# FCC PART 22H, PART 24E

# MEASUREMENT AND TEST REPORT

For

## Posh Mobile Limited

1011A, 10/F., Harbour Centre Tower 1, No. 1 Hok Cheung St., Hung Hom, Kowloon, Hong Kong

**FCC ID: 2ABN6X511C**

| **Report Type:** | **Product Type:** |
|---|---|
| Original Report | Kick |

| | |
|---|---|
| **Test Engineer:** | Costa Dong |
| **Report Number:** | RDG160721004-00C |
| **Report Date:** | 2016-08-16 |
| **Reviewed By:** | Jerry Zhang<br>EMC Manager |
| **Test Laboratory:** | Bay Area Compliance Laboratories Corp. (Dongguan)<br>No.69 Pulongcun, Puxinhu Industrial Zone,<br>Tangxia, Dongguan, Guangdong, China<br>Tel: +86-769-86858888<br>Fax: +86-769-86858891<br>www.baclcorp.com.cn |

# TABLE OF CONTENTS

# GENERAL INFORMATION

## Product Description for Equipment under Test (EUT)

The *Posh Mobile Limited*'s product, model number: *X511 (FCC ID: 2ABN6X511C)* (the "EUT") in this report was a *Kick* , which was measured approximately: 14.5 cm (L) x 7.2 cm (W) x 0.8cm (H), rated input voltage: DC3.7V rechargeable Li-ion battery or DC5V charging from adapter.

Adapter information:
PART NO.: U02-5V/1A
MODEL: SC/5WM500100-US
INPUT: 100-240V ~ 50/60Hz 0.4A
OUTPUT: DC 5V, 1000mA

*Note: The series product, model X511and X511C are electrically identical, the difference them is the model name, we selected X511 for fully testing, the details was explained in the attached declaration letter.*

*All measurement and test data in this report was gathered from production sample serial number: 160721004 (Assigned by BACL, Dongguan). The EUT was received on 2016-07-22.*

## Objective

This report is prepared on behalf of *Posh Mobile Limited* in accordance with: Part 2-Subpart J, Part 22-Subpart H, 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: 2ABN6X511C
FCC Part 15C DSS submissions with FCC ID: 2ABN6X511C
FCC Part 15C DTS submissions with FCC ID: 2ABN6X511C

## 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.

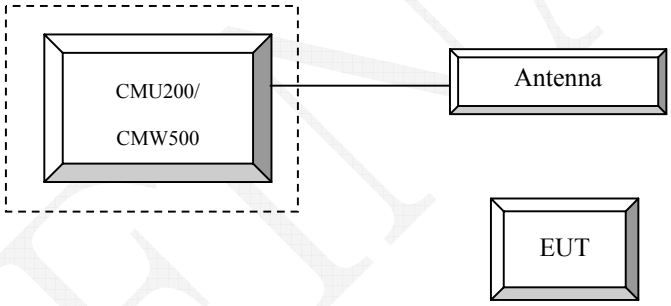
## Equipment Modifications

No modification was made to the EUT.

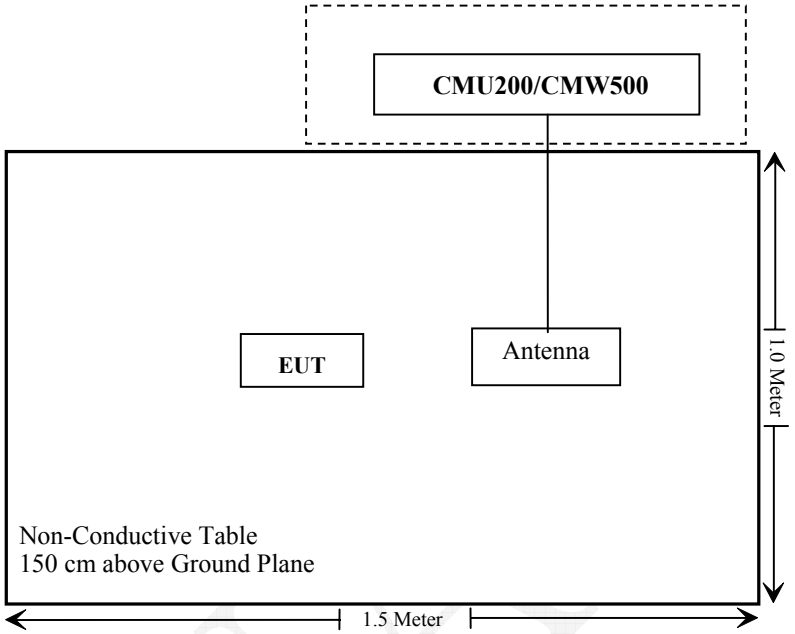
## Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|---|---|---|---|
| R&S | Universal Radio Communication Tester | CMU200 | 109038 |
| R&S | Universal Radio Communication Tester | CMW500 | T-03-EM342 |
| N/A | ANTENNA | N/A | N/A |

## 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;<br>§ 22.913 (a); § 24.232 (c); | RF Output Power | Compliance |
| § 2.1047 | Modulation Characteristics | Not Applicable |
| § 2.1049; § 22.905<br>§ 22.917; § 24.238 | Occupied Bandwidth | Compliance |
| § 2.1051,<br>§ 22.917 (a); § 24.238 (a) | Spurious Emissions at Antenna Terminal | Compliance |
| § 2.1053<br>§ 22.917 (a); § 24.238 (a) | Spurious Radiation Emissions | Compliance |
| § 22.917 (a); § 24.238 (a) | Out of band emission, Band Edge | Compliance |
| § 2.1055<br>§ 22.355; § 24.235 | Frequency stability vs. temperature<br>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: RDG160721004-20.

# 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/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 stabe)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]
Channel Type > Off
P0 > 4 dB
Slot Config > Unchanged (if already set under MS signal)
TCH > choose desired test channel
Hopping > Off
Main Timeslot > 3
Network Coding Scheme > CS4 (GPRS)
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

**WCDMA-Release 99**

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification. The EUT has a nominal maximum output power of 24dBm (+1.7/-3.7).

| | | |
|---|---|---|
| **WCDMA General Settings** | Loopback Mode | Test Mode 1 |
| | Rel99 RMC | 12.2kbps RMC |
| | Power Control Algorithm | Algorithm2 |
| | **βc / βd** | 8/15 |

**WCDMA HSDPA**

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

| | Mode | HSDPA | HSDPA | HSDPA | HSDPA |
|---|---|---|---|---|---|
| | Subset | 1 | 2 | 3 | 4 |
| WCDMA General Settings | Loopback Mode | Test Mode 1 | | | |
| | Rel99 RMC | 12.2kbps RMC | | | |
| | HSDPA FRC | H-Set1 | | | |
| | Power Control Algorithm | Algorithm2 | | | |
| | βc | 2/15 | 12/15 | 15/15 | 15/15 |
| | βd | 15/15 | 15/15 | 8/15 | 4/15 |
| | βd (SF) | 64 | | | |
| | βc/ βd | 2/15 | 12/15 | 15/8 | 15/4 |
| | βhs | 4/15 | 24/15 | 30/15 | 30/15 |
| | MPR(dB) | 0 | 0 | 0.5 | 0.5 |
| HSDPA Specific Settings | DACK | 8 | | | |
| | DNAK | 8 | | | |
| | DCQI | 8 | | | |
| | Ack-Nack repetition factor | 3 | | | |
| | CQI Feedback | 4ms | | | |
| | CQI Repetition Factor | 2 | | | |
| | Ahs=βhs/ βc | 30/15 | | | |

**WCDMA HSUPA**

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

| | Mode | HSUPA | HSUPA | HSUPA | HSUPA | HSUPA |
|---|---|---|---|---|---|---|
| | Subset | 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 |
| | CM(dB) | 1.0 | 3.0 | 2.0 | 3.0 | 1.0 |
| | MPR(dB) | 0 | 2 | 1 | 2 | 0 |
| HSDPA Specific Settings | DACK | 8 | | | | |
| | DNAK | 8 | | | | |
| | DCQI | 8 | | | | |
| | Ack-Nack repetition factor | 3 | | | | |
| | CQI Feedback | 4ms | | | | |
| | CQI Repetition Factor | 2 | | | | |
| | Ahs=βhs/ βc | 30/15 | | | | |
| HSUPA Specific Settings | DE-DPCCH | 6 | 8 | 8 | 5 | 7 |
| | DHARQ | 0 | 0 | 0 | 0 | 0 |
| | AG Index | 20 | 12 | 15 | 17 | 21 |
| | ETFCI | 75 | 67 | 92 | 71 | 81 |
| | Associated Max UL Data Rate kbps | 242.1 | 174.9 | 482.8 | 205.8 | 308.9 |
| | Reference E_FCIs | E-TFCI 11 E<br>E-TFCI PO 4<br>E-TFCI 67<br>E-TFCI PO 18<br>E-TFCI 71<br>E-TFCI PO23<br>E-TFCI 75<br>E-TFCI PO26<br>E-TFCI 81<br>E-TFCI PO 27 | | E-TFCI 11<br>E-TFCI PO4<br>E-TFCI 92<br>E-TFCI PO 18 | E-TFCI 11 E<br>E-TFCI PO 4<br>E-TFCI 67<br>E-TFCI PO 18<br>E-TFCI 71<br>E-TFCI PO23<br>E-TFCI 75<br>E-TFCI PO26<br>E-TFCI 81<br>E-TFCI PO 27 | |

**HSPA+**

The following tests were conducted according to the test requirements in Table C.11.1.4 of 3GPP TS 34.121-1

| Sub-test | $\beta_c$ (Note3) | $\beta_d$ | $\beta_{HS}$ (Note1) | $\beta_{ec}$ | $\beta_{ed}$ (2xSF2) (Note 4) | $\beta_{ed}$ (2xSF4) (Note 4) | CM (dB) (Note 2) | MPR (dB) (Note 2) | AG Index (Note 4) | E-TFCI (Note 5) | E-TFCI (boost) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 0 | 30/15 | 30/15 | $\beta_{ed}$1: 30/15<br>$\beta_{ed}$2: 30/15 | $\beta_{ed}$3: 24/15<br>$\beta_{ed}$4: 24/15 | 3.5 | 2.5 | 14 | 105 | 105 |

Note 1: $\Delta_{ACK}$, $\Delta_{NACK}$ and $\Delta_{CQI}$ = 30/15 with $\beta_{hs}$ = 30/15 * $\beta_c$.
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the $\beta_c$ is set to 1 and $\beta_d$ = 0 by default.
Note 4: $\beta_{ed}$ can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

**DC-HSDPA**

The following tests were conducted according to the test requirements in Table C.8.1.12 of 3GPP TS 34.121-1

**Table C.8.1.12: Fixed Reference Channel H-Set 12**

| Parameter | Unit | Value |
|---|---|---|
| Nominal Avg. Inf. Bit Rate | kbps | 60 |
| Inter-TTI Distance | TTI's | 1 |
| Number of HARQ Processes | Processes | 6 |
| Information Bit Payload ( $N_{INF}$ ) | Bits | 120 |
| Number Code Blocks | Blocks | 1 |
| Binary Channel Bits Per TTI | Bits | 960 |
| Total Available SML's in UE | SML's | 19200 |
| Number of SML's per HARQ Proc. | SML's | 3200 |
| Coding Rate | | 0.15 |
| Number of Physical Channel Codes | Codes | 1 |
| Modulation | | QPSK |

Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.

*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 | 2015-08-03 | 2016-08-02 |
| 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 | DE23437 | 2015-11-23 | 2016-11-22 |
| 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 | E8247C | MY43321350 | 2014-10-16 | 2016-10-15 |
| 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 |
| E-Microwave | Attenuator | EMCA10-5RN | OE01203239 | 2016-05-06 | 2017-05-06 |
| 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:** | 30.5°C |
| **Relative Humidity:** | 50 % |
| **ATM Pressure:** | 100 kPa |

*The testing was performed by Costa Dong on 2016-08-14.*

**Conducted 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 | 32.64 | 32.63 | 32.15 | 30.75 | 29.72 |
| | 190 | 32.66 | 32.57 | 31.98 | 30.58 | 29.37 |
| | 251 | 32.74 | 32.79 | 32.15 | 30.52 | 29.27 |
| PCS | 512 | 29.72 | 29.55 | 28.74 | 26.89 | 25.73 |
| | 661 | 29.66 | 29.76 | 28.86 | 26.98 | 25.82 |
| | 810 | 29.77 | 29.83 | 28.97 | 27.27 | 26.13 |

**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 (QPSK) | 1 | 22.61 | 2.36 | 22.64 | 1.96 | 22.78 | 2.28 |
| HSDPA (QPSK) | 1 | 21.56 | 2.26 | 21.64 | 1.99 | 21.79 | 2.26 |
| | 2 | 21.59 | 2.28 | 21.64 | 1.98 | 21.73 | 2.24 |
| | 3 | 21.55 | 2.26 | 21.63 | 1.98 | 21.80 | 2.31 |
| | 4 | 21.52 | 2.28 | 21.60 | 2.01 | 21.76 | 2.33 |
| HSUPA (QPSK) | 1 | 21.59 | 2.27 | 21.60 | 1.95 | 21.81 | 2.27 |
| | 2 | 21.55 | 2.27 | 21.62 | 1.99 | 21.77 | 2.28 |
| | 3 | 21.55 | 2.24 | 21.67 | 1.94 | 21.78 | 2.28 |
| | 4 | 21.57 | 2.26 | 21.61 | 2.01 | 21.78 | 2.32 |
| | 5 | 21.51 | 2.27 | 21.59 | 1.94 | 21.77 | 2.25 |
| DC-HSDPA (QPSK) | 1 | 21.56 | 2.28 | 21.62 | 1.96 | 21.80 | 2.27 |
| | 2 | 21.55 | 2.28 | 21.60 | 1.93 | 21.75 | 2.29 |
| | 3 | 21.50 | 2.27 | 21.56 | 1.97 | 21.76 | 2.25 |
| | 4 | 21.55 | 2.24 | 21.62 | 1.93 | 21.73 | 2.29 |
| HSPA+ (16QAM) | 1 | 21.53 | 2.26 | 21.60 | 1.96 | 21.76 | 2.30 |

**WCDMA Band V**

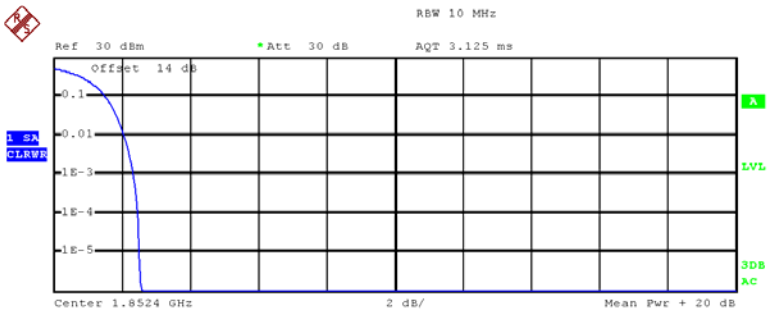
| Mode | 3GPP Sub Test | Average Output Power (dBm) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Low Channel (Ave. Power) | Low Channel (PAR) | Middle Channel (Ave. Power) | Middle Channel (PAR) | High Channel (Ave. Power) | High Channel (PAR) |
| Rel 99 (QPSK) | 1 | 22.98 | 2.88 | 22.75 | 2.72 | 22.75 | 2.92 |
| HSDPA (QPSK) | 1 | 21.88 | 2.80 | 21.69 | 2.70 | 21.72 | 2.90 |
| | 2 | 21.84 | 2.76 | 21.66 | 2.76 | 21.71 | 2.96 |
| | 3 | 21.87 | 2.76 | 21.64 | 2.74 | 21.67 | 2.96 |
| | 4 | 21.82 | 2.80 | 21.62 | 2.74 | 21.63 | 2.89 |
| HSUPA (QPSK) | 1 | 21.88 | 2.76 | 21.66 | 2.76 | 21.71 | 2.88 |
| | 2 | 21.87 | 2.78 | 21.63 | 2.69 | 21.68 | 2.95 |
| | 3 | 21.81 | 2.81 | 21.65 | 2.70 | 21.70 | 2.92 |
| | 4 | 21.85 | 2.79 | 21.63 | 2.76 | 21.67 | 2.93 |
| DC-HSDPA (QPSK) | 5 | 21.83 | 2.80 | 21.63 | 2.77 | 21.68 | 2.95 |
| | 1 | 21.87 | 2.80 | 21.68 | 2.72 | 21.70 | 2.91 |
| | 2 | 21.84 | 2.80 | 21.63 | 2.73 | 21.64 | 2.90 |
| | 3 | 21.85 | 2.77 | 21.59 | 2.75 | 21.63 | 2.87 |
| | 4 | 21.82 | 2.79 | 21.57 | 2.77 | 21.64 | 2.87 |
| HSPA+ (16QAM) | 1 | 21.81 | 2.80 | 21.64 | 2.72 | 21.66 | 2.94 |

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

Peak-to-average ratio (PAR)

**WCDMA Band Ⅱ**

**Low Channel**




Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 21.87 dBm |
| Peak | 24.44 dBm |
| Crest | 2.57 dB |
| 10 % | 1.52 dB |
| 1 % | 2.08 dB |
| .1 % | 2.36 dB |
| .01 % | 2.48 dB |

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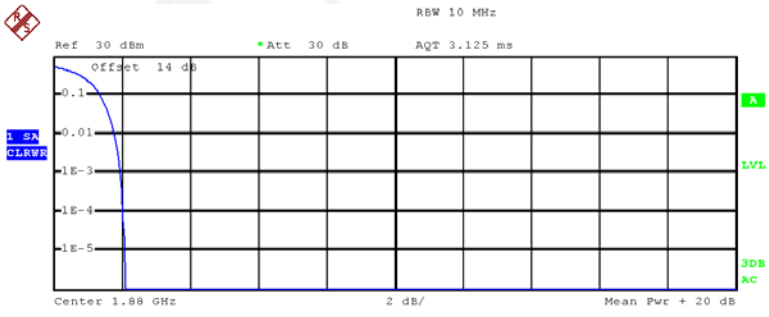
**Middle Channel**




Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 21.55 dBm |
| Peak | 23.66 dBm |
| Crest | 2.11 dB |
| 10 % | 1.40 dB |
| 1 % | 1.80 dB |
| .1 % | 1.96 dB |
| .01 % | 2.04 dB |

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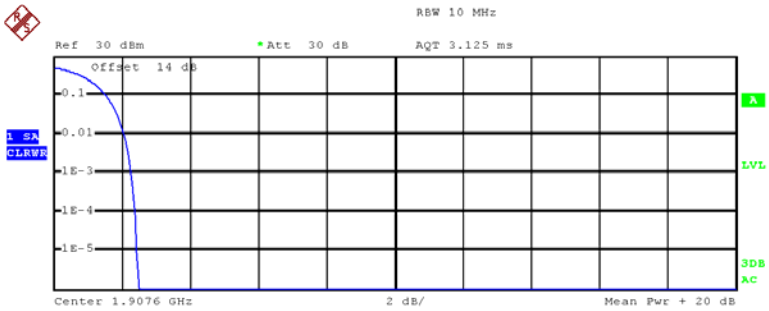
**High Channel**




Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 21.23 dBm |
| Peak | 23.73 dBm |
| Crest | 2.50 dB |
| 10 % | 1.56 dB |
| 1 % | 2.08 dB |
| .1 % | 2.28 dB |
| .01 % | 2.40 dB |

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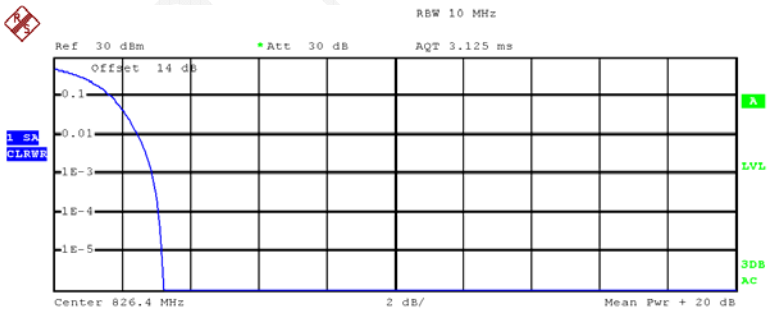
**WCDMA Band Ⅴ**

**Low Channel**




Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.92 dBm |
| Peak | 26.13 dBm |
| Crest | 3.21 dB |
| 10 % | 1.72 dB |
| 1 % | 2.48 dB |
| .1 % | 2.88 dB |
| .01 % | 3.08 dB |

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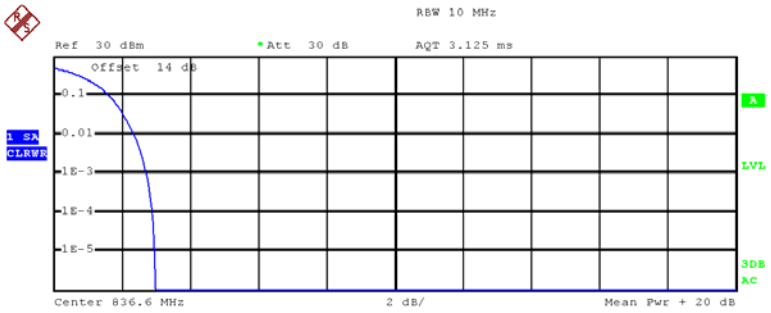
**Middle Channel**




Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 21.97 dBm |
| Peak | 24.93 dBm |
| Crest | 2.96 dB |
| 10 % | 1.64 dB |
| 1 % | 2.36 dB |
| .1 % | 2.72 dB |
| .01 % | 2.92 dB |

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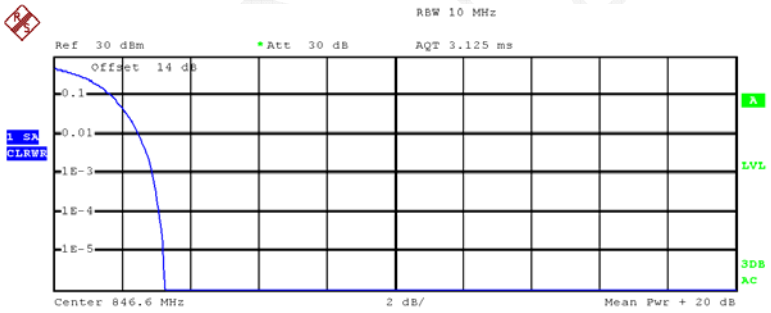
**High Channel**




Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 21.90 dBm |
| Peak | 25.14 dBm |
| Crest | 3.24 dB |
| 10 % | 1.72 dB |
| 1 % | 2.52 dB |
| .1 % | 2.92 dB |
| .01 % | 3.12 dB |

Date: 14.AUG.2016 20:49:49

ERP & EIRP

| 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 | 107.31 | 32.4 | 0.0 | 1 | 31.4 | 38.45 | 7.1 |
| 836.600 | V | 100.66 | 28.9 | 0.0 | 1 | 27.9 | 38.45 | 10.6 |
| **WCDMA Band V Middle Channel** | | | | | | | | |
| 836.600 | H | 96.39 | 21.5 | 0.0 | 1 | 20.5 | 38.45 | 17.95 |
| 836.600 | V | 88.69 | 16.9 | 0.0 | 1 | 15.9 | 38.45 | 22.55 |
| **PCS 1900 Middle Channel** | | | | | | | | |
| 1880.000 | H | 89.95 | 18.4 | 11.7 | 1.4 | 28.7 | 33.0 | 4.3 |
| 1880.000 | V | 81.88 | 10.4 | 11.7 | 1.4 | 20.7 | 33.0 | 12.3 |
| **WCDMA Band II Middle Channel** | | | | | | | | |
| 1880.000 | H | 82.37 | 10.8 | 11.7 | 1.4 | 21.1 | 33.0 | 11.9 |
| 1880.000 | V | 73.92 | 2.5 | 11.7 | 1.4 | 12.8 | 33.0 | 20.2 |

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

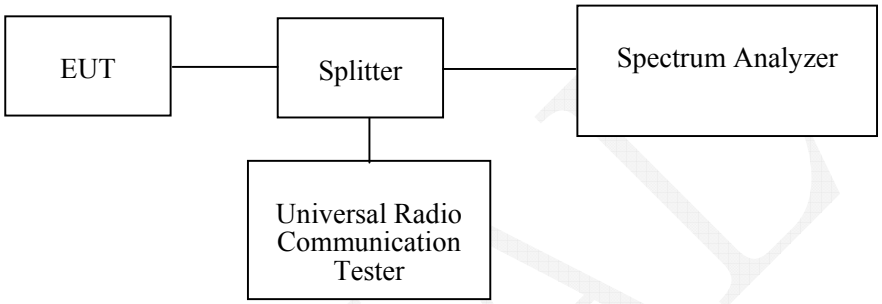
## Applicable Standard

FCC §2.1049, §22.917, §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 | FSEM | DE23437 | 2015-11-23 | 2016-11-22 |
| R&S | Spectrum Analyzer | FSEM | 831259/019 | 2016-07-28 | 2017-07-27 |
| R&S | Universal Radio Communication Tester | CMU200 | 109 038 | 2016-07-28 | 2017-07-27 |
| R&S | Wideband Radio Communication Tester | CMW500 | 1201.002K50-146520-wh | 2015-12-19 | 2016-12-19 |
| 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 | 2016-05-06 | 2017-05-06 |
| 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:** | 30.5 °C |
| **Relative Humidity:** | 50 % |
| **ATM Pressure:** | 100 kPa |

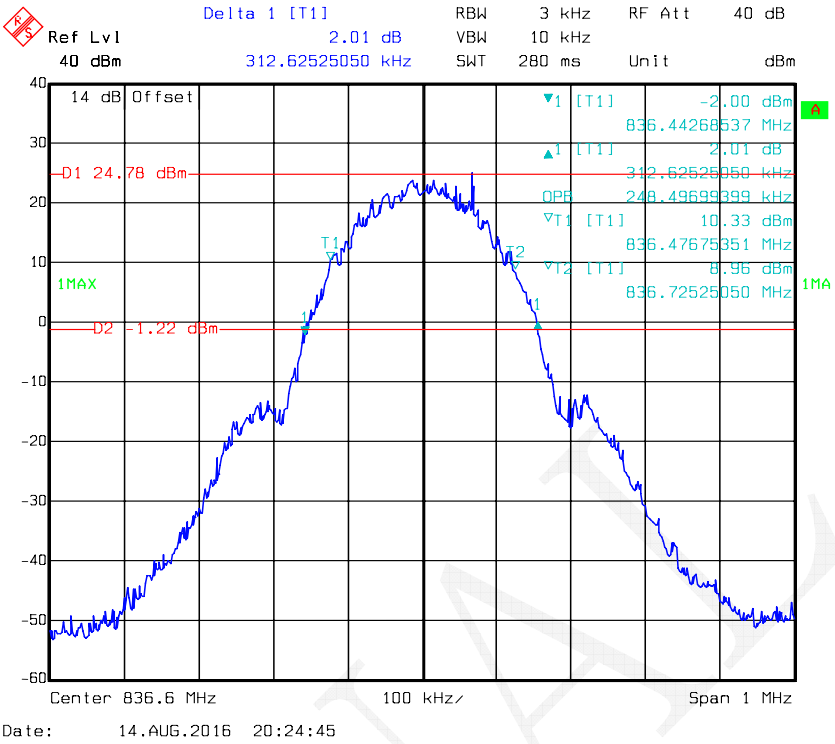
*The testing was performed by Costa Dong on 2016-08-14.*

*Test Mode: Transmitting*

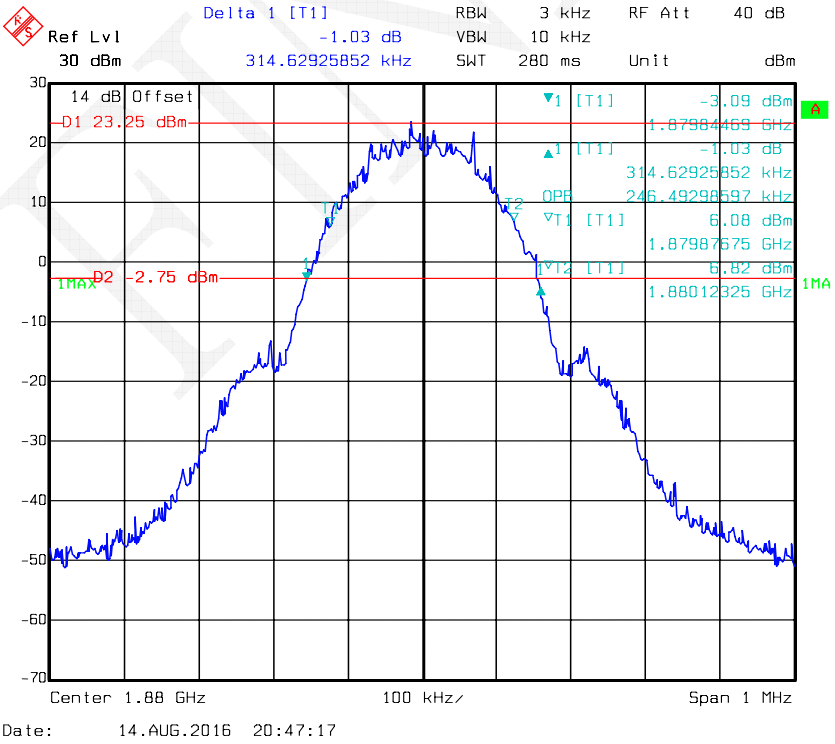
*Test Result: Compliant. Please refer to the following table and plots.*

| Band | Channel No. | Mode | 99% Occupied Bandwidth (MHz) | 26 dB Occupied Bandwidth (MHz) |
|---|---|---|---|---|
| Cellular | 190 | GSM | 0.248 | 0.313 |
| PCS | 661 | PCS | 0.246 | 0.315 |
| WCDMA Band II | 9400 | Rel 99 | 4.228 | 4.870 |
| | 9400 | HSDPA | 4.228 | 4.749 |
| | 9400 | HSUPA | 4.228 | 4.830 |
| WCDMA Band V | 4175 | Rel 99 | 4.168 | 4.729 |
| | 4175 | HSDPA | 4.168 | 4.709 |
| | 4175 | HSUPA | 4.168 | 4.729 |

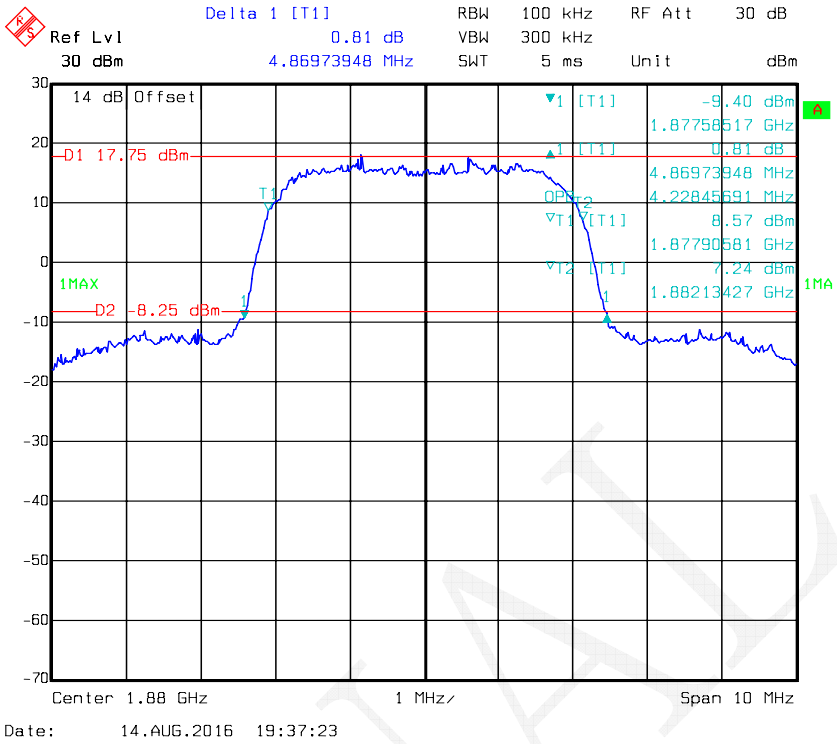
## GMSK 850 Cellular Band



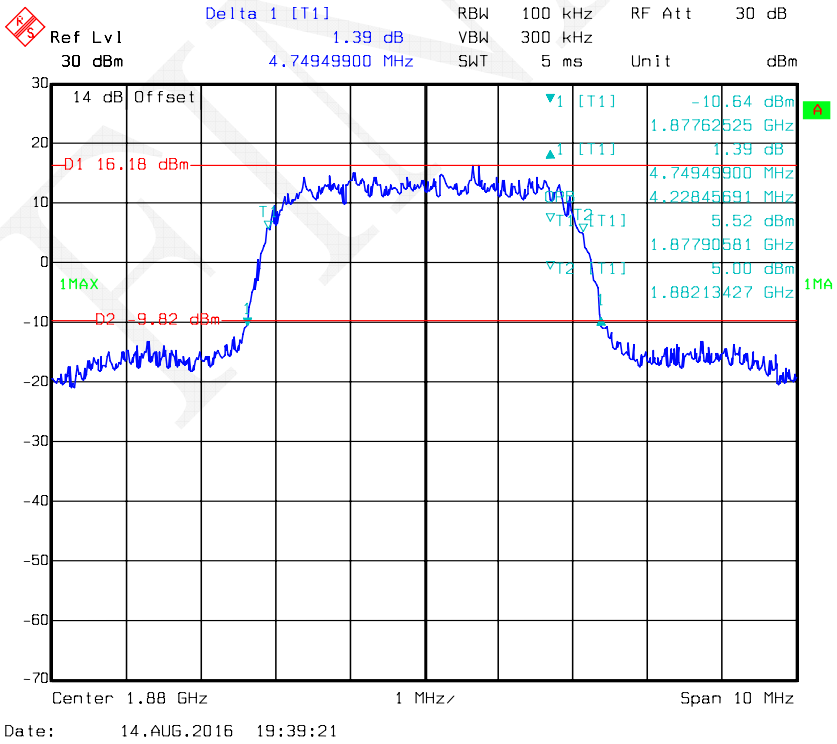

## GMSK PCS Band



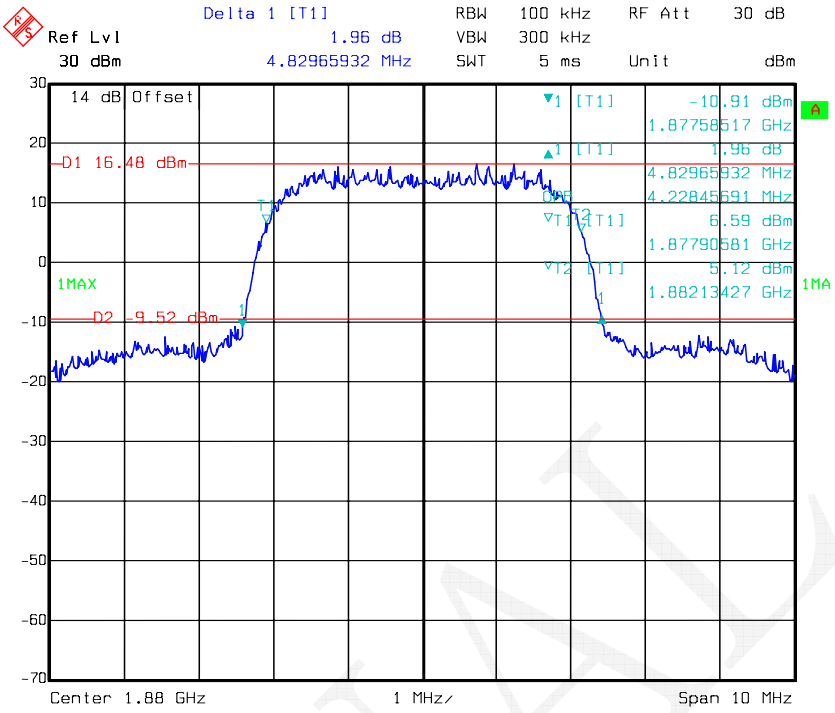
**REL99 Band II**



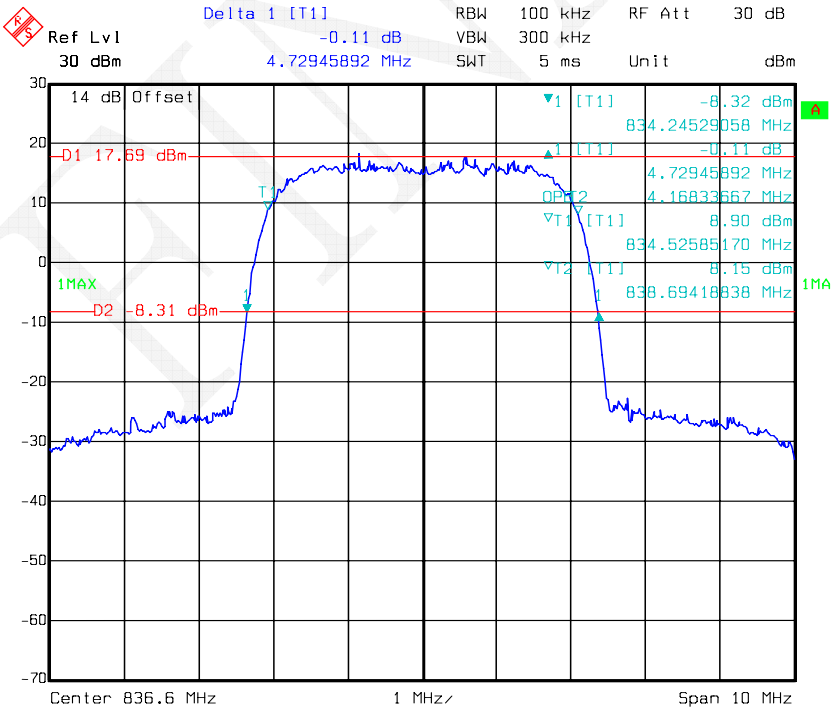

**HSDPA Band II**



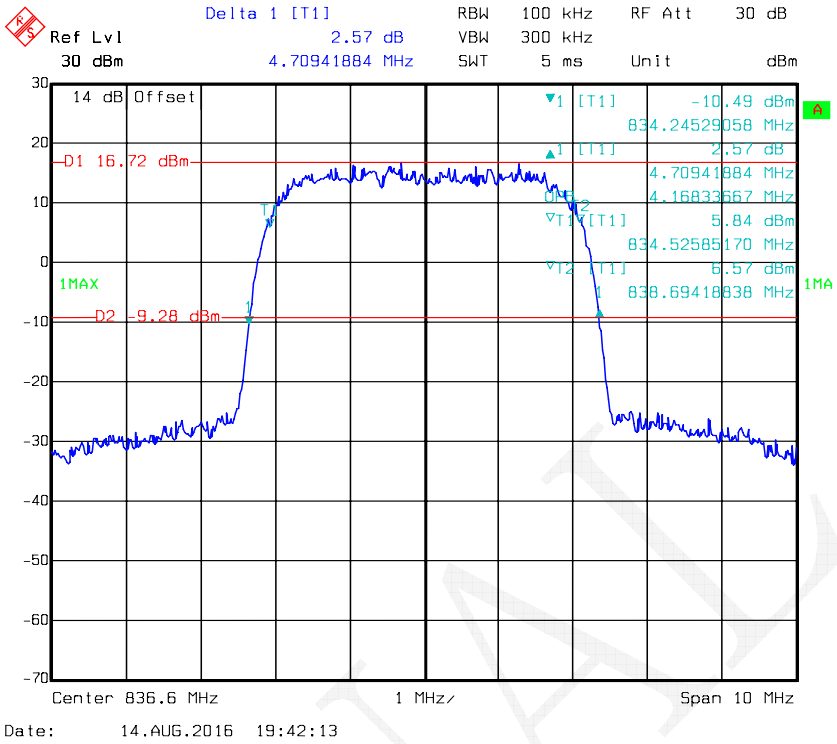
**HSUPA Band II**



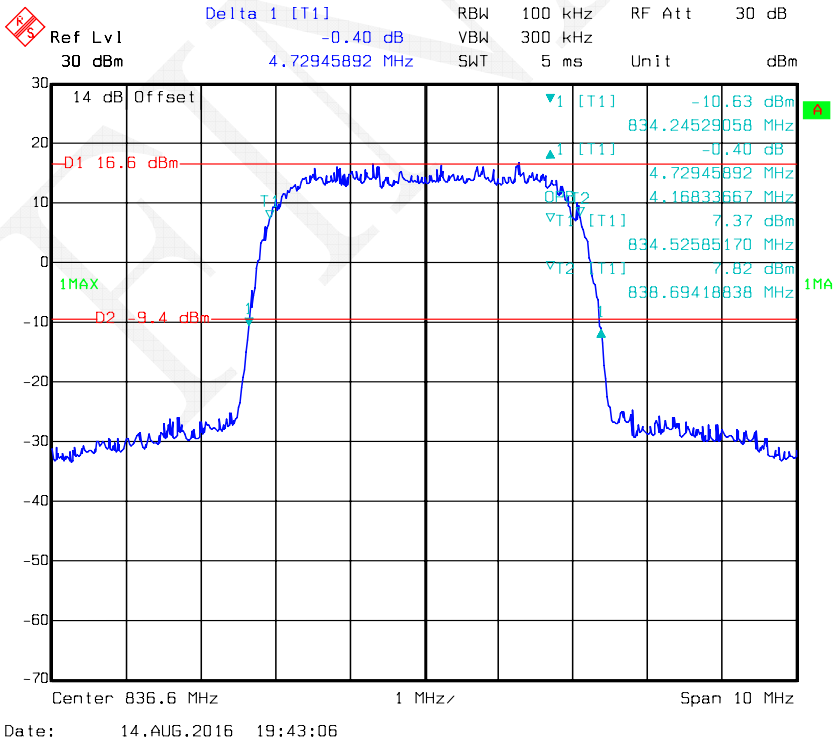

**REL99 Band V**



## HSDPA Band V




## HSUPA Band V



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

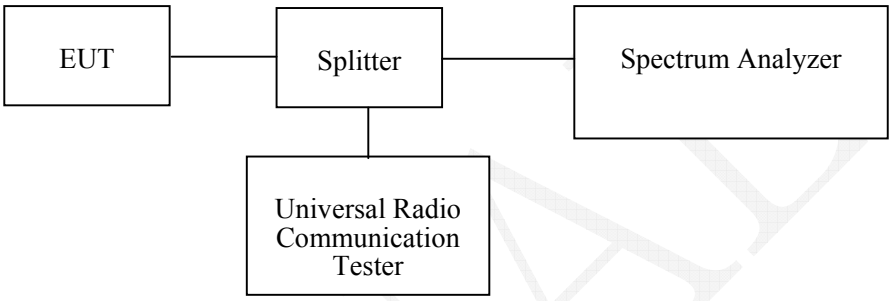
## Applicable Standard

FCC §2.1051, §22.917(a) , §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 | 2016-07-28 | 2017-07-27 |
| R&S | Universal Radio Communication Tester | CMU200 | 109 038 | 2016-07-28 | 2017-07-27 |
| R&S | Wideband Radio Communication Tester | CMW500 | 1201.002K50-146520-wh | 2015-12-19 | 2016-12-19 |
| 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 | 2016-05-06 | 2017-05-06 |
| 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 |
| 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 | 2016-05-06 | 2017-05-06 |
| 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

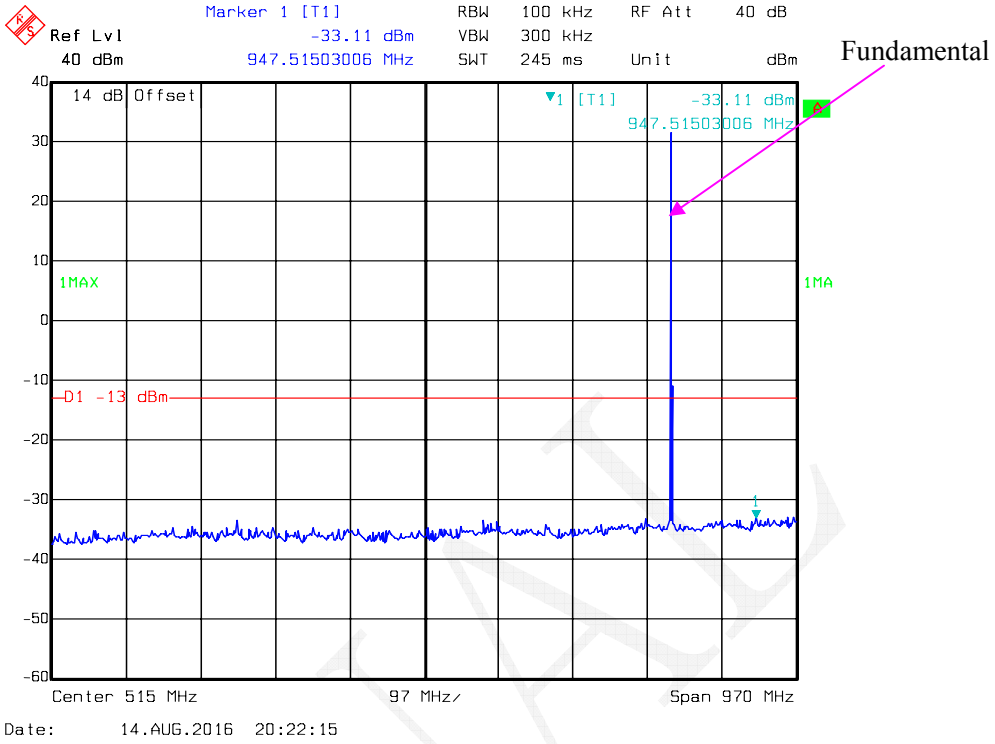
### Environmental Conditions

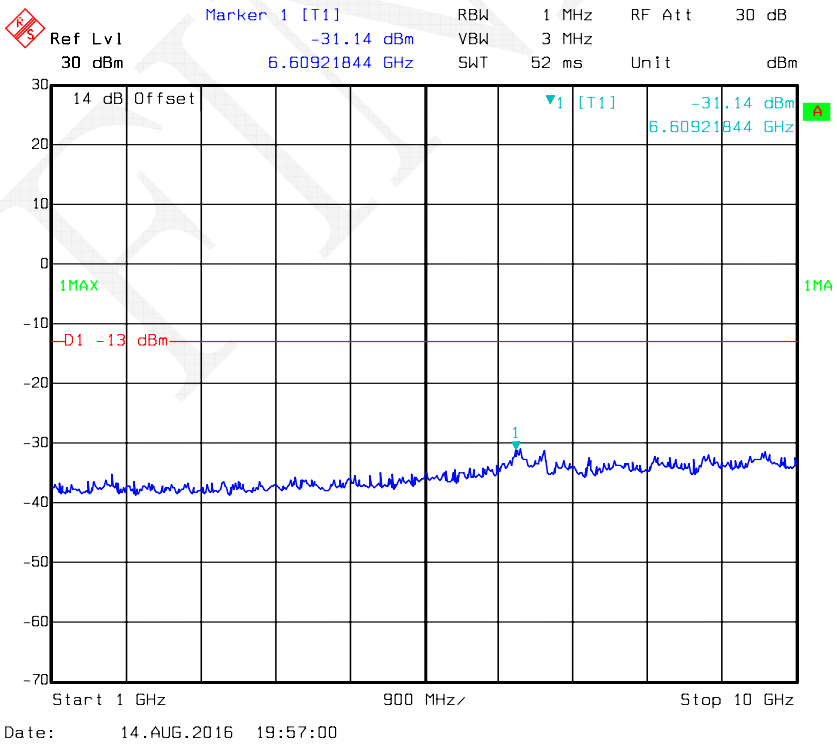
| | |
|---|---|
| **Temperature:** | 30.5 °C |
| **Relative Humidity:** | 50 % |
| **ATM Pressure:** | 100 kPa |

*The testing was performed by Costa Dong on 2016-08-14.*

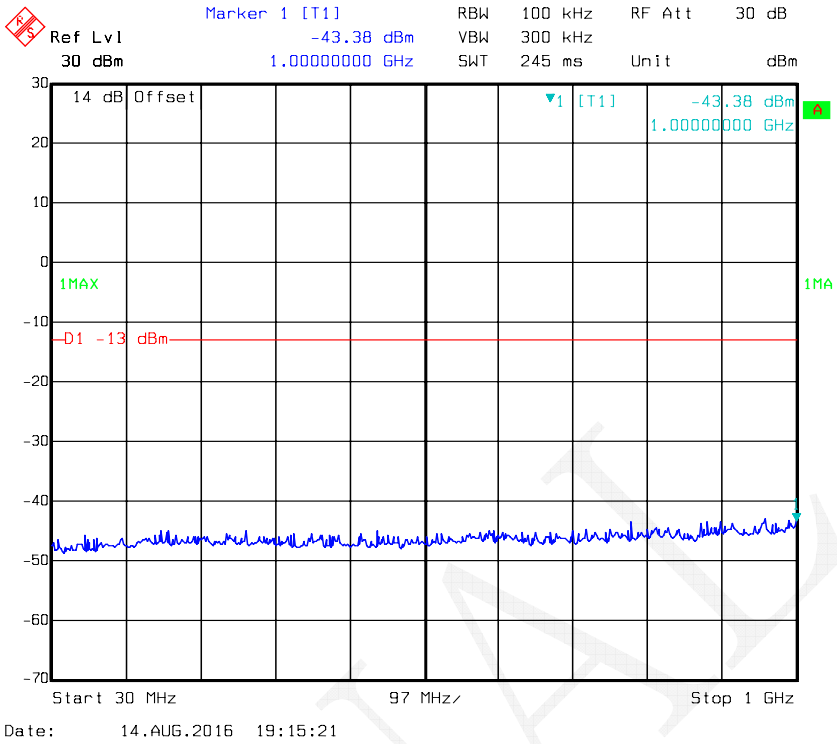
Please refer to the following plots.

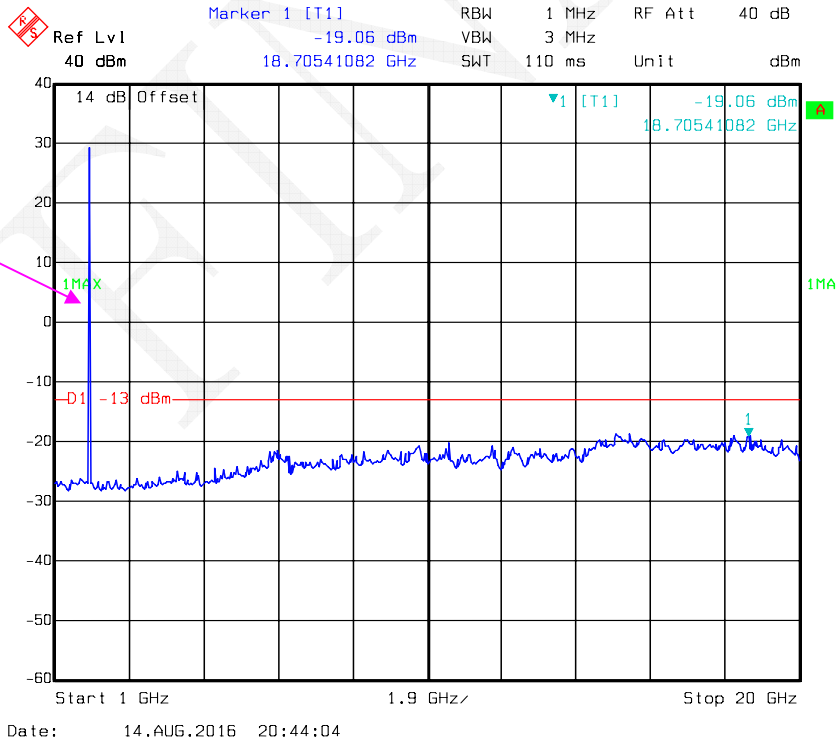
**GSM850_Middle Channel**



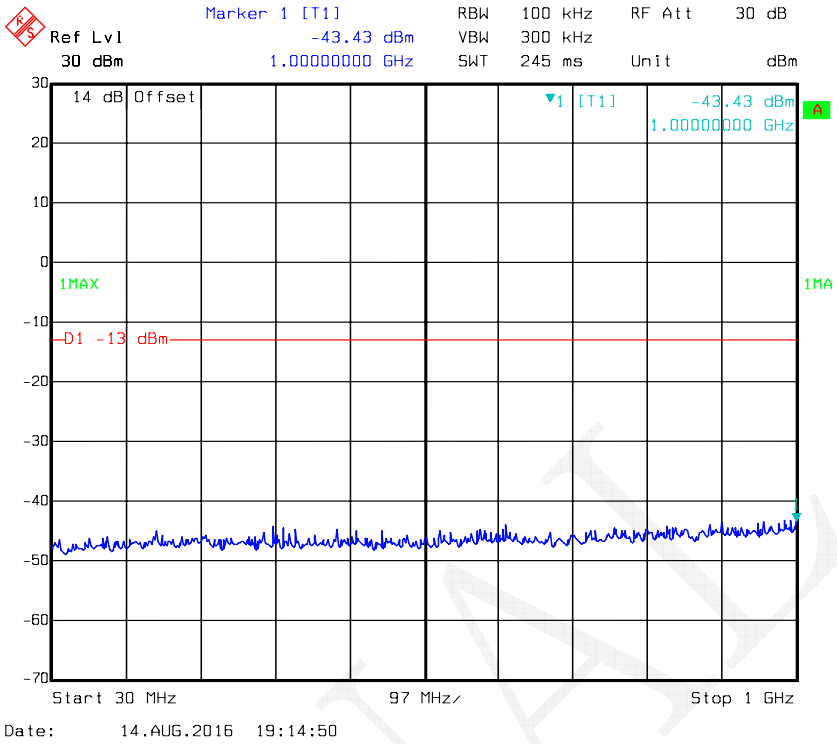
**PCS 1900_ Middle Channel**

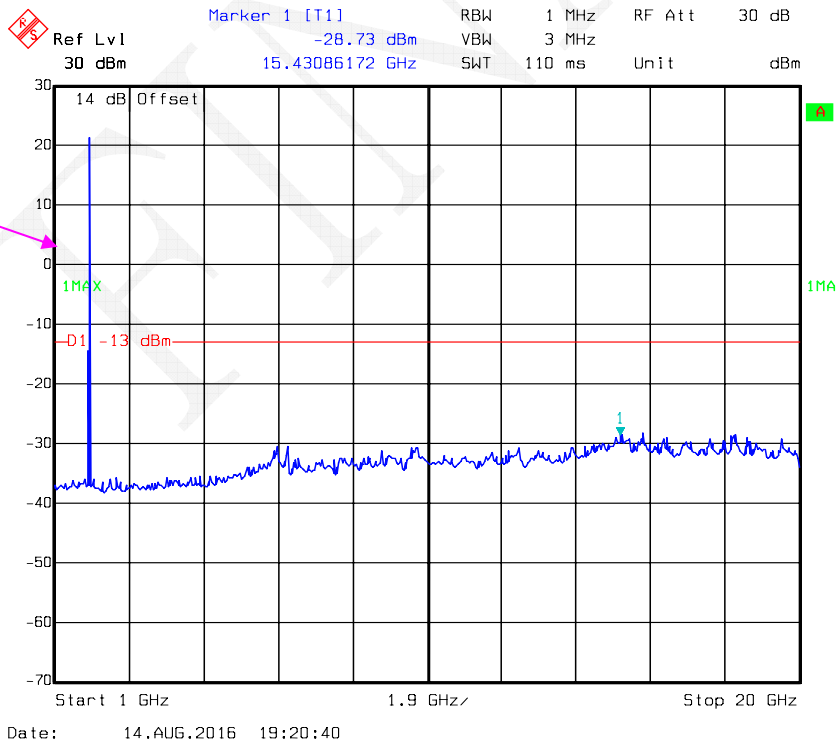



Fundamental

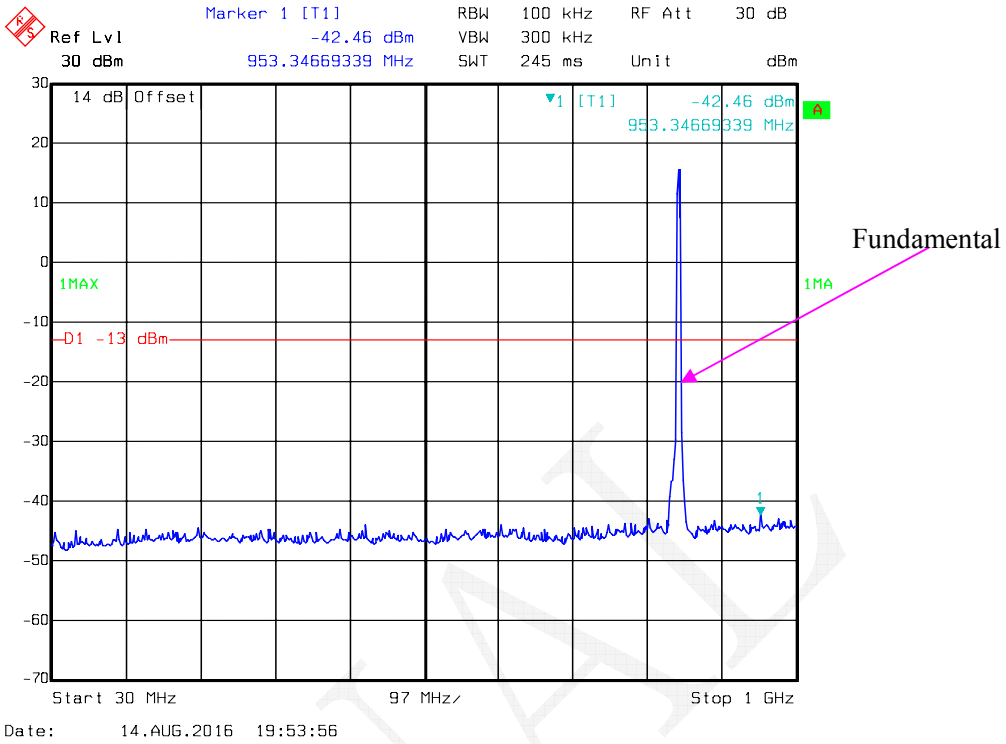
**REL99 Band II_ Middle Channel**

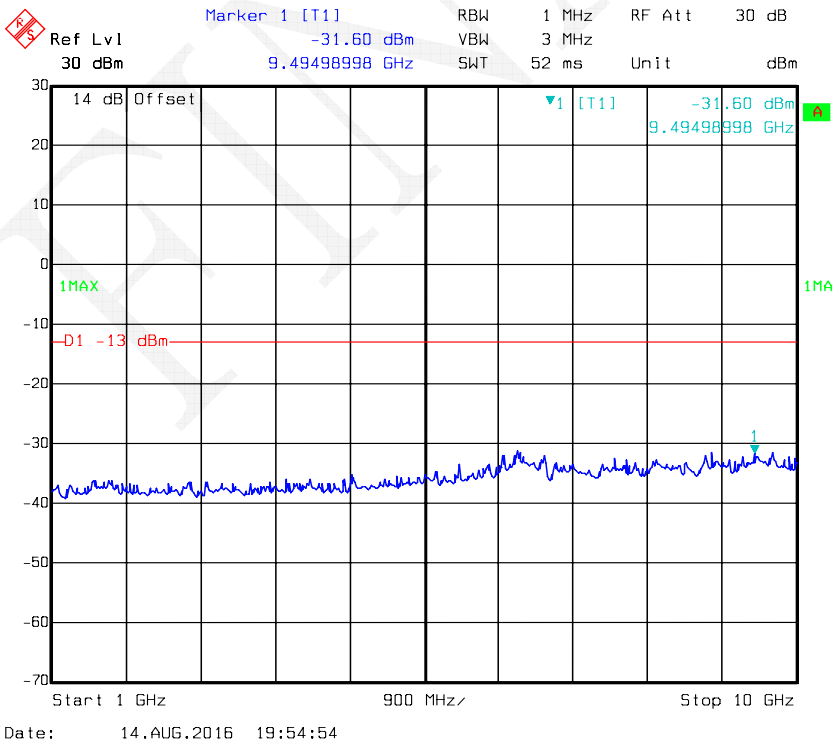



Fundamental

**REL99 Band V_ Middle Channel**



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

## Applicable Standard

FCC § 2.1053, §22.917, § 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 | 2016-08-03 | 2017-08-02 |
| 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 | DE23437 | 2015-11-23 | 2016-11-22 |
| 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 |
| HP | Signal Generator | E4422B | MY41000355 | 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 | 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:** | 30.5 °C |
| **Relative Humidity:** | 50 % |
| **ATM Pressure:** | 100 kPa |

*The testing was performed by Costa Dong on 2016-08-14.*

*EUT Operation Mode: Transmitting*

**Cellular Band**

**30MHz-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 | 55.78 | -45.3 | 10.6 | 1.5 | -36.2 | -13.0 | 23.2 |
| 1673.200 | V | 54.54 | -46.8 | 10.6 | 1.5 | -37.7 | -13.0 | 24.7 |
| 2509.800 | H | 49.55 | -48.5 | 13.1 | 2.8 | -38.2 | -13.0 | 25.2 |
| 2509.800 | V | 46.55 | -50.5 | 13.1 | 2.8 | -40.2 | -13.0 | 27.2 |
| 3346.400 | H | 46.81 | -50.6 | 13.8 | 1.7 | -38.5 | -13.0 | 25.5 |
| 3346.400 | V | 40.35 | -56.8 | 13.8 | 1.7 | -44.7 | -13.0 | 31.7 |
| 134.700 | H | 36.31 | -70.1 | 0.0 | 0.3 | -70.4 | -13.0 | 57.4 |
| 303.500 | V | 34.58 | -70 | 0.0 | 0.5 | -70.5 | -13.0 | 57.5 |
| WCDMA Band V R99,Frequency:836.600 MHz | | | | | | | | |
| 1673.200 | H | 44.52 | -56.6 | 10.6 | 1.5 | -47.5 | -13.0 | 34.5 |
| 1673.200 | V | 40.13 | -61.2 | 10.6 | 1.5 | -52.1 | -13.0 | 39.1 |
| 2509.800 | H | 33.60 | -64.4 | 13.1 | 2.8 | -54.1 | -13.0 | 41.1 |
| 2509.800 | V | 32.01 | -65.1 | 13.1 | 2.8 | -54.8 | -13.0 | 41.8 |
| 134.700 | H | 36.32 | -70 | 0.0 | 0.3 | -70.3 | -13.0 | 57.3 |
| 303.500 | V | 34.01 | -70.5 | 0.0 | 0.5 | -71.0 | -13.0 | 58.0 |

**PCS Band**

**30MHz-20GHz:**

| 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 | 43.68 | -50.6 | 13.8 | 2.9 | -39.7 | -13.0 | 26.7 |
| 3760.000 | V | 42.62 | -50.4 | 13.8 | 2.9 | -39.5 | -13.0 | 26.5 |
| 5640.000 | H | 44.95 | -46.7 | 14.0 | 2.1 | -34.8 | -13.0 | 21.8 |
| 5640.000 | V | 44.61 | -47.1 | 14.0 | 2.1 | -35.2 | -13.0 | 22.2 |
| 7520.000 | H | 45.88 | -41.7 | 13.2 | 2.9 | -31.4 | -13.0 | 18.4 |
| 7520.000 | V | 41.44 | -46 | 13.2 | 2.9 | -35.7 | -13.0 | 22.7 |
| 134.700 | H | 35.88 | -70.5 | 0.0 | 0.3 | -70.8 | -13.0 | 57.8 |
| 303.500 | V | 33.98 | -70.6 | 0.0 | 0.5 | -71.1 | -13.0 | 58.1 |
| WCDMA Band II, R99, Frequency:1880.000 MHz | | | | | | | | |
| 3760.000 | H | 44.81 | -49.5 | 13.8 | 2.9 | -38.6 | -13.0 | 25.6 |
| 3760.000 | V | 40.64 | -52.4 | 13.8 | 2.9 | -41.5 | -13.0 | 28.5 |
| 5640.000 | H | 32.36 | -59.3 | 14.0 | 2.1 | -47.4 | -13.0 | 34.4 |
| 5640.000 | V | 32.17 | -59.5 | 14.0 | 2.1 | -47.6 | -13.0 | 34.6 |
| 134.700 | H | 35.79 | -70.6 | 0.0 | 0.3 | -70.9 | -13.0 | 57.9 |
| 303.500 | V | 34.17 | -70.4 | 0.0 | 0.5 | -70.9 | -13.0 | 57.9 |

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

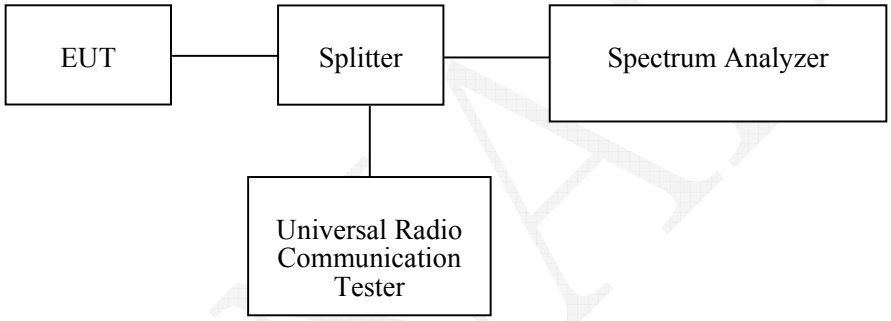
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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 | DE23437 | 2015-11-23 | 2016-11-22 |
| R&S | Universal Radio Communication Tester | CMU200 | 109 038 | 2016-07-28 | 2017-07-27 |
| R&S | Wideband Radio Communication Tester | CMW500 | 1201.002K50-146520-wh | 2015-12-19 | 2016-12-19 |
| 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 | 2016-05-06 | 2017-05-06 |
| 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 |
| 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 | 2016-05-06 | 2017-05-06 |
| 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

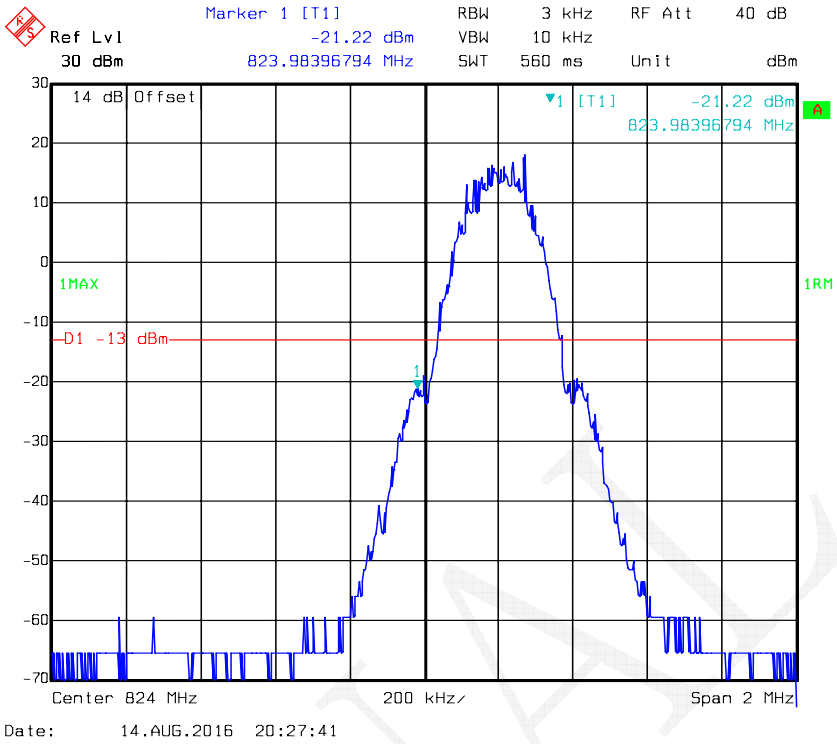
| | |
|---|---|
| **Temperature:** | 30.5 °C |
| **Relative Humidity:** | 50 % |
| **ATM Pressure:** | 100 kPa |

*The testing was performed by Costa Dong on 2016-08-14.*

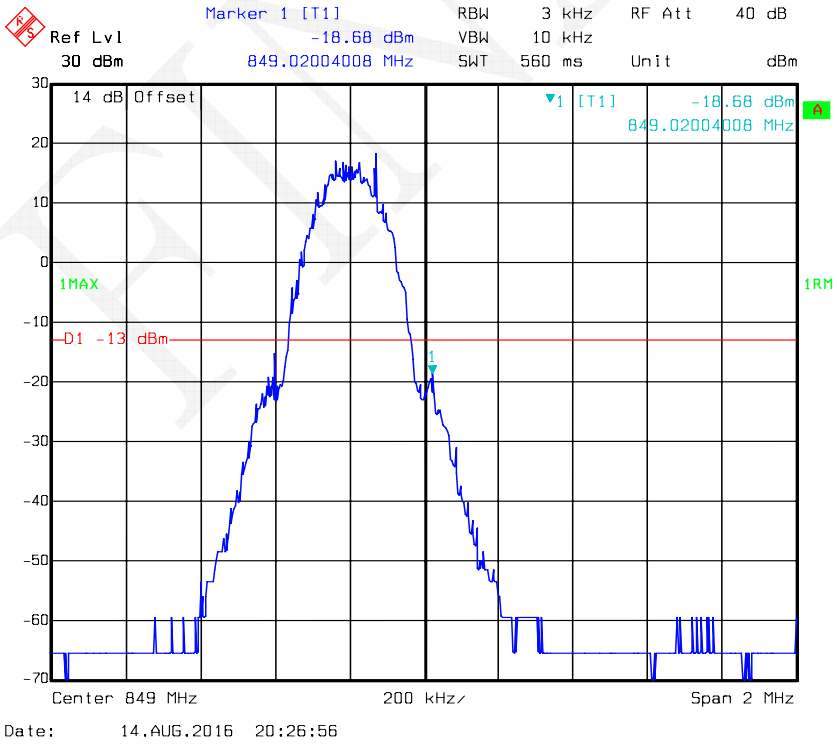
*Test Mode: Transmitting*

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

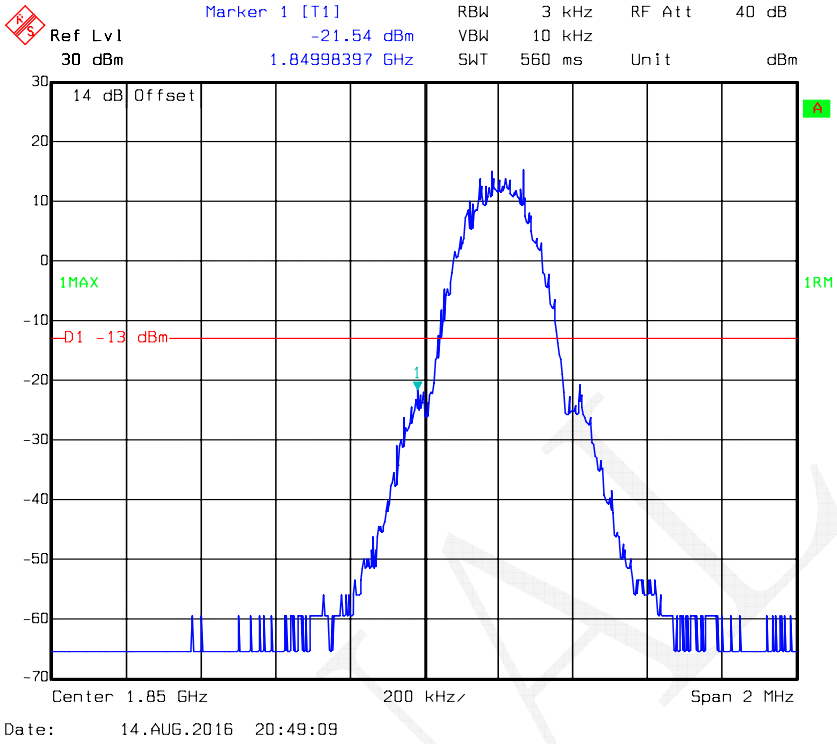
**GSM 850, Left Band Edge**



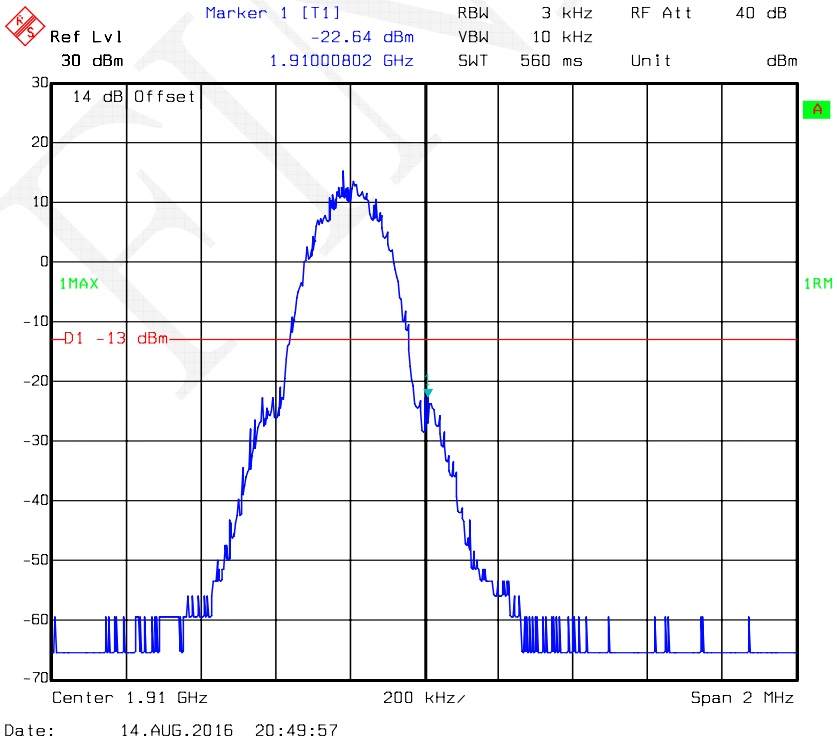

**GSM 850, Right Band Edge**



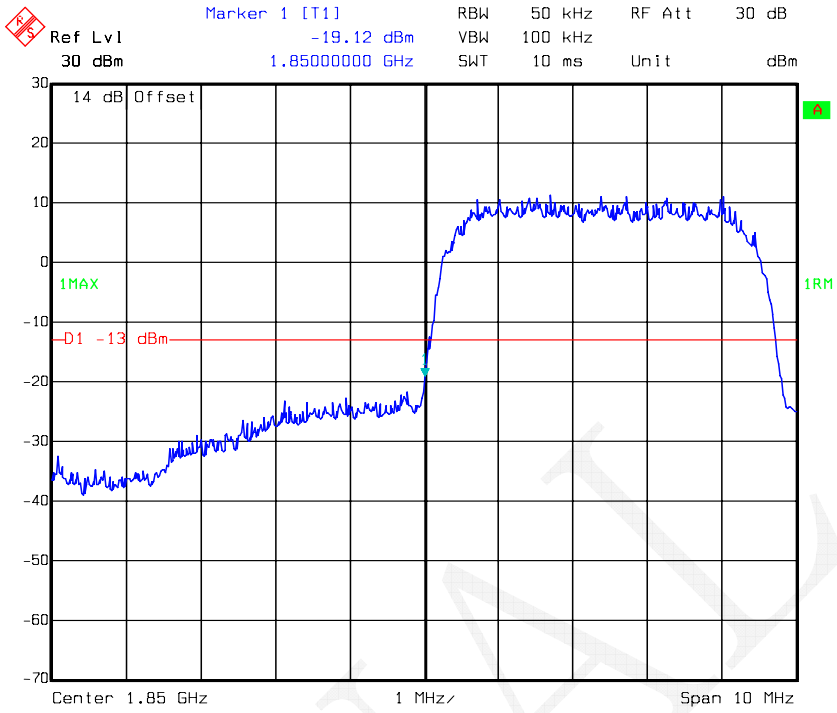
**GSM 1900, Left Band Edge**



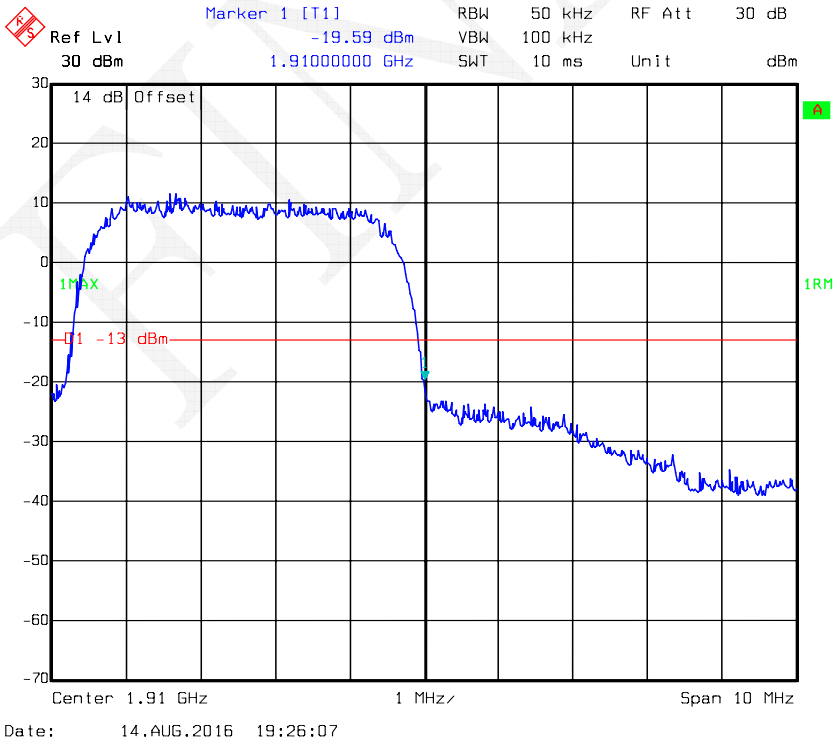

**GSM 1900, Right Band Edge**



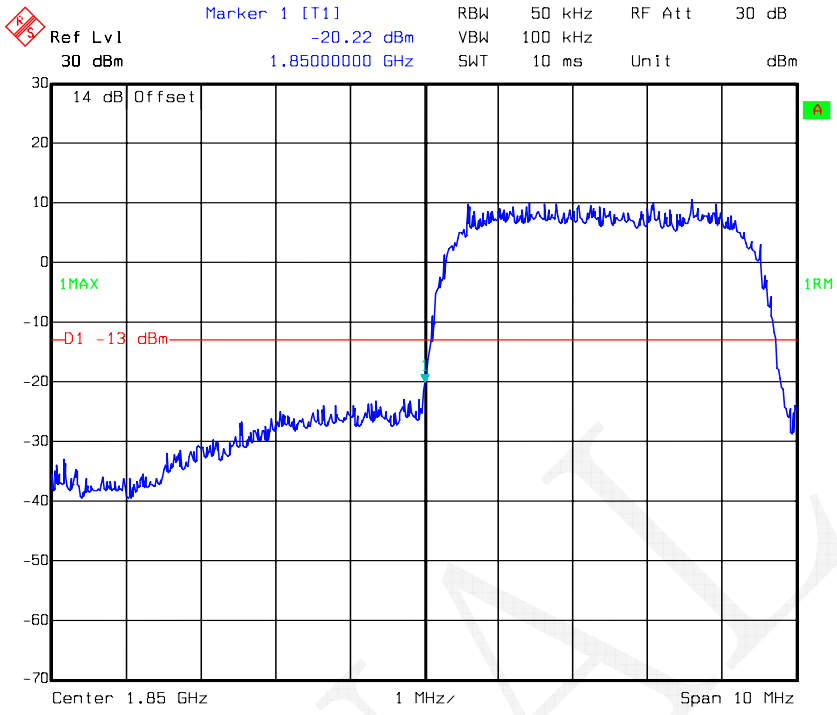
**REL99 Band II, Left Band Edge**



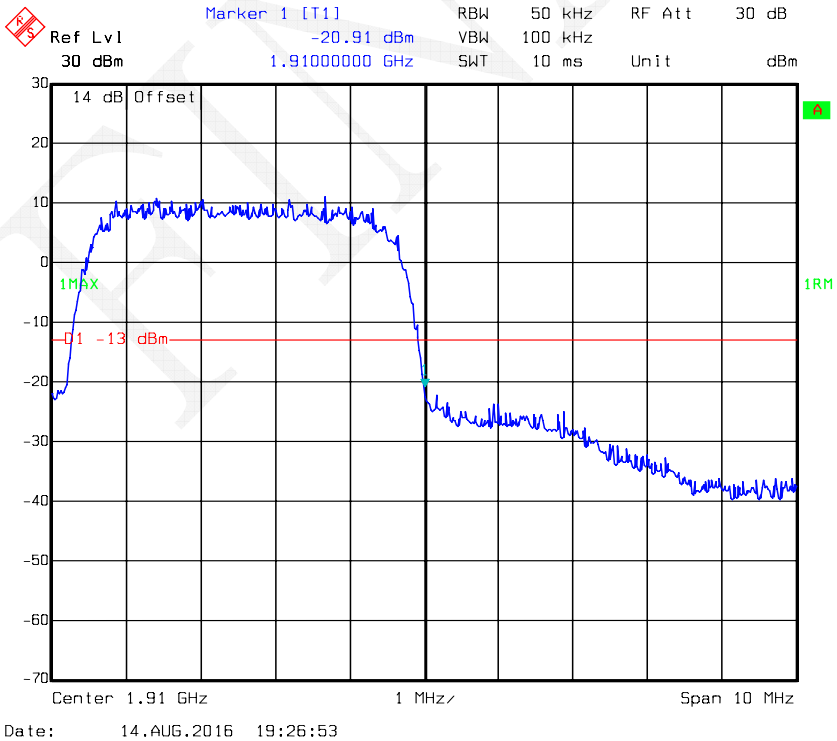

**REL99 Band II, Right Band Edge**



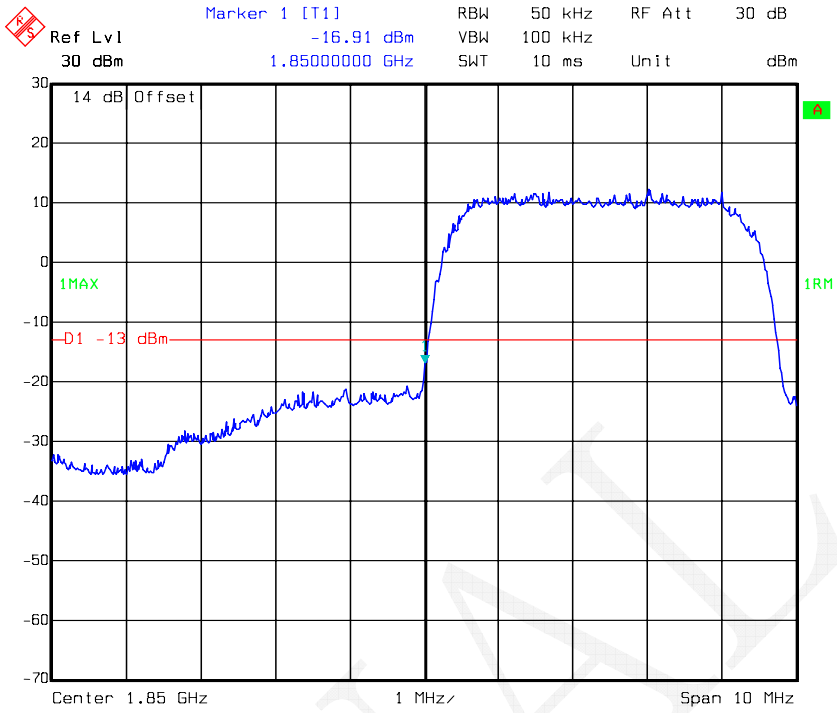
**HSDPA Band II, Left Band Edge**



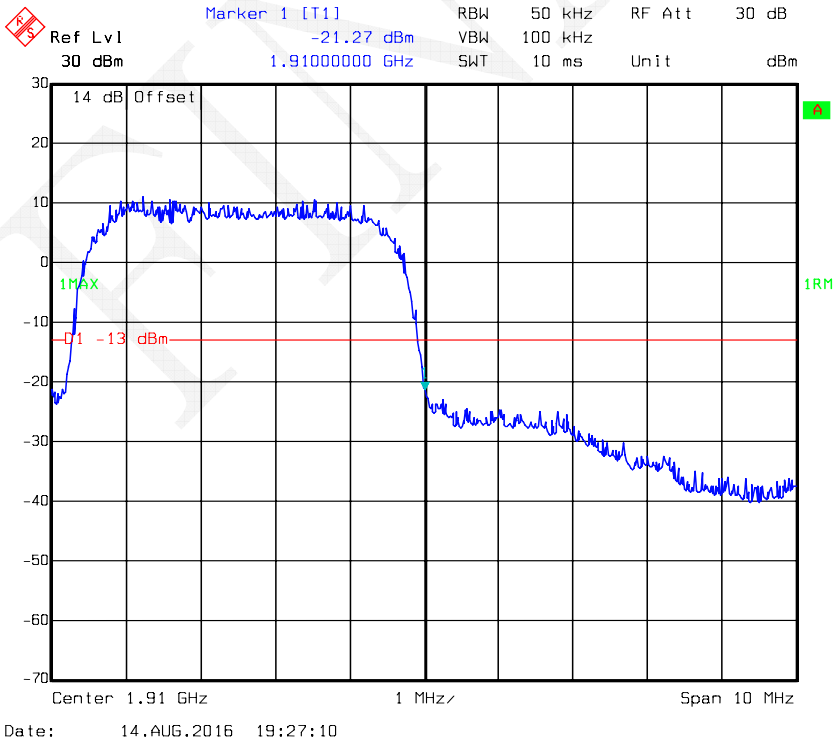

**HSDPA Band II, Right Band Edge**



**HSUPA Band II, Left Band Edge**

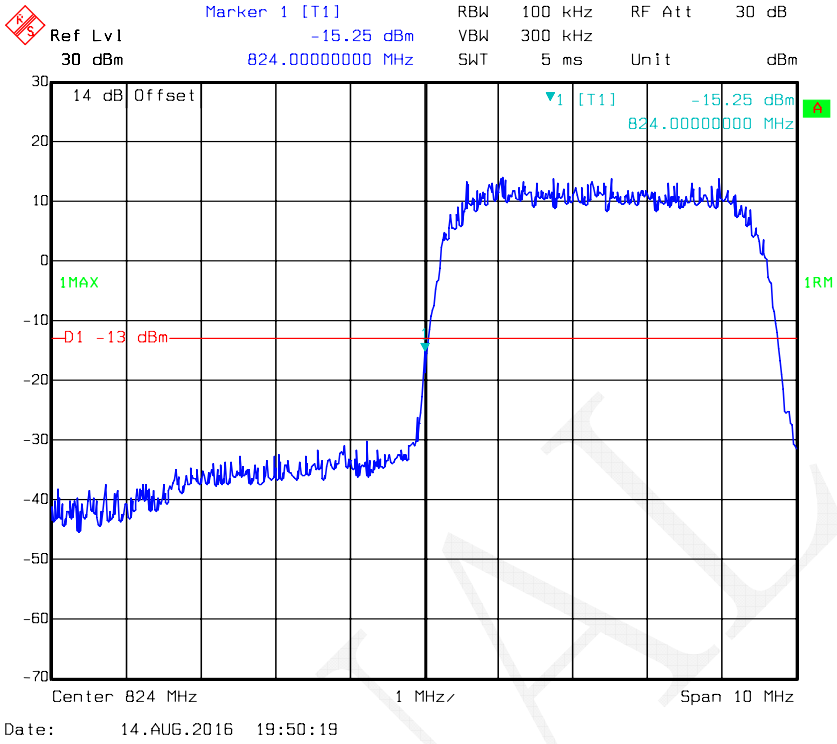



**HSUPA Band II, Right Band Edge**

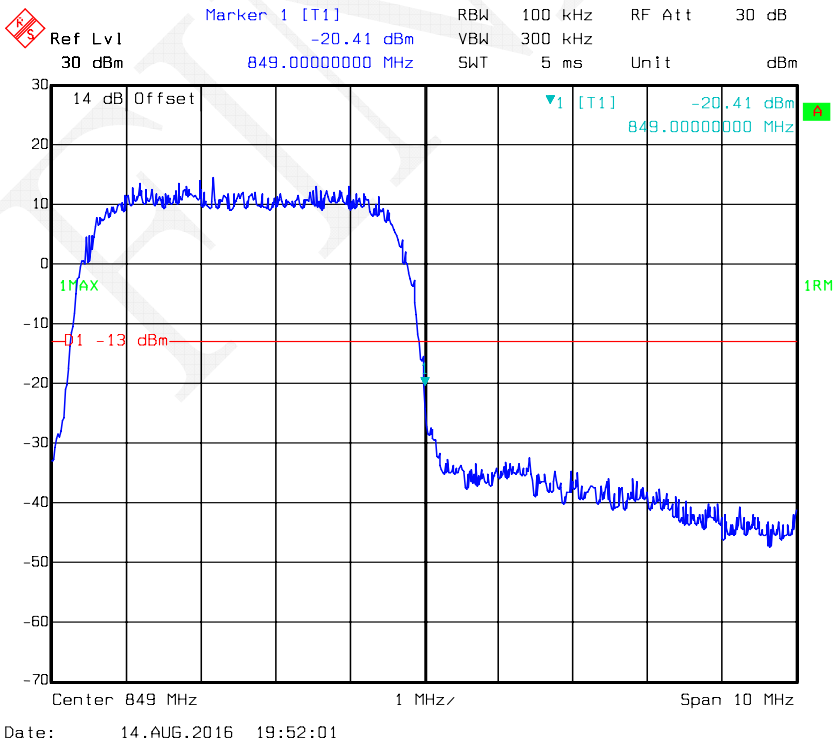


WCDMA Band V

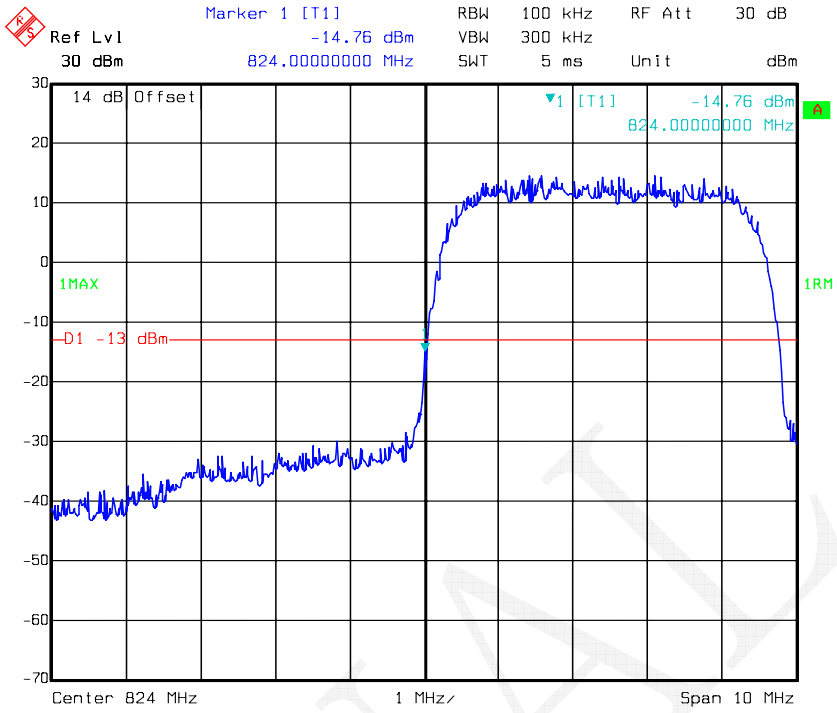
**REL99 Band V, Left Band Edge**



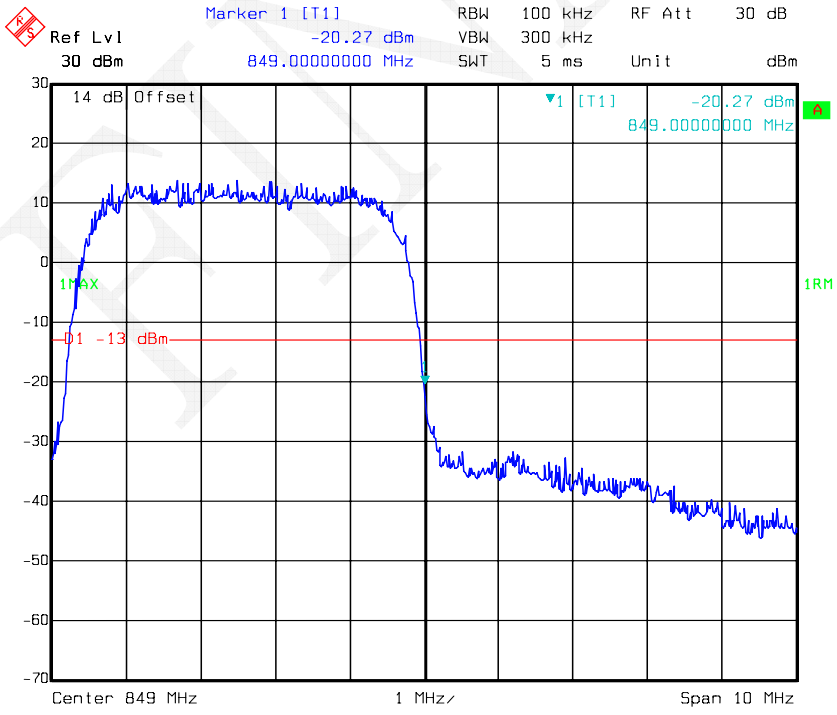

**REL99 Band V Right Band Edge**



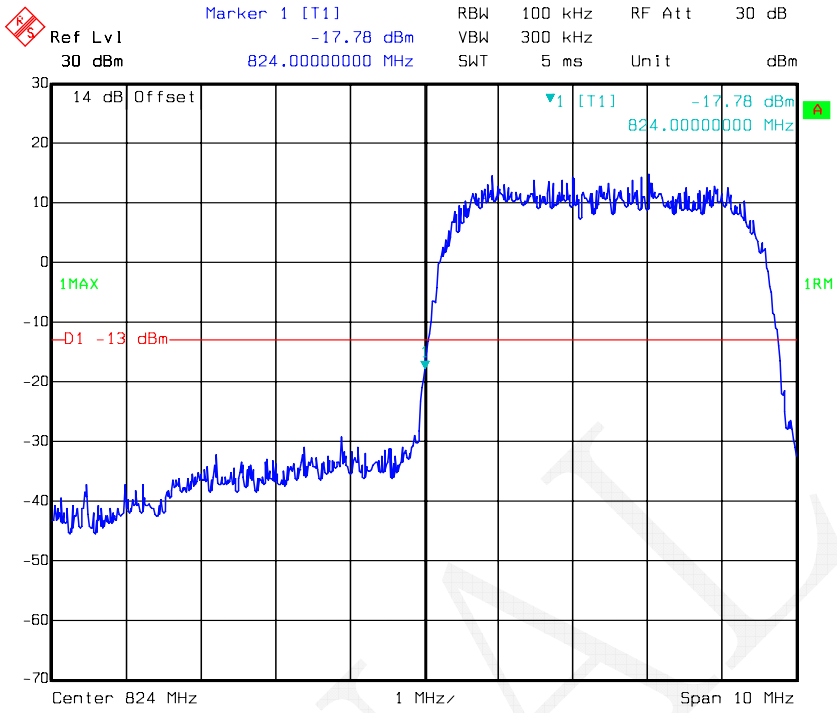
**HSDPA Band V, Left Band Edge**



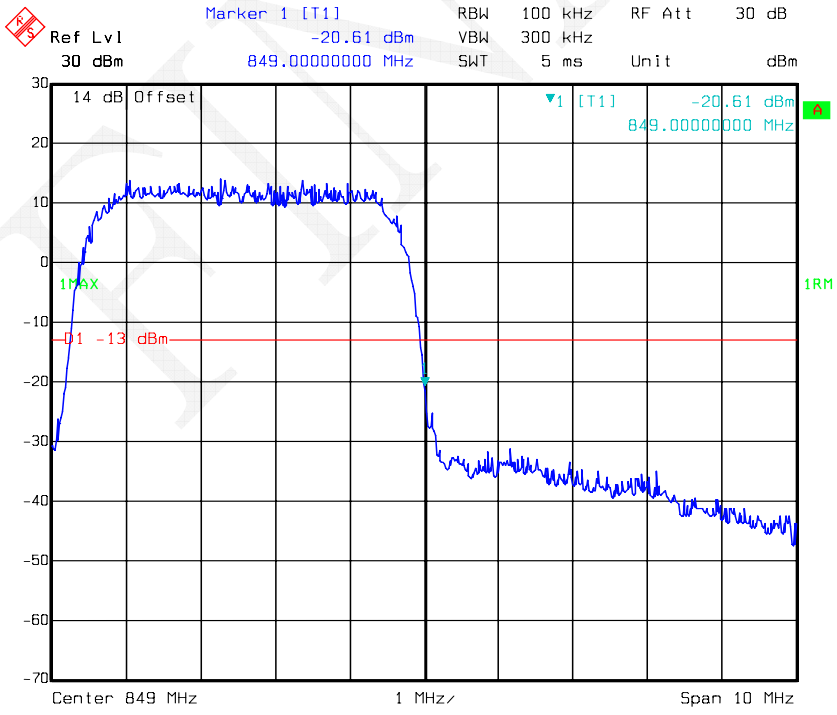

**HSDPA Band V, Right Band Edge**



**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 |

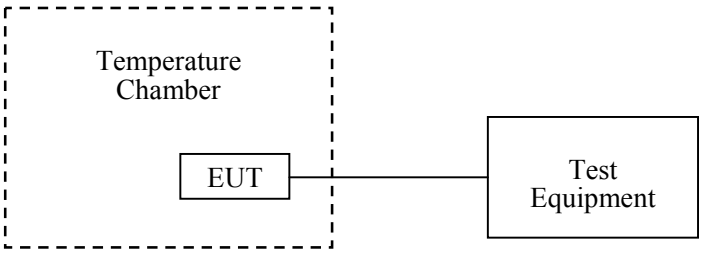
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

## 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 | 201105083-4 | 2015-09-10 | 2016-09-09 |
| R&S | Universal Radio Communication Tester | CMU200 | 109 038 | 2016-07-28 | 2017-07-27 |
| R&S | Wideband Radio Communication Tester | CMW500 | 1201.002K50-146520-wh | 2015-12-19 | 2016-12-19 |
| 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:** | 30.5 °C |
| **Relative Humidity:** | 50 % |
| **ATM Pressure:** | 100 kPa |

*The testing was performed by Costa Dong on 2016-08-14.*

**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 | 3.7 | 16 | 0.019 | 2.5 |
| -20 | 3.7 | 13 | 0.016 | 2.5 |
| -10 | 3.7 | 9 | 0.011 | 2.5 |
| 0 | 3.7 | 5 | 0.006 | 2.5 |
| 10 | 3.7 | 8 | 0.010 | 2.5 |
| 20 | 3.7 | 10 | 0.012 | 2.5 |
| 30 | 3.7 | 12 | 0.014 | 2.5 |
| 40 | 3.7 | 12 | 0.014 | 2.5 |
| 50 | 3.7 | 8 | 0.010 | 2.5 |
| 25 | 3.5 | 7 | 0.008 | 2.5 |
| 25 | 4.2 | 7 | 0.008 | 2.5 |

**PCS Band (Part 24E)**

| GMSK, Middle Channel, $f_c$ = 1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature** | **Voltage** | **Frequency Error** | **Frequency Error** | **Result** |
| **℃** | **$V_{DC}$** | **Hz** | **ppm** | |
| -30 | 3.7 | 17 | 0.009 | 2.5 |
| -20 | 3.7 | 17 | 0.009 | 2.5 |
| -10 | 3.7 | 22 | 0.012 | 2.5 |
| 0 | 3.7 | 19 | 0.010 | 2.5 |
| 10 | 3.7 | 18 | 0.010 | 2.5 |
| 20 | 3.7 | 18 | 0.010 | 2.5 |
| 30 | 3.7 | 18 | 0.010 | 2.5 |
| 40 | 3.7 | 15 | 0.008 | 2.5 |
| 50 | 3.7 | 17 | 0.009 | 2.5 |
| 25 | 3.5 | 20 | 0.011 | 2.5 |
| 25 | 4.2 | 23 | 0.012 | 2.5 |

**WCDMA Band V: Re199**

| Middle Channel, $f_c$ = 836.6 MHz | | | | |
|---|---|---|---|---|
| **Temperature** | **Voltage** | **Frequency Error** | **Frequency Error** | **Limit** |
| **℃** | **$V_{DC}$** | **Hz** | **ppm** | **ppm** |
| -30 | 3.7 | -17 | -0.020 | 2.5 |
| -20 | 3.7 | -11 | -0.013 | 2.5 |
| -10 | 3.7 | -15 | -0.018 | 2.5 |
| 0 | 3.7 | -12 | -0.014 | 2.5 |
| 10 | 3.7 | -6 | -0.007 | 2.5 |
| 20 | 3.7 | -8 | -0.010 | 2.5 |
| 30 | 3.7 | -12 | -0.014 | 2.5 |
| 40 | 3.7 | -9 | -0.011 | 2.5 |
| 50 | 3.7 | -7 | -0.008 | 2.5 |
| 25 | 3.5 | -9 | -0.011 | 2.5 |
| 25 | 4.2 | -13 | -0.016 | 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 | 3.7 | -10 | -0.005 | Pass |
| -20 | 3.7 | -12 | -0.006 | Pass |
| -10 | 3.7 | -12 | -0.006 | Pass |
| 0 | 3.7 | -7 | -0.004 | Pass |
| 10 | 3.7 | -11 | -0.006 | Pass |
| 20 | 3.7 | -10 | -0.005 | Pass |
| 30 | 3.7 | -15 | -0.008 | Pass |
| 40 | 3.7 | -12 | -0.006 | Pass |
| 50 | 3.7 | -9 | -0.005 | Pass |
| 25 | 3.5 | -10 | -0.005 | Pass |
| 25 | 4.2 | -12 | -0.006 | Pass |

**WCDMA Band V: HSUPA**

| Middle Channel, $f_c$ = 836.6 MHz | | | | |
|---|---|---|---|---|
| **Temperature** | **Voltage** | **Frequency Error** | **Frequency Error** | **Limit** |
| **℃** | **$V_{DC}$** | **Hz** | **ppm** | **ppm** |
| -30 | 3.7 | -20 | -0.024 | 2.5 |
| -20 | 3.7 | -16 | -0.019 | 2.5 |
| -10 | 3.7 | -16 | -0.019 | 2.5 |
| 0 | 3.7 | -10 | -0.012 | 2.5 |
| 10 | 3.7 | -7 | -0.008 | 2.5 |
| 20 | 3.7 | -10 | -0.012 | 2.5 |
| 30 | 3.7 | -11 | -0.013 | 2.5 |
| 40 | 3.7 | -11 | -0.013 | 2.5 |
| 50 | 3.7 | -16 | -0.019 | 2.5 |
| 25 | 3.5 | -10 | -0.012 | 2.5 |
| 25 | 4.2 | -9 | -0.011 | 2.5 |

**WCDMA Band II: HSUPA**

| Middle Channel, $f_c$ = 1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature** | **Voltage** | **Frequency Error** | **Frequency Error** | **Result** |
| **℃** | **$V_{DC}$** | **Hz** | **ppm** | |
| -30 | 3.7 | -8 | -0.004 | Pass |
| -20 | 3.7 | -6 | -0.003 | Pass |
| -10 | 3.7 | -8 | -0.004 | Pass |
| 0 | 3.7 | -5 | -0.003 | Pass |
| 10 | 3.7 | -15 | -0.008 | Pass |
| 20 | 3.7 | -9 | -0.005 | Pass |
| 30 | 3.7 | -11 | -0.006 | Pass |
| 40 | 3.7 | -10 | -0.005 | Pass |
| 50 | 3.7 | -17 | -0.009 | Pass |
| 25 | 3.5 | -11 | -0.006 | Pass |
| 25 | 4.2 | -6 | -0.003 | Pass |

**WCDMA Band V: HSDPA**

| Middle Channel, $f_c$ = 836.6 MHz | | | | |
|---|---|---|---|---|
| **Temperature** | **Voltage** | **Frequency Error** | **Frequency Error** | **Limit** |
| **℃** | **$V_{DC}$** | **Hz** | **ppm** | **ppm** |
| -30 | 3.7 | -15 | -0.018 | 2.5 |
| -20 | 3.7 | -12 | -0.014 | 2.5 |
| -10 | 3.7 | -13 | -0.016 | 2.5 |
| 0 | 3.7 | -12 | -0.014 | 2.5 |
| 10 | 3.7 | -12 | -0.014 | 2.5 |
| 20 | 3.7 | -7 | -0.008 | 2.5 |
| 30 | 3.7 | -7 | -0.008 | 2.5 |
| 40 | 3.7 | -9 | -0.011 | 2.5 |
| 50 | 3.7 | -13 | -0.016 | 2.5 |
| 25 | 3.5 | -8 | -0.010 | 2.5 |
| 25 | 4.2 | -7 | -0.008 | 2.5 |

**WCDMA Band II: HSDPA**

| Middle Channel, $f_c$ = 1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature** | **Voltage** | **Frequency Error** | **Frequency Error** | **Result** |
| **℃** | **$V_{DC}$** | **Hz** | **ppm** | |
| -30 | 3.7 | -7 | -0.004 | Pass |
| -20 | 3.7 | -9 | -0.005 | Pass |
| -10 | 3.7 | -5 | -0.003 | Pass |
| 0 | 3.7 | -14 | -0.007 | Pass |
| 10 | 3.7 | -11 | -0.006 | Pass |
| 20 | 3.7 | -17 | -0.009 | Pass |
| 30 | 3.7 | -15 | -0.008 | Pass |
| 40 | 3.7 | -14 | -0.007 | Pass |
| 50 | 3.7 | -14 | -0.007 | Pass |
| 25 | 3.5 | -8 | -0.004 | Pass |
| 25 | 4.2 | -7 | -0.004 | Pass |

Note: The fundamental emissions stay within the authorized bands of operation based on the frequency deviation measured is small.

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