

FCC Radio Test Report

FCC ID: QISME919BS-567A

This report concerns (check one): Original Grant Class II Change

Project No. : 1701C252
Equipment : LTE Module
Model Name : ME919Bs-567a
Applicant : Huawei Technologies Co.,Ltd.
Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District Shenzhen China

Date of Receipt : Feb. 08, 2017
Date of Test : Feb. 08, 2017 ~ Feb. 15, 2017
Issued Date : Feb. 16 2017
Tested by : BTL Inc.

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Declaration

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REPORT ISSUED HISTORY

| Issued No. | Description | Issued Date |
|---------------------|-----------------|--------------|
| BTL-FCCP-2-1701C252 | Original Issue. | Feb. 16 2017 |

1. CERTIFICATION

Equipment : LTE Module
Brand Name : HUAWEI
Model Name : ME919Bs-567a
Applicant : Huawei Technologies Co.,Ltd.
Manufacturer : Huawei Technologies Co.,Ltd.
Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District Shenzhen China
Factory : Huawei Technologies Co.,Ltd.
Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District Shenzhen China
Date of Test : Feb. 08, 2017 ~ Feb. 15, 2017
Test Sample : Engineering Sample
Standard(s) : 47 CFR FCC Part 24 Subpart E
47 CFR FCC Part 2
ANSI/TIA-603-D-2010
KDB 971168 D01 Power Meas License Digital Systems v02r02

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-2-1701C252) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

Test results included in this report is only for the DCS1900, WCDMA Band 2 and LTE Band 2 part.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

| FCC Part 22 Subpart H& Part 2 | | | |
|-------------------------------|------------------------------|----------|--------------|
| Standard(s) Section | Test Item | Judgment | Tested By |
| 2.1046 24.232(c) | Radiated power | PASS | Paul Li |
| 2.1046 24.232(c) | Conducted Output Power | PASS | Paul Li |
| 2.1049 24.238(a) | Occupied Bandwidth | PASS | Paul Li |
| 2.1051 24.238(a) | Conducted Spurious Emissions | PASS | Paul Li |
| 2.1053 24.238(a) | Radiated Spurious Emissions | PASS | Shaohua Peng |
| 24.238(a) | Band Edge Measurements | PASS | Paul Li |
| 24.232(d) | Peak To Average Ratio | PASS | Paul Li |
| 2.1055 24.235 | Frequency Stability | PASS | Paul Li |

NOTE:

(1) "N/A" denotes test is not applicable to this device.

2.1 TEST FACILITY

Conducted: No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

Radiated: No.2 New City Avenue Songshan Lake Sci. &Tech. Industry Park, Dongguan, Guangdong, P.R.C

BTL's test firm number for FCC: 319330

HUAWEI's test firm number for FCC: 97456

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The BTL / HUAWEI measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95%**.

| System Measurement Uncertainty | |
|--------------------------------|----------------------|
| Items | Extended Uncertainty |
| RE(9KHz-30MHz) | $U(E)=4.2, k=2$ |
| RSE(30MHz-26.5GHz) | $U=4.9, k=2$ |

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

| | | | |
|---------------------|--|--------------------------------|-----------|
| Equipment | LTE Module | | |
| Brand Name | HUAWEI | | |
| Model Name | ME919Bs-567a | | |
| Model Difference | N/A | | |
| Modulation Type | GSM/GPRS | GMSK | |
| | EDGE | GMSK, 8PSK | |
| | WCDMA | Uplink: BPSK Downlink: QPSK | |
| | WCDMA(HSDPA/HSUPA/HSPA+/DC-HSDPA/DC-HSUPA) | 16QAM | |
| | LTE | QPSK, 16QAM | |
| Operation Frequency | GSM /EDGE/GPRS | 1850.2 ~ 1909.8 MHz | |
| | WCDMA Band 2 | 1852.4 ~ 1907.6 MHz | |
| | LTE 2 (Channel Bandwidth: 1.4MHz) | 1850.7 ~ 1909.3 MHz | |
| | LTE 2 (Channel Bandwidth: 3MHz) | 1851.5 ~ 1908.5 MHz | |
| | LTE 2 (Channel Bandwidth: 5MHz) | 1852.5 ~ 1907.5 MHz | |
| | LTE 2 (Channel Bandwidth: 10MHz) | 1855.0 ~ 1905.0 MHz | |
| | LTE 2 (Channel Bandwidth: 15MHz) | 1857.5 ~ 1902.5 MHz | |
| | LTE 2 (Channel Bandwidth: 20MHz) | 1860.0 ~ 1900.0 MHz | |
| Max. EIRP Power | GSM/GPRS | GMSK | 26.92 dBm |
| | EDGE | 8PSK | 25.72 dBm |
| | WCDMA | BPSK | 21.18 dBm |
| | WCDMA_HSDPA | 16QAM | 21.12 dBm |
| | WCDMA_HSUPA | 16QAM | 21.12 dBm |
| | LTE 2 (Channel Bandwidth: 1.4MHz) | QPSK | 20.60 dBm |
| | | 16QAM | 19.80 dBm |
| | LTE 2 (Channel Bandwidth: 3MHz) | QPSK | 20.70 dBm |
| | | 16QAM | 19.84 dBm |
| | LTE 2 (Channel Bandwidth: 5MHz) | QPSK | 20.83 dBm |
| | | 16QAM | 20.08 dBm |
| | LTE 2 (Channel Bandwidth: 10MHz) | QPSK | 21.07 dBm |
| | | 16QAM | 20.35 dBm |
| | LTE 2 (Channel Bandwidth: 15MHz) | QPSK | 20.87 dBm |
| | | 16QAM | 20.21 dBm |
| | LTE 2 (Channel Bandwidth: 20MHz) | QPSK | 21.09 dBm |
| 16QAM | | 20.53 dBm | |

| | | |
|------------------|--|-----------------|
| Antenna Type | External Antenna | |
| Antenna Gain | 2.5 dBi for GSM, 2.5 dBi for WCDMA, 2.5 dBi for LTE | |
| Hardware Version | RM1ME919BSTM | |
| Software Version | 11.655.03.00.1419 | |
| IMEI No.1 | Radiated | 004401727616498 |
| | Conducted | 354189080003885 |
| Power Source | #1 Supplied from PC USB port or adapter. #2 Battery Supplied. | |
| Power Rating | #1 100-240V~ 50/60Hz #2 4.0V (3.8V-4.2V) | |

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

3.2 DESCRIPTION OF TEST MODES AND TEST CONDITION

Following channel(s) was (were) selected for the final test as listed below:

| GSM MODE | | | |
|------------------------|-------------------|----------------|-----------|
| Test Item | Available Channel | Tested Channel | Mode |
| EIRP | 512 to 810 | 512, 661, 810 | GSM, EDGE |
| Conducted Output Power | 512 to 810 | 512, 661, 810 | GSM, EDGE |
| Occupied Bandwidth | 512 to 810 | 512, 661, 810 | GSM, EDGE |
| Condcudeted Emission | 512 to 810 | 661 | GSM, EDGE |
| Radiated Emission | 512 to 810 | 661 | GSM, EDGE |
| Band Edge | 512 to 810 | 512, 810 | GSM, EDGE |
| Peak to Average Ratio | 512 to 810 | 512, 661, 810 | GSM, EDGE |
| Frequency Stability | 512 to 810 | 661 | GSM, EDGE |

| WCDMA MODE | | | |
|------------------------|-------------------|------------------|---------------------|
| Test Item | Available Channel | Tested Channel | Mode |
| EIRP | 9262 to 9538 | 9262, 9400, 9538 | WCDMA, HSDPA, HSUPA |
| Conducted Output Power | 9262 to 9538 | 9262, 9400, 9538 | WCDMA, HSDPA, HSUPA |
| Condcudeted Emission | 9262 to 9538 | 9400 | WCDMA, HSDPA, HSUPA |
| Radiated Emission | 9262 to 9538 | 9400 | WCDMA, HSDPA, HSUPA |
| Band Edge | 9262 to 9538 | 9262, 9538 | WCDMA, HSDPA, HSUPA |
| Peak to Average Ratio | 9262 to 9538 | 9262, 9400, 9538 | WCDMA, HSDPA, HSUPA |
| Frequency Stability | 9262 to 9538 | 9262 | WCDMA, HSDPA, HSUPA |

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in **QPSK** modulation.

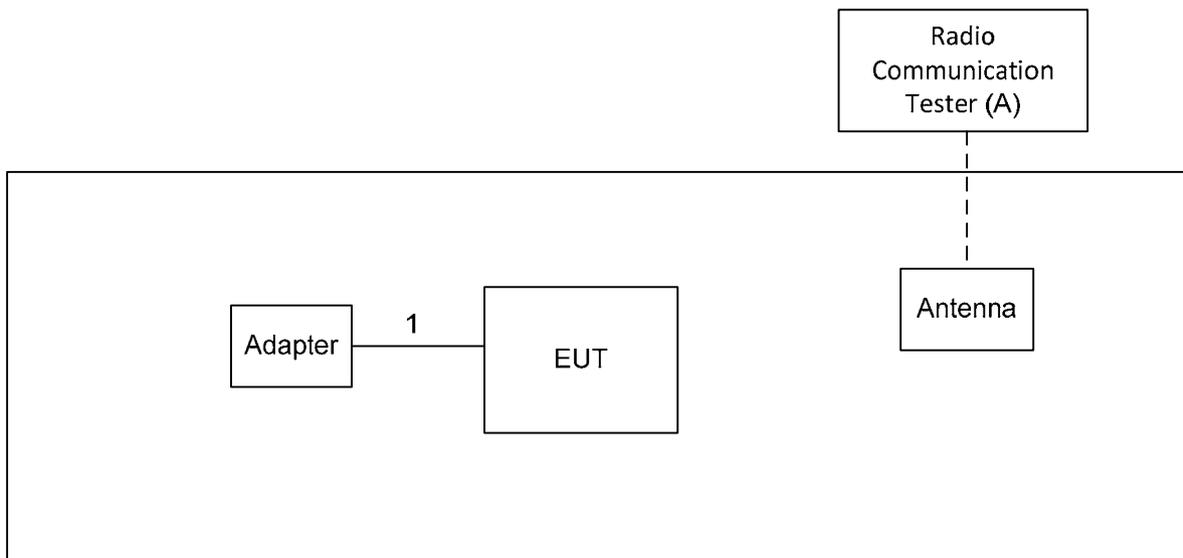
| LTE BAND 2 MODE | | | | | |
|--------------------|-------------------|---------------------|-------------------|-------------|----------------------|
| Test Item | Available Channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
| EIRP | 18607 to 19193 | 18607, 18900, 19193 | 1.4MHz | QPSK, 16QAM | 1 RB / 0 RB Offset |
| | 18615 to 19185 | 18615, 18900, 19185 | 3MHz | QPSK, 16QAM | 1 RB / 0 RB Offset |
| | 18625 to 19175 | 18625, 18900, 19175 | 5MHz | QPSK, 16QAM | 1 RB / 0 RB Offset |
| | 18650 to 19150 | 18650, 18900, 19150 | 10MHz | QPSK, 16QAM | 1 RB / 0 RB Offset |
| | 18675 to 19125 | 18675, 18900, 19125 | 15MHz | QPSK, 16QAM | 1 RB / 0 RB Offset |
| | 18700 to 19100 | 18700, 18900, 19100 | 20MHz | QPSK, 16QAM | 1 RB / 0 RB Offset |
| Occupied Bandwidth | 18607 to 19193 | 18607, 18900, 19193 | 1.4MHz | QPSK, 16QAM | 6 RB / 0 RB Offset |
| | 18615 to 19185 | 18615, 18900, 19185 | 3MHz | QPSK, 16QAM | 15 RB / 0 RB Offset |
| | 18625 to 19175 | 18625, 18900, 19175 | 5MHz | QPSK, 16QAM | 25 RB / 0 RB Offset |
| | 18650 to 19150 | 18650, 18900, 19150 | 10MHz | QPSK, 16QAM | 50 RB / 0 RB Offset |
| | 18675 to 19125 | 18675, 18900, 19125 | 15MHz | QPSK, 16QAM | 75 RB / 0 RB Offset |
| | 18700 to 19100 | 18700, 18900, 19100 | 20MHz | QPSK, 16QAM | 100 RB / 0 RB Offset |
| Conducted Emission | 18607 to 19193 | 18900 | 1.4MHz | QPSK | 1 RB / 0 RB Offset |
| | 18615 to 19185 | 18900 | 3MHz | QPSK | 1 RB / 0 RB Offset |
| | 18625 to 19175 | 18900 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | 18650 to 19150 | 18900 | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | 18675 to 19125 | 18900 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | 18700 to 19100 | 18900 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| Radiated Emission | 18607 to 19193 | 18900 | 1.4MHz | QPSK | 1 RB / 0 RB Offset |
| | 18700 to 19100 | 18900 | 20MHz | QPSK | 1 RB / 0 RB Offset |

| LTE BAND 2 MODE | | | | | | |
|---------------------|-----------------------|---------------------|---------------------|-------------|---|--------------------|
| Test Item | Available Channel | Tested Channel | Channel Bandwidth | Modulation | Mode | |
| Band Edge | 18607 to 19193 | 18607 | 1.4MHz | QPSK | 1 RB / 0 RB Offset 6 RB / 0 RB Offset | |
| | | 19193 | 1.4MHz | QPSK | 1 RB / 5 RB Offset 6 RB / 0 RB Offset | |
| | 18615 to 19185 | 18615 | 3MHz | QPSK | 1 RB / 0 RB Offset 15 RB / 0 RB Offset | |
| | | 19185 | 3MHz | QPSK | 1 RB / 14 RB Offset 15 RB / 0 RB Offset | |
| | 18625 to 19175 | 18625 | 5MHz | QPSK | 1 RB / 0 RB Offset 25 RB / 0 RB Offset | |
| | | 19175 | 5MHz | QPSK | 1 RB / 24 RB Offset 25 RB / 0 RB Offset | |
| | 18650 to 19150 | 18650 | 10MHz | QPSK | 1 RB / 0 RB Offset 50 RB / 0 RB Offset | |
| | | 19150 | 10MHz | QPSK | 1 RB / 49 RB Offset 50 RB / 0 RB Offset | |
| | 18675 to 19125 | 18675 | 15MHz | QPSK | 1 RB / 0 RB Offset 75 RB / 0 RB Offset | |
| | | 19125 | 15MHz | QPSK | 1 RB / 74 RB Offset 75 RB / 0 RB Offset | |
| | 18700 to 19100 | 18700 | 20MHz | QPSK | 1 RB / 0 RB Offset 100 RB / 0 RB Offset | |
| | | 19100 | 20MHz | QPSK | 1 RB / 99 RB Offset 100 RB / 0 RB Offset | |
| | Peak To Average Ratio | 18607 to 19193 | 18607, 18900, 19193 | 1.4MHz | QPSK, 16QAM | 1 RB / 0 RB Offset |
| | | 18615 to 19185 | 18615, 18900, 19185 | 3MHz | QPSK, 16QAM | 1 RB / 0 RB Offset |
| | | 18625 to 19175 | 18625, 18900, 19175 | 5MHz | QPSK, 16QAM | 1 RB / 0 RB Offset |
| | | 18650 to 19150 | 18650, 18900, 19150 | 10MHz | QPSK, 16QAM | 1 RB / 0 RB Offset |
| 18675 to 19125 | | 18675, 18900, 19125 | 15MHz | QPSK, 16QAM | 1 RB / 0 RB Offset | |
| 18700 to 19100 | | 18700, 18900, 19100 | 20MHz | QPSK, 16QAM | 1 RB / 0 RB Offset | |
| Frequency Stability | 18607 to 19193 | 18900 | 1.4MHz | QPSK | 1 RB / 0 RB Offset | |
| | 18615 to 19185 | 18900 | 3MHz | QPSK | 1 RB / 0 RB Offset | |
| | 18625 to 19175 | 18900 | 5MHz | QPSK | 1 RB / 0 RB Offset | |
| | 18650 to 19150 | 18900 | 10MHz | QPSK | 1 RB / 0 RB Offset | |
| | 18675 to 19125 | 18900 | 15MHz | QPSK | 1 RB / 0 RB Offset | |
| | 18700 to 19100 | 18900 | 20MHz | QPSK | 1 RB / 0 RB Offset | |

EUT TEST CONDITIONS:

| Test Item | Environmental Conditions | Test Voltage |
|------------------------|--------------------------|--------------|
| EIRP | 25°C, 60%RH | DC 4.0V |
| Conducted Output Power | 25°C, 65%RH | DC 4.0V |
| Occupied Bandwidth | 25°C, 65%RH | DC 4.0V |
| Conducted Emission | 25°C, 65%RH | DC 4.0V |
| Radiated Emission | 25°C, 60%RH | AC 120V/60Hz |
| Band Edge | 25°C, 65%RH | DC 4.0V |
| Peak to Average Ratio | 25°C, 65%RH | DC 4.0V |
| Frequency Stability | 25°C, 65%RH | DC 4.0V |

3.3 BLOCKDIGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED FOR RADIATED



3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | FCC ID | Series No. |
|------|----------------------------|-----------|----------------|--------|-----------------|
| A | Radio Communication Tester | R&S | CMU200 | N/A | 3608082535 |
| | | Anritsu | MT8820C | N/A | A110518805 |
| B | Adaptor | Huawei | HW-050200U3W | N/A | HWHKA8G62400013 |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|-----------|
| 1 | YES | NO | 1m | USB cable |

4. TEST RESULT

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMIT

Mobile / Portable station are limited to 2 watts e.i.r.p.

4.1.2 TEST PROCEDURE

EIRP/ERP:

EIRP= Conducted Power +Antenan gain

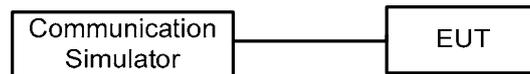
ERP power=EIPR power-2.15dBi.

Conducted Power:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 TESTSETUP LAYOUT

Conducted Power Measurement



4.1.4 TEST DEVIATION

No deviation

4.1.5 TEST RESULTS

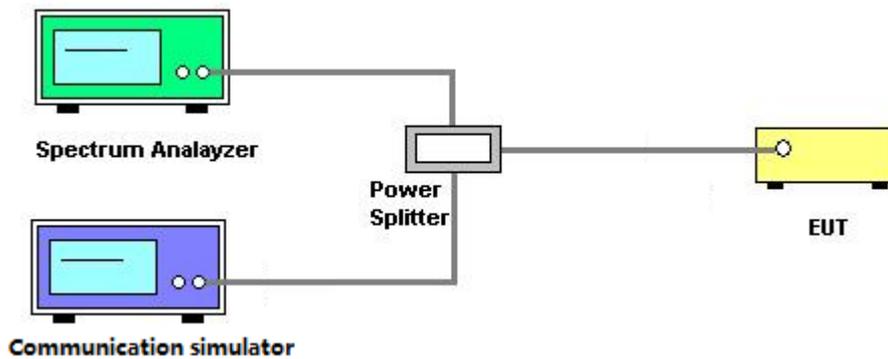
Please refer to the Attachment A.

4.2 OCCUPIED BANDWIDTH MEASUREMENT

4.2.1 TEST PROCEDURE

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth and 26dB bandwidth.

4.2.2 TEST SETUP LAYOUT



4.2.3 TEST DEVIATION

No deviation

4.2.4 TEST RESULTS

Please refer to the Attachment B.

4.3 CONDUCTED EMISSIONS MEASUREMENT

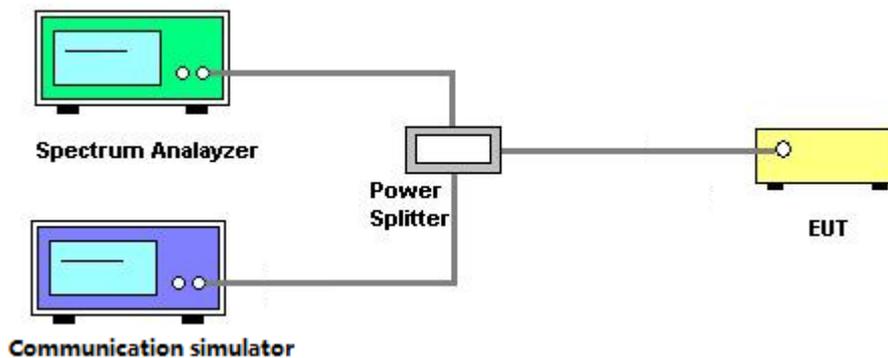
4.3.1 LIMIT

The power of any emission 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. The emission limit equal to -13dBm .

4.3.2 TEST PROCEDURES

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured. Set $\text{RBW} \geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from $43+10\log(P)\text{dB}$ below the transmitter power P(Watts)
 $=P(W)-[43+10\log(P)](\text{dB})$
 $=[30+10\log(P)](\text{dBm})-[43+10\log(P)](\text{dB})$
 $=-13\text{dBm}$

4.3.3 TESTSETUP LAYOUT



4.3.4 TESTDEVIATION

No deviation

4.3.5 TEST RESULTS

Please refer to the Attachment C.

4.4 RADIATED EMISSIONS MEASUREMENT

4.4.1 LIMIT

The power of any emission 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. The emission limit equal to -13dBm.

4.4.2 TEST PROCEDURES

1. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
2. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G
3. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
4. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.4.3 TESTSETUP LAYOUT

This test setup layout is the same as that shown in **section 4.1.3**.

4.4.4 TESTDEVIATION

No deviation

4.4.5 TEST RESULTS

Please refer to the Attachment D.

4.5 BAND EDGE MEASUREMENT

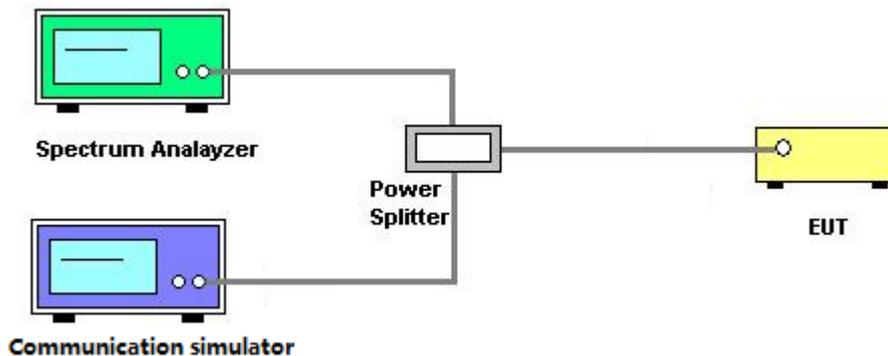
4.5.1 LIMIT

A Power of any emission 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. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

4.5.2 TEST PROCEDURES

1. All measurements were done at low and high operational frequency range.
2. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM/GPRS/EDGE).
3. The center frequency of spectrum is the band edge frequency and span is 5MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA).
4. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 13kHz and VB of the spectrum is 51kHz (LTE Bandwidth 1.4MHz).
5. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Bandwidth 3MHz).
6. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Bandwidth 5MHz/10MHz).
7. Record the max trace plot into the test report.

4.5.3 TESTSETUP LAYOUT



4.5.4 TESTDEVIATION

No deviation

4.5.5 TEST RESULTS

Please refer to the Attachment E.

4.6 PEAK TO AVERAGE RATIO MEASUREMENT

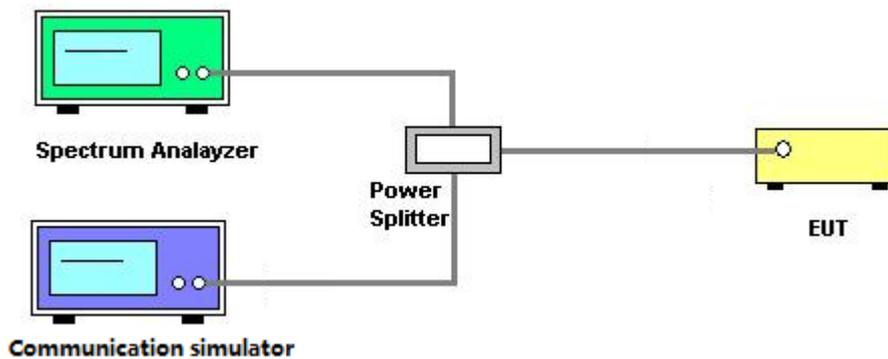
4.6.1 LIMIT

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.

4.6.2 TEST PROCEDURES

1. Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

4.6.3 TESTSETUP LAYOUT



4.6.4 TESTDEVIATION

No deviation

4.6.5 TEST RESULTS

Please refer to the Attachment F.

4.7 FREQUENCY STABILITY MEASUREMENT

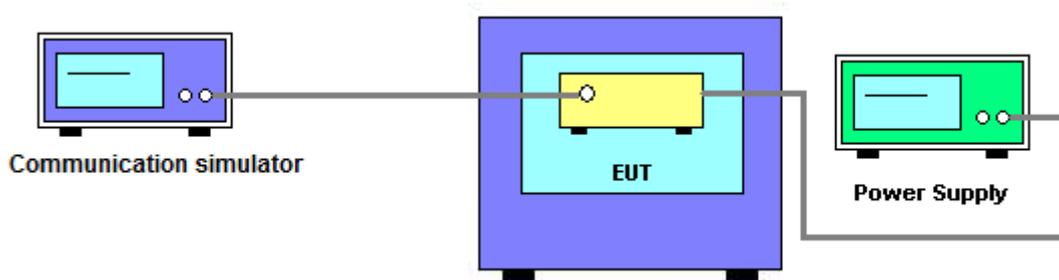
4.7.1 LIMIT

1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.7.2 TEST PROCEDURES

1. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
2. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
3. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.
4. The frequency error was recorded frequency error from the communication simulator.

4.7.3 TESTSETUP LAYOUT



4.7.4 TESTDEVIATION

No deviation

4.7.5 TEST RESULTS

Please refer to the Attachment G.

5. LIST OF MEASUREMENT EQUIPMENTS

| Radiated Emission Measurement | | | | | |
|-------------------------------|---|--------------|-----------|------------|------------------|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Test receiver | R&S | ESU26 | 100387 | Jul. 21, 2017 |
| 2 | LOOP Antennas(9kHz-30MHz) | R&S | HFH2-Z2 | 100263 | Apr. 29, 2017 |
| 3 | Spectrum analyzer | R&S | FSU3 | 200474 | May 24, 2017 |
| 4 | Spectrum analyzer | R&S | FSU43 | 100144 | Jun. 02, 2017 |
| 5 | Trilog Broadband Antenna (30M~3GHz) | SCHWARZBECK | VULB 9163 | 9163-521 | Apr. 08, 2017 |
| 6 | Double-Ridged Waveguide Horn Antenna (1G~18GHz) | R&S | HF907 | 100304 | Apr. 29, 2017 |
| 7 | Pyramidal Horn Antenna(18GHz-26.5 GHz) | ETS-Lindgren | Sep-60 | 5140299 | Jul. 14, 2017 |
| 8 | Radio Communication Tester | R&S | CMU200 | 3608082535 | Mar. 30, 2017 |
| 9 | Radio Communication Tester | Anritsu | MT8820C | A110518805 | May 23, 2017 |

| Conducted Emission & Band Edge & Occupied Bandwidth Measurement | | | | | |
|---|-------------------------------------|---------------|--------------|-------------|------------------|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Wireless Communication Test SET | Agilent | E5515C | MY48364183 | Mar. 27, 2017 |
| 2 | EXA Spectrum Analyzer | Agilent | N9010A | MY50520044 | Mar. 27, 2017 |
| 3 | POWER SPLITTER | Mini-Circuits | ZFRSC-123-S+ | 331000910-1 | Feb. 26, 2017 |
| 4 | wideband radio communication tester | R&S | CMW500 | 152372 | Mar. 27, 2017 |
| 5 | Cable | N/A | RG316(0.3m) | N/A | Jul. 06, 2017 |
| 6 | Cable | N/A | RG316(0.3m) | N/A | Jul. 06, 2017 |

| Frequency Stability Measurement | | | | | |
|---------------------------------|-------------------------------------|---------------|--------------|-------------|------------------|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Wireless Communication Test SET | Agilent | E5515C | MY48364183 | Mar. 27, 2017 |
| 2 | DC power supply | GW Instek | GPC-3030DN | EK880675 | Oct. 13, 2017 |
| 3 | POWER SPLITTER | Mini-Circuits | ZFRSC-123-S+ | 331000910-1 | Feb. 26, 2017 |
| 4 | wideband radio communication tester | R&S | CMW500 | 152372 | Mar. 27, 2017 |
| 5 | Const Temp,& Humidity Chamber | Giant?Force | ITH-225-20-S | IAB0309-001 | Sep. 04, 2017 |
| 6 | Cable | N/A | RG316(0.3m) | N/A | Jul. 06, 2017 |

Remark: "N/A" denotes no model name, serial no. or calibration specified.
 All calibration period of equipment list is one year.

ATTACHMENT A - OUTPUT POWER

Conducted Power:

| DCS1900 (Capsensor Off) | Burst Conducted Power (dBm) | | |
|----------------------------|-----------------------------|---------|-----------|
| | 512CH | 661CH | 810CH |
| | 1850.2MHz | 1880MHz | 1909.8MHz |
| GSM (CS) | - | - | - |
| GPRS/EDGE (GMSK) | 28.97 | 29.00 | 29.07 |
| | 27.22 | 27.31 | 27.41 |
| | 26.34 | 26.29 | 26.44 |
| | 24.21 | 24.16 | 24.39 |
| EDGE (8PSK) | 25.74 | 25.88 | 26.10 |
| | 24.21 | 24.47 | 24.47 |
| | 23.17 | 23.07 | 23.34 |
| | 20.76 | 21.39 | 21.01 |

| Modulation | Band | WCDMA Band 2(Capsensor Off) | | |
|------------|-----------------|-----------------------------|---------|-----------|
| | Tx Channel | 9262CH | 9400CH | 9538CH |
| | Rx Channel | 9662CH | 9800CH | 9938CH |
| | Frequency | 1852.4MHz | 1880MHz | 1907.6MHz |
| BPSK | RMC 12.2K | 23.23 | 23.10 | 23.33 |
| | RMC 64K | 23.17 | 23.04 | 23.27 |
| | RMC 144K | 23.20 | 23.07 | 23.28 |
| | RMC 384K | 23.21 | 23.10 | 23.25 |
| 16QAM | HSDPA Subtest-1 | 23.18 | 23.05 | 23.27 |
| | HSDPA Subtest-2 | 22.67 | 22.56 | 22.76 |
| | HSDPA Subtest-3 | 22.15 | 22.03 | 22.27 |
| | HSDPA Subtest-4 | 22.13 | 22.02 | 22.24 |
| 16QAM | HSUPA Subtest-1 | 23.18 | 22.52 | 22.75 |
| | HSUPA Subtest-2 | 23.18 | 23.07 | 23.27 |
| | HSUPA Subtest-3 | 22.16 | 22.06 | 22.26 |
| | HSUPA Subtest-4 | 23.19 | 23.07 | 23.27 |
| | HSUPA Subtest-5 | 23.14 | 23.03 | 23.22 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|------------|----------|------------|
| | | | | 18607 CH | 18900 CH | 19193 CH |
| | | | | 1850.7 MHz | 1880 MHz | 1909.3 MHz |
| 2 / 1.4M | QPSK | 1 | 0 | 22.04 | 22.68 | 22.05 |
| | | 1 | 2 | 22.15 | 22.68 | 21.99 |
| | | 1 | 5 | 22.06 | 22.71 | 21.88 |
| | | 3 | 0 | 22.12 | 22.68 | 21.93 |
| | | 3 | 1 | 22.24 | 22.69 | 21.94 |
| | | 3 | 3 | 22.23 | 22.75 | 21.92 |
| | 16QAM | 6 | 0 | 21.33 | 21.77 | 21.15 |
| | | 1 | 0 | 21.34 | 21.93 | 21.18 |
| | | 1 | 2 | 21.43 | 21.93 | 21.21 |
| | | 1 | 5 | 21.35 | 21.95 | 21.11 |
| | | 3 | 0 | 21.31 | 21.82 | 21.11 |
| | | 3 | 1 | 21.32 | 21.83 | 21.11 |
| | | 3 | 3 | 21.31 | 21.87 | 21.10 |
| | | 6 | 0 | 20.32 | 20.73 | 20.21 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|------------|----------|------------|
| | | | | 18615 CH | 18900 CH | 19185 CH |
| | | | | 1851.5 MHz | 1880 MHz | 1908.5 MHz |
| 2 / 3M | QPSK | 1 | 0 | 22.03 | 22.68 | 22.05 |
| | | 1 | 7 | 22.38 | 22.85 | 22.10 |
| | | 1 | 14 | 22.11 | 22.72 | 21.79 |
| | | 8 | 0 | 21.38 | 21.76 | 21.30 |
| | | 8 | 3 | 21.44 | 21.85 | 21.24 |
| | | 8 | 7 | 21.36 | 21.84 | 21.09 |
| | 16QAM | 15 | 0 | 21.40 | 21.84 | 21.22 |
| | | 1 | 0 | 21.16 | 21.83 | 21.36 |
| | | 1 | 7 | 21.51 | 21.99 | 21.38 |
| | | 1 | 14 | 21.22 | 21.90 | 21.08 |
| | | 8 | 0 | 20.31 | 20.72 | 20.35 |
| | | 8 | 3 | 20.38 | 20.80 | 20.27 |
| | | 8 | 7 | 20.30 | 20.80 | 20.12 |
| | | 15 | 0 | 20.35 | 20.75 | 20.22 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|------------|----------|------------|
| | | | | 18625 CH | 18900 CH | 19175 CH |
| | | | | 1852.5 MHz | 1880 MHz | 1907.5 MHz |
| 2 / 5M | QPSK | 1 | 0 | 22.38 | 22.79 | 22.31 |
| | | 1 | 12 | 22.41 | 22.85 | 22.16 |
| | | 1 | 24 | 22.53 | 22.98 | 22.01 |
| | | 12 | 0 | 21.43 | 21.82 | 21.48 |
| | | 12 | 6 | 21.54 | 21.86 | 21.45 |
| | | 12 | 13 | 21.48 | 21.89 | 21.26 |
| | 16QAM | 25 | 0 | 21.44 | 21.83 | 21.30 |
| | | 1 | 0 | 21.52 | 22.16 | 21.62 |
| | | 1 | 12 | 21.64 | 22.06 | 21.41 |
| | | 1 | 24 | 21.77 | 22.23 | 21.21 |
| | | 12 | 0 | 20.42 | 20.74 | 20.48 |
| | | 12 | 6 | 20.53 | 20.80 | 20.45 |
| | | 12 | 13 | 20.48 | 20.83 | 20.25 |
| | | 25 | 0 | 20.41 | 20.78 | 20.28 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|----------|----------|----------|
| | | | | 18650 CH | 18900 CH | 19150 CH |
| | | | | 1855 MHz | 1880 MHz | 1905 MHz |
| 2 / 10M | QPSK | 1 | 0 | 22.37 | 22.79 | 22.53 |
| | | 1 | 24 | 22.61 | 22.90 | 22.37 |
| | | 1 | 49 | 23.22 | 22.97 | 22.11 |
| | | 25 | 0 | 21.42 | 21.76 | 21.78 |
| | | 25 | 12 | 21.71 | 21.94 | 21.63 |
| | | 25 | 25 | 21.89 | 22.01 | 21.30 |
| | | 50 | 0 | 21.67 | 21.84 | 21.62 |
| | 16QAM | 1 | 0 | 21.64 | 22.17 | 21.79 |
| | | 1 | 24 | 21.94 | 22.14 | 21.64 |
| | | 1 | 49 | 22.50 | 22.35 | 21.26 |
| | | 25 | 0 | 20.29 | 20.64 | 20.76 |
| | | 25 | 12 | 20.52 | 20.83 | 20.54 |
| | | 25 | 25 | 20.77 | 20.91 | 20.32 |
| | | 50 | 0 | 20.49 | 20.81 | 20.52 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|------------|----------|------------|
| | | | | 18675 CH | 18900 CH | 19125 CH |
| | | | | 1857.5 MHz | 1880 MHz | 1902.5 MHz |
| 2 / 15M | QPSK | 1 | 0 | 22.12 | 22.48 | 22.33 |
| | | 1 | 37 | 22.88 | 22.88 | 22.43 |
| | | 1 | 74 | 23.02 | 22.55 | 21.76 |
| | | 36 | 0 | 21.54 | 22.55 | 21.59 |
| | | 36 | 19 | 21.96 | 21.84 | 21.61 |
| | | 36 | 39 | 22.18 | 21.89 | 21.32 |
| | | 75 | 0 | 21.92 | 21.79 | 21.69 |
| | 16QAM | 1 | 0 | 21.29 | 21.82 | 21.59 |
| | | 1 | 37 | 22.20 | 22.02 | 21.84 |
| | | 1 | 74 | 22.36 | 21.84 | 21.00 |
| | | 36 | 0 | 20.39 | 21.84 | 20.52 |
| | | 36 | 19 | 20.83 | 20.74 | 20.55 |
| | | 36 | 39 | 21.14 | 20.81 | 20.22 |
| | | 75 | 0 | 20.81 | 20.71 | 20.61 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|----------|----------|----------|
| | | | | 18700 CH | 18900 CH | 19100 CH |
| | | | | 1860 MHz | 1880 MHz | 1900 MHz |
| 2 / 20M | QPSK | 1 | 0 | 21.94 | 22.57 | 22.21 |
| | | 1 | 50 | 23.24 | 22.21 | 22.47 |
| | | 1 | 99 | 22.59 | 22.15 | 21.56 |
| | | 50 | 0 | 21.66 | 21.60 | 21.53 |
| | | 50 | 25 | 22.20 | 21.91 | 21.82 |
| | | 50 | 50 | 22.21 | 21.74 | 21.46 |
| | | 100 | 0 | 22.03 | 21.76 | 21.50 |
| | 16QAM | 1 | 0 | 21.23 | 21.97 | 21.61 |
| | | 1 | 50 | 22.68 | 21.12 | 21.74 |
| | | 1 | 99 | 22.09 | 21.58 | 20.89 |
| | | 50 | 0 | 20.53 | 20.45 | 20.41 |
| | | 50 | 25 | 21.15 | 20.76 | 20.77 |
| | | 50 | 50 | 21.12 | 20.61 | 20.38 |
| | | 100 | 0 | 20.89 | 20.64 | 20.43 |

EIRP Power

| DCS1900 (Capsensor Off) | EIRP Power (dBm) | | |
|----------------------------|------------------|---------|--------------|
| | 512CH | 661CH | 810CH |
| | 1850.2MHz | 1880MHz | 1909.8MHz |
| GSM (CS) | - | - | - |
| GPRS/EDGE (GMSK) | 26.82 | 26.85 | 26.92 |
| | 25.07 | 25.16 | 25.26 |
| | 24.19 | 24.14 | 24.29 |
| | 22.06 | 22.01 | 22.24 |
| EDGE (8PSK) | 23.59 | 23.73 | 23.95 |
| | 22.06 | 22.32 | 22.32 |
| | 21.02 | 20.92 | 21.19 |
| | 18.61 | 19.24 | 18.86 |

| Modulation | Band | WCDMA Band 2(Capsensor Off) | | |
|------------|-----------------|-----------------------------|---------|--------------|
| | Tx Channel | 9262CH | 9400CH | 9538CH |
| | Rx Channel | 9662CH | 9800CH | 9938CH |
| | Frequency | 1852.4MHz | 1880MHz | 1907.6MHz |
| BPSK | RMC 12.2K | 21.08 | 20.95 | 21.18 |
| | RMC 64K | 21.02 | 20.89 | 21.12 |
| | RMC 144K | 21.05 | 20.92 | 21.13 |
| | RMC 384K | 21.06 | 20.95 | 21.10 |
| 16QAM | HSDPA Subtest-1 | 21.03 | 20.90 | 21.12 |
| | HSDPA Subtest-2 | 20.52 | 20.41 | 20.61 |
| | HSDPA Subtest-3 | 20.00 | 19.88 | 20.12 |
| | HSDPA Subtest-4 | 19.98 | 19.87 | 20.09 |
| 16QAM | HSUPA Subtest-1 | 21.03 | 20.37 | 20.60 |
| | HSUPA Subtest-2 | 21.03 | 20.92 | 21.12 |
| | HSUPA Subtest-3 | 20.01 | 19.91 | 20.11 |
| | HSUPA Subtest-4 | 21.04 | 20.92 | 21.12 |
| | HSUPA Subtest-5 | 20.99 | 20.88 | 21.07 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|------------|--------------|------------|
| | | | | 18607 CH | 18900 CH | 19193 CH |
| | | | | 1850.7 MHz | 1880 MHz | 1909.3 MHz |
| 2 / 1.4M | QPSK | 1 | 0 | 19.89 | 20.53 | 19.90 |
| | | 1 | 2 | 20.00 | 20.53 | 19.84 |
| | | 1 | 5 | 19.91 | 20.56 | 19.73 |
| | | 3 | 0 | 19.97 | 20.53 | 19.78 |
| | | 3 | 1 | 20.09 | 20.54 | 19.79 |
| | | 3 | 3 | 20.08 | 20.60 | 19.77 |
| | 16QAM | 6 | 0 | 19.18 | 19.62 | 19.00 |
| | | 1 | 0 | 19.19 | 19.78 | 19.03 |
| | | 1 | 2 | 19.28 | 19.78 | 19.06 |
| | | 1 | 5 | 19.20 | 19.80 | 18.96 |
| | | 3 | 0 | 19.16 | 19.67 | 18.96 |
| | | 3 | 1 | 19.17 | 19.68 | 18.96 |
| | | 3 | 3 | 19.16 | 19.72 | 18.95 |
| | | 6 | 0 | 18.17 | 18.58 | 18.06 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|------------|--------------|------------|
| | | | | 18615 CH | 18900 CH | 19185 CH |
| | | | | 1851.5 MHz | 1880 MHz | 1908.5 MHz |
| 2 / 3M | QPSK | 1 | 0 | 19.88 | 20.53 | 19.90 |
| | | 1 | 7 | 20.23 | 20.70 | 19.95 |
| | | 1 | 14 | 19.96 | 20.57 | 19.64 |
| | | 8 | 0 | 19.23 | 19.61 | 19.15 |
| | | 8 | 3 | 19.29 | 19.70 | 19.09 |
| | | 8 | 7 | 19.21 | 19.69 | 18.94 |
| | 16QAM | 15 | 0 | 19.25 | 19.69 | 19.07 |
| | | 1 | 0 | 19.01 | 19.68 | 19.21 |
| | | 1 | 7 | 19.36 | 19.84 | 19.23 |
| | | 1 | 14 | 19.07 | 19.75 | 18.93 |
| | | 8 | 0 | 18.16 | 18.57 | 18.20 |
| | | 8 | 3 | 18.23 | 18.65 | 18.12 |
| | | 8 | 7 | 18.15 | 18.65 | 17.97 |
| | | 15 | 0 | 18.20 | 18.60 | 18.07 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|------------|--------------|------------|
| | | | | 18625 CH | 18900 CH | 19175 CH |
| | | | | 1852.5 MHz | 1880 MHz | 1907.5 MHz |
| 2 / 5M | QPSK | 1 | 0 | 20.23 | 20.64 | 20.16 |
| | | 1 | 12 | 20.26 | 20.70 | 20.01 |
| | | 1 | 24 | 20.38 | 20.83 | 19.86 |
| | | 12 | 0 | 19.28 | 19.67 | 19.33 |
| | | 12 | 6 | 19.39 | 19.71 | 19.30 |
| | | 12 | 13 | 19.33 | 19.74 | 19.11 |
| | | 25 | 0 | 19.29 | 19.68 | 19.15 |
| | 16QAM | 1 | 0 | 19.37 | 20.01 | 19.47 |
| | | 1 | 12 | 19.49 | 19.91 | 19.26 |
| | | 1 | 24 | 19.62 | 20.08 | 19.06 |
| | | 12 | 0 | 18.27 | 18.59 | 18.33 |
| | | 12 | 6 | 18.38 | 18.65 | 18.30 |
| | | 12 | 13 | 18.33 | 18.68 | 18.10 |
| | | 25 | 0 | 18.26 | 18.63 | 18.13 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|--------------|----------|----------|
| | | | | 18650 CH | 18900 CH | 19150 CH |
| | | | | 1855 MHz | 1880 MHz | 1905 MHz |
| 2 / 10M | QPSK | 1 | 0 | 20.22 | 20.64 | 20.38 |
| | | 1 | 24 | 20.46 | 20.75 | 20.22 |
| | | 1 | 49 | 21.07 | 20.82 | 19.96 |
| | | 25 | 0 | 19.27 | 19.61 | 19.63 |
| | | 25 | 12 | 19.56 | 19.79 | 19.48 |
| | | 25 | 25 | 19.74 | 19.86 | 19.15 |
| | | 50 | 0 | 19.52 | 19.69 | 19.47 |
| | 16QAM | 1 | 0 | 19.49 | 20.02 | 19.64 |
| | | 1 | 24 | 19.79 | 19.99 | 19.49 |
| | | 1 | 49 | 20.35 | 20.20 | 19.11 |
| | | 25 | 0 | 18.14 | 18.49 | 18.61 |
| | | 25 | 12 | 18.37 | 18.68 | 18.39 |
| | | 25 | 25 | 18.62 | 18.76 | 18.17 |
| | | 50 | 0 | 18.34 | 18.66 | 18.37 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|--------------|----------|------------|
| | | | | 18675 CH | 18900 CH | 19125 CH |
| | | | | 1857.5 MHz | 1880 MHz | 1902.5 MHz |
| 2 / 15M | QPSK | 1 | 0 | 19.97 | 20.33 | 20.18 |
| | | 1 | 37 | 20.73 | 20.73 | 20.28 |
| | | 1 | 74 | 20.87 | 20.40 | 19.61 |
| | | 36 | 0 | 19.39 | 20.40 | 19.44 |
| | | 36 | 19 | 19.81 | 19.69 | 19.46 |
| | | 36 | 39 | 20.03 | 19.74 | 19.17 |
| | | 75 | 0 | 19.77 | 19.64 | 19.54 |
| | 16QAM | 1 | 0 | 19.14 | 19.67 | 19.44 |
| | | 1 | 37 | 20.05 | 19.87 | 19.69 |
| | | 1 | 74 | 20.21 | 19.69 | 18.85 |
| | | 36 | 0 | 18.24 | 19.69 | 18.37 |
| | | 36 | 19 | 18.68 | 18.59 | 18.40 |
| | | 36 | 39 | 18.99 | 18.66 | 18.07 |
| | | 75 | 0 | 18.66 | 18.56 | 18.46 |

| LTE Band / BW | Modulation | RB Sizing | RB Offset | Low CH | Mid CH | High CH |
|---------------|------------|-----------|-----------|--------------|----------|----------|
| | | | | 18700 CH | 18900 CH | 19100 CH |
| | | | | 1860 MHz | 1880 MHz | 1900 MHz |
| 2 / 20M | QPSK | 1 | 0 | 19.79 | 20.42 | 20.06 |
| | | 1 | 50 | 21.09 | 20.06 | 20.32 |
| | | 1 | 99 | 20.44 | 20.00 | 19.41 |
| | | 50 | 0 | 19.51 | 19.45 | 19.38 |
| | | 50 | 25 | 20.05 | 19.76 | 19.67 |
| | | 50 | 50 | 20.06 | 19.59 | 19.31 |
| | | 100 | 0 | 19.88 | 19.61 | 19.35 |
| | 16QAM | 1 | 0 | 19.08 | 19.82 | 19.46 |
| | | 1 | 50 | 20.53 | 18.97 | 19.59 |
| | | 1 | 99 | 19.94 | 19.43 | 18.74 |
| | | 50 | 0 | 18.38 | 18.30 | 18.26 |
| | | 50 | 25 | 19.00 | 18.61 | 18.62 |
| | | 50 | 50 | 18.97 | 18.46 | 18.23 |
| | | 100 | 0 | 18.74 | 18.49 | 18.28 |

ATTACHMENT B - OCCUPIED BANDWIDTH

| DCS1900 | | | | | |
|---------|-----------------|------------------------------|---------|-----------------|------------------------------|
| GSM | | | EDGE | | |
| CS | | | 8PSK | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
| 512 | 1850.2 | 0.248 | 512 | 1850.2 | 0.251 |
| 661 | 1880 | 0.249 | 661 | 1880 | 0.256 |
| 810 | 1909.8 | 0.245 | 810 | 1909.8 | 0.248 |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 512 | 1850.2 | 0.314 | 512 | 1850.2 | 0.312 |
| 661 | 1880 | 0.317 | 661 | 1880 | 0.317 |
| 810 | 1909.8 | 0.312 | 810 | 1909.8 | 0.310 |

Spectrum Plot

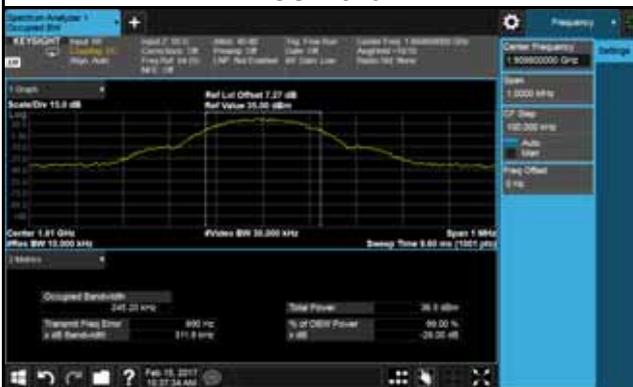
GSM-512



GSM-661



GSM-810



EDGE-512



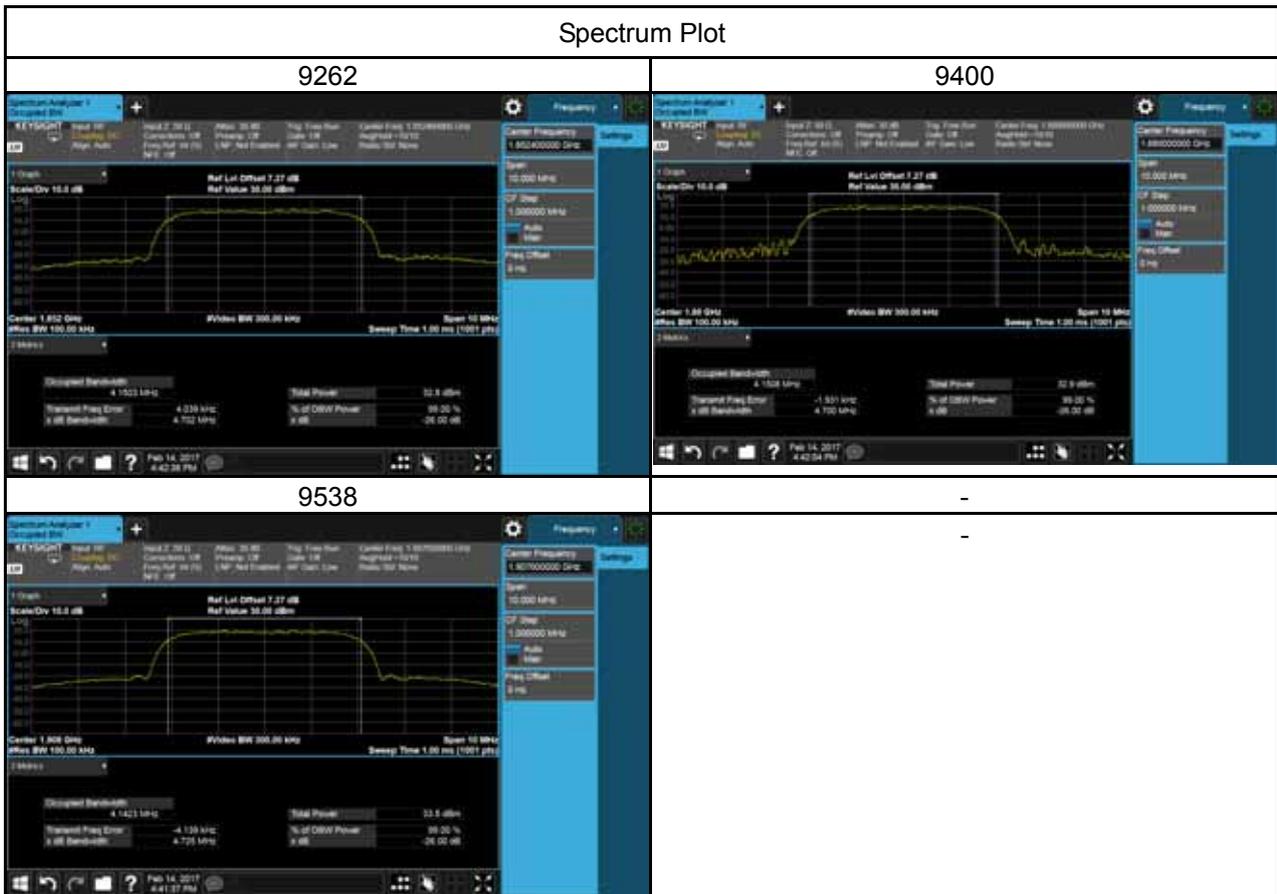
EDGE-661



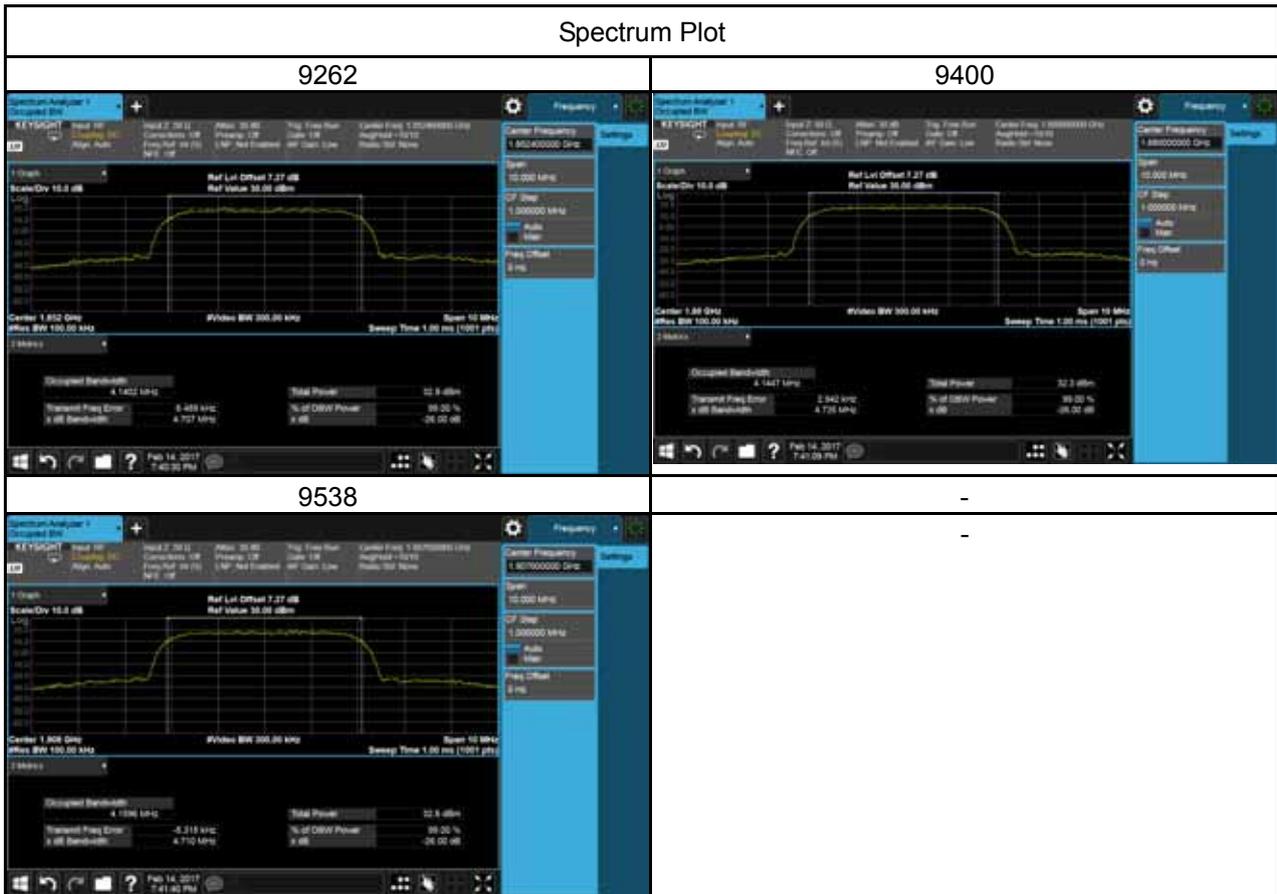
EDGE-810



| WCDMA Band 2 | | | | | |
|--------------|-----------------|------------------------------|---------|-----------------|----------------------|
| BPSK | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 9262 | 1852.4 | 4.150 | 9262 | 1852.4 | 4.702 |
| 9400 | 1880 | 4.151 | 9400 | 1880 | 4.700 |
| 9538 | 1907.6 | 4.142 | 9538 | 1907.6 | 4.725 |



| WCDMA_HSDPA Band 2 | | | | | |
|--------------------|-----------------|------------------------------|---------|-----------------|----------------------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 9262 | 1852.4 | 4.140 | 9262 | 1852.4 | 4.707 |
| 9400 | 1880 | 4.145 | 9400 | 1880 | 4.735 |
| 9538 | 1907.6 | 4.160 | 9538 | 1907.6 | 4.710 |



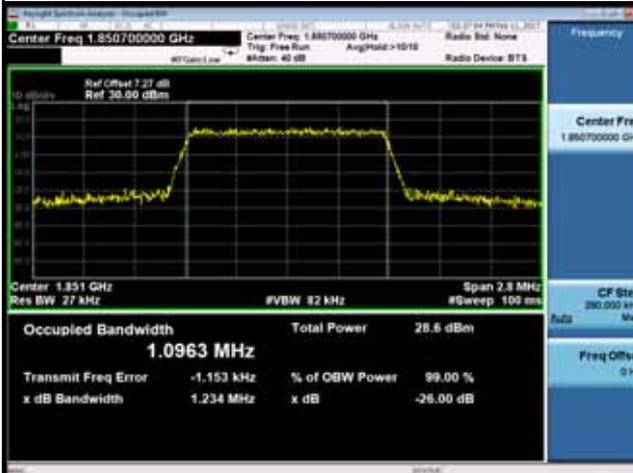
| WCDMA_HSUPA Band 2 | | | | | |
|--------------------|-----------------|------------------------------|---------|-----------------|----------------------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 9262 | 1852.4 | 4.133 | 9262 | 1852.4 | 4.725 |
| 9400 | 1880 | 4.141 | 9400 | 1880 | 4.707 |
| 9538 | 1907.6 | 4.145 | 9538 | 1907.6 | 4.718 |



| LTE Band 2_1.4M | | | | | |
|-----------------|-----------------|------------------------------|---------|-----------------|------------------------------|
| QPSK | | | 16QAM | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
| 18607 | 1850.7 | 1.096 | 18607 | 1850.7 | 1.090 |
| 18900 | 1880 | 1.096 | 18900 | 1880 | 1.094 |
| 19193 | 1909.3 | 1.091 | 19193 | 1909.3 | 1.098 |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18607 | 1850.7 | 1.234 | 18607 | 1850.7 | 1.225 |
| 18900 | 1880 | 1.241 | 18900 | 1880 | 1.241 |
| 19193 | 1909.3 | 1.226 | 19193 | 1909.3 | 1.240 |

Spectrum Plot

QPSK-18607



QPSK-18900



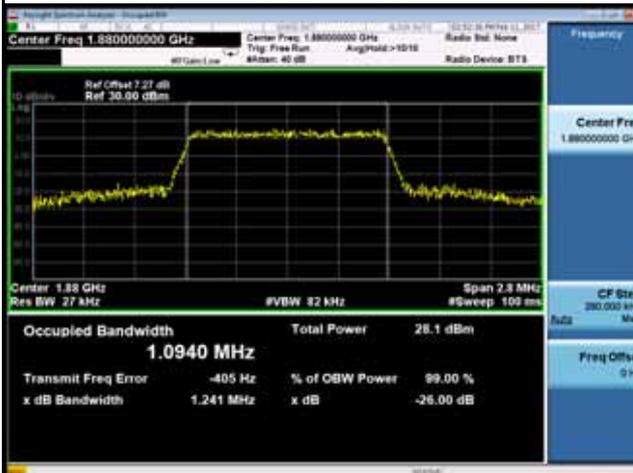
QPSK-19193



16QAM-18607



16QAM-18900



16QAM-19193



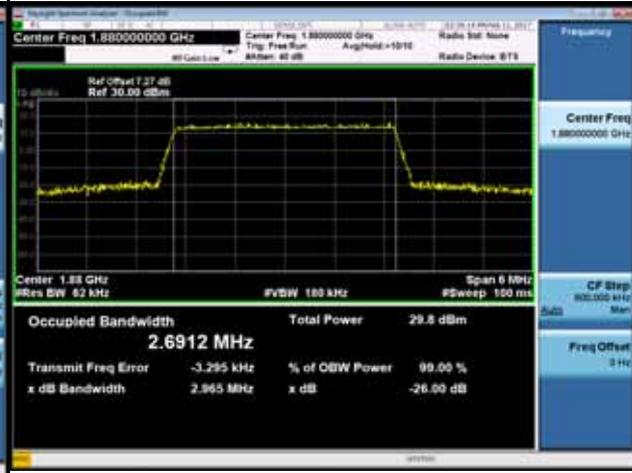
| LTE Band 2_3M | | | | | |
|---------------|-----------------|------------------------------|---------|-----------------|------------------------------|
| QPSK | | | 16QAM | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
| 18615 | 1851.5 | 2.700 | 18615 | 1851.5 | 2.706 |
| 18900 | 1880 | 2.691 | 18900 | 1880 | 2.692 |
| 19185 | 1908.5 | 2.703 | 19185 | 1908.5 | 2.705 |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18615 | 1851.5 | 2.940 | 18615 | 1851.5 | 2.975 |
| 18900 | 1880 | 2.965 | 18900 | 1880 | 2.954 |
| 19185 | 1908.5 | 2.966 | 19185 | 1908.5 | 2.964 |

Spectrum Plot

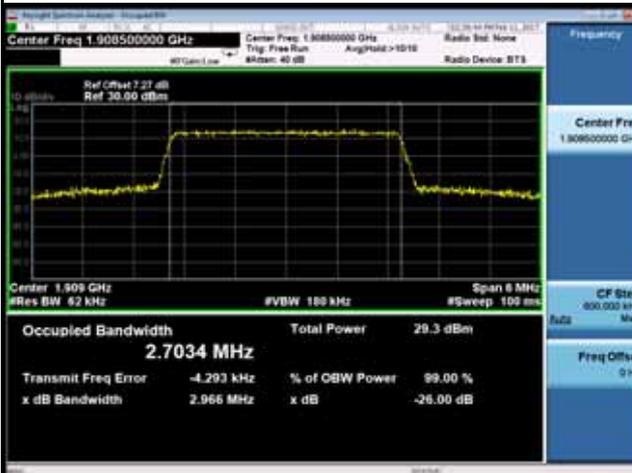
QPSK-18615



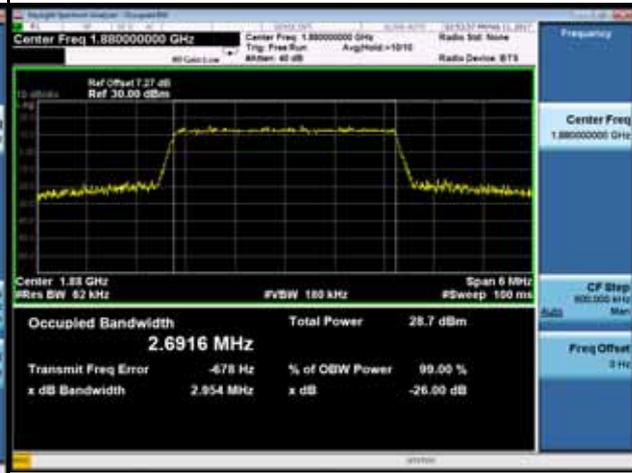
QPSK-18900



QPSK-19185



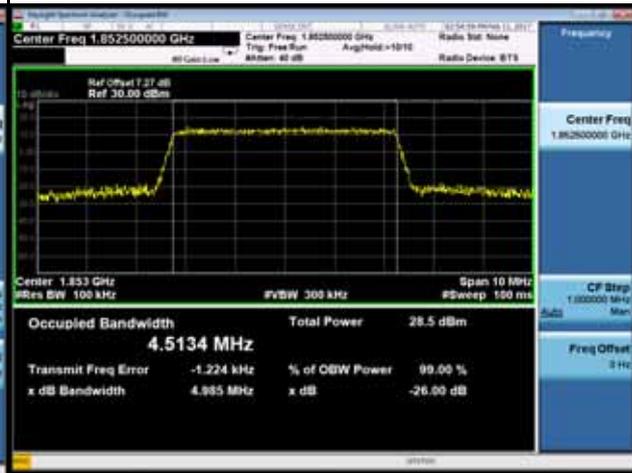
16QAM-18615



16QAM-18900



16QAM-19185



| LTE Band 2_5M | | | | | |
|---------------|-----------------|------------------------------|---------|-----------------|------------------------------|
| QPSK | | | 16QAM | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
| 18625 | 1852.5 | 4.507 | 18625 | 1852.5 | 4.513 |
| 18900 | 1880 | 4.505 | 18900 | 1880 | 4.500 |
| 19175 | 1907.5 | 4.507 | 19175 | 1907.5 | 4.506 |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18625 | 1852.5 | 4.913 | 18625 | 1852.5 | 4.985 |
| 18900 | 1880 | 4.965 | 18900 | 1880 | 4.930 |
| 19175 | 1907.5 | 4.958 | 19175 | 1907.5 | 4.977 |

Spectrum Plot

QPSK-18625



QPSK-18900



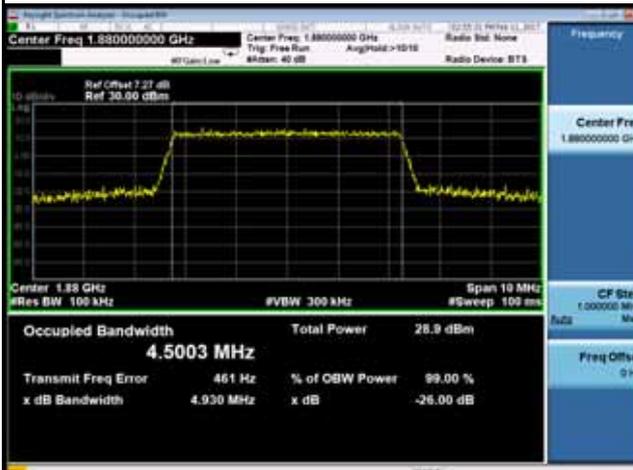
QPSK-19175



16QAM-18625



16QAM-18900



16QAM-19175



| LTE Band 2_10M | | | | | |
|----------------|-----------------|------------------------------|---------|-----------------|------------------------------|
| QPSK | | | 16QAM | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
| 18650 | 1855 | 8.993 | 18650 | 1855 | 9.002 |
| 18900 | 1880 | 8.991 | 18900 | 1880 | 8.976 |
| 19150 | 1905 | 8.998 | 19150 | 1905 | 9.002 |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18650 | 1855 | 9.850 | 18650 | 1855 | 9.884 |
| 18900 | 1880 | 9.893 | 18900 | 1880 | 9.866 |
| 19150 | 1905 | 9.901 | 19150 | 1905 | 9.946 |

Spectrum Plot

QPSK-18650



QPSK-18900



QPSK-19150



16QAM-18650



16QAM-18900



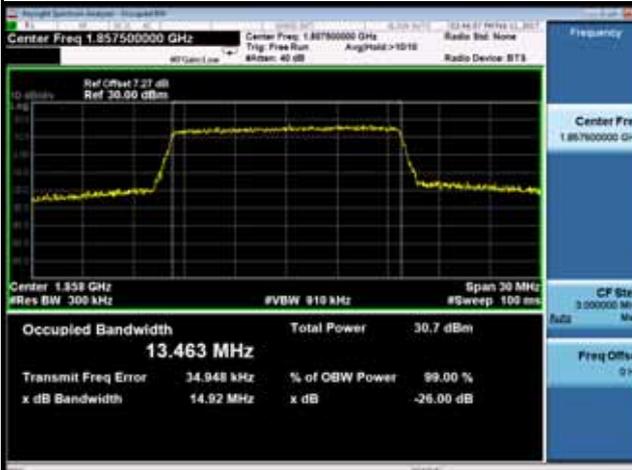
16QAM-19150



| LTE Band 2_15M | | | | | |
|----------------|-----------------|------------------------------|---------|-----------------|------------------------------|
| QPSK | | | 16QAM | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
| 18675 | 1857.5 | 13.463 | 18675 | 1857.5 | 13.516 |
| 18900 | 1880 | 13.466 | 18900 | 1880 | 13.482 |
| 19125 | 1902.5 | 13.441 | 19125 | 1902.5 | 13.459 |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18675 | 1857.5 | 14.920 | 18675 | 1857.5 | 14.960 |
| 18900 | 1880 | 14.880 | 18900 | 1880 | 14.960 |
| 19125 | 1902.5 | 14.810 | 19125 | 1902.5 | 14.950 |

Spectrum Plot

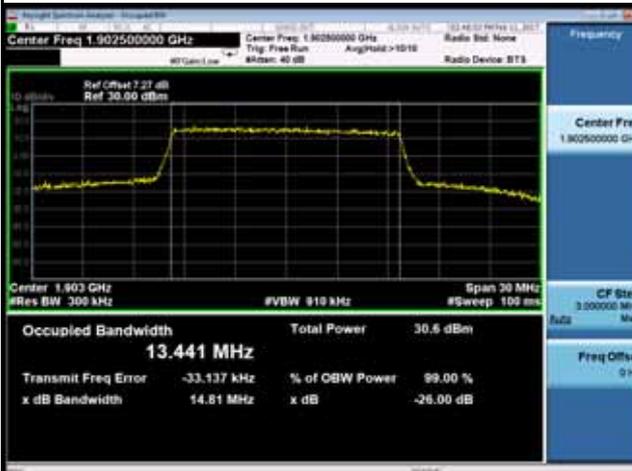
QPSK-18675



QPSK-18900



QPSK-19125



16QAM-18675



16QAM-18900



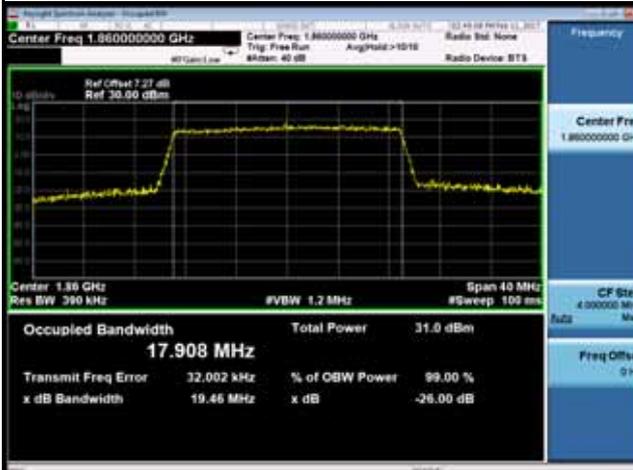
16QAM-19125



| LTE Band 2_20M | | | | | |
|----------------|-----------------|------------------------------|---------|-----------------|------------------------------|
| QPSK | | | 16QAM | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
| 18700 | 1860 | 17.908 | 18700 | 1860 | 17.939 |
| 18900 | 1880 | 17.950 | 18900 | 1880 | 17.959 |
| 19100 | 1900 | 18.178 | 19100 | 1900 | 17.960 |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18700 | 1860 | 19.460 | 18700 | 1860 | 19.630 |
| 18900 | 1880 | 19.750 | 18900 | 1880 | 19.630 |
| 19100 | 1900 | 20.410 | 19100 | 1900 | 19.820 |

Spectrum Plot

QPSK-18700



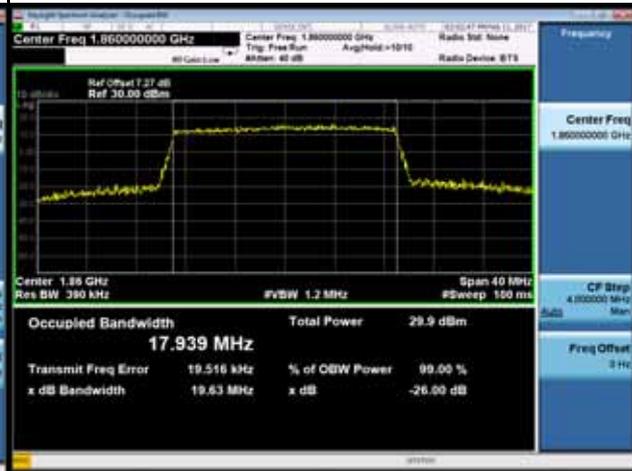
QPSK-18900



QPSK-19100



16QAM-18700



16QAM-18900



16QAM-19100



ATTACHMENT C - CONDUCTED EMISSIONS

| DCS1900 | | | |
|---------|----------------|---------|----------------|
| GSM | | GSM | |
| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
| 661 | 1880 | 661 | 1880 |
| | | | |
| GSM | | EDGE | |
| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
| 661 | 1880 | 661 | 1880 |
| | | | |
| EDGE | | EDGE | |
| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
| 661 | 1880 | 661 | 1880 |
| | | | |

WCDMA Band 2

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---------|----------------|---------|----------------|
| 9400 | 1880 | 9400 | 1880 |
| | | | |
| Channel | Frequency(MHz) | - | - |
| 9400 | 1880 | - | - |
| | | - | |

WCDMA_HSDPA Band 2

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---------|----------------|---------|----------------|
| 9400 | 1880 | 9400 | 1880 |
| | | | |
| Channel | Frequency(MHz) | - | - |
| 9400 | 1880 | - | - |
| | | - | |

WCDMA_HSUPA Band 2

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---------|----------------|---------|----------------|
| 9400 | 1880 | 9400 | 1880 |
| | | | |
| Channel | Frequency(MHz) | - | - |
| 9400 | 1880 | - | - |
| | | - | |

| LTE Band 2_1.4M | | | |
|-----------------|----------------|---------|----------------|
| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
| 18900 | 1880 | 18900 | 1880 |
| | | | |
| Channel | Frequency(MHz) | - | - |
| 18900 | 1880 | - | - |
| | | - | |

| LTE Band 2_3M | | | |
|---------------|----------------|---------|----------------|
| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
| 18900 | 1880 | 18900 | 1880 |
| | | | |
| Channel | Frequency(MHz) | - | - |
| 18900 | 1880 | - | - |
| | | - | |

| LTE Band 2_5M | | | |
|---------------|----------------|---------|----------------|
| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
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| | | | |
| Channel | Frequency(MHz) | - | - |
| 18900 | 1880 | - | - |
| | | - | |

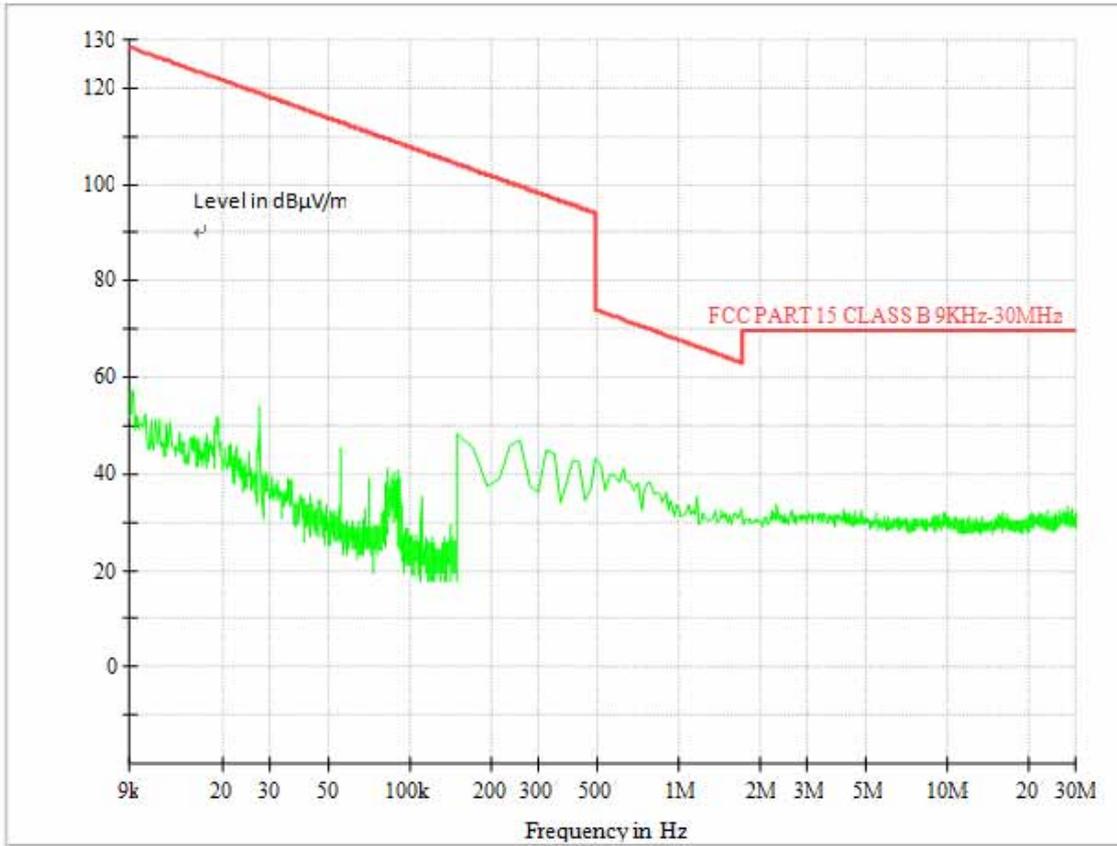
| LTE Band 2_10M | | | |
|----------------|----------------|---------|----------------|
| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
| 18900 | 1880 | 18900 | 1880 |
| | | | |
| Channel | Frequency(MHz) | - | - |
| 18900 | 1880 | - | - |
| | | - | |

| LTE Band 2_15M | | | |
|----------------|----------------|---------|----------------|
| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
| 18900 | 1880 | 18900 | 1880 |
| | | | |
| Channel | Frequency(MHz) | - | - |
| 18900 | 1880 | - | - |
| | | - | |

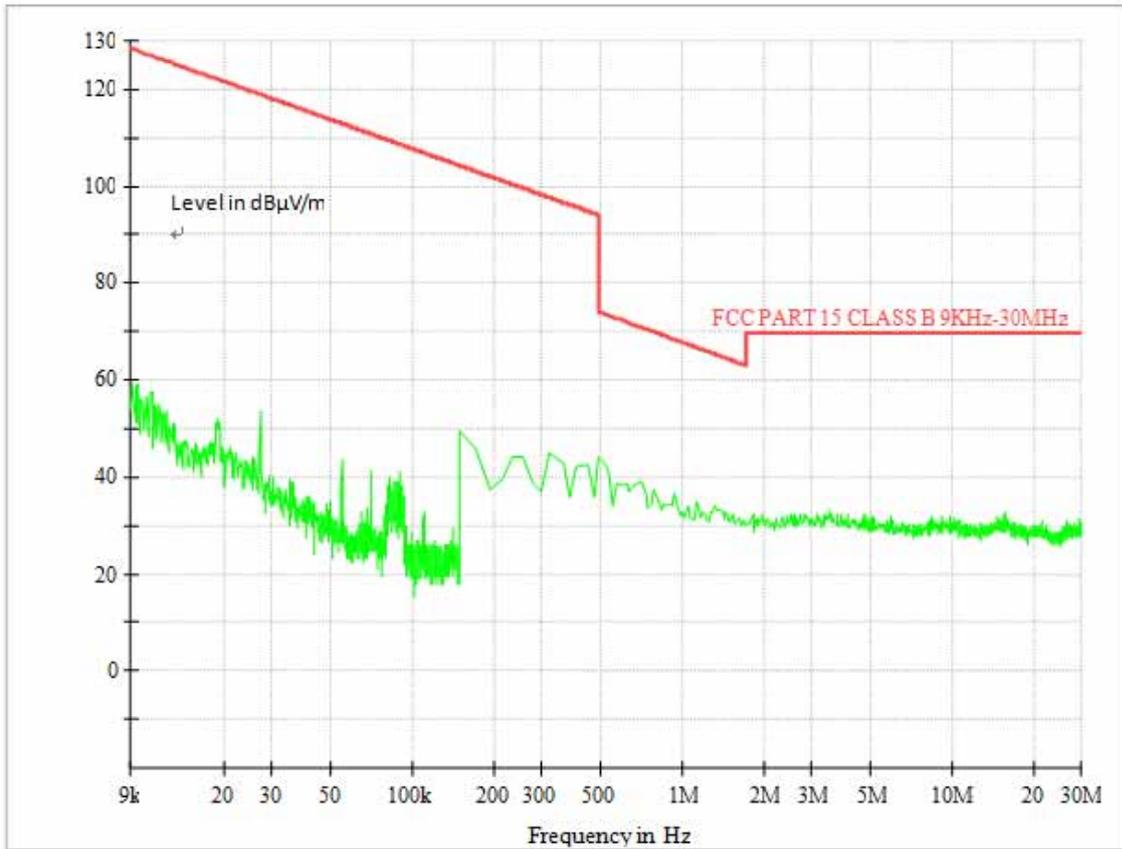
| LTE Band 2_20M | | | |
|----------------|----------------|---------|----------------|
| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
| 18900 | 1880 | 18900 | 1880 |
| | | | |
| Channel | Frequency(MHz) | - | - |
| 18900 | 1880 | - | - |
| | | - | |

ATTACHMENT D - RADIATED EMISSION

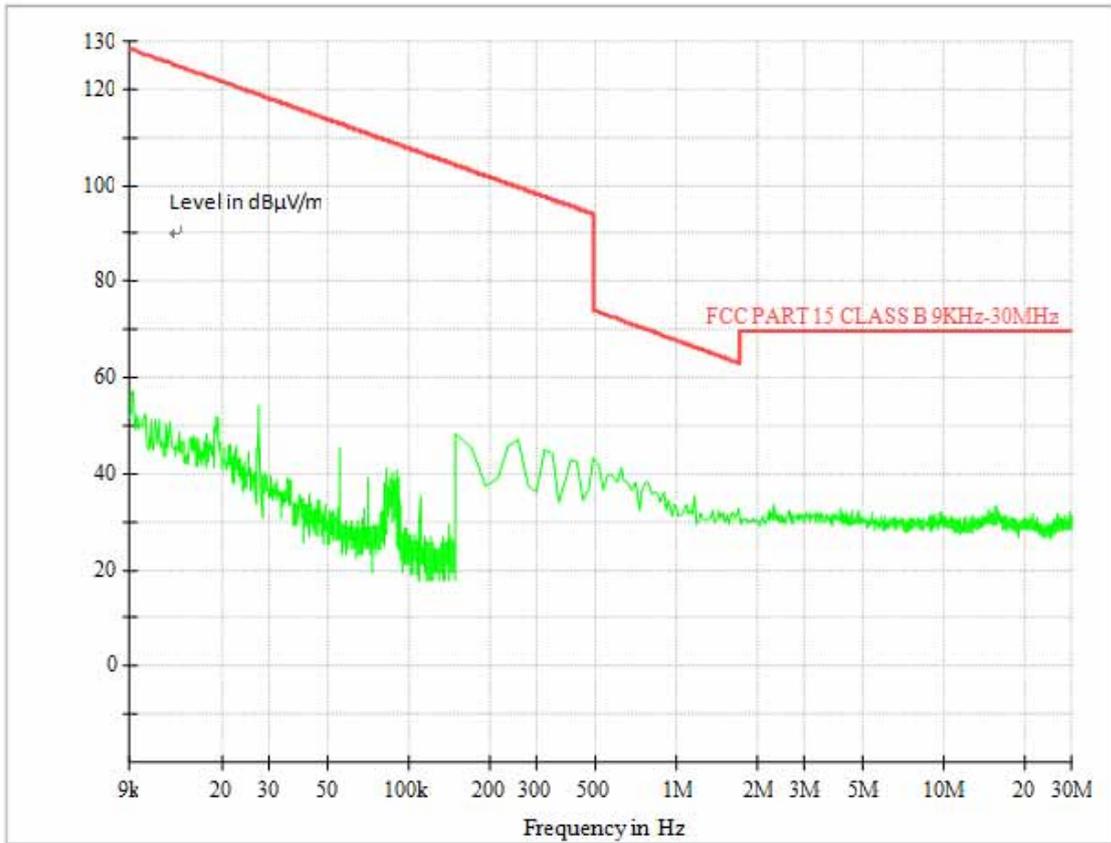
Test Mode: TX Mode_ DCS1900



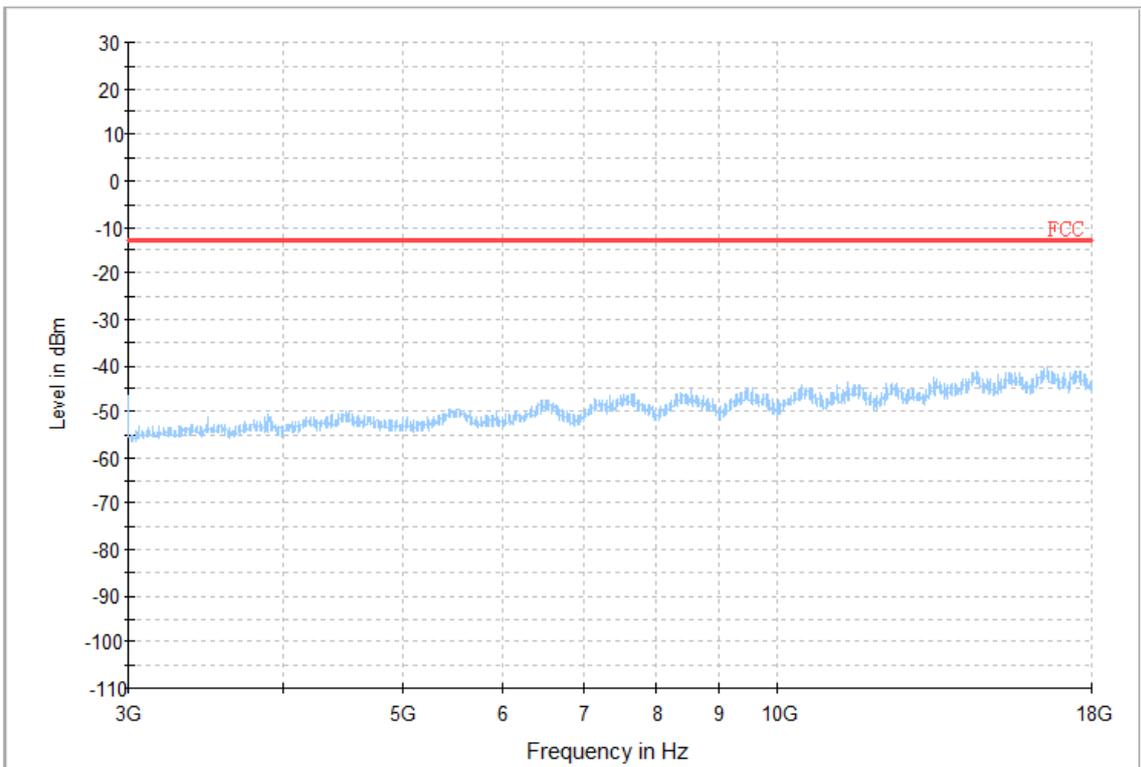
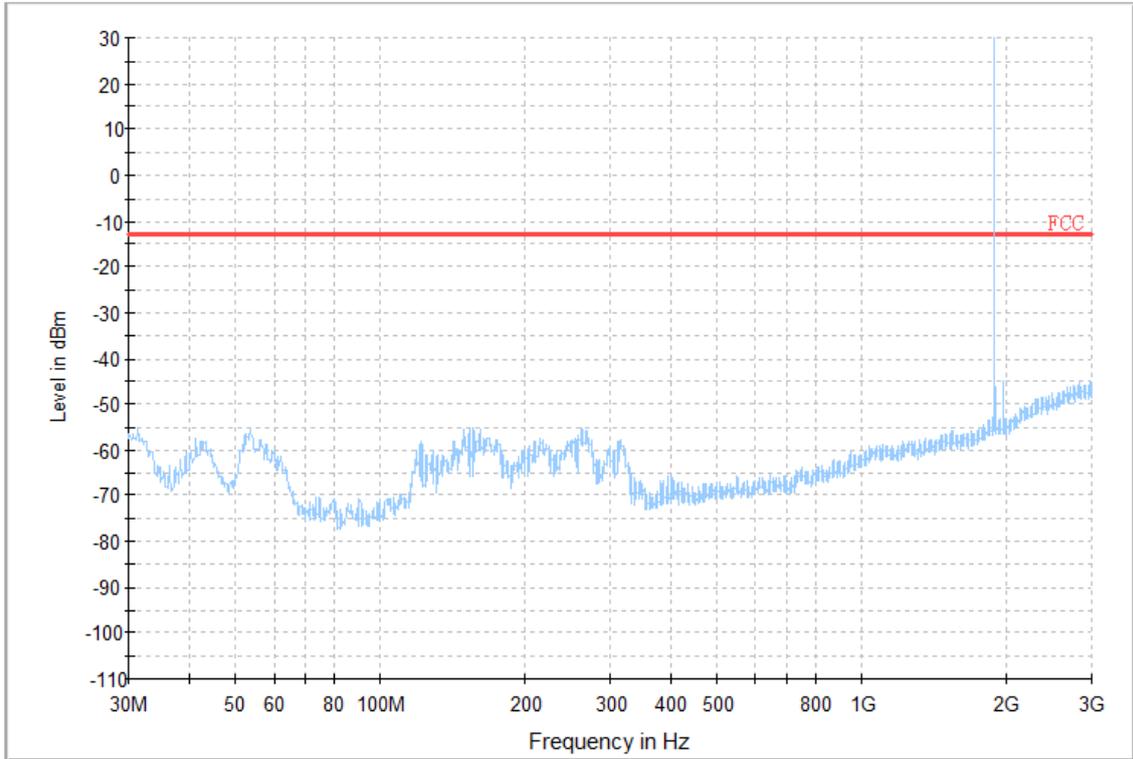
Test Mode: TX Mode_WCDMABand 2



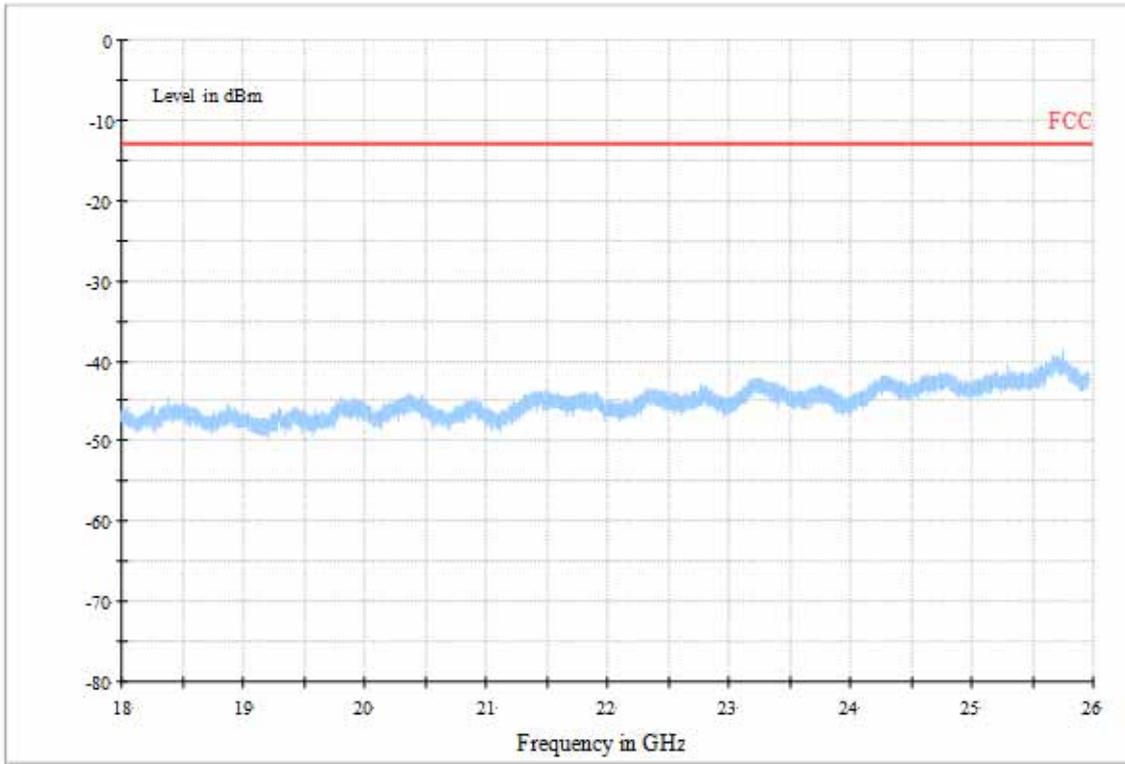
Test Mode: TX Mode_LTEBand 2



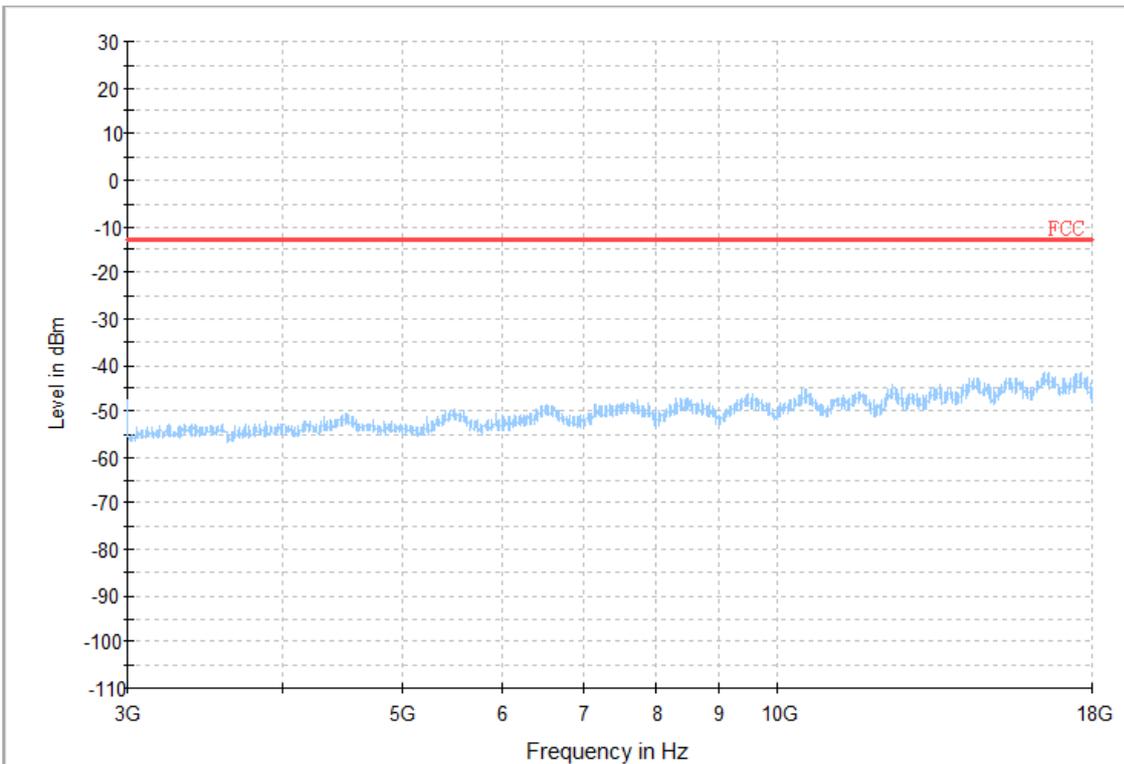
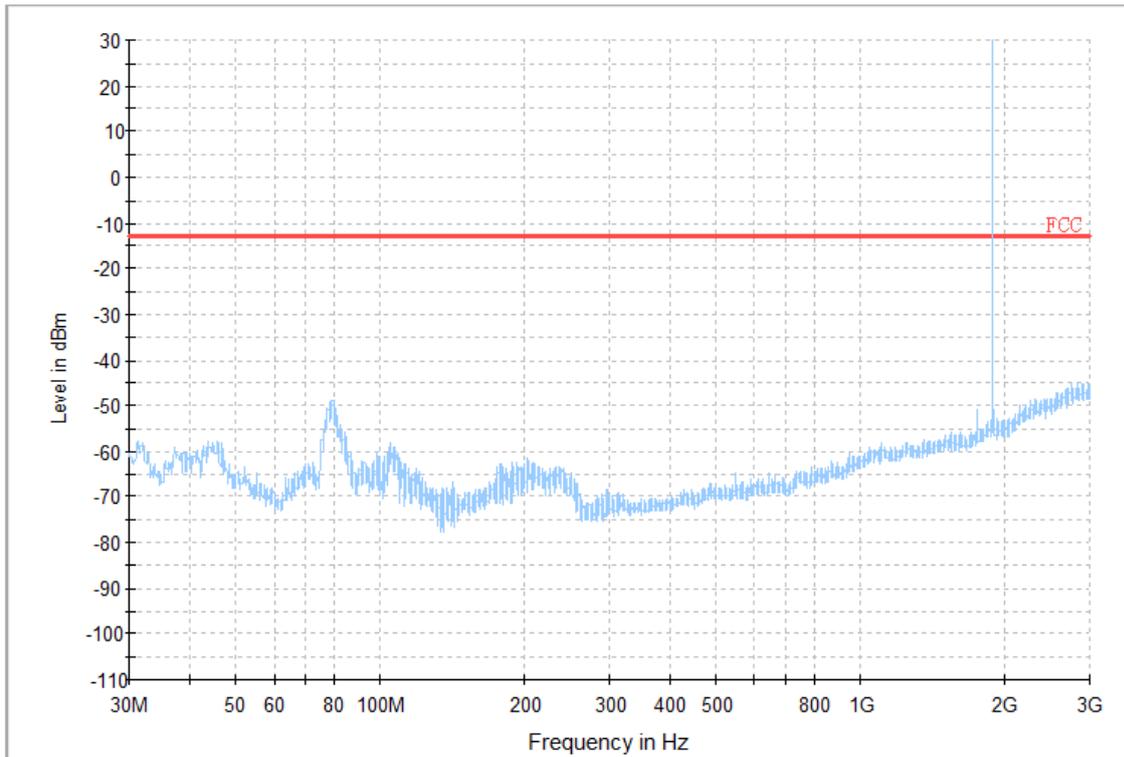
Test Mode: DCS1900_TX CH661_GSM



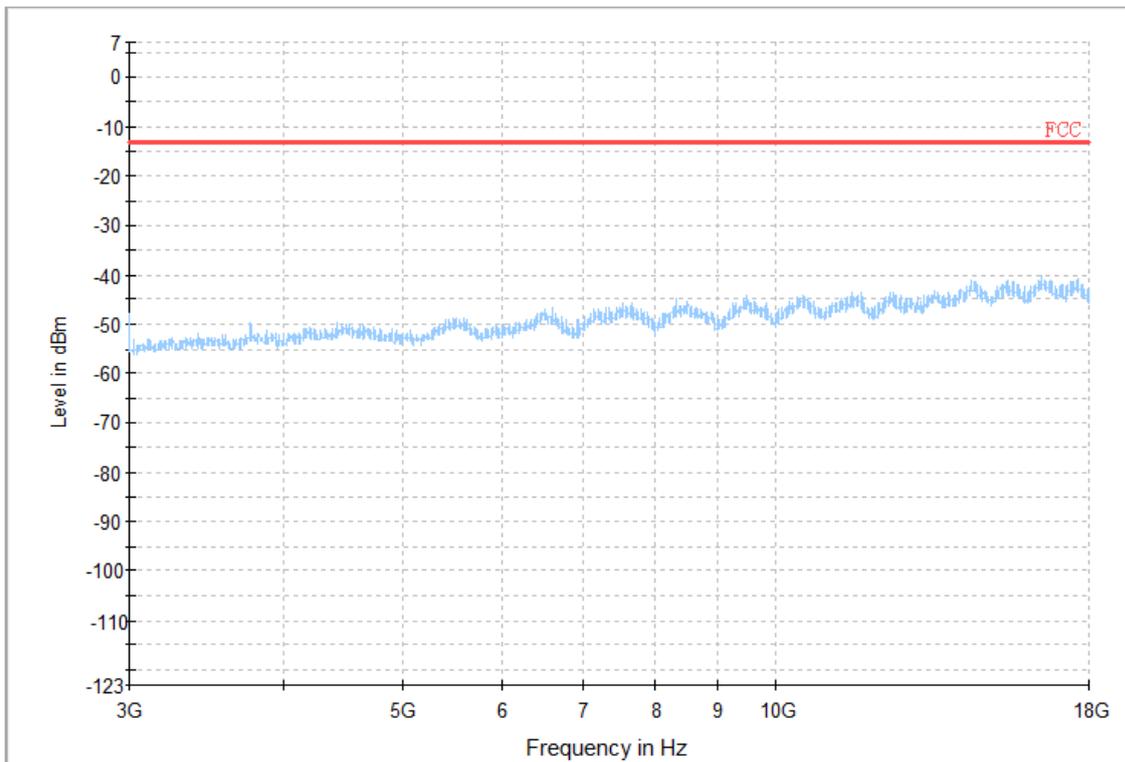
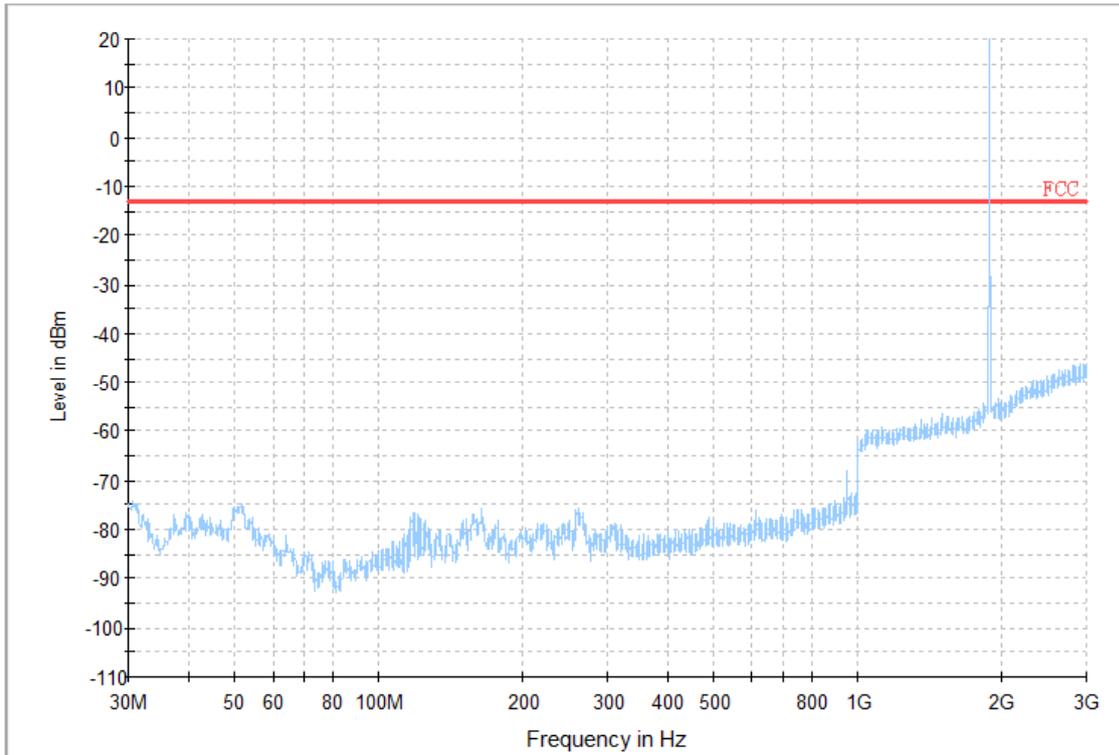
Test Mode: DCS1900_TX CH661_GSM



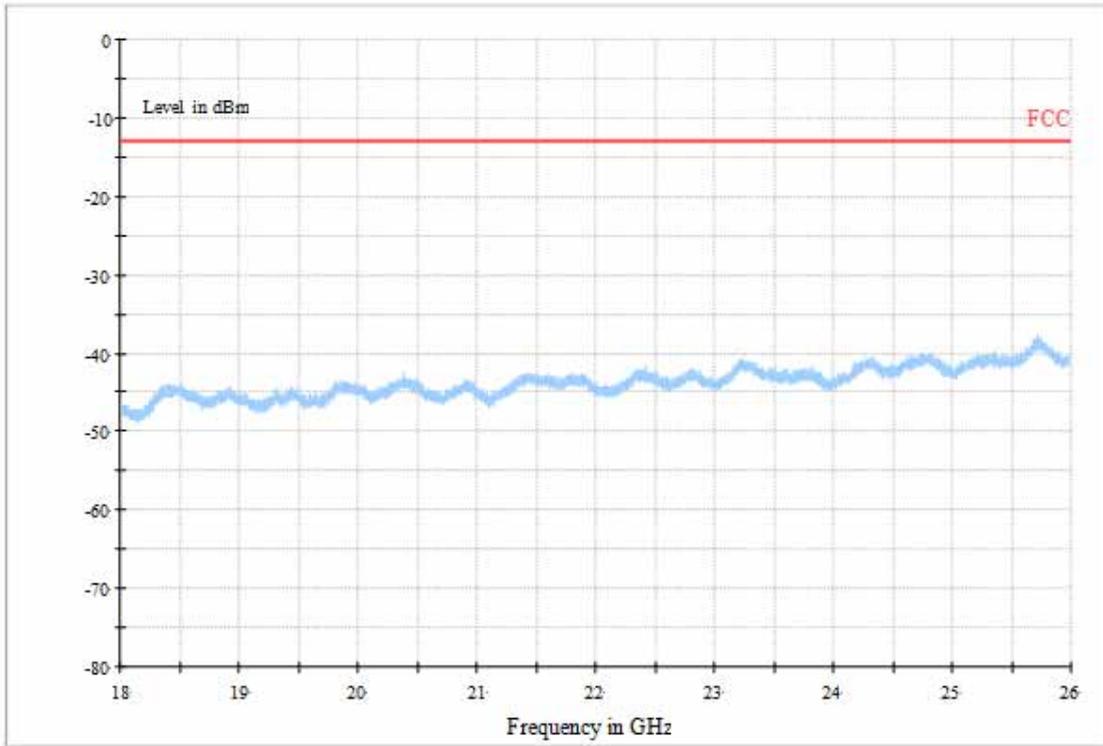
Test Mode: DCS1900_TX CH661_EDGE



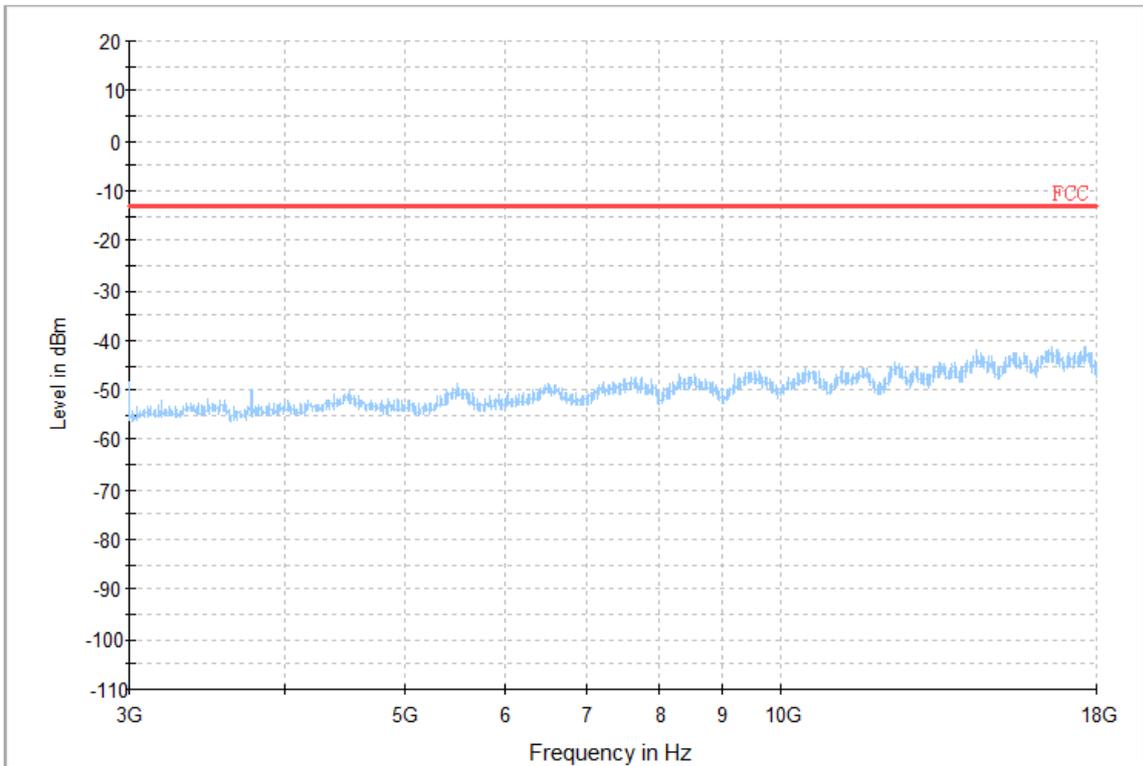
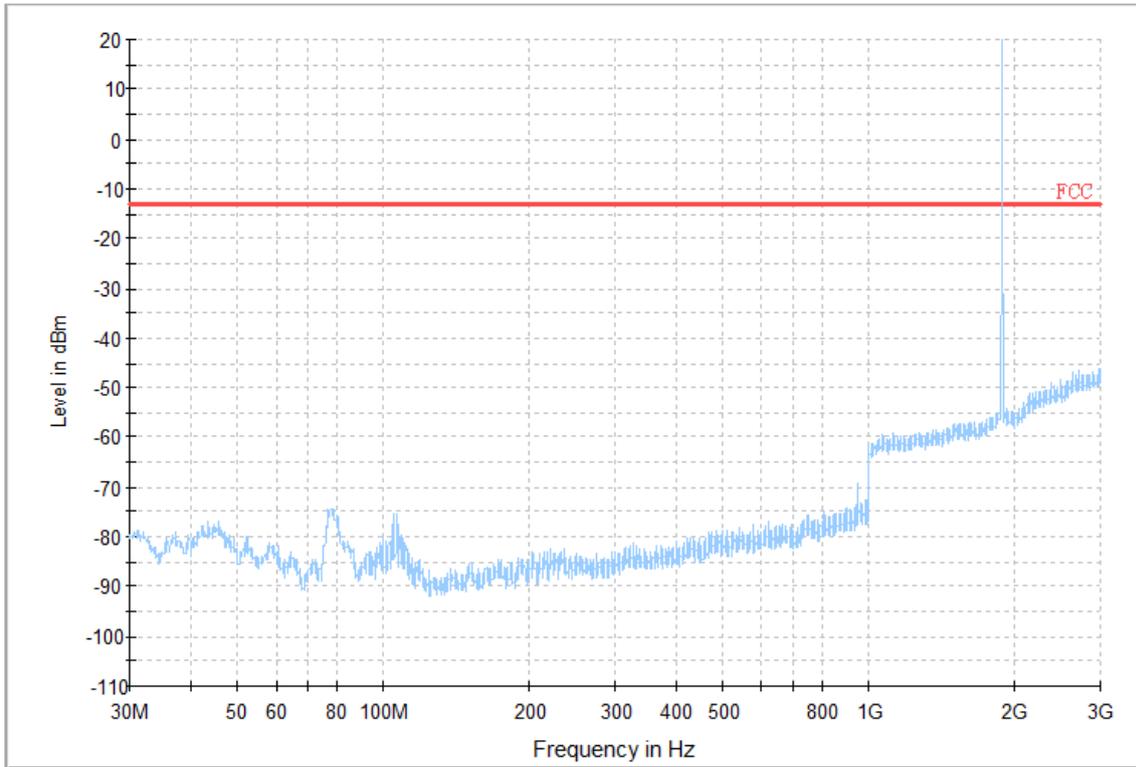
Test Mode: WCDMA Band 2_TX CH9400



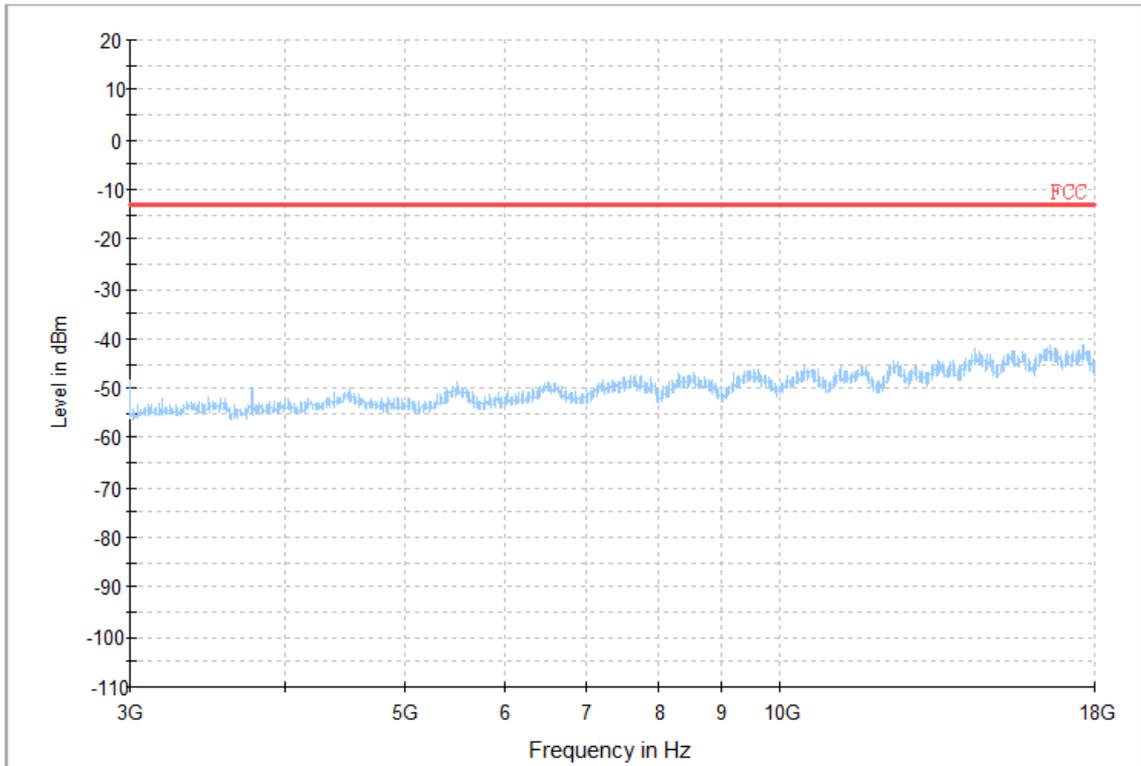
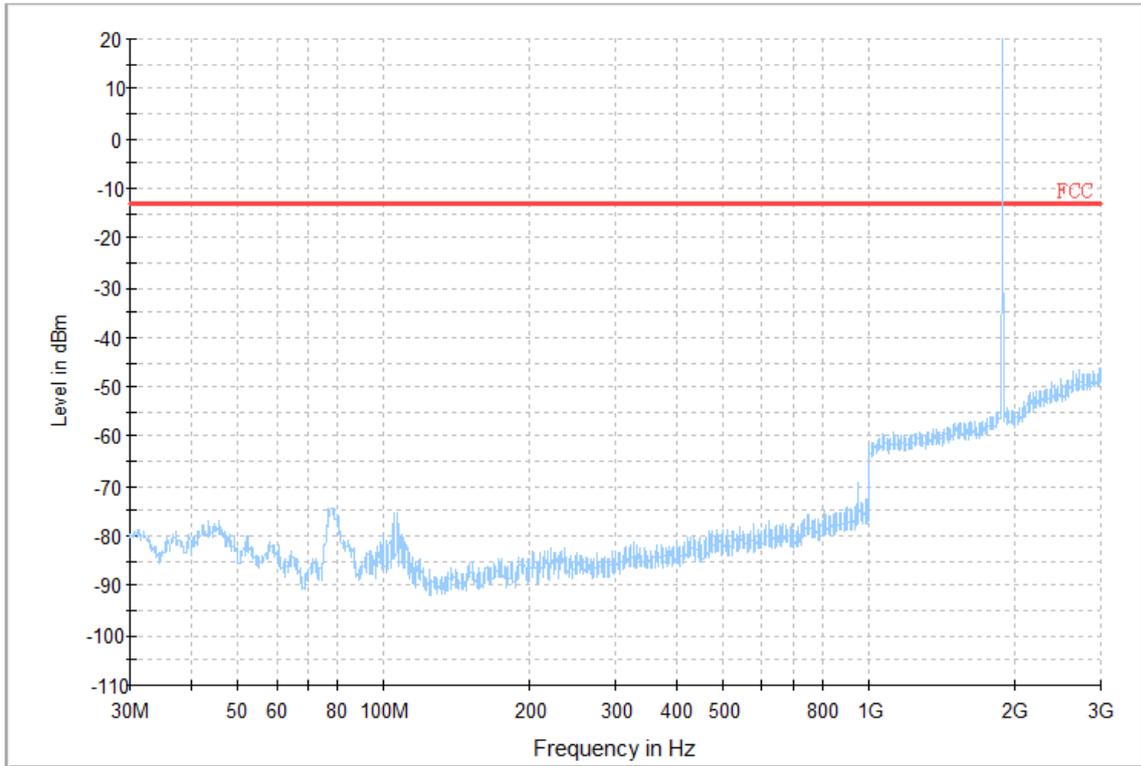
Test Mode: WCDMA Band 2_TX CH9400



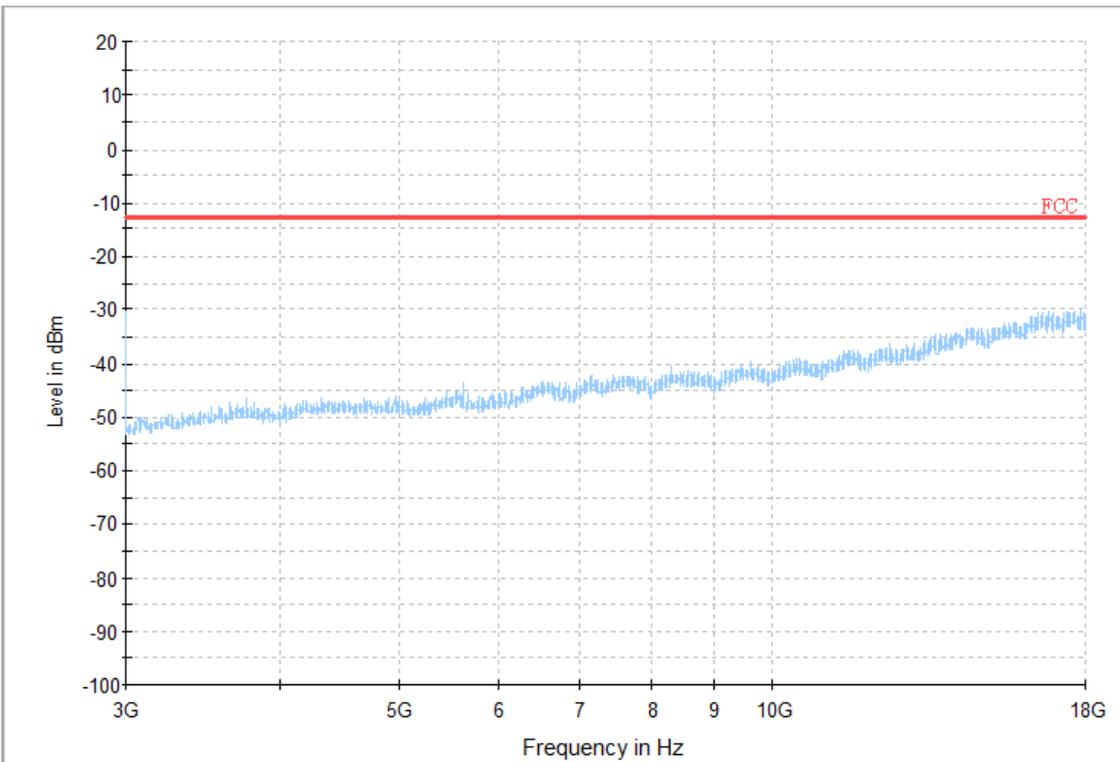
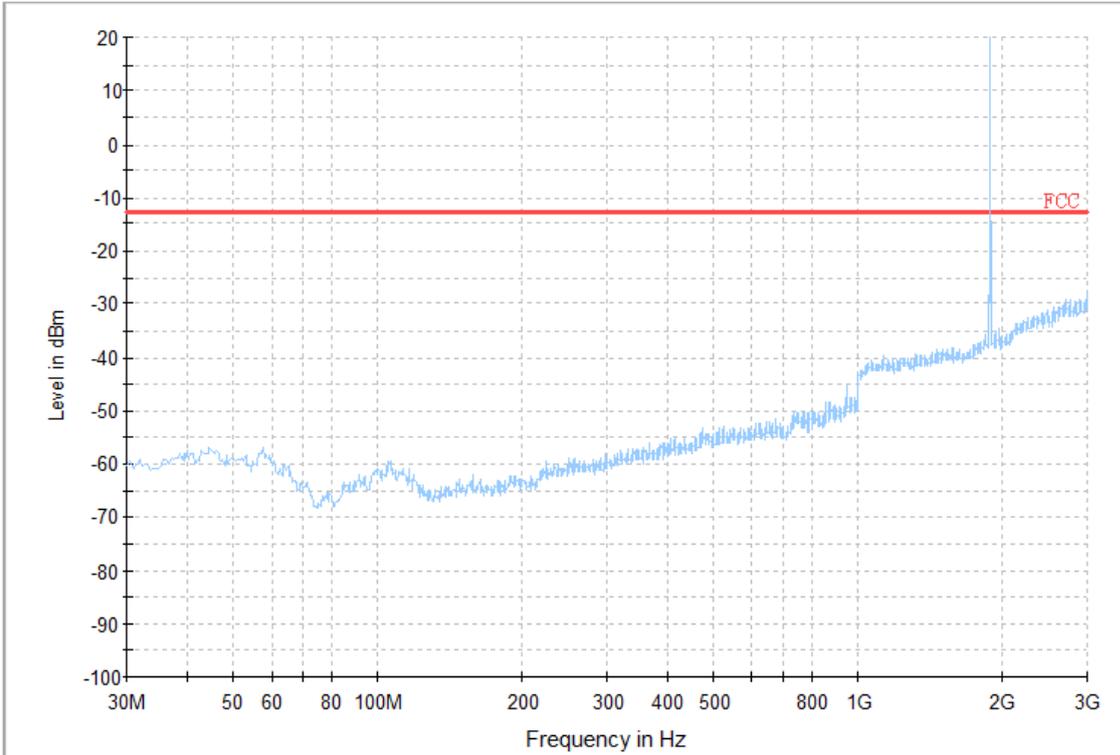
Test Mode: HSUPA Band 2_TX CH9400



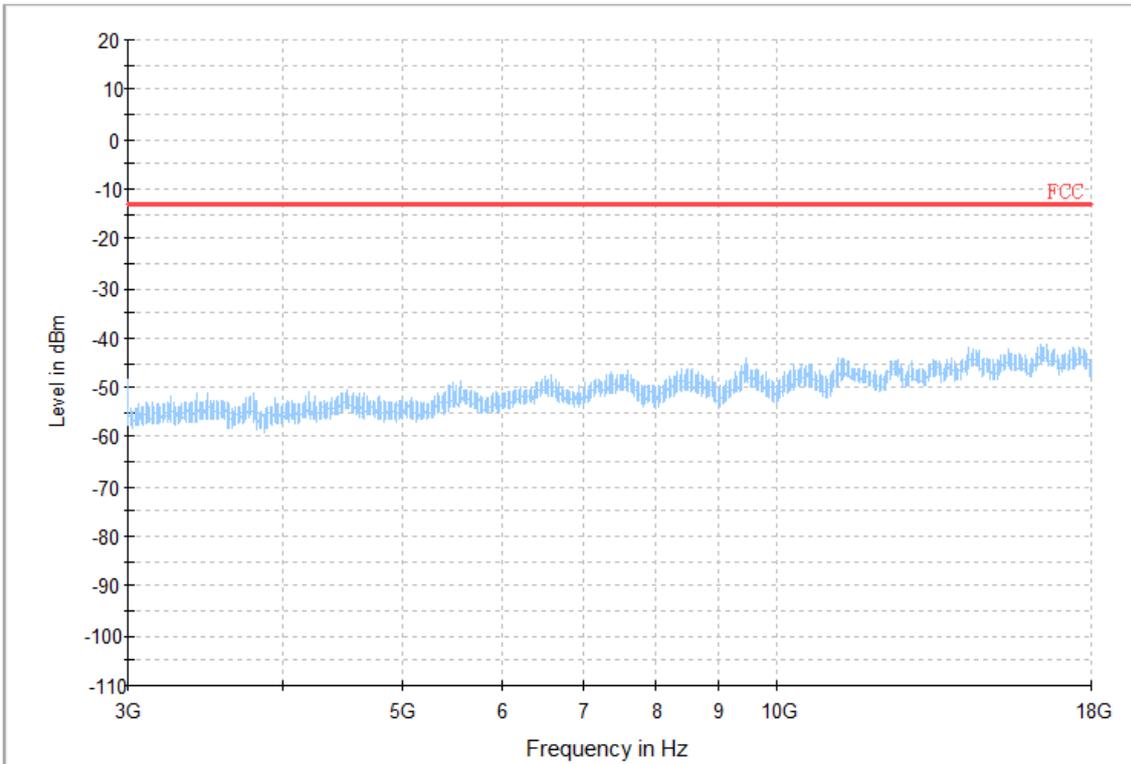
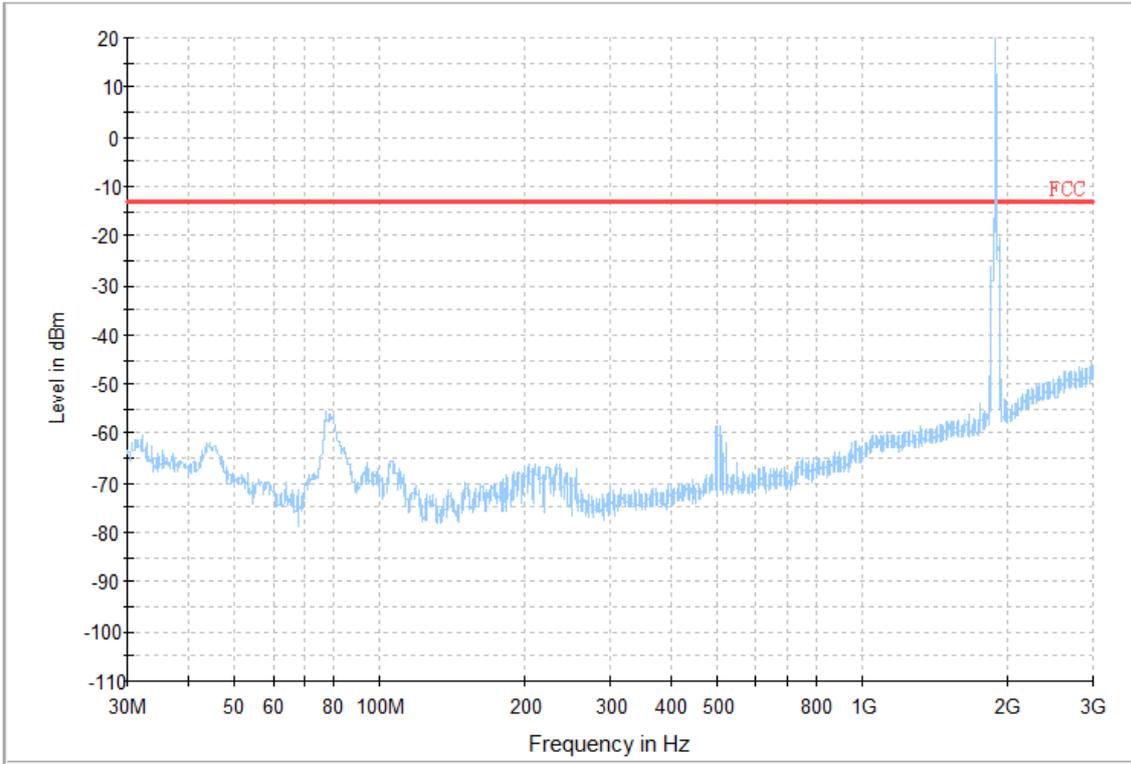
Test Mode: HSDPA Band 2_TX CH9400



Test Mode: LTE Band 2_TX CH18900_1.4M



Test Mode: LTE Band 2_TX CH18900_20M

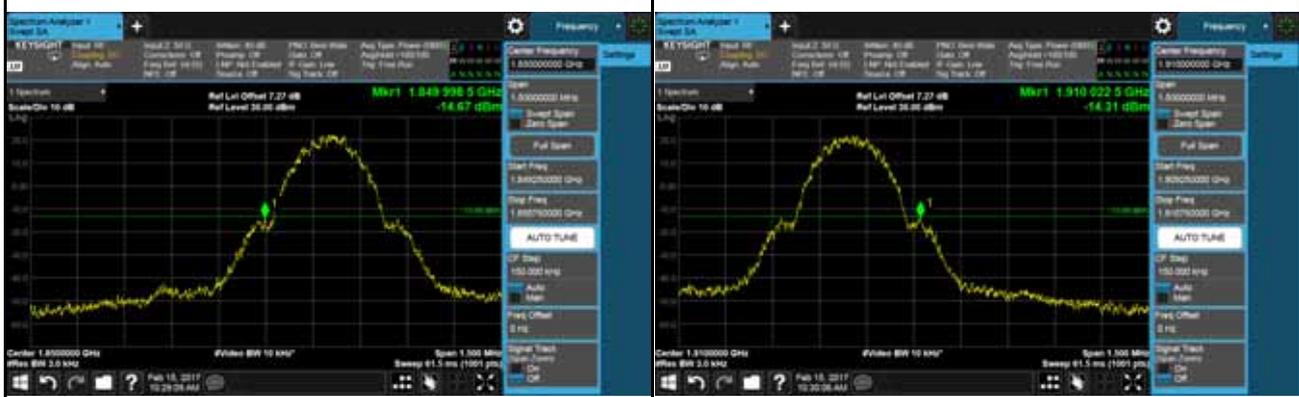


ATTACHMENT E - BAND EDGE

DCS1900

GSM

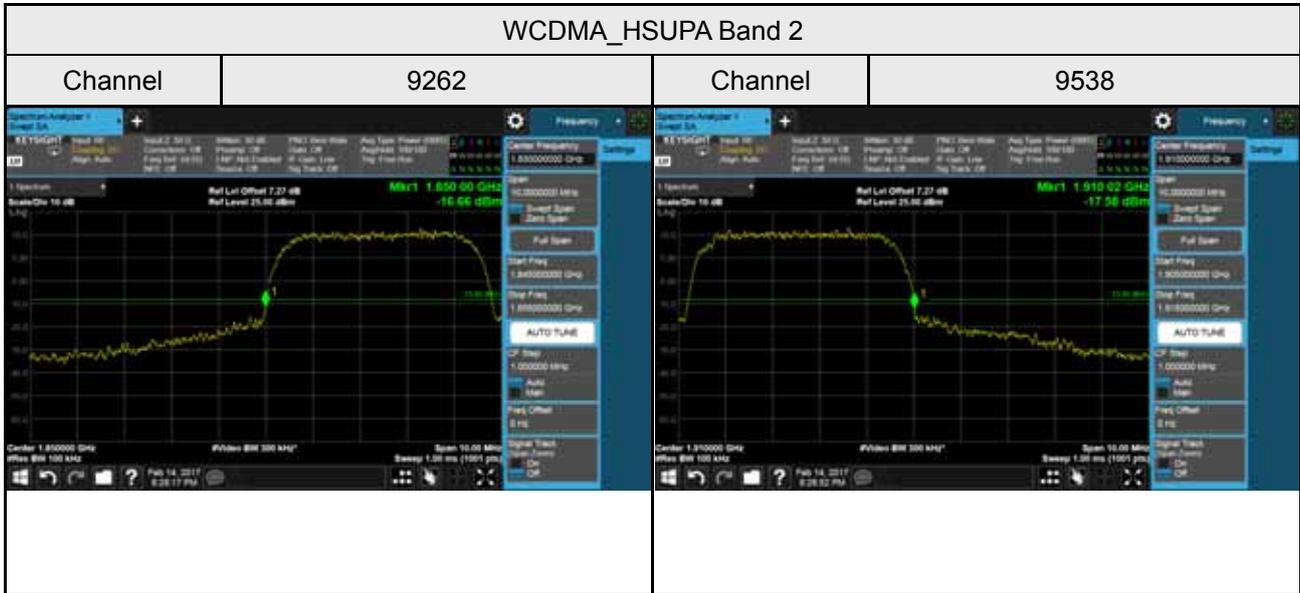
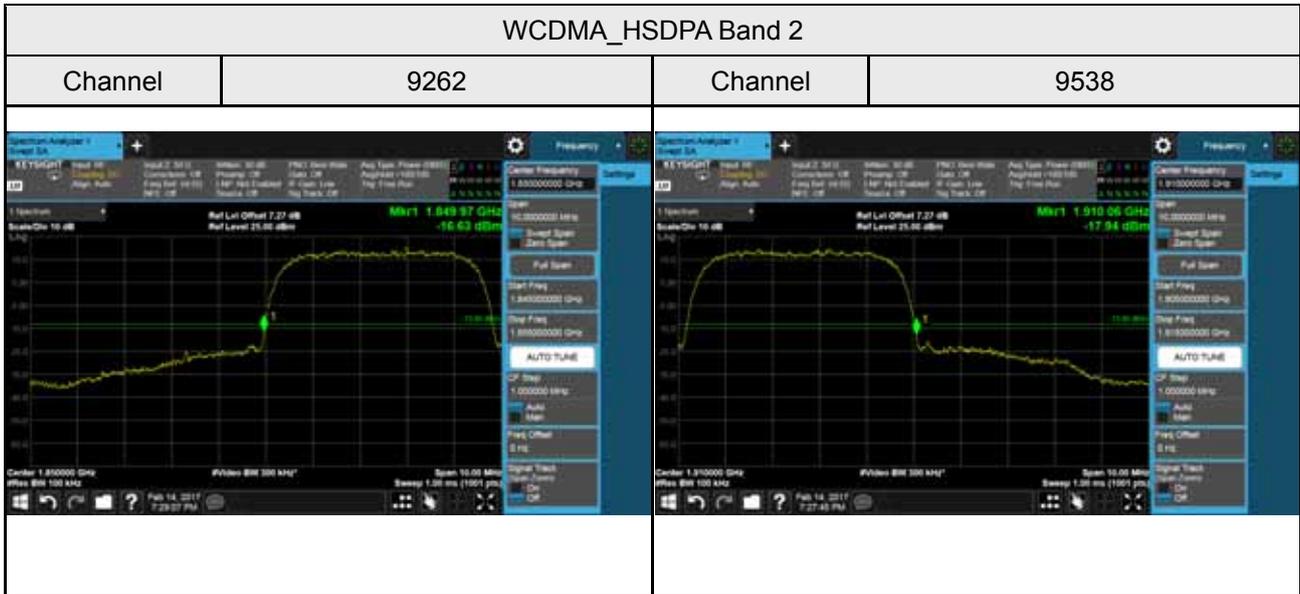
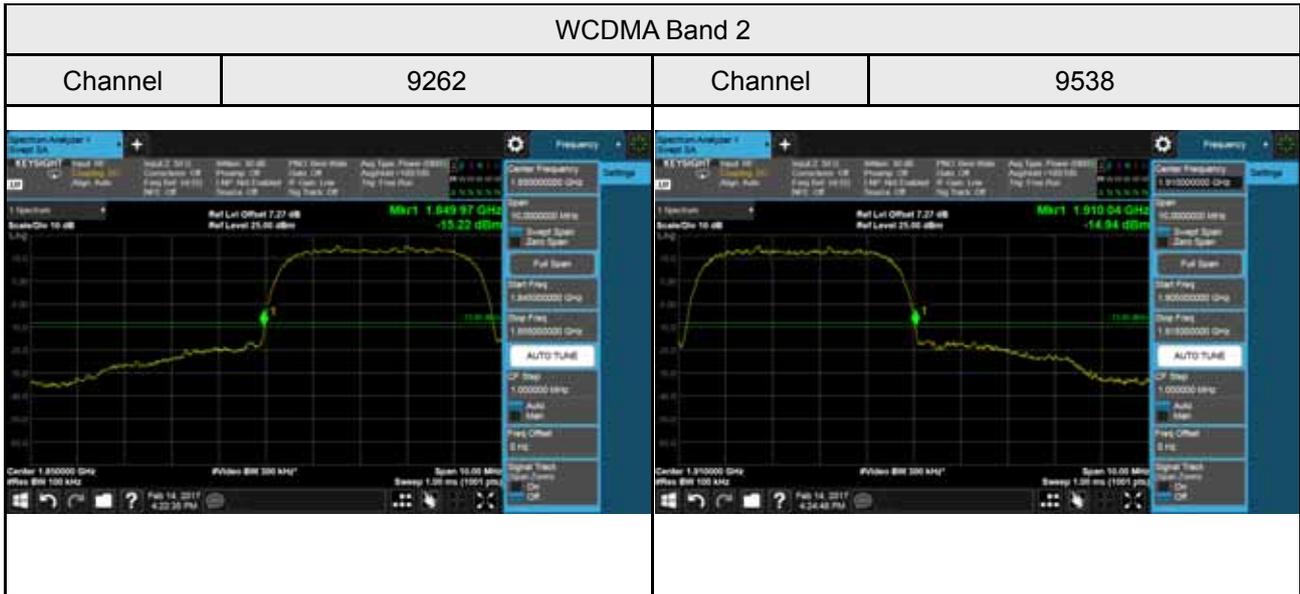
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|---------|-----|---------|-----|
| Channel | 512 | Channel | 810 |
|---------|-----|---------|-----|

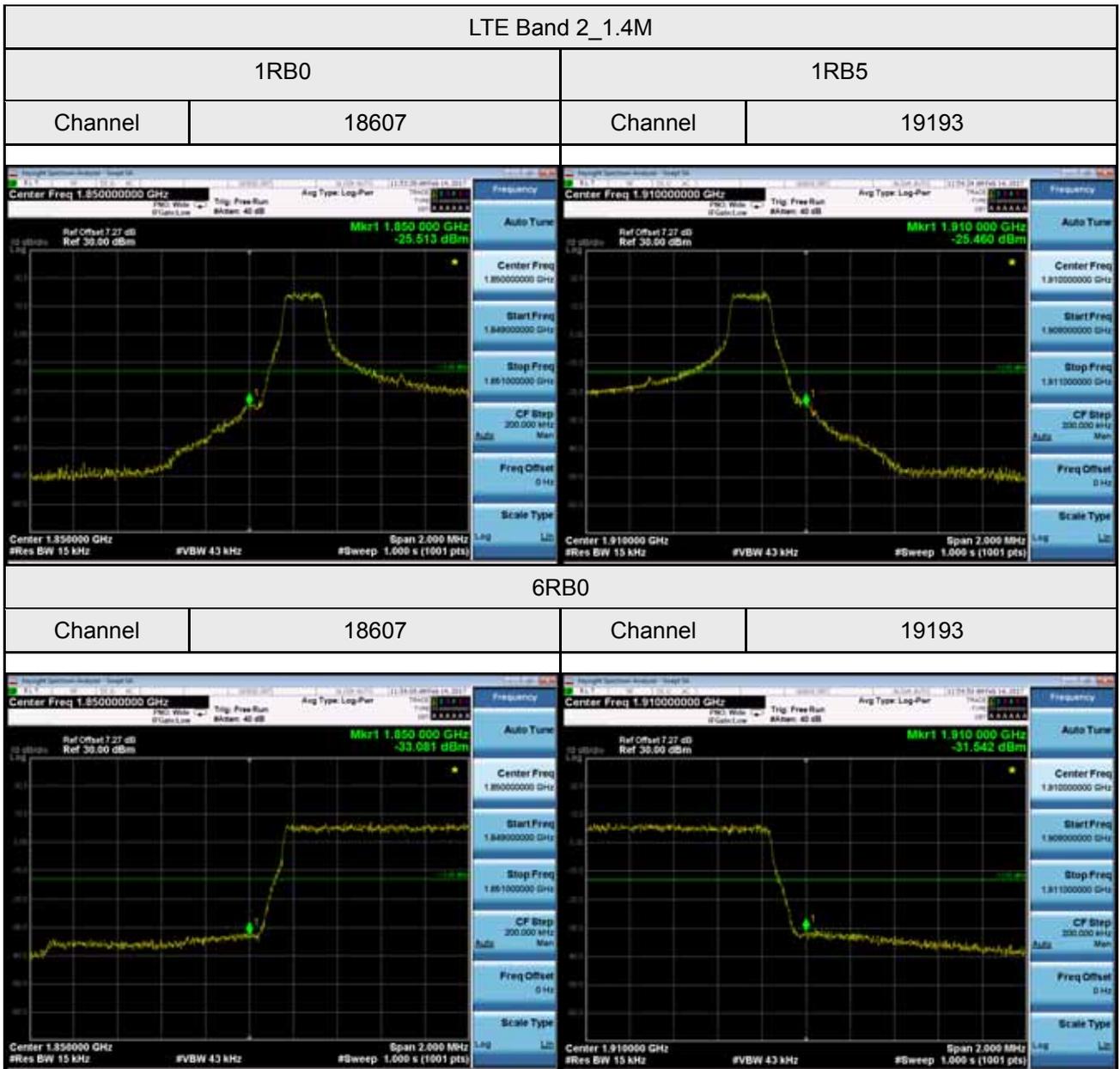


EDGE

| | | | |
|---------|-----|---------|-----|
| Channel | 512 | Channel | 810 |
|---------|-----|---------|-----|



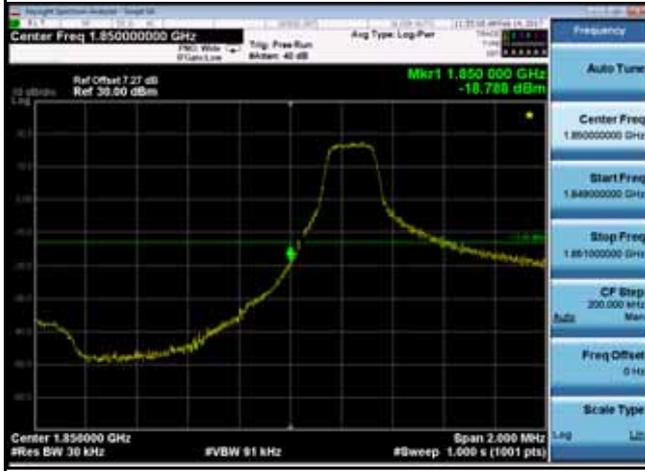




LTE Band 2_3M

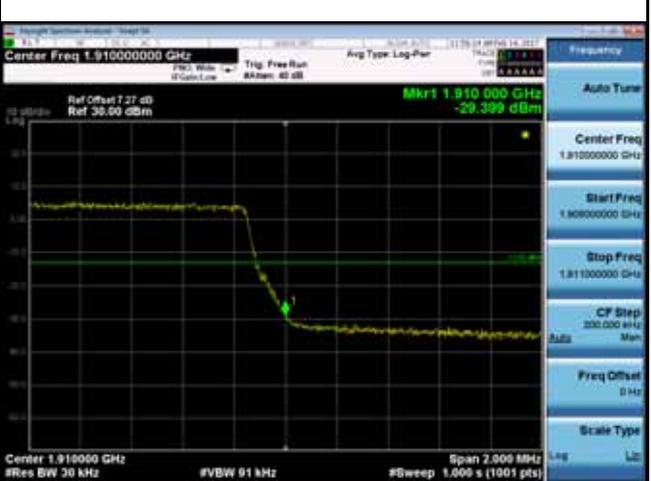
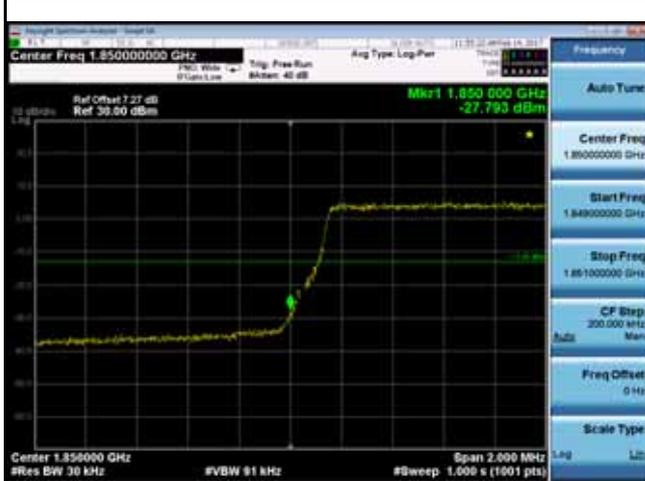
| | | | |
|------|--|-------|--|
| 1RB0 | | 1RB14 | |
|------|--|-------|--|

| | | | |
|---------|-------|---------|-------|
| Channel | 18615 | Channel | 19185 |
|---------|-------|---------|-------|



15RB0

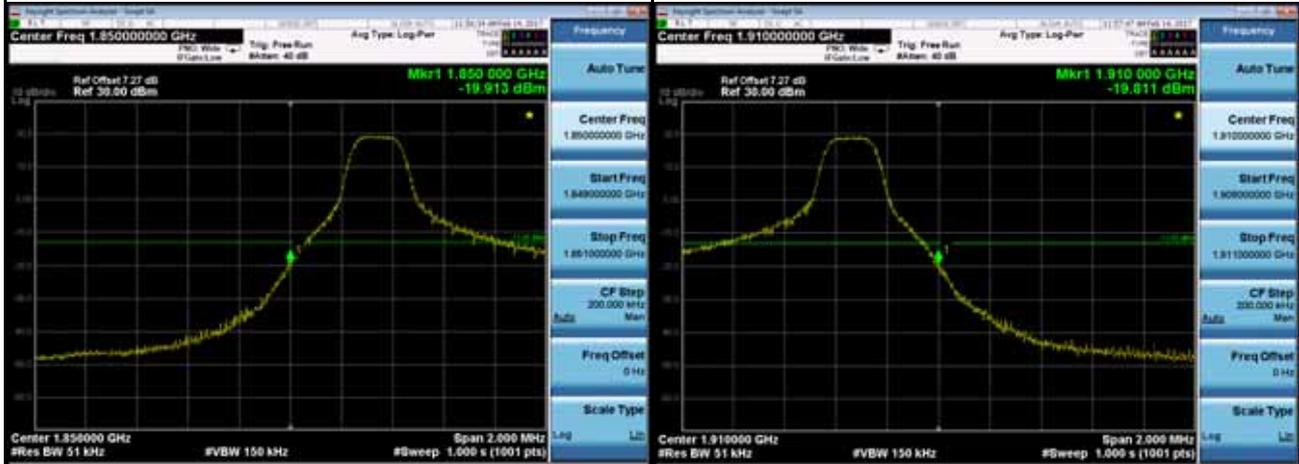
| | | | |
|-------|--|-------|--|
| 18615 | | 19185 | |
|-------|--|-------|--|



LTE Band 2_5M

| | | | |
|------|--|-------|--|
| 1RB0 | | 1RB24 | |
|------|--|-------|--|

| | | | |
|---------|-------|---------|-------|
| Channel | 18625 | Channel | 19175 |
|---------|-------|---------|-------|



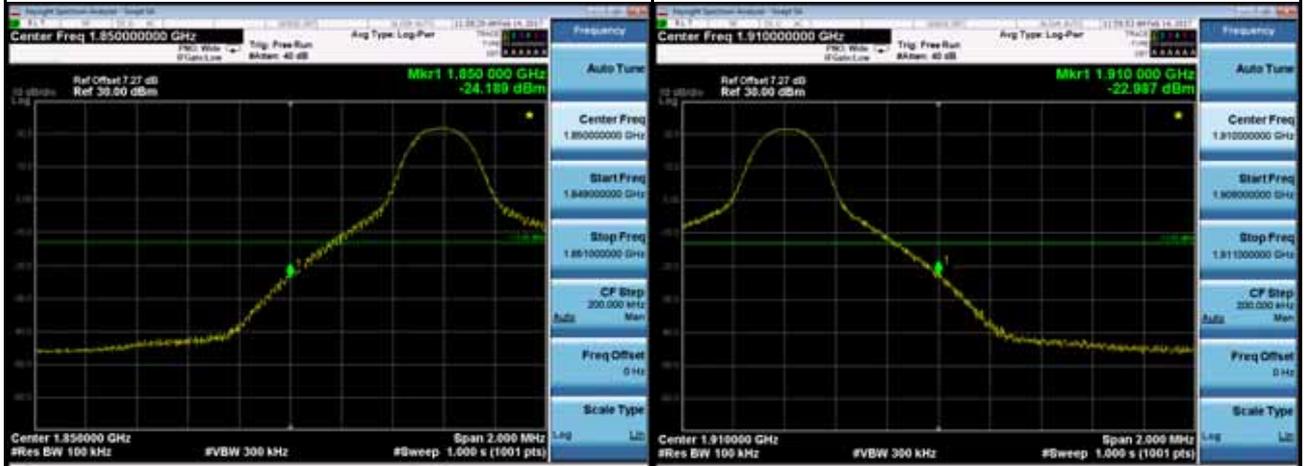
25RB0

| | | | |
|-------|--|-------|--|
| 18625 | | 19175 | |
|-------|--|-------|--|



LTE Band 2_10M

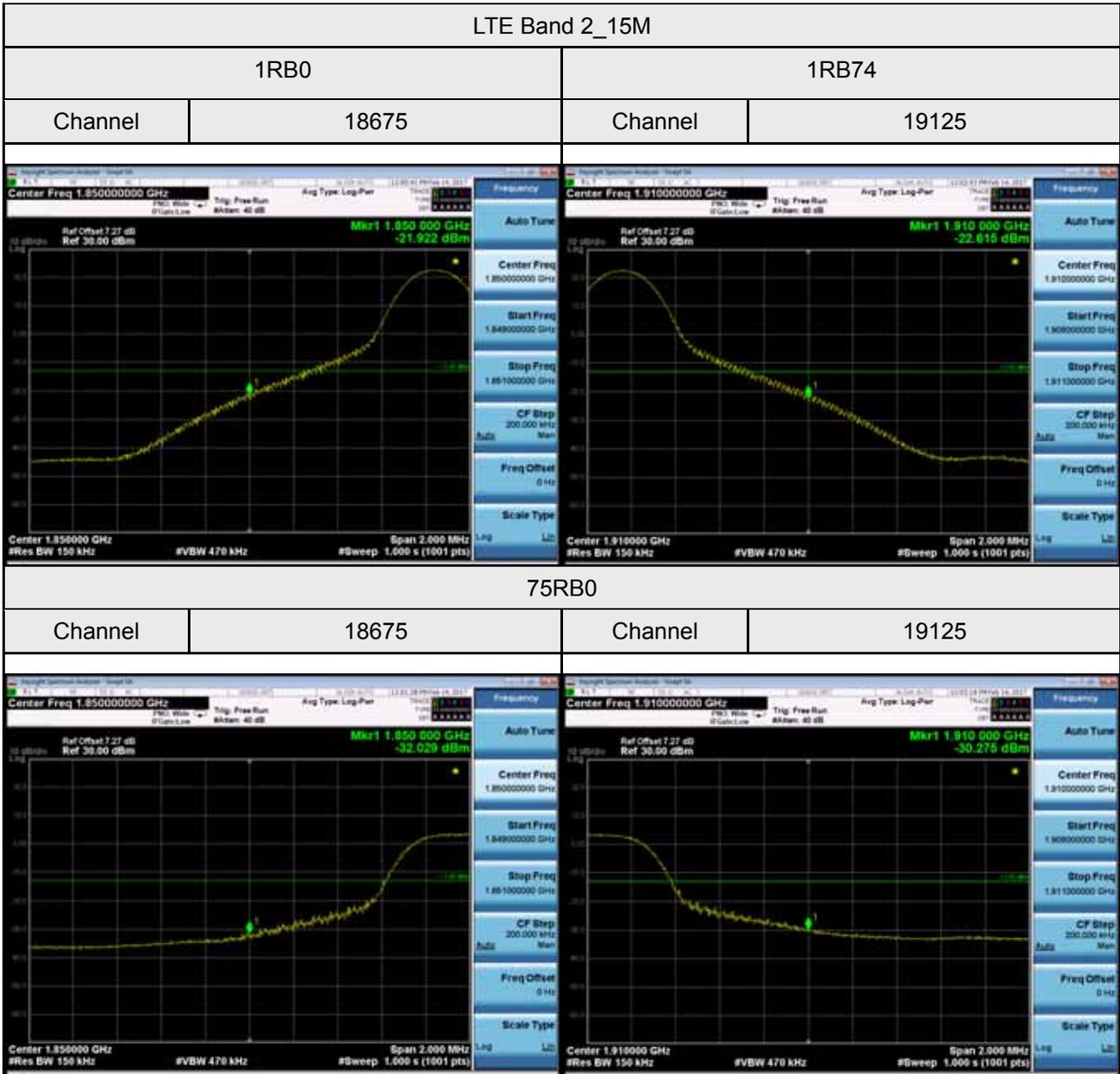
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|---------|-------|---------|-------|
| 1RB0 | | 1RB49 | |
| Channel | 18650 | Channel | 19150 |



50RB0

| | | | |
|---------|-------|---------|-------|
| Channel | 18650 | Channel | 19150 |
|---------|-------|---------|-------|

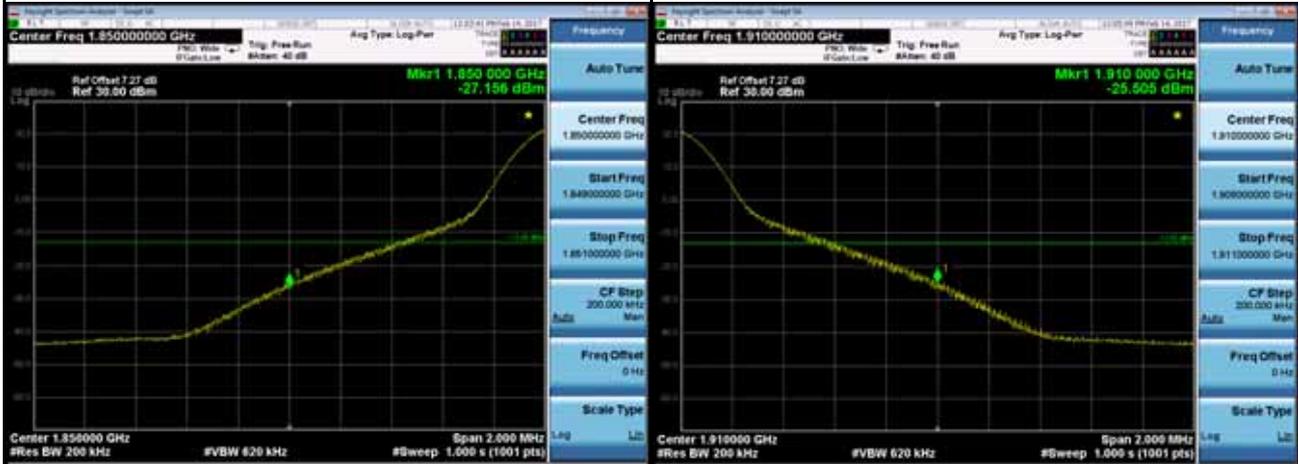




LTE Band 2_20M

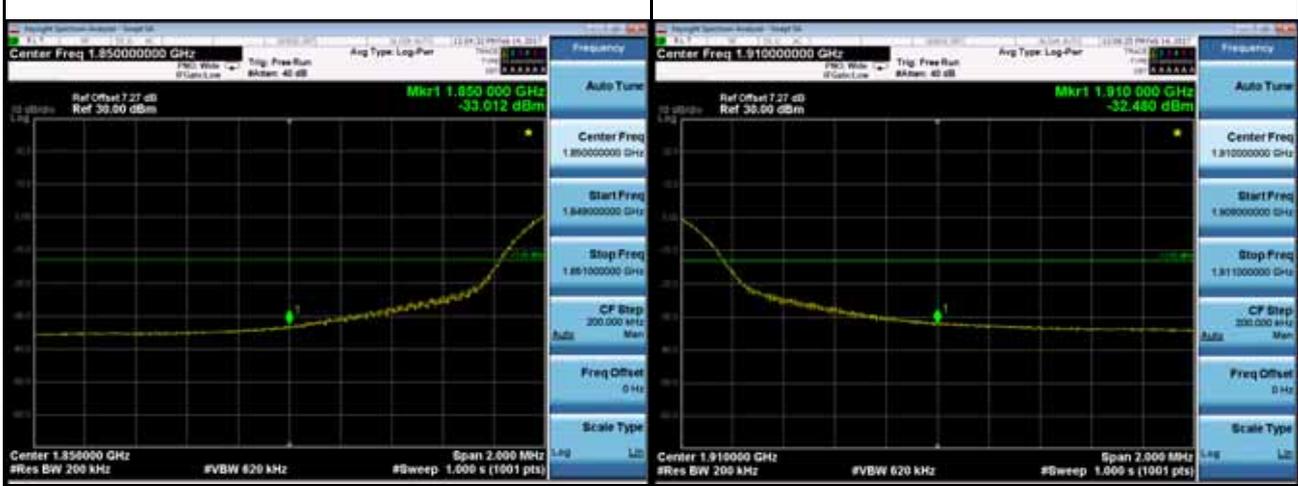
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|------|--|-------|--|
| 1RB0 | | 1RB99 | |
|------|--|-------|--|

| | | | |
|---------|-------|---------|-------|
| Channel | 18700 | Channel | 19100 |
|---------|-------|---------|-------|



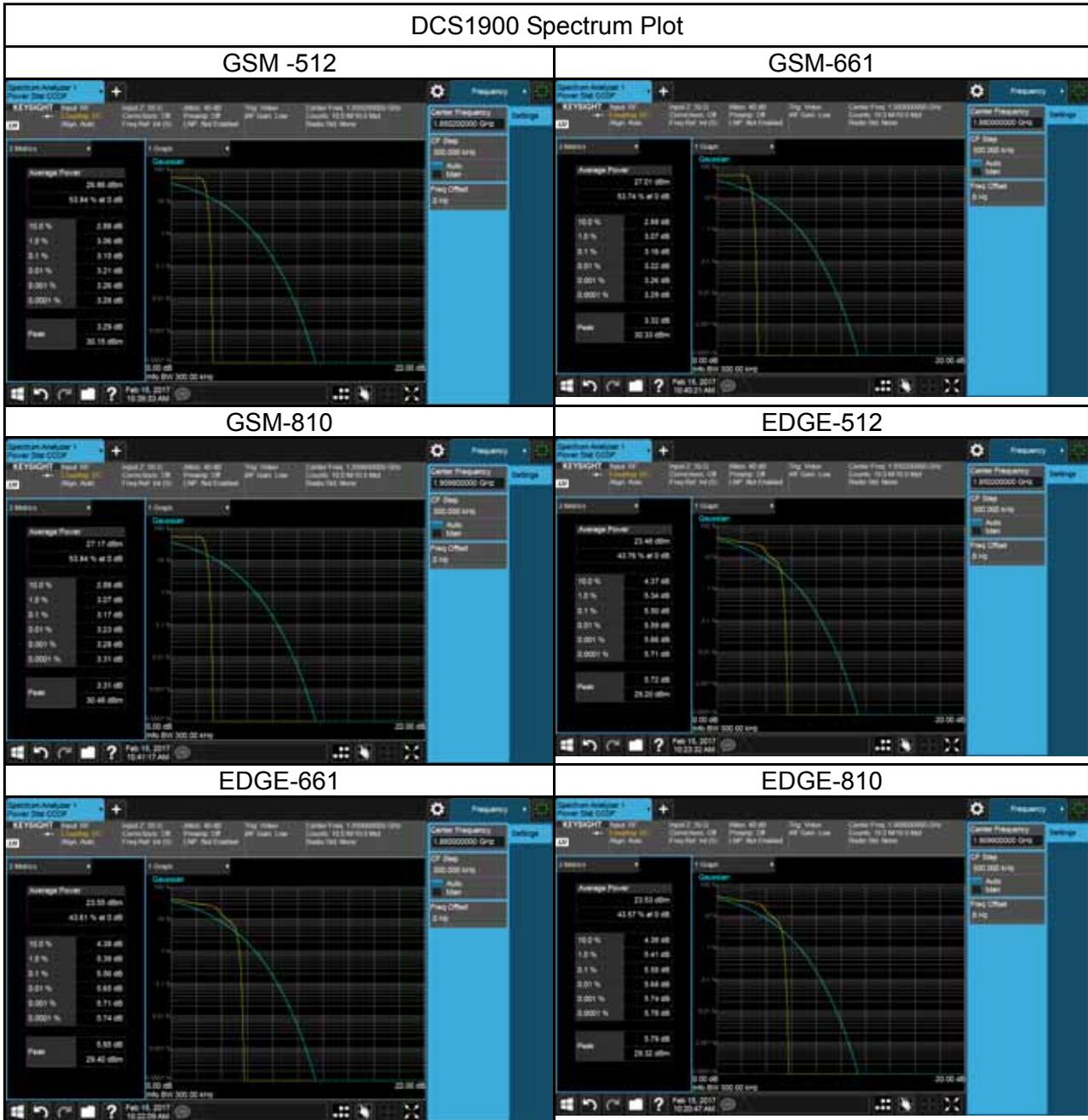
100RB0

| | | | |
|-------|--|-------|--|
| 18700 | | 19100 | |
|-------|--|-------|--|

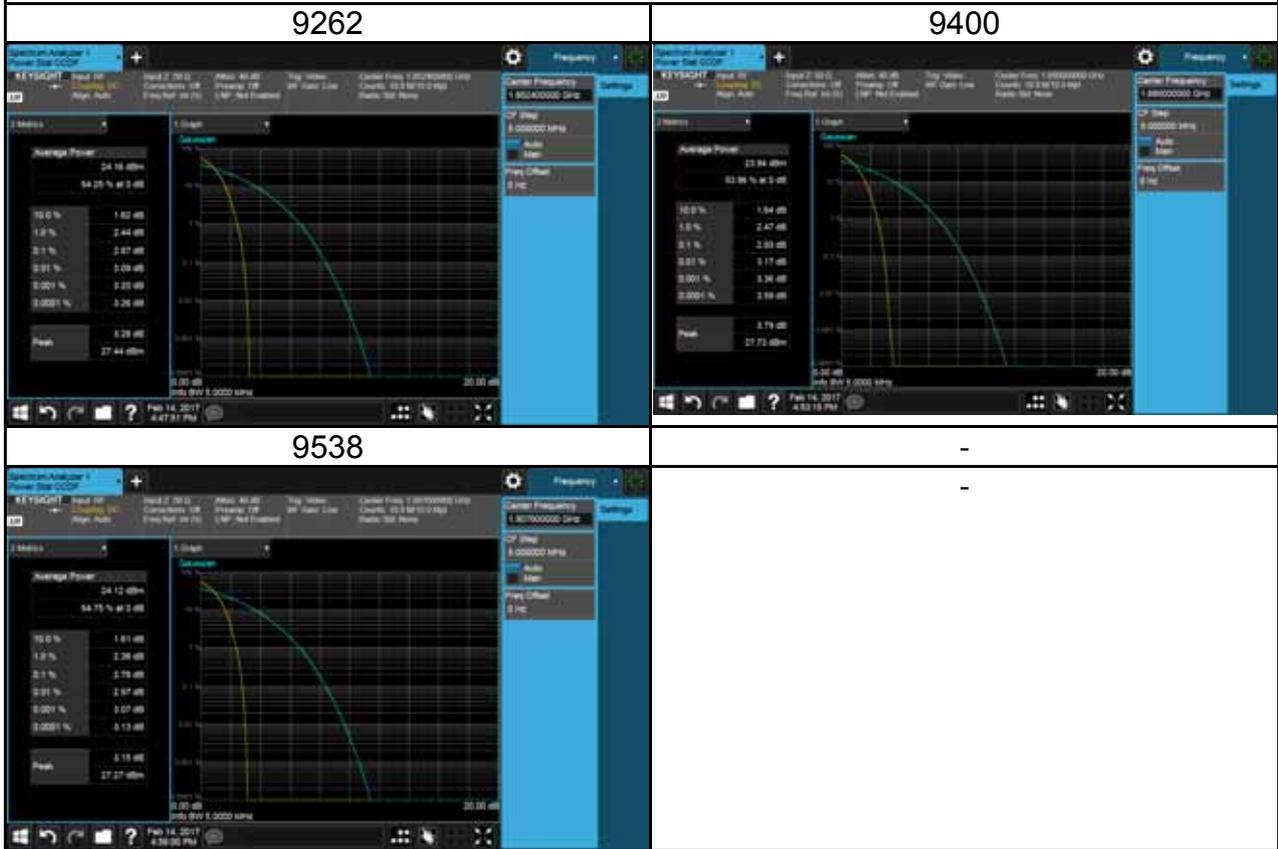


ATTACHMENT F - PEAK TO AVERAGE RATIO

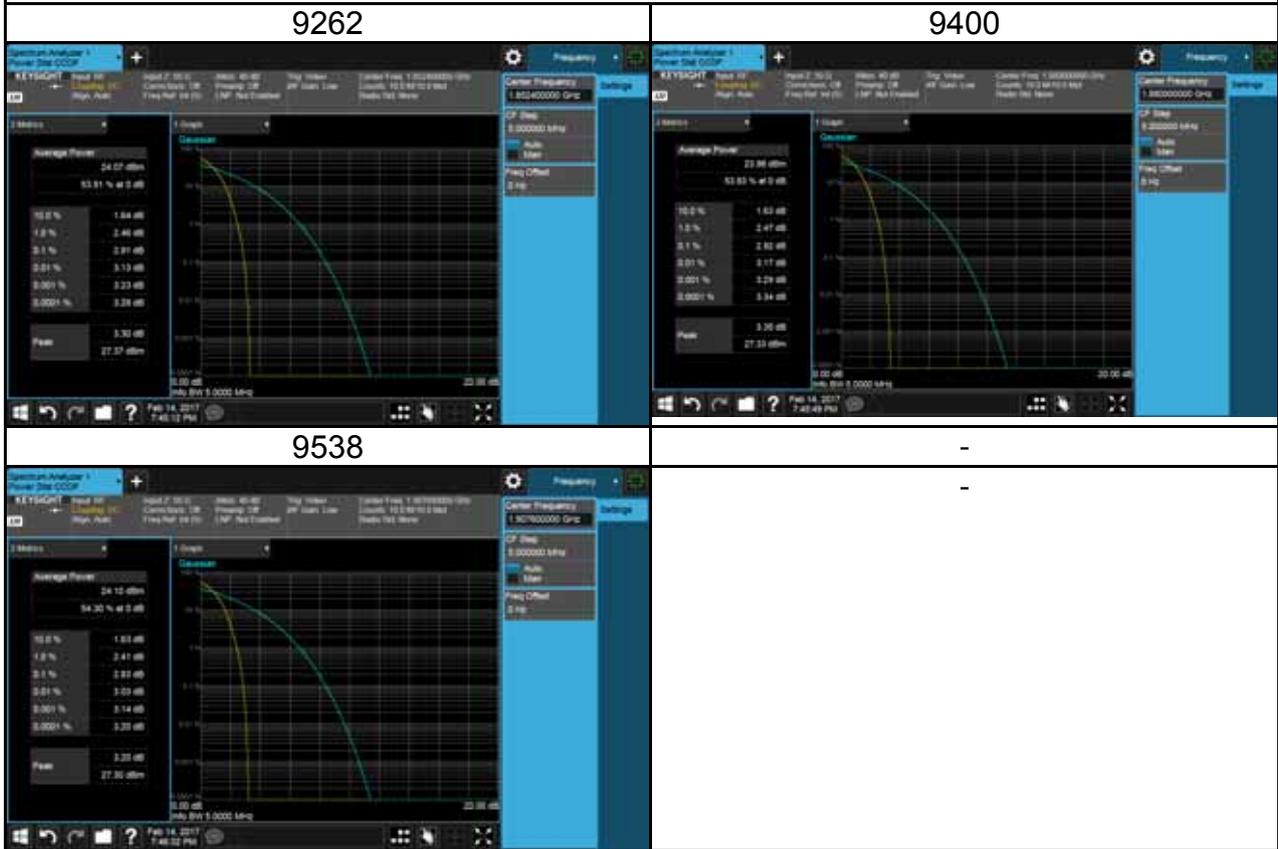
DCS1900 Spectrum Plot



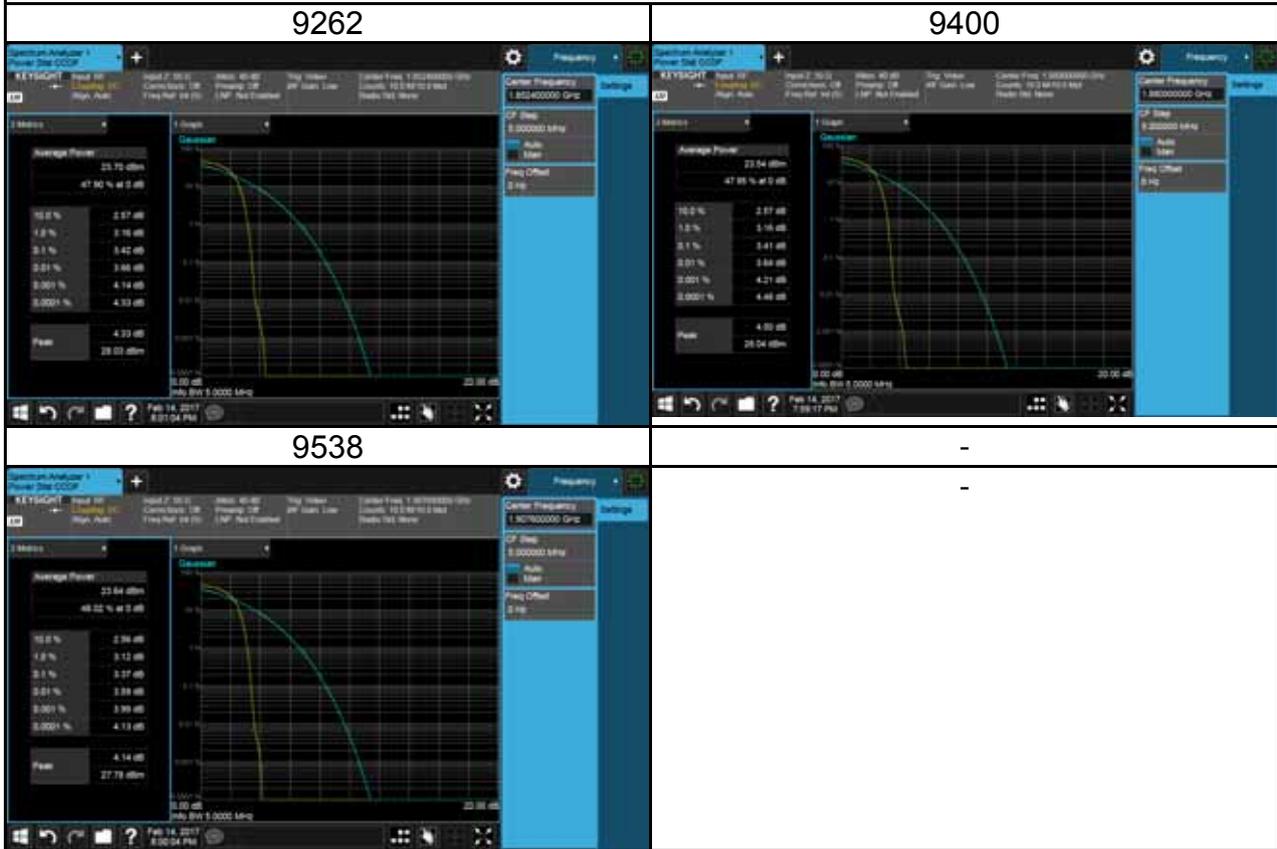
WCDMA Band 2 Spectrum Plot



WCDMA_HSDPA Band 2 Spectrum Plot

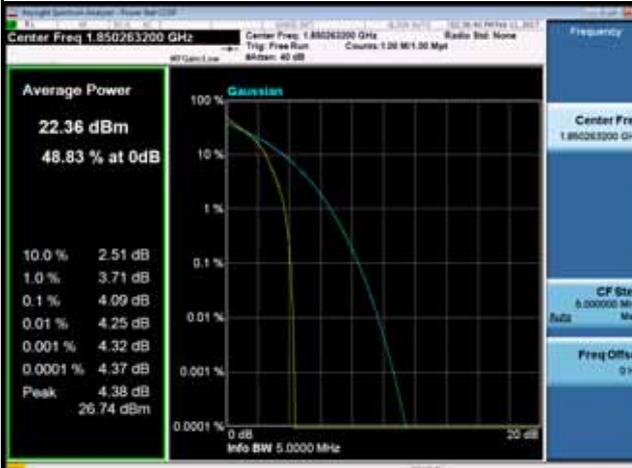


WCDMA_HSUPA Band 2 Spectrum Plot

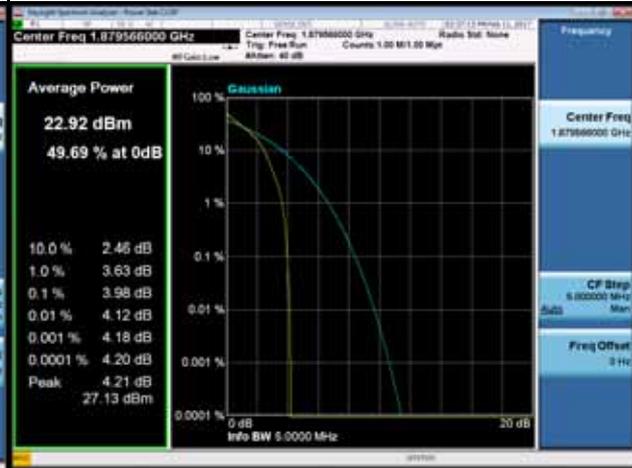


LTE Band 2 Spectrum Plot_1.4M

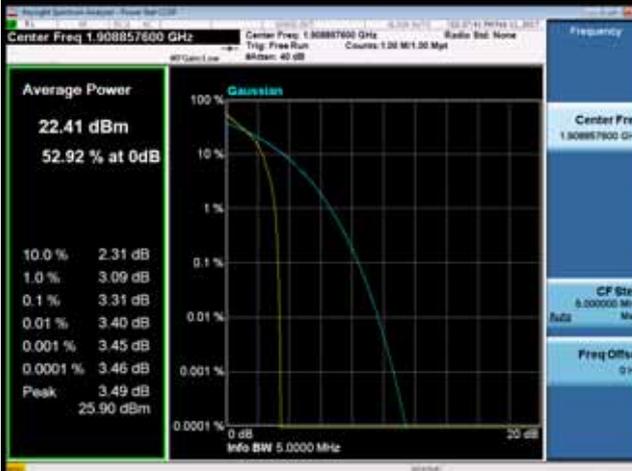
QPSK-18607



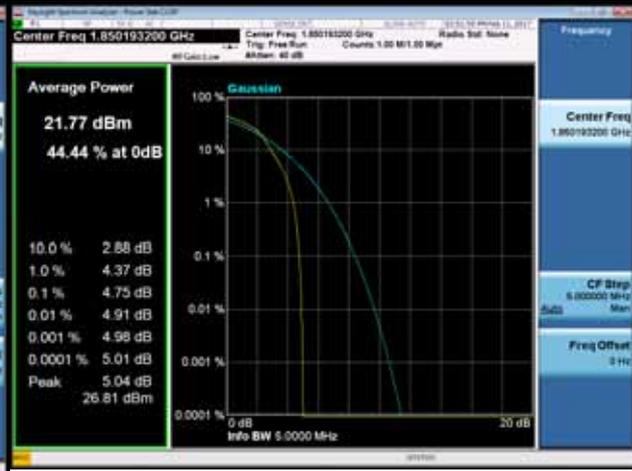
QPSK-18900



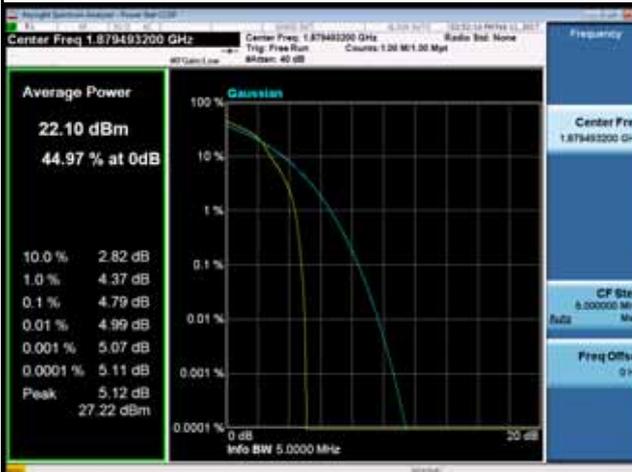
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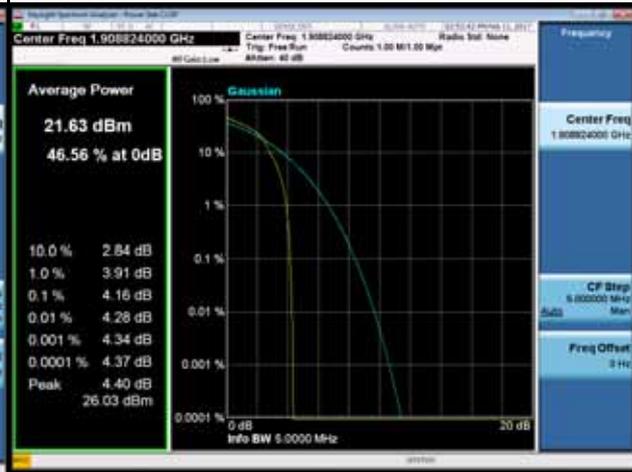
16QAM-18607



16QAM-18900



16QAM-19193



LTE Band 2 Spectrum Plot_3M

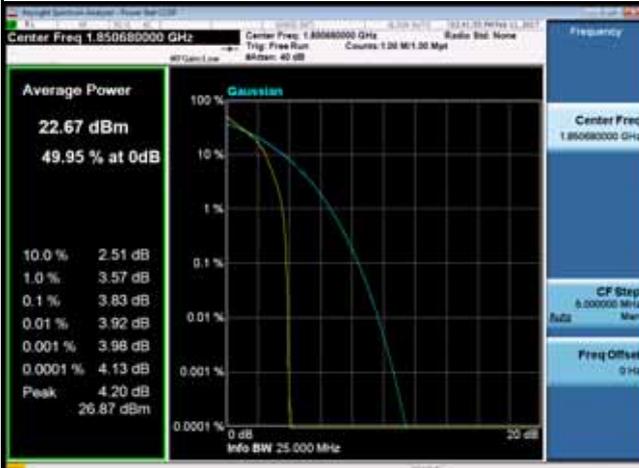


LTE Band 2 Spectrum Plot_5M

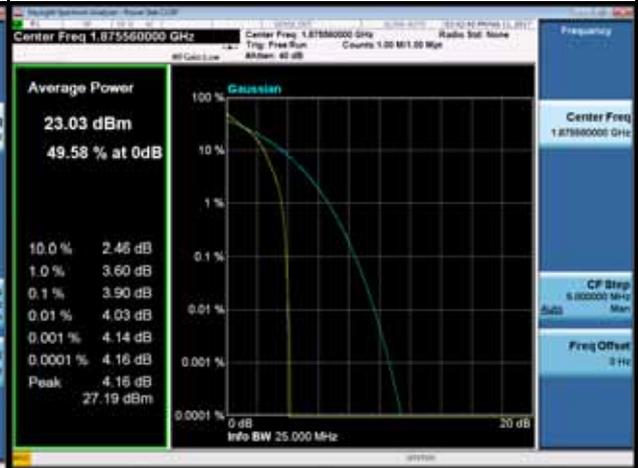


LTE Band 2 Spectrum Plot_10M

QPSK-18650



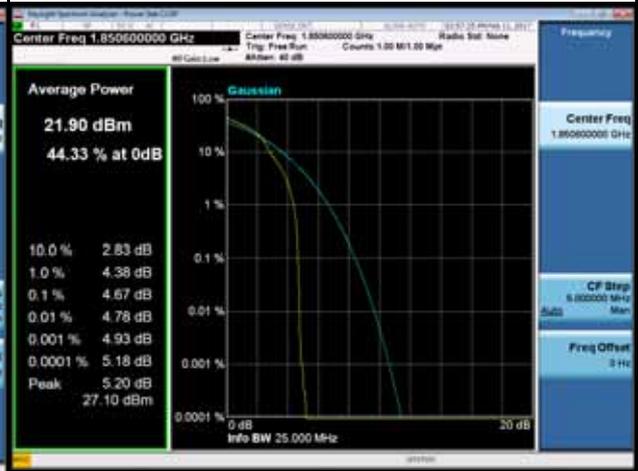
QPSK-18900



QPSK-19150



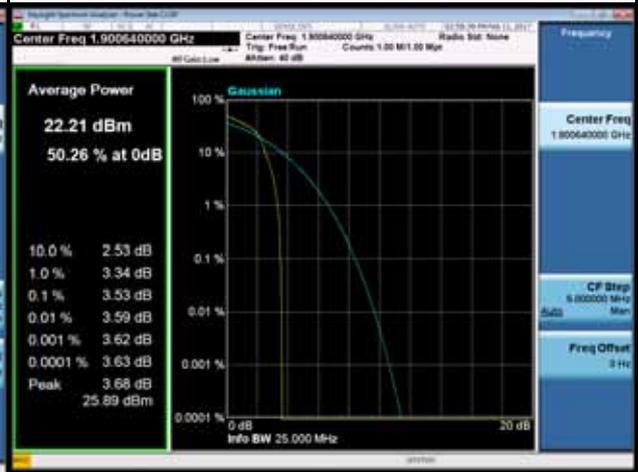
16QAM-18650



16QAM-18900

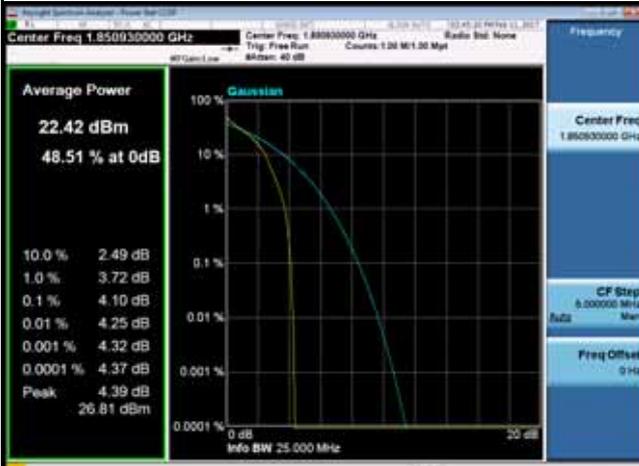


16QAM-19150

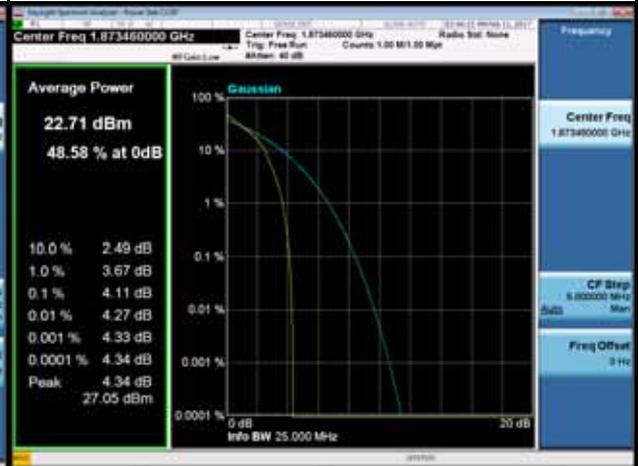


LTE Band 2 Spectrum Plot_15M

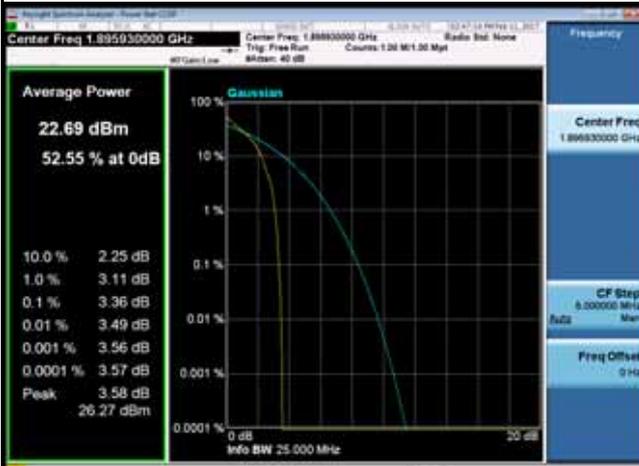
QPSK-18675



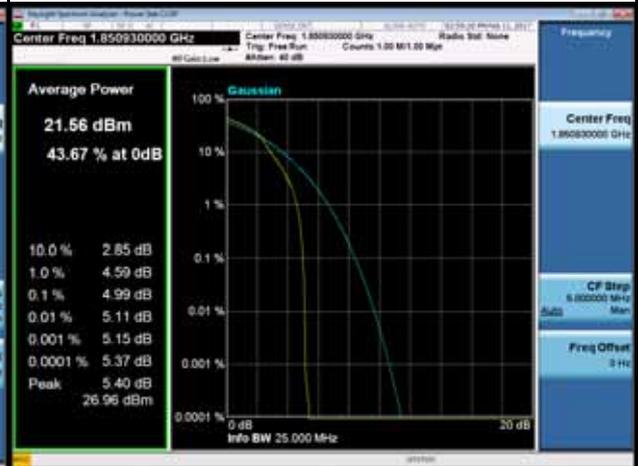
QPSK-18900



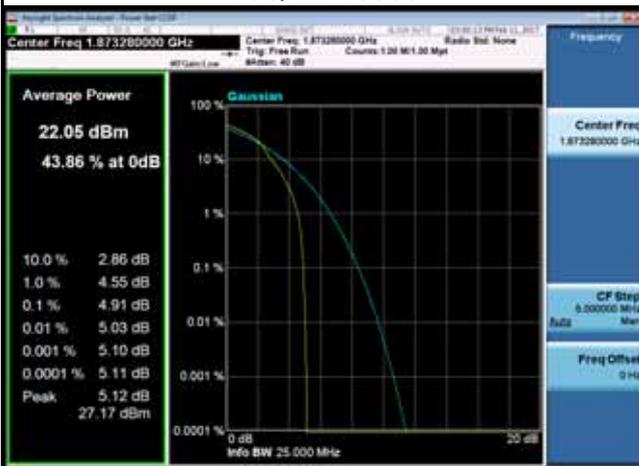
QPSK-19125



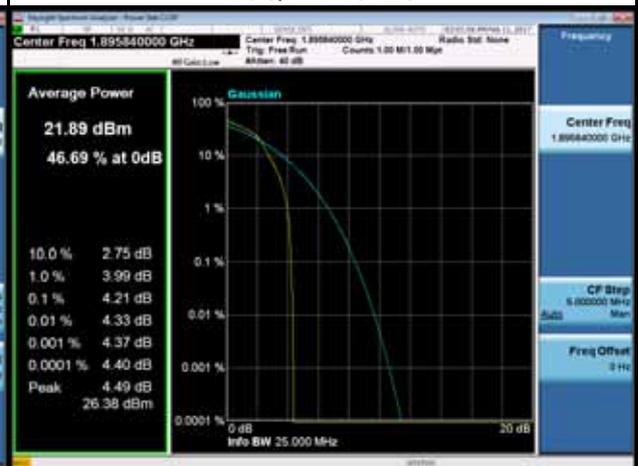
16QAM-18675



16QAM-18900

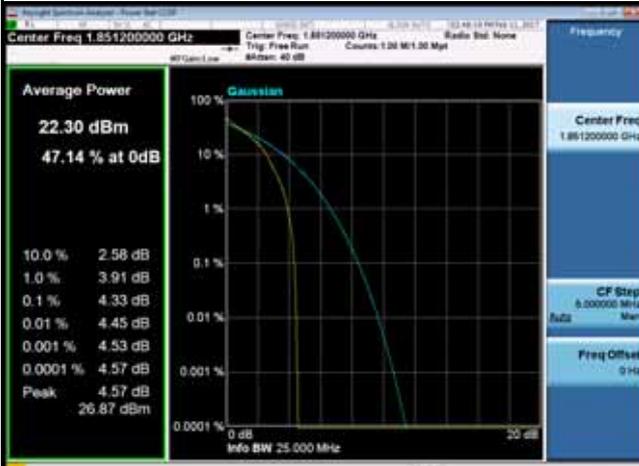


16QAM-19125

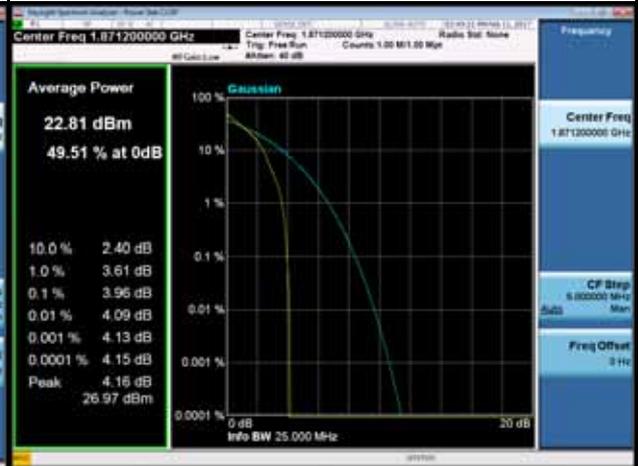


LTE Band 2 Spectrum Plot_20M

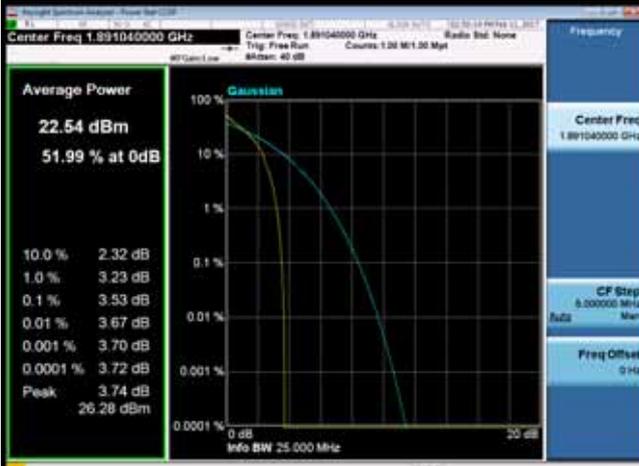
QPSK-18700



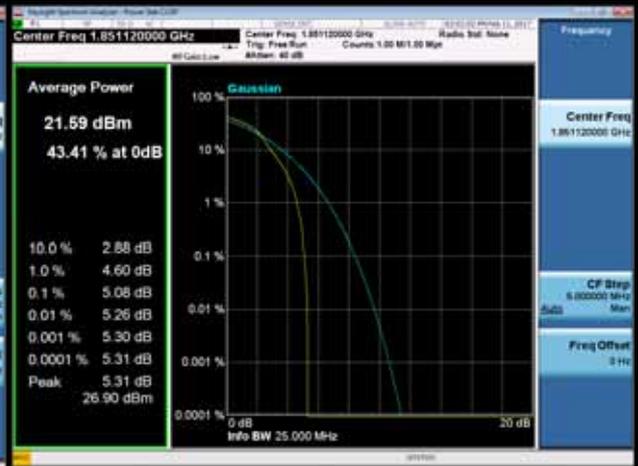
QPSK-18900



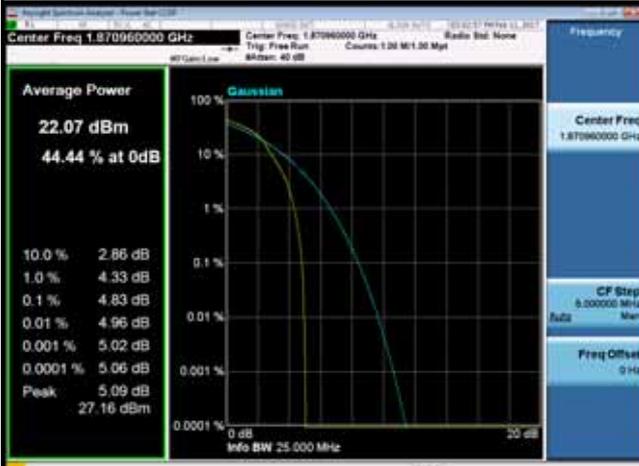
QPSK-19100



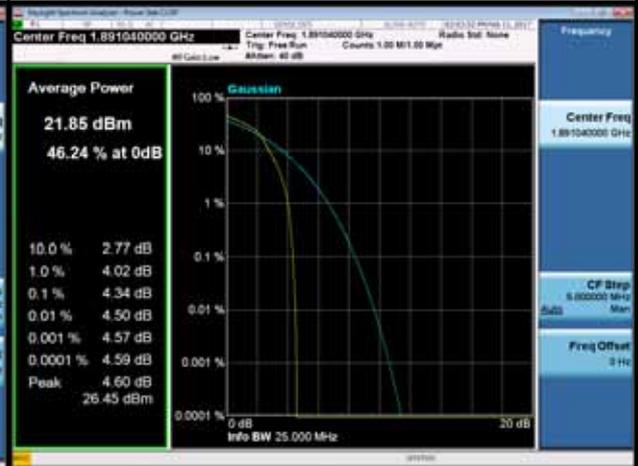
16QAM-18700



16QAM-18900



16QAM-19100



ATTACHMENT G - FREQUENCY STABILITY

| | |
|------------|---------------|
| Test Mode: | DCS1900_CH661 |
|------------|---------------|

Temperature vs. Frequency Stability

| Temperature() | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| -30 | 6.28 | 0.003394228 | 2.5 |
| -20 | 3.69 | 0.001994379 | 2.5 |
| -10 | 5.38 | 0.002907794 | 2.5 |
| 0 | 7.24 | 0.00391309 | 2.5 |
| 10 | 5.13 | 0.002772673 | 2.5 |
| 20 | 5.96 | 0.003221273 | 2.5 |
| 30 | 3.73 | 0.002015998 | 2.5 |
| 40 | 3.29 | 0.001778186 | 2.5 |
| 50 | 7.35 | 0.003972544 | 2.5 |
| Max. Deviation (ppm) | 6.98 | 0.003772565 | 2.5 |

Voltage vs. Frequency Stability

| Voltage(Volts) | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| 3.8 | 7.26 | 0.0039239 | 2.5 |
| 4 | 5.22 | 0.002821317 | 2.5 |
| 4.2 | 6.07 | 0.003280726 | 2.5 |
| Max. Deviation (ppm) | 7.26 | 0.0039239 | 2.5 |

| | |
|------------|---------------------|
| Test Mode: | WCDMA Band 2_CH9400 |
|------------|---------------------|

Temperature vs. Frequency Stability

| Temperature() | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| -30 | 9.61 | 0.005111702 | 2.5 |
| -20 | 8.31 | 0.004420213 | 2.5 |
| -10 | 6.43 | 0.003420213 | 2.5 |
| 0 | 5.64 | 0.003 | 2.5 |
| 10 | 9.46 | 0.005031915 | 2.5 |
| 20 | 5.34 | 0.002840426 | 2.5 |
| 30 | 7.17 | 0.00381383 | 2.5 |
| 40 | 4.76 | 0.002531915 | 2.5 |
| 50 | 8.25 | 0.004388298 | 2.5 |
| Max. Deviation (ppm) | 9.61 | 0.005111702 | 2.5 |

Voltage vs. Frequency Stability

| Voltage(Volts) | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| 3.8 | 9.14 | 0.004861702 | 2.5 |
| 4 | 7.33 | 0.003898936 | 2.5 |
| 4.2 | 7.32 | 0.003893617 | 2.5 |
| Max. Deviation (ppm) | 9.14 | 0.004861702 | 2.5 |

| | |
|------------|-------------------------|
| Test Mode: | LTE Band 2_CH18900_1.4M |
|------------|-------------------------|

Temperature vs. Frequency Stability

| Temperature() | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| -30 | 4.32 | 0.002297872 | 2.5 |
| -20 | -2.98 | 0.001585106 | 2.5 |
| -10 | -3.66 | 0.001946809 | 2.5 |
| 0 | 3.49 | 0.001856383 | 2.5 |
| 10 | -3.19 | 0.001696809 | 2.5 |
| 20 | 2.08 | 0.001106383 | 2.5 |
| 30 | 3.91 | 0.002079787 | 2.5 |
| 40 | -3.58 | 0.001904255 | 2.5 |
| 50 | 4.28 | 0.002276596 | 2.5 |
| Max. Deviation (ppm) | 4.32 | 0.002297872 | 2.5 |

Voltage vs. Frequency Stability

| Voltage(Volts) | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| 3.8 | 4.16 | 0.002212766 | 2.5 |
| 4 | 3.15 | 0.001675532 | 2.5 |
| 4.2 | -3.73 | 0.001984043 | 2.5 |
| Max. Deviation (ppm) | 4.16 | 0.002212766 | 2.5 |

| | |
|------------|-----------------------|
| Test Mode: | LTE Band 2_CH18900_3M |
|------------|-----------------------|

Temperature vs. Frequency Stability

| Temperature() | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| -30 | -5.19 | 0.002760638 | 2.5 |
| -20 | -4.63 | 0.002462766 | 2.5 |
| -10 | 4.33 | 0.002303191 | 2.5 |
| 0 | 3.96 | 0.002106383 | 2.5 |
| 10 | -2.97 | 0.001579787 | 2.5 |
| 20 | 2.28 | 0.001212766 | 2.5 |
| 30 | 3.46 | 0.001840426 | 2.5 |
| 40 | 4.16 | 0.002212766 | 2.5 |
| 50 | -5.23 | 0.002781915 | 2.5 |
| Max. Deviation (ppm) | 5.23 | 0.002781915 | 2.5 |

Voltage vs. Frequency Stability

| Voltage(Volts) | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| 3.8 | -3.91 | 0.002079787 | 2.5 |
| 4 | -2.83 | 0.001505319 | 2.5 |
| 4.2 | 3.11 | 0.001654255 | 2.5 |
| Max. Deviation (ppm) | 3.91 | 0.002079787 | 2.5 |

| | |
|------------|-----------------------|
| Test Mode: | LTE Band 2_CH18900_5M |
|------------|-----------------------|

Temperature vs. Frequency Stability

| Temperature() | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| -30 | 4.16 | 0.002212766 | 2.5 |
| -20 | 3.97 | 0.002111702 | 2.5 |
| -10 | -4.16 | 0.002212766 | 2.5 |
| 0 | -2.98 | 0.001585106 | 2.5 |
| 10 | 2.46 | 0.001308511 | 2.5 |
| 20 | 3.16 | 0.001680851 | 2.5 |
| 30 | -2.99 | 0.001590426 | 2.5 |
| 40 | 4.36 | 0.002319149 | 2.5 |
| 50 | -3.97 | 0.002111702 | 2.5 |
| Max. Deviation (ppm) | 4.36 | 0.002319149 | 2.5 |

Voltage vs. Frequency Stability

| Voltage(Volts) | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| 3.8 | 3.17 | 0.00168617 | 2.5 |
| 4 | -2.55 | 0.001356383 | 2.5 |
| 4.2 | -4.52 | 0.002404255 | 2.5 |
| Max. Deviation (ppm) | 4.52 | 0.002404255 | 2.5 |

| | |
|------------|------------------------|
| Test Mode: | LTE Band 2_CH18900_10M |
|------------|------------------------|

Temperature vs. Frequency Stability

| Temperature() | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| -30 | 3.65 | 0.001941489 | 2.5 |
| -20 | -3.76 | 0.002 | 2.5 |
| -10 | 2.88 | 0.001531915 | 2.5 |
| 0 | -4.16 | 0.002212766 | 2.5 |
| 10 | -2.97 | 0.001579787 | 2.5 |
| 20 | 2.44 | 0.001297872 | 2.5 |
| 30 | 3.45 | 0.001835106 | 2.5 |
| 40 | -1.97 | 0.001047872 | 2.5 |
| 50 | 4.33 | 0.002303191 | 2.5 |
| Max. Deviation (ppm) | 4.33 | 0.002303191 | 2.5 |

Voltage vs. Frequency Stability

| Voltage(Volts) | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| 3.8 | 2.57 | 0.001367021 | 2.5 |
| 4 | -3.19 | 0.001696809 | 2.5 |
| 4.2 | 2.86 | 0.001521277 | 2.5 |
| Max. Deviation (ppm) | 3.19 | 0.001696809 | 2.5 |

| | |
|------------|------------------------|
| Test Mode: | LTE Band 2_CH18900_15M |
|------------|------------------------|

Temperature vs. Frequency Stability

| Temperature() | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| -30 | 2.79 | 0.001484043 | 2.5 |
| -20 | -3.67 | 0.001952128 | 2.5 |
| -10 | 2.59 | 0.00137766 | 2.5 |
| 0 | -3.12 | 0.001659574 | 2.5 |
| 10 | 3.06 | 0.00162766 | 2.5 |
| 20 | -2.33 | 0.001239362 | 2.5 |
| 30 | 3.11 | 0.001654255 | 2.5 |
| 40 | -2.97 | 0.001579787 | 2.5 |
| 50 | -3.12 | 0.001659574 | 2.5 |
| Max. Deviation (ppm) | 3.67 | 0.001952128 | 2.5 |

Voltage vs. Frequency Stability

| Voltage(Volts) | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| 3.8 | -4.33 | 0.002303191 | 2.5 |
| 4 | 1.93 | 0.001026596 | 2.5 |
| 4.2 | 2.68 | 0.001425532 | 2.5 |
| Max. Deviation (ppm) | 4.33 | 0.002303191 | 2.5 |

| | |
|------------|------------------------|
| Test Mode: | LTE Band 2_CH18900_20M |
|------------|------------------------|

Temperature vs. Frequency Stability

| Temperature() | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| -30 | 3.69 | 0.001962766 | 2.5 |
| -20 | -4.13 | 0.002196809 | 2.5 |
| -10 | 2.97 | 0.001579787 | 2.5 |
| 0 | -3.26 | 0.001734043 | 2.5 |
| 10 | -2.85 | 0.001515957 | 2.5 |
| 20 | 2.36 | 0.001255319 | 2.5 |
| 30 | -3.55 | 0.001888298 | 2.5 |
| 40 | 2.90 | 0.001542553 | 2.5 |
| 50 | -4.01 | 0.002132979 | 2.5 |
| Max. Deviation (ppm) | 4.13 | 0.002196809 | 2.5 |

Voltage vs. Frequency Stability

| Voltage(Volts) | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|----------------------|----------------------|-----------------------|------------|
| 3.8 | -3.77 | 0.002005319 | 2.5 |
| 4 | -2.94 | 0.00156383 | 2.5 |
| 4.2 | -2.88 | 0.001531915 | 2.5 |
| Max. Deviation (ppm) | 3.77 | 0.002005319 | 2.5 |