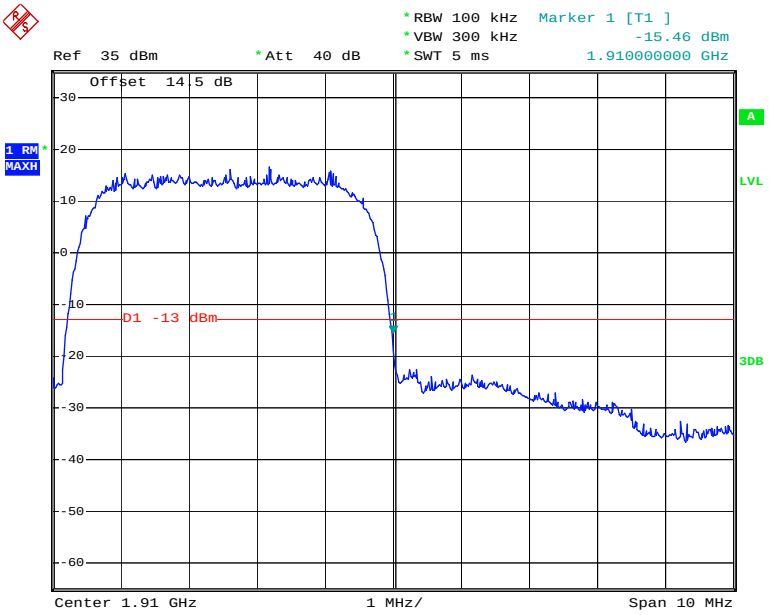
PCS Band, Right Band Edge for WCDMA Mode



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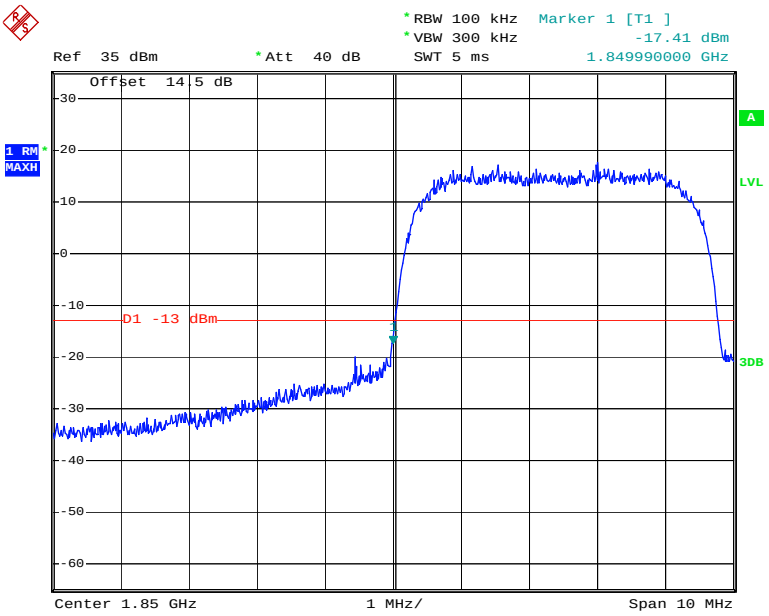
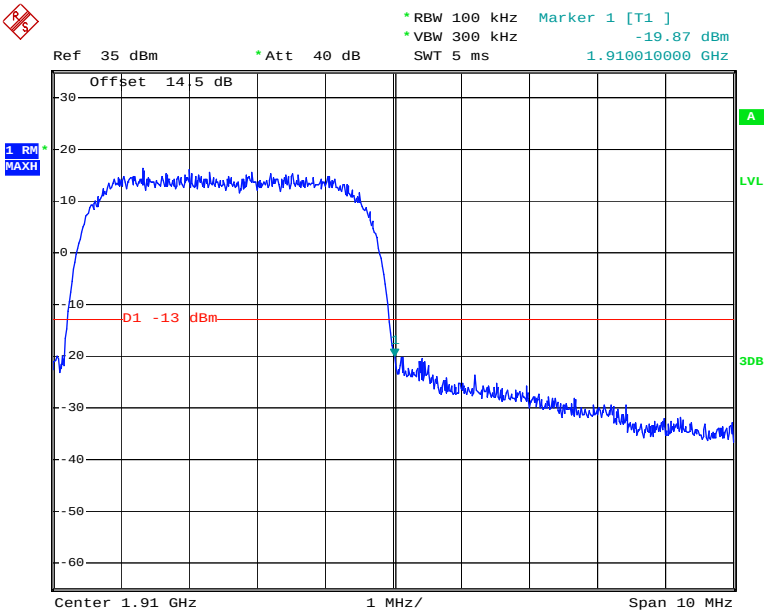
PCS Band, Left Band Edge for HSUPA Mode



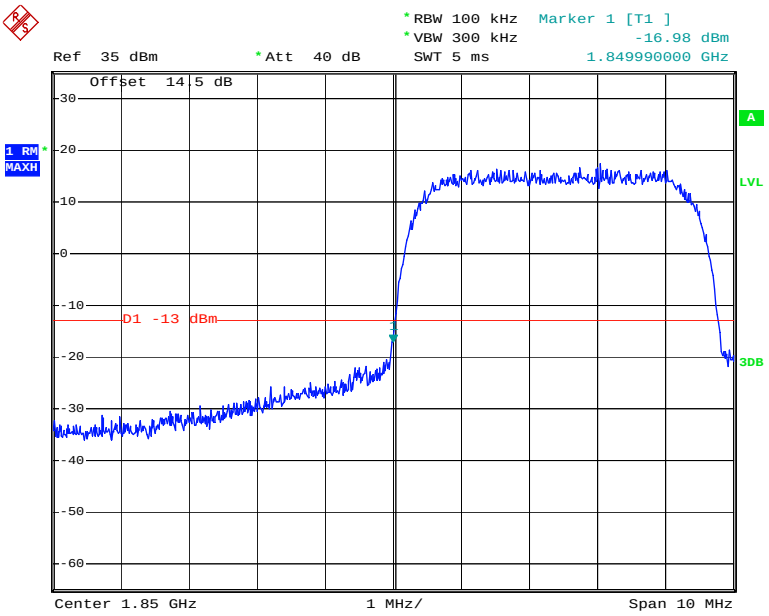
Date: 13.MAR.2014 11:57:22

PCS Band, Right Band Edge for HSUPA Mode



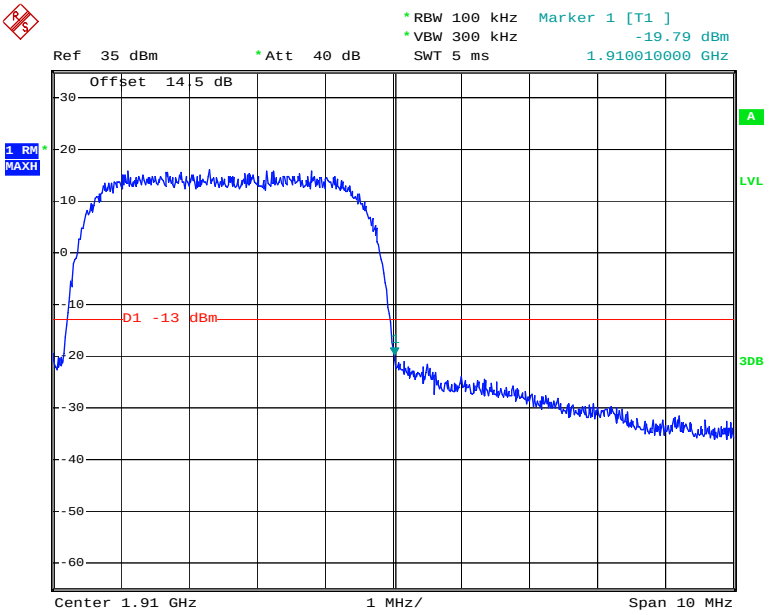
Date: 13.MAR.2014 11:58:20

PCS Band, Left Band Edge for HSDPA Mode



Date: 13.MAR.2014 11:53:05

PCS Band, Right Band Edge for HSDPA Mode



Date: 13.MAR.2014 11:54:21

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

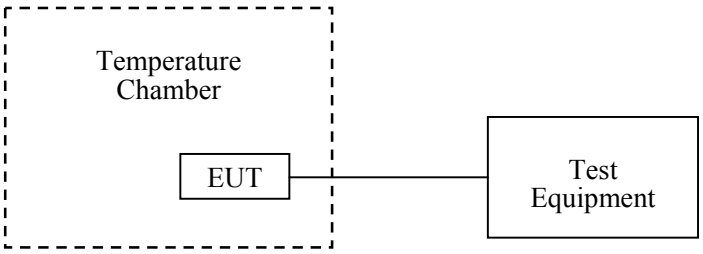
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-3	2013-7-31	2014-8-1
R&S	Universal Radio Communication Tester	CMU200	109 038	2013-5-2	2014-5-1

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22.4 °C
Relative Humidity:	67 %
ATM Pressure:	101.2 kPa

The testing was performed by Ares Liu on 2014-03-13.

Cellular Band (Part 22H)

GSM Mode

Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	26	0.0311	2.5
-20		21	0.0251	2.5
-10		24	0.0287	2.5
0		20	0.0239	2.5
10		22	0.0263	2.5
20		23	0.0275	2.5
30		25	0.0299	2.5
40		28	0.0335	2.5
50		24	0.0287	2.5
25	$V_{min.}$= 3.5	28	0.0335	2.5
25	$V_{max.}$= 4.2	22	0.0263	2.5

WCDMA Mode

Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	14	0.0167	2.5
-20		18	0.0215	2.5
-10		15	0.0179	2.5
0		11	0.0131	2.5
10		17	0.0203	2.5
20		13	0.0155	2.5
30		16	0.0191	2.5
40		15	0.0179	2.5
50		12	0.0143	2.5
25	$V_{min.}$= 3.5	14	0.0167	2.5
25	$V_{max.}$= 4.2	19	0.0227	2.5

HSUPA Mode

Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	21	0.0251	2.5
-20		15	0.0179	2.5
-10		14	0.0167	2.5
0		22	0.0263	2.5
10		18	0.0215	2.5
20		16	0.0191	2.5
30		13	0.0155	2.5
40		20	0.0239	2.5
50		25	0.0299	2.5
25	$V_{min.}$= 3.5	23	0.0275	2.5
25	$V_{max.}$= 4.2	26	0.0311	2.5

HSDPA Mode

Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	13	0.0155	2.5
-20		19	0.0227	2.5
-10		17	0.0203	2.5
0		16	0.0191	2.5
10		12	0.0143	2.5
20		14	0.0167	2.5
30		16	0.0191	2.5
40		11	0.0131	2.5
50		18	0.0215	2.5
25	$V_{min.}$= 3.5	15	0.0179	2.5
25	$V_{max.}$= 4.2	13	0.0155	2.5

PCS Band (Part 24E)

GSM Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	46	0.0245	Pass
-20		43	0.0229	Pass
-10		48	0.0255	Pass
0		42	0.0223	Pass
10		45	0.0239	Pass
20		44	0.0234	Pass
30		41	0.0218	Pass
40		47	0.0250	Pass
50		43	0.0229	Pass
25	$V_{min.}$= 3.5	45	0.0239	Pass
25	$V_{max.}$= 4.2	42	0.0223	Pass

WCDMA Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	21	0.0112	Pass
-20		26	0.0138	Pass
-10		28	0.0149	Pass
0		20	0.0106	Pass
10		19	0.0101	Pass
20		17	0.0090	Pass
30		20	0.0106	Pass
40		22	0.0117	Pass
50		24	0.0128	Pass
25	$V_{min.}$= 3.5	26	0.0138	Pass
25	$V_{max.}$= 4.2	23	0.0122	Pass

HSUPA

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	27	0.0144	Pass
-20		24	0.0128	Pass
-10		29	0.0154	Pass
0		21	0.0112	Pass
10		25	0.0133	Pass
20		22	0.0117	Pass
30		23	0.0122	Pass
40		21	0.0112	Pass
50		28	0.0149	Pass
25	$V_{min.}$= 3.5	25	0.0133	Pass
25	$V_{max.}$= 4.2	24	0.0128	Pass

HSDPA

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	29	0.0154	Pass
-20		26	0.0138	Pass
-10		24	0.0128	Pass
0		27	0.0144	Pass
10		23	0.0122	Pass
20		19	0.0101	Pass
30		25	0.0133	Pass
40		21	0.0112	Pass
50		27	0.0144	Pass
25	$V_{min.}$= 3.5	26	0.0138	Pass
25	$V_{max.}$= 4.2	24	0.0128	Pass

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