FCC PART 22H

TEST REPORT

For

Shenzhen Xiangyue Perfect Digital Science&Technology Co., Ltd

Building A1, Jiujiutongxin Industrial Zone11, Xinbu, Tongle, Longgang, Shenzhen, China

FCC ID: 2ABYGB8404

Report Type:	**Product Type:**
Class II Permissive Change	3G Mobile Phone

Test Engineer:	Simon Wang (Simon wang)
Report Number:	RSZ140423003-00A1
Report Date:	2014-04-29
Reviewed By:	Jimmy Xiao (Jimmy xiao) RF Engineer
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Xiangyue Perfect Digital Science&Technology Co., Ltd*'s product, model number: *B8404 (FCC ID: 2ABYGB8404)* or the "EUT" in this report was a *3G mobile phone*, which was measured approximately: 12.5 cm (L) x 6.5 cm (W) x 1.18 cm (H), rated with input voltage: DC 3.8 V rechargeable Li-ion battery

**All measurement and test data in this report was gathered from production sample serial number: 1404149 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2014-04-23.*

Objective

This test report is prepared on behalf of *Shenzhen Xiangyue Perfect Digital Science&Technology Co., Ltd in* accordance with Part 2-Subpart J, Part 22-Subpart H of the Federal Communication Commissions rules.

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

This is a CIIPC application for adding the WCDMA850 band by software between the original device and the current one, and there is no change of the hardware circuit.

For the changes made to the device, all item testing were performed.

Related Submittal(s)/Grant(s)

No related submittal.

Test Methodology

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

Part 22 Subpart H - Public Mobile Services

Applicable Standards: TIA/EIA 603-D, 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.

Measurement uncertainty with radiated emission is 5.91 dB for 30MHz-1GHz.and 4.92 dB for above 1GHz, 1.95dB for conducted measurement.

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.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

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

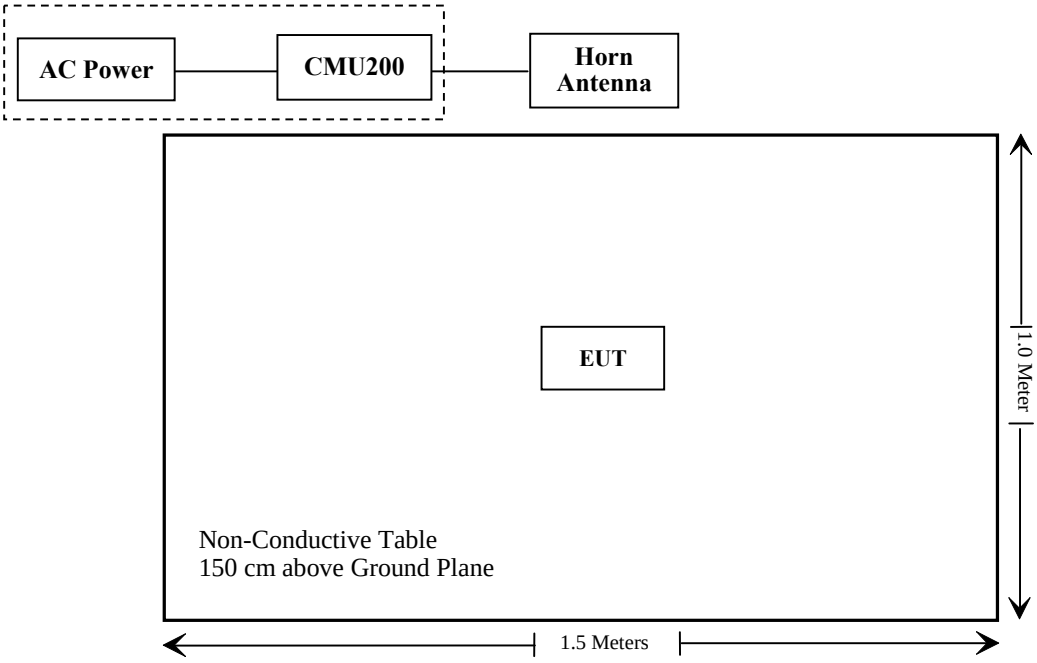
Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891

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)	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905 § 22.917	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

Note: * Please refer to SAR report released by BACL, report number: RSZ140423003-20A1.

FCC §1.1307 & §2.1093 - RF EXPOSURE

Applicable Standard

FCC§1.1307 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ140423003-20A1

FCC §2.1047 - MODULATION CHARACTERISTIC

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

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

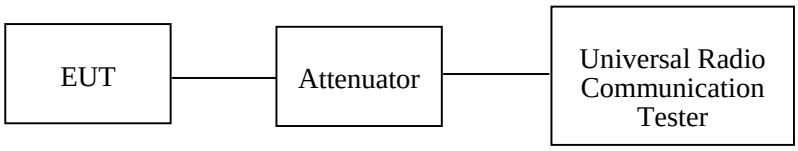
Applicable Standard

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

Test Procedure

Conducted method:

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



Radiated method:

TIA 603-D 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	101122	2013-09-25	2014-09-25
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
HP	Signal Generator	8341B	2624A00116	2013-05-09	2014-05-09
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2013-11-23	2014-11-23

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

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Simon Wang on 2014-04-28.

Conducted Power

Cellular Band (Part 22H)

Results (12.2kbps RMC)

Band	Frequency (MHz)	Channel NO.	Conducted Output Power	
			(dBm)	(Watt)
WCDMA 850	826.4	4132	22.28	0.17
	836.6	4183	22.35	0.17
	846.6	4233	22.17	0.16

Results (HSDPA)

Band	Frequency (MHz)	Channel NO.	Conducted Output Power (dBm)			
			Subset 1	Subset 2	Subset 3	Subset 4
WCDMA 850	826.4	4132	21.36	21.32	21.37	21.39
	836.6	4183	21.46	21.42	21.40	21.47
	846.6	4233	21.28	21.26	21.24	21.29

Results (HSUPA)

Band	Frequency (MHz)	Channel NO.	Conducted Output Power (dBm)				
			Subset 1	Subset 2	Subset 3	Subset 4	Subset 5
WCDMA 850	826.4	4132	21.35	21.29	21.39	21.28	21.33
	836.6	4183	21.43	21.44	21.41	21.43	21.45
	846.6	4233	21.23	21.25	21.21	21.26	22.22

Radiated Power (Measured at Max. conducted power channel)

ERP

WCDMA Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
ERP for WCDMA 850 (Part 22H), Middle Channel										
836.6	93.82	59	1.5	H	21.5	0.68	0.0	20.82	38.5	17.68
836.6	93.06	210	1.6	V	20.9	0.68	0.0	20.22	38.5	18.28

Note: all above data were tested with no amplifier.

FCC §2.1049, §22.917 & §22.905 - BANDWIDTH

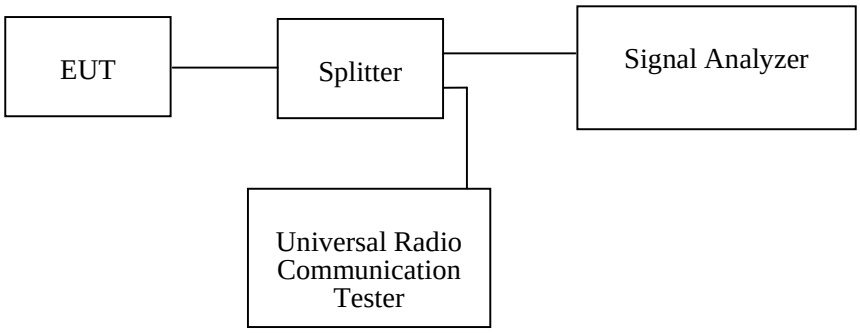
Applicable Standard

FCC §2.1049, §22.917 and §22.905.

Test Procedure

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

The resolution bandwidth of the spectrum analyzer was set at 100 kHz (WCDMA) and the 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Signal Analyzer	FSIQ26	837405/023	2013-05-31	2014-05-31
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2013-11-23	2014-11-23

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

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	54 %
ATM Pressure:	101.0 kPa

The testing was performed by Simon Wang on 2014-04-28.

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables and plots.

Cellular Band (Part 22H)

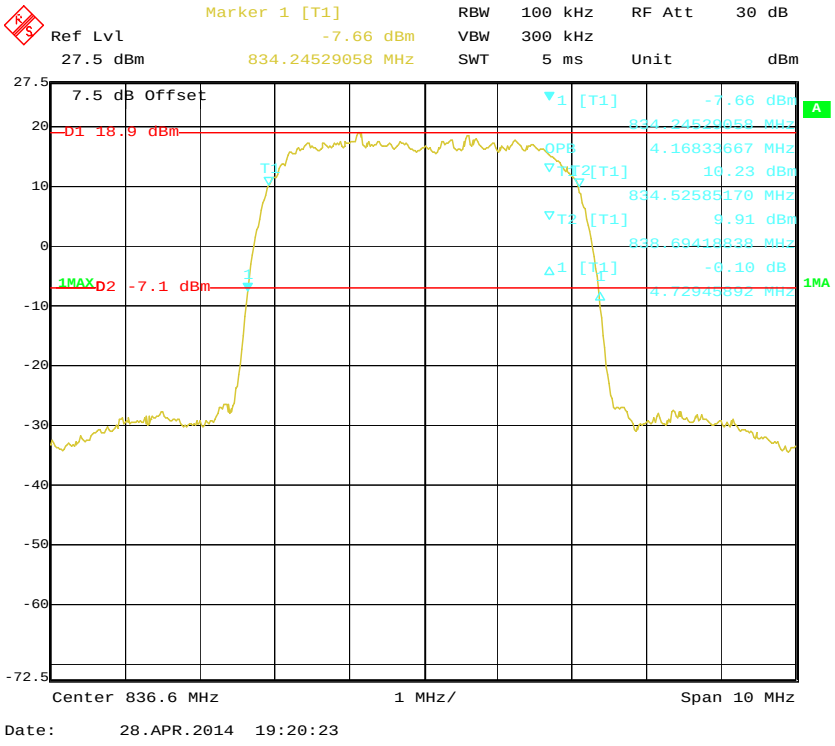
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA (BPSK)	836.6	4.168	4.729

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
HSUPA (BPSK)	836.6	4.168	4.729

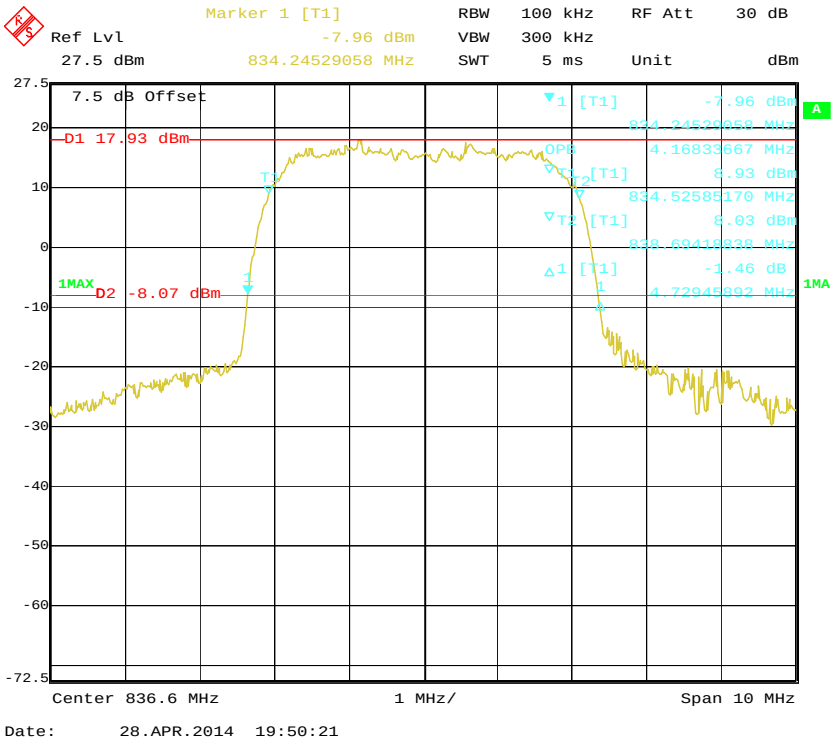
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
HSDPA (16QAM)	836.6	4.168	4.729

Cellular Band (Part 22H)

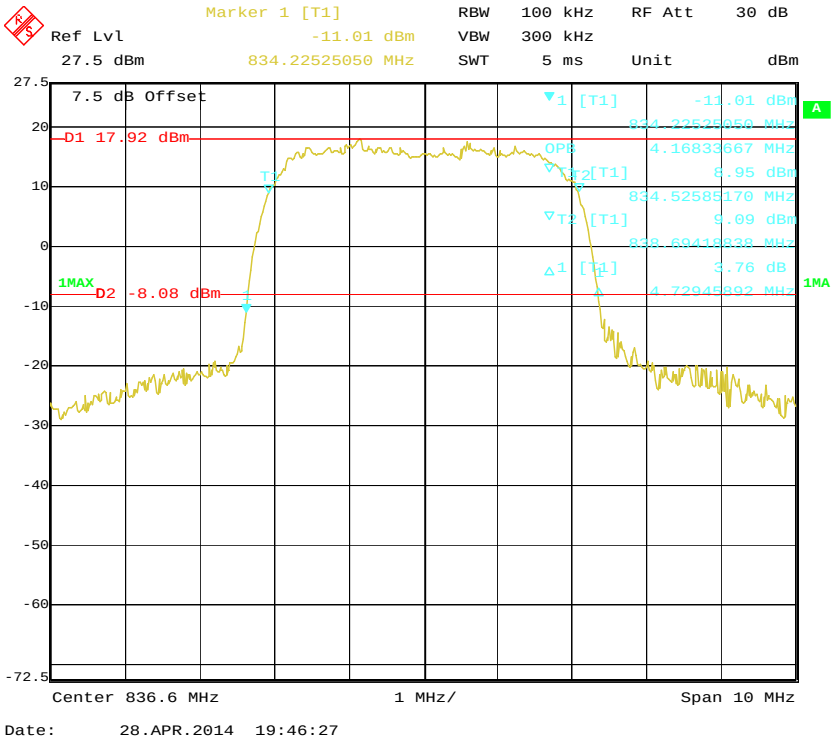
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (BPSK) Mode



99% Occupied & 26 dB Emissions Bandwidth for HSUPA (BPSK) Mode



99% Occupied & 26 dB Emissions Bandwidth for HSDPA (16QAM) Mode



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

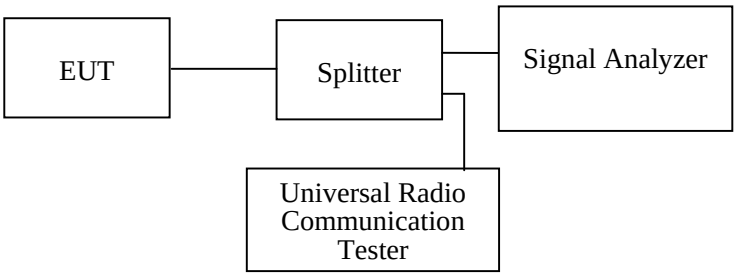
Applicable Standard

FCC §2.1051and §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 transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10^{th} harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Signal Analyzer	FSIQ26	837405/023	2013-05-31	2014-05-31
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2013-11-23	2014-11-23

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Test Data

Environmental Conditions

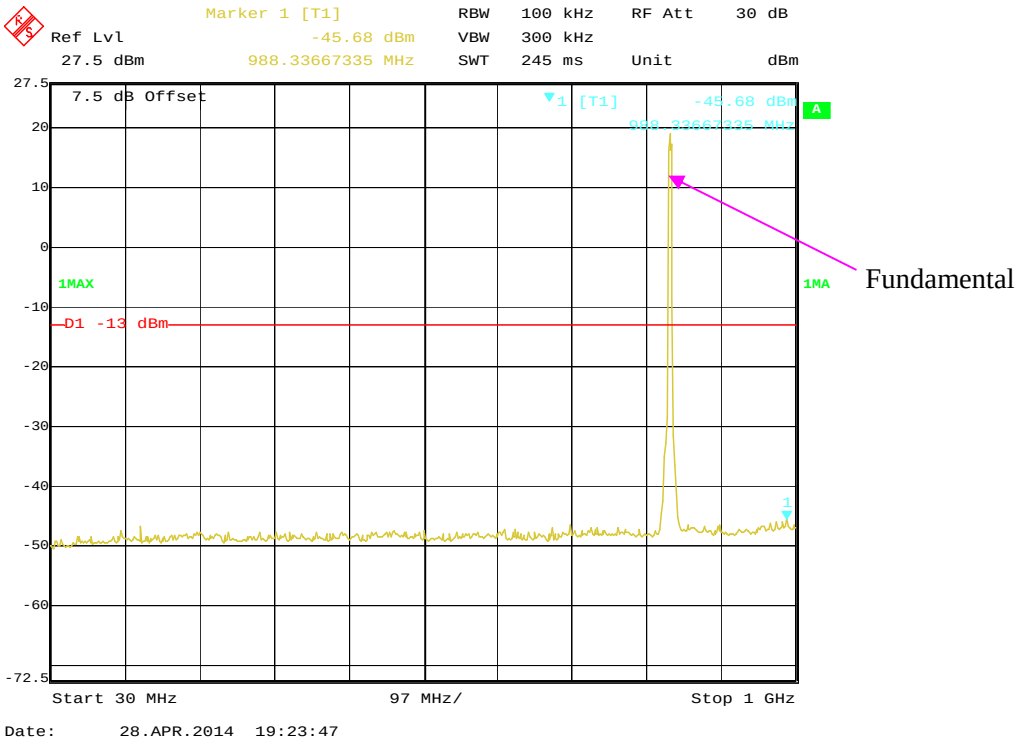
Temperature:	26 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Simon Wang on 2014-04-28.

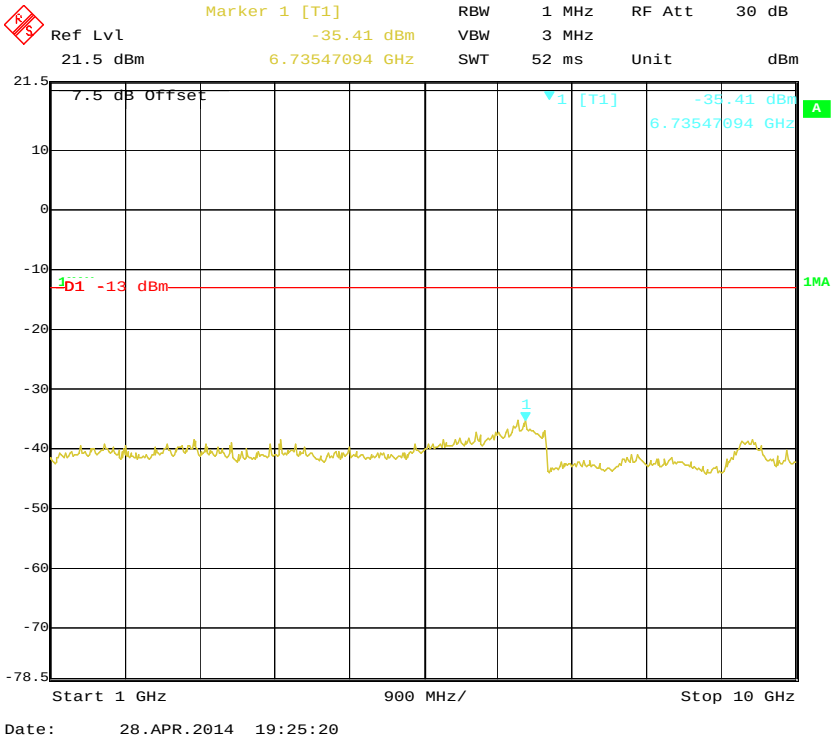
Test result: Compliance, please refer to the following plots.

Cellular Band (Part 22H)

30 MHz – 1 GHz (WCDMA Mode)



1 GHz – 10 GHz (WCDMA Mode)



FCC §2.1053 & §22.917 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053 and §22.917.

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 receiving 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	2011-12-01	2014-11-30
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2013-11-12	2014-11-12
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2013-09-25	2014-09-25
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2014-04-03	2015-04-03
HP	Amplifier	8447E	1937A01046	2013-09-30	2014-09-30
HP	Signal Generator	8341B	2624A00116	2013-05-09	2014-05-09
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2015-02-10
Electro-Mechanics	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2013-11-23	2014-11-23

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

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Simon Wang on 2014-04-28.

EUT operation mode: Transmitting (worst case)

30 MHz ~ 10 GHz:

Cellular Band (Part 22H)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
WCDMA 850(Band V) Middle channel										
523.6	30.16	65	2.1	H	-66.7	0.52	0	-67.22	-13	54.22
523.6	31.29	208	1.8	V	-65.6	0.52	0	-66.12	-13	53.12
1673.2	59.02	151	2.5	H	-44.0	0.97	9.40	-35.57	-13	22.57
1673.2	61.50	160	1.6	V	-39.0	0.97	9.40	-30.57	-13	17.57

Note:
1) Absolute Level = SG Level - Cable loss + Antenna Gain
2) Margin = Limit- Absolute Level

FCC §22.917(a) - BAND EDGES

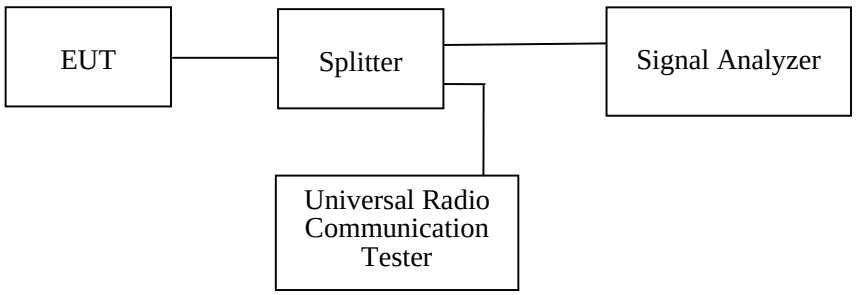
Applicable Standard

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.

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	Signal Analyzer	FSIQ26	837405/023	2013-05-31	2014-05-31
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2013-11-23	2014-11-23

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

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Simon Wang on 2014-04-28.

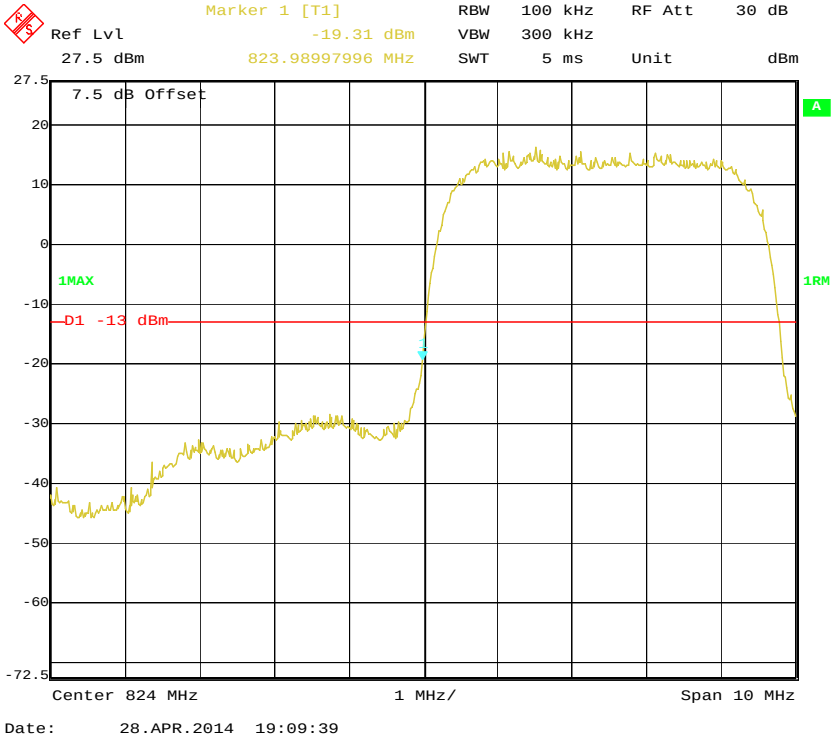
EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables and plots.

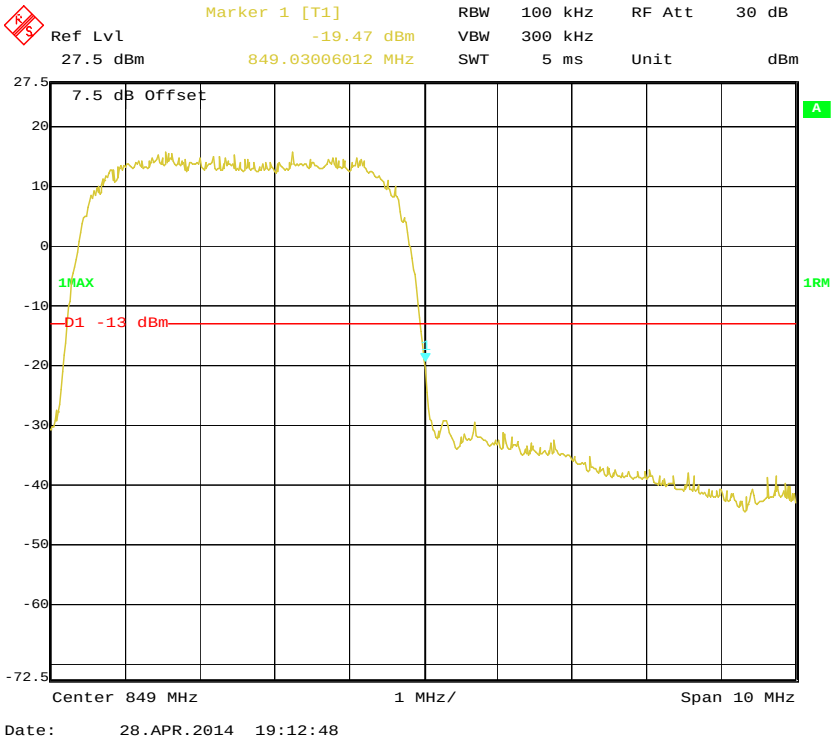
Cellular Band (Part 22H)

Mode	Band Edge	Emission (dBm)	Limit (dBm)
WCDMA (BPSK)	Left Band	-19.31	⩽-13
	Right Band	-19.47	⩽-13

Left Band Edge for WCDMA (BPSK) Mode



Right Band Edge for WCDMA (BPSK) Mode



FCC §2.1055 & §22.355 - FREQUENCY STABILITY

Applicable Standard

FCC § 2.1055, §22.355

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

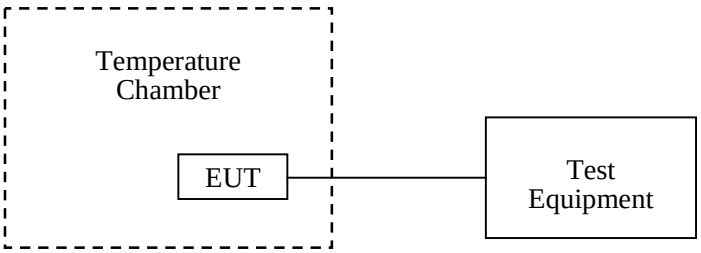
Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

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: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2013-11-01	2014-11-01
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2013-11-23	2014-11-23

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Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Simon Wang on 2014-04-28.

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables.

Cellular Band (Part 22H)

WCDMA Mode

Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	8	0.009563	2.5
-20		9	0.010758	2.5
-10		6	0.007172	2.5
0		11	0.013148	2.5
10		12	0.014344	2.5
20		5	0.005977	2.5
30		7	0.008367	2.5
40		9	0.010758	2.5
50		8	0.009563	2.5
25	$V_{min.}$= 3.5	10	0.011953	2.5
25	$V_{max.}$= 4.2	13	0.015539	2.5

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