

# TEST REPORT

Report No.: **BCTC2205535730-1E**

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Applicant: **UMOVAL IoT Technology Co., Ltd**

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Product Name: **3G/4G LTE Solar Security PTZ Cameras**

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Model/Type  
reference: **UM-Q6-4G**

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Tested Date: **2022-05-26 to 2022-06-30**

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Issued Date: **2022-06-30**

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**Shenzhen BCTC Testing Co., Ltd.**



## FCC ID: 2A7FT-UM-Q6-4G

Product Name: 3G/4G LTE Solar Security PTZ Cameras

Trademark: **UMOVAL**

Model/Type reference: UM-Q6-4G  
UM-Q6-4G-BK, UM-Q6-4G-WH, UM-Q7-4G-BK, UM-Q7-4G-WH,  
UM-Q8-4G-BK, UM-Q8-4G-WH, UM-Q9-4G-BK, UM-Q9-4G-WH,  
UM-Q10-4G-BK, UM-Q10-4G-WH, UM-Q11-4G-BK, UM-Q11-4G-WH,  
UM-Q12-4G-BK, UM-Q12-4G-WH

Prepared For: UMOVAL IoT Technology Co., Ltd

Address: 1502-H, Bldg 3A, Tian'an Cyber Park, 449 North Huangge Road, Longgang District, Shenzhen, China 518172

Manufacturer: UMOVAL Technology (Shenzhen) Co., Ltd

Address: 1502H, Bldg 3A, Tian'an Cyber Park, 449 North Huangge Road, Longgang District, Shenzhen, Guangdong, China 518172

Prepared By: Shenzhen BCTC Testing Co., Ltd.

Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Sample Received Date: 2022-05-26

Sample tested Date: 2022-05-26 to 2022-06-30

Issue Date: 2022-06-30

Report No.: BCTC2205535730-1E

Test Standards: FCC CFR Title 47 Part 2  
FCC CFR Title 47 Part22 Subpart H  
FCC CFR Title 47 Part24 Subpart E  
FCC CFR Title 47 Part27 Subpart L  
ANSI/ TIA/ EIA-603-D-2010  
FCC KDB 971168 D01 Power Meas. License Digital Systems v02v02

Test Results: PASS

Remark: This is WCDMA radio test report for 3G in US full bands.

Tested by:



Brave Zeng/ Project Handler

Approved by:



Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

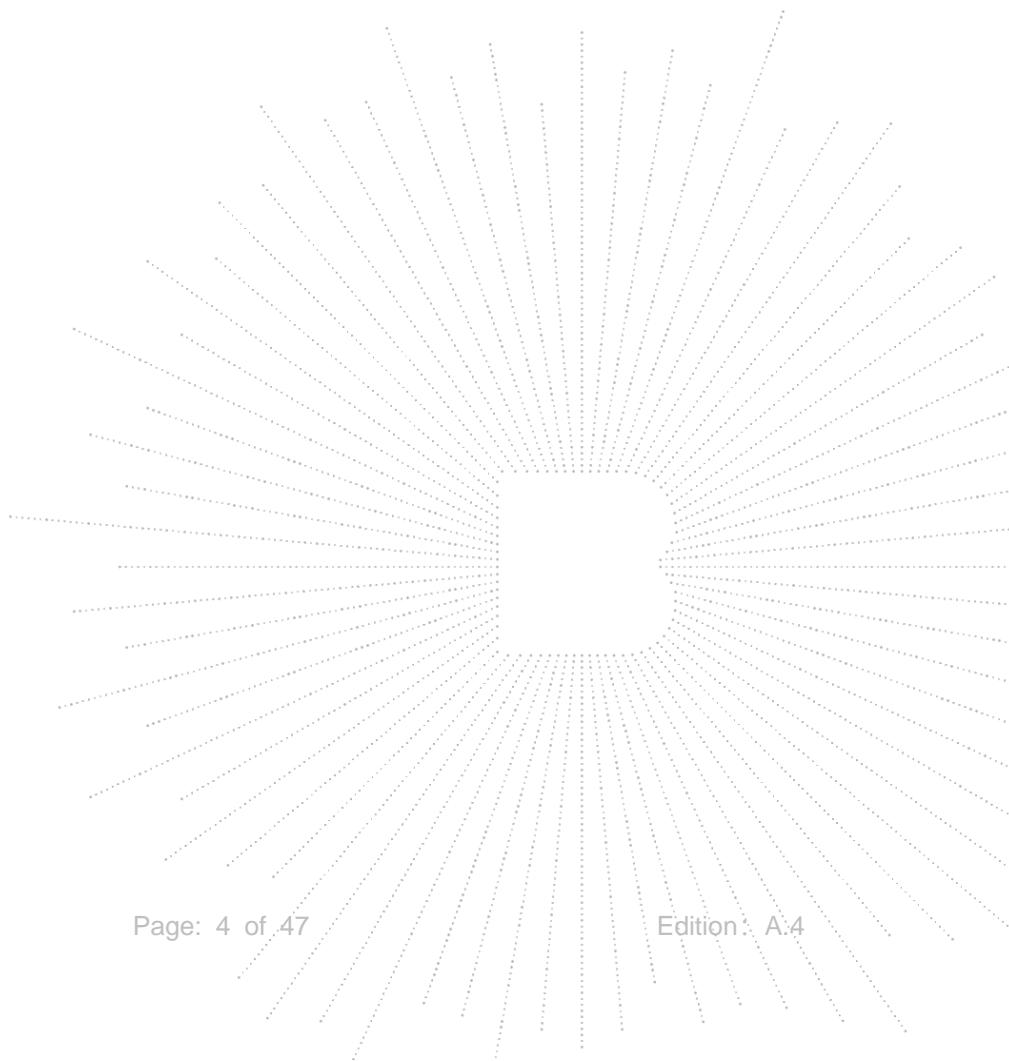
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(Note: N/A Means Not Applicable)

## 1. Version

| Report No.        | Issue Date | Description | Approved |
|-------------------|------------|-------------|----------|
| BCTC2205535730-1E | 2022-06-30 | Original    | Valid    |
|                   |            |             |          |



## 2. Test Summary

The Product has been tested according to the following specifications:

| No. | Test Parameter                            | Clause No.                                       | Results |
|-----|---|--|---------|
| 1   | RF Exposure                               | §1.1307,§2.1093                                  | PASS    |
| 2   | RF Output Power                           | §22.913 (a), §24.232 (c),<br>§27.50 (d),         | PASS    |
| 3   | Peak-to-average Ratio(PAR) of Transmitter | §24.232(d),§22.913,<br>§27.50(d),                | PASS    |
| 4   | Emission Bandwidth                        | §22.917 (b), §24.238(b),<br>§27.53(g)            | PASS    |
| 5   | Spurious Emissions at Antenna Terminal    | §22.917 (a), §24.238 (a),<br>§27.53(g),§27.53(h) | PASS    |
| 6   | Spurious Radiation Emissions              | §22.917 (a), §24.238 (a),<br>§27.53(g),§27.53(h) | PASS    |
| 7   | Out of Band Emissions                     | §22.917 (a), §24.238 (a),<br>§27.53(g),§27.53(h) | PASS    |
| 8   | Frequency Stability                       | §22.355, §24.235, §27.54                         | PASS    |

### 3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| No. | Item   | Uncertainty |
|-----|--|-------------|
| 1   | 3m chamber Radiated spurious emission(30MHz-1GHz)  | U=4.3dB     |
| 2   | 3m chamber Radiated spurious emission(9KHz-30MHz)  | U=3.7dB     |
| 3   | 3m chamber Radiated spurious emission(1GHz-18GHz)  | U=4.5dB     |
| 4   | 3m chamber Radiated spurious emission(18GHz-40GHz) | U=3.34dB    |
| 5   | Conducted Emission (150kHz-30MHz)                  | U=3.20dB    |
| 6   | Conducted Adjacent channel power                   | U=1.38dB    |
| 7   | Conducted output power uncertainty Above 1G        | U=1.576dB   |
| 8   | Conducted output power uncertainty below 1G        | U=1.28dB    |
| 9   | humidity uncertainty                               | U=5.3%      |
| 10  | Temperature uncertainty                            | U=0.59°C    |

## 4. Product Information And Test Setup

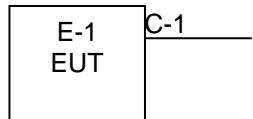
### 4.1 Product Information

|                        |  |
|------------------------|--|
| Model/Type reference:  | UM-Q6-4G<br>UM-Q6-4G-BK, UM-Q6-4G-WH, UM-Q7-4G-BK, UM-Q7-4G-WH, UM-Q8-4G-BK,<br>UM-Q8-4G-WH, UM-Q9-4G-BK, UM-Q9-4G-WH, UM-Q10-4G-BK, UM-Q10-4G-WH,<br>UM-Q11-4G-BK, UM-Q11-4G-WH, UM-Q12-4G-BK, UM-Q12-4G-WH |
| Model differences:     | The main differences are on appearances, colors and video resolutions.<br>Same working principles and RF modules.  |
| Hardware Version:      | N/A  |
| Software Version:      | N/A  |
| Operation Frequency:   | WCDMA Band II: TX: 1852.40~1907.60MHz; Rx: 1932.60~1987.40MHz;<br>WCDMA Band IV: TX: 1712.40~1752.60MHz; RX: 2112.60 – 2452.40MHz<br>WCDMA Band V: TX: 826.40~846.60MHz; RX: 871.40~ 891.60MHz;              |
| GRPS Class:            | Class 12   |
| MaxRF Output Power:    | WCDMA Band II: 22.62 dBm<br>WCDMA Band IV: 22.39 dBm<br>WCDMA Band V: 21.94 dBm  |
| Type of Modulation:    | WCDMA Mode with BPSK Modulation<br>HSDPA Mode with QPSK, 16QAM Modulation<br>HSUPA Mode with QPSK, 16QAM Modulation  |
| Type of Emission:      | WCDMA Band II: 4M15F9W<br>WCDMA Band IV: 4M14F9W<br>WCDMA Band V: 4M17F9W  |
| Antenna installation:  | External antenna   |
| Antenna Gain:          | WCDMA Band II: 5 dBi<br>WCDMA Band IV: 5 dBi<br>WCDMA Band V: 5 dBi  |
| Connecting I/O Port(s) | Please refer to the User's Manual  |
| Ratings:               | Rated Voltage: 3.7V,<br>Charging Voltage: 4.2V,<br>Battery Capacity: 16,000mAh   |

## 4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Radiated Spurious Emission



## 4.3 Support Equipment

| No. | Device Type                          | Brand         | Model    | Series No.           | Note      |
|-----|--------------------------------------|---------------|----------|----------------------|-----------|
| E-1 | 3G/4G LTE Solar Security PTZ Cameras | <b>UMOVAL</b> | UM-Q6-4G | Ref. the Section 4.1 | EUT       |
| E-2 | Adapter                              | N/A           | BCTC001  | N/A                  | Auxiliary |

| Item | Shielded Type | Ferrite Core | Length | Note                |
|------|---------------|--------------|--------|---------------------|
| C-1  | N/A           | N/A          | 0.3M   | DC cable unshielded |

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

#### 4.5 Test Mode

| <b>Testing Configure</b> |                   |                   |                |
|--------------------------|-------------------|-------------------|----------------|
| Support Band             | Support Standard  | Channel Frequency | Channel Number |
| WCDMA<br>Band II         | WCDMA/HSDPA/HSUPA | 1852.4 MHz        | 9262           |
|                          |                   | 1880.0 MHz        | 9400           |
|                          |                   | 1907.6 MHz        | 9538           |
| WCDMA<br>Band IV         | WCDMA/HSDPA/HSUPA | 1712.4 MHz        | 1312           |
|                          |                   | 1740 MHz          | 1450           |
|                          |                   | 1752.6 MHz        | 1513           |
| WCDMA<br>Band V          | WCDMA/HSDPA/HSUPA | 826.4 MHz         | 4132           |
|                          |                   | 836.4 MHz         | 4182           |
|                          |                   | 846.6 MHz         | 4233           |

Note: the transmitter has been tested on the communications mode of WCDMA, HSDPA, HSUPA compliance test and record the worst case.

#### EUT Cable List and Details

| Cable Description | Length (M) | Shielded/Unshielded | With Core/Without Core |
|-------------------|------------|---------------------|------------------------|
| /                 | /          | /                   | /                      |
| /                 | /          | /                   | /                      |

#### Auxiliary Equipment List and Details

| Description | Manufacturer | Model | Serial Number |
|-------------|--------------|-------|---------------|
| /           | /            | /     | /             |

#### Special Cable List and Details

| Cable Description | Length (M) | Shielded/Unshielded | With Core/Without Core |
|-------------------|------------|---------------------|------------------------|
| /                 | /          | /                   | /                      |

## 5. Test Facility And Test Instrument Used

### 5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

IC Registered No.: 23583

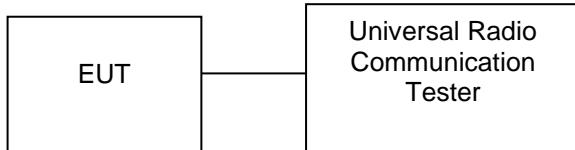
### 5.2 Test Instrument Used

| Equipment   | Manufacturer | Type No.         | Serial No.    | Last calibration | Calibrated until |
|---|--------------|------------------|---------------|------------------|------------------|
| 966 chamber   | ChengYu      | 966 Room         | 966           | Jun. 06. 2020    | Jun. 05, 2023    |
| Receiver  | R&S          | ESR3             | 102075        | May 24, 2022     | May 23, 2023     |
| Receiver  | R&S          | ESRP             | 101154        | May 24, 2022     | May 23, 2023     |
| Amplifier   | SKET         | LAPA_01G18G-45dB | \             | May 24, 2022     | May 23, 2023     |
| Amplifier   | Schwarzbeck  | BBV9744          | 9744-0037     | May 24, 2022     | May 23, 2023     |
| TRILOG Broadband Antenna                                    | Schwarzbeck  | VULB 9163        | 942           | May 26, 2022     | May 25, 2023     |
| Horn Antenna  | Schwarzbeck  | BBHA9120D        | 1541          | May 26, 2022     | May 25, 2023     |
| band rejection filter                                       | ZBSF         | ZBSF-C2441.5     | 1706003606    | May 24, 2022     | May 23, 2023     |
| Horn antenna  | Schwarzbeck  | BBHA9170         | 822           | May 24, 2022     | May 23, 2023     |
| Preamplifier  | MITEQ        | TTA1840-35-HG    | 2034381       | May 24, 2022     | May 23, 2023     |
| Loop Antenna  | Schwarzbeck  | FMZB1519B        | 14            | May 24, 2022     | May 23, 2023     |
| RF cables1 (9kHz-30MHz)                                     | Huber+Suhnar | 9kHz-30MHz       | B1702988-0008 | May 24, 2022     | May 23, 2023     |
| RF cables2 (30MHz-1GHz)                                     | Huber+Suhnar | 30MHz-1GHz       | 1486150       | May 24, 2022     | May 23, 2023     |
| RF cables3 (1GHz-40GHz)                                     | Huber+Suhnar | 1GHz-40GHz       | 1607106       | May 24, 2022     | May 23, 2023     |
| Software  | Frad         | EZ-EMC           | FA-03A2 RE    | \                | \                |
| Spectrum Analyzer   | Keysight     | N9020A           | MY49100060    | May 24, 2022     | May 23, 2023     |
| Communication test set                                      | R&S          | CMW500           | 126173        | Nov 12, 2021     | Nov 11, 2022     |
| Signal Generator  | Keysight     | N5182B           | MY56200519    | May 26, 2022     | May 25, 2023     |
| RF Room   | SKET         | RF Room          | RF ROOM-1     | Nov 05, 2021     | Nov 04, 2022     |
| Radio frequency control box                                 | MAIWEI       | MW200-RFCB       | \             | \                | \                |
| D.C. Power Supply   | Keysight     | E3642A           | MY40003053    | \                | \                |
| Programmable constant temperature and humidity test chamber | DGBELL       | BTKS5-150C       | \             | May 26, 2022     | May 25, 2023     |

## 6. RF Output Power

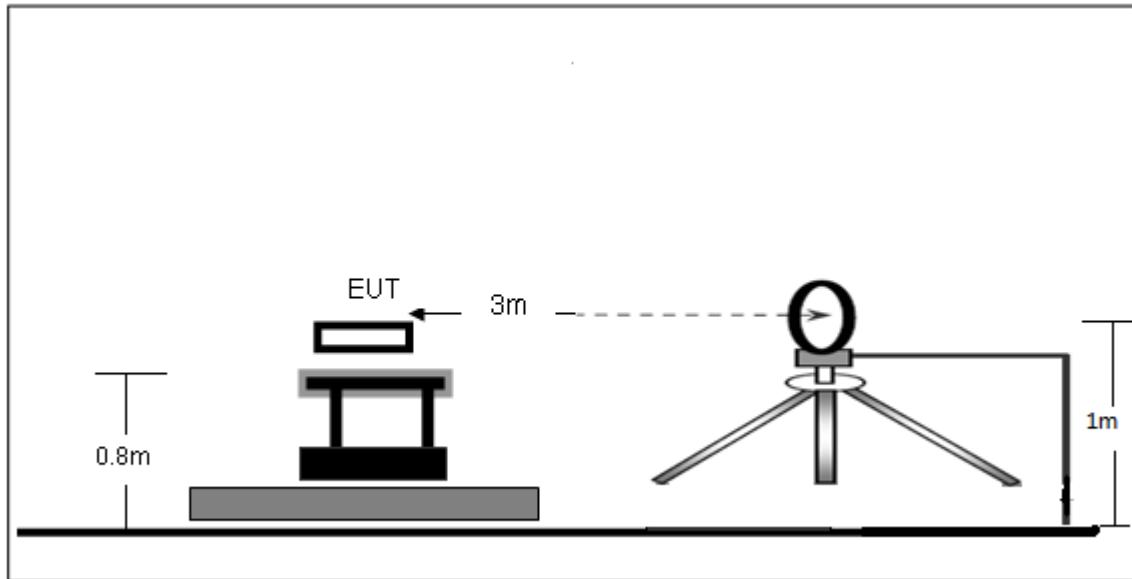
### 6.1 Block Diagram Of Test Setup

Conducted output power test method:

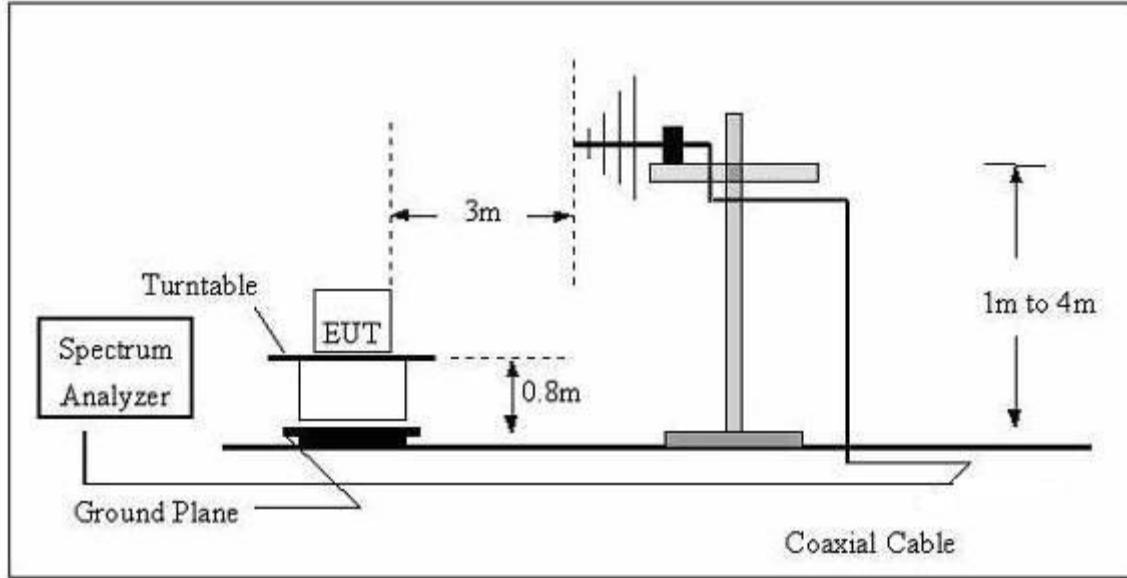


Radiated power test method:

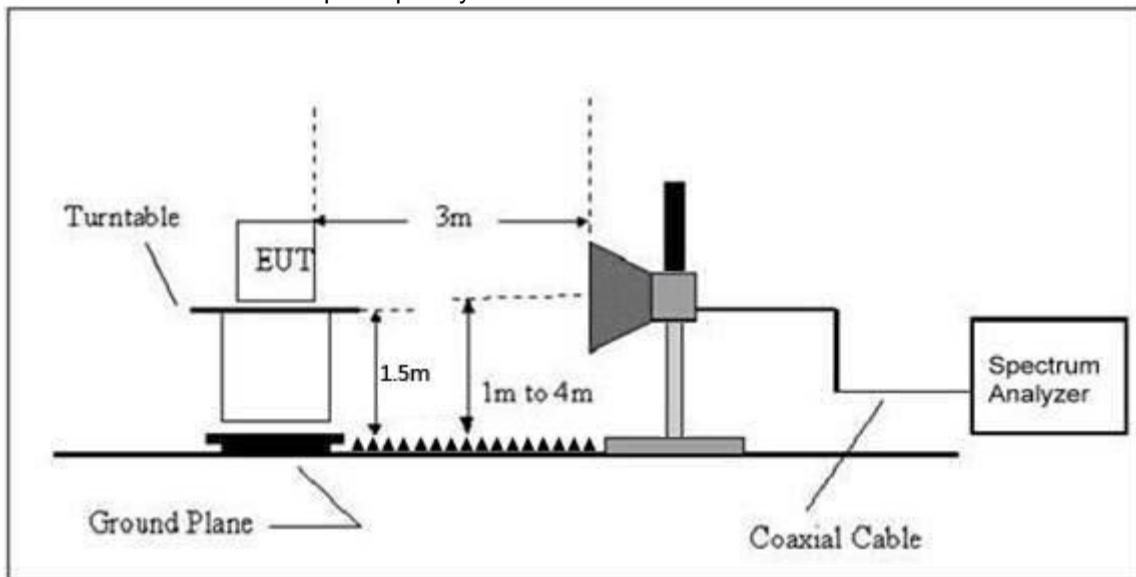
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



## (C) Radiated Emission Test-Up Frequency Above 1GHz



## 6.2 Limit

According to §22.913(a)(2), The ERP of mobile and portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to §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 §27.50(d)(4), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

## 6.3 Test procedure

Radiated power test method:

1. The setup of EUT is according with per ANSI/TIA Standard 603D and ANSI C63.4-2014 measurement procedure.
2. 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.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. 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.

## 6.4 Test Result

### EIRP For WCDMA Mode Band II

| Frequency (MHz) | Polar (H/V) | Height (Meter) | Table (Degree) | Reading Level (dBm) | Correct Factor (dB) | Measure-ment (dBm) | FCC Part 24E Limits (dBm) | Result |
|-----------------|-------------|----------------|----------------|---------------------|---------------------|--------------------|---------------------------|--------|
| Low Channel     |             |                |                |                     |                     |                    |                           |        |
| 1852.4          | H           | 1.5            | 0              | 40.23               | -22.25              | 17.98              | 33.00                     | PASS   |
| 1852.4          | V           | 1.5            | 0              | 40.11               | -22.25              | 17.86              | 33.00                     | PASS   |
| Middle Channel  |             |                |                |                     |                     |                    |                           |        |
| 1880            | H           | 1.5            | 0              | 40.80               | -22.16              | 18.64              | 33.00                     | PASS   |
| 1880            | V           | 1.5            | 0              | 39.46               | -22.16              | 17.30              | 33.00                     | PASS   |
| High Channel    |             |                |                |                     |                     |                    |                           |        |
| 1907.6          | H           | 1.5            | 0              | 40.57               | -22.06              | 18.51              | 33.00                     | PASS   |
| 1907.6          | V           | 1.5            | 0              | 39.55               | -22.06              | 17.49              | 33.00                     | PASS   |

### EIRP For HSDPA Mode Band II

| Frequency (MHz) | Polar (H/V) | Height (Meter) | Table (Degree) | Reading Level (dBm) | Correct Factor (dB) | Measure-ment (dBm) | FCC Part 24E Limits (dBm) | Result |
|-----------------|-------------|----------------|----------------|---------------------|---------------------|--------------------|---------------------------|--------|
| Low Channel     |             |                |                |                     |                     |                    |                           |        |
| 1852.4          | H           | 1.5            | 0              | 39.73               | -22.25              | 17.48              | 33.00                     | PASS   |
| 1852.4          | V           | 1.5            | 0              | 39.51               | -22.25              | 17.26              | 33.00                     | PASS   |
| Middle Channel  |             |                |                |                     |                     |                    |                           |        |
| 1880            | H           | 1.5            | 0              | 40.22               | -22.16              | 18.06              | 33.00                     | PASS   |
| 1880            | V           | 1.5            | 0              | 39.55               | -22.16              | 17.39              | 33.00                     | PASS   |
| High Channel    |             |                |                |                     |                     |                    |                           |        |
| 1907.6          | H           | 1.5            | 0              | 40.62               | -22.06              | 18.56              | 33.00                     | PASS   |
| 1907.6          | V           | 1.5            | 0              | 39.76               | -22.06              | 17.70              | 33.00                     | PASS   |

### EIRP For HSUPA Mode Band II

| Frequency (MHz) | Polar (H/V) | Height (Meter) | Table (Degree) | Reading Level (dBm) | Correct Factor (dB) | Measure-ment (dBm) | FCC Part 24E Limits (dBm) | Result |
|-----------------|-------------|----------------|----------------|---------------------|---------------------|--------------------|---------------------------|--------|
| Low Channel     |             |                |                |                     |                     |                    |                           |        |
| 1852.4          | H           | 1.5            | 0              | 40.32               | -22.25              | 18.07              | 33.00                     | PASS   |
| 1852.4          | V           | 1.5            | 0              | 39.34               | -22.25              | 17.09              | 33.00                     | PASS   |
| Middle Channel  |             |                |                |                     |                     |                    |                           |        |
| 1880            | H           | 1.5            | 0              | 40.29               | -22.16              | 18.13              | 33.00                     | PASS   |
| 1880            | V           | 1.5            | 0              | 40.19               | -22.16              | 18.03              | 33.00                     | PASS   |
| High Channel    |             |                |                |                     |                     |                    |                           |        |
| 1907.6          | H           | 1.5            | 0              | 39.85               | -22.06              | 17.79              | 33.00                     | PASS   |
| 1907.6          | V           | 1.5            | 0              | 39.35               | -22.06              | 17.29              | 33.00                     | PASS   |

**EIRP For WCDMA Mode Band IV**

| Frequency (MHz) | Polar (H/V) | Height (Meter) | Table (Degree) | Reading Level (dBm) | Correct Factor (dB) | Measurement (dBm) | FCC Part 27L Limits (dBm) | Result |
|-----------------|-------------|----------------|----------------|---------------------|---------------------|-------------------|---------------------------|--------|
| Low Channel     |             |                |                |                     |                     |                   |                           |        |
| 1712.4          | H           | 1.5            | 0              | 40.99               | -22.71              | 18.28             | 33.00                     | PASS   |
| 1712.4          | V           | 1.5            | 0              | 40.45               | -22.71              | 17.74             | 33.00                     | PASS   |
| Middle Channel  |             |                |                |                     |                     |                   |                           |        |
| 1740            | H           | 1.5            | 0              | 39.99               | -22.67              | 17.32             | 33.00                     | PASS   |
| 1740            | V           | 1.5            | 0              | 40.14               | -22.67              | 17.47             | 33.00                     | PASS   |
| High Channel    |             |                |                |                     |                     |                   |                           |        |
| 1752.6          | H           | 1.5            | 0              | 41.24               | -22.60              | 18.64             | 33.00                     | PASS   |
| 1752.6          | V           | 1.5            | 0              | 39.80               | -22.60              | 17.20             | 33.00                     | PASS   |

**EIRP For HSDPA Mode Band IV**

| Frequency (MHz) | Polar (H/V) | Height (Meter) | Table (Degree) | Reading Level (dBm) | Correct Factor (dB) | Measurement (dBm) | FCC Part 27L Limits (dBm) | Result |
|-----------------|-------------|----------------|----------------|---------------------|---------------------|-------------------|---------------------------|--------|
| Low Channel     |             |                |                |                     |                     |                   |                           |        |
| 1712.4          | H           | 1.5            | 0              | 40.54               | -22.71              | 17.83             | 33.00                     | PASS   |
| 1712.4          | V           | 1.5            | 0              | 40.52               | -22.71              | 17.81             | 33.00                     | PASS   |
| Middle Channel  |             |                |                |                     |                     |                   |                           |        |
| 1740            | H           | 1.5            | 0              | 40.94               | -22.67              | 18.27             | 33.00                     | PASS   |
| 1740            | V           | 1.5            | 0              | 39.95               | -22.67              | 17.28             | 33.00                     | PASS   |
| High Channel    |             |                |                |                     |                     |                   |                           |        |
| 1752.6          | H           | 1.5            | 0              | 40.21               | -22.60              | 17.61             | 33.00                     | PASS   |
| 1752.6          | V           | 1.5            | 0              | 40.12               | -22.60              | 17.52             | 33.00                     | PASS   |

**EIRP For HSUPA Mode Band IV**

| Frequency (MHz) | Polar (H/V) | Height (Meter) | Table (Degree) | Reading Level (dBm) | Correct Factor (dB) | Measurement (dBm) | FCC Part 27L Limits (dBm) | Result |
|-----------------|-------------|----------------|----------------|---------------------|---------------------|-------------------|---------------------------|--------|
| Low Channel     |             |                |                |                     |                     |                   |                           |        |
| 1712.4          | H           | 1.5            | 0              | 40.78               | -22.71              | 18.07             | 33.00                     | PASS   |
| 1712.4          | V           | 1.5            | 0              | 40.17               | -22.71              | 17.46             | 33.00                     | PASS   |
| Middle Channel  |             |                |                |                     |                     |                   |                           |        |
| 1740            | H           | 1.5            | 0              | 40.54               | -22.67              | 17.87             | 33.00                     | PASS   |
| 1740            | V           | 1.5            | 0              | 39.84               | -22.67              | 17.17             | 33.00                     | PASS   |
| High Channel    |             |                |                |                     |                     |                   |                           |        |
| 1752.6          | H           | 1.5            | 0              | 39.93               | -22.60              | 17.33             | 33.00                     | PASS   |
| 1752.6          | V           | 1.5            | 0              | 40.18               | -22.60              | 17.58             | 33.00                     | PASS   |

## ERP For WCDMA Mode Band V

| Frequency (MHz) | Polar (H/V) | Height (Meter) | Table (Degree) | Reading Level (dBm) | Correct Factor (dB) | Measure-ment (dBm) | FCC Part 22H Limits (dBm) | Result |
|-----------------|-------------|----------------|----------------|---------------------|---------------------|--------------------|---------------------------|--------|
| Low Channel     |             |                |                |                     |                     |                    |                           |        |
| 826.4           | H           | 1.5            | 0              | 18.88               | -1.33               | 17.55              | 30                        | PASS   |
| 826.4           | V           | 1.5            | 0              | 17.33               | -1.33               | 16.00              | 30                        | PASS   |
| Middle Channel  |             |                |                |                     |                     |                    |                           |        |
| 836.4           | H           | 1.5            | 0              | 18.30               | -1.10               | 17.20              | 30                        | PASS   |
| 836.4           | V           | 1.5            | 0              | 17.32               | -1.10               | 16.22              | 30                        | PASS   |
| High Channel    |             |                |                |                     |                     |                    |                           |        |
| 846.6           | H           | 1.5            | 0              | 18.60               | -0.87               | 17.73              | 30                        | PASS   |
| 846.6           | V           | 1.5            | 0              | 17.29               | -0.87               | 16.42              | 30                        | PASS   |

## ERP For HSDPA Mode Band V

| Frequency (MHz) | Polar (H/V) | Height (Meter) | Table (Degree) | Reading Level (dBm) | Correct Factor (dB) | Measure-ment (dBm) | FCC Part 22H Limits (dBm) | Result |
|-----------------|-------------|----------------|----------------|---------------------|---------------------|--------------------|---------------------------|--------|
| Low Channel     |             |                |                |                     |                     |                    |                           |        |
| 826.4           | H           | 1.5            | 0              | 18.96               | -1.33               | 17.63              | 30                        | PASS   |
| 826.4           | V           | 1.5            | 0              | 17.92               | -1.33               | 16.59              | 30                        | PASS   |
| Middle Channel  |             |                |                |                     |                     |                    |                           |        |
| 836.4           | H           | 1.5            | 0              | 18.13               | -1.10               | 17.03              | 30                        | PASS   |
| 836.4           | V           | 1.5            | 0              | 17.93               | -1.10               | 16.83              | 30                        | PASS   |
| High Channel    |             |                |                |                     |                     |                    |                           |        |
| 846.6           | H           | 1.5            | 0              | 17.50               | -0.87               | 16.63              | 30                        | PASS   |
| 846.6           | V           | 1.5            | 0              | 17.41               | -0.87               | 16.54              | 30                        | PASS   |

## ERP For HSUPA Mode Band V

| Frequency (MHz) | Polar (H/V) | Height (Meter) | Table (Degree) | Reading Level (dBm) | Correct Factor (dB) | Measure-ment (dBm) | FCC Part 22H Limits (dBm) | Result |
|-----------------|-------------|----------------|----------------|---------------------|---------------------|--------------------|---------------------------|--------|
| Low Channel     |             |                |                |                     |                     |                    |                           |        |
| 826.4           | H           | 1.5            | 0              | 18.83               | -1.33               | 17.50              | 30                        | PASS   |
| 826.4           | V           | 1.5            | 0              | 17.79               | -1.33               | 16.46              | 30                        | PASS   |
| Middle Channel  |             |                |                |                     |                     |                    |                           |        |
| 836.4           | H           | 1.5            | 0              | 17.91               | -1.10               | 16.81              | 30                        | PASS   |
| 836.4           | V           | 1.5            | 0              | 17.79               | -1.10               | 16.69              | 30                        | PASS   |
| High Channel    |             |                |                |                     |                     |                    |                           |        |
| 846.6           | H           | 1.5            | 0              | 17.48               | -0.87               | 16.61              | 30                        | PASS   |
| 846.6           | V           | 1.5            | 0              | 17.96               | -0.87               | 17.09              | 30                        | PASS   |

**Max. Conducted Output Power**

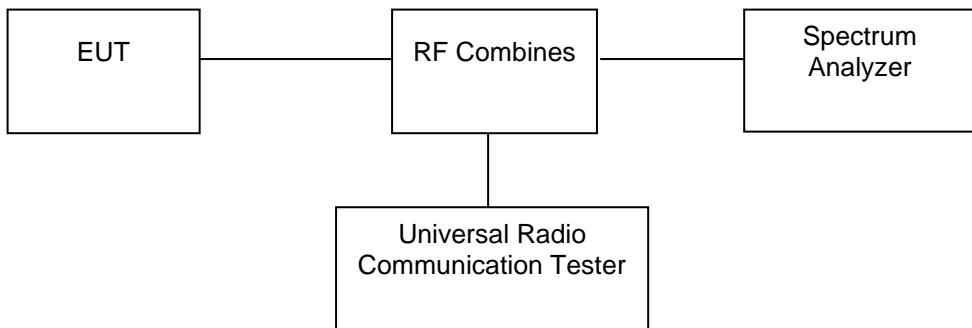
| Band                  | WCDMA Band II |               |               |
|-----------------------|---------------|---------------|---------------|
| Channel               | 9262          | 9400          | 9538          |
| <b>Frequency(MHz)</b> | <b>1852.4</b> | <b>1880.0</b> | <b>1907.6</b> |
| WCDMA RMC 12.2K       | 21.87         | <b>22.62</b>  | 22.44         |
| HSDPA Subtest-1       | 20.61         | 21.46         | 21.37         |
| HSDPA Subtest-2       | 20.58         | 21.29         | 21.26         |
| HSDPA Subtest-3       | 19.81         | 20.24         | 20.27         |
| HSDPA Subtest-4       | 19.45         | 20.30         | 20.38         |
| HSUPA Subtest-1       | 20.08         | 20.86         | 20.78         |
| HSUPA Subtest-2       | 20.89         | 21.47         | 21.42         |
| HSUPA Subtest-3       | 20.50         | 20.93         | 20.87         |
| HSUPA Subtest-4       | 20.97         | 21.52         | 21.31         |
| HSUPA Subtest-5       | 20.13         | 20.70         | 20.85         |

| Band                  | WCDMA Band IV |              |               |
|-----------------------|---------------|--------------|---------------|
| Channel               | 1312          | 1450         | 1513          |
| <b>Frequency(MHz)</b> | <b>1712.4</b> | <b>1740</b>  | <b>1752.6</b> |
| WCDMA RMC 12.2K       | 21.73         | <b>22.39</b> | 21.94         |
| HSDPA Subtest-1       | 20.79         | 21.26        | 20.92         |
| HSDPA Subtest-2       | 20.77         | 21.04        | 20.76         |
| HSDPA Subtest-3       | 19.82         | 20.24        | 19.91         |
| HSDPA Subtest-4       | 19.61         | 19.82        | 19.36         |
| HSUPA Subtest-1       | 20.01         | 20.54        | 20.16         |
| HSUPA Subtest-2       | 20.77         | 21.24        | 20.92         |
| HSUPA Subtest-3       | 20.29         | 20.78        | 20.47         |
| HSUPA Subtest-4       | 20.91         | 21.29        | 21.06         |
| HSUPA Subtest-5       | 20.22         | 20.37        | 20.29         |

| Band                  | WCDMA Band V |              |              |
|-----------------------|--------------|--------------|--------------|
| Channel               | 4132         | 4182         | 4233         |
| <b>Frequency(MHz)</b> | <b>826.4</b> | <b>836.4</b> | <b>846.6</b> |
| WCDMA RMC 12.2K       | 21.62        | <b>21.94</b> | 21.75        |
| HSDPA Subtest-1       | 20.60        | 20.95        | 21.01        |
| HSDPA Subtest-2       | 20.64        | 20.71        | 20.70        |
| HSDPA Subtest-3       | 19.62        | 19.87        | 19.74        |
| HSDPA Subtest-4       | 19.30        | 19.69        | 19.30        |
| HSUPA Subtest-1       | 19.91        | 20.14        | 20.23        |
| HSUPA Subtest-2       | 20.75        | 20.87        | 20.83        |
| HSUPA Subtest-3       | 20.09        | 20.48        | 20.23        |
| HSUPA Subtest-4       | 20.77        | 21.00        | 20.64        |
| HSUPA Subtest-5       | 20.05        | 20.22        | 20.25        |

## 7. Peak-to-average Ratio(PAR) of Transmitter

### 7.1 Block Diagram Of Test Setup



### 7.2 Limit

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.

According to §27.50(B), the peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

### 7.3 Test procedure

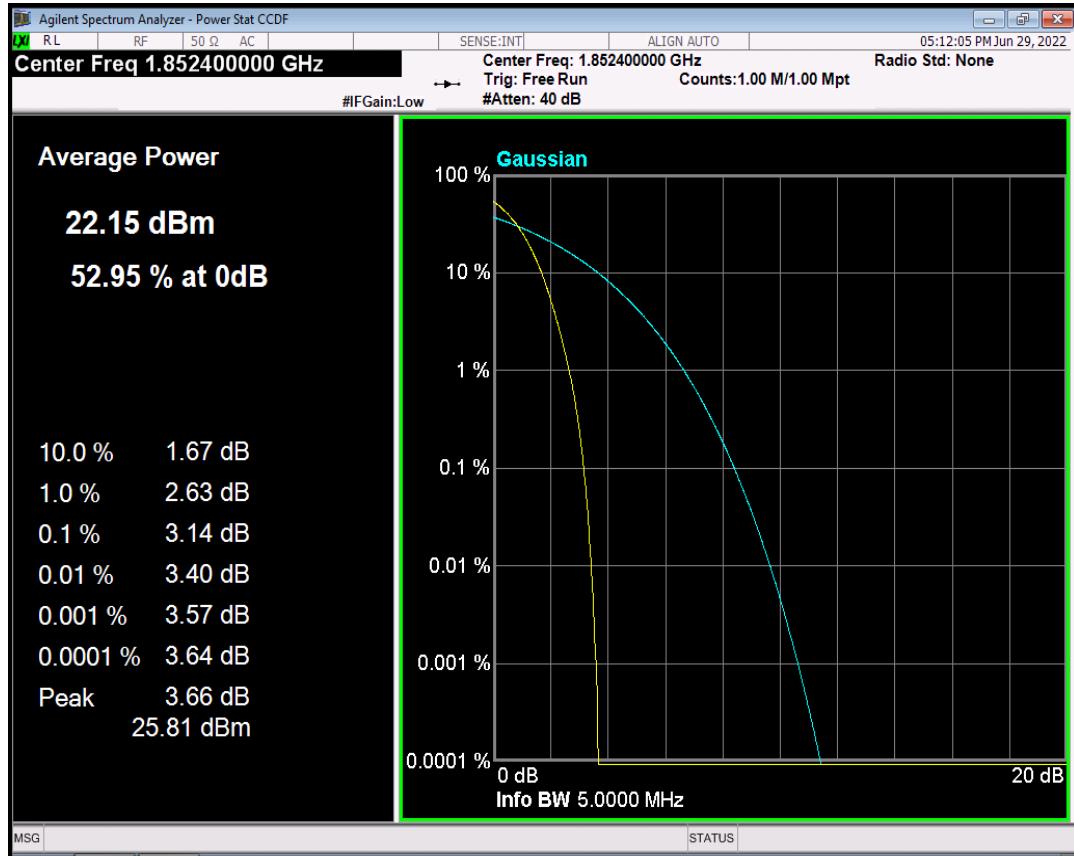
The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 30kHz and the peak-to-average ratio (PAR) of the transmission was recorded. Record the maximum PAPR level associated with a probability of 0.1%.

### 7.4 Test Result

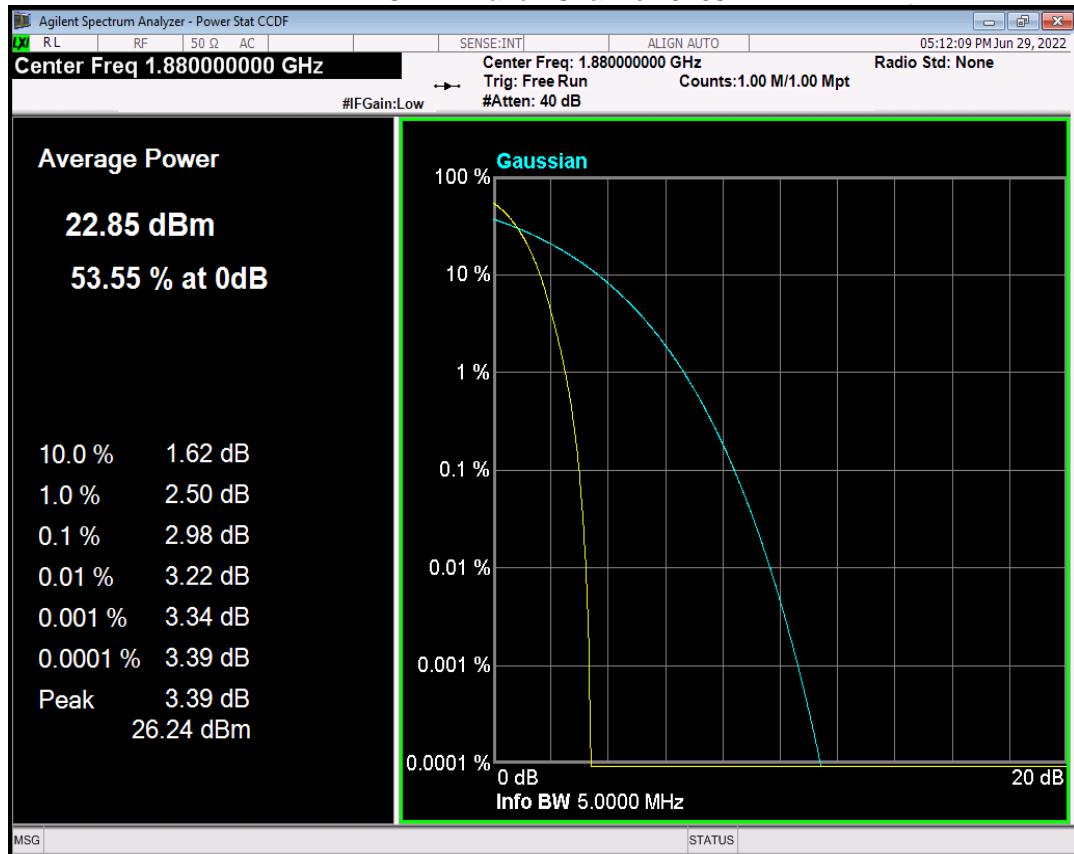
| Band        | Channel | Frequency (MHz) | Result (dB) | high Limit (dB) | Verdict |
|-------------|---------|-----------------|-------------|-----------------|---------|
| WCDMA Band2 | 9262    | 1852.4          | 3.14        | 13              | PASS    |
| WCDMA Band2 | 9400    | 1880            | 2.98        | 13              | PASS    |
| WCDMA Band2 | 9538    | 1907.6          | 3.02        | 13              | PASS    |
| WCDMA Band4 | 1312    | 1712.4          | 2.82        | 13              | PASS    |
| WCDMA Band4 | 1450    | 1740            | 3.25        | 13              | PASS    |
| WCDMA Band4 | 1513    | 1752.6          | 3.21        | 13              | PASS    |
| WCDMA Band5 | 4132    | 826.4           | 2.78        | 13              | PASS    |
| WCDMA Band5 | 4182    | 836.4           | 2.96        | 13              | PASS    |
| WCDMA Band5 | 4233    | 846.6           | 2.82        | 13              | PASS    |

Note: In WCDMA, RMC, HSDPA and HSUPA all three tests only reflect the worst mode RMC.

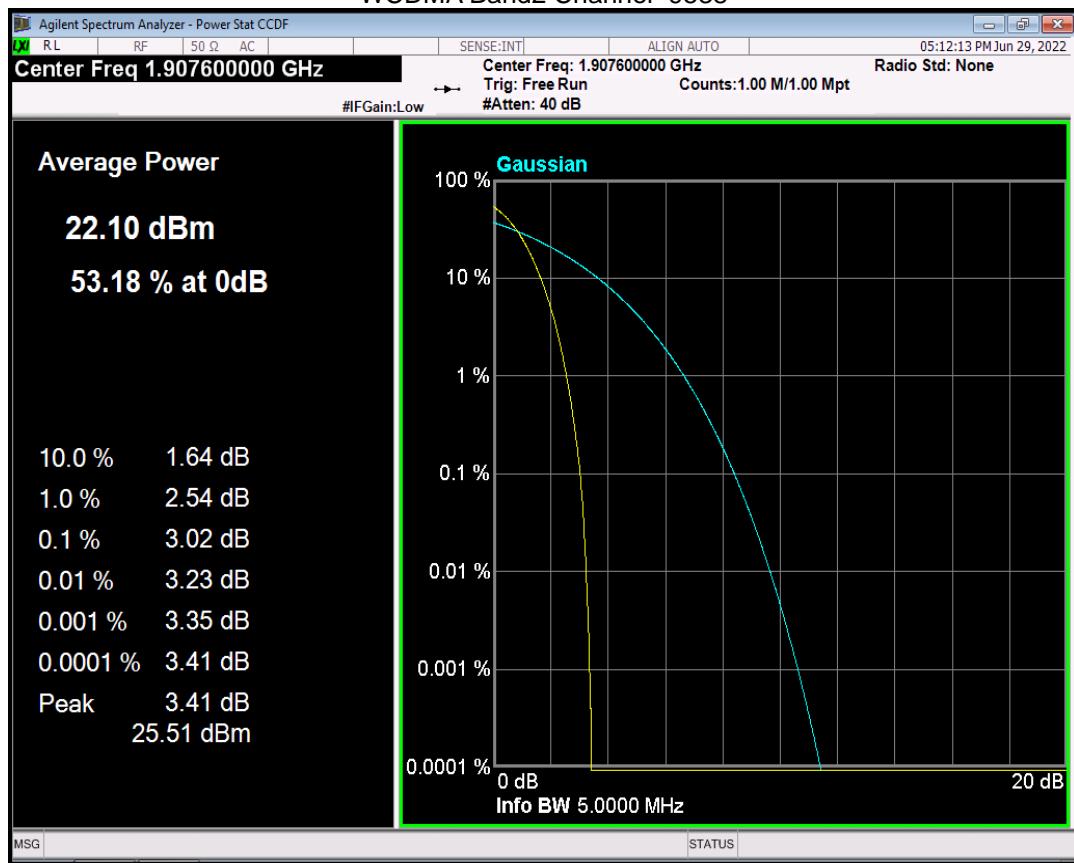
## WCDMA Band2 Channel=9262



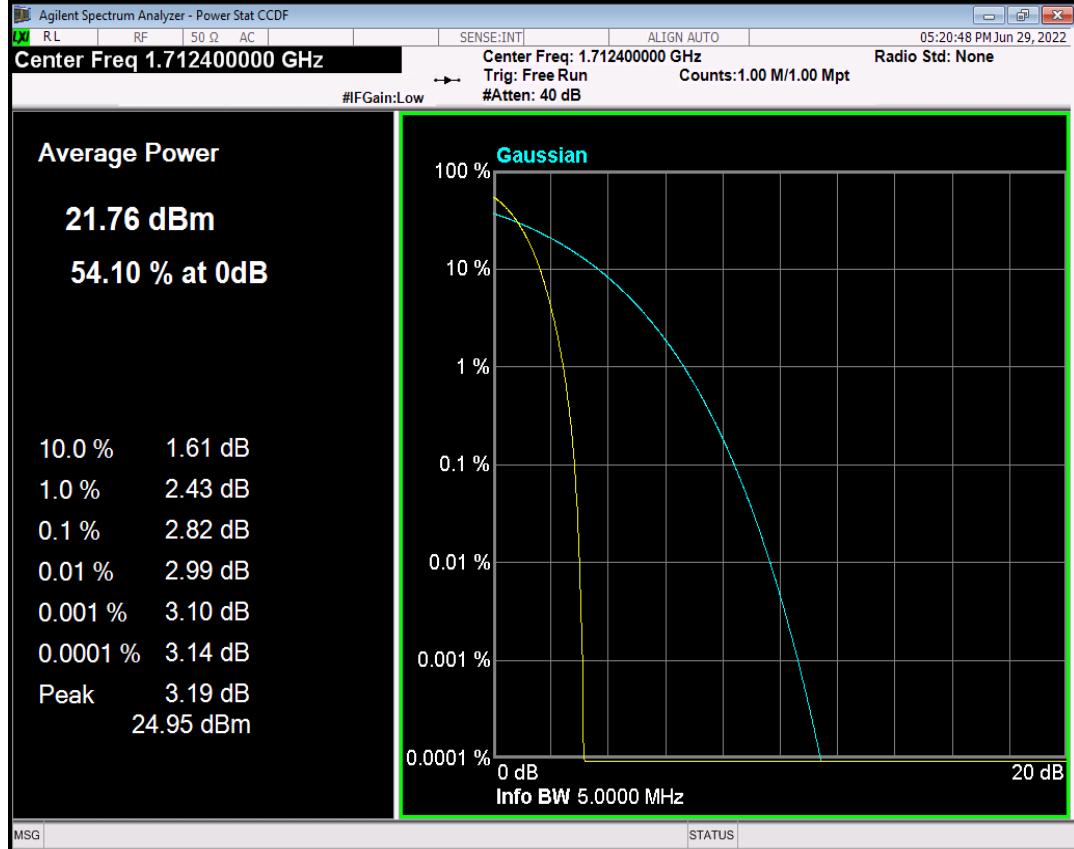
## WCDMA Band2 Channel=9400



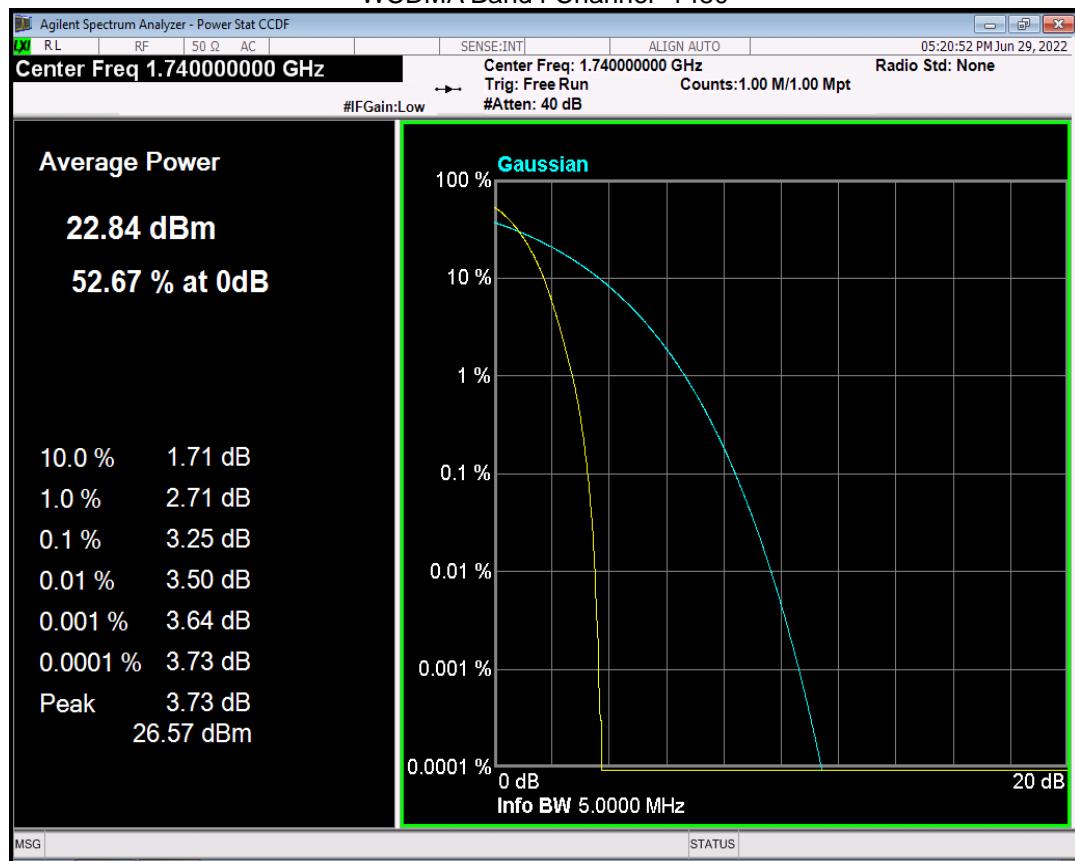
## WCDMA Band2 Channel=9538



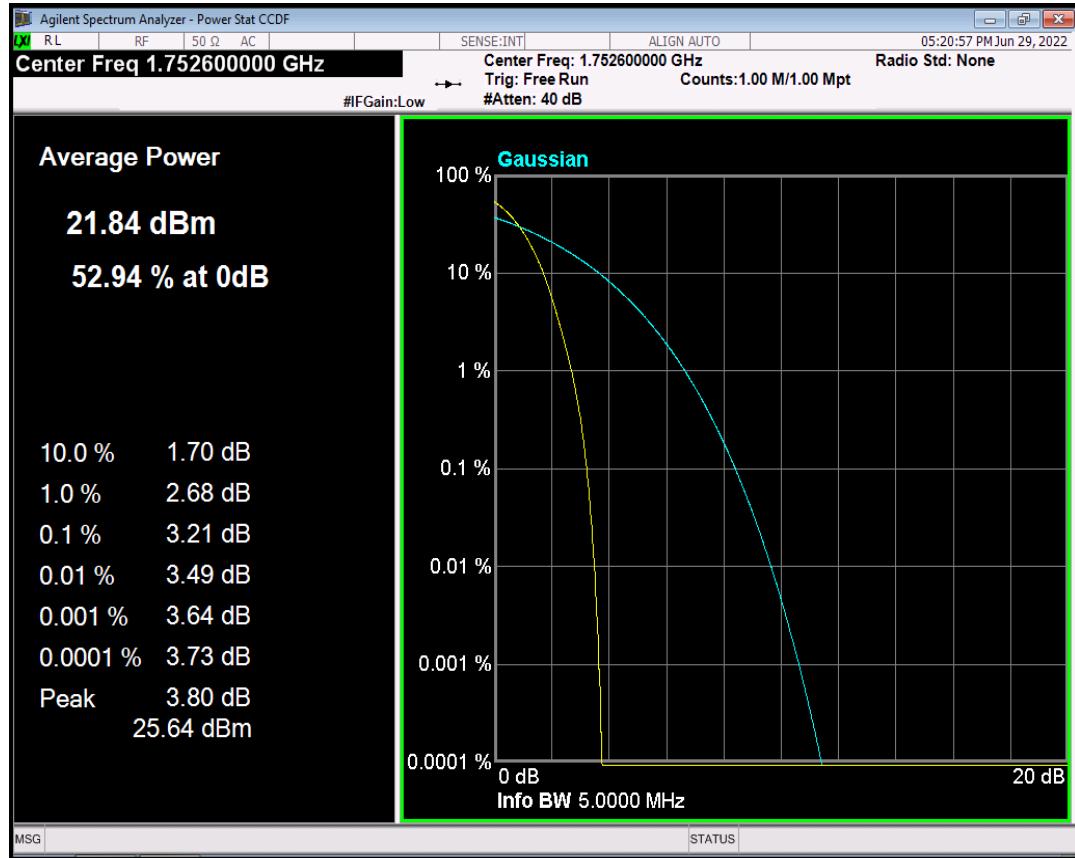
## WCDMA Band4 Channel=1312



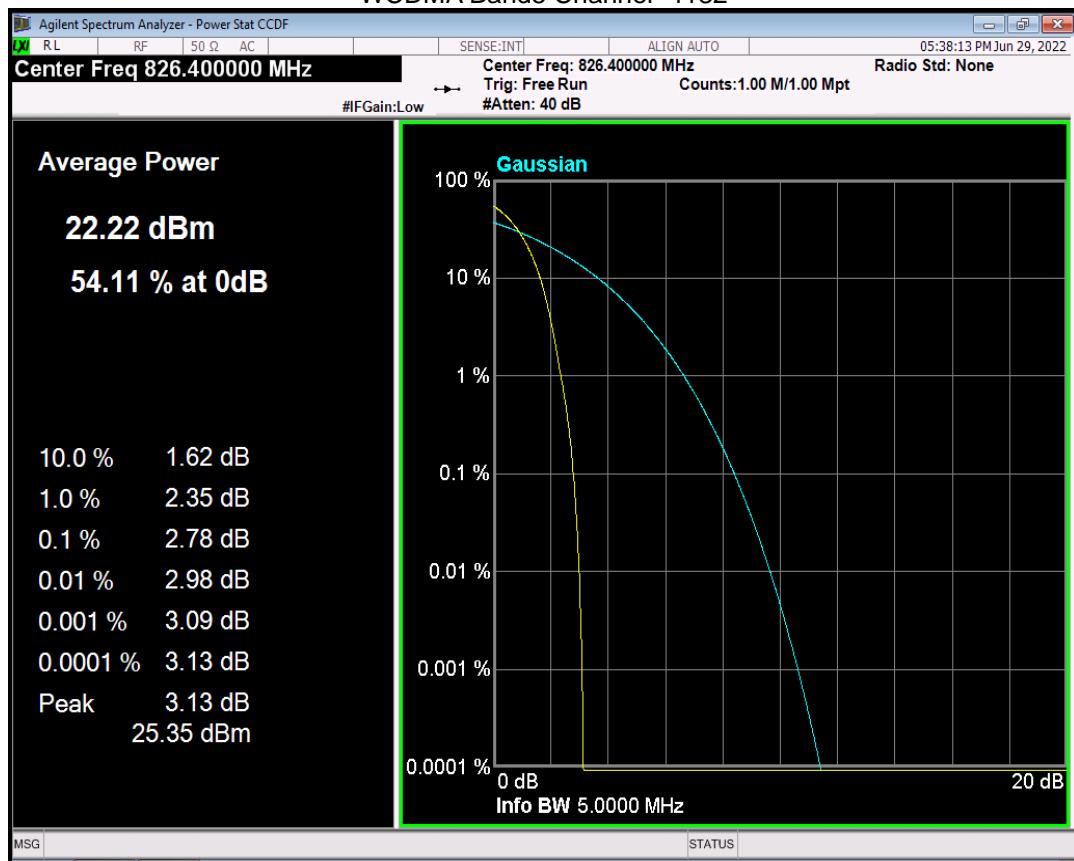
## WCDMA Band4 Channel=1450



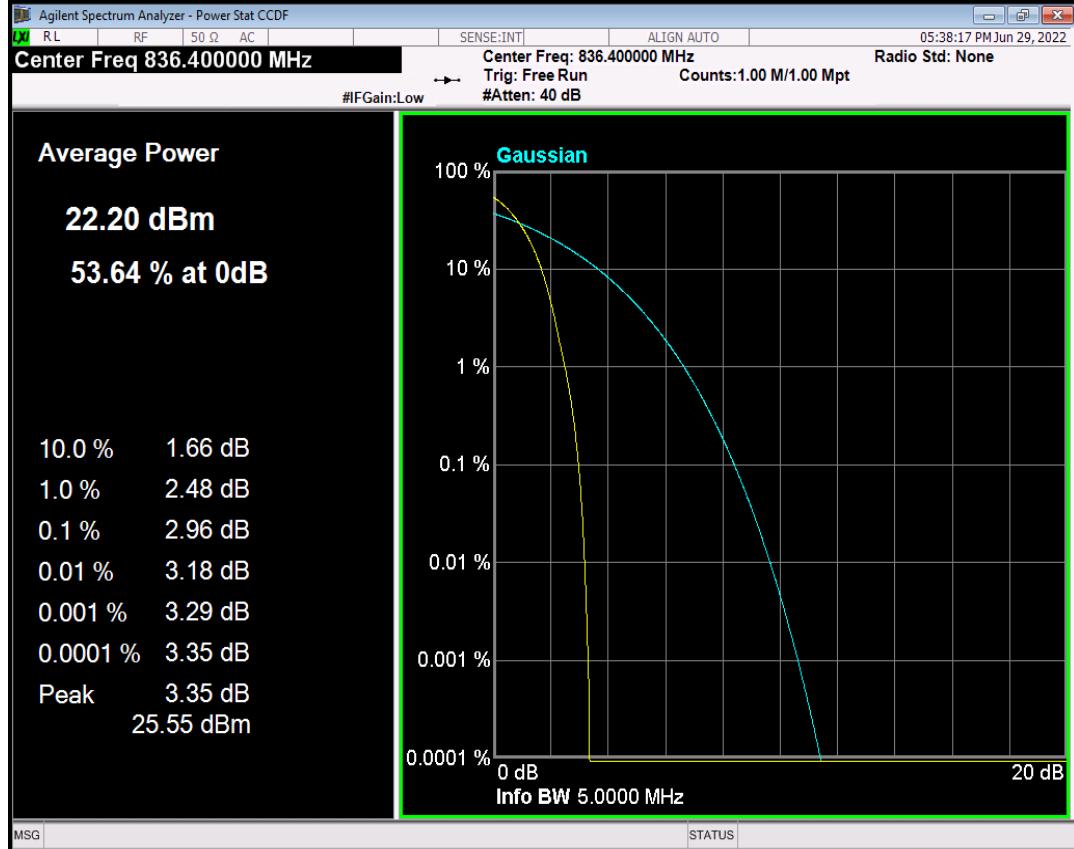
## WCDMA Band4 Channel=1513



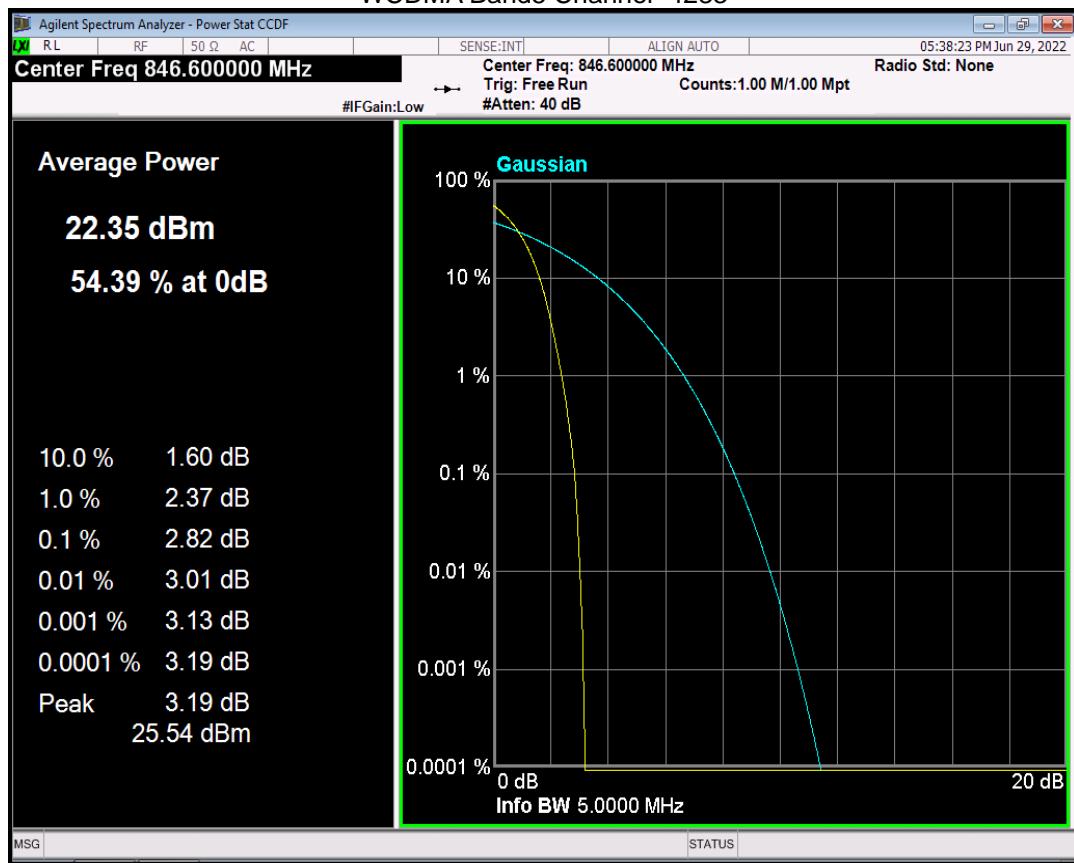
## WCDMA Band5 Channel=4132



## WCDMA Band5 Channel=4182

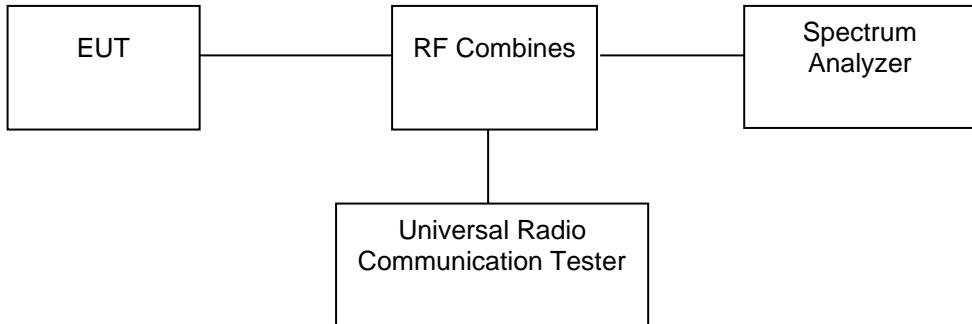


## WCDMA Band5 Channel=4233



## 8. Emission Bandwidth

### 8.1 Block Diagram Of Test Setup



### 8.2 Limit

According to §22.917(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §24.238(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §27.53, The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

### 8.3 Test procedure

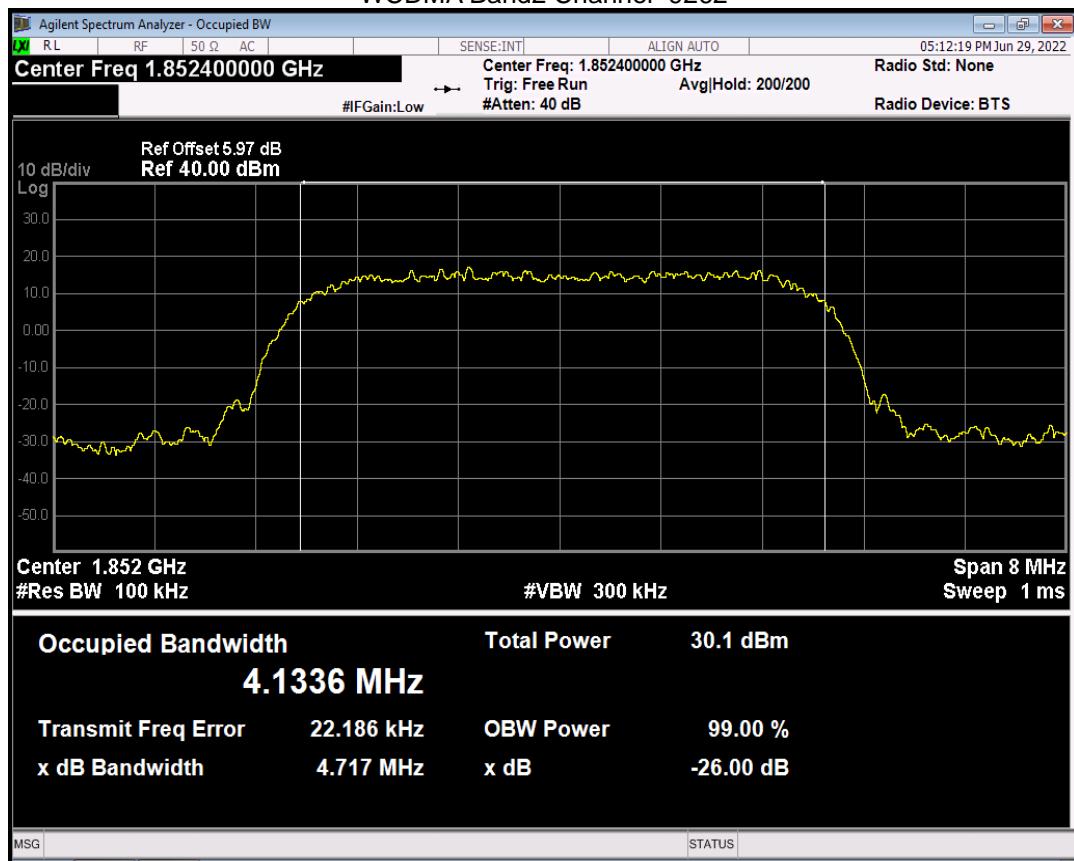
The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 10kHz for GSM mode and 100kHz for WCDMA mode, VBW shall be at least 3 times the RBW, and the 26dB bandwidth was recorded.

### 8.4 Test Result

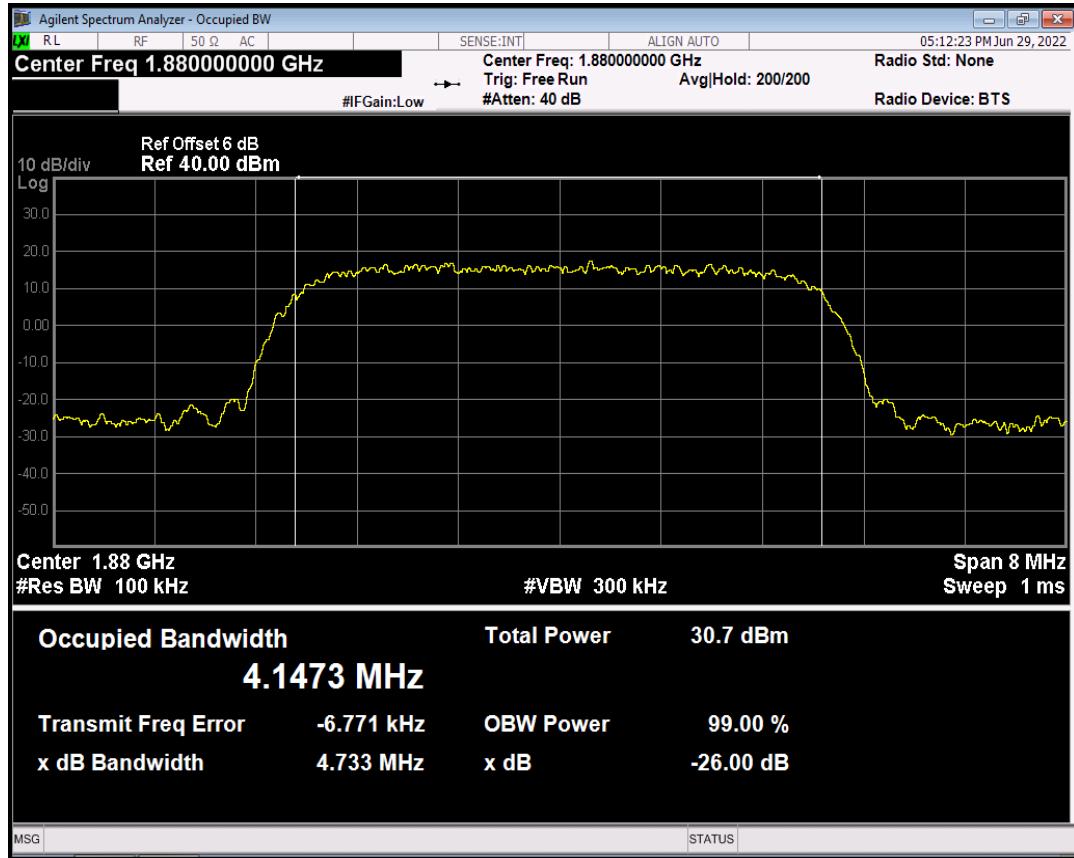
| Band        | Channel | Frequency (MHz) | 99% OBW (kHz) | -26dB EBW (kHz) | Verdict |
|-------------|---------|-----------------|---------------|-----------------|---------|
| WCDMA Band2 | 9262    | 1852.4          | 4133.586      | 4717.182        | PASS    |
| WCDMA Band2 | 9400    | 1880            | 4147.301      | 4733.000        | PASS    |
| WCDMA Band2 | 9538    | 1907.6          | 4132.557      | 4723.828        | PASS    |
| WCDMA Band4 | 1312    | 1712.4          | 4142.929      | 4689.923        | PASS    |
| WCDMA Band4 | 1450    | 1740            | 4142.599      | 4706.049        | PASS    |
| WCDMA Band4 | 1513    | 1752.6          | 4130.862      | 4710.075        | PASS    |
| WCDMA Band5 | 4132    | 826.4           | 4166.955      | 4696.685        | PASS    |
| WCDMA Band5 | 4182    | 836.4           | 4173.182      | 4730.813        | PASS    |
| WCDMA Band5 | 4233    | 846.6           | 4150.124      | 4706.519        | PASS    |

Note: In WCDMA, RMC, HSDPA and HSUPA all three tests only reflect the worst mode RMC.

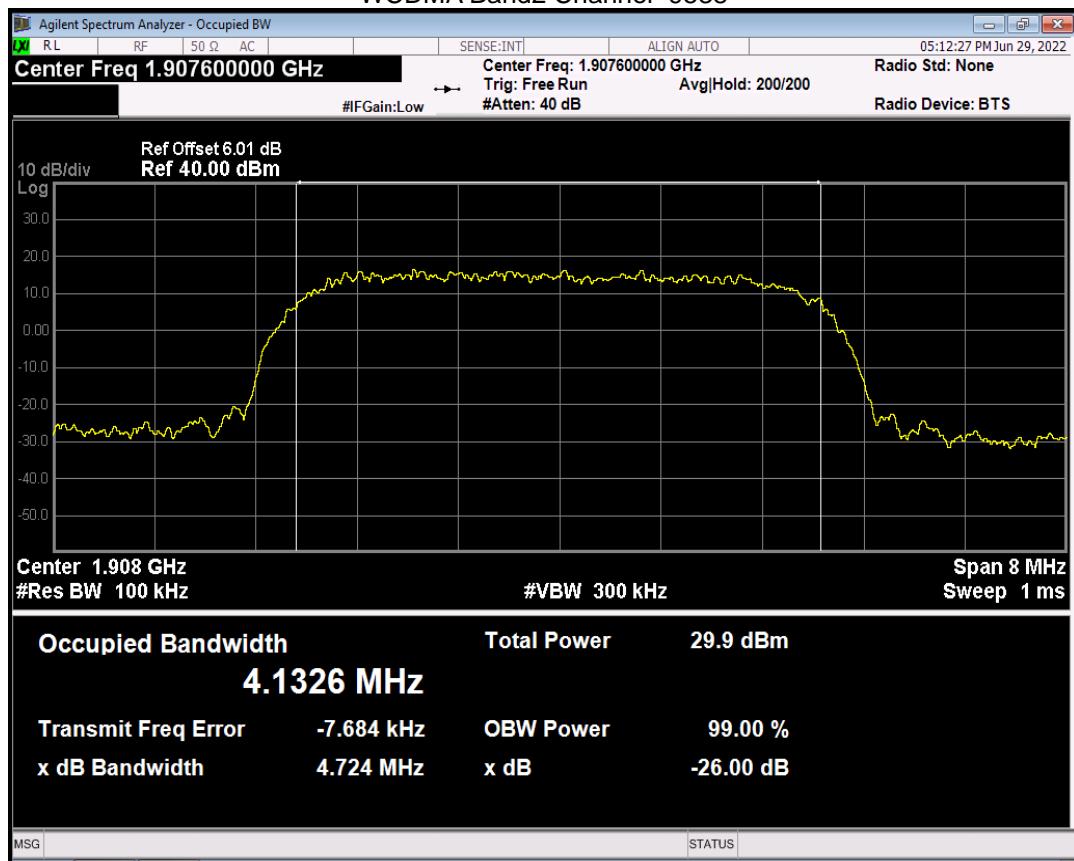
## WCDMA Band2 Channel=9262



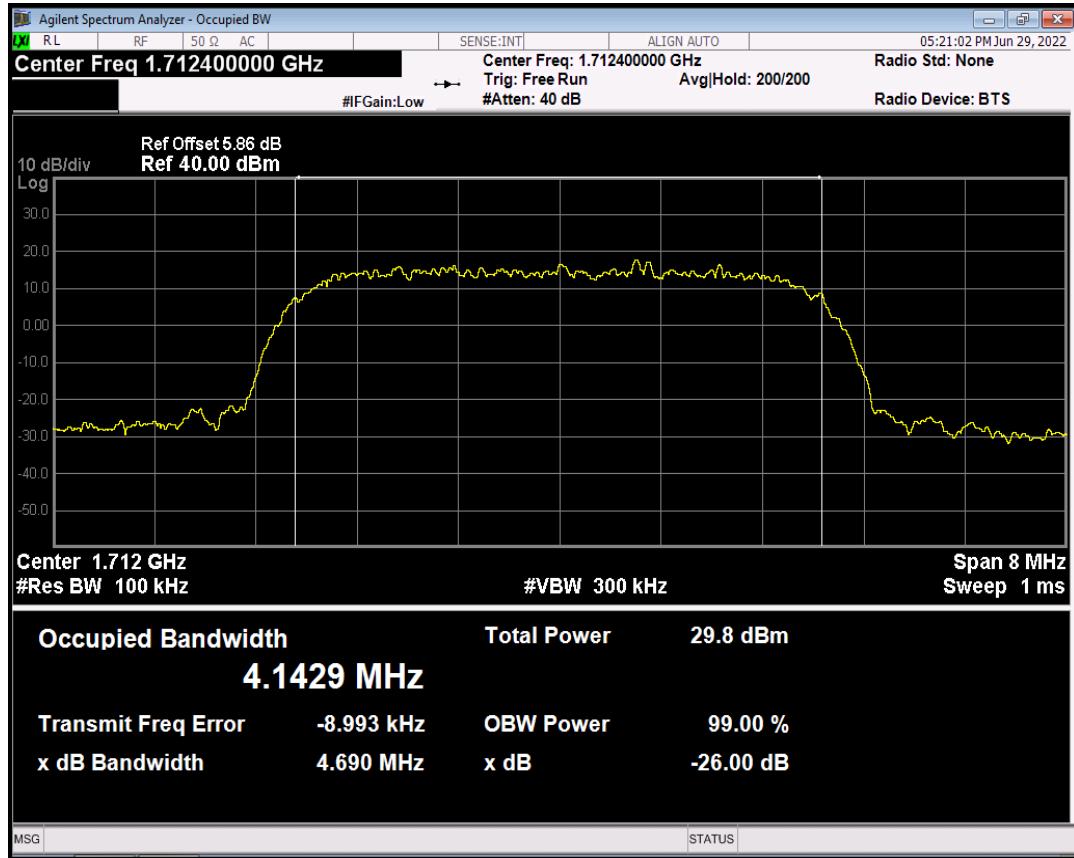
## WCDMA Band2 Channel=9400



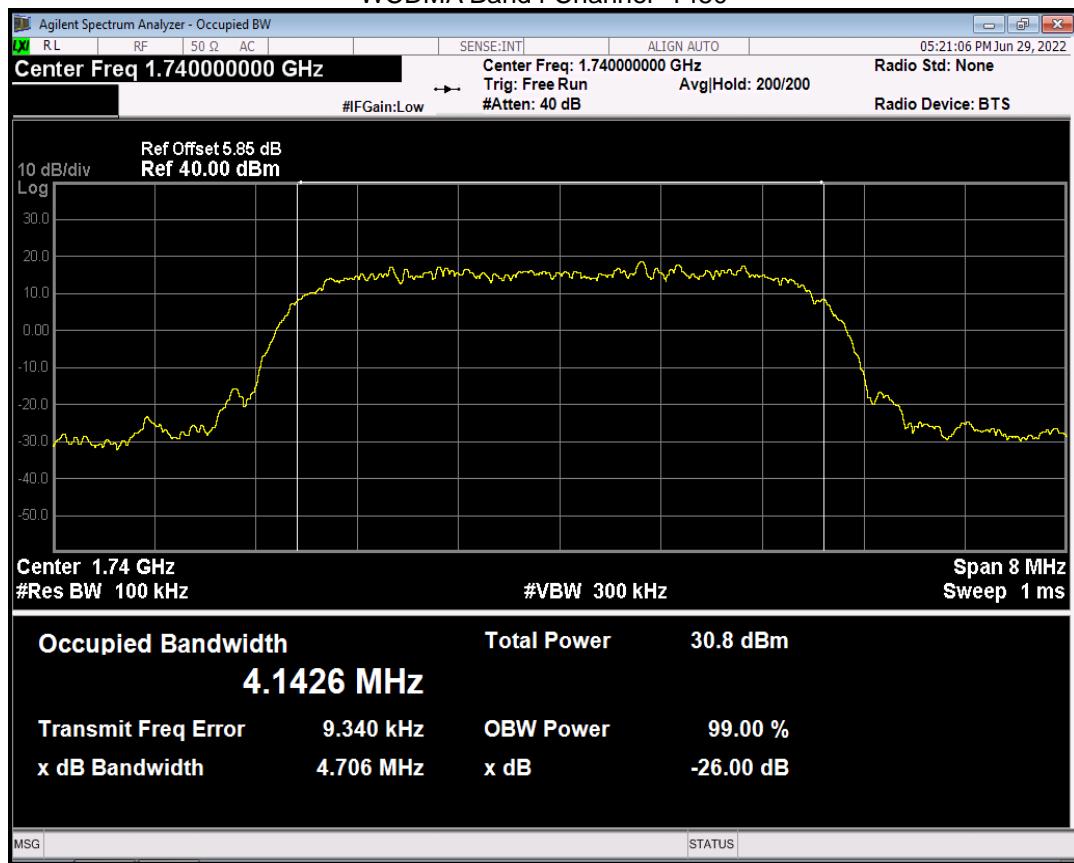
## WCDMA Band2 Channel=9538



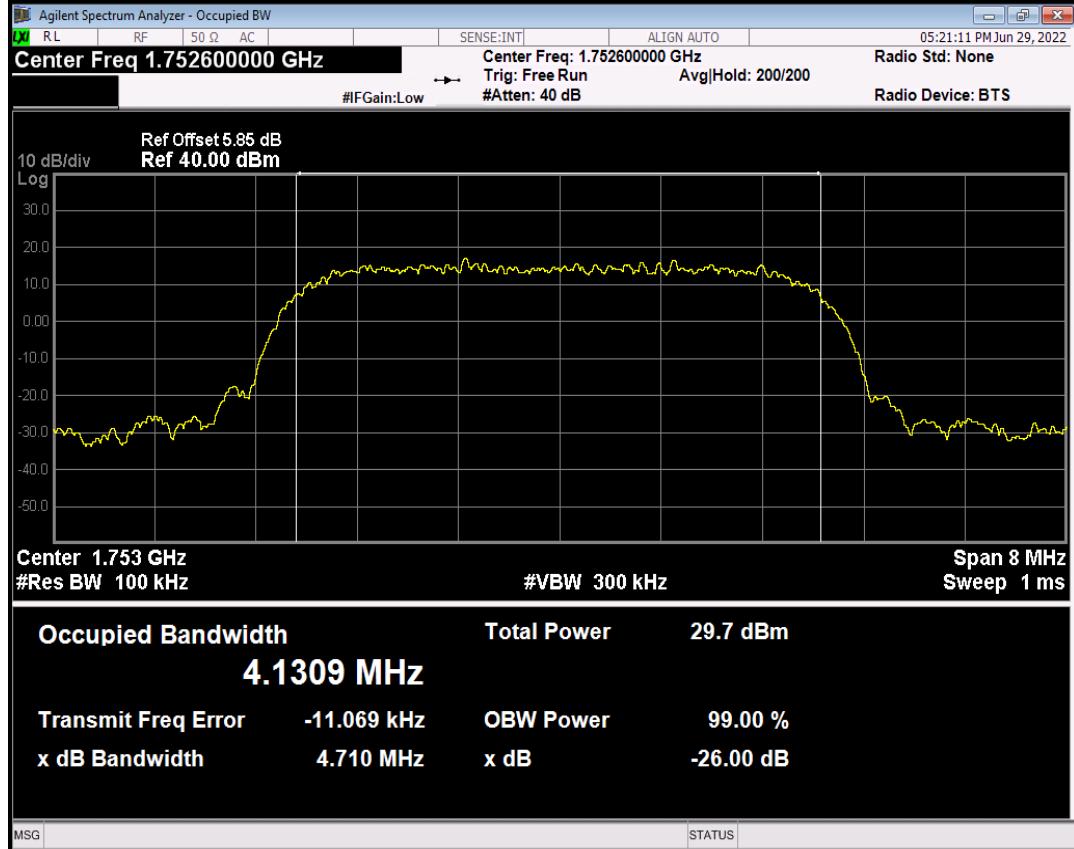
## WCDMA Band4 Channel=1312



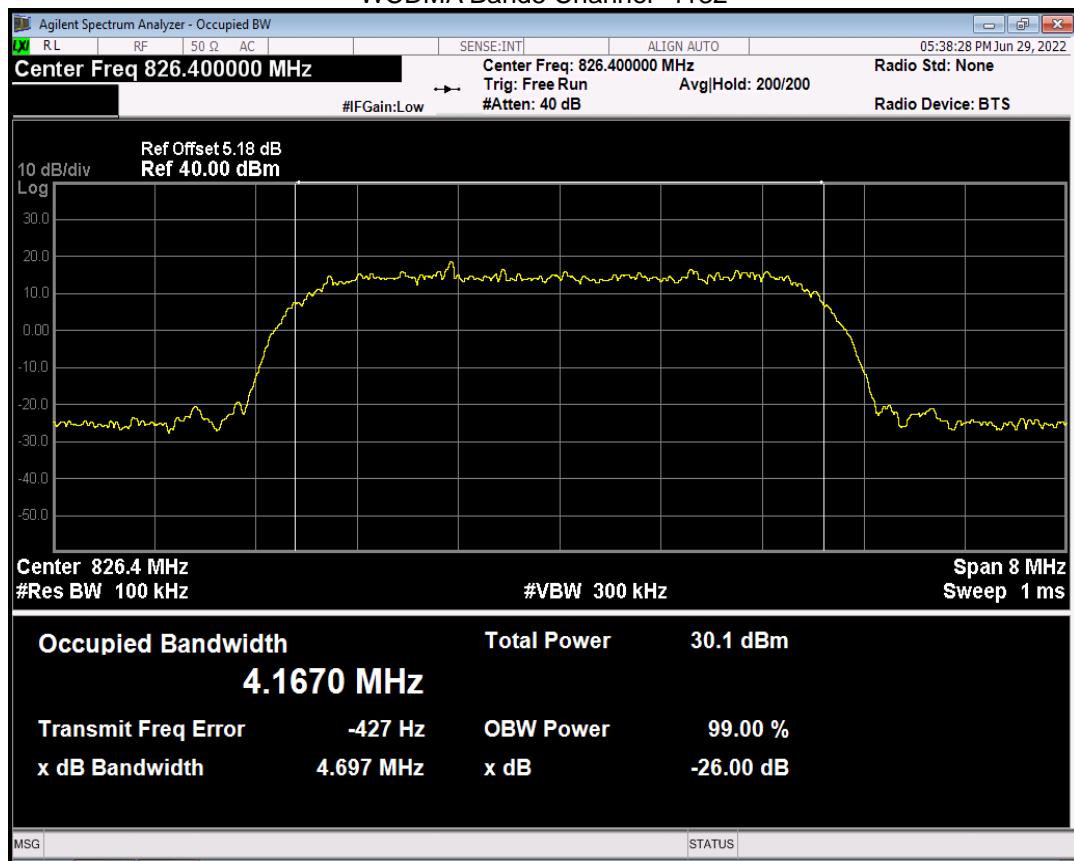
## WCDMA Band4 Channel=1450



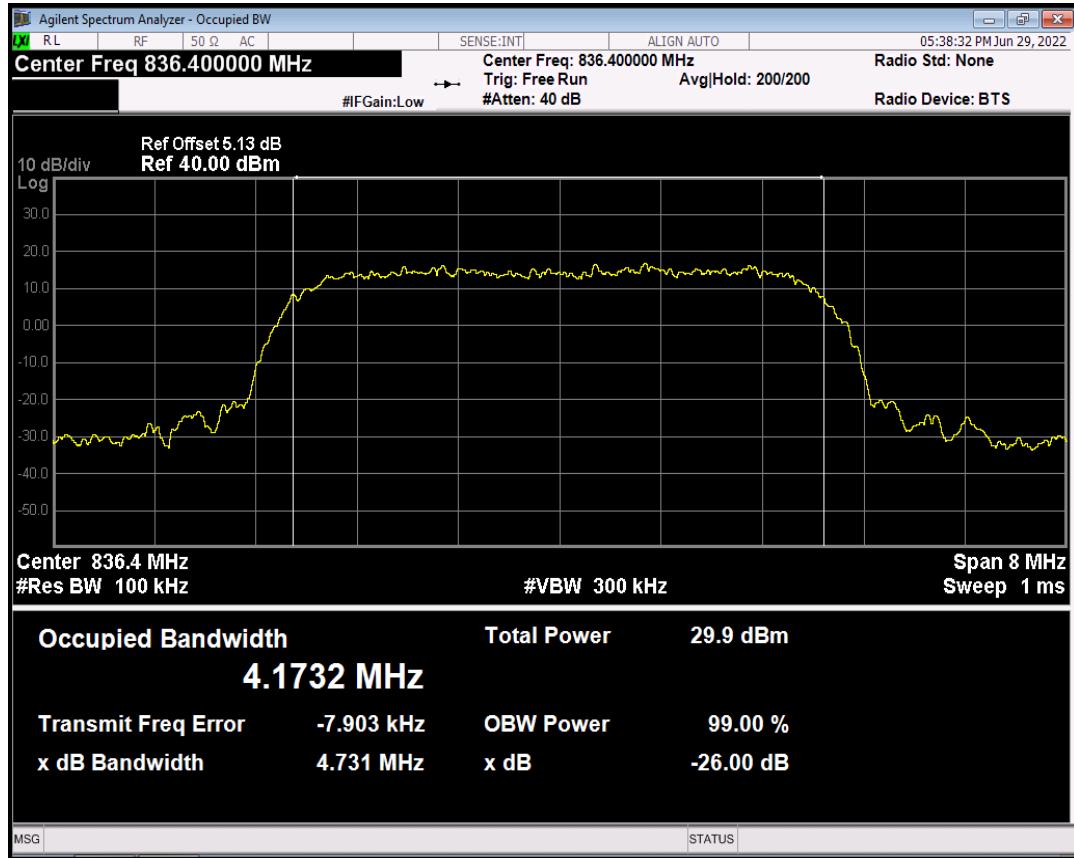
## WCDMA Band4 Channel=1513



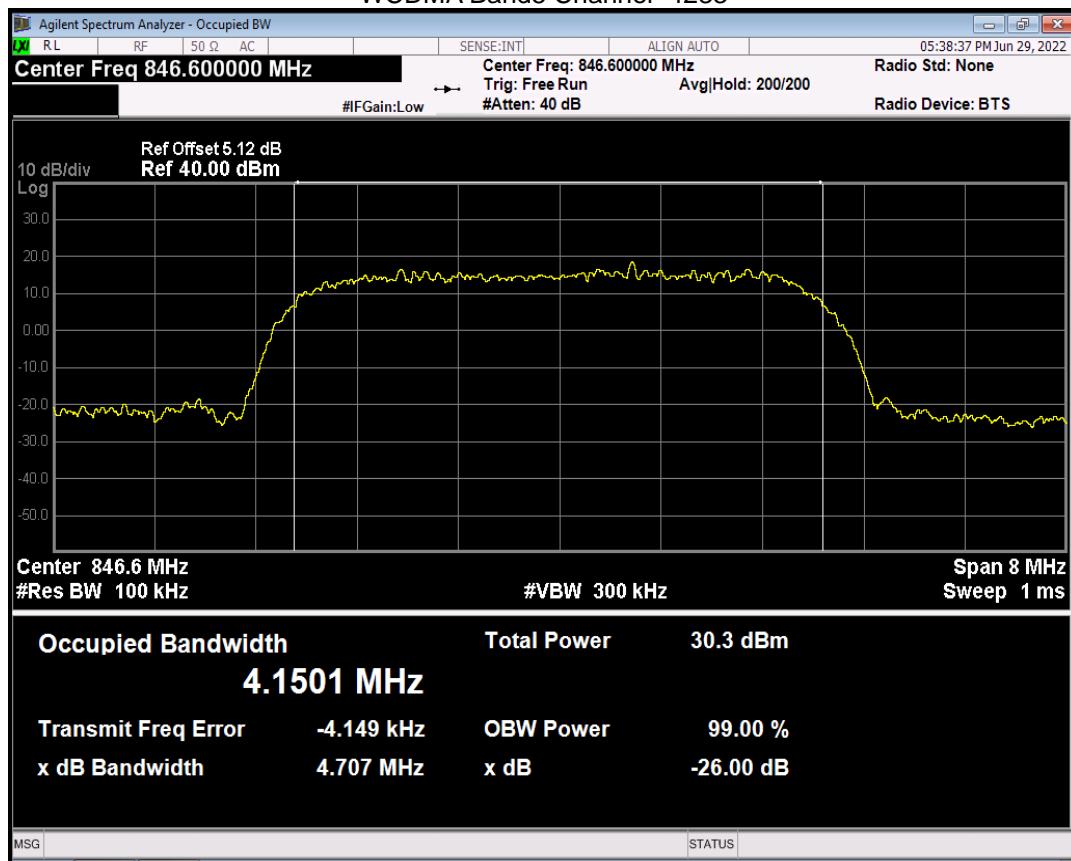
## WCDMA Band5 Channel=4132



## WCDMA Band5 Channel=4182

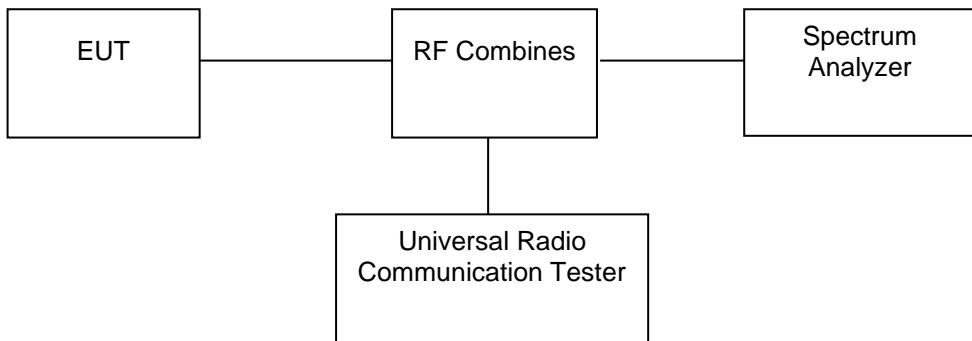


## WCDMA Band5 Channel=4233



## 9. Out of Band Emissions at Antenna Terminal

### 9.1 Block Diagram Of Test Setup



### 9.2 Limit

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.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10} (P)$  dB.

### 9.3 Test procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 100kHz and 1MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to 10<sup>th</sup> harmonic

### 9.4 Test Result

Note: In WCDMA, RMC, HSDPA and HSUPA all three tests only reflect the worst mode RMC.

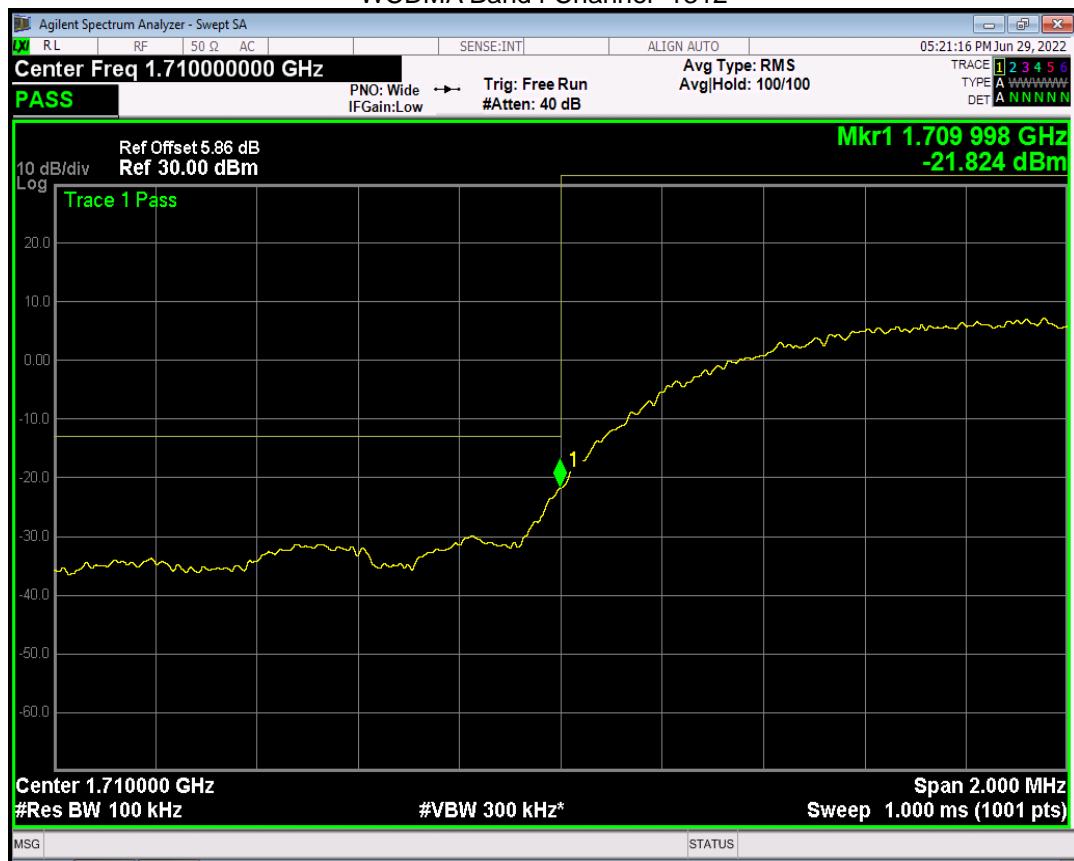
## WCDMA Band2 Channel=9262



## WCDMA Band2 Channel=9538



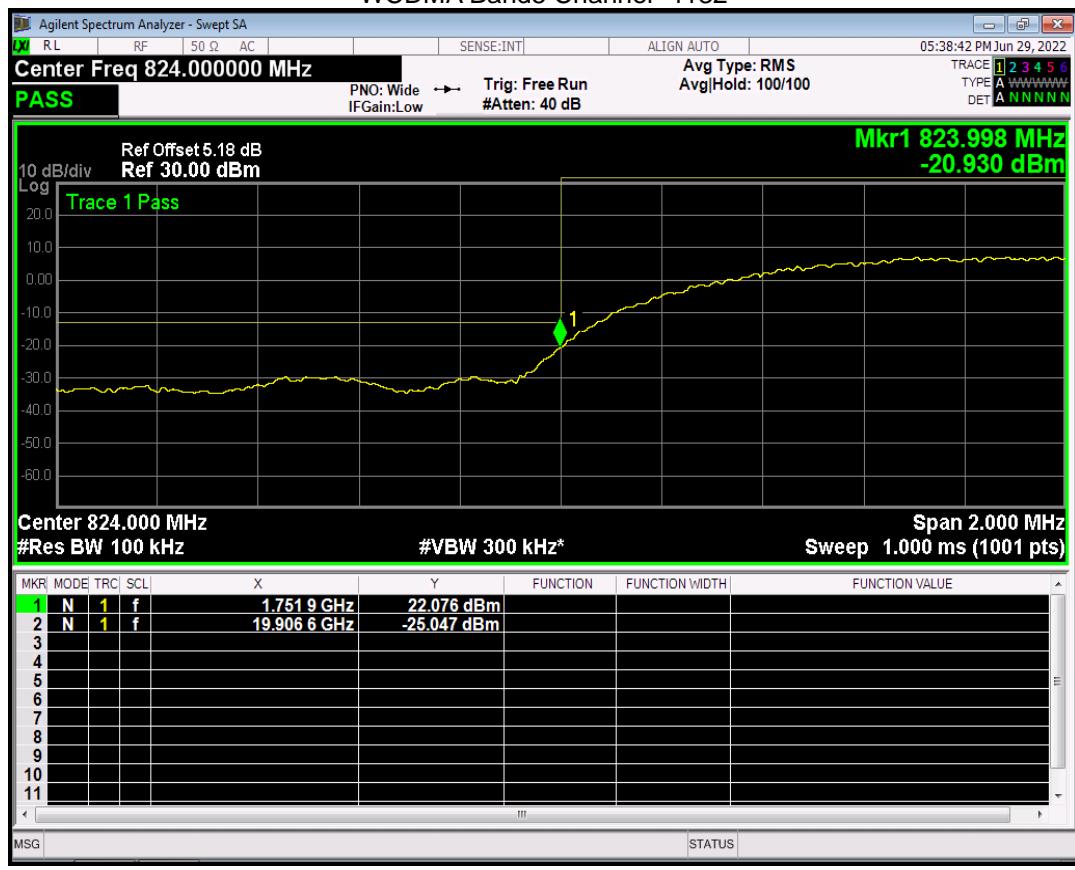
## WCDMA Band4 Channel=1312



## WCDMA Band4 Channel=1513



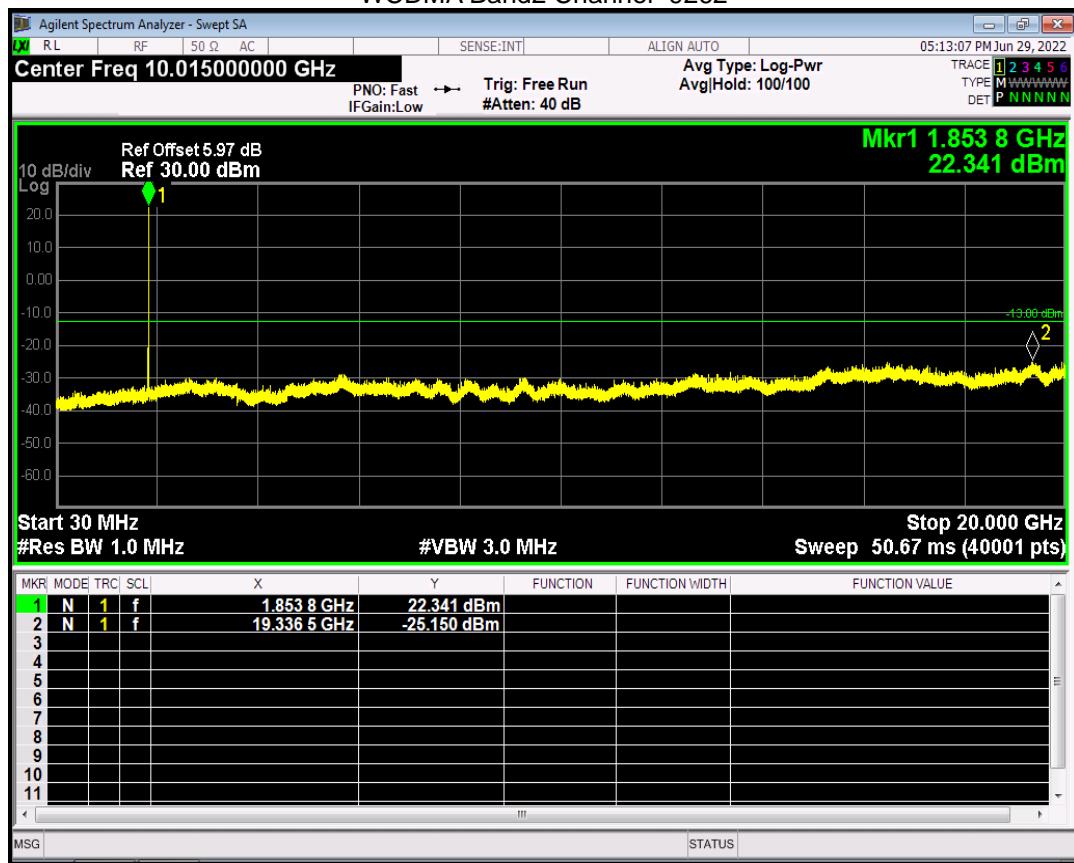
## WCDMA Band5 Channel=4132



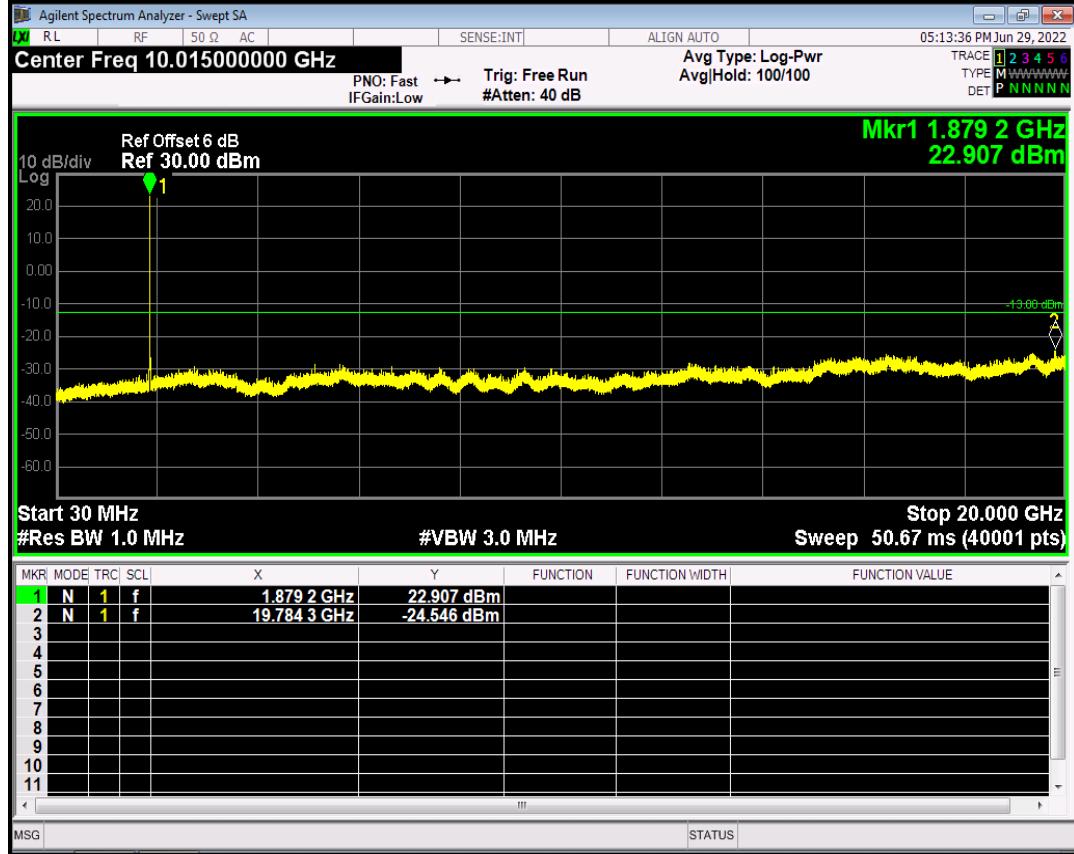
## WCDMA Band5 Channel=4233



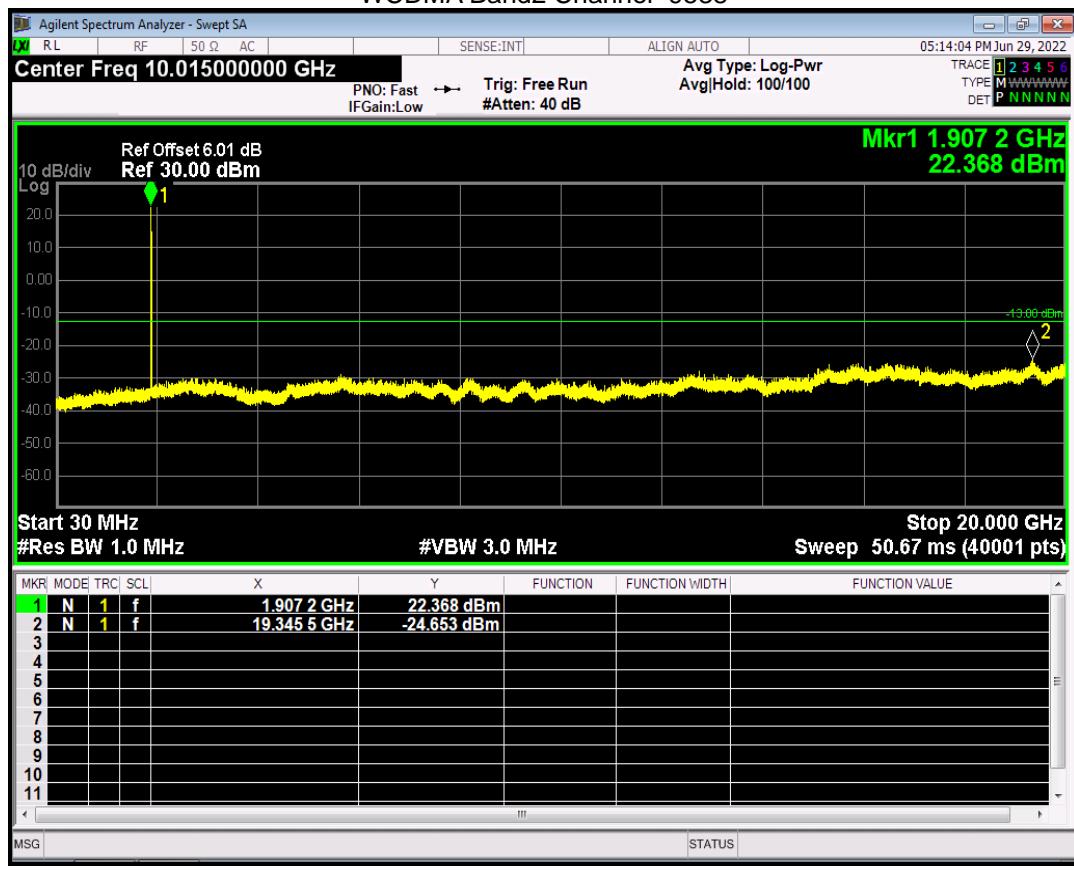
## WCDMA Band2 Channel=9262



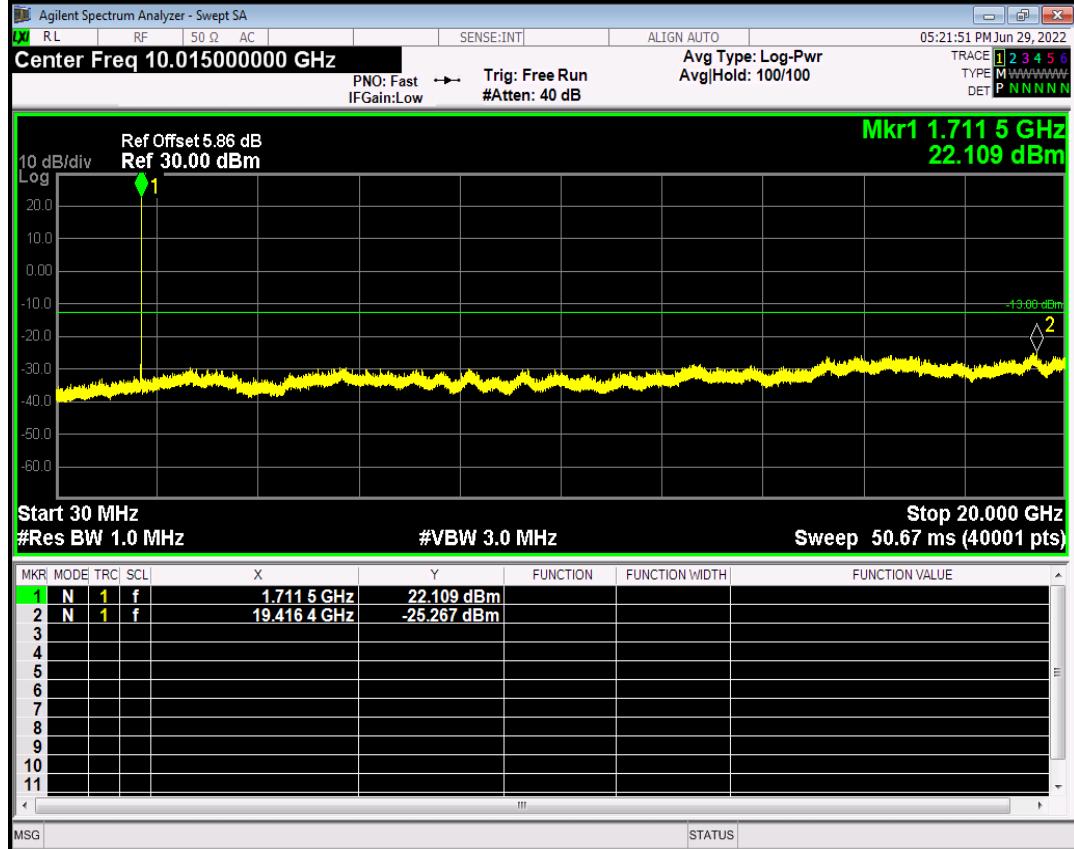
## WCDMA Band2 Channel=9400



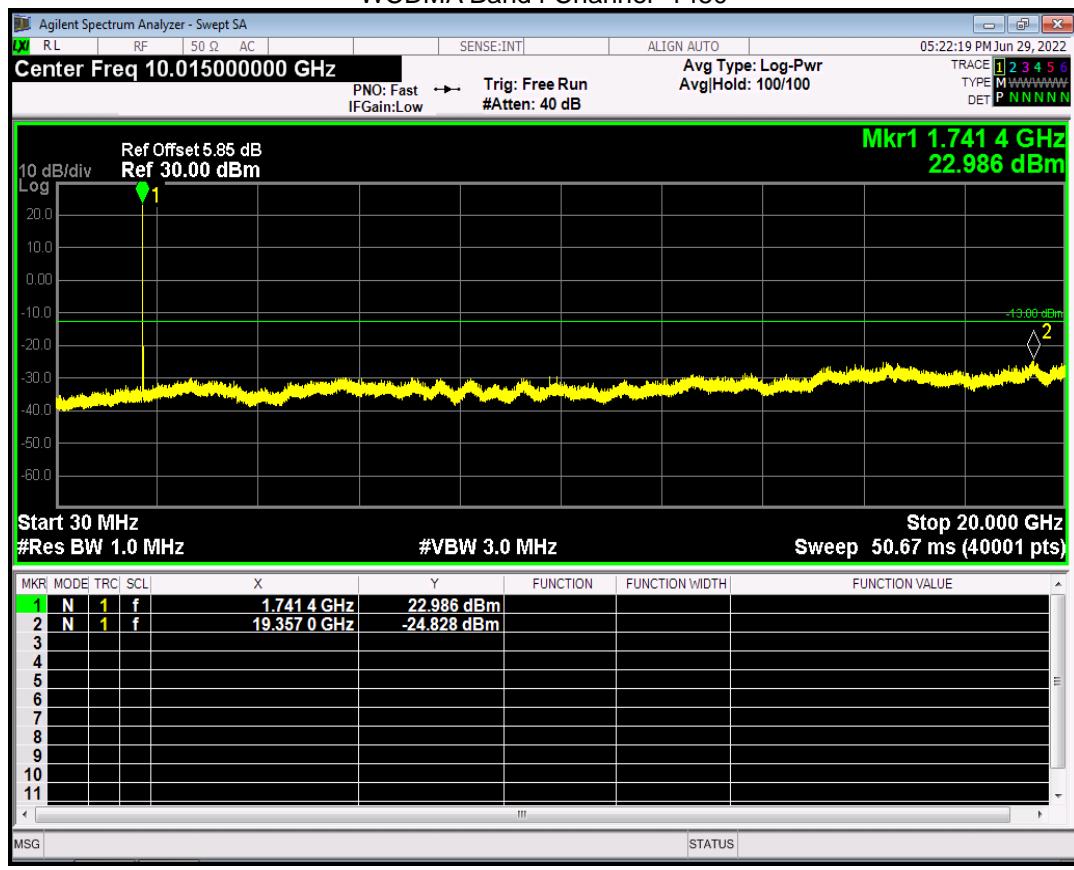
## WCDMA Band2 Channel=9538



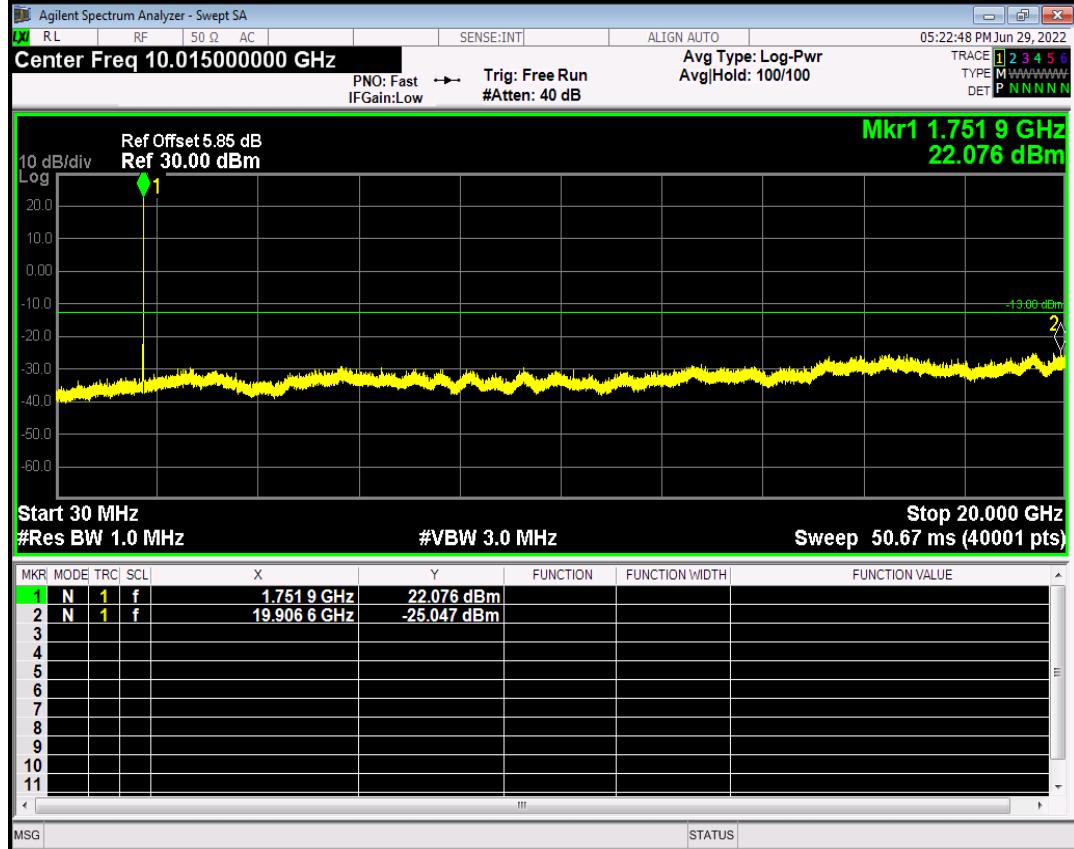
## WCDMA Band4 Channel=1312



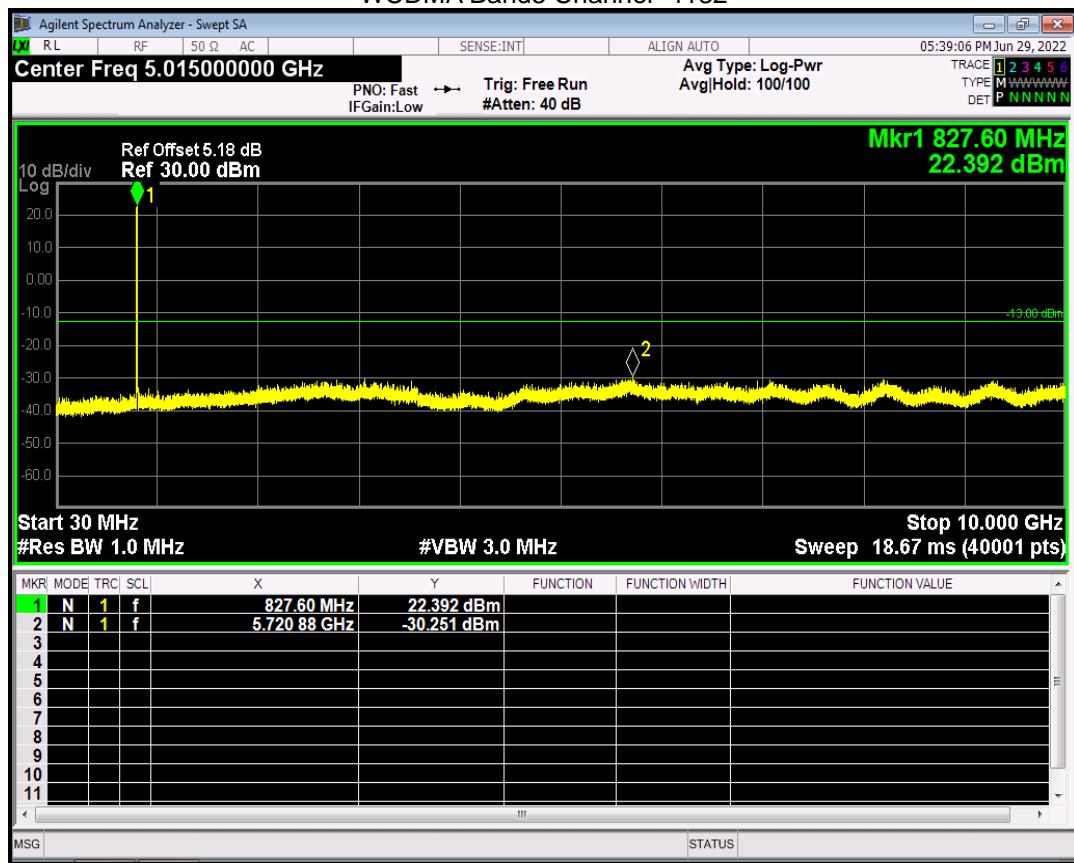
## WCDMA Band4 Channel=1450



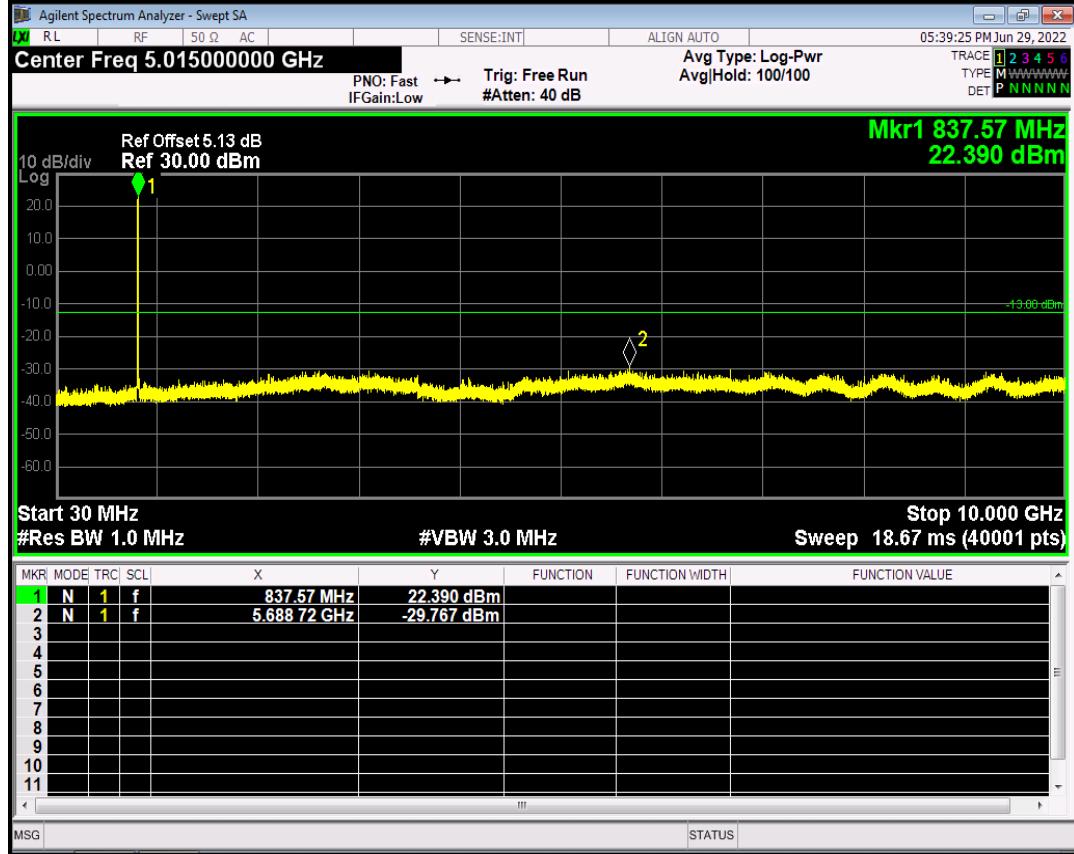
## WCDMA Band4 Channel=1513



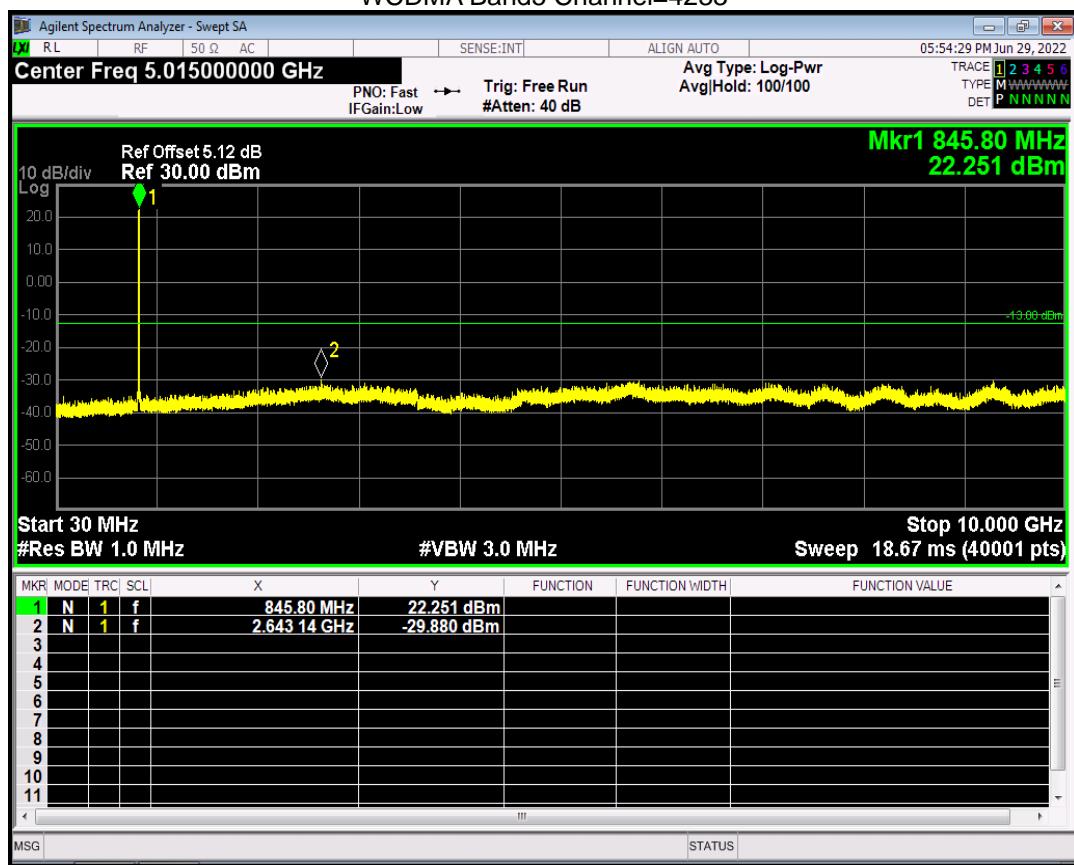
## WCDMA Band5 Channel=4132



## WCDMA Band5 Channel=4182



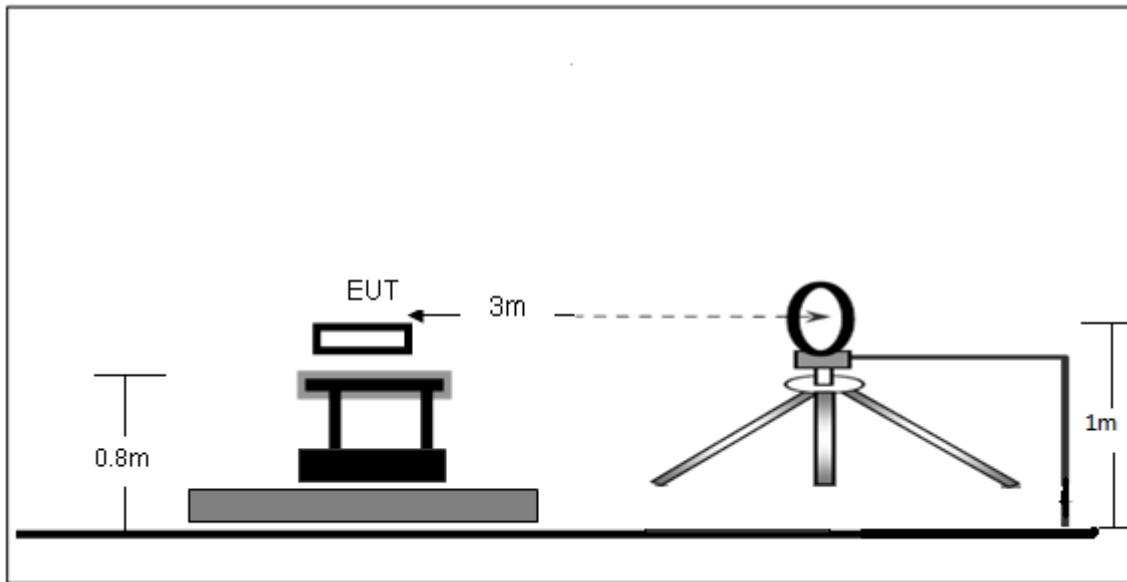
## WCDMA Band5 Channel=4233



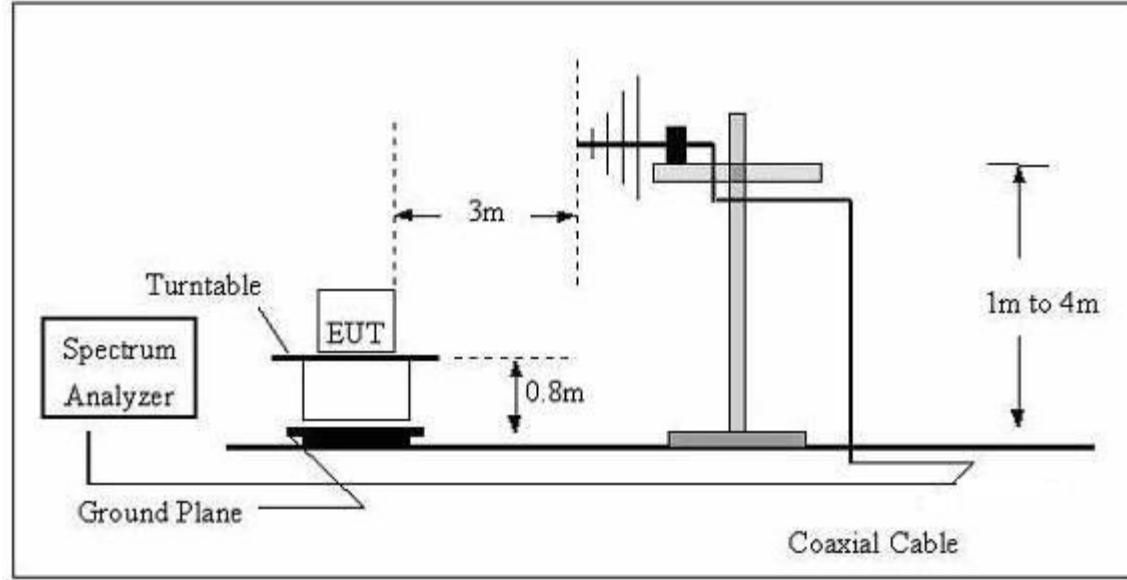
## 10. Spurious Radiated Emissions

### 10.1 Block Diagram Of Test Setup

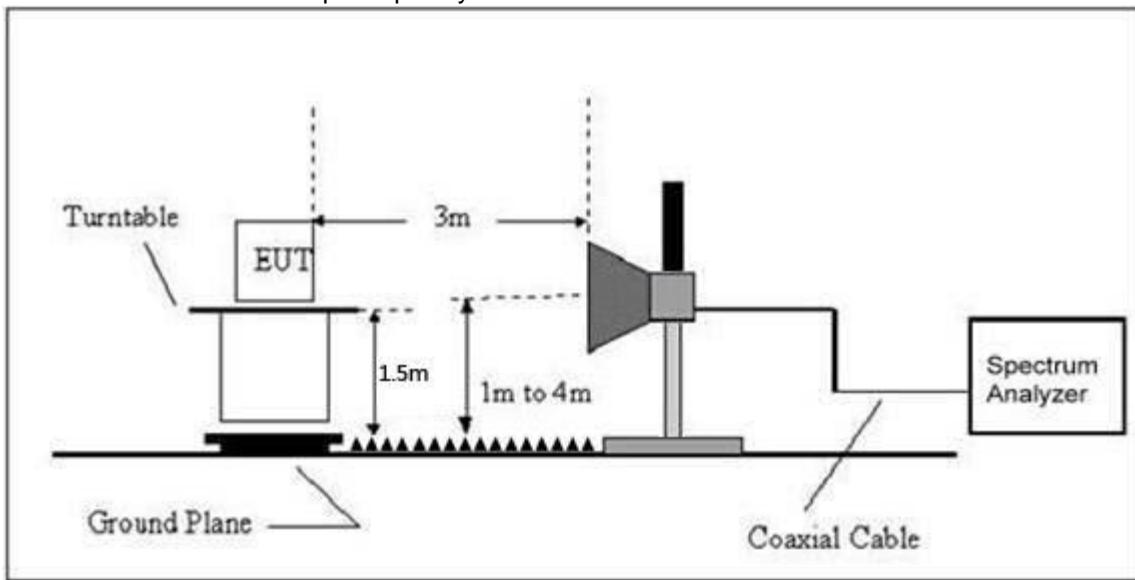
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



## (C) Radiated Emission Test-Up Frequency Above 1GHz



## 10.2 Limit

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.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10} (P)$  dB.

## 10.3 Test procedure

1. The setup of EUT is according with per ANSI/TIA Standard 603D and ANSI C63.4-2014 measurement procedure.
2. 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.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. 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 attenuation limit in dB =  $43 + 10 \log_{10}$  (power out in Watts)

## 10.4 Test Result

For Band WCDMA Band II Mode

| Frequency<br>(MHz)       | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polar<br>H/V |
|--------------------------|------------------|---------------|-----------------|----------------|----------------|--------------|
| Low Channel (1852.4MHz)  |                  |               |                 |                |                |              |
| 69.71                    | -44.85           | -15.71        | -60.56          | -13.00         | -47.56         | H            |
| 3704.8                   | -24.12           | -17.43        | -41.55          | -13.00         | -28.55         | H            |
| 5557.2                   | -31.20           | -11.73        | -42.93          | -13.00         | -29.93         | H            |
| 69.71                    | -44.80           | -15.71        | -60.51          | -13.00         | -47.51         | V            |
| 3704.8                   | -26.75           | -17.43        | -44.18          | -13.00         | -31.18         | V            |
| 5557.2                   | -30.84           | -11.73        | -42.57          | -13.00         | -29.57         | V            |
| Middle Channel (1880MHz) |                  |               |                 |                |                |              |
| 69.71                    | -42.47           | -15.71        | -58.17          | -13.00         | -45.17         | H            |
| 3760                     | -27.35           | -16.98        | -44.33          | -13.00         | -31.33         | H            |
| 5640                     | -29.12           | -11.33        | -40.45          | -13.00         | -27.45         | H            |
| 69.71                    | -41.21           | -15.71        | -56.92          | -13.00         | -43.92         | V            |
| 3760                     | -27.40           | -16.98        | -44.38          | -13.00         | -31.38         | V            |
| 5640                     | -30.85           | -11.33        | -42.18          | -13.00         | -29.18         | V            |
| High Channel (1907.6MHz) |                  |               |                 |                |                |              |
| 69.71                    | -41.72           | -15.71        | -57.43          | -13.00         | -44.43         | H            |
| 3815.2                   | -27.45           | -16.52        | -43.97          | -13.00         | -30.97         | H            |
| 5722.8                   | -29.16           | -10.93        | -40.09          | -13.00         | -27.09         | H            |
| 69.71                    | -42.41           | -15.71        | -58.12          | -13.00         | -45.12         | V            |
| 3815.2                   | -26.11           | -16.52        | -42.63          | -13.00         | -29.63         | V            |
| 5722.8                   | -29.79           | -10.93        | -40.72          | -13.00         | -27.72         | V            |

Note: Result=Reading+ Correct, Margin= Result- Limit

For Band WCDMA Band IV Mode

| Frequency<br>(MHz)       | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polar<br>H/V |
|--------------------------|------------------|---------------|-----------------|----------------|----------------|--------------|
| Low Channel (1712.4MHz)  |                  |               |                 |                |                |              |
| 69.71                    | -43.09           | -15.71        | -58.80          | -13.00         | -45.80         | H            |
| 3424.80                  | -24.95           | -19.74        | -44.69          | -13.00         | -31.69         | H            |
| 5137.20                  | -29.06           | -13.77        | -42.83          | -13.00         | -29.83         | H            |
| 69.71                    | -44.23           | -15.71        | -59.94          | -13.00         | -46.94         | V            |
| 3424.80                  | -28.12           | -19.74        | -47.86          | -13.00         | -34.86         | V            |
| 5137.20                  | -28.68           | -13.77        | -42.45          | -13.00         | -29.45         | V            |
| Middle Channel (1740MHz) |                  |               |                 |                |                |              |
| 69.71                    | -42.63           | -15.71        | -58.33          | -13.00         | -45.33         | H            |
| 3464.80                  | -25.19           | -19.41        | -44.60          | -13.00         | -31.60         | H            |
| 5197.20                  | -32.07           | -13.48        | -45.55          | -13.00         | -32.55         | H            |
| 69.71                    | -43.50           | -15.71        | -59.20          | -13.00         | -46.20         | V            |
| 3464.80                  | -28.28           | -19.41        | -47.69          | -13.00         | -34.69         | V            |
| 5197.20                  | -31.46           | -13.48        | -44.94          | -13.00         | -31.94         | V            |
| High Channel (1752.6MHz) |                  |               |                 |                |                |              |
| 69.71                    | -43.44           | -15.71        | -59.15          | -13.00         | -46.15         | H            |
| 3505.20                  | -24.45           | -19.08        | -43.53          | -13.00         | -30.53         | H            |
| 5257.80                  | -31.96           | -13.19        | -45.15          | -13.00         | -32.15         | H            |
| 69.71                    | -42.77           | -15.71        | -58.47          | -13.00         | -45.47         | V            |
| 3505.20                  | -27.18           | -19.08        | -46.26          | -13.00         | -33.26         | V            |
| 5257.80                  | -30.20           | -13.19        | -43.39          | -13.00         | -30.39         | V            |

Note: Result=Reading+ Correct, Margin= Result- Limit

## For Band WCDMA Band V Mode

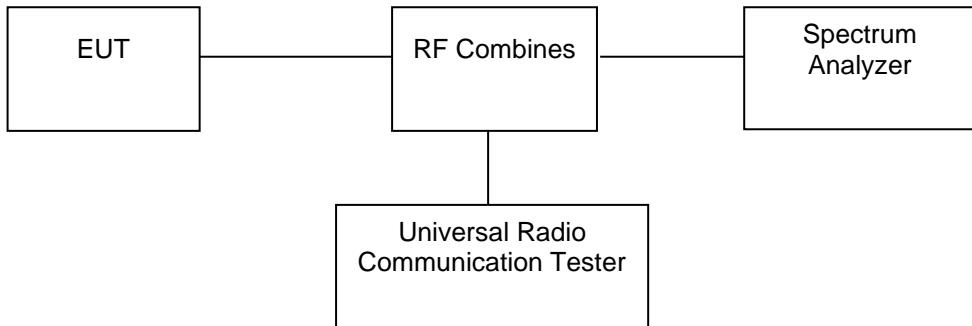
| Frequency<br>(MHz)        | Reading<br>(dBm) | Correct<br>dB | Result<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polar<br>H/V |
|---------------------------|------------------|---------------|-----------------|----------------|----------------|--------------|
| Low Channel (826.4MHz)    |                  |               |                 |                |                |              |
| 69.71                     | -44.39           | -15.71        | -60.09          | -13.00         | -47.09         | H            |
| 1652.80                   | -20.33           | -22.94        | -43.27          | -13.00         | -30.27         | H            |
| 2479.20                   | -24.21           | -22.46        | -46.67          | -13.00         | -33.67         | H            |
| 69.71                     | -41.93           | -15.71        | -57.63          | -13.00         | -44.63         | V            |
| 1652.80                   | -19.26           | -22.94        | -42.20          | -13.00         | -29.20         | V            |
| 2479.20                   | -26.79           | -22.46        | -49.25          | -13.00         | -36.25         | V            |
| Middle Channel (836.4MHz) |                  |               |                 |                |                |              |
| 69.71                     | -42.12           | -15.71        | -57.83          | -13.00         | -44.83         | H            |
| 1673.20                   | -21.94           | -22.87        | -44.81          | -13.00         | -31.81         | H            |
| 2509.80                   | -24.51           | -22.50        | -47.01          | -13.00         | -34.01         | H            |
| 69.71                     | -42.47           | -15.71        | -58.18          | -13.00         | -45.18         | V            |
| 1673.20                   | -18.40           | -22.87        | -41.27          | -13.00         | -28.27         | V            |
| 2509.80                   | -23.11           | -22.50        | -45.61          | -13.00         | -32.61         | V            |
| High Channel (846.6MHz)   |                  |               |                 |                |                |              |
| 69.71                     | -43.02           | -15.71        | -58.73          | -13.00         | -45.73         | H            |
| 1693.20                   | -18.29           | -22.80        | -41.09          | -13.00         | -28.09         | H            |
| 2539.80                   | -23.74           | -22.55        | -46.29          | -13.00         | -33.29         | H            |
| 69.71                     | -42.23           | -15.71        | -57.93          | -13.00         | -44.93         | V            |
| 1693.20                   | -19.88           | -22.80        | -42.68          | -13.00         | -29.68         | V            |
| 2539.80                   | -25.61           | -22.55        | -48.16          | -13.00         | -35.16         | V            |

Note: Result=Reading+ Correct, Margin= Result- Limit

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

## 11. Frequency Stability

### 11.1 Block Diagram Of Test Setup



### 11.2 Limit

FCC Part 22.355 :  $\pm 2.5$  ppm

FCC Part 24.235 :

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### 11.3 Test procedure

1. The testing follows FCC KDB 971168 D01v03r01 Section 9.0.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to  $-30^{\circ}\text{C}$  and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in  $10^{\circ}\text{C}$  steps up to  $50^{\circ}\text{C}$ . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

#### Test Procedures for Voltage Variation

1. The testing follows FCC KDB 971168 D01v03r01 Section 9.0.
2. The EUT was placed in a temperature chamber at  $25 \pm 5^{\circ}\text{C}$  and connected with the system simulator.
3. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.

## 11.4 Test Result

All modes have been tested, and the worst result recorded was report as below

| Operation Mode | Channel Number | Test Condition |           | Channel Frequency (MHz) | Freq.Dev. (Hz) | Deviation (ppm) | Limit (ppm) |
|----------------|----------------|----------------|-----------|-------------------------|----------------|-----------------|-------------|
|                |                | Voltage (V)    | Temp (°C) |                         |                |                 |             |
| WCDMA850       | 4132           | VN             | -20       | 836.40                  | 14.34          | 0.0171          | 2.5         |
|                |                |                | -10       | 836.40                  | 18.77          | 0.0224          | 2.5         |
|                |                |                | 0         | 836.40                  | 15.13          | 0.0181          | 2.5         |
|                |                |                | 10        | 836.40                  | 17.32          | 0.0207          | 2.5         |
|                |                |                | 20        | 836.40                  | 17.17          | 0.0205          | 2.5         |
|                |                |                | 30        | 836.40                  | 16.21          | 0.0194          | 2.5         |
|                |                |                | 40        | 836.40                  | 16.98          | 0.0203          | 2.5         |
|                |                |                | 50        | 836.40                  | 13.82          | 0.0165          | 2.5         |
|                |                |                | VL        | 20                      | 836.40         | 15.37           | 0.0184      |
|                |                | VH             | 20        | 836.40                  | 17.19          | 0.0205          | 2.5         |
| VERDICT        |                |                |           | PASS                    |                |                 |             |

| Operation Mode | Channel Number | Test Condition |           | Channel Frequency (MHz) | Freq.Dev. (Hz) | Deviation (ppm) | Limit (ppm) |
|----------------|----------------|----------------|-----------|-------------------------|----------------|-----------------|-------------|
|                |                | Voltage (V)    | Temp (°C) |                         |                |                 |             |
| WCDMA1700      | 1312           | VN             | -20       | 1712.40                 | 15.57          | 0.0091          | 2.5         |
|                |                |                | -10       | 1712.40                 | 17.61          | 0.0103          | 2.5         |
|                |                |                | 0         | 1712.40                 | 16.52          | 0.0096          | 2.5         |
|                |                |                | 10        | 1712.40                 | 17.14          | 0.0100          | 2.5         |
|                |                |                | 20        | 1712.40                 | 16.37          | 0.0096          | 2.5         |
|                |                |                | 30        | 1712.40                 | 17.32          | 0.0101          | 2.5         |
|                |                |                | 40        | 1712.40                 | 14.96          | 0.0087          | 2.5         |
|                |                |                | 50        | 1712.40                 | 16.38          | 0.0096          | 2.5         |
|                |                |                | VL        | 20                      | 1712.40        | 17.16           | 0.0100      |
|                |                | VH             | 20        | 1712.40                 | 17.00          | 0.0099          | 2.5         |
| VERDICT        |                |                |           | PASS                    |                |                 |             |

| Operation Mode | Channel Number | Test Condition |           | Channel Frequency (MHz) | Freq.Dev. (Hz) | Deviation (ppm) | Limit (ppm) |
|----------------|----------------|----------------|-----------|-------------------------|----------------|-----------------|-------------|
|                |                | Voltage (V)    | Temp (°C) |                         |                |                 |             |
| WCDMA1900      | 9262           | VN             | -20       | 1852.40                 | 14.00          | 0.0076          | 2.5         |
|                |                |                | -10       | 1852.40                 | 18.29          | 0.0099          | 2.5         |
|                |                |                | 0         | 1852.40                 | 14.63          | 0.0079          | 2.5         |
|                |                |                | 10        | 1852.40                 | 15.79          | 0.0085          | 2.5         |
|                |                |                | 20        | 1852.40                 | 16.15          | 0.0087          | 2.5         |
|                |                |                | 30        | 1852.40                 | 16.78          | 0.0091          | 2.5         |
|                |                |                | 40        | 1852.40                 | 16.15          | 0.0087          | 2.5         |
|                |                |                | 50        | 1852.40                 | 14.26          | 0.0077          | 2.5         |
|                |                |                | VL        | 20                      | 1852.40        | 16.34           | 0.0088      |
|                |                | VH             | 20        | 1852.40                 | 17.84          | 0.0096          | 2.5         |
| VERDICT        |                |                |           | PASS                    |                |                 |             |

## 12. EUT Photographs

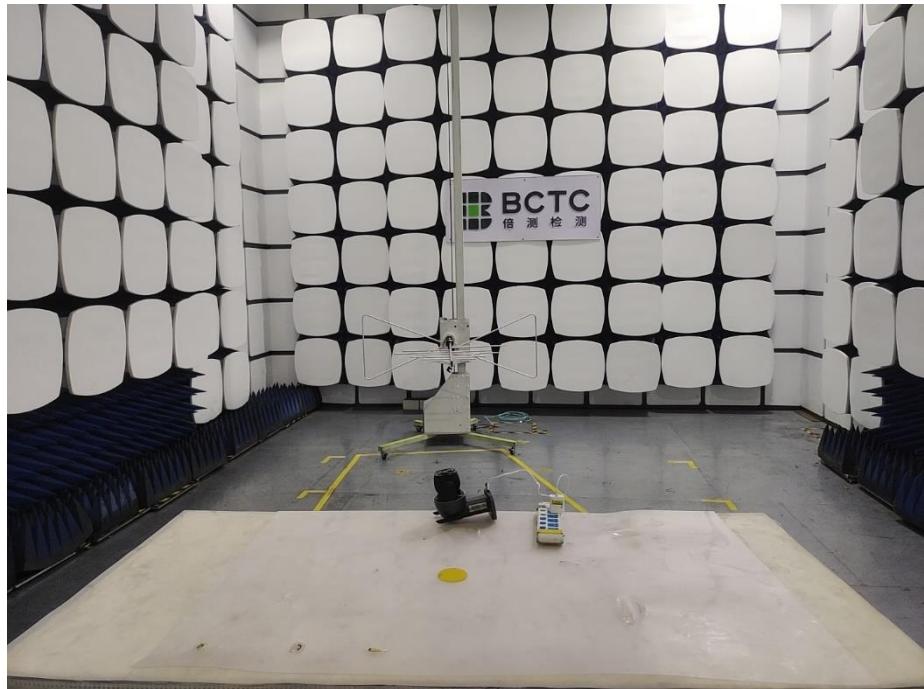
EUT Photo



NOTE: Appendix-Photographs Of EUT Constructional Details

### 13. EUT Test Setup Photographs

Radiated Measurement Photos



## STATEMENT

- 1.The equipment lists are traceable to the national reference standards.
- 2.The test report can not be partially copied unless prior written approval is issued from our lab.
- 3.The test report is invalid without stamp of laboratory.
- 4.The test report is invalid without signature of person(s) testing and authorizing.
- 5.The test process and test result is only related to the Unit Under Test.
- 6.The quality system of our laboratory is in accordance with ISO/IEC17025.
- 7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL: 400-788-9558

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E-Mail: [bctc@bctc-lab.com.cn](mailto:bctc@bctc-lab.com.cn)

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