FCC PART 22H, PART 24E

MEASUREMENT AND TEST REPORT

For

SWAGTEK

10205 NW 19th Street, STE101, Miami, Florida, United States, 33172

FCC ID: O55602516

Report Type:	Product Type:
Original Report	6 inch Smart Phone

Test Engineer:	Lion Xiao
Report Number:	RDG160811001-00B
Report Date:	2016-08-25
Reviewed By:	Dean Liu RF Engineer
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *SWAGTEK*'s product, model number: *Elite 6R PLUS(FCC ID: O55602516)* (the "EUT") in this report was a *6 inch Smart Phone* , which was measured approximately: 16.25 cm (L) × 8.35 cm (W) × 1.05 cm (H), rated input voltage: DC3.8V rechargeable Li-ion battery or DC5V from adapter.

Adapter information:
Model: TPA-46050150UU
Input: 100-240V~50/60hz 0.3A
Output: DC 5.0V, 1500mA

All measurement and test data in this report was gathered from production sample serial number: 160811001 (Assigned by BACL, Dongguan). The EUT was received on 2016-08-11.

Objective

This report is prepared on behalf of *SWAGTEK.* 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: O55602516
FCC Part 15C DSS submissions with FCC ID: O55602516
FCC Part 15C DTS submissions with FCC ID: O55602516

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.

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 06, 2015.

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.

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.

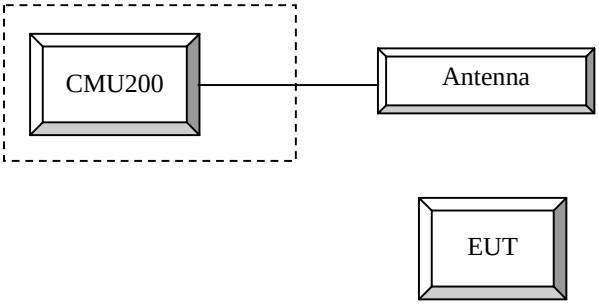
Equipment Modifications

No modification was made to the EUT.

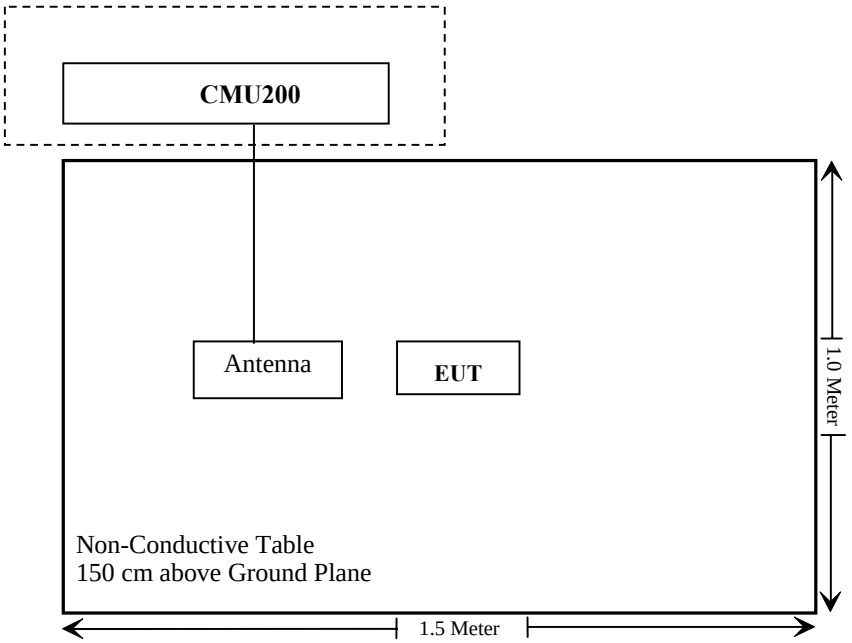
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universial 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

Compliant, please refer to the SAR report: RDG160811001-20.

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..

According to §24.232 (d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Test Procedure

GSM/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 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) and MCS5 (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

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
R&S	EMI Test Receiver	ESCI	100224	2016-05-09	2017-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
R&S	Spectrum Analyzer	FSEM	DE31388	2016-05-09	2017-05-09
ETS LINDGREN	Horn Antenna	3115	000 527 35	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2016-02-19	2017-02-19
Giga	Signal Generator	1026	320408	2015-11-23	2016-11-22
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2015-09-06	2018-09-06
N/A	Coaxial Cable	14m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	8m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

Test Data

Environmental Conditions

Temperature:	29.1 °C
Relative Humidity:	42 %
ATM Pressure:	99.8 kPa

The testing was performed by Lion Xiao on 2016-08-23.

Conducted Output Power

Cellular Band (Part 22H) & PCS Band (Part 24E)

Band	Channel No.	Peak Output Power (dBm)				
		GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot
Cellular	128	33.08	32.99	31.34	29.58	28.64
	190	32.94	32.92	31.32	29.59	28.54
	251	32.90	32.75	31.29	29.59	28.43
PCS	512	30.17	28.67	27.91	27.24	26.08
	661	29.92	28.54	28.06	27.19	26.21
	810	29.71	28.42	27.92	27.43	26.24

WCDMA Band Ⅱ

Mode	3GPP Sub Test	Average 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	22.49	2.20	22.30	2.64	22.14	2.36
HSDPA	1	21.37	2.29	21.45	2.69	21.18	2.42
	2	21.41	2.12	21.63	2.73	21.21	2.39
	3	21.47	2.13	21.63	2.57	21.15	2.48
	4	21.43	2.12	21.51	2.54	21.23	2.29
HSUPA	1	21.48	2.24	21.41	2.52	21.16	2.43
	2	21.54	2.21	21.54	2.73	21.30	2.37
	3	21.45	2.15	21.50	2.71	21.17	2.46
	4	21.48	2.08	21.39	2.54	21.24	2.25
	5	21.51	2.31	21.28	2.72	21.25	2.29
HSPA+	1	21.41	2.18	21.55	2.61	21.16	2.39

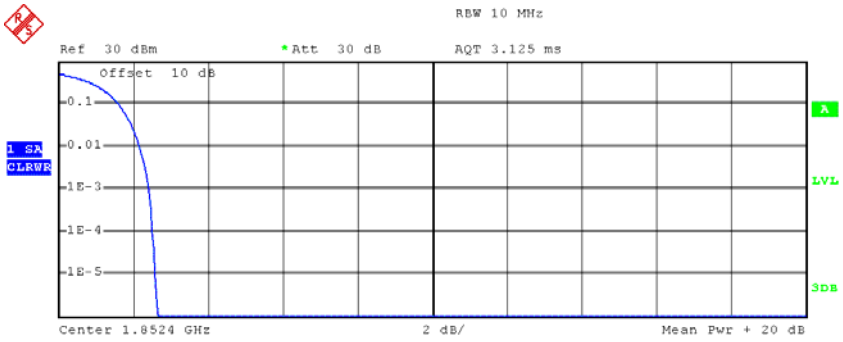
WCDMA Band V

Mode	3GPP Sub Test	Average 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	22.93	2.88	22.29	2.68	22.42	2.76
HSDPA	1	21.77	2.85	21.27	2.62	21.18	2.68
	2	22.01	2.90	21.26	2.71	21.27	2.72
	3	21.99	2.88	21.34	2.76	21.38	2.84
	4	21.95	2.80	21.37	2.72	21.41	2.66
HSUPA	1	21.83	2.94	21.41	2.66	21.35	2.87
	2	22.12	2.97	21.47	2.60	21.39	2.68
	3	21.88	2.89	21.46	2.73	21.40	2.80
	4	21.95	2.92	21.43	2.69	21.35	2.73
HSPA+	1	22.02	2.92	21.33	2.65	21.43	2.73

Peak-to-average ratio (PAR)

WCDMA Band Ⅱ

Low Channel



Complementary Cumulative Distribution Function (100000 samples)

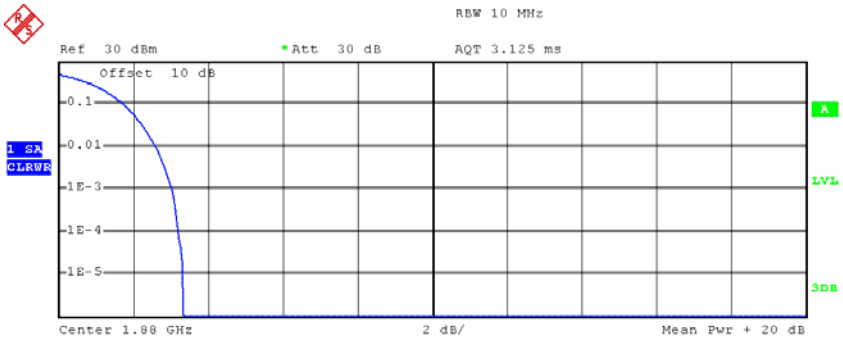
Trace 1

Mean 21.15 dBm
Peak 23.80 dBm
Crest 2.65 dB

10% @ 1.64 dB
1% @ 2.20 dB
.1% @ 2.44 dB

Date: 23.AUG.2016 01:13:03

Middle Channel



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 21.86 dBm
Peak 25.21 dBm
Crest 3.35 dB

10% @ 1.76 dB
1% @ 2.64 dB
.1% @ 3.04 dB

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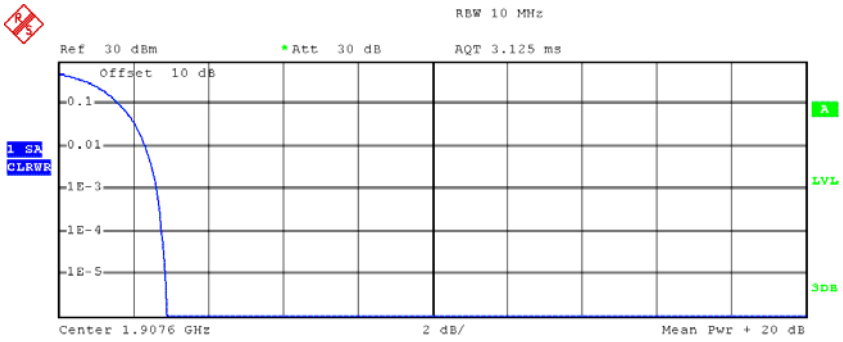
High Channel



Complementary Cumulative Distribution Function (100000 samples)

Trace 1	
Mean	21.05 dBm
Peak	23.94 dBm
Crest	2.89 dB
10% @	1.64 dB
1% @	2.36 dB
.1% @	2.64 dB

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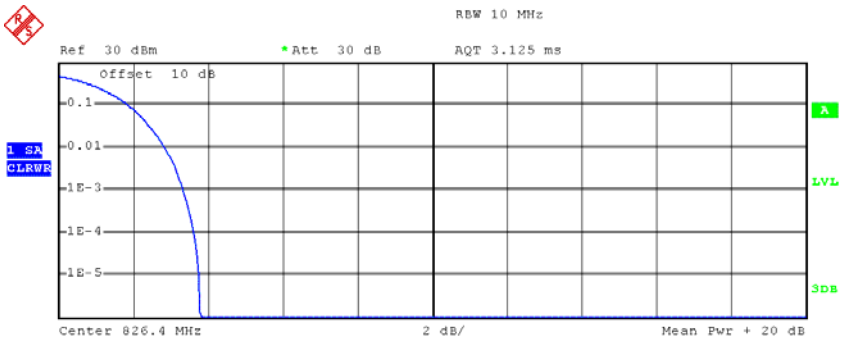
WCDMA Band Ⅴ

Low Channel

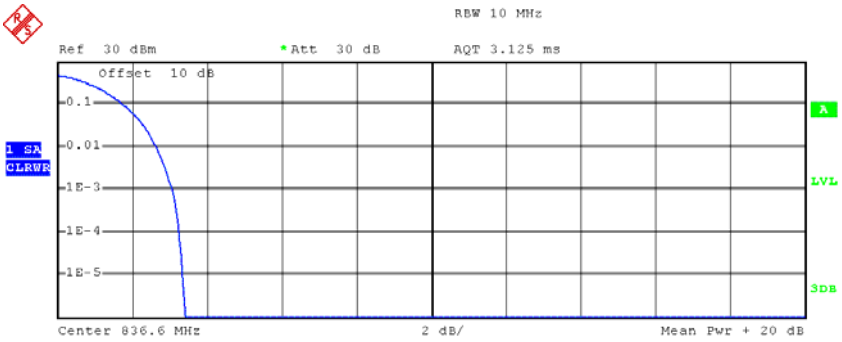


Complementary Cumulative Distribution Function (100000 samples)

Trace 1	
Mean	22.76 dBm
Peak	26.55 dBm
Crest	3.80 dB
10% @	1.88 dB
1% @	2.88 dB
.1% @	3.36 dB

Date: 23.AUG.2016 01:15:21

Middle Channel



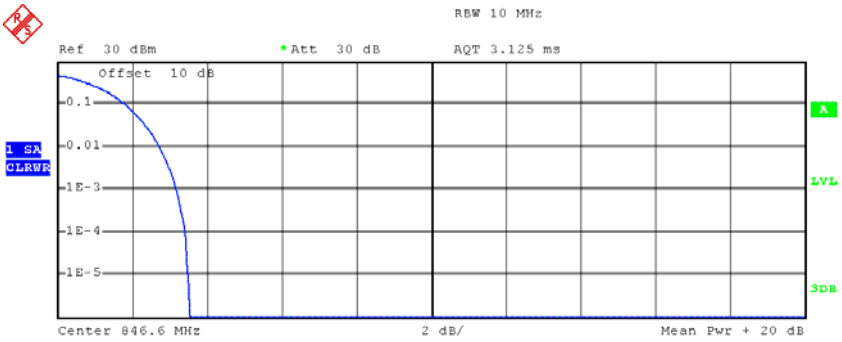
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	21.80 dBm
Peak	25.21 dBm
Crest	3.42 dB
10% @	1.80 dB
1% @	2.68 dB
.1% @	3.08 dB

Date: 23.AUG.2016 01:14:37

High Channel



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	21.68 dBm
Peak	25.21 dBm
Crest	3.54 dB
10% @	1.84 dB
1% @	2.76 dB
.1% @	3.20 dB

Date: 23.AUG.2016 01:15:01

ERP & EIRP

Part 22H

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)			
GSM 850_Middle Channel								
836.600	H	106.97	32.0	0.0	1	31.0	38.45	7.5
836.600	V	99.72	27.9	0.0	1	26.9	38.45	11.6
WCDMA Band V Middle Channel								
836.600	H	97.17	22.2	0.0	1	21.2	38.45	17.3
836.600	V	90.31	18.5	0.0	1	17.5	38.45	21.0

Part 24E

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)			
PCS 1900_Middle Channel								
1880.000	H	91.92	20.3	11.7	1.4	30.6	33.0	2.4
1880.000	V	86.73	15.3	11.7	1.4	25.6	33.0	7.4
WCDMA Band II Middle Channel								
1880.000	H	86.03	14.4	11.7	1.4	24.7	33.0	8.3
1880.000	V	79.37	7.9	11.7	1.4	18.2	33.0	14.8

Note:
1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
2) Absolute Level = SG Level - Cable loss + Antenna Gain
3) Margin = Limit-Absolute Level

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

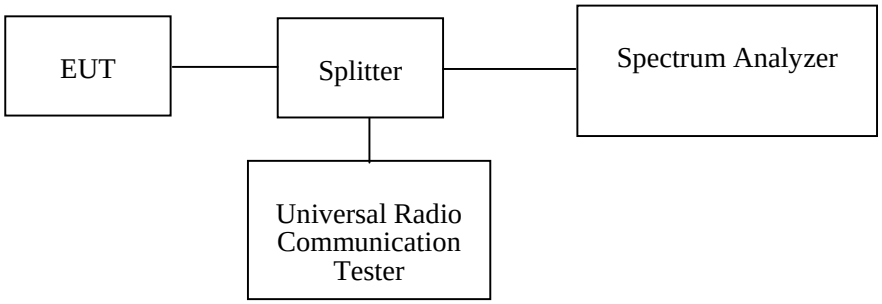
Applicable Standard

FCC §2.1049, §22.917 and §22.905, §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	2015-11-23	2016-11-22
R&S	Spectrum Analyzer	FSEM	831259/019	2016-05-09	2017-05-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2016-05-09	2017-05-09
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06
E-Microwave	Attenuator	EMCA10-5RN	OE01203239	2016-05-08	2017-05-08
Pasternack	RF Coaxial Cable	RF-01	N/A	2016-05-06	2017-05-06
Pasternack	RF Coaxial Cable	RF-02	N/A	2016-05-06	2017-05-06
N/A	Two-way Spliter	ODP-1-6-2S	OE0120142	2016-05-06	2017-05-06

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

Test Data

Environmental Conditions

Temperature:	29.1~29.8 °C
Relative Humidity:	41~42%
ATM Pressure:	99.6~99.8 kPa

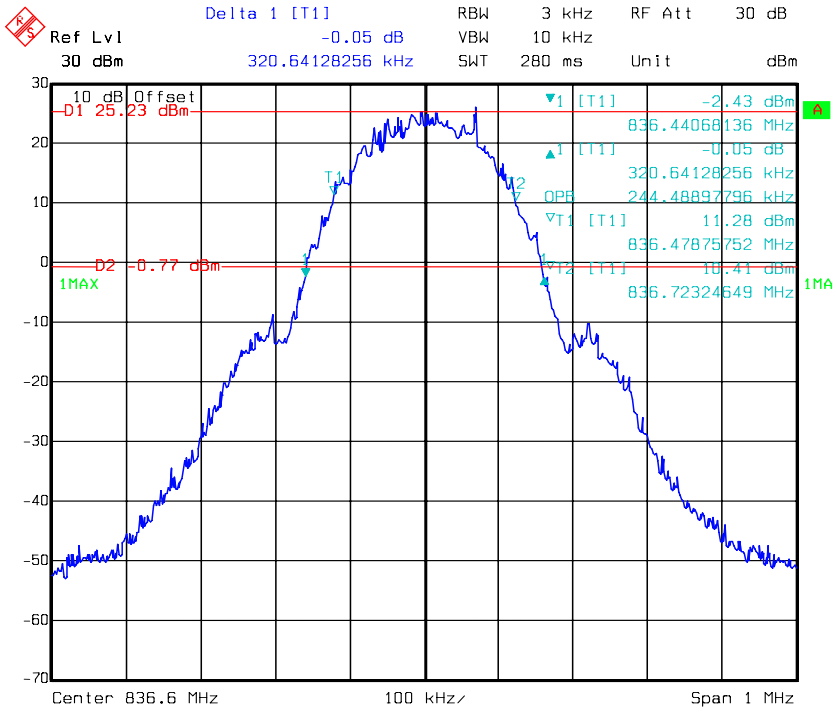
The testing was performed by Lion Xiao from 2016-08-23 to 2016-08-24.

Test Mode: Transmitting

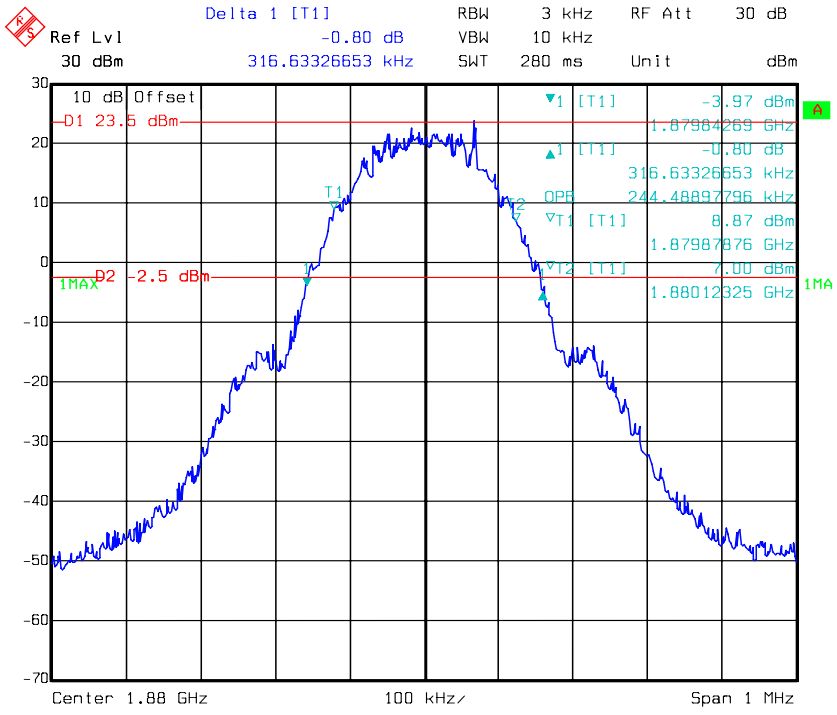
Test Result: Compliant. Please refer to the following table and plots.

Band	Test Channel	Mode	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
Cellular	M	GSM	244.000	321.000
		EDGE	/	/
PCS		PCS	244.000	317.000
		EDGE	/	/
WCDMA Band II		Rel 99	4168.000	4749.000
		HSDPA	4168.000	4749.000
		HSUPA	4188.000	4729.000
WCDMA Band V		Rel 99	4148.000	4709.000
		HSDPA	4148.000	4729.000
		HSUPA	4168.000	4709.000

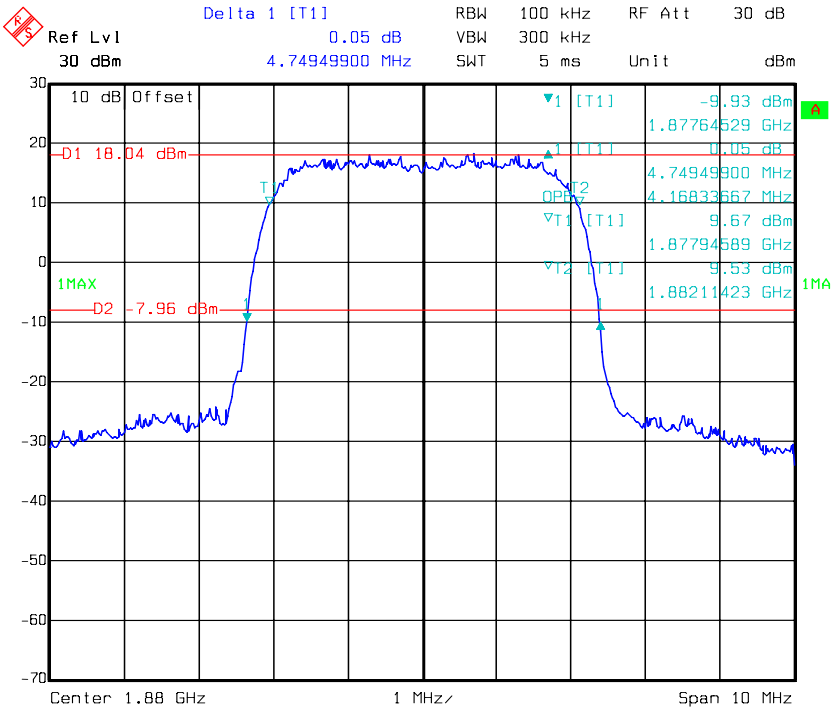
GMSK 850 Cellular Band



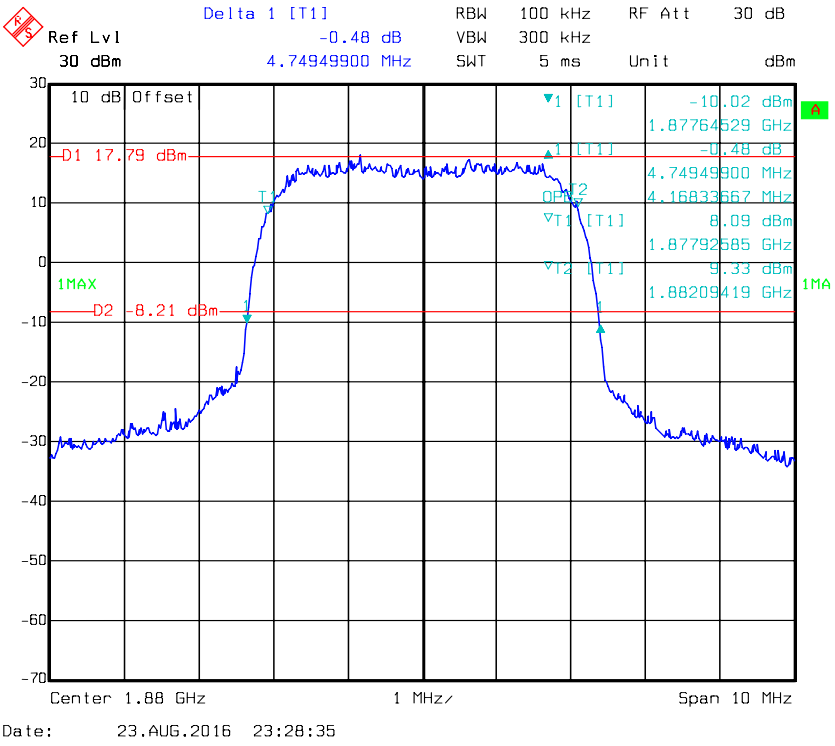
GMSK PCS Band



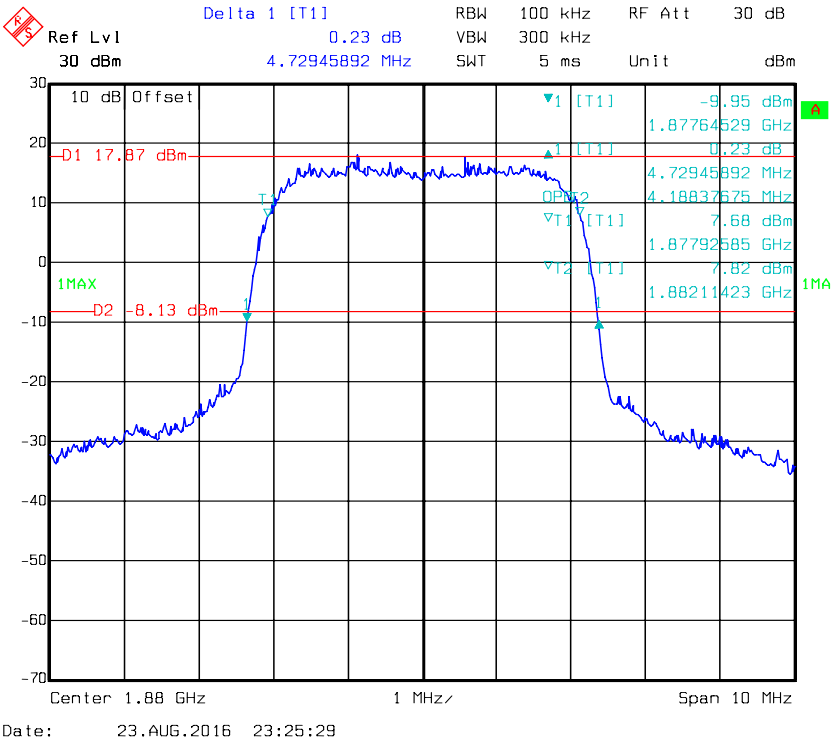
REL99 Band II



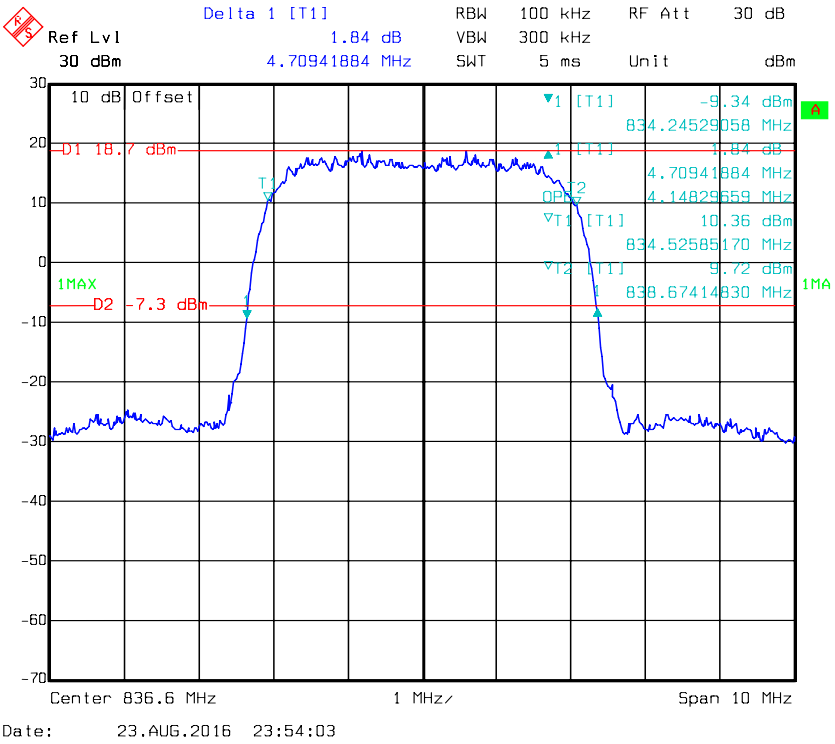
HSDPA Band II



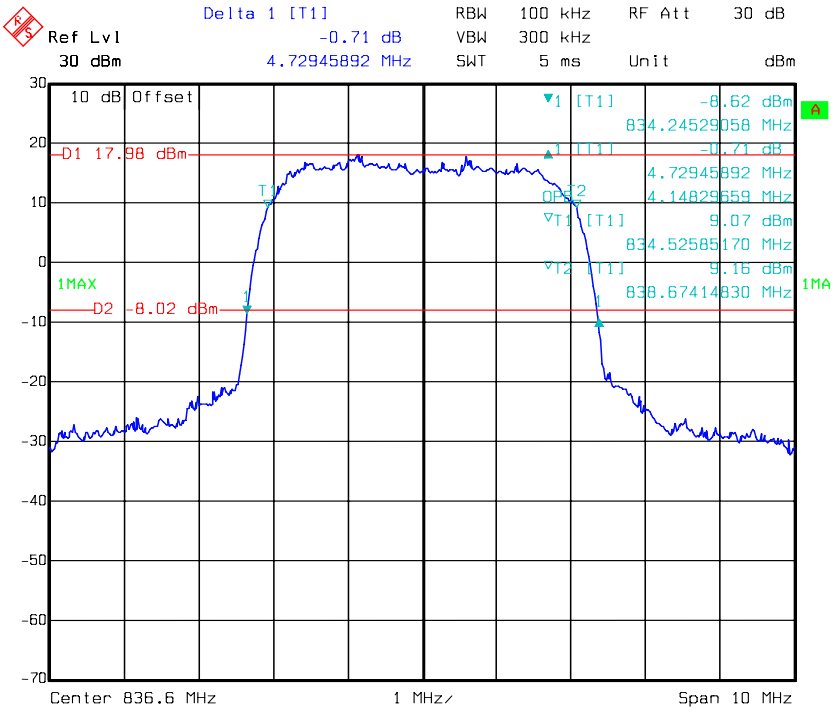
HSUPA Band II



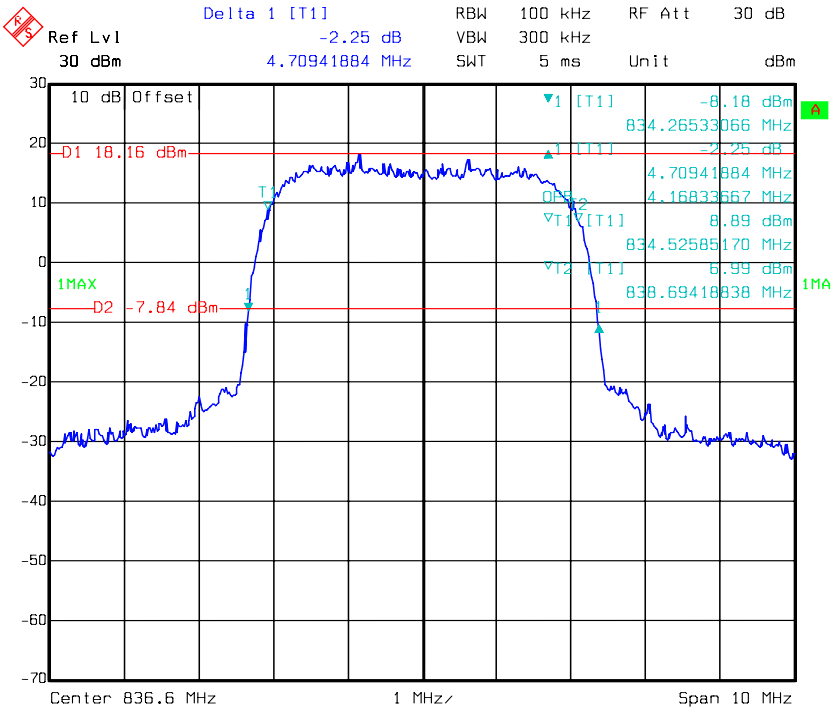
REL99 Band V



HSDPA Band V



HSUPA Band V



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

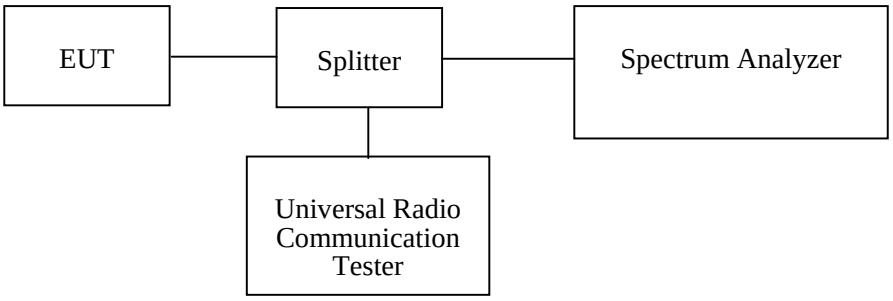
Applicable Standard

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	2015-11-23	2016-11-22
R&S	Spectrum Analyzer	FSEM	831259/019	2016-05-09	2017-05-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2016-05-09	2017-05-09
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06
E-Microwave	Attenuator	EMCA10-5RN	OE01203239	2016-05-08	2017-05-08
Pasternack	RF Coaxial Cable	RF-01	N/A	2016-05-06	2017-05-06
Pasternack	RF Coaxial Cable	RF-02	N/A	2016-05-06	2017-05-06
N/A	Two-way Spliter	ODP-1-6-2S	OE0120142	2016-05-06	2017-05-06

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

Test Data

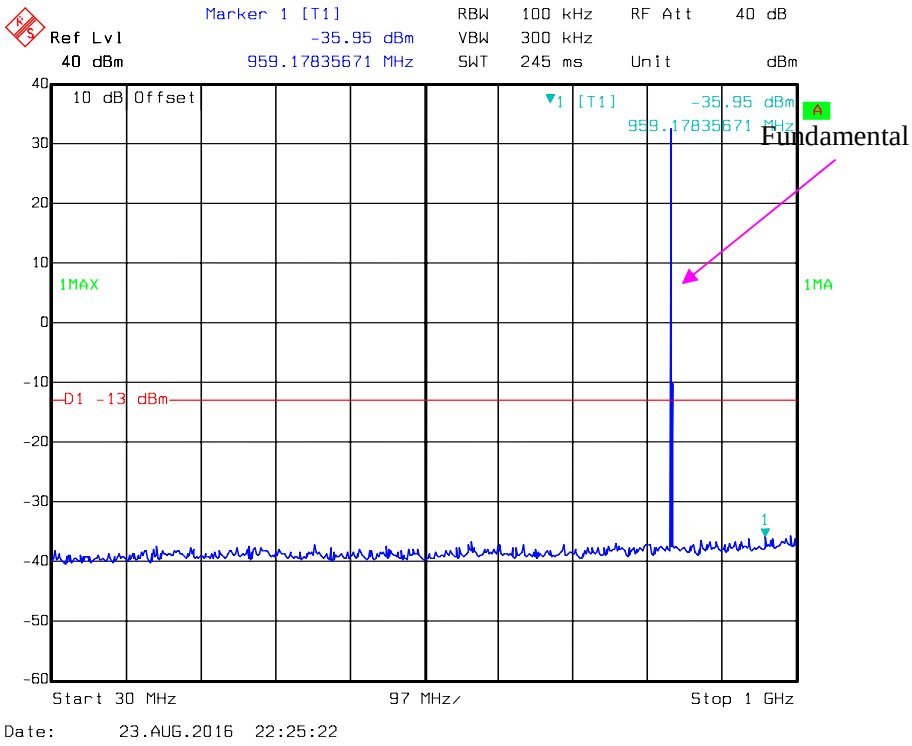
Environmental Conditions

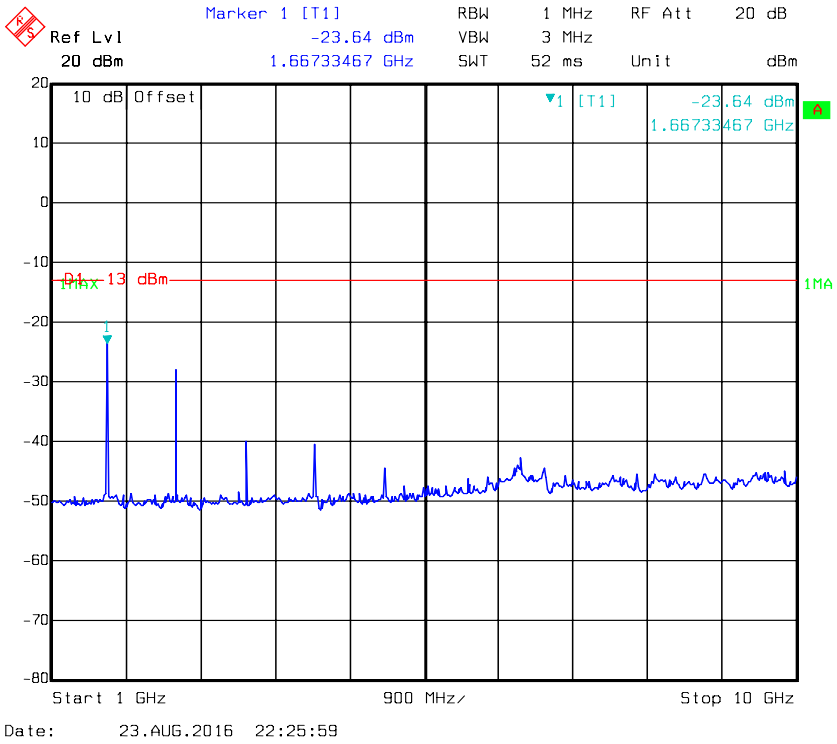
Temperature:	29.1~29.8 °C
Relative Humidity:	41~42%
ATM Pressure:	99.6~99.8 kPa

The testing was performed by Lion Xiao from 2016-08-23 to 2016-08-24.

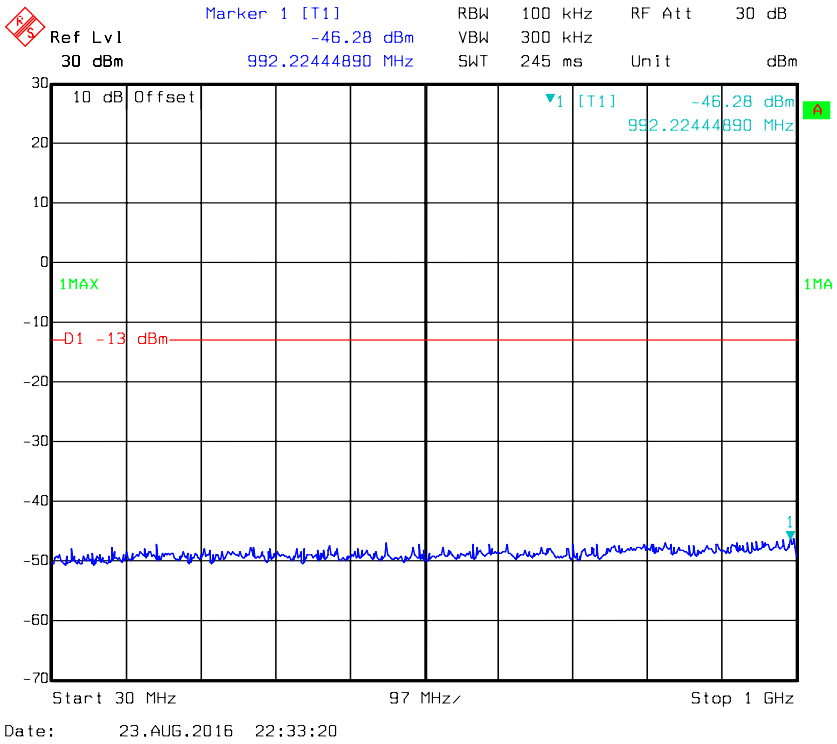
Please refer to the following plots.

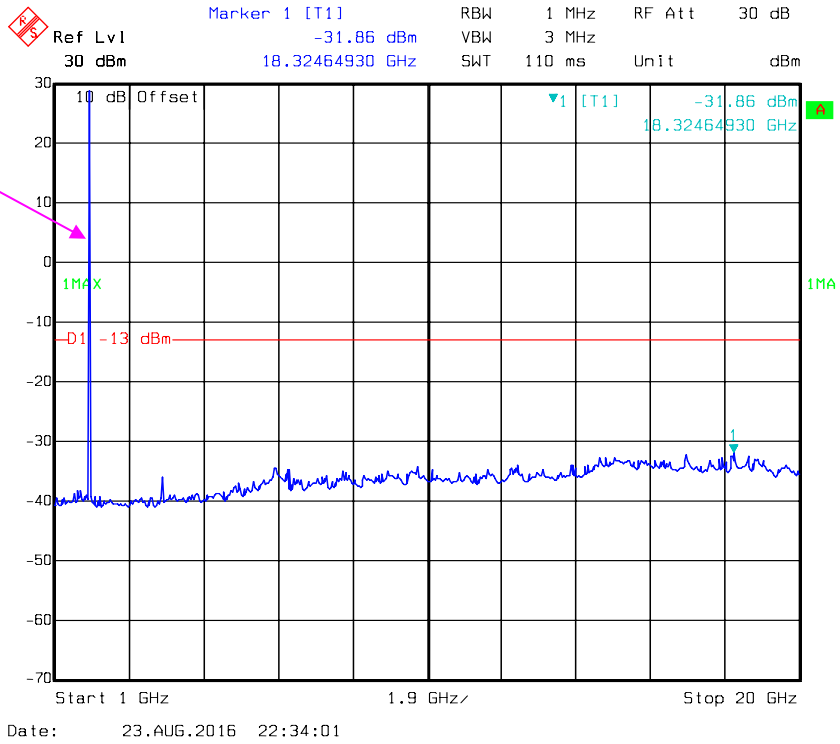
GSM850_Middle Channel



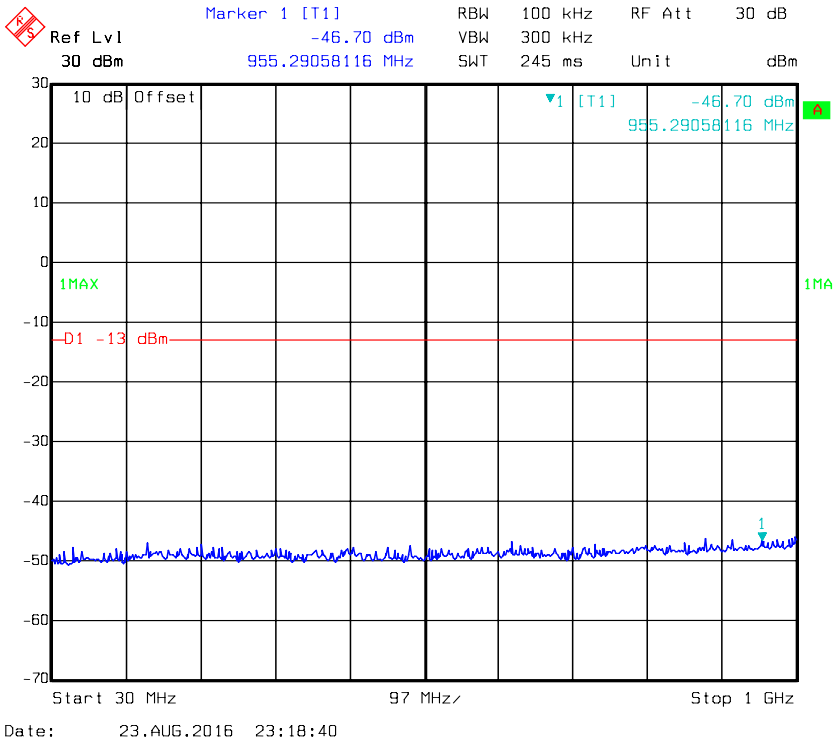


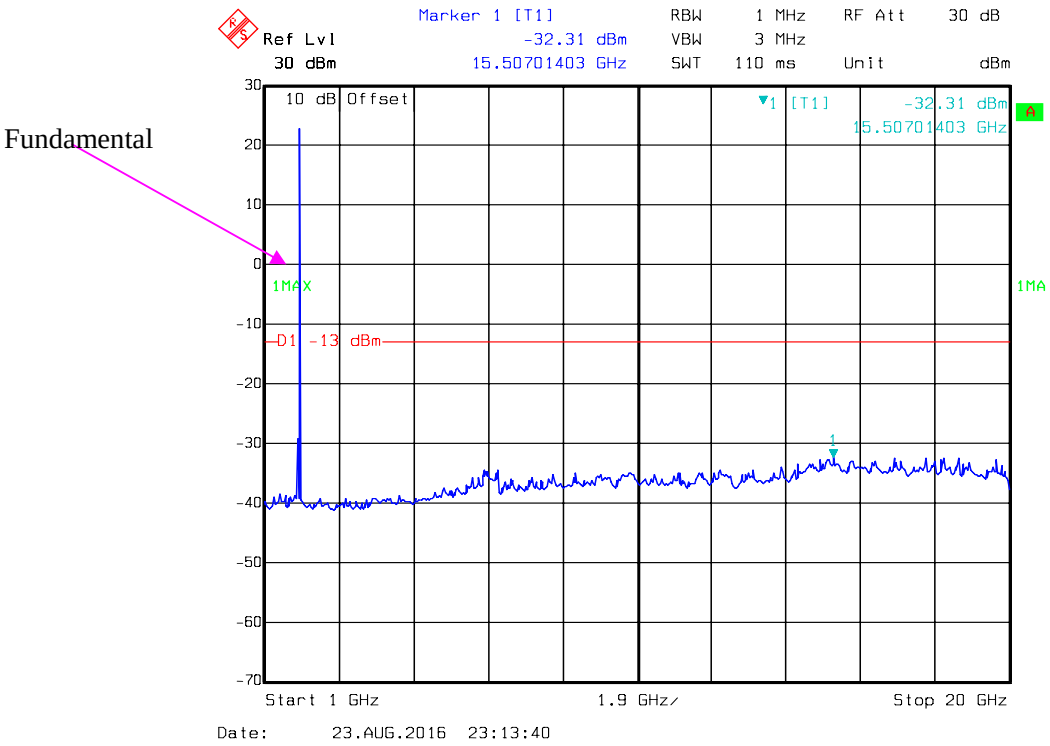
PCS 1900_ Middle Channel



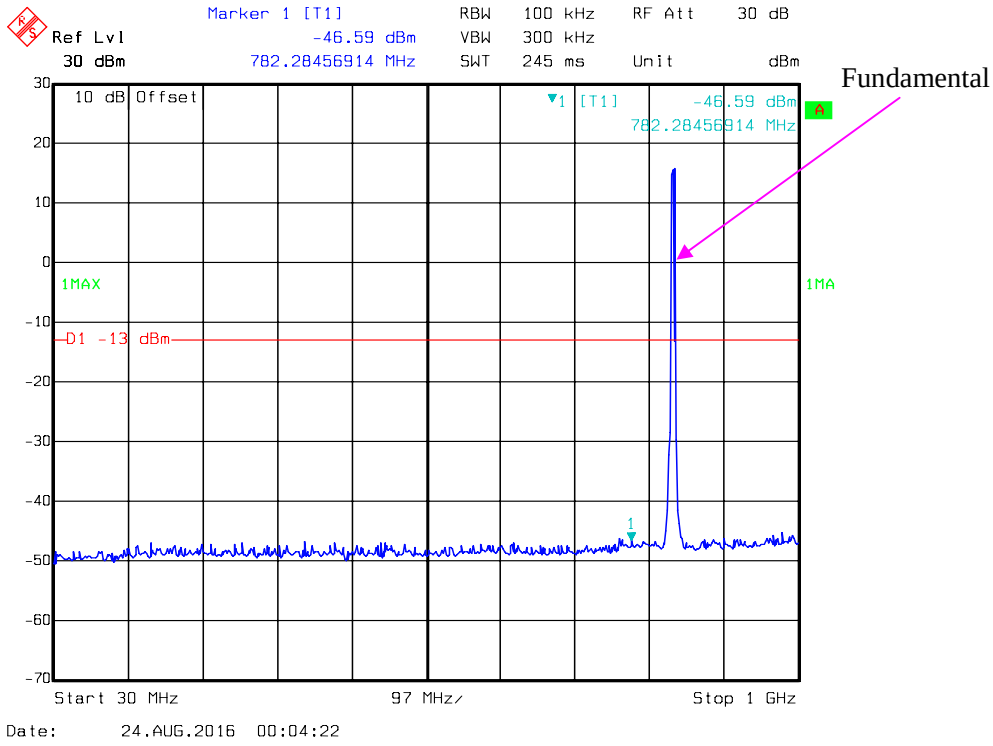


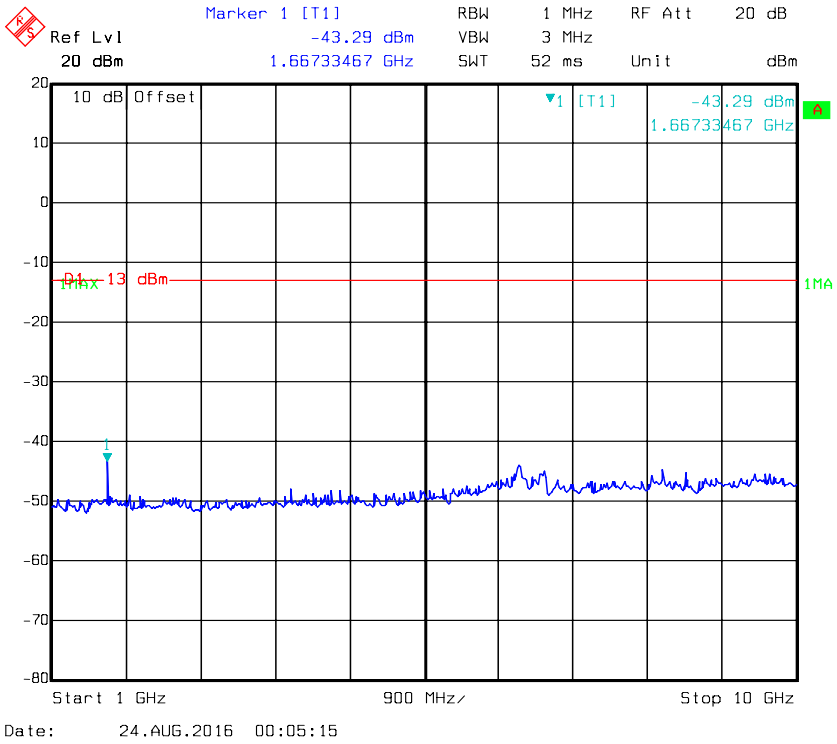
REL99 Band II_ Middle Channel





REL99 Band V_ Middle Channel




Marker 1 [T1]
Ref Lvl
20 dBm
-43.29 dBm
1.66733467 GHz
RBW 1 MHz
VBW 3 MHz
SWT 52 ms
RF Att 20 dB
Unit dBm
10 dB Offset
1 [T1]
-43.29 dBm
1.66733467 GHz
D1 -13 dBm
1MAX
1MA
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 24.AUG.2016 00:05:15

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
R&S	EMI Test Receiver	ESCI	100224	2016-05-09	2017-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
R&S	Spectrum Analyzer	FSEM	DE31388	2016-05-09	2017-05-09
ETS LINDGREN	Horn Antenna	3115	000 527 35	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2016-02-19	2017-02-19
Giga	Signal Generator	1026	320408	2016-05-09	2017-05-09
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2015-09-06	2018-09-06
N/A	Coaxial Cable	14m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	8m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	2m	N/A	2016-05-06	2017-05-06
Mini Circuit	High Pass Filter	VHF-3100+	31251	2016-05-06	2017-05-06
Mini Circuit	High Pass Filte	VHF-1200+	N/A	2016-05-06	2017-05-06

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

Test Data

Environmental Conditions

Temperature:	26.8°C
Relative Humidity:	65 %
ATM Pressure:	99.8 kPa

The testing was performed by Lion Xiao on 2016-08-23.

EUT Operation Mode: Transmitting

Cellular Band (PART 22H)

30 MHz-10 GHz:

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)			
GSM850, Frequency:836.600 MHz								
1673.200	H	41.68	-59.4	10.6	1.5	-50.3	-13.0	37.3
1673.200	V	43.29	-58.1	10.6	1.5	-49.0	-13.0	36.0
2509.800	H	48.50	-49.5	13.1	2.8	-39.2	-13.0	26.2
2509.800	V	46.40	-50.7	13.1	2.8	-40.4	-13.0	27.4
319.900	H	37.83	-67.2	0.0	0.5	-67.7	-13.0	54.7
271.500	V	36.48	-68.9	0.0	0.5	-69.4	-13.0	56.4
WCDMA Band V R99,Frequency:836.600 MHz								
1673.200	H	38.63	-62.4	10.6	1.5	-53.3	-13.0	40.3
1673.200	V	36.44	-64.9	10.6	1.5	-55.8	-13.0	42.8
2509.800	H	38.25	-59.8	13.1	2.8	-49.5	-13.0	36.5
2509.800	V	36.34	-60.8	13.1	2.8	-50.5	-13.0	37.5
319.900	H	37.60	-67.4	0.0	0.5	-67.9	-13.0	54.9
271.500	V	36.27	-69.2	0.0	0.5	-69.7	-13.0	56.7

PCS Band (PART 24E)

30 MHz-20 GHz:

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)			
GSM1900, Frequency:1880.000 MHz								
3760.000	H	37.56	-56.7	13.8	2.9	-45.8	-13.0	32.8
3760.000	V	35.34	-57.7	13.8	2.9	-46.8	-13.0	33.8
5640.000	H	49.72	-42	14.0	2.1	-30.1	-13.0	17.1
5640.000	V	40.43	-51.2	14.0	2.1	-39.3	-13.0	26.3
289.400	H	37.66	-69.9	0.0	0.5	-70.4	-13.0	57.4
301.700	V	36.89	-67.9	0.0	0.5	-68.4	-13.0	55.4
WCDMA Band II, R99, Frequency:1880.000 MHz								
3760.000	H	38.23	-56.1	13.8	2.9	-45.2	-13.0	32.2
3760.000	V	37.44	-55.6	13.8	2.9	-44.7	-13.0	31.7
289.400	H	37.90	-69.7	0.0	0.5	-70.2	-13.0	57.2
301.700	V	36.65	-68.1	0.0	0.5	-68.6	-13.0	55.6

Note:
1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
2) Absolute Level = SG Level - Cable loss + Antenna Gain
3) Margin = Limit-Absolute Level

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

Applicable Standard

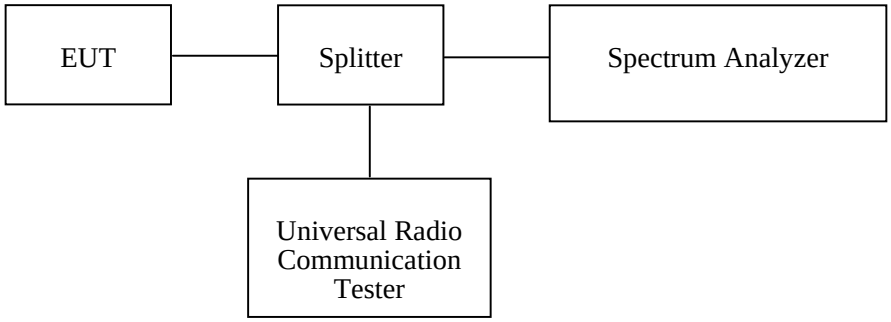
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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	FSEM	831259/019	2016-05-09	2017-05-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2016-05-09	2017-05-09
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06
E-Microwave	Attenuator(10dB)	EMCA10-5RN	OE01203239	2016-05-08	2017-05-08
Pasternack	RF Coaxial Cable	RF-01	N/A	2016-05-06	2017-05-06
Pasternack	RF Coaxial Cable	RF-02	N/A	2016-05-06	2017-05-06
N/A	Two-way Spliter	ODP-1-6-2S	OE0120142	2016-05-06	2017-05-06

*** 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

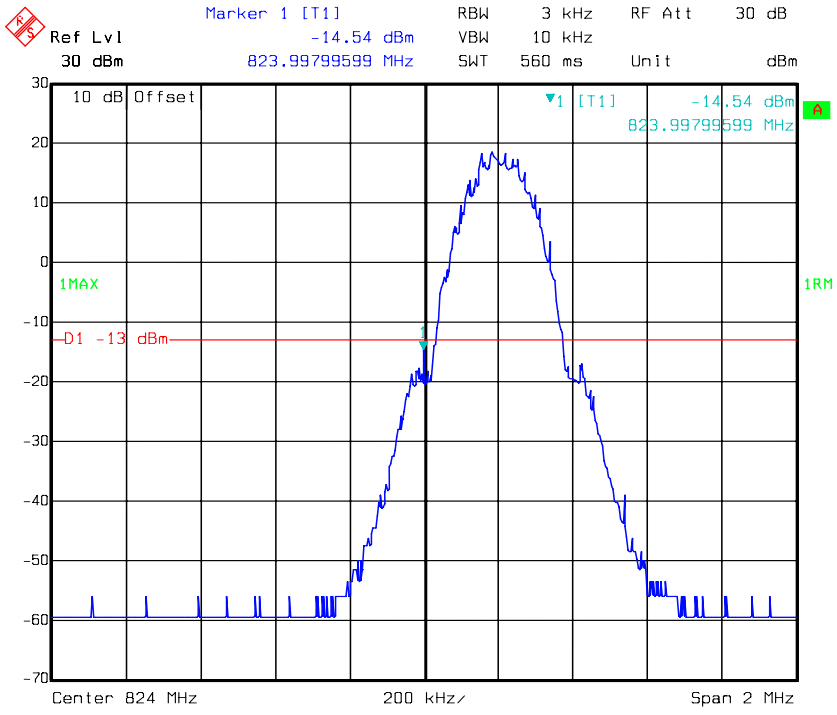
Temperature:	29.1 °C
Relative Humidity:	42 %
ATM Pressure:	99.8 kPa

The testing was performed by Lion Xiao on 2016-08-23.

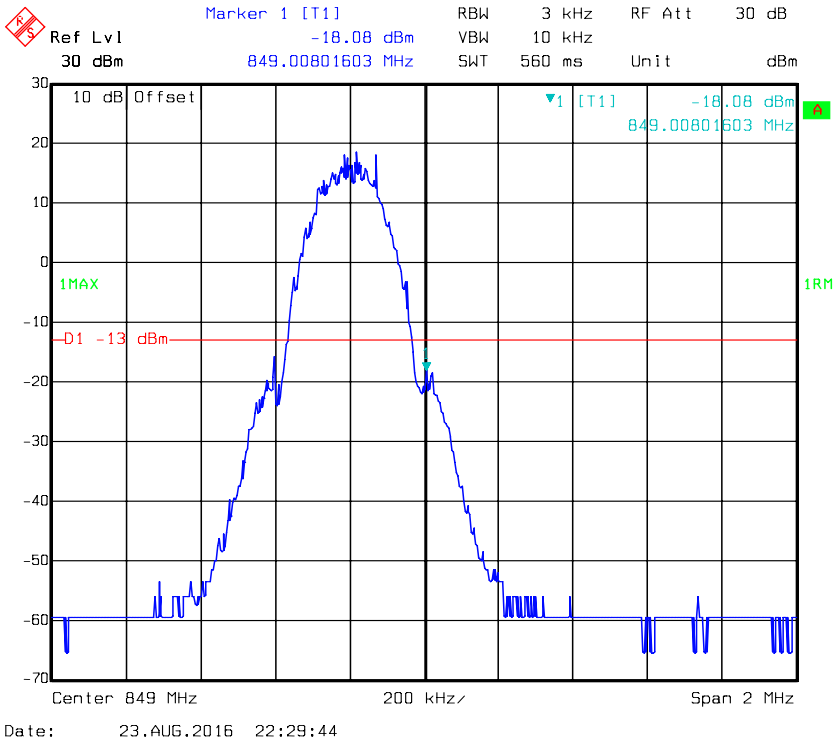
Test Mode: Transmitting

Test Result: Compliant. Please refer to the following plots.

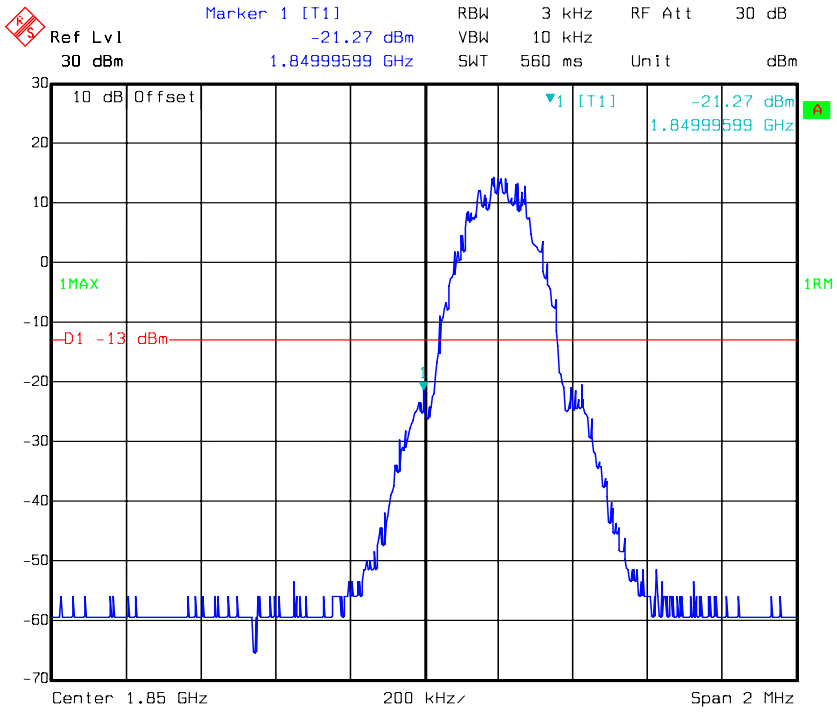
GSM 850, Left Band Edge



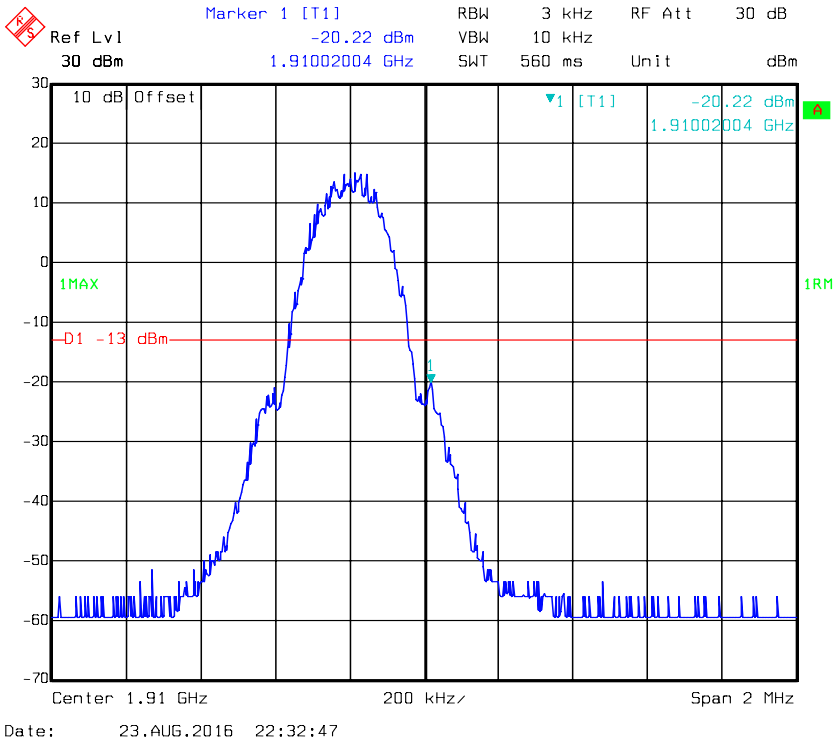
GSM 850, Right Band Edge



PCS 1900, Left Band Edge

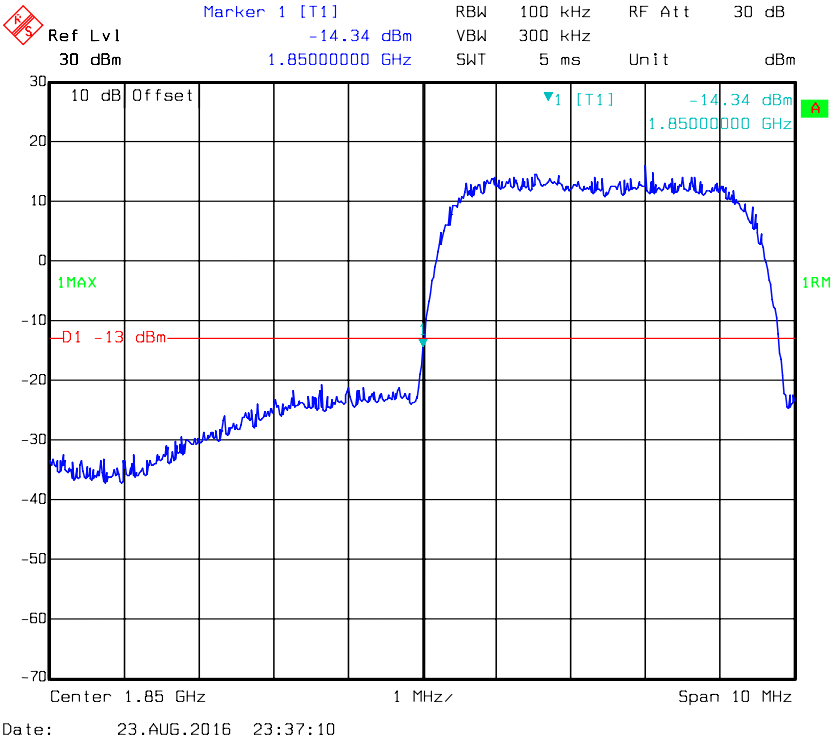


PCS 1900, Right Band Edge

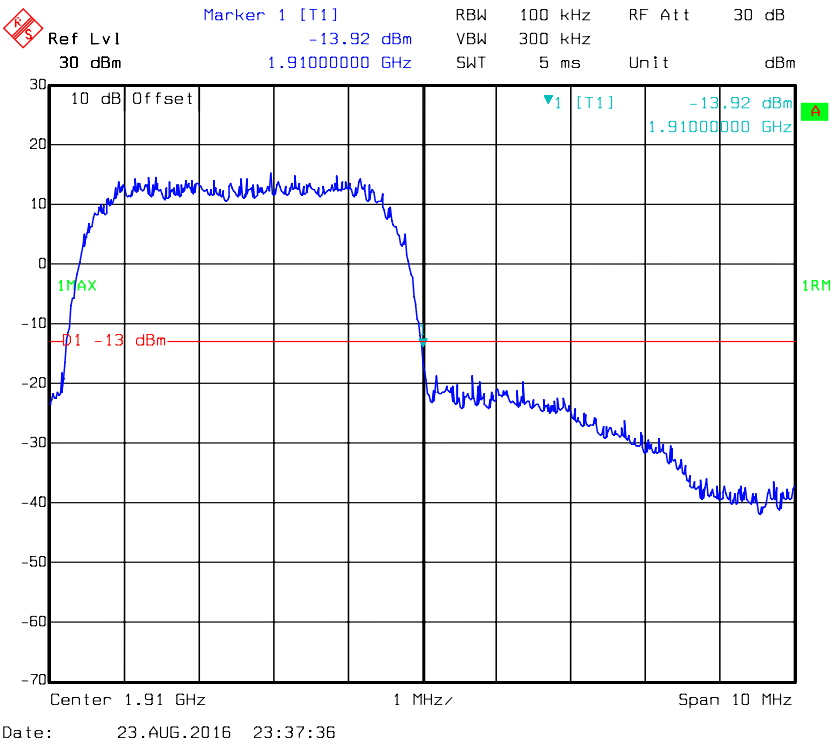


WCDMA Band II:

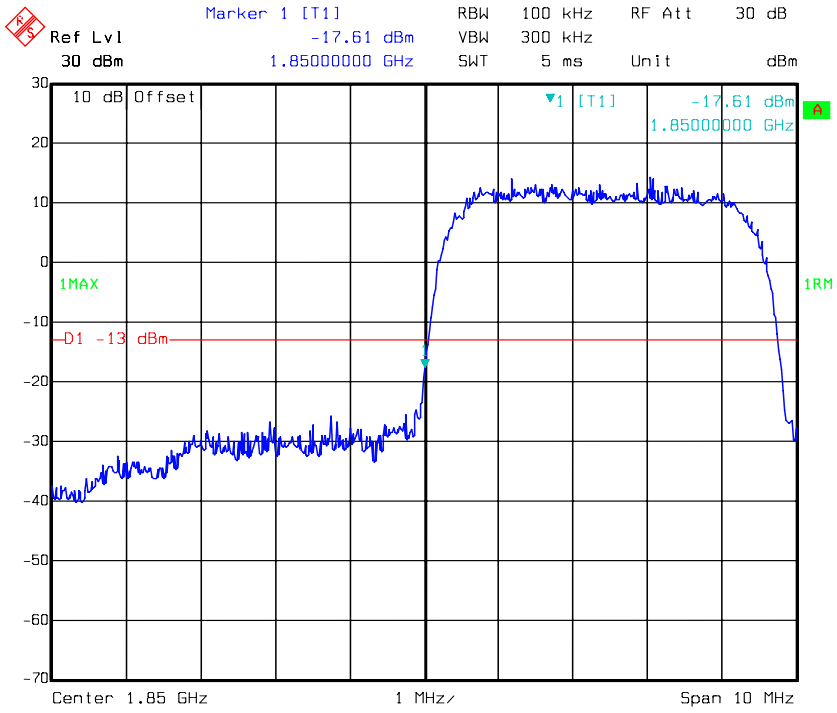
REL99 Band II, Left Band Edge



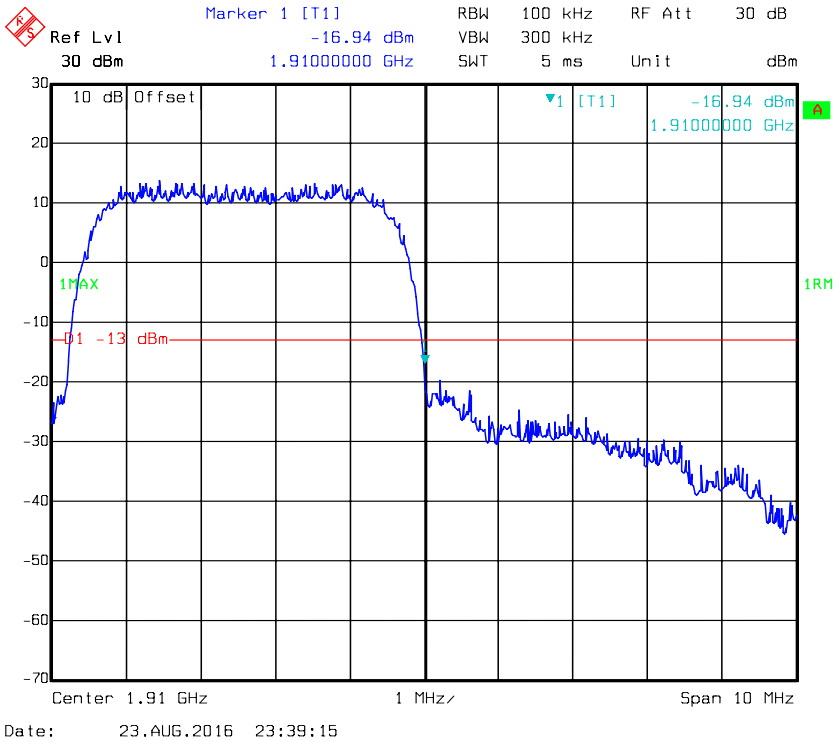
REL99 Band II, Right Band Edge



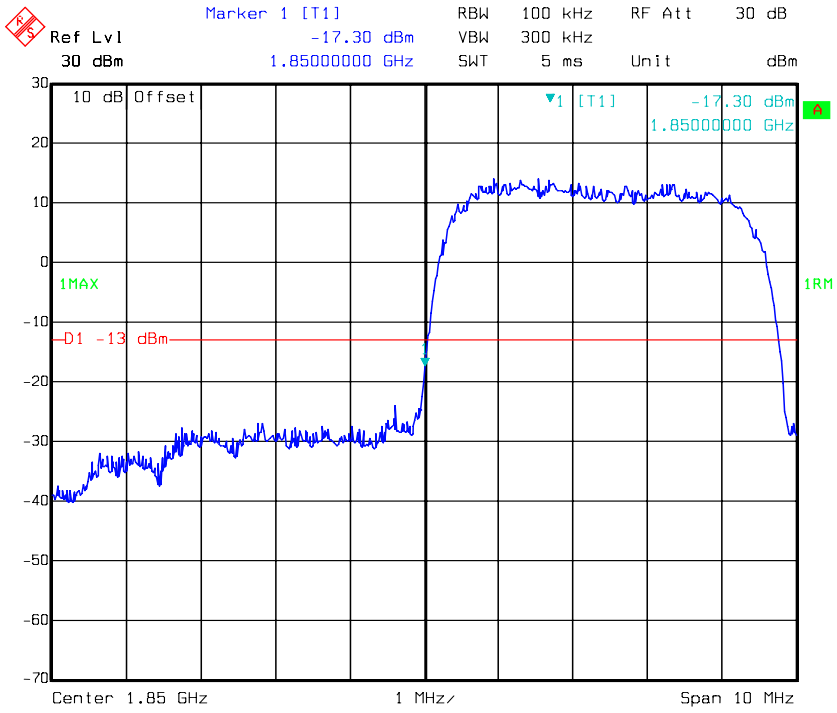
HSDPA Band II, Left Band Edge



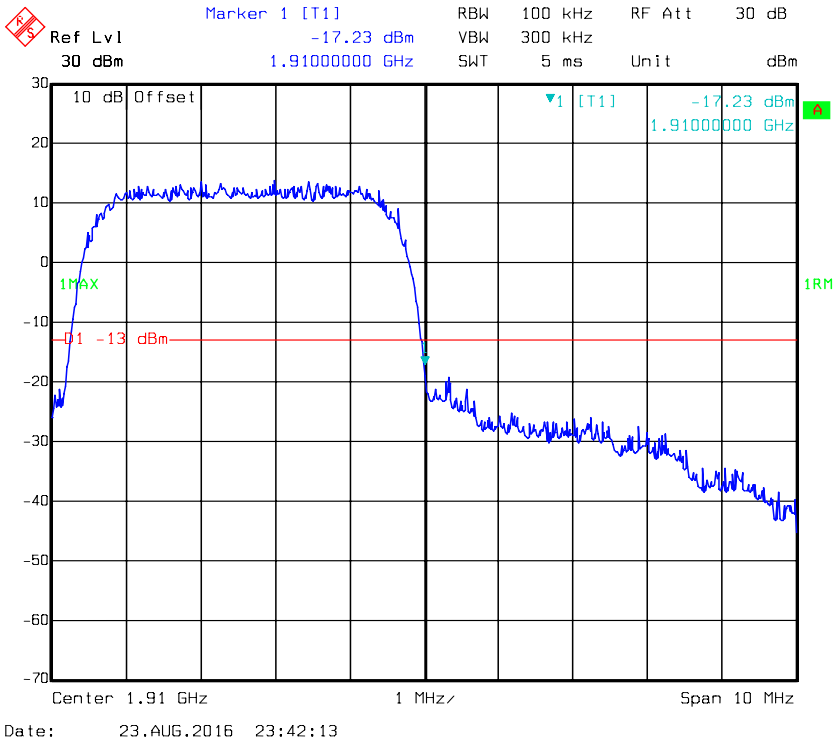
HSDPA Band II, Right Band Edge



HSUPA Band II, Left Band Edge

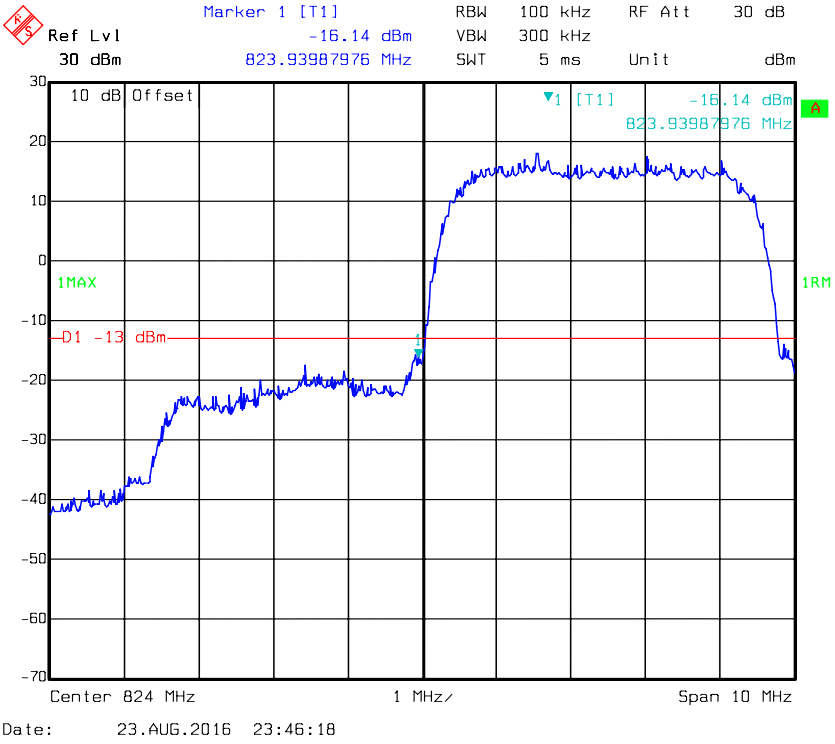


HSUPA Band II, Right Band Edge

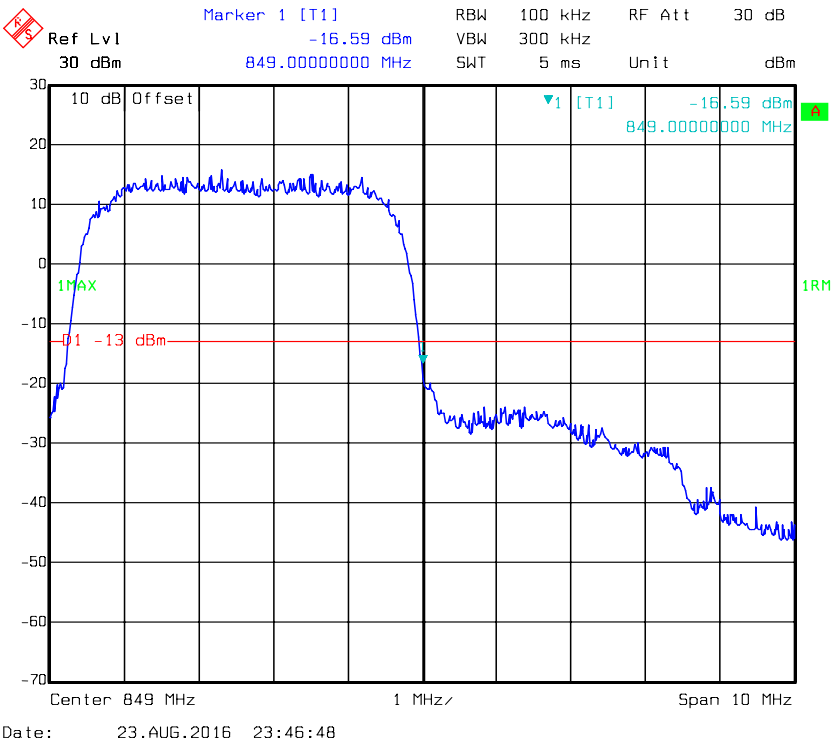


WCDMA Band V

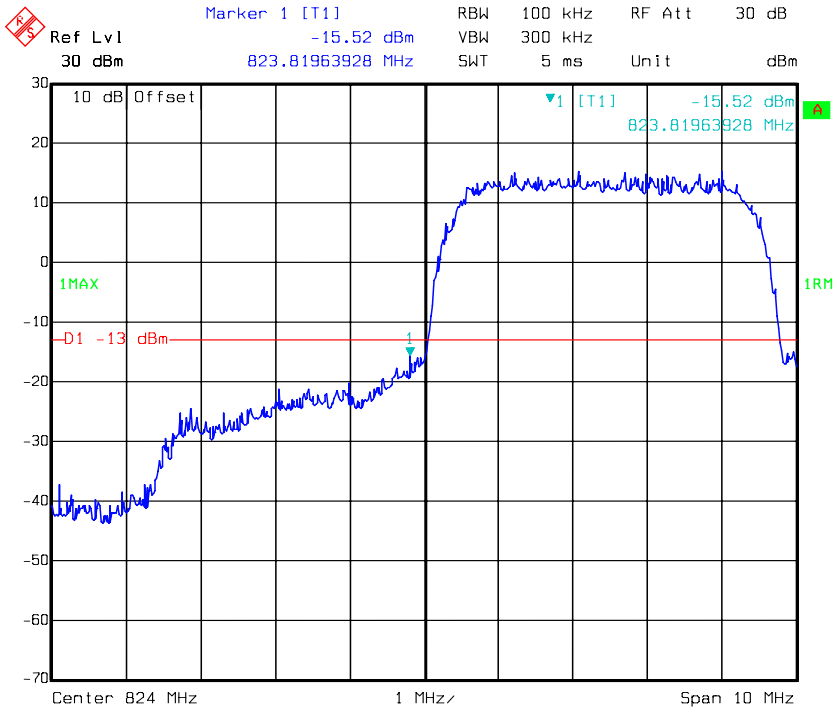
REL99 Band V, Left Band Edge



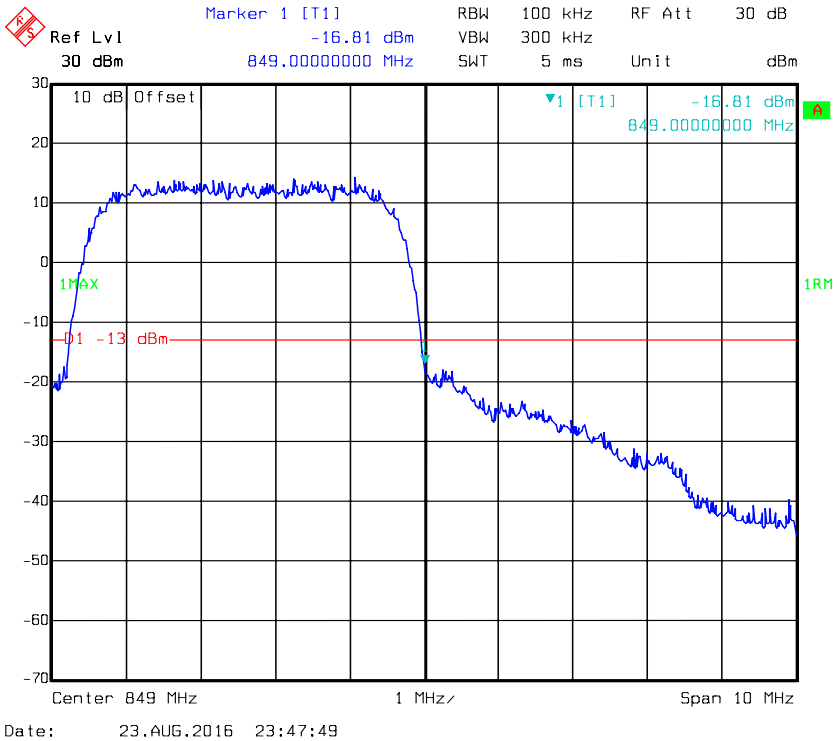
REL99 Band V Right Band Edge



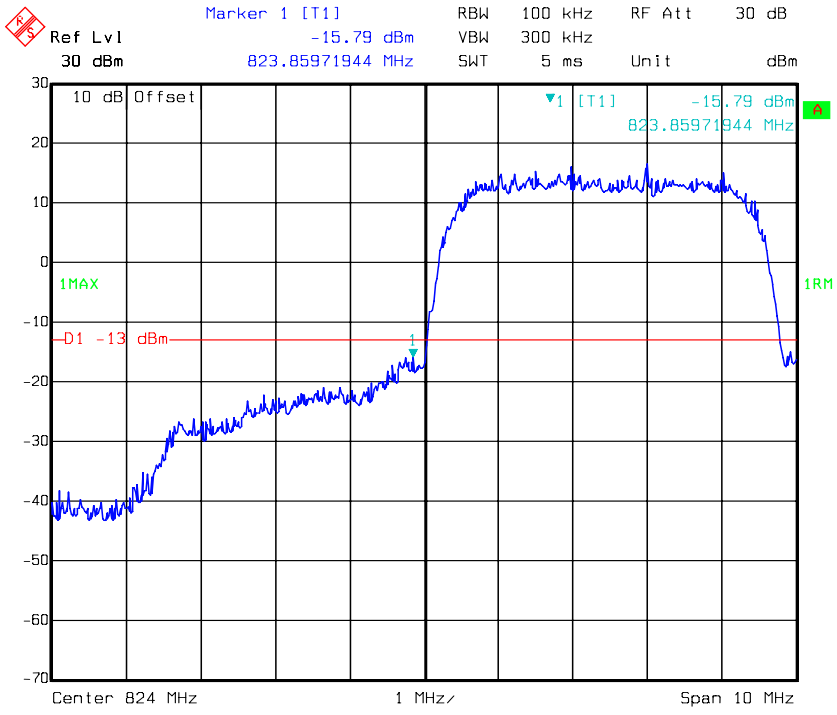
HSDPA Band V, Left Band Edge



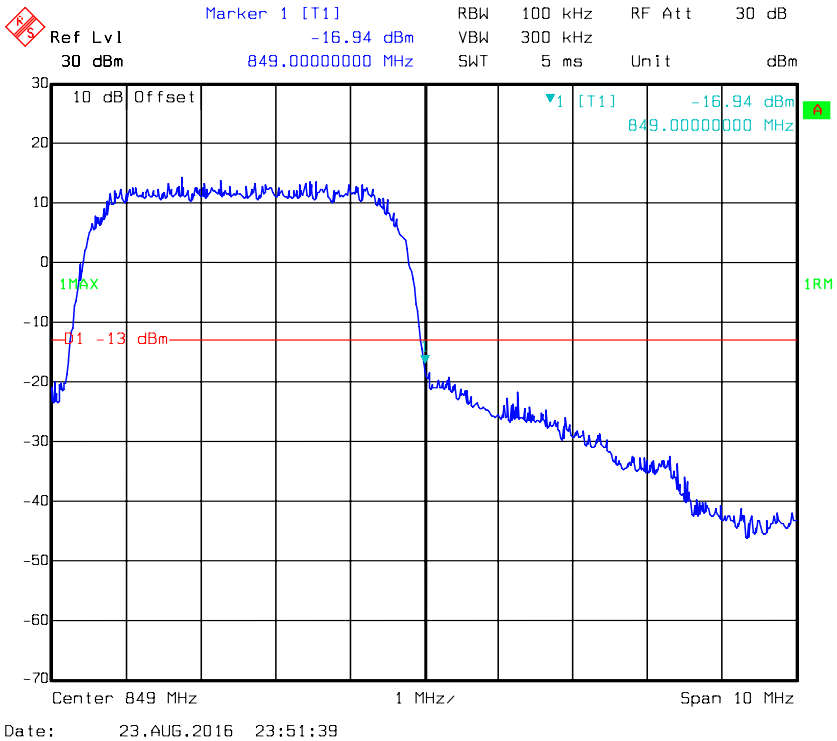
HSDPA Band V, Right Band Edge



HSUPA Band V, Left Band Edge



HSUPA Band V, 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

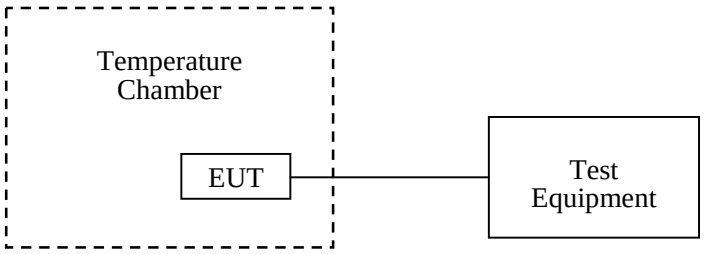
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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 from 85% 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	2015-09-10	2016-09-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2016-05-09	2017-05-09
UNI-T	Multimeter	UT39A	M130199938	2016-04-02	2017-04-02
Pasternack	RF Coaxial Cable	RF-01	/	2016-05-06	2017-05-06

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

Test Data

Environmental Conditions

Temperature:	29.1 °C
Relative Humidity:	42 %
ATM Pressure:	99.8 kPa

The testing was performed by Lion Xiao on 2016-08-23.

Cellular Band (Part 22H)

GMSK, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.8	19	0.023	2.5
-20		17	0.020	
-10		12	0.014	
0		23	0.027	
10		18	0.022	
20		15	0.018	
30		10	0.012	
40		17	0.020	
50		20	0.024	
25	3.6	14	0.017	
25	4.35	18	0.022	

PCS Band (Part 24E)

GMSK, Middle Channel, f_c = 1880.0 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	25	0.013	Compliance
-20		20	0.011	
-10		29	0.015	
0		26	0.014	
10		21	0.011	
20		27	0.014	
30		31	0.016	
40		28	0.015	
50		24	0.013	
25	3.6	22	0.012	
25	4.35	27	0.014	

WCDMA Band V: Re199

Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.8	-20	-0.024	2.5
-20	3.8	-23	-0.027	2.5
-10	3.8	-27	-0.032	2.5
0	3.8	-18	-0.022	2.5
10	3.8	-21	-0.025	2.5
20	3.8	-19	-0.023	2.5
30	3.8	-24	-0.029	2.5
40	3.8	-28	-0.033	2.5
50	3.8	-25	-0.030	2.5
25	3.4	-20	-0.024	2.5
25	4.35	-24	-0.029	2.5

WCDMA Band II: Re199

Middle Channel, f_c = 1880.0 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	-9	-0.005	Compliance
-20	3.8	-7	-0.004	
-10	3.8	-13	-0.007	
0	3.8	-5	-0.003	
10	3.8	-1	-0.001	
20	3.8	-11	-0.006	
30	3.8	-14	-0.007	
40	3.8	-8	-0.004	
50	3.8	-3	-0.002	
25	3.4	-6	-0.003	
25	4.35	-12	-0.006	

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