**FCC CFR47 PART 22 SUBPART H**
**FCC CFR47 PART 24 SUBPART E**
**FCC CFR47 PART 27 SUBPART L**

# CERTIFICATION TEST REPORT

**FOR**

**CDMA/LTE PHONE + BLUETOOTH, & 2.4GHz DTS b/g/n**

**MODEL NUMBER: LG-VW820, VW820, LGVW820**

**FCC ID: ZNFVW820**

**REPORT NUMBER: 15I19783-E1**

**ISSUE DATE: JANUARY 28, 2015**

*Prepared for*
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NVLAP LAB CODE 200065-0

## Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| -- | 01/28/15 | Initial Issue | D. Coronia |



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# 1. ATTESTATION OF TEST RESULTS

| | |
|---|---|
| **COMPANY NAME:** | LG ELECTRONICS MOBILECOMM U.S.A., INC |
| **EUT DESCRIPTION:** | CDMA/LTE PHONE + BLUETOOTH, & 2.4GHz DTS b/g/n |
| **MODEL:** | LG-VW820, VW820, LGVW820 |
| **SERIAL NUMBER:** | 1MFWY (Radiated), 1MFWZ (Conducted) |
| **DATE TESTED:** | JANUARY 12-26, 2015 |

**APPLICABLE STANDARDS**

| STANDARD | TEST RESULTS |
|---|---|
| FCC PART 22H, 24E and 27L | PASS |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
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# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 22, FCC CFR Part 24, and FCC CFR 47 Part 27.

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 47173 Benicia Street | 47266 Benicia Street |
|---|---|
| ☐ Chamber A(IC: 2324B-1) | ☐ Chamber D(IC: 2324B-4) |
| ☒ Chamber B(IC: 2324B-2) | ☐ Chamber E(IC: 2324B-5) |
| ☒ Chamber C(IC: 2324B-3) | ☐ Chamber F(IC: 2324B-6) |
| | ☐ Chamber G(IC: 2324B-7) |
| | ☐ Chamber H(IC: 2324B-8) |

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards

## 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

EIRP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss( between the SG and substitution antenna) + Substitution Antenna Factor (dBi)

ERP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss( between the SG and substitution antenna)

(Path loss = Signal generator output – PSA reading with substitution antenna)



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## 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER | UNCERTAINTY |
|---|---|
| Conducted Disturbance, 0.15 to 30 MHz | 3.52 dB |
| Radiated Disturbance, 30 to 1000 MHz | 4.94 dB |

Uncertainty figures are valid to a confidence level of 95%.



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# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is a CDMA/LTE PHONE + BLUETOOTH, & 2.4GHz DTS b/g/n

## 5.2. MAXIMUM OUTPUT POWER (CDMA)

The transmitter has a maximum peak conducted and radiated ERP / EIRP output powers as follows:

| FCC Part 22/24 | | | | | | |
|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | Modulation | Conducted | | Radiated | |
| | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| BC0 | 824~849 | 1xRTT | 24.0 | 251.2 | 20.76 | 119.12 |
| | 824~849 | EVDO REL. 0 | 24.0 | 251.2 | 20.70 | 117.49 |
| | 824~849 | EVDO REV. A | 23.9 | 245.5 | | |
| BC1 | 1850~1910 | 1xRTT | 24.1 | 257.0 | 25.71 | 372.39 |
| | 1850~1910 | EVDO REL. 0 | 24.1 | 257.0 | 25.33 | 341.19 |
| | 1850~1910 | EVDO REV. A | 24.0 | 251.2 | | |


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## 5.3. MAXIMUM OUTPUT POWER (LTE)

The transmitter has a maximum peak conducted and radiated ERP/EIRP output powers as follows:

**LTE Band 2**

| FCC Part 24 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE2 | 1850~1910 | 20MHz | QPSK | 22.7 | 186.2 | 24.976 | 314.49 |
| | 1850~1910 | 20MHz | 16QAM | 21.7 | 147.9 | 24.09 | 256.45 |

| FCC Part 24 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE2 | 1850~1910 | 15MHz | QPSK | 22.7 | 186.2 | 25.16 | 328.10 |
| | 1850~1910 | 15MHz | 16QAM | 21.7 | 147.9 | 24.08 | 255.86 |

| FCC Part 24 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE2 | 1850~1910 | 10MHz | QPSK | 22.7 | 186.2 | 25.136 | 326.29 |
| | 1850~1910 | 10MHz | 16QAM | 21.6 | 144.5 | 24.146 | 259.78 |

| FCC Part 24 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE2 | 1850~1910 | 5MHz | QPSK | 22.6 | 182.0 | 24.99 | 315.50 |
| | 1850~1910 | 5MHz | 16QAM | 21.2 | 131.8 | 24.04 | 253.51 |


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| FCC Part 24 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE2 | 1850~1910 | 3MHz | QPSK | 22.7 | 186.2 | 25.35 | 342.77 |
| | 1850~1910 | 3MHz | 16QAM | 21.7 | 147.9 | 24.22 | 264.24 |

| FCC Part 24 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE2 | 1850~1910 | 1.4MHz | QPSK | 22.6 | 182.0 | 25.4 | 346.74 |
| | 1850~1910 | 1.4MHz | 16QAM | 21.7 | 147.9 | 24.33 | 271.02 |

## LTE Band 4

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE4 | 1710~1755 | 20MHz | QPSK | 23.48 | 222.84 | 25.19 | 330.37 |
| | 1710~1755 | 20MHz | 16QAM | 22.70 | 186.21 | 24.16 | 260.62 |

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE4 | 1710~1755 | 15MHz | QPSK | 23.70 | 234.42 | 25.54 | 358.1 |
| | 1710~1755 | 15MHz | 16QAM | 22.70 | 186.21 | 24.2 | 263.03 |

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE4 | 1710~1755 | 10MHz | QPSK | 23.45 | 221.31 | 25.10 | 323.59 |
| | 1710~1755 | 10MHz | 16QAM | 22.70 | 186.21 | 24.38 | 274.16 |


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| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE4 | 1710~1755 | 5MHz | QPSK | 23.70 | 234.42 | 25.11 | 324.34 |
| | 1710~1755 | 5MHz | 16QAM | 22.70 | 186.21 | 24.13 | 258.82 |

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE4 | 1710~1755 | 3MHz | QPSK | 23.70 | 234.42 | 25.79 | 379.31 |
| | 1710~1755 | 3MHz | 16QAM | 22.69 | 185.78 | 24.57 | 286.42 |

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE4 | 1710~1755 | 1.4MHz | QPSK | 23.53 | 225.42 | 26.03 | 400.87 |
| | 1710~1755 | 1.4MHz | 16QAM | 22.70 | 186.21 | 24.84 | 304.79 |

## LTE Band 5

| FCC Part 22 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE5 | 824~849 | 10MHz | QPSK | 23.37 | 217.27 | 20.911 | 123.34 |
| | 824~849 | 10MHz | 16QAM | 22.70 | 186.21 | 19.971 | 99.33 |

| FCC Part 22 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE5 | 824~849 | 5MHz | QPSK | 23.70 | 234.42 | 20.871 | 122.21 |
| | 824~849 | 5MHz | 16QAM | 22.70 | 186.21 | 19.871 | 97.07 |


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| FCC Part 22 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE5 | 824~849 | 3MHz | QPSK | 23.39 | 218.27 | 21.46 | 139.96 |
| | 824~849 | 3MHz | 16QAM | 22.70 | 186.21 | 20.23 | 105.44 |

| FCC Part 22 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | mW | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE5 | 824~849 | 1.4MHz | QPSK | 23.34 | 215.77 | 21.38 | 137.40 |
| | 824~849 | 1.4MHz | 16QAM | 22.70 | 186.21 | 20.24 | 105.68 |

## LTE Band 13

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | mW | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE13 | 777~787 | 10MHz | QPSK | 23.36 | 216.77 | 21.49 | 140.93 |
| | 777~787 | 10MHz | 16QAM | 22.37 | 172.58 | 20.62 | 115.34 |

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | mW | AVG(dBm) | AVG(mW) | AVG(dBm) | AVG(mW) |
| LTE13 | 777~787 | 5MHz | QPSK | 23.70 | 234.42 | 20.51 | 112.46 |
| | 777~787 | 5MHz | 16QAM | 22.32 | 170.61 | 19.56 | 90.36 |


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## 5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna for the [List the bands supported] with a maximum peak gain as follow:

| Frequency (MHz) | Peak Gain (dBi) |
|---|---|
| CDMA BC0 / LTE 5, 824~849MHz | -1.8 |
| CDMA BC1 / LTE 2, 1850~1910MHz | 2.8 |
| LTE 4, 1710~1755MHz | 2.5 |
| LTE 13, 777~787 | -2.6 |


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## 5.5. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Support Equipment List | | | | |
|---|---|---|---|---|
| Description | Manufacturer | Model | Serial Number | FCC ID |
| AC Adapter | LG | MCS-02WR | RA4Y1031433 | N/A |
| Earphone | LG | N/A | N/A | N/A |

**I/O CABLES (CONDUCTED SETUP)**

| I/O Cable List | | | | | | |
|---|---|---|---|---|---|---|
| Cable No | Port | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1 | RF Out | 1 | Spectrum Analyzer | Shielded | None | NA |
| 2 | Antenna Port | 1 | EUT | Shielded | 0.1m | NA |
| 3 | RF In/Out | 1 | Communication Test Set | Shielded | 1m | NA |

**I/O CABLES (RADIATED SETUP)**

| I/O CABLE LIST | | | | | | |
|---|---|---|---|---|---|---|
| Cable No. | Port | # of Identical Ports | Connector Type | Cable Type | Cable Length | Remarks |
| 1 | USB | 1 | AC Adapter | Un-shielded | 1.2m | No |
| 2 | Jack | 1 | Headset | Shielded | 1m | No |
| 3 | RF In/out | 1 | Communication Test Set | Un-shielded | 2m | Yes |

**TEST SETUP**

The EUT is continuously communicated to the call box during the tests.



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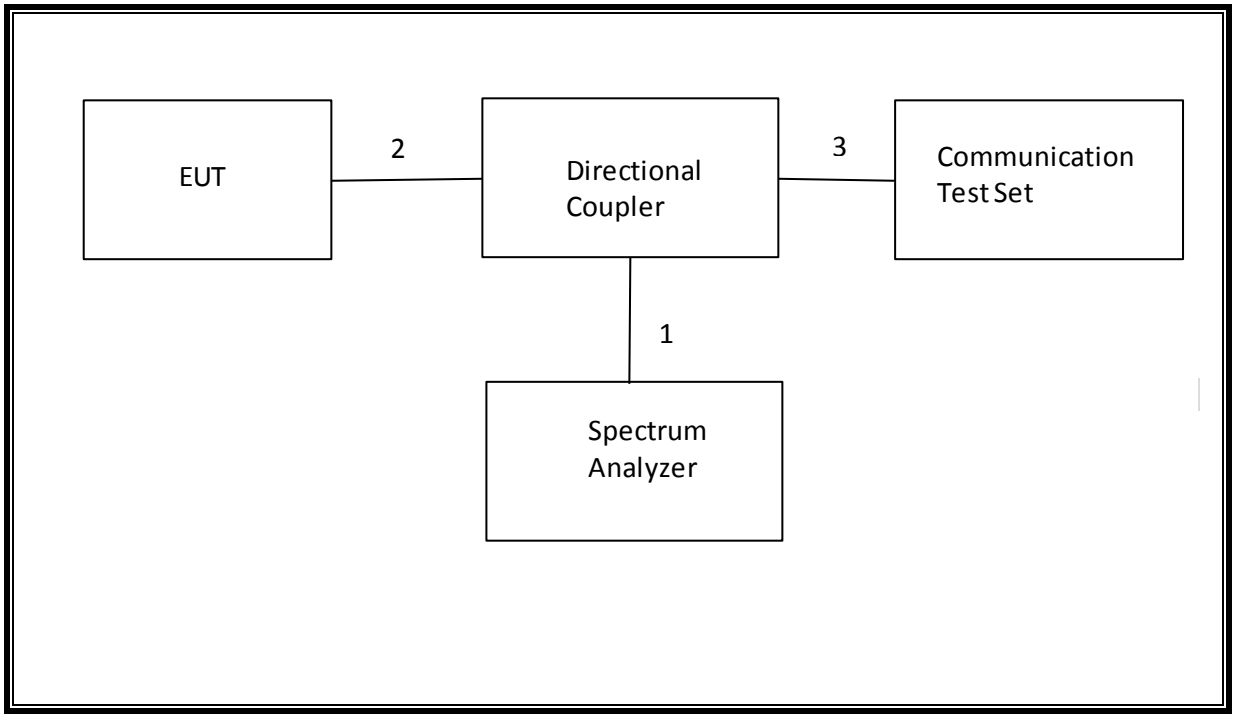
**SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)**





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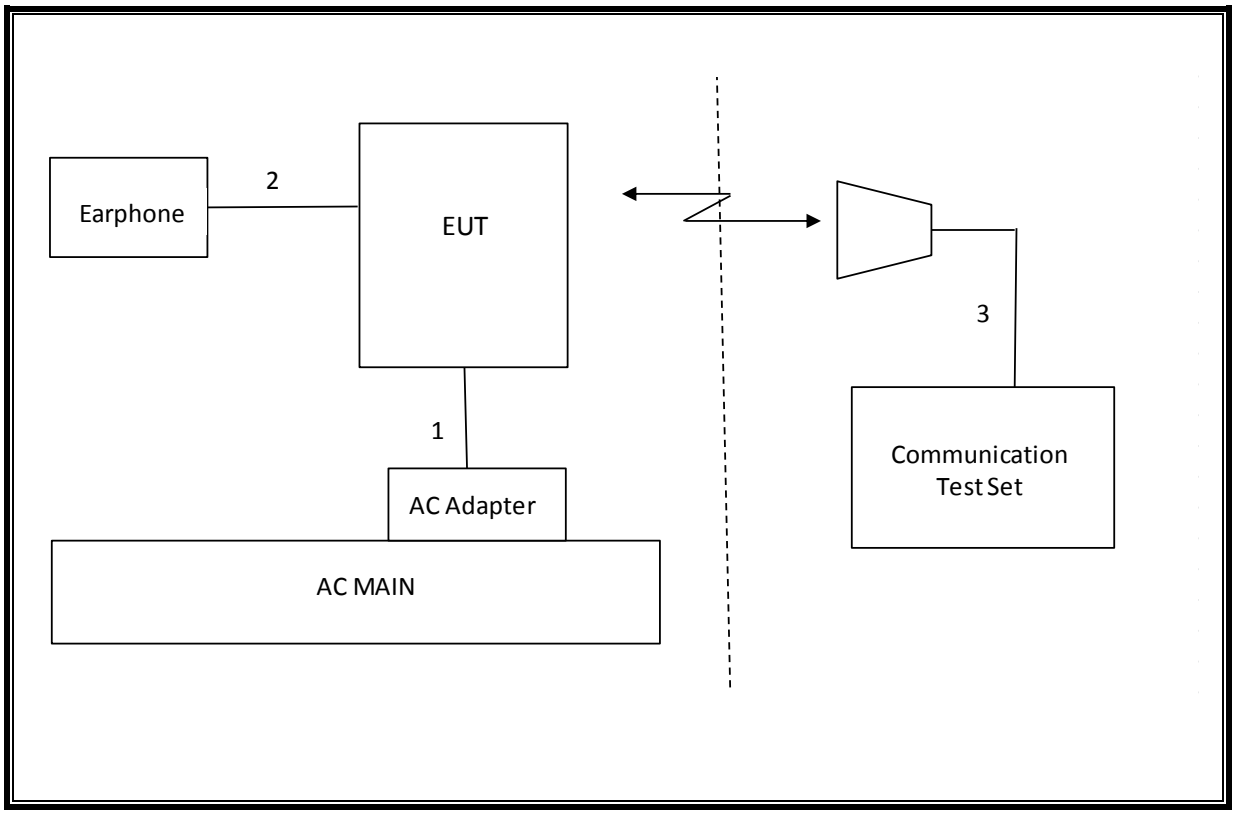
**SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)**





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# 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| TEST EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Asset** | **Cal Due** |
| Spectrum Analyzer, 44 GHz | Agilent / HP | E4446A | C01179 | 02/26/15 |
| Antenna, Bilog, 2 GHz | Sunol Sciences | JB1 | C01011 | 04/22/15 |
| Antenna, Horn, 18 GHz | EMCO | 3115 | C00783 | 10/25/15 |
| Antenna, Horn, 18 GHz | EMCO | 3115 | C00784 | 10/25/15 |
| Highpass Filter, 2.7 GHz | Micro-Tronics | HPM13194 | N02687 | CNR |
| Highpass Filter, 1.5 GHz | Micro-Tronics | HPM13193 | N02688 | CNR |
| Temperature / Humidity Chamber | Thermotron | SE 600-10-10 | C00930 | 01/09/15 |
| Communications Test Set | R&S | CMW500 | T159 | 07/02/15 |
| DC power supply, 8 V @ 3 A or 15 V | Agilent / HP | E3610A | None | CNR |
| Vector signal generator, 6 GHz | Agilent / HP | E4438C | None | 06/18/15 |
| Antenna, Tuned Dipole 400~1000 | ETS | 3121C DB4 | C00993 | 02/14/15 |
| Directional Coupler | RF-Lambda | RFDC5M06G15 | None | CNR |
| Antenna, Horn, 26.5 GHz | ARA | MWH-1826/B | C00589 | 12/17/15 |

| Test Software List | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Version** |
| Radiated Software | UL | UL EMC | Version 9.5, 07/22/14 |
| Conducted Software | UL | UL EMC | Version 9.5, 05/17/14 |
| CLT Software | UL | UL RF | Version 1.0, 02/02/15 |
| Antenna Port Software | UL | UL RF | Version 2.1.1.1, 1/20/15 |


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# 7. SUMMARY TABLE

| FCC Part Section | RSS Section(s) | Test Description | Test Limit | Test Condition | Test Result | Note |
|---|---|---|---|---|---|---|
| 2.1049 | N/A | Occupied Band width (99%) | N/A | Conducted | Pass | 17.91 MHz |
| 22.917(a)<br>24.238(a)<br>27.53(g)<br>90.691 | RSS-132(4.5.1)<br>RSS-133(6.5.1)<br>RSS-139(6.5.1) | Band Edge / Conducted Spurious Emission | -13dBm | | Pass | -15.03 dBm |
| 2.1046 | N/A | Conducted output power | N/A | | Pass | 24.1 dBm |
| 22.355<br>24.235<br>27.54<br>90.213 | RSS-132(4.3)<br>RSS-133(6.3)<br>RSS-139(6.3)<br>RSS-199(4.3) | Frequency Stability | 2.5PPM | | Pass | 0.011 PPM |
| 22.913(a)(2) | RSS-132(4.4) | Effective Radiated Power | 38 dBm | Radiated | Pass | 21.46 dBm |
| 27.50(c)(10) | N/A | | 34.77 dBm | | Pass | 21.49 dBm |
| 24.232(c )<br>27.50(h)(2) | RSS-133(6.4)<br>RSS-199(4.4) | Equivalent Isotropic Radiated Power | 33dBm | | Pass | 25.71 dBm |
| 27.50(d)(4) | RSS-139(6.4) | | 30dBm | | Pass | 26.03 dBm |
| 22.917(a)<br>24.238(a)<br>27.53(g) | RSS-132(4.5.1)<br>RSS-133(6.5.1)<br>RSS-139(6.5.1) | Radiated Spurious Emission | -13dBm | | Pass | -34.3 dBm |


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# 9. CONDUCTED POWER VERIFICATION

## 9.1. CDMA2000

### 9.1.1. 1xRTT

**TEST PROCEDURE**

This procedure assumes the Agilest 8960 Test Set has the following applications installed and with valid license.

| Application | Rev, License |
|---|---|
| CDMA2000 Mobile Test | B.13.08, L |

- Call Setup > Shift & Preset
- Cell Info > Cell Parameters > System ID (SID) > 7
  > Network ID (NID) > 1
- Protocol Rev > 6 (IS-2000-0)
- Radio Config (RC) > Please see following table or details
- FCH Service Option (SO) Setup > Please see following table or details
- Traffic Data Rate > Full
- TDSO SCH Info > F-SCH Parameters > F-SCH Data Rate > 153.6 kbps
  > R-SCH Parameters > R-SCH Data Rate > 153.6 kbps
- Rvs Power Ctrl > Active bits
  - Rvs Power Ctrl > All Up bits (Maximum TxPout)



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### 9.1.2. CDMA2000 OUTPUT POWER RESULT

| Band | Mode | Channel | Freq. (MHz) | Avg Pwr (dBm) |
|---|---|---|---|---|
| BC0 | RC1, SO55 (Loopback) | 1013 | 824.70 | 24.0 |
| | | 384 | 836.52 | 24.0 |
| | | 777 | 848.31 | 23.9 |
| | RC3, SO55 (Loopback) | 1013 | 824.70 | 24.0 |
| | | 384 | 836.52 | 24.0 |
| | | 777 | 848.31 | 23.9 |
| | RC3, SO32 (+F-SCH) | 1013 | 824.70 | 24.0 |
| | | 384 | 836.52 | 24.0 |
| | | 777 | 848.31 | 23.9 |

| Band | Mode | Channel | Freq. (MHz) | Avg Pwr (dBm) |
|---|---|---|---|---|
| BC1 | RC1, SO55 (Loopback) | 25 | 1851.25 | 23.8 |
| | | 600 | 1880.00 | 23.9 |
| | | 1175 | 1908.75 | 24.1 |
| | RC3, SO55 (Loopback) | 25 | 1851.25 | 23.8 |
| | | 600 | 1880.00 | 23.8 |
| | | 1175 | 1908.75 | 24.1 |
| | RC3, SO32 (+F-SCH) | 25 | 1851.25 | 23.8 |
| | | 600 | 1880.00 | 23.9 |
| | | 1175 | 1908.75 | 24.1 |


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### 9.1.3. 1xEV-DO Release 0

**TEST PROCEDURE**

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

| Application | Rev, License |
|---|---|
| 1xEV-DO Terminal Test | A.09.13 |

EVDO Release 0 - RTAP

- Call Setup > Shift & Preset
- Call Control:
  - Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
  - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Parms:
  - Cell Power > -105.5 dBm/1.23 MHz
  - Cell Band > (Select US Cellular or US PCS)
  - Channel > (Enter channel number)
  - Application Config > Enhanced Test Application Protocol > RTAP
  - RTAP Rate > 153.6 kbps
  - Rvs Power Ctrl > Active bits
  - Protocol Rel > 0 (1xEV-DO)
- Press “Start Data Connection” when “Session Open” appear in “Active Cell”
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

EVDO Release 0 - FTAP

- Call Setup > Shift & Preset
- Call Control:
  - Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
  - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Parms:
  - Cell Power > -105.5 dBm/1.23 MHz
  - Cell Band > (Select US Cellular or US PCS)
  - Channel > (Enter channel number)
  - Application Config > Enhanced Test Application Protocol > FTAP (default)
  - FTAP Rate > 307.2 kbps (2 Slot, QPSK)
  - Rvs Power Ctrl > Active bits
  - Protocol Rel > 0 (1xEV-DO)
- Press “Start Data Connection” when “Session Open” appear in “Active Cell”
- Rvs Power Ctrl > All Up bits (Maximum TxPout)


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### 9.1.4. 1XEVDO REL 0 OUTPUT POWER RESULT

| Band | FTAP Rate | Channel | f (MHz) | Avg Pwr (dBm) |
|---|---|---|---|---|
| BC0 | 307.2 kbps (2 slot, QPSK) | 1013 | 824.70 | 24.0 |
| | | 384 | 836.52 | 24.0 |
| | | 777 | 848.31 | 23.9 |

| Band | FTAP Rate | Channel | f (MHz) | Avg Pwr (dBm) |
|---|---|---|---|---|
| BC1 | 307.2 kbps (2 slot, QPSK) | 25 | 1851.25 | 23.8 |
| | | 600 | 1880.00 | 23.9 |
| | | 1175 | 1908.75 | 24.1 |


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### 9.1.5. 1xEV-DO Rev. A

**TEST PROCEDURE**

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

| Application | Rev, License |
|---|---|
| 1xEV-DO Terminal Test | A.09.13 |

EVDO Release A – RETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2

> PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)

- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Release A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2

> PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)

- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)



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### 9.1.6. 1xEVDO REV A OUTPUT RESULT

| Band | FETAP Traffic Format | Channel | f (MHz) | Avg Pwr (dBm) |
|---|---|---|---|---|
| BC0 | 307.2k, QPSK/ ACK channel is transmitted at all the slots | 1013 | 824.70 | 23.9 |
| | | 384 | 836.52 | 23.9 |
| | | 777 | 848.31 | 23.9 |

| Band | FETAP Traffic Format | Channel | f (MHz) | Avg Pwr (dBm) |
|---|---|---|---|---|
| BC1 | 307.2k, QPSK/ ACK channel is transmitted at all the slots | 25 | 1851.25 | 23.9 |
| | | 600 | 1880.00 | 23.9 |
| | | 1175 | 1908.75 | 24.0 |


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# 9.2. LTE OUTPUT VERIFICATION

## 9.2.1. LTE OUTPUT RESULT

**LTE Band 2**

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 18700 | 18900 | 19100 |
| | | | | | | 1860 MHz | 1880 MHz | 1900 MHz |
| LTE Band 2 | 20 | QPSK | 1 | 0 | 0 | 22.5 | 22.7 | 22.7 |
| | | | 1 | 49 | 0 | 22.6 | 22.7 | 22.5 |
| | | | 1 | 99 | 0 | 22.4 | 22.7 | 22.5 |
| | | | 50 | 0 | 1 | 21.6 | 21.5 | 21.6 |
| | | | 50 | 24 | 1 | 21.4 | 21.5 | 21.5 |
| | | | 50 | 50 | 1 | 21.5 | 21.4 | 21.3 |
| | | | 100 | 0 | 1 | 21.4 | 21.5 | 21.5 |
| | | 16QAM | 1 | 0 | 1 | 21.1 | 21.3 | 21.7 |
| | | | 1 | 49 | 1 | 21.1 | 21.4 | 21.5 |
| | | | 1 | 99 | 1 | 21.1 | 21.5 | 21.5 |
| | | | 50 | 0 | 2 | 20.6 | 20.6 | 20.6 |
| | | | 50 | 24 | 2 | 20.5 | 20.6 | 20.4 |
| | | | 50 | 50 | 2 | 20.5 | 20.5 | 20.4 |
| | | | 100 | 0 | 2 | 20.5 | 20.5 | 20.6 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 18675 | 18900 | 19125 |
| | | | | | | 1857.5 MHz | 1880 MHz | 1902.5 MHz |
| LTE Band 2 | 15 | QPSK | 1 | 0 | 0 | 22.3 | 22.3 | 22.6 |
| | | | 1 | 37 | 0 | 22.7 | 22.7 | 22.4 |
| | | | 1 | 74 | 0 | 22.4 | 22.4 | 22.6 |
| | | | 36 | 0 | 1 | 21.4 | 21.5 | 21.5 |
| | | | 36 | 20 | 1 | 21.4 | 21.4 | 21.4 |
| | | | 36 | 39 | 1 | 21.4 | 21.4 | 21.4 |
| | | | 75 | 0 | 1 | 21.4 | 21.4 | 21.4 |
| | | 16QAM | 1 | 0 | 1 | 21.4 | 21.6 | 21.5 |
| | | | 1 | 37 | 1 | 21.4 | 21.6 | 21.1 |
| | | | 1 | 74 | 1 | 21.2 | 21.7 | 21.3 |
| | | | 36 | 0 | 2 | 20.4 | 20.5 | 20.5 |
| | | | 36 | 20 | 2 | 20.3 | 20.4 | 20.4 |
| | | | 36 | 39 | 2 | 20.4 | 20.4 | 20.4 |
| | | | 75 | 0 | 2 | 20.4 | 20.4 | 20.4 |


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| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 18650 | 18900 | 19150 |
| | | | | | | 1855 MHz | 1880 MHz | 1905 MHz |
| LTE Band 2 | 10 | QPSK | 1 | 0 | 0 | 22.4 | 22.6 | 22.7 |
| | | | 1 | 25 | 0 | 22.3 | 22.6 | 22.4 |
| | | | 1 | 49 | 0 | 22.3 | 22.5 | 22.6 |
| | | | 25 | 0 | 1 | 21.4 | 21.5 | 21.4 |
| | | | 25 | 12 | 1 | 21.4 | 21.4 | 21.5 |
| | | | 25 | 25 | 1 | 21.4 | 21.5 | 21.5 |
| | | | 50 | 0 | 1 | 21.5 | 21.5 | 21.5 |
| | | 16QAM | 1 | 0 | 1 | 21.4 | 21.6 | 21.6 |
| | | | 1 | 25 | 1 | 21.5 | 21.6 | 21.6 |
| | | | 1 | 49 | 1 | 21.4 | 21.3 | 21.4 |
| | | | 25 | 0 | 2 | 20.4 | 20.6 | 20.5 |
| | | | 25 | 12 | 2 | 20.4 | 20.5 | 20.5 |
| | | | 25 | 25 | 2 | 20.4 | 20.6 | 20.5 |
| | | | 50 | 0 | 2 | 20.4 | 20.5 | 20.4 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 18625 | 18900 | 19175 |
| | | | | | | 1852.5 MHz | 1880 MHz | 1907.5 MHz |
| LTE Band 2 | 5 | QPSK | 1 | 0 | 0 | 22.1 | 22.6 | 22.1 |
| | | | 1 | 12 | 0 | 22.6 | 22.6 | 22.4 |
| | | | 1 | 24 | 0 | 22.2 | 22.5 | 22.4 |
| | | | 12 | 0 | 1 | 21.3 | 21.5 | 21.4 |
| | | | 12 | 7 | 1 | 21.4 | 21.5 | 21.5 |
| | | | 12 | 13 | 1 | 21.4 | 21.5 | 21.5 |
| | | | 25 | 0 | 1 | 21.3 | 21.5 | 21.5 |
| | | 16QAM | 1 | 0 | 1 | 20.7 | 21.1 | 21.2 |
| | | | 1 | 12 | 1 | 20.8 | 21.0 | 21.1 |
| | | | 1 | 24 | 1 | 20.8 | 21.2 | 21.0 |
| | | | 12 | 0 | 2 | 20.4 | 20.5 | 20.6 |
| | | | 12 | 7 | 2 | 20.4 | 20.5 | 20.6 |
| | | | 12 | 13 | 2 | 20.4 | 20.6 | 20.6 |
| | | | 25 | 0 | 2 | 20.6 | 20.5 | 20.6 |


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| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 18615 | 18900 | 19185 |
| | | | | | | 1851.5 MHz | 1880 MHz | 1908.5 MHz |
| LTE Band 2 | 3 | QPSK | 1 | 0 | 0 | 22.18 | 22.40 | 22.31 |
| | | | 1 | 7 | 0 | 22.17 | 22.70 | 22.46 |
| | | | 1 | 14 | 0 | 22.19 | 22.25 | 22.48 |
| | | | 6 | 0 | 1 | 21.16 | 21.35 | 21.36 |
| | | | 6 | 3 | 1 | 21.27 | 21.39 | 21.40 |
| | | | 6 | 5 | 1 | 21.18 | 21.29 | 21.37 |
| | | | 15 | 0 | 1 | 21.21 | 21.38 | 21.38 |
| | | 16QAM | 1 | 0 | 1 | 21.32 | 21.35 | 21.39 |
| | | | 1 | 7 | 1 | 21.35 | 21.35 | 21.67 |
| | | | 1 | 14 | 1 | 21.42 | 21.70 | 21.60 |
| | | | 6 | 0 | 2 | 20.39 | 20.17 | 20.42 |
| | | | 6 | 3 | 2 | 20.29 | 19.98 | 20.59 |
| | | | 6 | 5 | 2 | 20.34 | 20.28 | 20.48 |
| | | | 15 | 0 | 2 | 20.23 | 20.35 | 20.42 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 18607 | 18900 | 19193 |
| | | | | | | 1850.7 MHz | 1880 MHz | 1909.3 MHz |
| LTE Band 2 | 1.4 | QPSK | 1 | 0 | 0 | 22.12 | 22.25 | 22.43 |
| | | | 1 | 2 | 0 | 22.24 | 22.33 | 22.44 |
| | | | 1 | 5 | 0 | 22.25 | 22.19 | 22.63 |
| | | | 3 | 0 | 0 | 22.06 | 22.38 | 22.40 |
| | | | 3 | 1 | 0 | 22.23 | 22.41 | 22.51 |
| | | | 3 | 2 | 0 | 22.24 | 22.41 | 22.52 |
| | | | 6 | 0 | 1 | 21.19 | 21.34 | 21.43 |
| | | 16QAM | 1 | 0 | 1 | 21.70 | 20.70 | 21.70 |
| | | | 1 | 2 | 1 | 21.70 | 21.70 | 21.70 |
| | | | 1 | 5 | 1 | 21.70 | 21.29 | 21.70 |
| | | | 3 | 0 | 1 | 20.87 | 21.02 | 20.89 |
| | | | 3 | 1 | 1 | 20.78 | 21.51 | 21.24 |
| | | | 3 | 2 | 1 | 20.70 | 21.17 | 21.27 |
| | | | 6 | 0 | 2 | 20.11 | 20.38 | 20.45 |


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**LTE Band 4**

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 20050 | 20175 | 20300 |
| | | | | | | 1720 MHz | 1732.5 MHz | 1745 MHz |
| LTE Band 4 | 20 | QPSK | 1 | 0 | 0 | 23.46 | 23.30 | 23.39 |
| | | | 1 | 49 | 0 | 23.46 | 23.44 | 23.17 |
| | | | 1 | 99 | 0 | 23.26 | 23.48 | 23.23 |
| | | | 50 | 0 | 1 | 22.38 | 22.61 | 22.41 |
| | | | 50 | 24 | 1 | 22.38 | 22.44 | 22.25 |
| | | | 50 | 50 | 1 | 22.35 | 22.38 | 22.22 |
| | | | 100 | 0 | 1 | 22.38 | 22.47 | 22.38 |
| | | 16QAM | 1 | 0 | 1 | 22.63 | 22.56 | 22.63 |
| | | | 1 | 49 | 1 | 22.58 | 22.70 | 22.70 |
| | | | 1 | 99 | 1 | 22.41 | 22.58 | 22.40 |
| | | | 50 | 0 | 2 | 21.44 | 21.62 | 21.39 |
| | | | 50 | 24 | 2 | 21.41 | 21.40 | 21.23 |
| | | | 50 | 50 | 2 | 21.37 | 21.45 | 21.16 |
| | | | 100 | 0 | 2 | 21.39 | 21.55 | 21.34 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 20025 | 20175 | 20325 |
| | | | | | | 1717.5 MHz | 1732.5 MHz | 1747.5 MHz |
| LTE Band 4 | 15 | QPSK | 1 | 0 | 0 | 23.43 | 23.36 | 23.49 |
| | | | 1 | 37 | 0 | 23.30 | 23.70 | 23.17 |
| | | | 1 | 74 | 0 | 23.15 | 23.43 | 23.08 |
| | | | 36 | 0 | 1 | 22.29 | 22.53 | 22.35 |
| | | | 36 | 20 | 1 | 22.26 | 22.38 | 22.19 |
| | | | 36 | 39 | 1 | 22.32 | 22.22 | 22.22 |
| | | | 75 | 0 | 1 | 22.29 | 22.32 | 22.25 |
| | | 16QAM | 1 | 0 | 1 | 22.69 | 22.70 | 22.56 |
| | | | 1 | 37 | 1 | 22.70 | 22.55 | 22.59 |
| | | | 1 | 74 | 1 | 22.70 | 22.19 | 22.16 |
| | | | 36 | 0 | 2 | 21.24 | 21.58 | 21.25 |
| | | | 36 | 20 | 2 | 21.28 | 21.46 | 21.10 |
| | | | 36 | 39 | 2 | 21.27 | 21.23 | 21.17 |
| | | | 75 | 0 | 2 | 21.33 | 21.35 | 21.28 |


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| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 20000 | 20175 | 20350 |
| | | | | | | 1715 MHz | 1732.5 MHz | 1750 MHz |
| LTE Band 4 | 10 | QPSK | 1 | 0 | 0 | 23.44 | 23.45 | 23.21 |
| | | | 1 | 25 | 0 | 23.15 | 23.37 | 23.28 |
| | | | 1 | 49 | 0 | 23.30 | 23.13 | 23.20 |
| | | | 25 | 0 | 1 | 22.38 | 22.52 | 22.16 |
| | | | 25 | 12 | 1 | 22.31 | 22.44 | 22.21 |
| | | | 25 | 25 | 1 | 22.31 | 22.32 | 22.30 |
| | | | 50 | 0 | 1 | 22.29 | 22.40 | 22.26 |
| | | 16QAM | 1 | 0 | 1 | 22.65 | 22.11 | 22.25 |
| | | | 1 | 25 | 1 | 22.70 | 22.07 | 22.70 |
| | | | 1 | 49 | 1 | 22.47 | 22.42 | 22.70 |
| | | | 25 | 0 | 2 | 21.34 | 21.39 | 21.15 |
| | | | 25 | 12 | 2 | 21.33 | 21.35 | 21.18 |
| | | | 25 | 25 | 2 | 21.25 | 21.26 | 21.15 |
| | | | 50 | 0 | 2 | 21.25 | 21.33 | 21.14 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 19975 | 20175 | 20375 |
| | | | | | | 1712.5 MHz | 1732.5 MHz | 1752.5 MHz |
| LTE Band 4 | 5 | QPSK | 1 | 0 | 0 | 23.10 | 23.21 | 23.00 |
| | | | 1 | 12 | 0 | 23.28 | 23.70 | 23.50 |
| | | | 1 | 24 | 0 | 23.04 | 23.11 | 22.94 |
| | | | 12 | 0 | 1 | 22.29 | 22.44 | 22.39 |
| | | | 12 | 7 | 1 | 22.26 | 22.49 | 22.33 |
| | | | 12 | 13 | 1 | 22.28 | 22.33 | 22.23 |
| | | | 25 | 0 | 1 | 22.27 | 22.45 | 22.33 |
| | | 16QAM | 1 | 0 | 1 | 22.01 | 22.50 | 22.68 |
| | | | 1 | 12 | 1 | 22.63 | 22.36 | 22.70 |
| | | | 1 | 24 | 1 | 21.79 | 22.65 | 22.70 |
| | | | 12 | 0 | 2 | 21.41 | 21.49 | 21.37 |
| | | | 12 | 7 | 2 | 21.37 | 21.29 | 21.37 |
| | | | 12 | 13 | 2 | 21.20 | 21.19 | 21.42 |
| | | | 25 | 0 | 2 | 21.49 | 21.53 | 21.36 |


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| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 19965 | 20175 | 20385 |
| | | | | | | 1711.5 MHz | 1732.5 MHz | 1753.5 MHz |
| LTE Band 4 | 3 | QPSK | 1 | 0 | 0 | 23.13 | 23.40 | 23.44 |
| | | | 1 | 7 | 0 | 23.24 | 23.70 | 23.30 |
| | | | 1 | 14 | 0 | 23.11 | 23.28 | 23.14 |
| | | | 6 | 0 | 1 | 22.31 | 22.40 | 22.49 |
| | | | 6 | 3 | 1 | 22.33 | 22.41 | 22.38 |
| | | | 6 | 5 | 1 | 22.32 | 22.39 | 22.28 |
| | | | 15 | 0 | 1 | 22.35 | 22.40 | 22.30 |
| | | 16QAM | 1 | 0 | 1 | 22.70 | 22.69 | 22.62 |
| | | | 1 | 7 | 1 | 22.09 | 22.53 | 22.54 |
| | | | 1 | 14 | 1 | 22.33 | 22.56 | 22.70 |
| | | | 6 | 0 | 2 | 21.31 | 20.91 | 21.58 |
| | | | 6 | 3 | 2 | 21.03 | 21.23 | 21.35 |
| | | | 6 | 5 | 2 | 21.10 | 21.31 | 21.45 |
| | | | 15 | 0 | 2 | 21.18 | 21.31 | 21.42 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 19957 | 20175 | 20393 |
| | | | | | | 1710.7 MHz | 1732.5 MHz | 1754.3 MHz |
| LTE Band 4 | 1.4 | QPSK | 1 | 0 | 0 | 23.24 | 23.10 | 23.03 |
| | | | 1 | 2 | 0 | 23.31 | 23.25 | 23.25 |
| | | | 1 | 5 | 0 | 23.19 | 23.16 | 23.42 |
| | | | 3 | 0 | 0 | 23.29 | 23.28 | 23.25 |
| | | | 3 | 1 | 0 | 23.37 | 23.53 | 23.33 |
| | | | 3 | 2 | 0 | 23.30 | 23.40 | 23.34 |
| | | | 6 | 0 | 1 | 22.28 | 22.35 | 22.32 |
| | | 16QAM | 1 | 0 | 1 | 22.70 | 22.66 | 22.70 |
| | | | 1 | 2 | 1 | 22.69 | 22.04 | 22.47 |
| | | | 1 | 5 | 1 | 22.70 | 22.06 | 22.60 |
| | | | 3 | 0 | 1 | 22.25 | 22.35 | 22.05 |
| | | | 3 | 1 | 1 | 22.16 | 22.49 | 22.21 |
| | | | 3 | 2 | 1 | 22.17 | 22.14 | 22.00 |
| | | | 6 | 0 | 2 | 21.50 | 21.59 | 21.70 |


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**LTE Band 5**

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 20450 | 20525 | 20600 |
| | | | | | | 829 MHz | 836.5 MHz | 844 MHz |
| LTE Band 5 | 10 | QPSK | 1 | 0 | 0 | 23.29 | 23.24 | 23.19 |
| | | | 1 | 25 | 0 | 23.35 | 22.85 | 23.37 |
| | | | 1 | 49 | 0 | 23.29 | 23.36 | 23.28 |
| | | | 25 | 0 | 1 | 22.33 | 22.35 | 22.38 |
| | | | 25 | 12 | 1 | 22.33 | 22.23 | 22.40 |
| | | | 25 | 25 | 1 | 22.37 | 22.25 | 22.44 |
| | | | 50 | 0 | 1 | 22.34 | 22.25 | 22.40 |
| | | 16QAM | 1 | 0 | 1 | 22.70 | 22.70 | 22.70 |
| | | | 1 | 25 | 1 | 21.93 | 21.94 | 22.29 |
| | | | 1 | 49 | 1 | 22.42 | 22.50 | 22.53 |
| | | | 25 | 0 | 2 | 21.16 | 21.29 | 21.28 |
| | | | 25 | 12 | 2 | 21.18 | 21.11 | 21.26 |
| | | | 25 | 25 | 2 | 21.12 | 21.09 | 21.25 |
| | | | 50 | 0 | 2 | 21.20 | 21.15 | 21.20 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 20425 | 20525 | 20625 |
| | | | | | | 826.5 MHz | 836.5 MHz | 846.5 MHz |
| LTE Band 5 | 5 | QPSK | 1 | 0 | 0 | 23.05 | 23.63 | 23.27 |
| | | | 1 | 12 | 0 | 23.61 | 23.70 | 23.22 |
| | | | 1 | 24 | 0 | 23.01 | 23.29 | 23.01 |
| | | | 12 | 0 | 1 | 22.27 | 22.27 | 22.36 |
| | | | 12 | 7 | 1 | 22.32 | 21.98 | 22.25 |
| | | | 12 | 13 | 1 | 22.48 | 21.97 | 22.29 |
| | | | 25 | 0 | 1 | 22.27 | 22.19 | 22.28 |
| | | 16QAM | 1 | 0 | 1 | 22.03 | 22.70 | 22.54 |
| | | | 1 | 12 | 1 | 21.97 | 22.70 | 22.29 |
| | | | 1 | 24 | 1 | 22.70 | 22.70 | 22.70 |
| | | | 12 | 0 | 2 | 21.24 | 21.16 | 21.22 |
| | | | 12 | 7 | 2 | 21.25 | 21.21 | 21.14 |
| | | | 12 | 13 | 2 | 20.98 | 21.06 | 21.20 |
| | | | 25 | 0 | 2 | 21.22 | 21.20 | 21.33 |


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| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 20415 | 20525 | 20635 |
| | | | | | | 825.5 MHz | 836.5 MHz | 847.5 MHz |
| LTE Band 5 | 3 | QPSK | 1 | 0 | 0 | 23.20 | 23.29 | 23.23 |
| | | | 1 | 7 | 0 | 23.39 | 23.26 | 23.25 |
| | | | 1 | 14 | 0 | 23.20 | 23.23 | 23.07 |
| | | | 6 | 0 | 1 | 22.32 | 22.19 | 22.48 |
| | | | 6 | 3 | 1 | 22.38 | 22.31 | 22.28 |
| | | | 6 | 5 | 1 | 22.36 | 22.29 | 22.21 |
| | | | 15 | 0 | 1 | 22.34 | 22.29 | 22.27 |
| | | 16QAM | 1 | 0 | 1 | 22.34 | 22.35 | 22.44 |
| | | | 1 | 7 | 1 | 22.58 | 22.70 | 22.23 |
| | | | 1 | 14 | 1 | 22.54 | 22.56 | 22.27 |
| | | | 6 | 0 | 2 | 21.45 | 21.01 | 21.59 |
| | | | 6 | 3 | 2 | 21.56 | 21.12 | 21.49 |
| | | | 6 | 5 | 2 | 21.43 | 21.01 | 21.44 |
| | | | 15 | 0 | 2 | 21.45 | 21.27 | 21.32 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 20407 | 20525 | 20643 |
| | | | | | | 824.7 MHz | 836.5 MHz | 848.3 MHz |
| LTE Band 5 | 1.4 | QPSK | 1 | 0 | 0 | 23.11 | 23.13 | 23.15 |
| | | | 1 | 2 | 0 | 23.15 | 23.24 | 23.18 |
| | | | 1 | 5 | 0 | 23.15 | 23.20 | 23.19 |
| | | | 3 | 0 | 0 | 23.18 | 23.34 | 23.12 |
| | | | 3 | 1 | 0 | 23.24 | 23.31 | 23.18 |
| | | | 3 | 2 | 0 | 23.18 | 23.33 | 23.20 |
| | | | 6 | 0 | 1 | 22.22 | 22.20 | 22.18 |
| | | 16QAM | 1 | 0 | 1 | 22.70 | 22.67 | 22.12 |
| | | | 1 | 2 | 1 | 22.70 | 22.70 | 22.38 |
| | | | 1 | 5 | 1 | 22.67 | 21.99 | 22.70 |
| | | | 3 | 0 | 1 | 21.76 | 22.09 | 22.10 |
| | | | 3 | 1 | 1 | 21.80 | 22.15 | 22.18 |
| | | | 3 | 2 | 1 | 22.08 | 21.88 | 22.18 |
| | | | 6 | 0 | 2 | 20.99 | 21.43 | 21.11 |


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**LTE Band 13**

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) 23230 782 MHz |
|---|---|---|---|---|---|---|
| LTE Band 13 | 10 | QPSK | 1 | 0 | 0 | 23.33 |
| | | | 1 | 25 | 0 | 23.36 |
| | | | 1 | 49 | 0 | 23.18 |
| | | | 25 | 0 | 1 | 22.37 |
| | | | 25 | 12 | 1 | 22.38 |
| | | | 25 | 25 | 1 | 22.38 |
| | | | 50 | 0 | 1 | 22.34 |
| | | 16QAM | 1 | 0 | 1 | 22.37 |
| | | | 1 | 25 | 1 | 22.37 |
| | | | 1 | 49 | 1 | 22.35 |
| | | | 25 | 0 | 2 | 21.40 |
| | | | 25 | 12 | 2 | 21.21 |
| | | | 25 | 25 | 2 | 21.33 |
| | | | 50 | 0 | 2 | 21.30 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Avg Pwr (dBm) 23230 782 MHz |
|---|---|---|---|---|---|---|
| LTE Band 13 | 5 | QPSK | 1 | 0 | 0 | 23.55 |
| | | | 1 | 12 | 0 | 23.70 |
| | | | 1 | 24 | 0 | 23.49 |
| | | | 12 | 0 | 1 | 22.43 |
| | | | 12 | 6 | 1 | 22.47 |
| | | | 12 | 11 | 1 | 22.50 |
| | | | 25 | 0 | 1 | 22.42 |
| | | 16QAM | 1 | 0 | 1 | 22.32 |
| | | | 1 | 12 | 1 | 22.24 |
| | | | 1 | 24 | 1 | 22.25 |
| | | | 12 | 0 | 2 | 21.50 |
| | | | 12 | 6 | 2 | 21.29 |
| | | | 12 | 11 | 2 | 21.53 |
| | | | 25 | 0 | 2 | 21.35 |


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# 10. PEAK TO AVERAGE RATIO

**Test Procedure**

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

**Test Spec**

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

## 10.1. CONDUCTED PEAK TO AVERAGE RESULT



UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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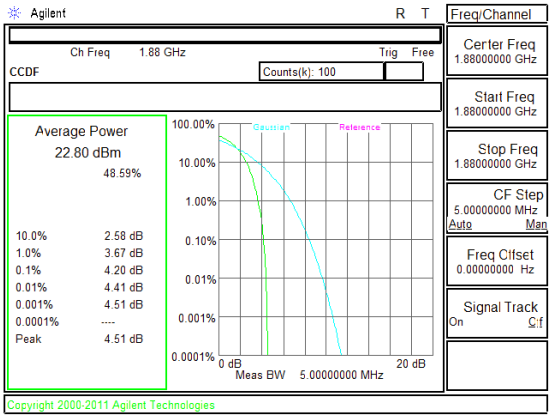
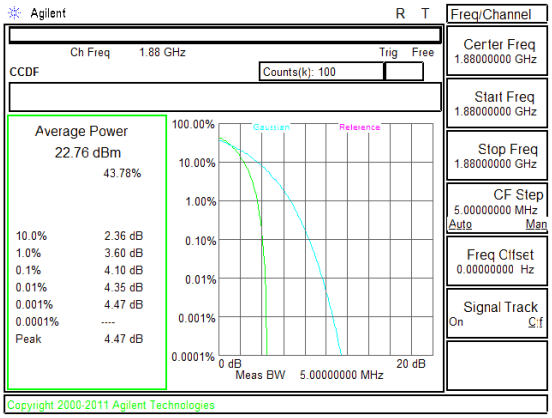
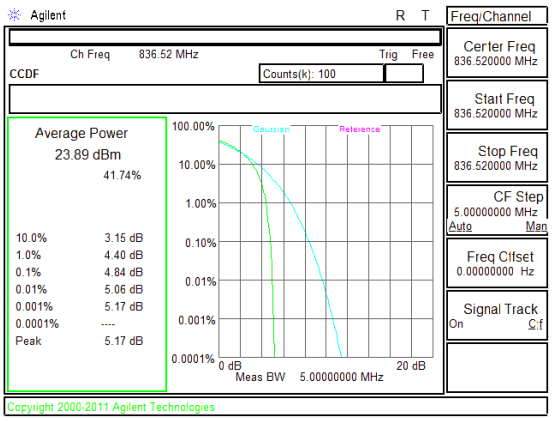
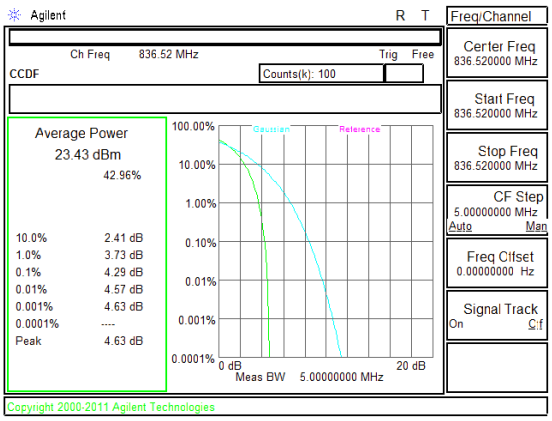
## CDMA

| | | |
|---|---|---|
| Band BC1 |  <br>Band BC1 Mid channel |  <br>Band BC1 1xRTT Mid channel |
| Band BC0 |  <br>Band BC0 Mid channel |  <br>Band BC0 1xRTT Mid channel |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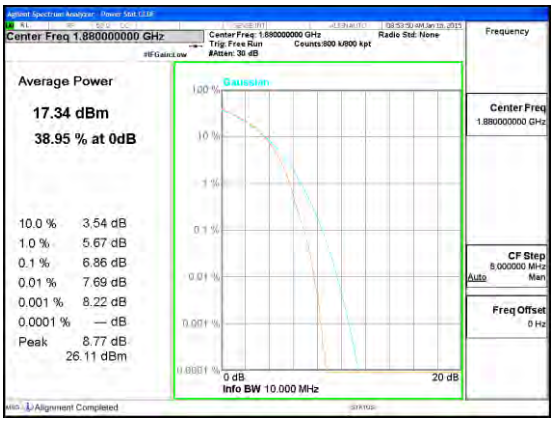
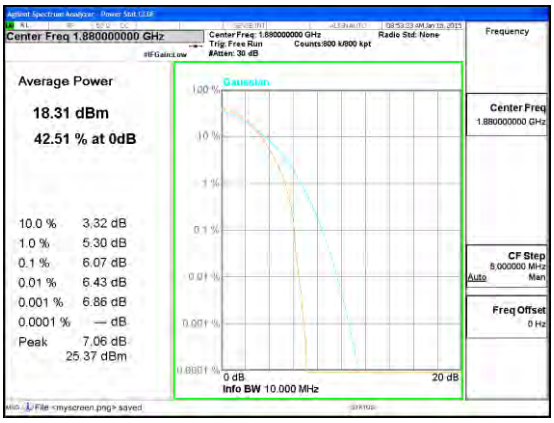
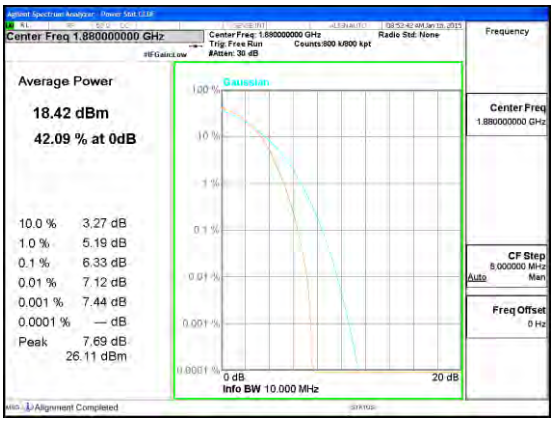
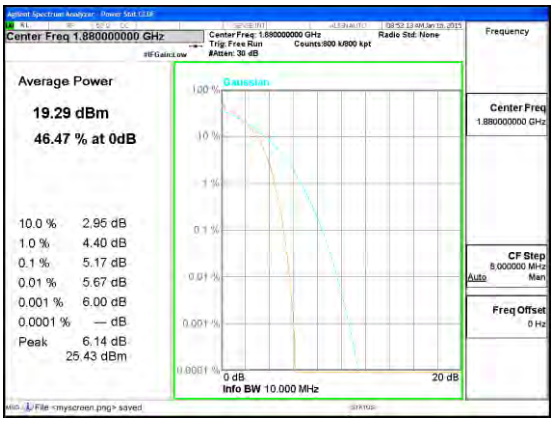
## LTE Band 2

| | | |
|---|---|---|
| Band<br>LTE2<br>20MHz<br>16QAM |  <br>Band LTE2 20MHz 16QAM Mid channel |  <br>Band LTE2 20MHz QPSK Mid channel |
| Band<br>LTE2<br>15MHz<br>16QAM |  <br>Band LTE2 15MHz 16QAM Mid channel |  <br>Band LTE2 15MHz QPSK Mid channel |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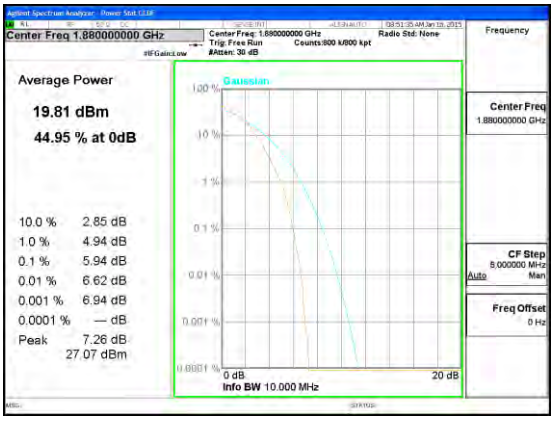
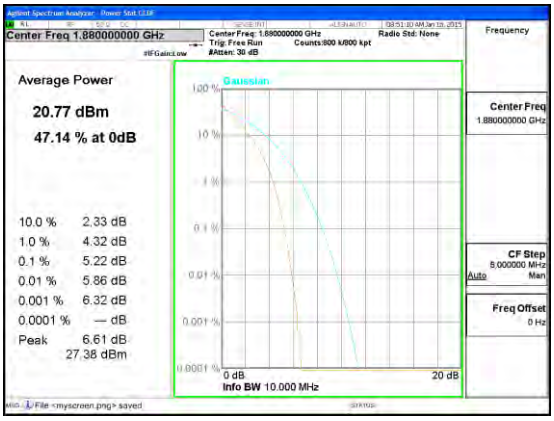
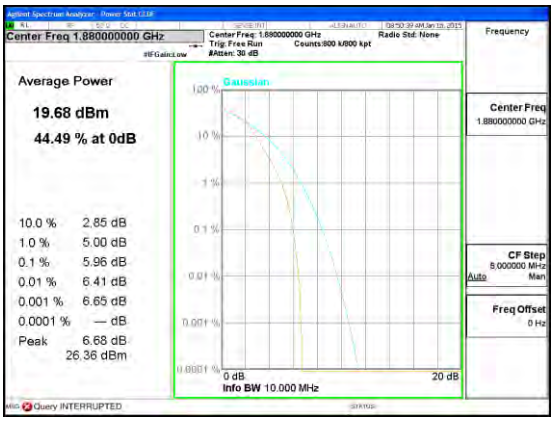
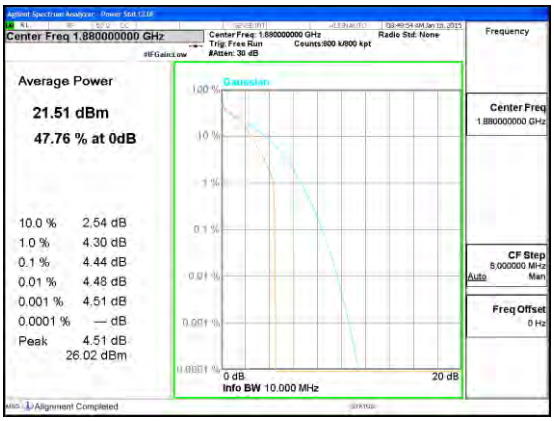
| | | |
|---|---|---|
| Band<br>LTE2<br>10MHz<br>16QAM |  <br>Band LTE2 10MHz 16QAM Mid channel |  <br>Band LTE2 10MHz QPSK Mid channel |
| Band<br>LTE2<br>5MHz<br>16QAM |  <br>Band LTE2 5MHz 16QAM Mid channel |  <br>Band LTE2 5MHz QPSK Mid channel |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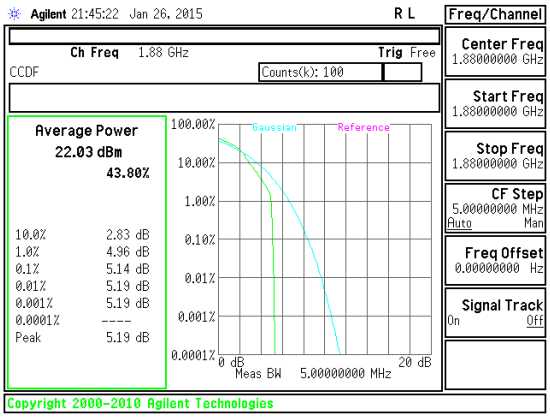
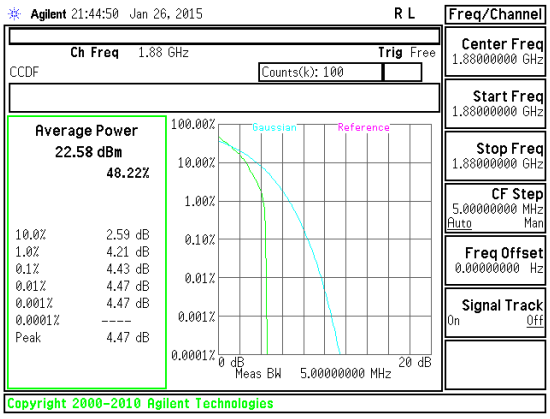
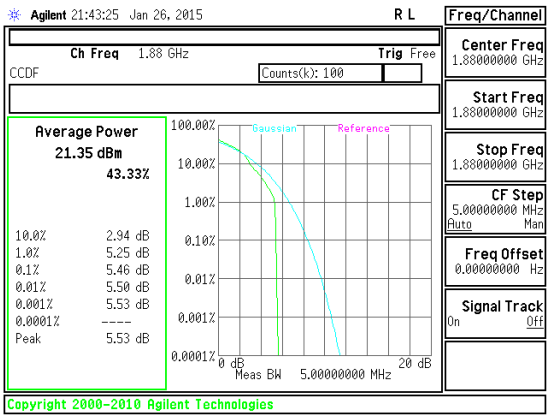
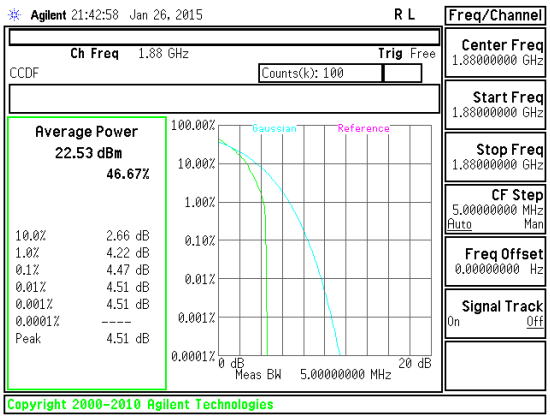
| | | |
|---|---|---|
| Band<br>LTE2<br>3MHz<br>16QAM |  <br><br>Band LTE2 3MHz 16QAM Mid channel |  <br><br>Band LTE2 3MHz QPSK Mid channel |
| Band<br>LTE2<br>1.4MHz<br>16QAM |  <br><br>Band LTE2 1.4MHz 16QAM Mid channel |  <br><br>Band LTE2 1.4MHz QPSK Mid channel |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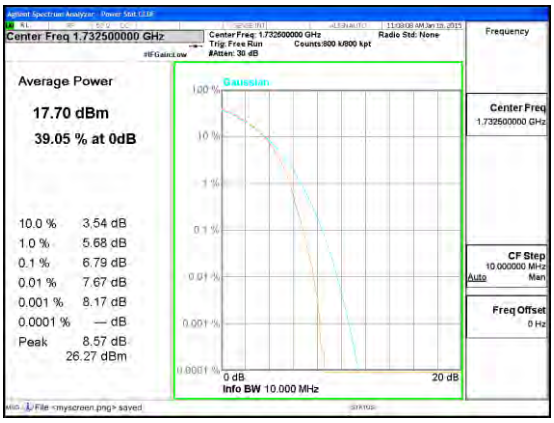
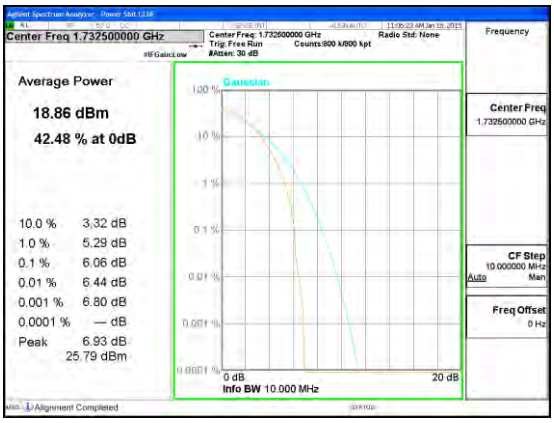
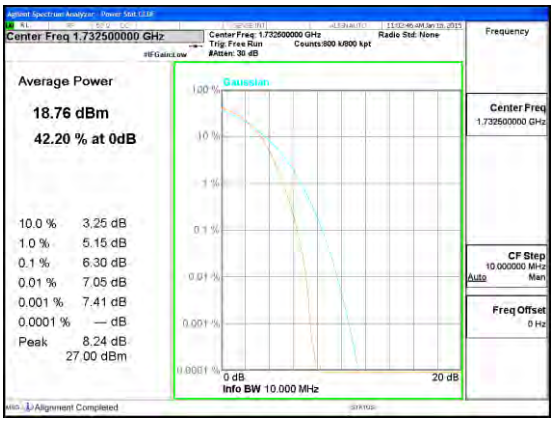
## LTE Band 4

| | | |
|---|---|---|
| Band<br>LTE4<br>20MHz<br>16QAM |  <br>Band LTE4 20MHz 16QAM Mid channel |  <br>Band LTE4 20MHz QPSK Mid channel |
| Band<br>LTE4<br>15MHz<br>16QAM |  <br>Band LTE4 15MHz 16QAM Mid channel | <br>Band LTE4 15MHz QPSK Mid channel |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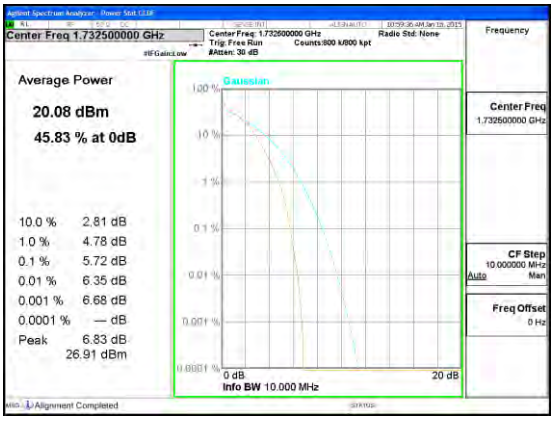
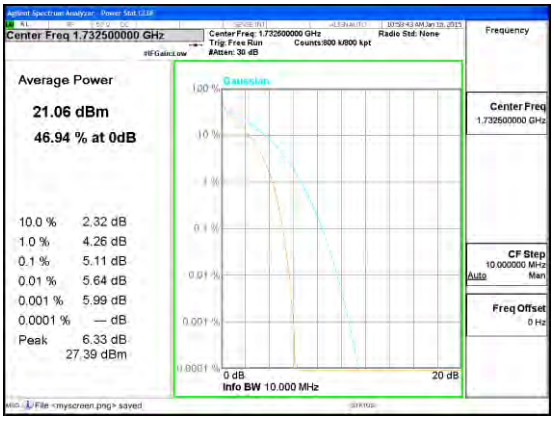
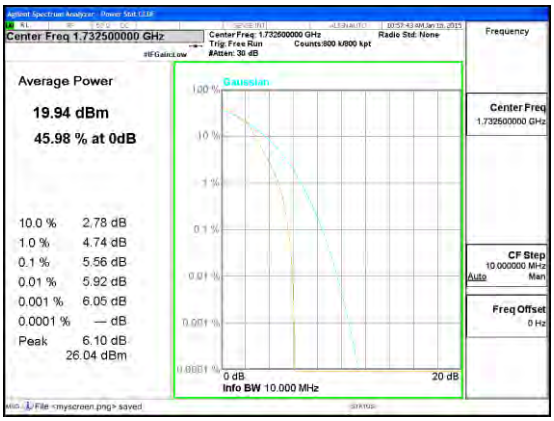
| | | |
|---|---|---|
| Band<br>LTE4<br>10MHz<br>16QAM |  <br>Band LTE4 10MHz 16QAM Mid channel |  <br>Band LTE4 10MHz QPSK Mid channel |
| Band<br>LTE4<br>5MHz<br>16QAM |  <br>Band LTE4 5MHz 16QAM Mid channel | <br>Band LTE4 5MHz QPSK Mid channel |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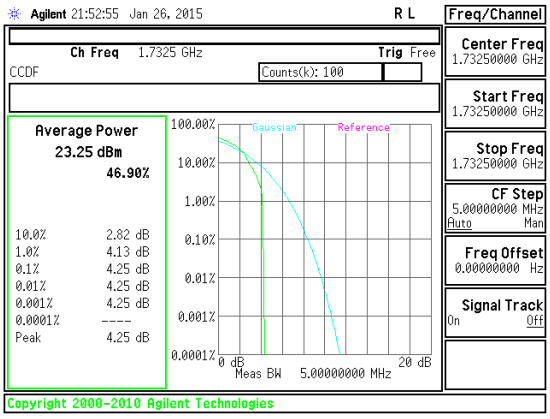
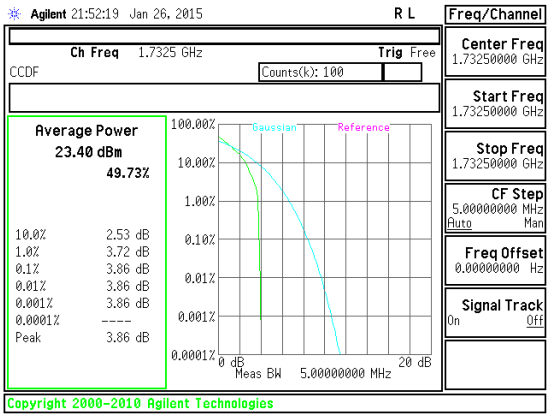
Band LTE4 3MHz 16QAM

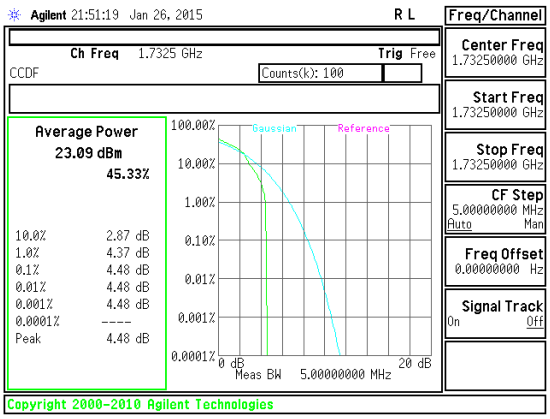



Band LTE4 3MHz 16QAM Mid channel

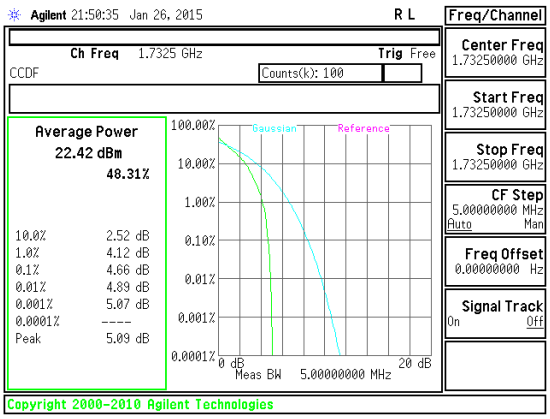



Band LTE4 3MHz QPSK Mid channel

Band LTE4 1.4MHz 16QAM




Band LTE4 1.4MHz 16QAM Mid channel




Band LTE4 1.4MHz QPSK Mid channel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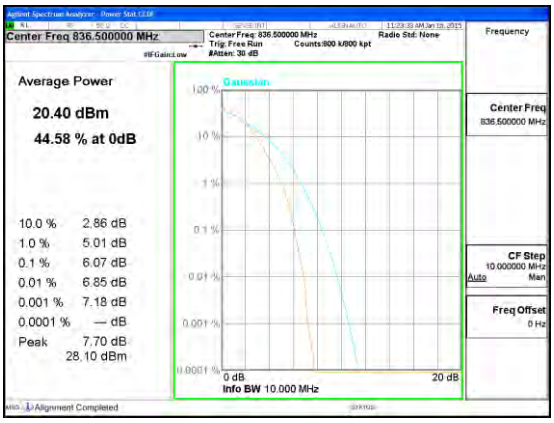
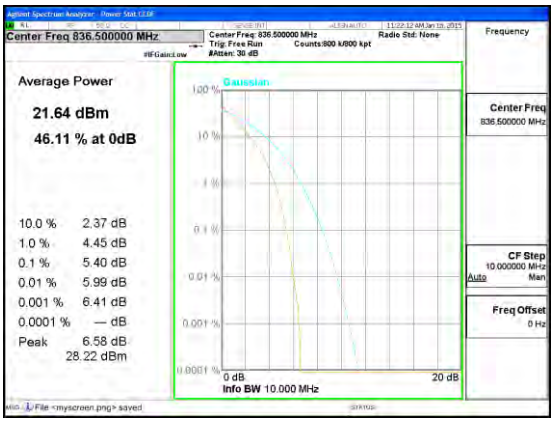
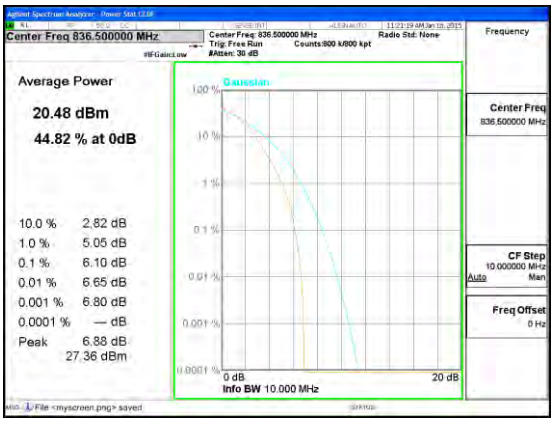
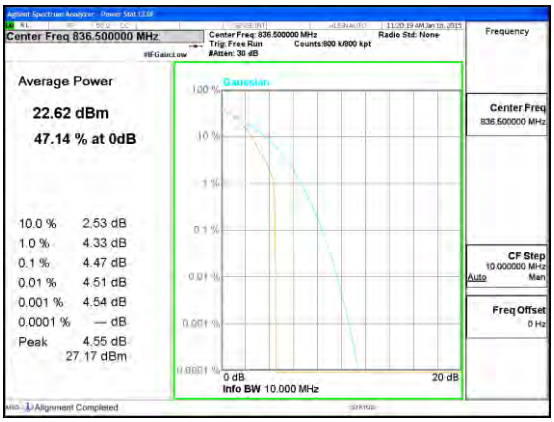
## LTE Band 5

| | | |
|---|---|---|
| Band<br>LTE5<br>10MHz<br>16QAM |  <br>Band LTE5 10MHz 16QAM Mid channel |  <br>Band LTE5 10MHz QPSK Mid channel |
| Band<br>LTE5<br>5MHz<br>16QAM |  <br>Band LTE5 5MHz 16QAM Mid channel |  <br>Band LTE5 5MHz QPSK Mid channel |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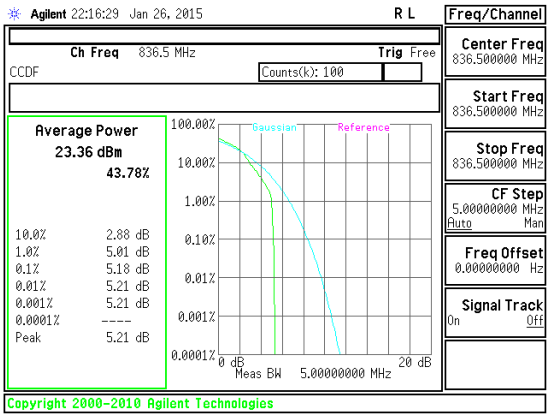
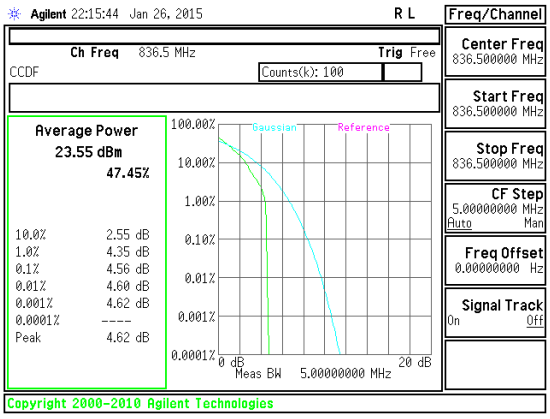
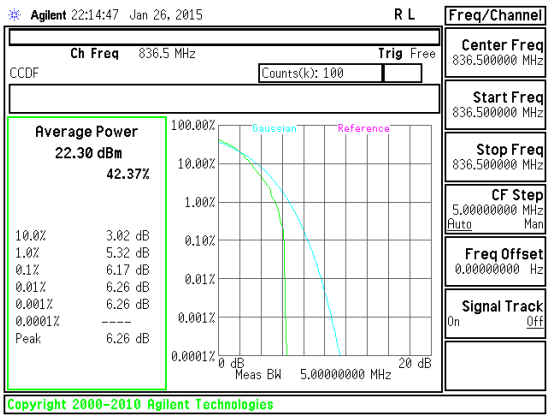
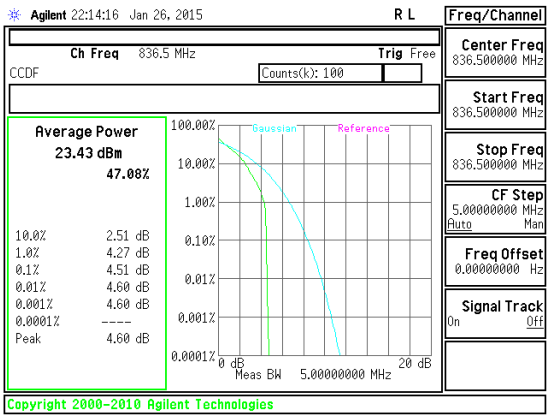
| | | |
|---|---|---|
| Band<br>LTE5<br>3MHz<br>16QAM |  <br>Band LTE5 3MHz 16QAM Mid channel |  <br>Band LTE5 3MHz QPSK Mid channel |
| Band<br>LTE5<br>1.4MHz<br>16QAM |  <br>Band LTE5 1.4MHz 16QAM Mid channel |  <br>Band LTE5 1.4MHz QPSK Mid channel |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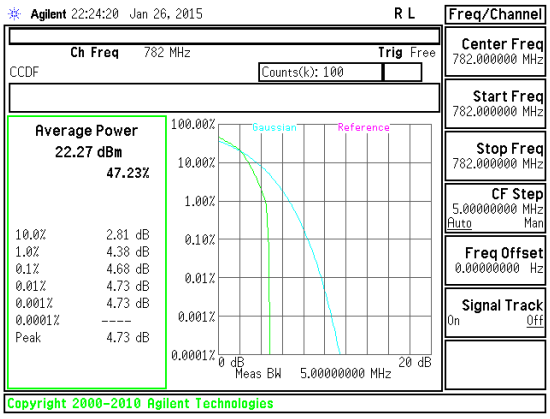
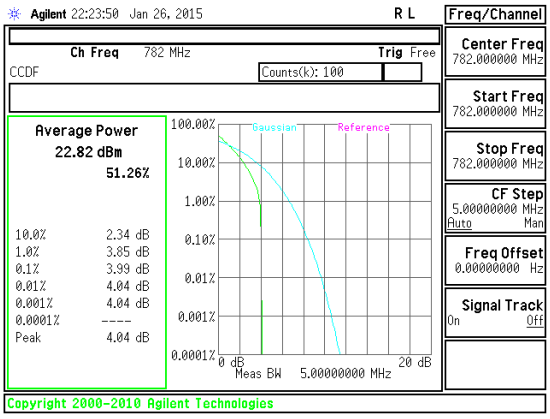
## LTE Band 13

| | | |
|---|---|---|
| Band LTE13 10MHz | <br>Band LTE13 10MHz 16QAM Mid channel | <br>Band LTE13 10MHz QPSK Mid channel |
| Band LTE13 5MHz |  <br>Band LTE13 5MHz 16QAM Mid channel |  <br>Band LTE13 5MHz QPSK Mid channel |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# 11. LIMITS AND CONDUCTED RESULTS

## 11.1. OCCUPIED BANDWIDTH

**RULE PART(S)**

FCC: §2.1049

IC: RSS-132, 4.5; RSS-133, 6.5

**LIMITS**

For reporting purposes only

**TEST PROCEDURE**

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

(KDB 971168 D01 Power Meas License Digital Systems v02r02)

**MODES TESTED**

CDMA and LTE



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### 11.1.1. OCCUPIED BANDWIDTH RESULTS

**CDMA**

| Band | Mode | Channel | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|
| BC0 | 1xRTT | 1013 | 824.7 | 1.2686 | 1.417 |
| | | 384 | 836.52 | 1.2699 | 1.412 |
| | | 777 | 848.31 | 1.2671 | 1.421 |
| | EVDO REL. 0 | 1013 | 824.7 | 1.27 | 1.42 |
| | | 384 | 836.52 | 1.27 | 1.41 |
| | | 777 | 848.31 | 1.27 | 1.42 |
| BC1 | 1xRTT | 25 | 1851.25 | 1.277 | 1.443 |
| | | 600 | 1880 | 1.2704 | 1.431 |
| | | 1175 | 1908.75 | 1.2885 | 1.451 |
| | EVDO REL. 0 | 25 | 1851.25 | 1.2754 | 1.435 |
| | | 600 | 1880 | 1.2771 | 1.423 |
| | | 1175 | 1908.75 | 1.2769 | 1.437 |


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**LTE Band 2**

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE2 | 20 | QPSK | 100/0 | 1860 | 17.914 | 19.29 |
| | | | 100/0 | 1880 | 17.911 | 19.26 |
| | | | 100/0 | 1900 | 17.89 | 19.50 |
| | | 16QAM | 100/0 | 1860 | 17.871 | 19.30 |
| | | | 100/0 | 1880 | 17.861 | 19.33 |
| | | | 100/0 | 1900 | 17.910 | 19.36 |
| | 15 | QPSK | 75/0 | 1857.5 | 13.436 | 14.67 |
| | | | 75/0 | 1880 | 13.440 | 14.69 |
| | | | 75/0 | 1902.5 | 13.457 | 14.66 |
| | | 16QAM | 75/0 | 1857.5 | 13.456 | 14.66 |
| | | | 75/0 | 1880 | 13.444 | 14.59 |
| | | | 75/0 | 1902.5 | 13.458 | 14.59 |
| | 10 | QPSK | 50/0 | 1855 | 8.9969 | 9.902 |
| | | | 50/0 | 1880 | 8.9948 | 9.829 |
| | | | 50/0 | 1905 | 8.9654 | 9.877 |
| | | 16QAM | 50/0 | 1855 | 8.9974 | 9.900 |
| | | | 50/0 | 1880 | 8.9626 | 9.875 |
| | | | 50/0 | 1905 | 8.9991 | 9.837 |
| | 5 | QPSK | 25/0 | 1852.5 | 4.499 | 4.973 |
| | | | 25/0 | 1880 | 4.5037 | 5.003 |
| | | | 25/0 | 1907.5 | 4.4921 | 4.966 |
| | | 16QAM | 25/0 | 1852.5 | 4.5041 | 4.971 |
| | | | 25/0 | 1880 | 4.5045 | 4.978 |
| | | | 25/0 | 1907.5 | 4.507 | 4.993 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| LTE2 | 3 | QPSK | 15/0 | 1851.5 | 2.69 | 2.976 |
| | | | 15/0 | 1880 | 2.674 | 2.962 |
| | | | 15/0 | 1908.5 | 2.693 | 2.963 |
| | | 16QAM | 15/0 | 1851.5 | 2.686 | 2.965 |
| | | | 15/0 | 1880 | 2.685 | 2.973 |
| | | | 15/0 | 1908.5 | 2.69 | 2.976 |
| | 1.4 | QPSK | 6/0 | 1850.7 | 1.084 | 1.282 |
| | | | 6/0 | 1880 | 1.079 | 1.263 |
| | | | 6/0 | 1909.3 | 1.085 | 1.274 |
| | | 16QAM | 6/0 | 1850.7 | 1.084 | 1.270 |
| | | | 6/0 | 1880 | 1.085 | 1.292 |
| | | | 6/0 | 1909.3 | 1.086 | 1.274 |


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**LTE Band 4**

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE4 | 20 | QPSK | 100/0 | 1720 | 17.895 | 19.275 |
| | | | 100/0 | 1732.5 | 17.904 | 19.310 |
| | | | 100/0 | 1745 | 17.913 | 19.537 |
| | | 16QAM | 100/0 | 1720 | 17.903 | 19.299 |
| | | | 100/0 | 1732.5 | 17.885 | 19.302 |
| | | | 100/0 | 1745 | 17.928 | 19.478 |
| | 15 | QPSK | 75/0 | 1717.5 | 13.435 | 14.749 |
| | | | 75/0 | 1732.5 | 13.447 | 14.567 |
| | | | 75/0 | 1747.5 | 13.479 | 14.617 |
| | | 16QAM | 75/0 | 1717.5 | 13.453 | 14.596 |
| | | | 75/0 | 1732.5 | 13.441 | 14.604 |
| | | | 75/0 | 1747.5 | 13.445 | 14.626 |
| | 10 | QPSK | 50/0 | 1715 | 8.981 | 9.934 |
| | | | 50/0 | 1732.5 | 8.987 | 9.851 |
| | | | 50/0 | 1750 | 8.974 | 9.869 |
| | | 16QAM | 50/0 | 1715 | 9.006 | 9.900 |
| | | | 50/0 | 1732.5 | 8.958 | 9.875 |
| | | | 50/0 | 1750 | 9.006 | 9.868 |
| | 5 | QPSK | 25/0 | 1712.5 | 4.5 | 4.971 |
| | | | 25/0 | 1732.5 | 4.51 | 4.998 |
| | | | 25/0 | 1752.5 | 4.495 | 4.967 |
| | | 16QAM | 25/0 | 1712.5 | 4.504 | 4.983 |
| | | | 25/0 | 1732.5 | 4.505 | 4.994 |
| | | | 25/0 | 1752.5 | 4.51 | 5.019 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| LTE4 | 3 | QPSK | 15/0 | 1711.5 | 2.685 | 2.972 |
| | | | 15/0 | 1732.5 | 2.689 | 2.972 |
| | | | 15/0 | 1753.5 | 2.682 | 2.983 |
| | | 16QAM | 15/0 | 1711.5 | 2.684 | 2.958 |
| | | | 15/0 | 1732.5 | 2.684 | 2.967 |
| | | | 15/0 | 1753.5 | 2.694 | 2.978 |
| | 1.4 | QPSK | 6/0 | 1710.7 | 1.086 | 1.264 |
| | | | 6/0 | 1732.5 | 1.083 | 1.268 |
| | | | 6/0 | 1754.3 | 1.087 | 1.266 |
| | | 16QAM | 6/0 | 1710.7 | 1.088 | 1.291 |
| | | | 6/0 | 1732.5 | 1.083 | 1.289 |
| | | | 6/0 | 1754.3 | 1.088 | 1.283 |


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**LTE Band 5**

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE5 | 10 | QPSK | 50/0 | 829 | 9.003 | 9.862 |
| | | | 50/0 | 836.5 | 8.995 | 9.789 |
| | | | 50/0 | 844 | 8.977 | 9.852 |
| | | 16QAM | 50/0 | 829 | 8.96 | 9.886 |
| | | | 50/0 | 836.5 | 8.977 | 9.818 |
| | | | 50/0 | 844 | 9.007 | 9.859 |
| | 5 | QPSK | 25/0 | 826.5 | 4.506 | 4.979 |
| | | | 25/0 | 836.5 | 4.509 | 5.009 |
| | | | 25/0 | 846.5 | 4.502 | 4.955 |
| | | 16QAM | 25/0 | 826.5 | 4.509 | 5.003 |
| | | | 25/0 | 836.5 | 4.509 | 4.982 |
| | | | 25/0 | 846.5 | 4.512 | 5.011 |
| | 3 | QPSK | 15/0 | 825.5 | 2.69 | 2.968 |
| | | | 15/0 | 836.5 | 2.68 | 2.970 |
| | | | 15/0 | 847.5 | 2.684 | 2.970 |
| | | 16QAM | 15/0 | 825.5 | 2.694 | 2.951 |
| | | | 15/0 | 836.5 | 2.681 | 2.973 |
| | | | 15/0 | 847.5 | 2.69 | 2.975 |
| | 1.4 | QPSK | 6/0 | 824.7 | 1.083 | 1.259 |
| | | | 6/0 | 836.5 | 1.086 | 1.279 |
| | | | 6/0 | 848.3 | 1.085 | 1.264 |
| | | 16QAM | 6/0 | 824.7 | 1.09 | 1.273 |
| | | | 6/0 | 836.5 | 1.087 | 1.282 |
| | | | 6/0 | 848.3 | 1.083 | 1.274 |


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**LTE Band 13**

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE13 | 10 | QPSK | 50/0 | 782 | 8.984 | 9.849 |
| | | 16QAM | 50/0 | 782 | 8.989 | 9.881 |
| LTE13 | 5 | QPSK | 25/0 | 779.5 | 4.504 | 4.974 |
| | | | 25/0 | 782 | 4.510 | 4.972 |
| | | | 25/0 | 784.5 | 4.512 | 4.977 |
| | | 16QAM | 25/0 | 779.5 | 4.510 | 4.993 |
| | | | 25/0 | 782 | 4.497 | 4.984 |
| | | | 25/0 | 784.5 | 4.502 | 4.973 |


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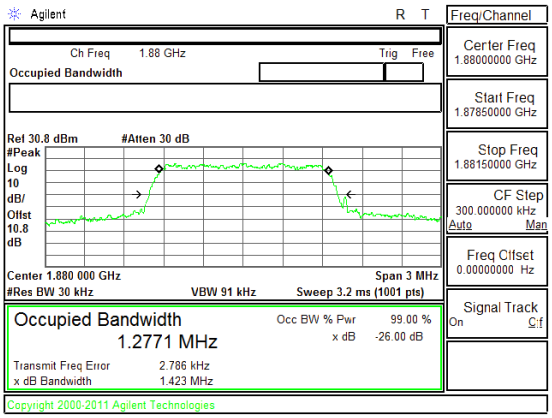
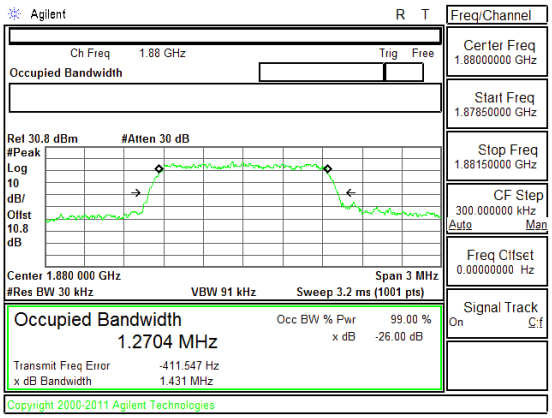
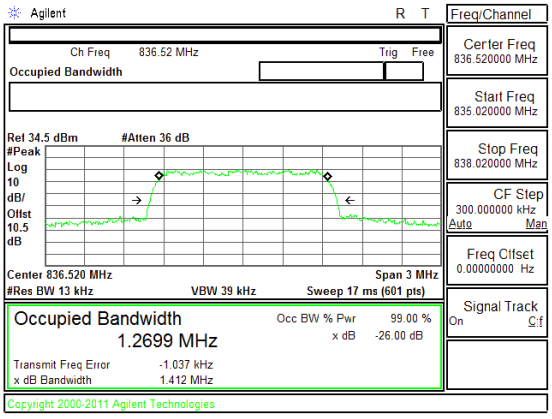
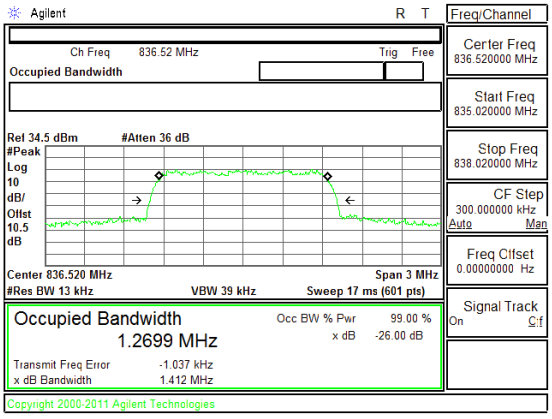
### 11.1.1. OCCUPIED BANDWIDTH PLOTS

**CDMA**

| | | |
|---|---|---|
| Band BC1 |  Band BC1 OBW Mid channel |  Band BC1 1xRTT OBW Mid channel |

| | | |
|---|---|---|
| Band BC0 |  Band BC0 OBW Mid channel |  Band BC0 1xRTT OBW Mid channel |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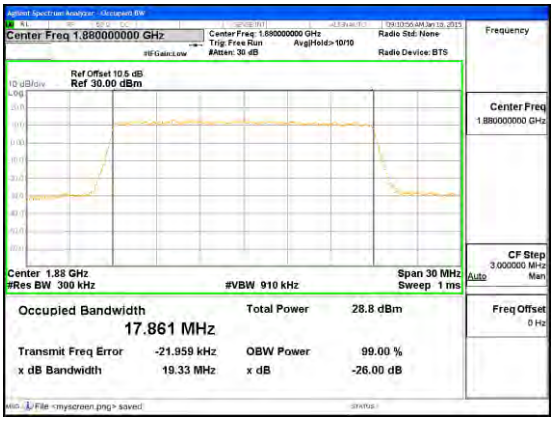
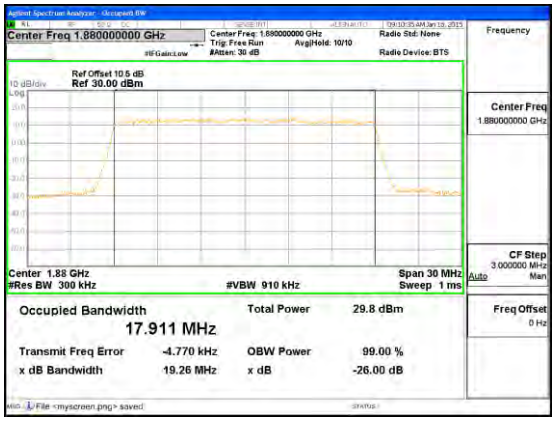
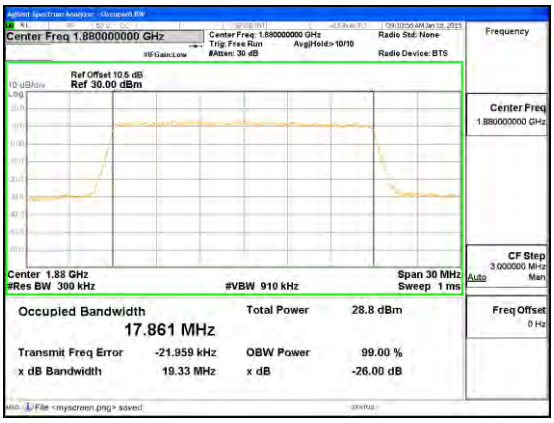
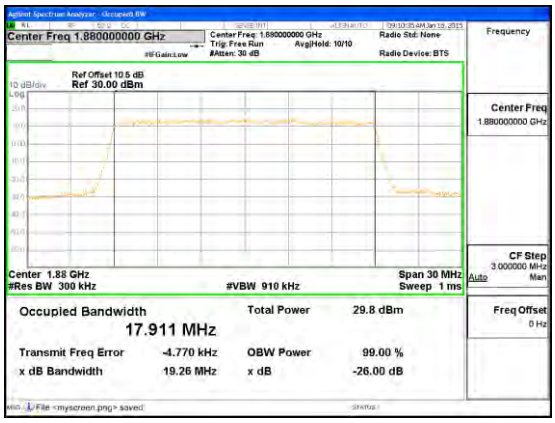
## LTE Band 2

| | | |
|---|---|---|
| Band<br>LTE2<br>20MHz<br>16QAM |  <br>Band LTE2 20MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE2 20MHz OBW QPSK Mid Channel FRB.gif |
| Band<br>LTE2<br>20MHz<br>16QAM |  <br>Band LTE2 20MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE2 20MHz OBW QPSK Mid Channel FRB.gif |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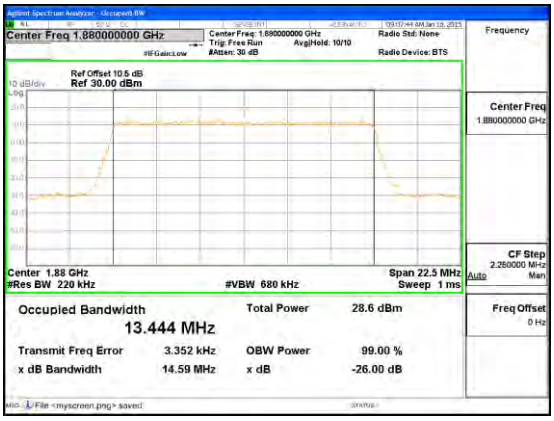
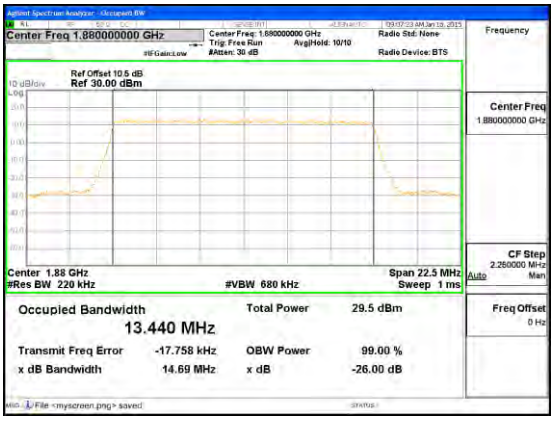
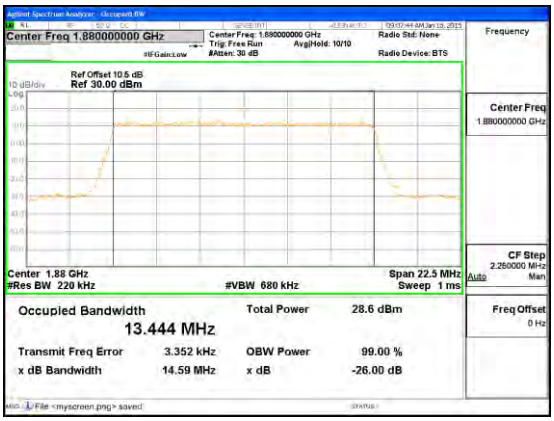
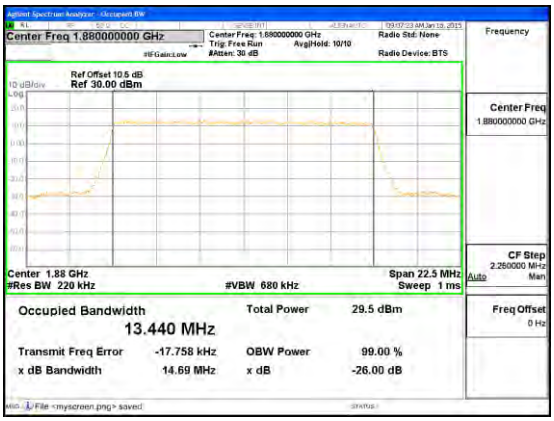
| | | |
|---|---|---|
| Band<br>LTE2<br>15MHz<br>16QAM |  <br>Band LTE2 15MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE2 15MHz OBW QPSK Mid Channel FRB.gif |
| Band<br>LTE2<br>15MHz<br>16QAM |  <br>Band LTE2 15MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE2 15MHz OBW QPSK Mid Channel FRB.gif |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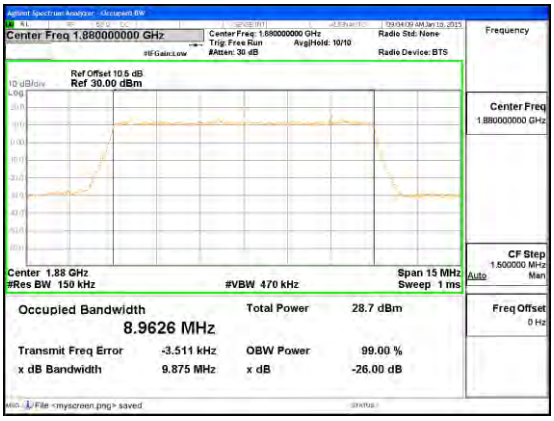
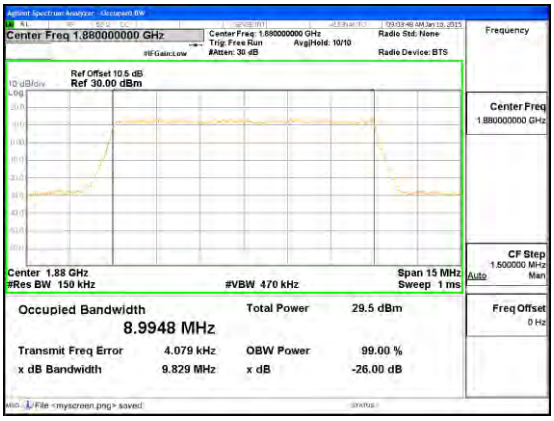
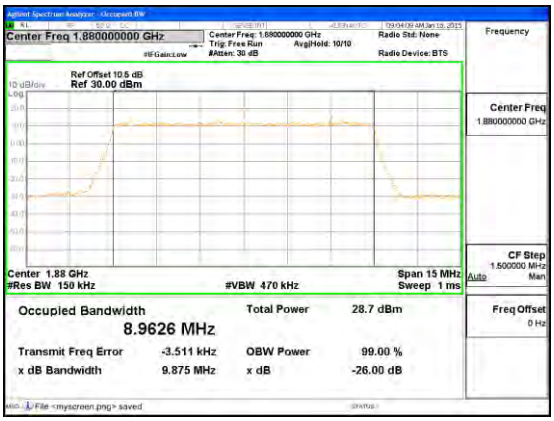
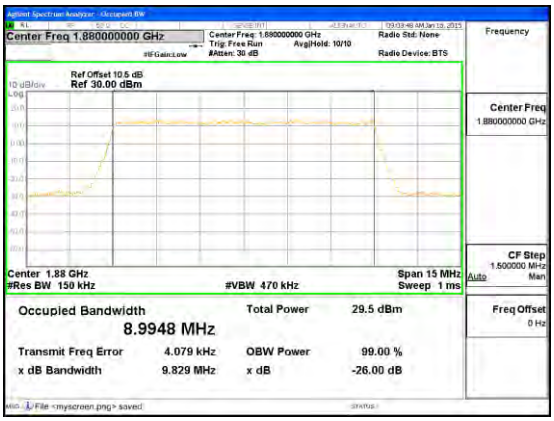
| | | |
|---|---|---|
| Band<br>LTE2<br>10MHz<br>16QAM |  <br>Band LTE2 10MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE2 10MHz OBW QPSK Mid Channel FRB.gif |
| Band<br>LTE2<br>10MHz<br>16QAM |  <br>Band LTE2 10MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE2 10MHz OBW QPSK Mid Channel FRB.gif |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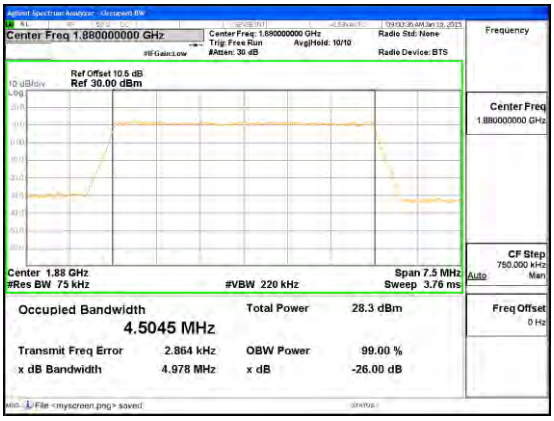
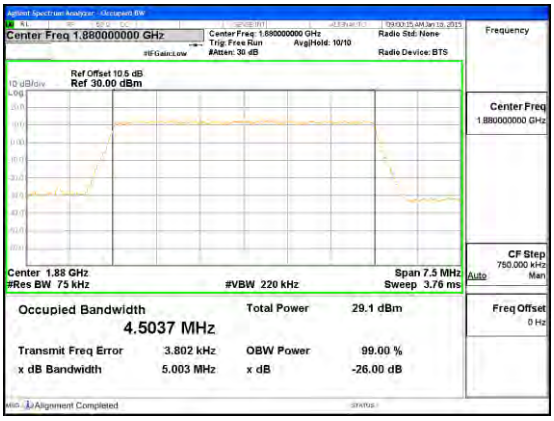
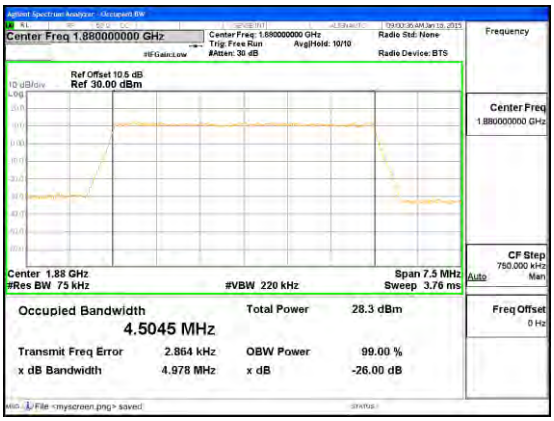
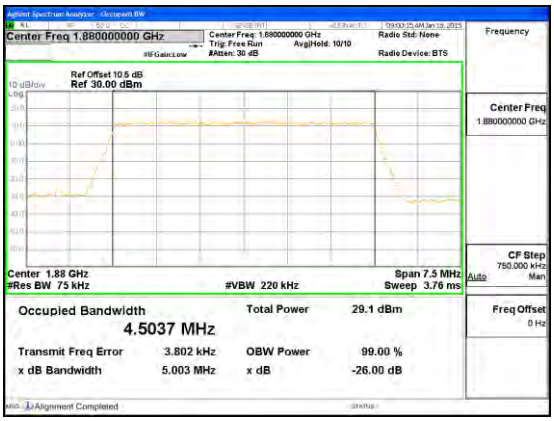
| | | |
|---|---|---|
| Band<br>LTE2<br>5MHz<br>16QAM |  <br>Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif |
| Band<br>LTE2<br>5MHz<br>16QAM |  <br>Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif |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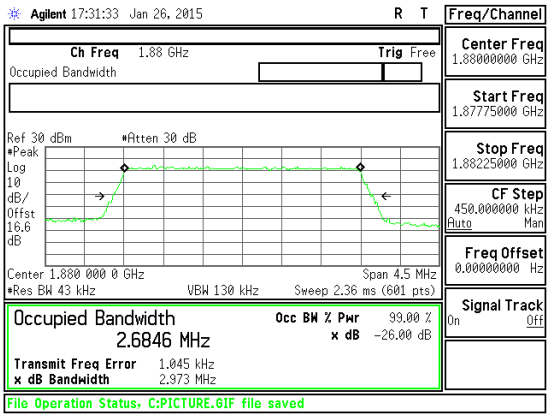
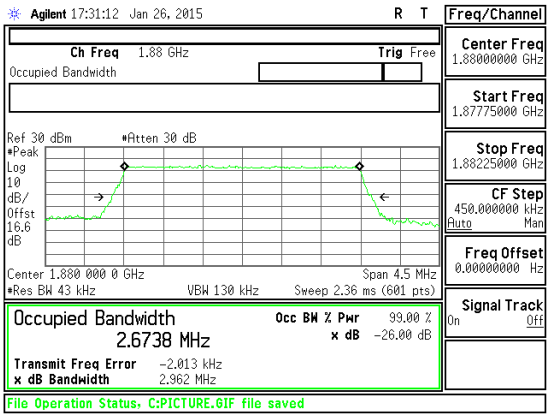
Band LTE2 3MHz 16QAM

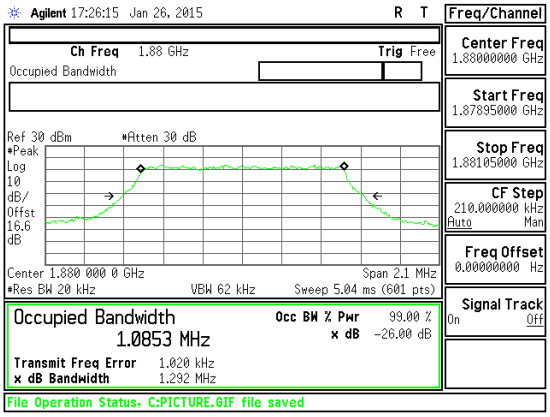



Band LTE2 3MHz 16QAM Mid channel

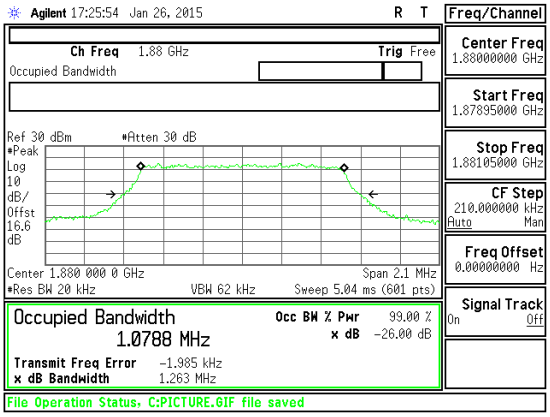



Band LTE2 3MHz QPSK Mid channel

Band LTE2 1.4MHz 16QAM




Band LTE2 1.4MHz 16QAM Mid channel




Band LTE2 1.4MHz QPSK Mid channel



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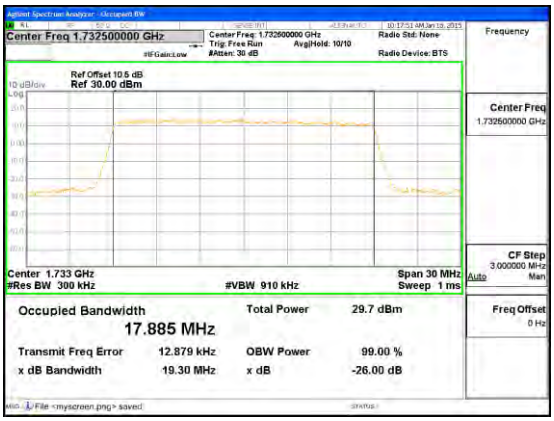
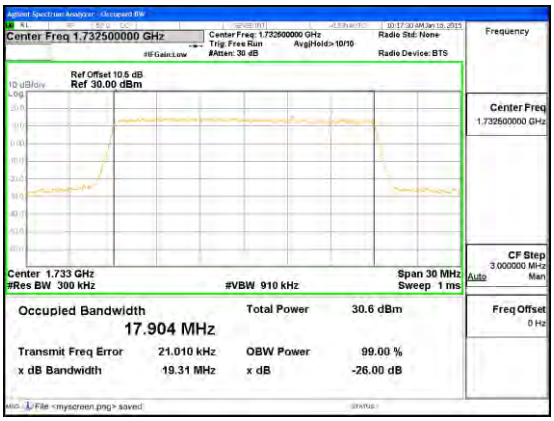
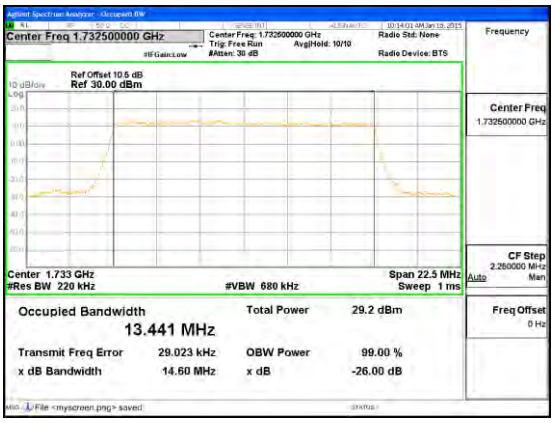
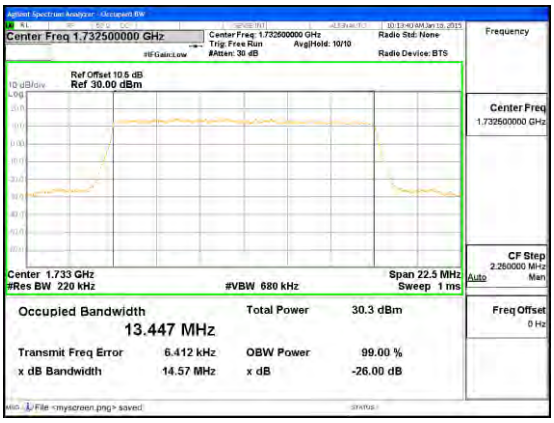
## LTE Band 4

| | | |
|---|---|---|
| Band<br>LTE4<br>20MHz<br>16QAM |  <br>Band LTE4 20MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE4 20MHz OBW QPSK Mid Channel FRB.gif |
| Band<br>LTE4<br>15MHz<br>16QAM |  <br>Band LTE4 15MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE4 15MHz OBW QPSK Mid Channel FRB.gif |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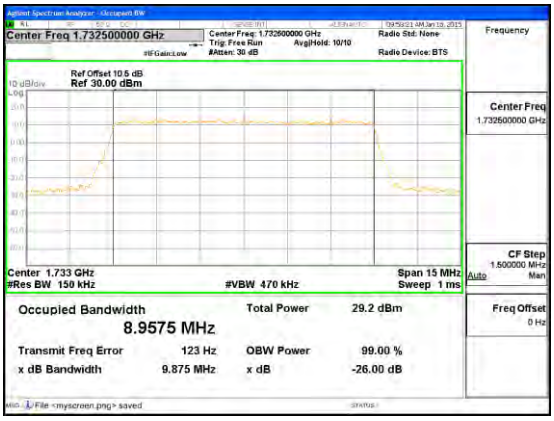
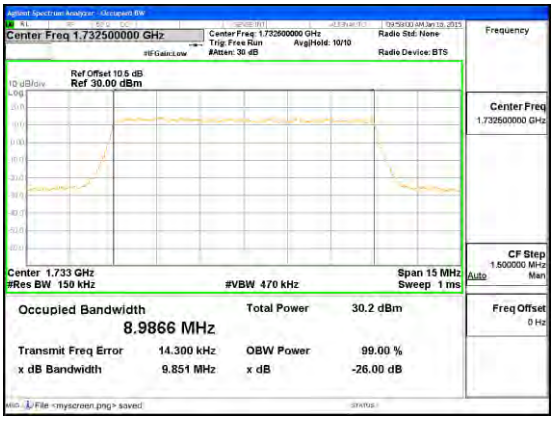
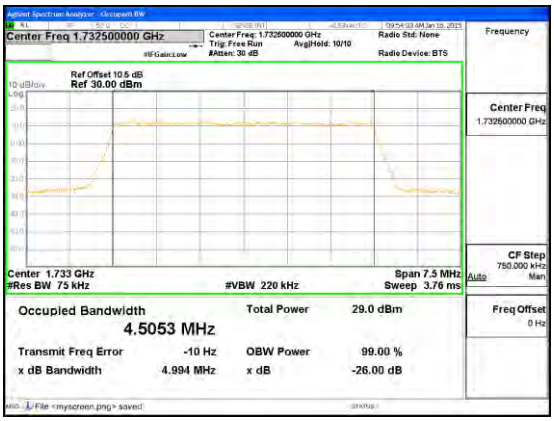
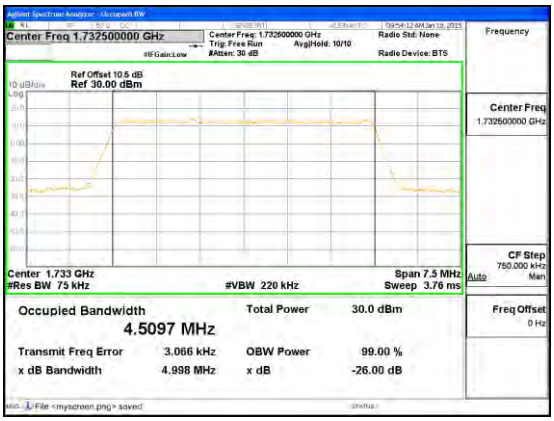
| | | |
|---|---|---|
| Band<br>LTE4<br>10MHz<br>16QAM |  <br>Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif |
| Band<br>LTE4<br>5MHz<br>16QAM |  <br>Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif |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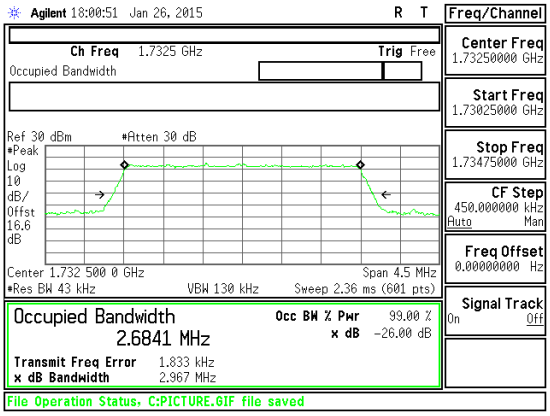
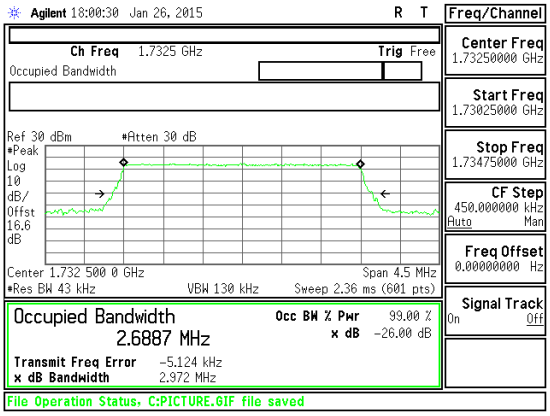
Band LTE4 3MHz 16QAM

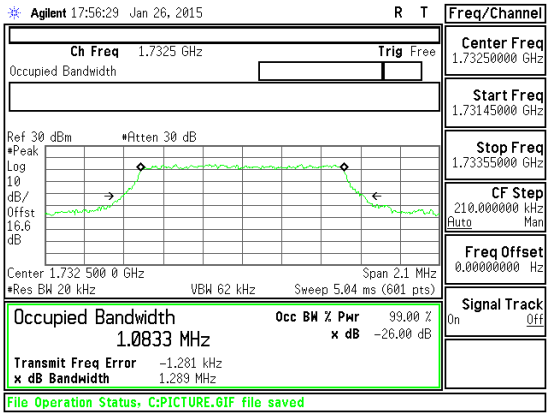



Band LTE4 3MHz 16QAM Mid channel

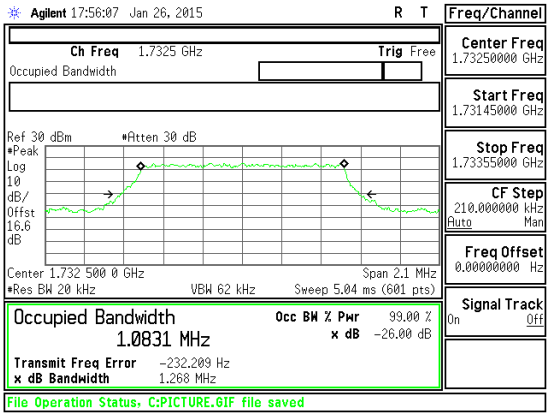



Band LTE4 3MHz QPSK Mid channel

Band LTE4 1.4MHz 16QAM




Band LTE4 1.4MHz 16QAM Mid channel




Band LTE4 1.4MHz QPSK Mid channel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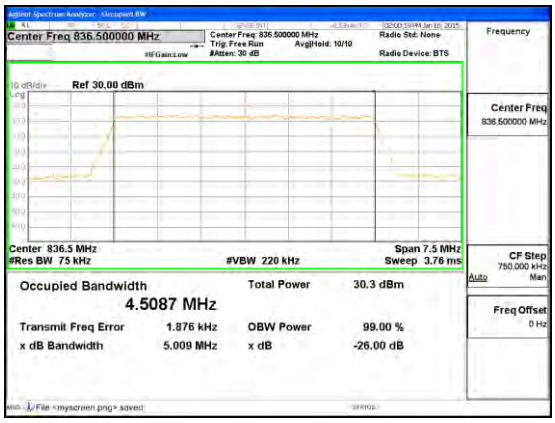
## LTE Band 5

| | | |
|---|---|---|
| Band LTE5 10MHz 16QAM | <br>Band LTE5 10MHz OBW 16QAM Mid Channel FRB.gif | <br>Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif |
| Band LTE5 5MHz 16QAM | <br>Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE5 5MHz OBW QPSK Mid Channel FRB.gif |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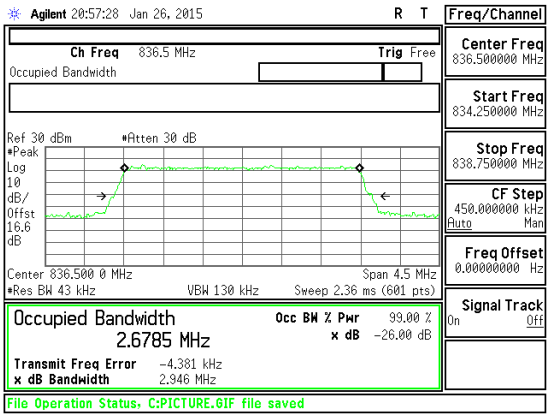
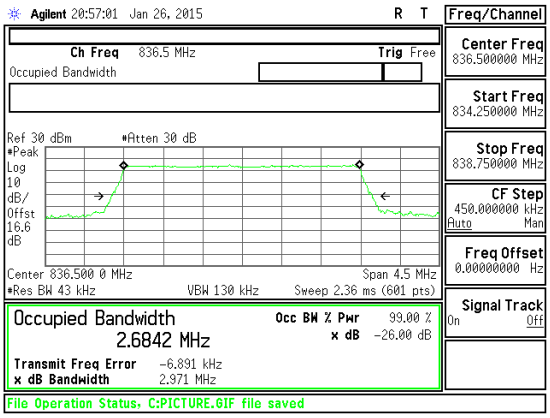
Band LTE5 3MHz 16QAM

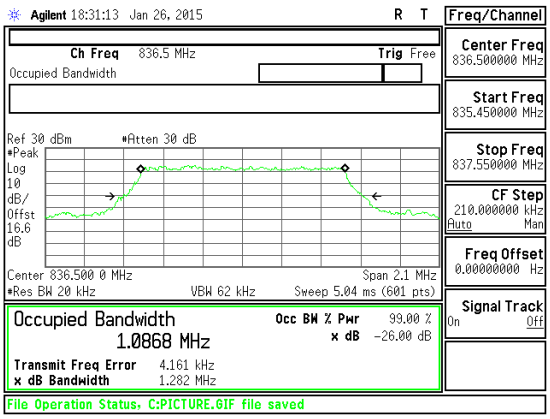



Band LTE5 3MHz CSE 16QAM Mid channel

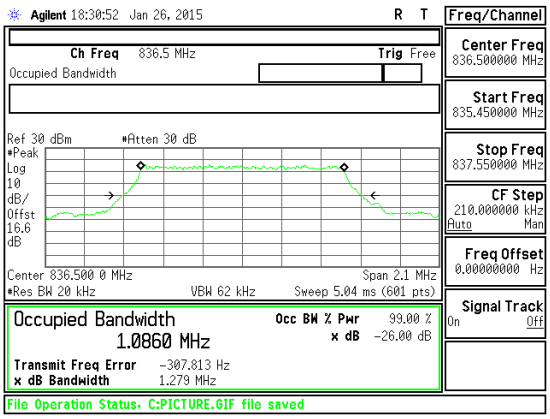



Band LTE5 3MHz CSE QPSK Mid channel

Band LTE5 1.4MHz 16QAM




Band LTE5 1.4MHz CSE 16QAM Mid channel




Band LTE5 1.4MHz CSE QPSK Mid channel



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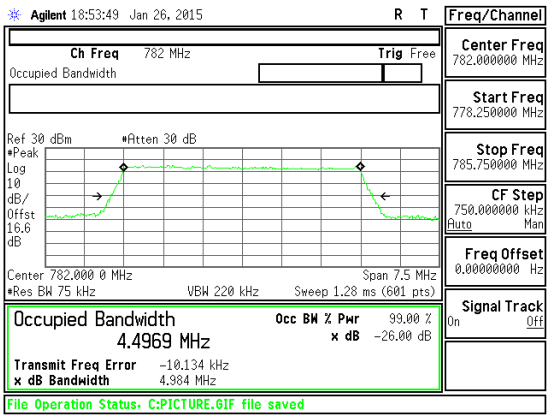
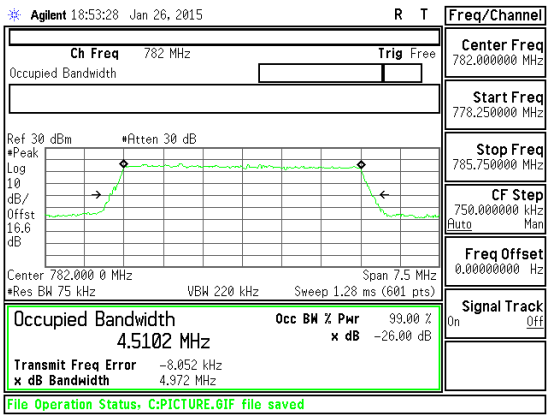
## LTE Band 13

| | | |
|---|---|---|
| Band LTE13 10MHz | <br>Band LTE13 10MHz 16QAM Mid channel | <br>Band LTE13 10MHz QPSK Mid channel |
| Band LTE13 5MHz 16QAM |  <br>Band LTE13 5MHz CSE 16QAM Mid channel |  <br>Band LTE13 5MHz CSE QPSK Mid channel |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## 11.2. BAND EDGE EMISSIONS

**RULE PART(S)**

FCC: §22.359, §24.238, §27. 53

**LIMITS**

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.

Part 27: (m)(4) For mobile station, the attenuation factor shall be not less than 43+10Log(P)dB at the channel edge and (55+10Log(P)dB) at 5.5MHz from the channel edges.

**TEST PROCEDURE**

Per KDB 971168 D01 Power Meas License Digital Systems v02r02
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

**MODES TESTED**

CDMA, LTE

**RESULTS**



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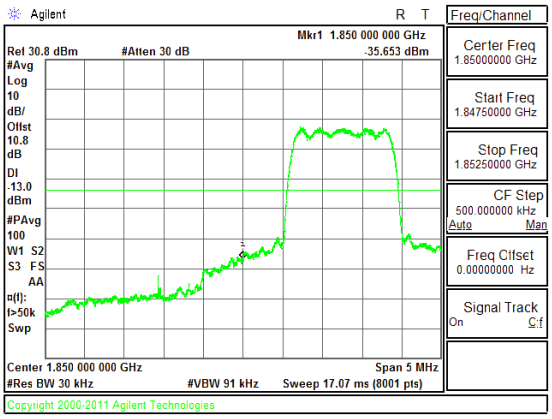
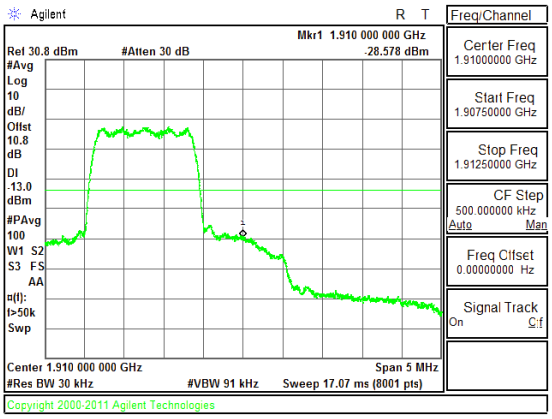
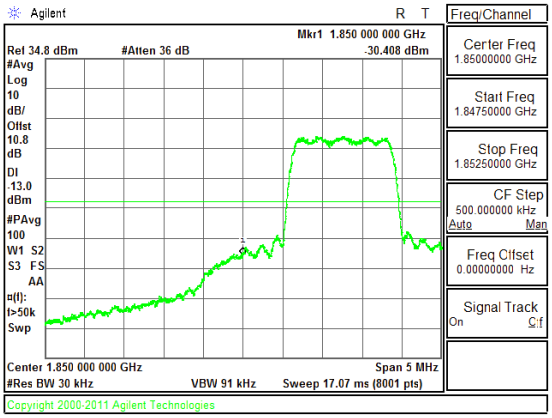
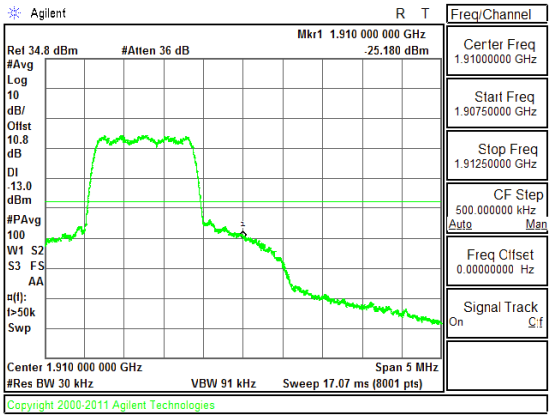
### 11.2.1. BAND EDGE PLOTS

**CDMA**

| | | |
|---|---|---|
| Band BC1 |  Band BC1 CBE Low channel |  Band BC1 CBE High channel |
| Band BC1 1xRTT |  Band BC1 1xRTT CBE Low channel |  Band BC1 1xRTT CBE High channel |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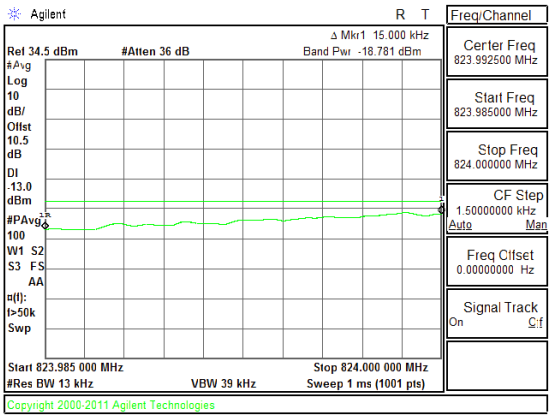
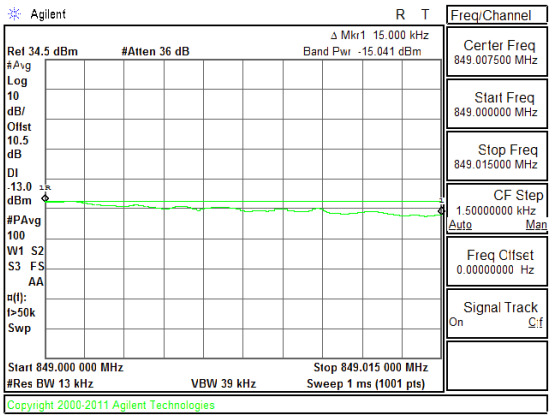
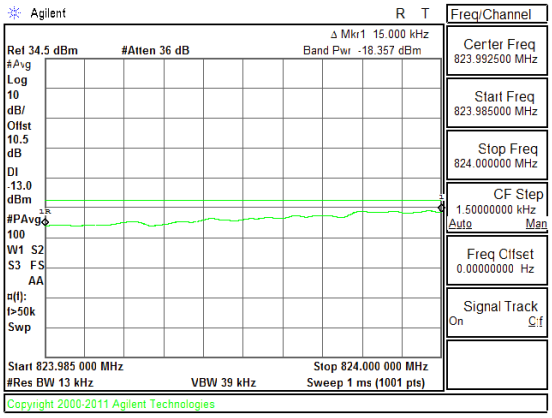
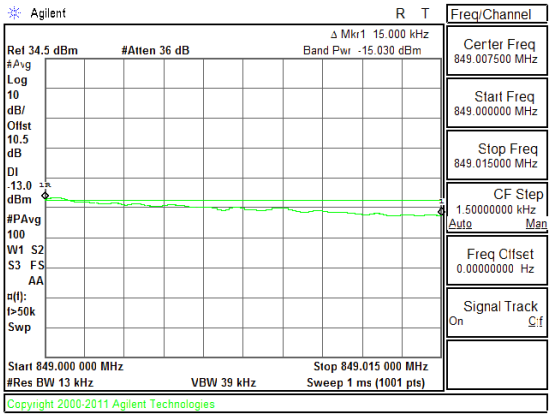
| | | |
|---|---|---|
| Band<br><br>BC0 |  <br>Band BC0 CBE Low channel |  <br>Band BC0 CBE High channel |
| Band<br><br>BC0<br><br>1xRTT |  <br>Band BC0 1xRTT CBE Low channel |  <br>Band BC0 1xRTT CBE High channel |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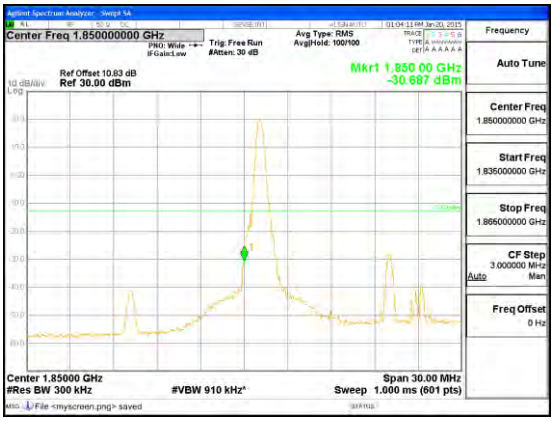
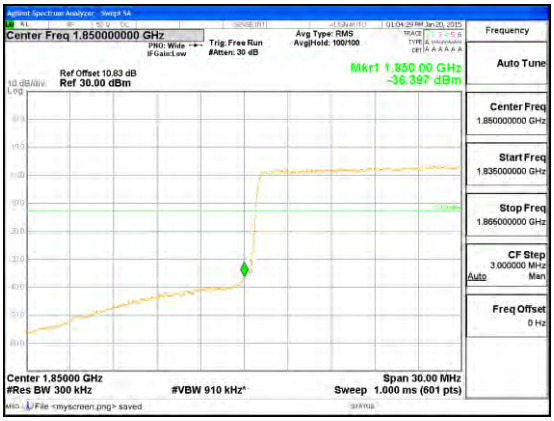
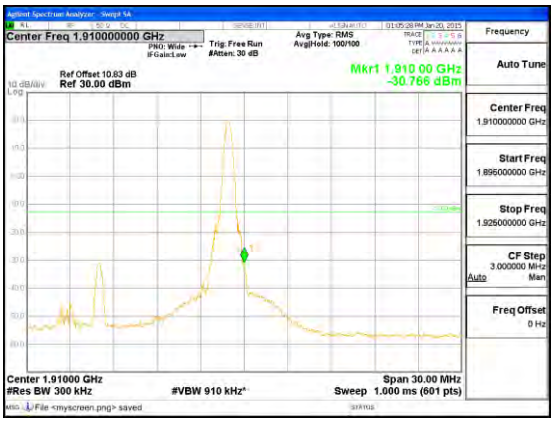
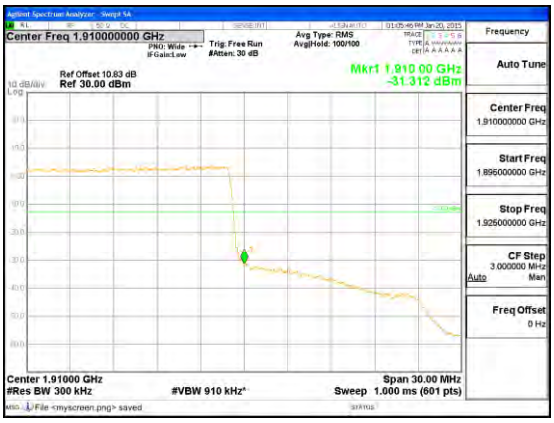
## LTE Band 2

| | | |
|---|---|---|
| Band<br>LTE2<br>20MHz<br>16QAM |  <br>Band LTE2 20MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE2 20MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE2<br>20MHz<br>16QAM |  <br>Band LTE2 20MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE2 20MHz CBE 16QAM High Channel FRB.gif |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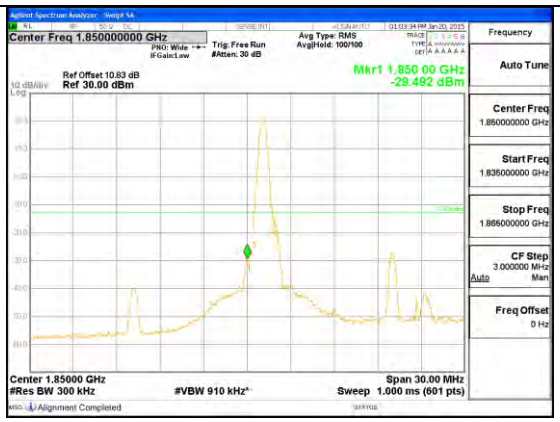
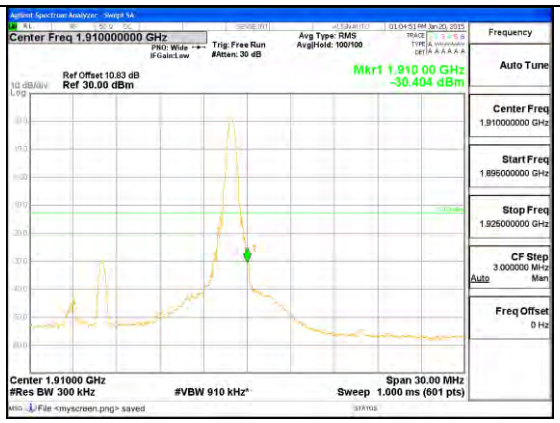
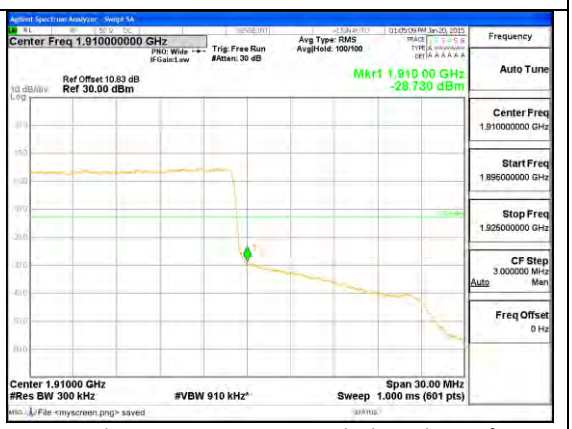
| | | |
|---|---|---|
| Band<br>LTE2<br>20MHz<br>QPSK |  <br>Band LTE2 20MHz CBE QPSK Low Channel 1RB.gif | <br>Band LTE2 20MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE2<br>20MHz<br>QPSK |  <br>Band LTE2 20MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE2 20MHz CBE QPSK High Channel FRB.gif |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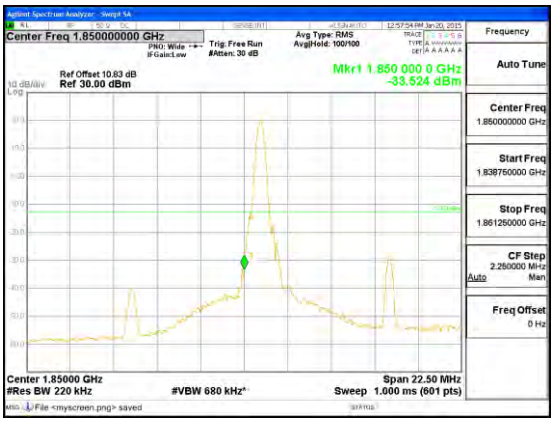
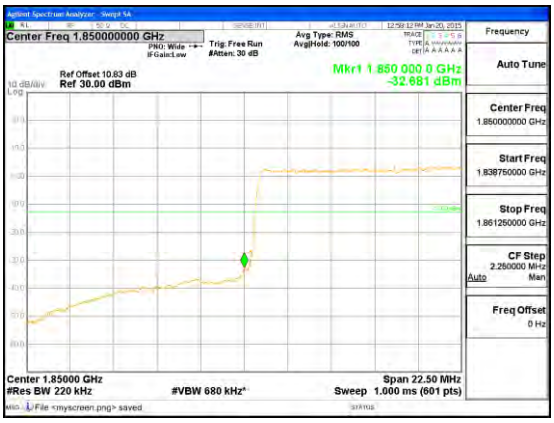
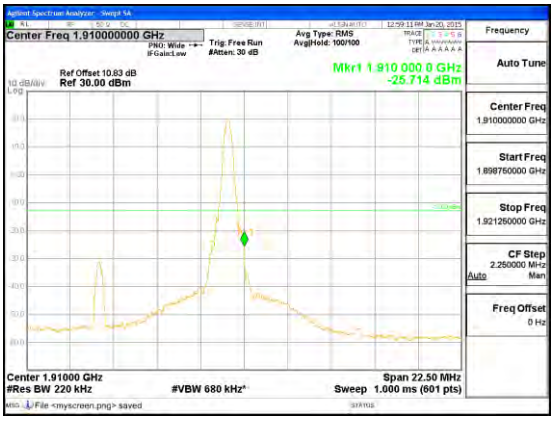
| | | |
|---|---|---|
| Band<br>LTE2<br>15MHz<br>16QAM |  <br>Band LTE2 15MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE2 15MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE2<br>15MHz<br>16QAM |  <br>Band LTE2 15MHz CBE 16QAM High Channel 1RB.gif | <br>Band LTE2 15MHz CBE 16QAM High Channel FRB.gif |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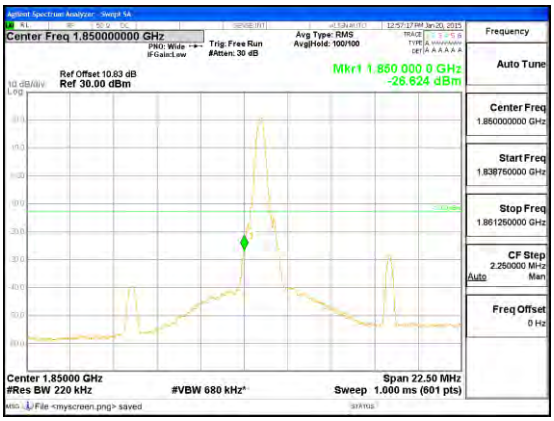
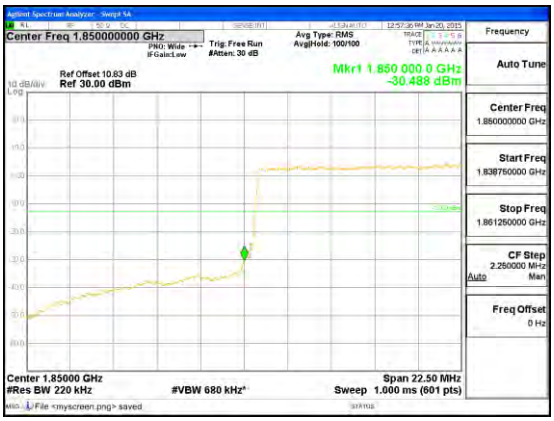
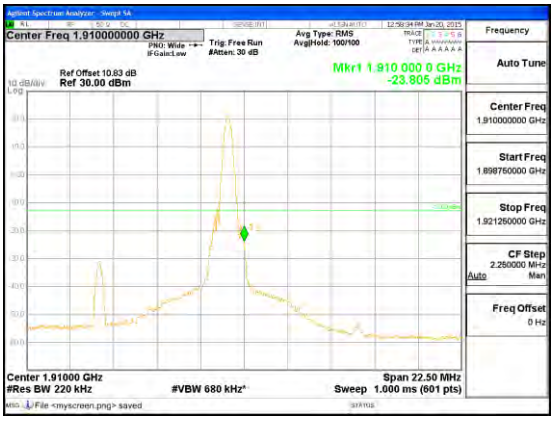
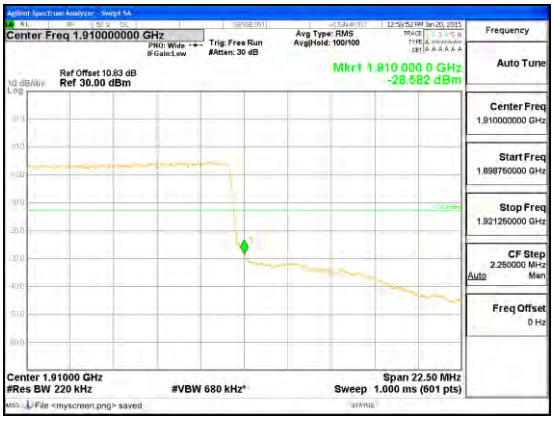
| | | |
|---|---|---|
| Band<br>LTE2<br>15MHz<br>QPSK |  <br>Band LTE2 15MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE2 15MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE2<br>15MHz<br>QPSK |  <br>Band LTE2 15MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE2 15MHz CBE QPSK High Channel FRB.gif |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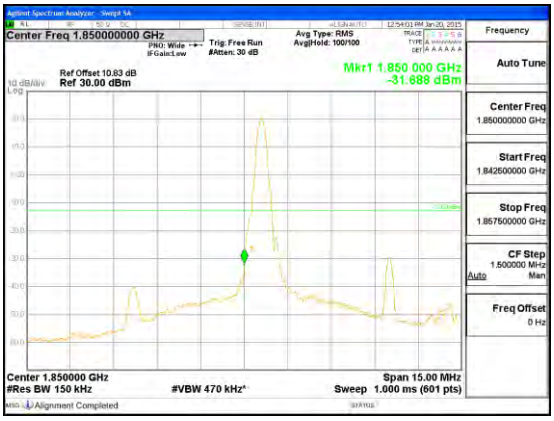
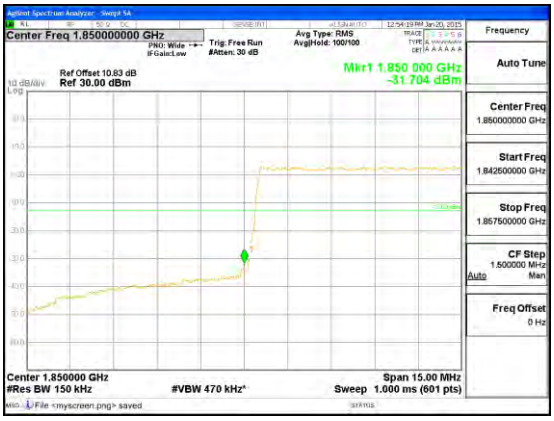
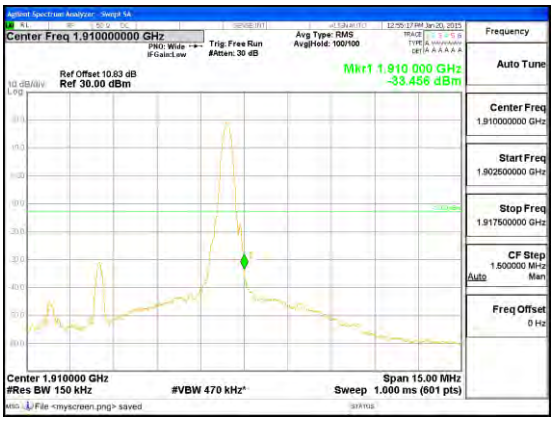
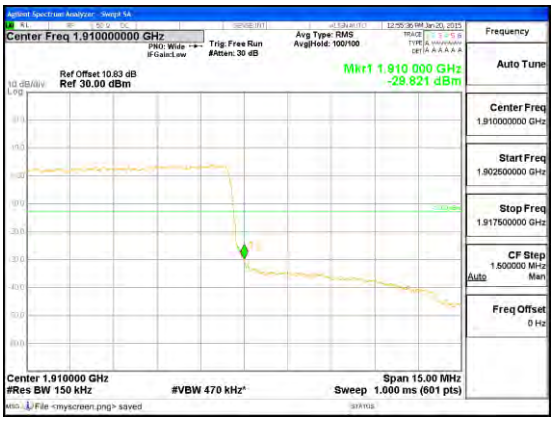
| | | |
|---|---|---|
| Band<br>LTE2<br>10MHz<br>16QAM |  <br><br>Band LTE2 10MHz CBE 16QAM Low Channel 1RB.gif |  <br><br>Band LTE2 10MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE2<br>10MHz<br>16QAM |  <br><br>Band LTE2 10MHz CBE 16QAM High Channel 1RB.gif |  <br><br>Band LTE2 10MHz CBE 16QAM High Channel FRB.gif |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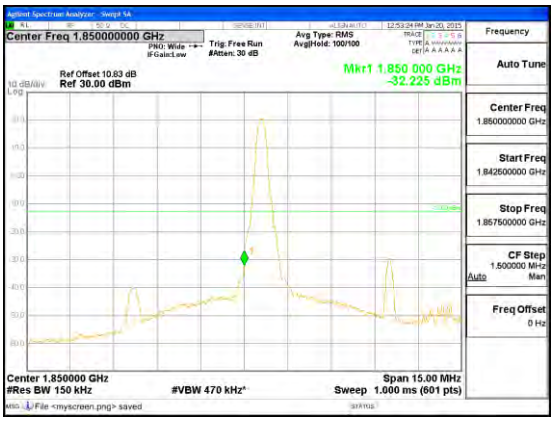
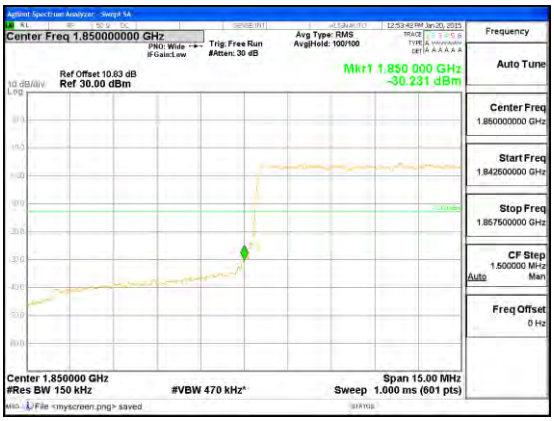
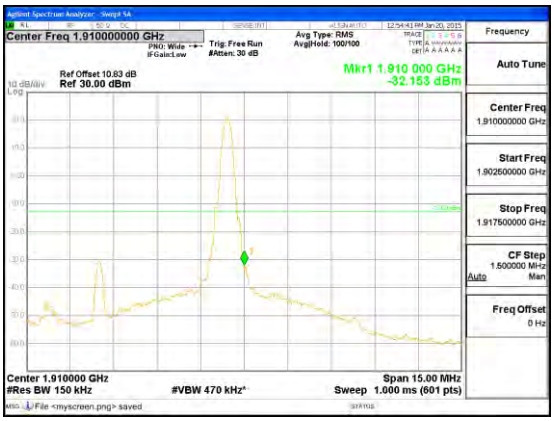
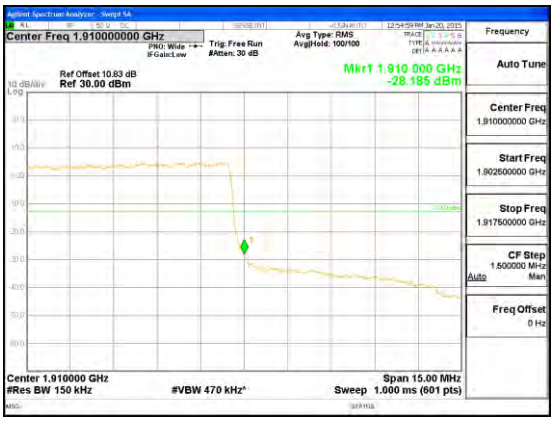
| | | |
|---|---|---|
| Band<br>LTE2<br>10MHz<br>QPSK |  <br><br>Band LTE2 10MHz CBE QPSK Low Channel 1RB.gif |  <br><br>Band LTE2 10MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE2<br>10MHz<br>QPSK |  <br><br>Band LTE2 10MHz CBE QPSK High Channel 1RB.gif |  <br><br>Band LTE2 10MHz CBE QPSK High Channel FRB.gif |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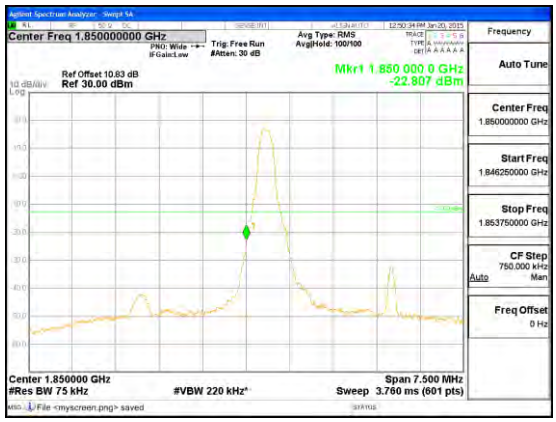
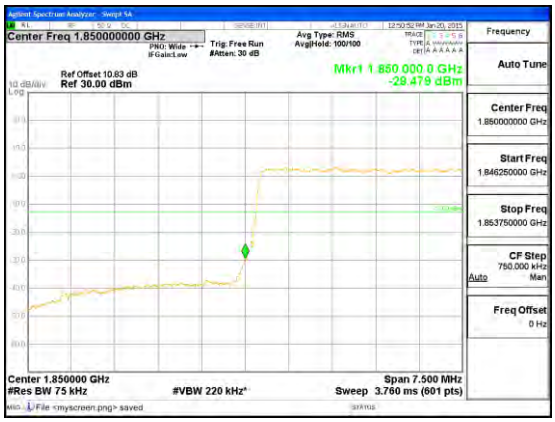
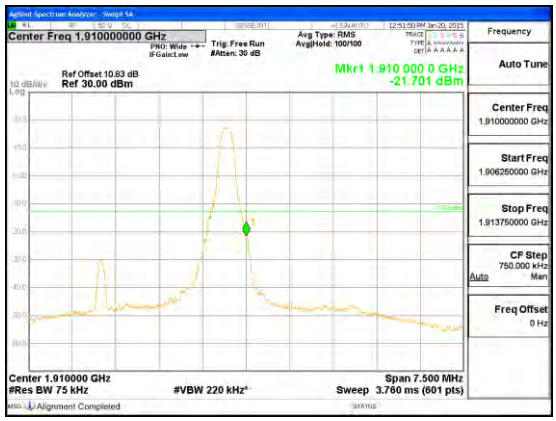
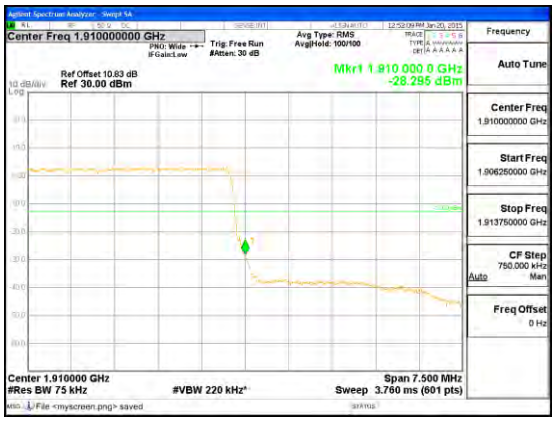
| | | |
|---|---|---|
| Band<br>LTE2<br>5MHz<br>16QAM |  <br>Band LTE2 5MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE2 5MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE2<br>5MHz<br>16QAM |  <br>Band LTE2 5MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE2 5MHz CBE 16QAM High Channel FRB.gif |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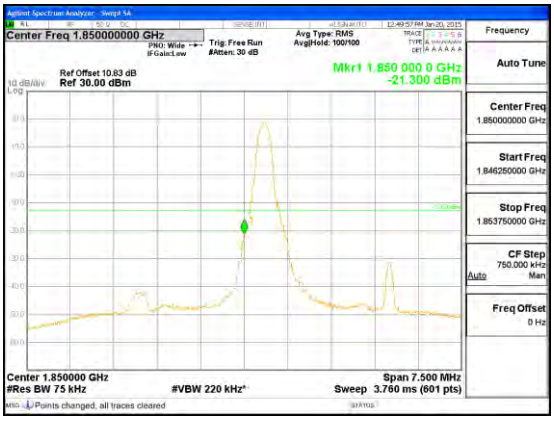
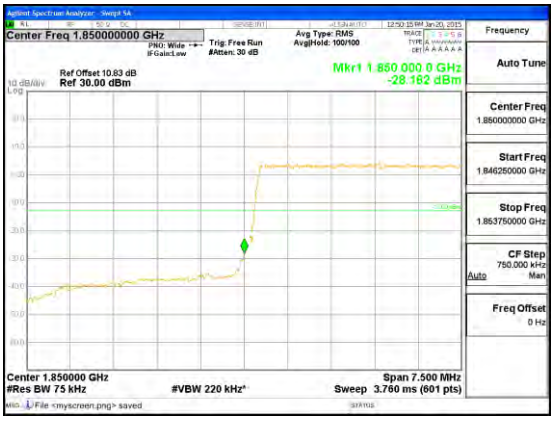
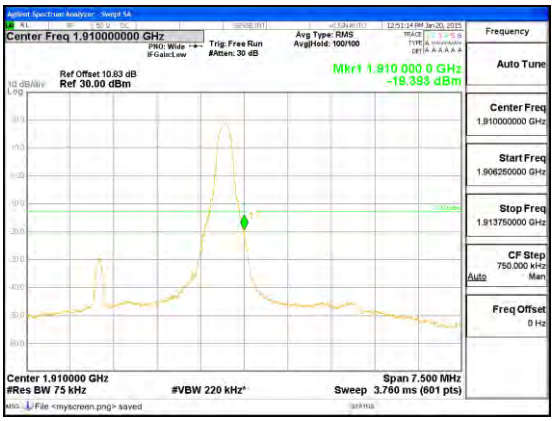
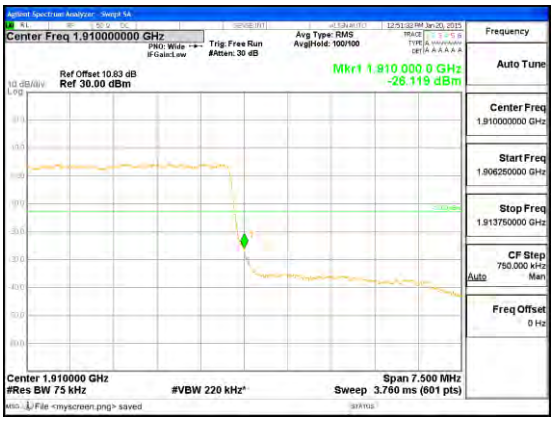
| | | |
|---|---|---|
| Band<br>LTE2<br>5MHz<br>QPSK |  <br><br>Band LTE2 5MHz CBE QPSK Low Channel 1RB.gif |  <br><br>Band LTE2 5MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE2<br>5MHz<br>QPSK |  <br><br>Band LTE2 5MHz CBE QPSK High Channel 1RB.gif |  <br><br>Band LTE2 5MHz CBE QPSK High Channel FRB.gif |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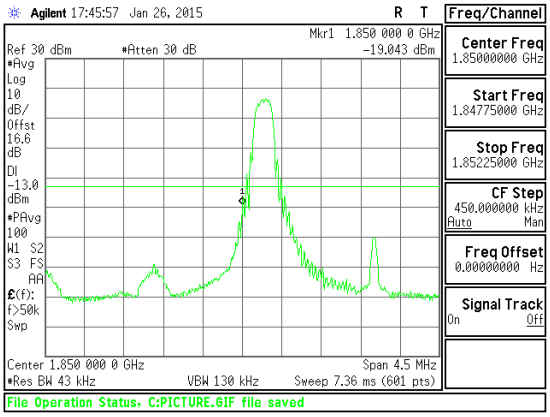
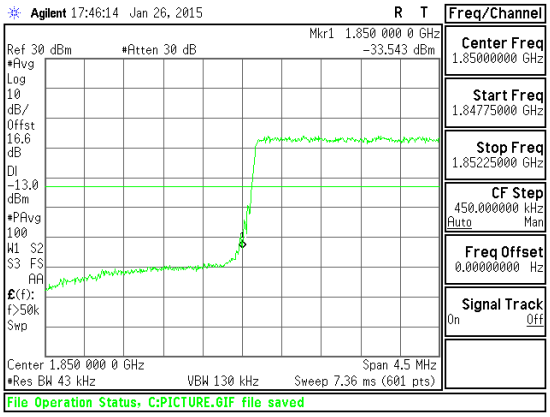
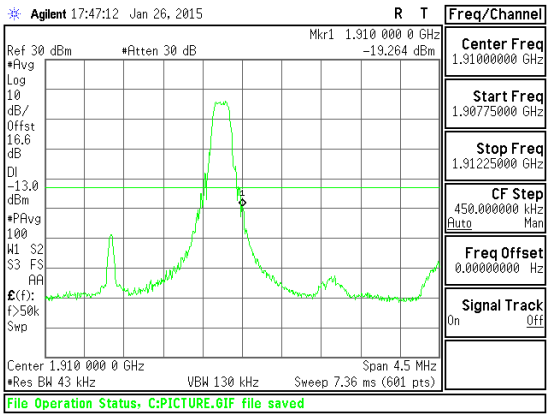
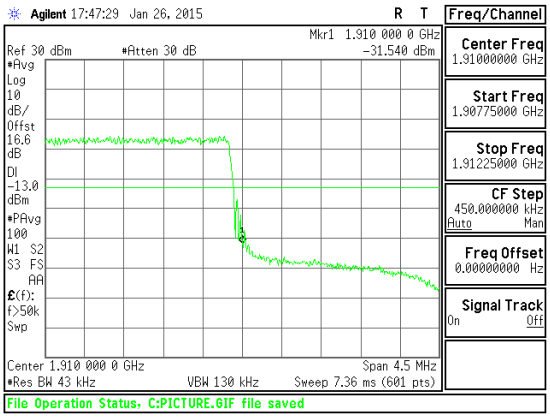
| | | |
|---|---|---|
| Band<br>LTE2<br>3MHz<br>16QAM |  <br>Band LTE2 3MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE2 3MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE2<br>3MHz<br>16QAM |  <br>Band LTE2 3MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE2 3MHz CBE 16QAM High Channel FRB.gif |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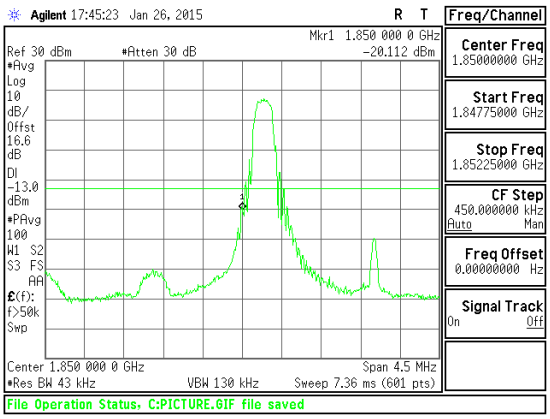
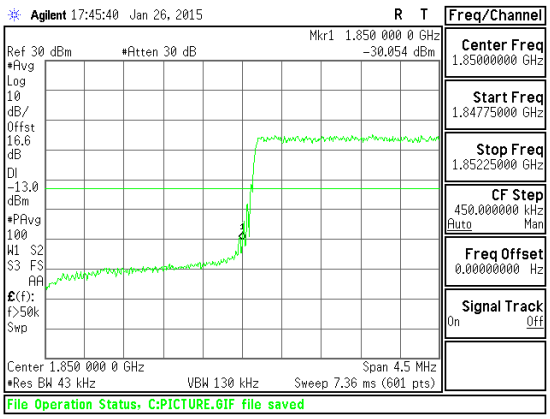
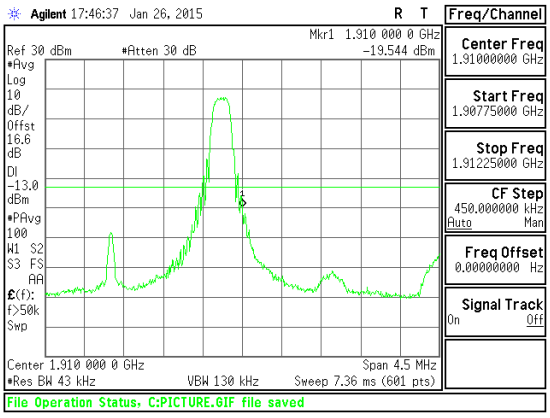
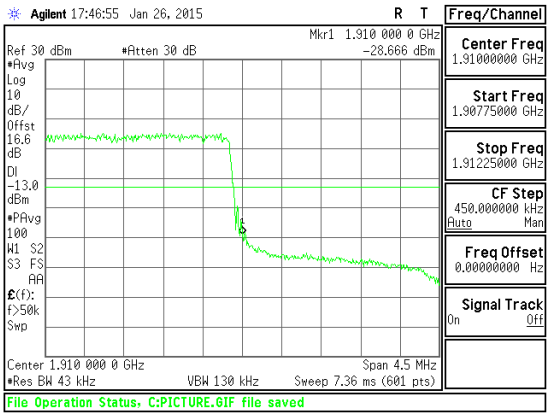
| | | |
|---|---|---|
| Band<br>LTE2<br>3MHz<br>QPSK |  <br>Band LTE2 3MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE2 3MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE2<br>3MHz<br>QPSK |  <br>Band LTE2 3MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE2 3MHz CBE QPSK High Channel FRB.gif |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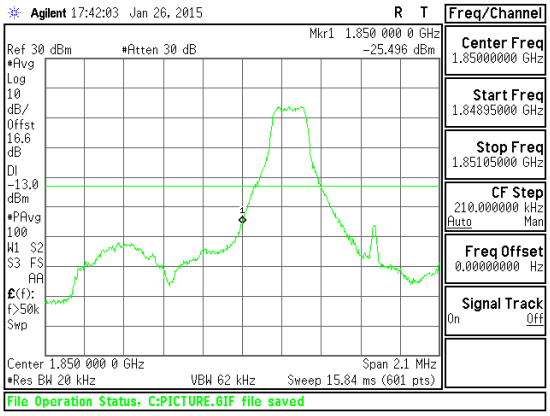
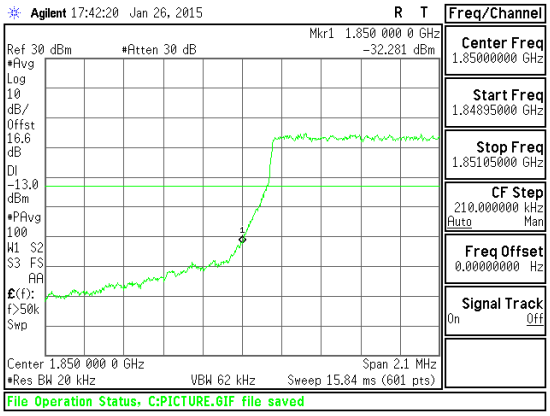
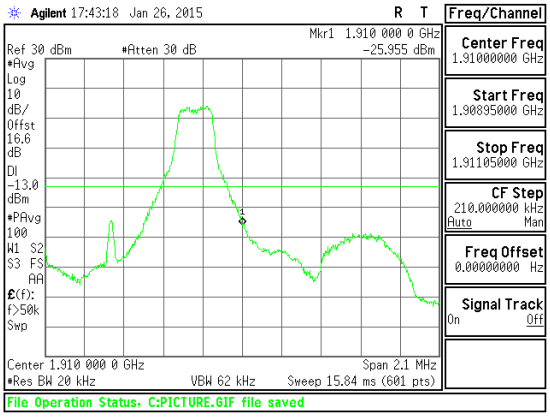
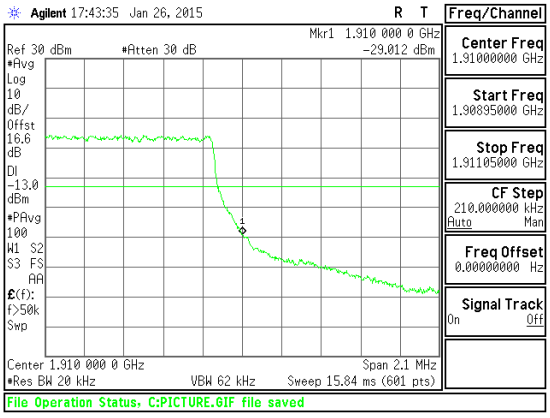
|---|---|---|
| Band<br>LTE2<br>1.4MHz<br>16QAM |  <br>Band LTE2 1.4MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE2 1.4MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE2<br>1.4MHz<br>16QAM |  <br>Band LTE2 1.4MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE2 1.4MHz CBE 16QAM High Channel FRB.gif |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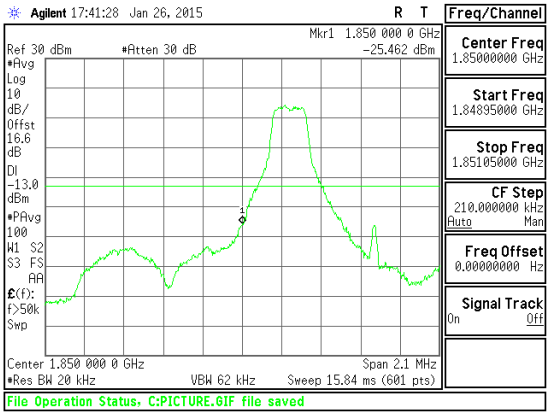
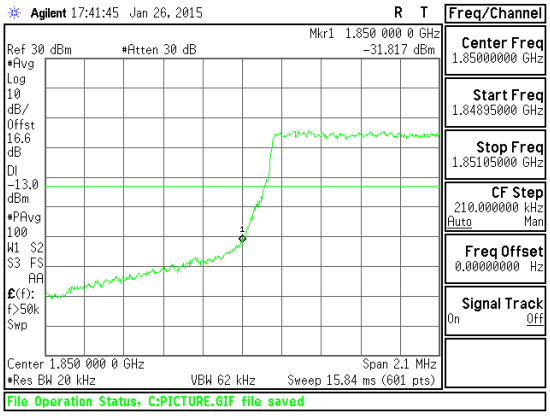
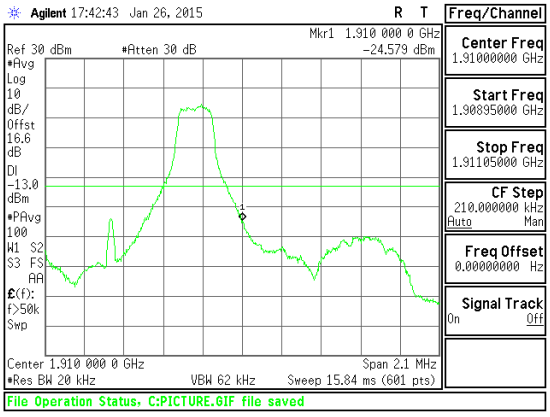
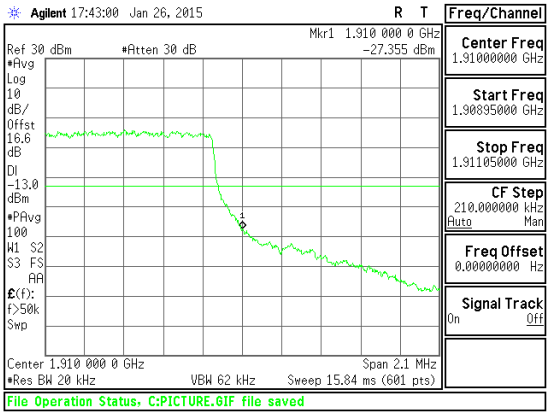
| | | |
|---|---|---|
| Band<br>LTE2<br>1.4MHz<br>QPSK |  <br>Band LTE2 1.4MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE2 1.4MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE2<br>1.4MHz<br>QPSK |  <br>Band LTE2 1.4MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE2 1.4MHz CBE QPSK High Channel FRB.gif |



UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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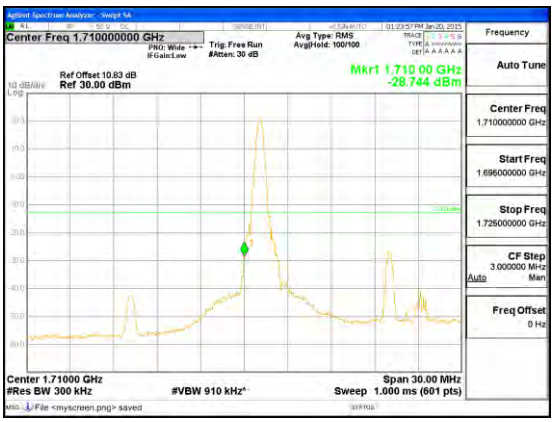
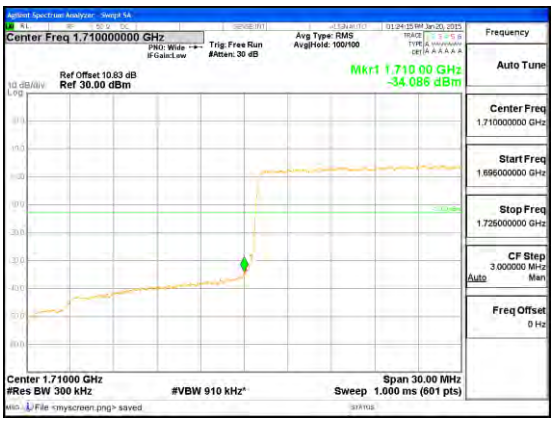
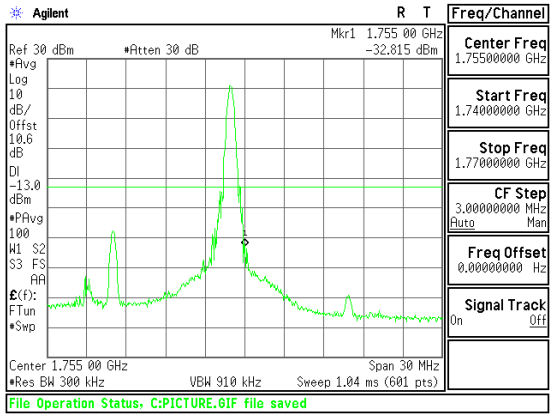
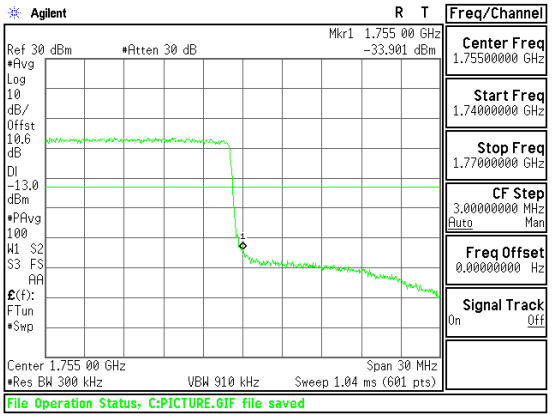
## LTE Band 4

| | | |
|---|---|---|
| Band<br>LTE4<br>20MHz<br>16QAM |  <br>Band LTE4 20MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE4 20MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE4<br>20MHz<br>16QAM |  <br>Band LTE4 20MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE4 20MHz CBE 16QAM High Channel FRB.gif |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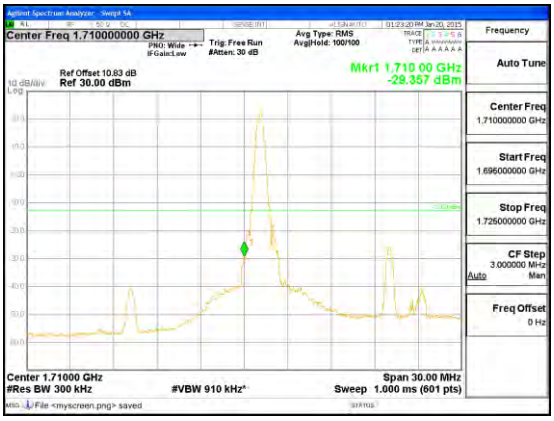
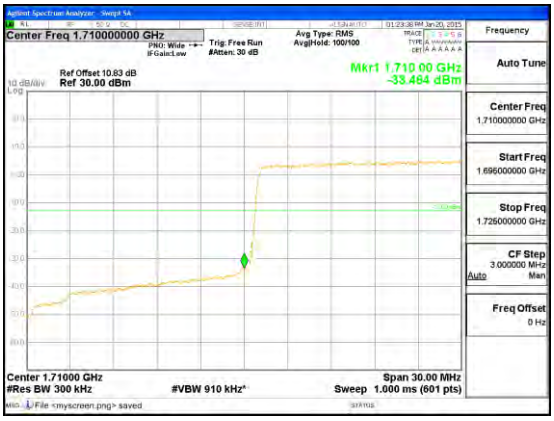
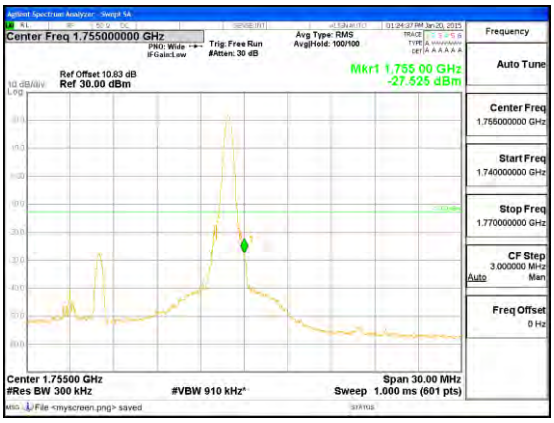
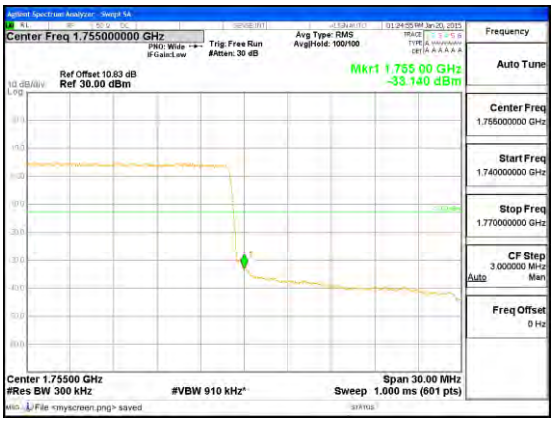
| | | |
|---|---|---|
| Band<br>LTE4<br>20MHz<br>QPSK |  <br>Band LTE4 20MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE4 20MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE4<br>20MHz<br>QPSK |  <br>Band LTE4 20MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE4 20MHz CBE QPSK High Channel FRB.gif |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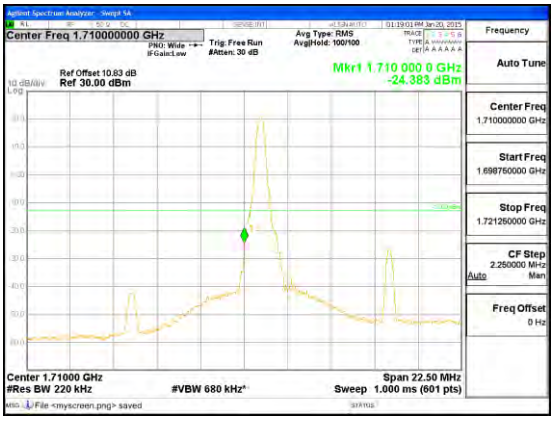
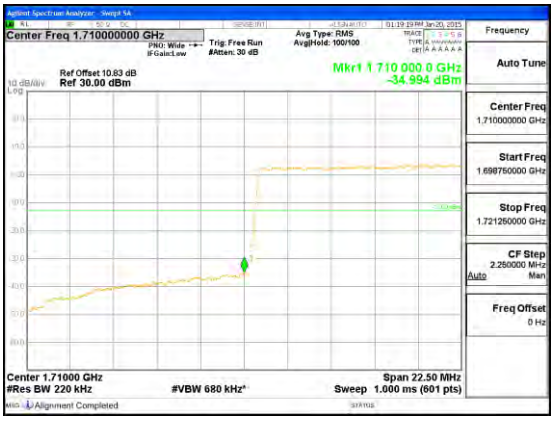
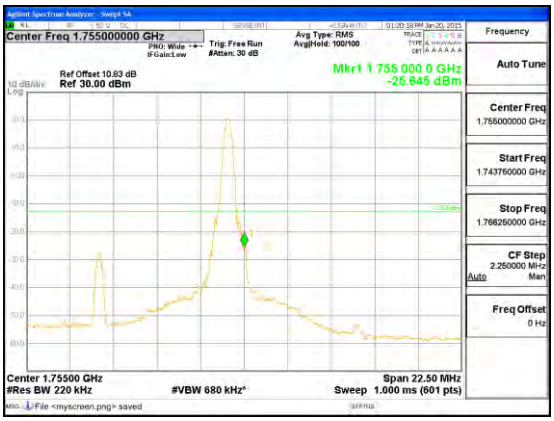
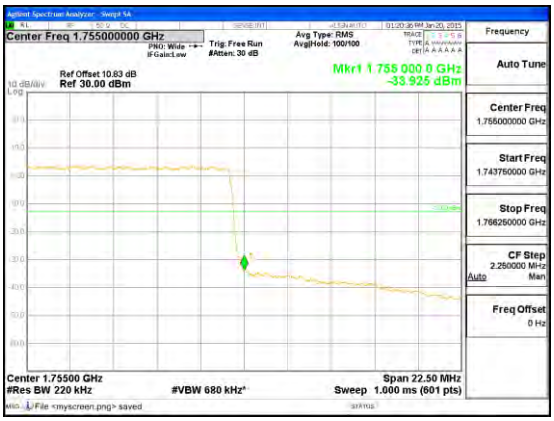
| | | |
|---|---|---|
| Band<br>LTE4<br>15MHz<br>16QAM |  <br>Band LTE4 15MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE4 15MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE4<br>15MHz<br>16QAM |  <br>Band LTE4 15MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE4 15MHz CBE 16QAM High Channel FRB.gif |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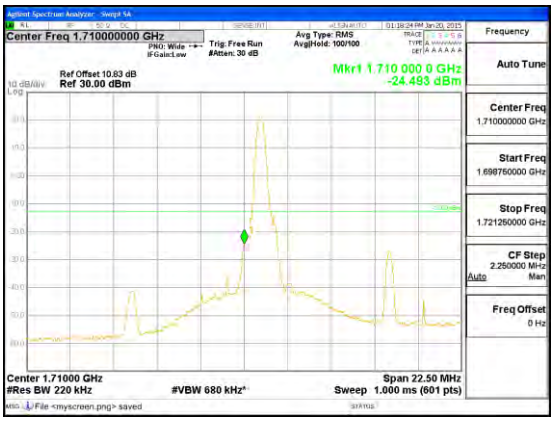
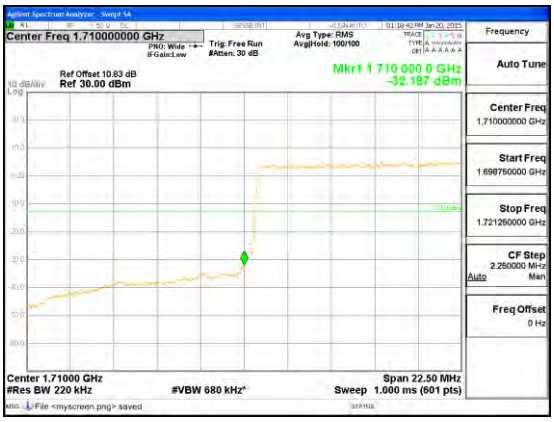
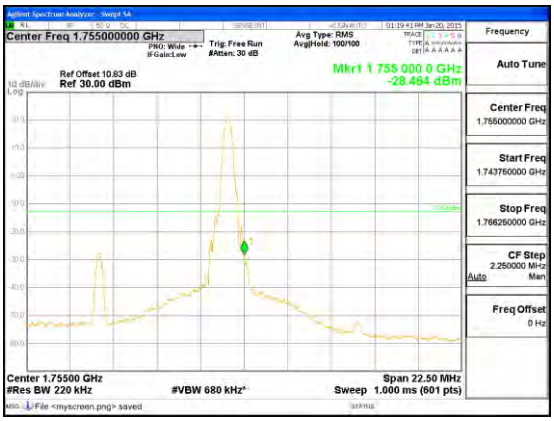
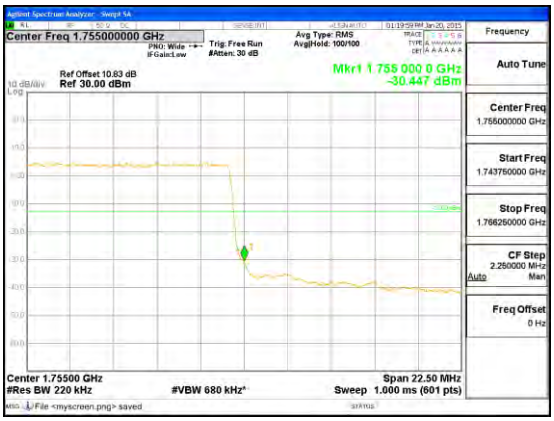
| | | |
|---|---|---|
| Band<br>LTE4<br>15MHz<br>QPSK |  <br>Band LTE4 15MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE4 15MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE4<br>15MHz<br>QPSK |  <br>Band LTE4 15MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE4 15MHz CBE QPSK High Channel FRB.gif |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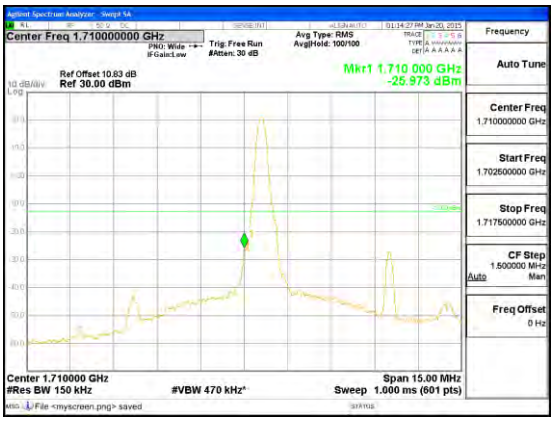
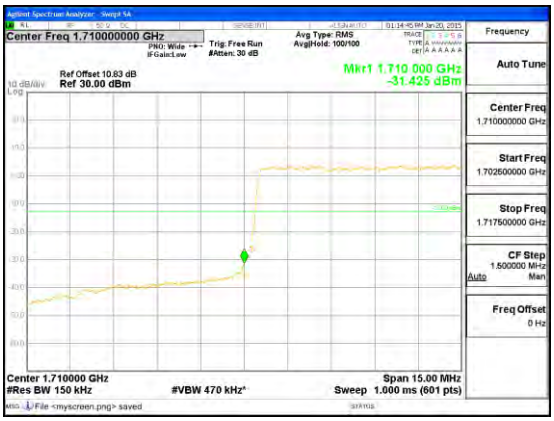
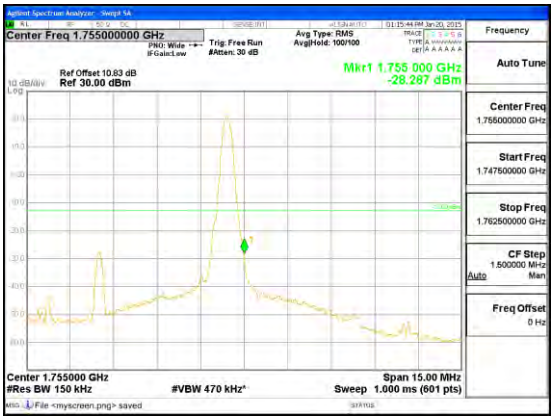
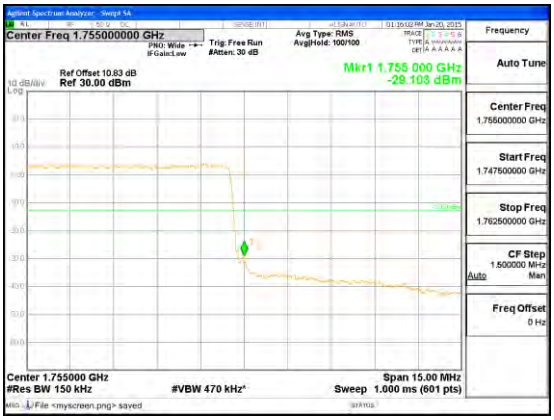
| | | |
|---|---|---|
| Band<br>LTE4<br>10MHz<br>16QAM |  <br>Band LTE4 10MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE4 10MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE4<br>10MHz<br>16QAM |  <br>Band LTE4 10MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE4 10MHz CBE 16QAM High Channel FRB.gif |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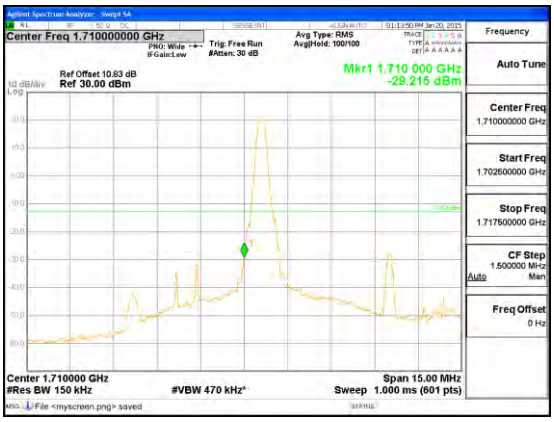
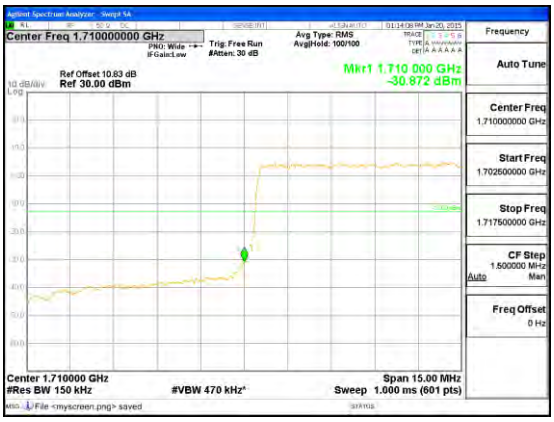
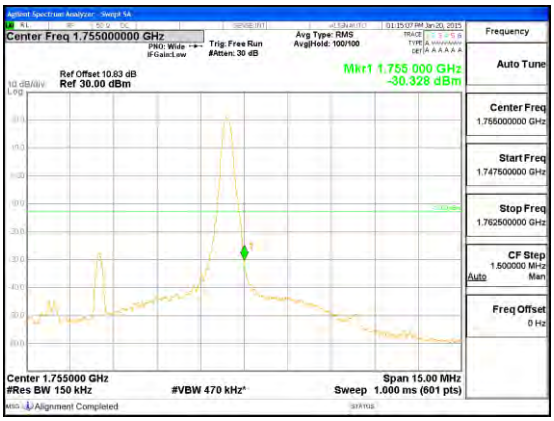
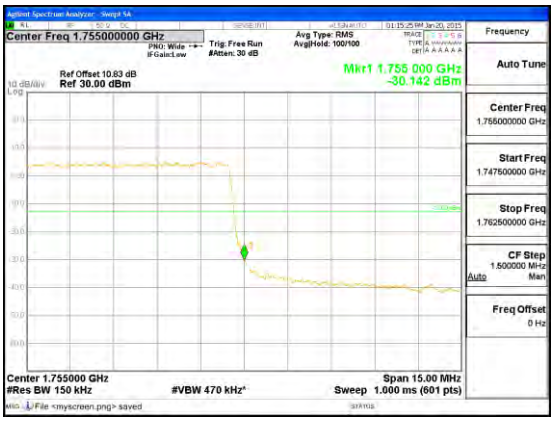
| | | |
|---|---|---|
| Band<br>LTE4<br>10MHz<br>QPSK |  <br>Band LTE4 10MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE4 10MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE4<br>10MHz<br>QPSK |  <br>Band LTE4 10MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE4 10MHz CBE QPSK High Channel FRB.gif |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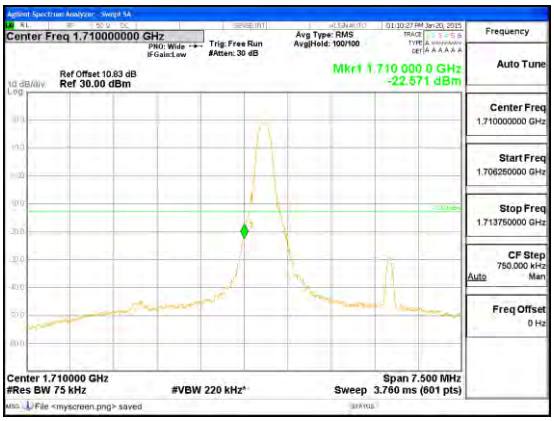
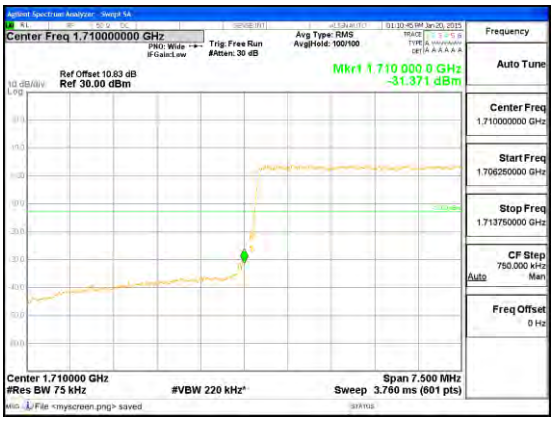
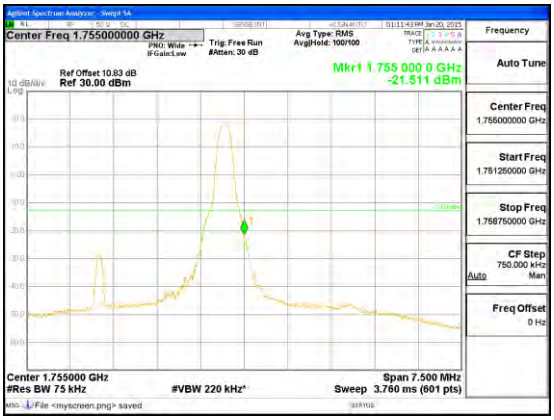
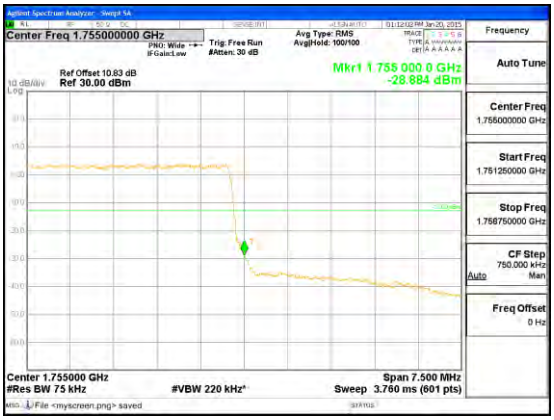
| | | |
|---|---|---|
| Band<br>LTE4<br>5MHz<br>16QAM |  <br>Band LTE4 5MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE4 5MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE4<br>5MHz<br>16QAM |  <br>Band LTE4 5MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE4 5MHz CBE 16QAM High Channel FRB.gif |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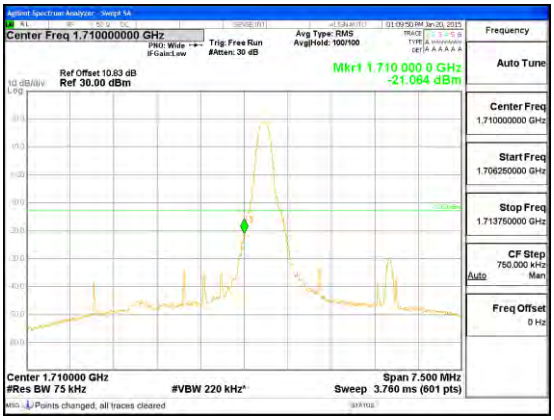
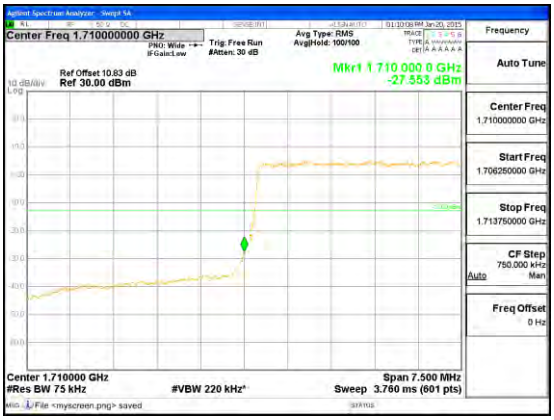
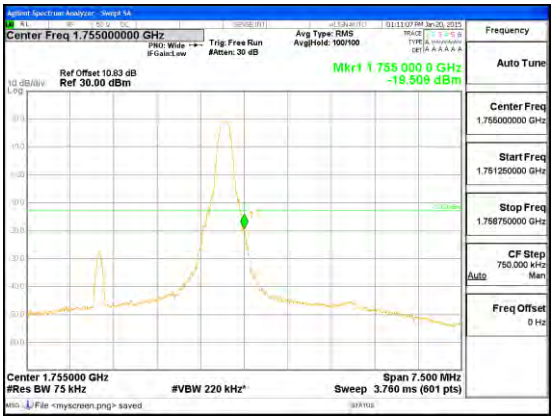
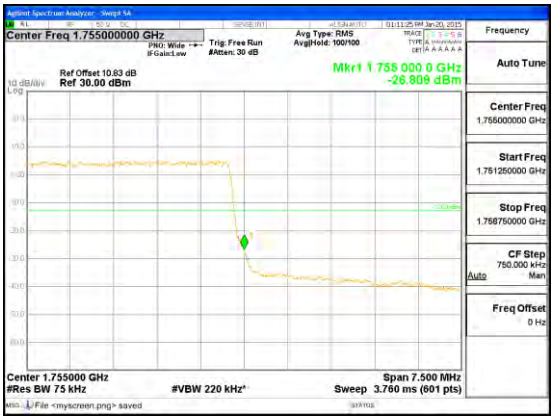
|---|---|---|
| Band<br>LTE4<br>5MHz<br>QPSK |  <br>Band LTE4 5MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE4 5MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE4<br>5MHz<br>QPSK |  <br>Band LTE4 5MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE4 5MHz CBE QPSK High Channel FRB.gif |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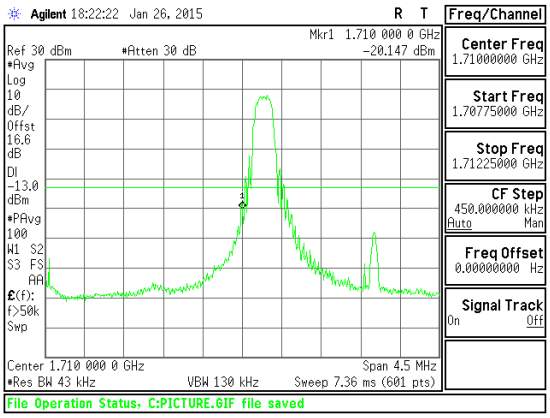
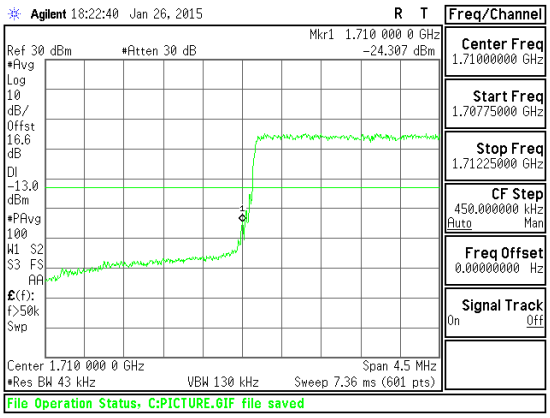
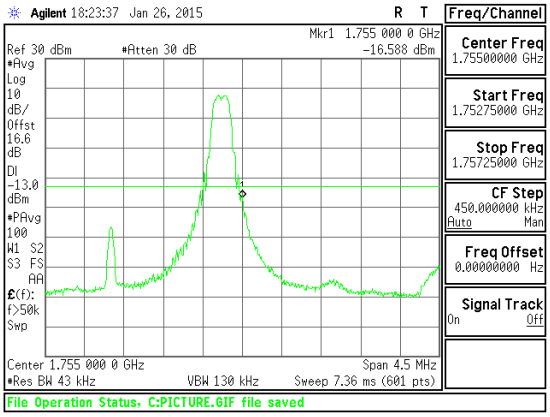
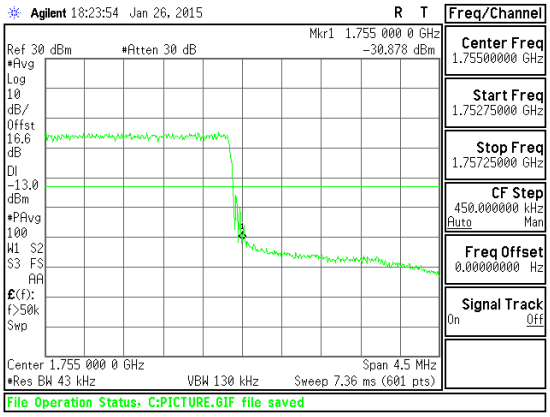
|---|---|---|
| Band<br>LTE4<br>3MHz<br>16QAM |  <br>Band LTE4 3MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE4 3MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE4<br>3MHz<br>16QAM |  <br>Band LTE4 3MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE4 3MHz CBE 16QAM High Channel FRB.gif |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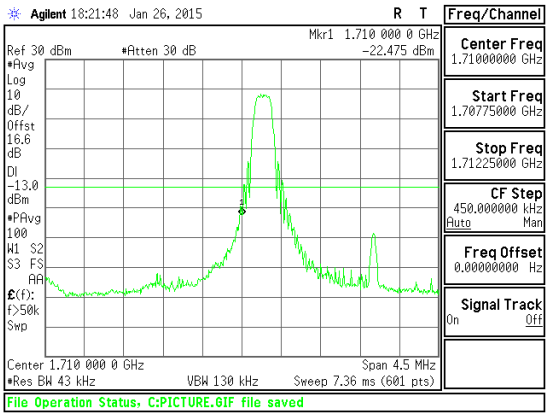
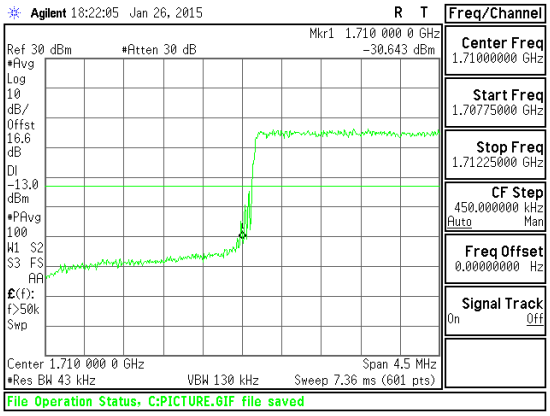
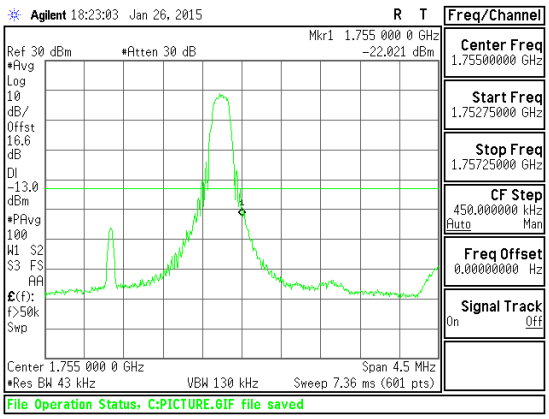
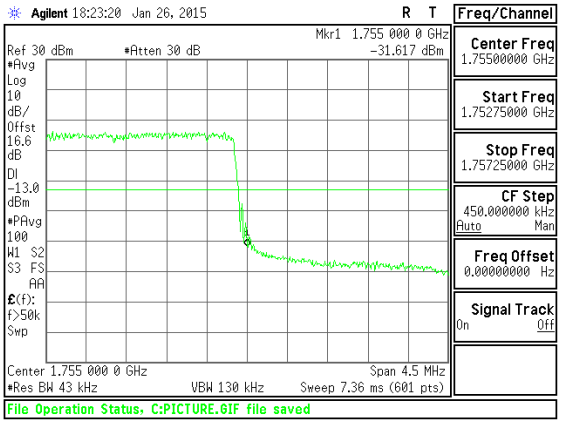
| | | |
|---|---|---|
| Band<br>LTE4<br>3MHz<br>QPSK |  <br>Band LTE4 3MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE4 3MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE4<br>3MHz<br>QPSK |  <br>Band LTE4 3MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE4 3MHz CBE QPSK High Channel FRB.gif |



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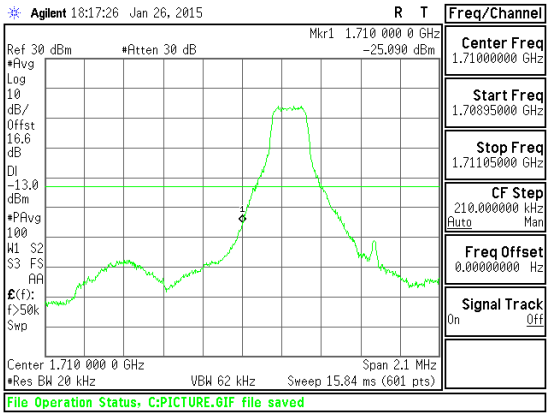
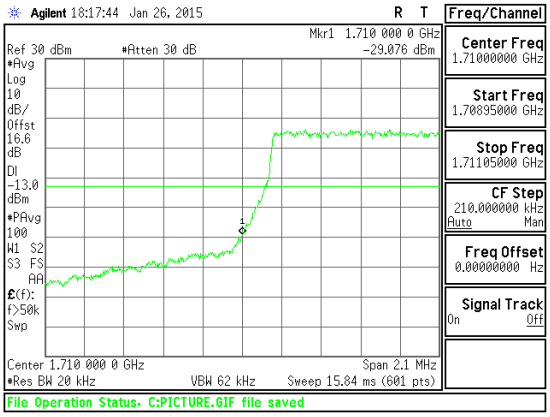
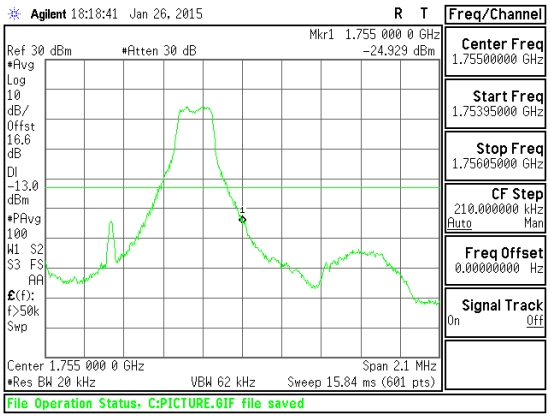
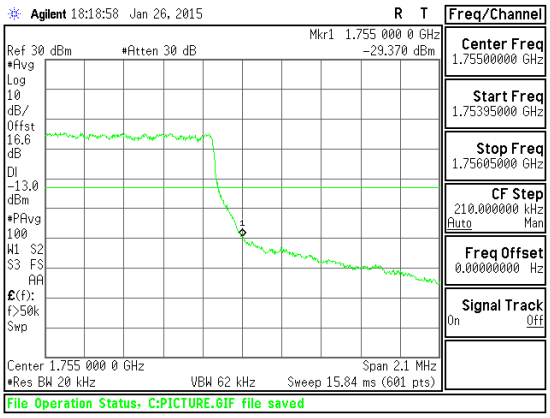
| | | |
|---|---|---|
| Band<br>LTE4<br>1.4MHz<br>16QAM |  <br>Band LTE4 1.4MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE4 1.4MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE4<br>1.4MHz<br>16QAM |  <br>Band LTE4 1.4MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE4 1.4MHz CBE 16QAM High Channel FRB.gif |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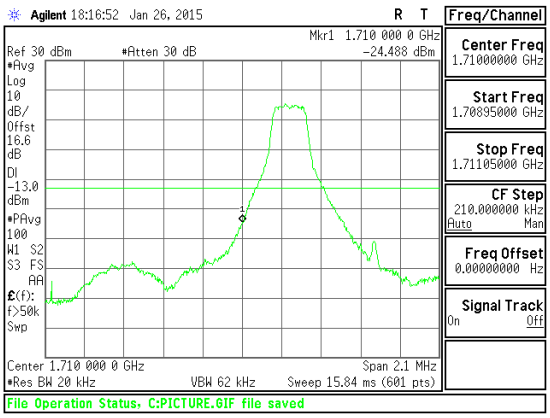
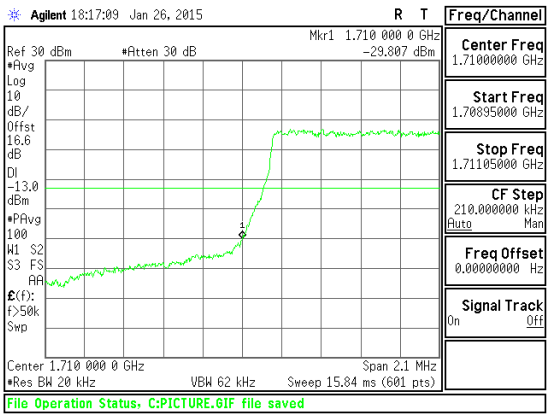
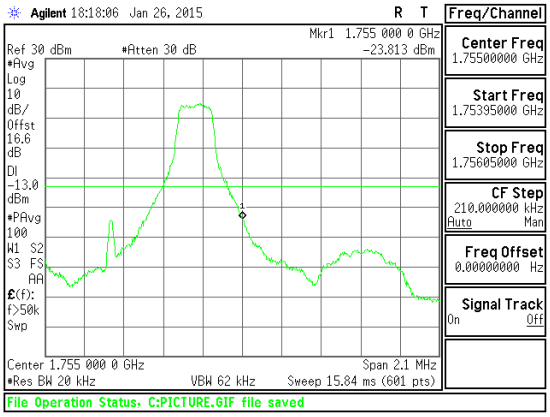
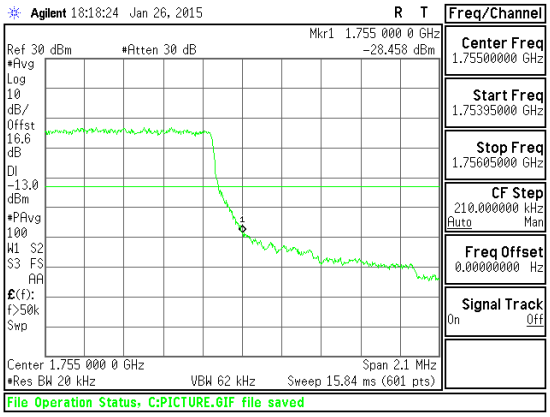
| | | |
|---|---|---|
| Band LTE4 1.4MHz QPSK |  <br>Band LTE4 1.4MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE4 1.4MHz CBE QPSK Low Channel FRB.gif |
| Band LTE4 1.4MHz QPSK |  <br>Band LTE4 1.4MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE4 1.4MHz CBE QPSK High Channel FRB.gif |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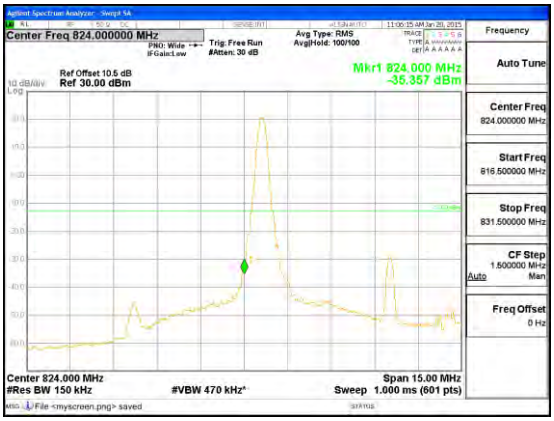
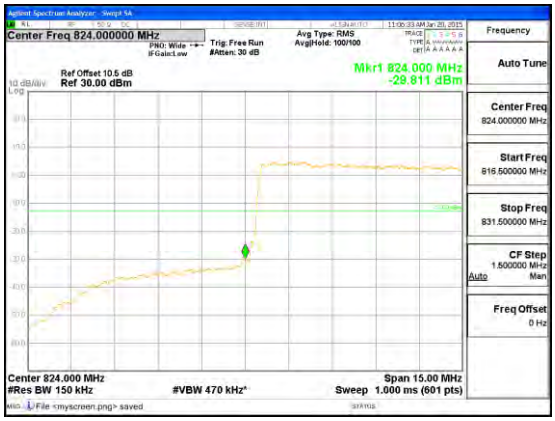
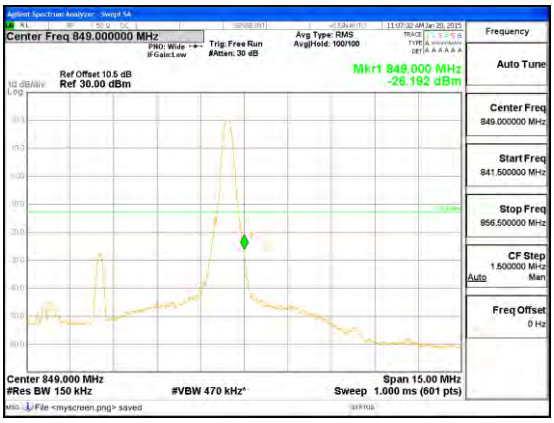
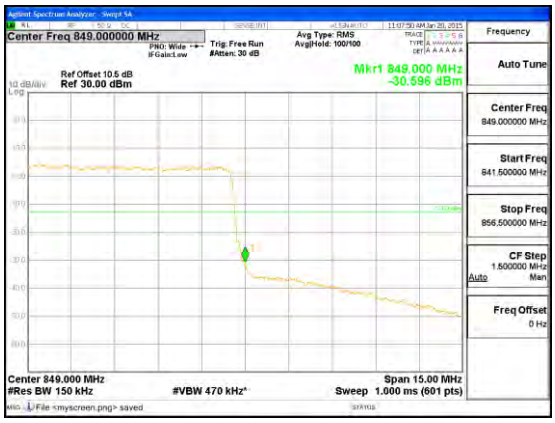
## LTE Band 5

| | | |
|---|---|---|
| Band<br>LTE5<br>10MHz<br>16QAM |  <br>Band LTE5 10MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE5 10MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE5<br>10MHz<br>16QAM |  <br>Band LTE5 10MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE5 10MHz CBE 16QAM High Channel FRB.gif |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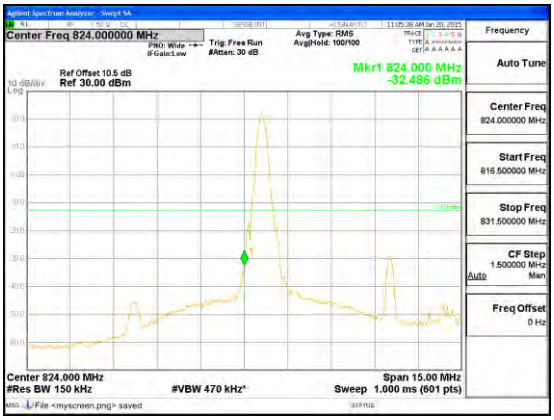
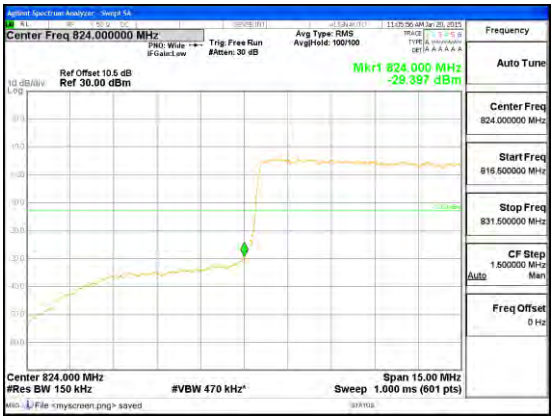
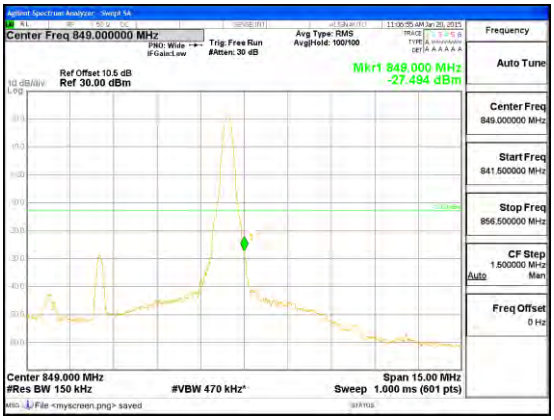
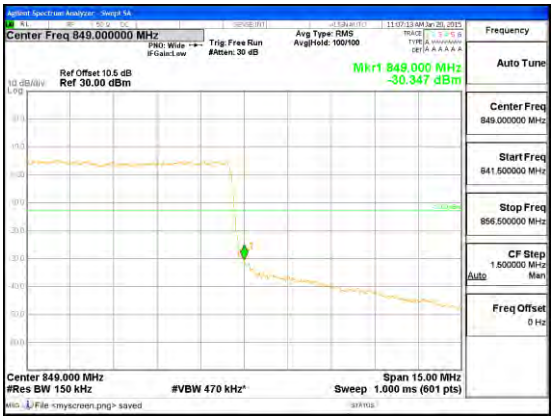
| | | |
|---|---|---|
| Band LTE5 10MHz QPSK |  <br>Band LTE5 10MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE5 10MHz CBE QPSK Low Channel FRB.gif |
| Band LTE5 10MHz QPSK |  <br>Band LTE5 10MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE5 10MHz CBE QPSK High Channel FRB.gif |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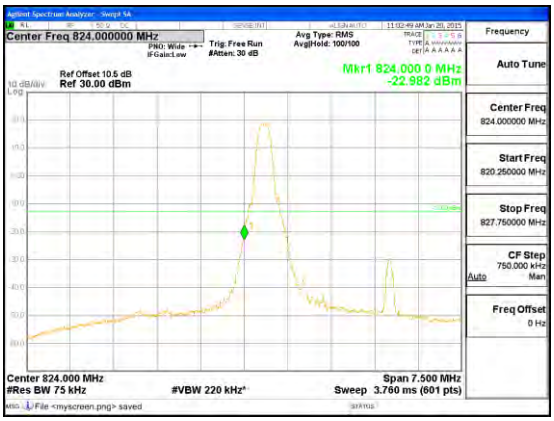
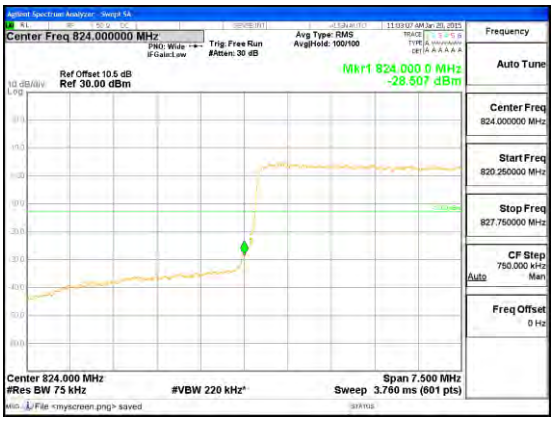
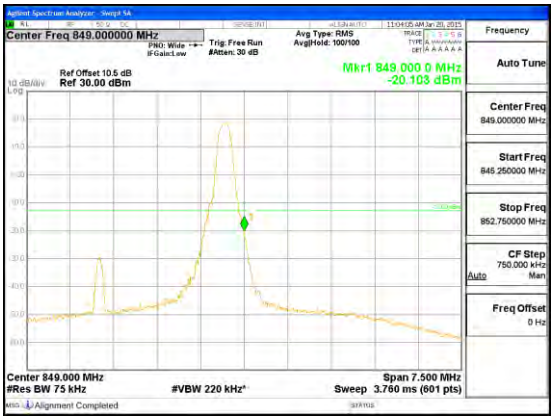
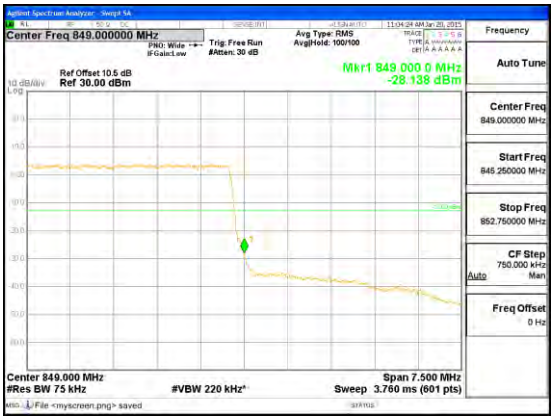
| | | |
|---|---|---|
| Band<br>LTE5<br>5MHz<br>16QAM |  <br>Band LTE5 5MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE5 5MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE5<br>5MHz<br>16QAM |  <br>Band LTE5 5MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE5 5MHz CBE 16QAM High Channel FRB.gif |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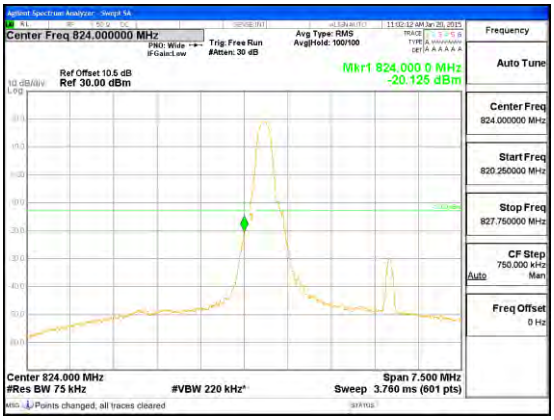
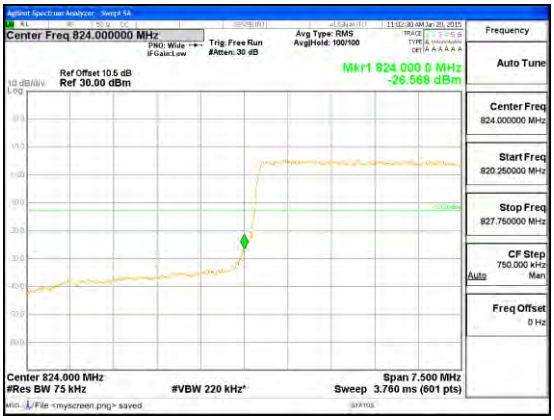
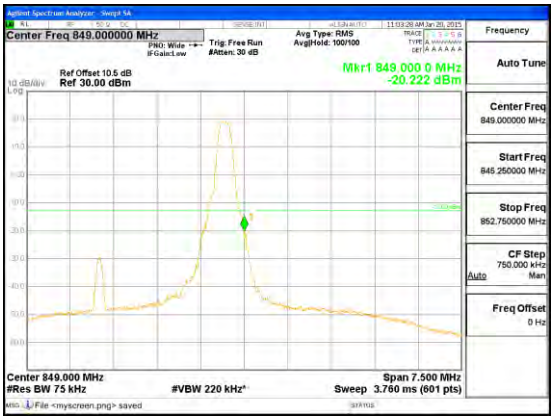
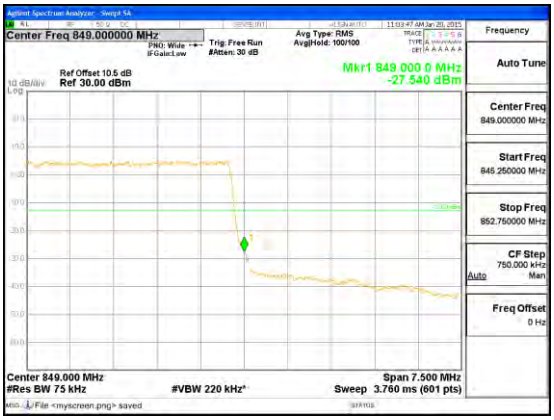
| | | |
|---|---|---|
| Band<br>LTE5<br>5MHz<br>QPSK |  <br>Band LTE5 5MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE5 5MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE5<br>5MHz<br>QPSK |  <br>Band LTE5 5MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE5 5MHz CBE QPSK High Channel FRB.gif |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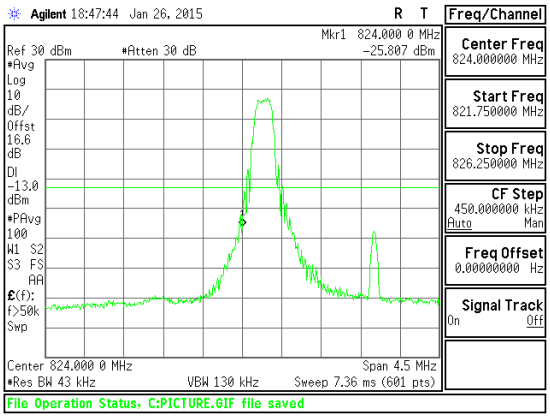
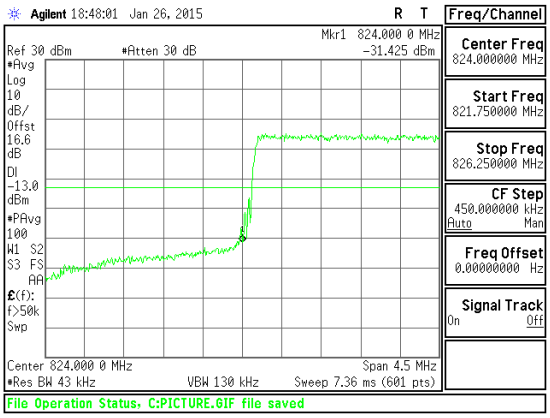
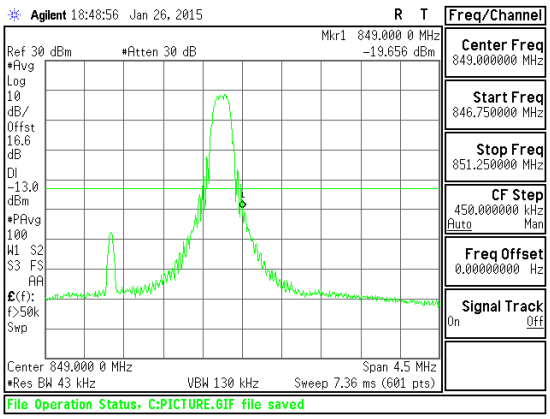
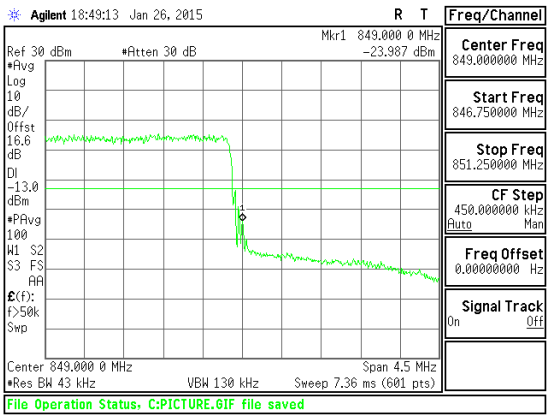
| | | |
|---|---|---|
| Band<br>LTE5<br>3MHz<br>16QAM |  <br>Band LTE5 3MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE5 3MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE5<br>3MHz<br>16QAM |  <br>Band LTE5 3MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE5 3MHz CBE 16QAM High Channel FRB.gif |





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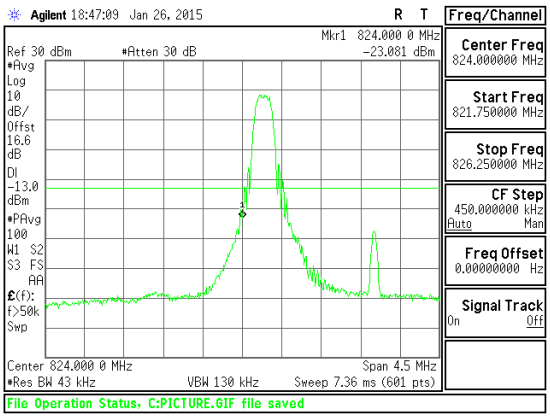
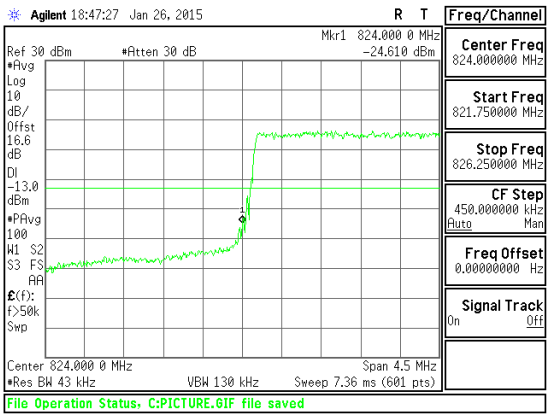
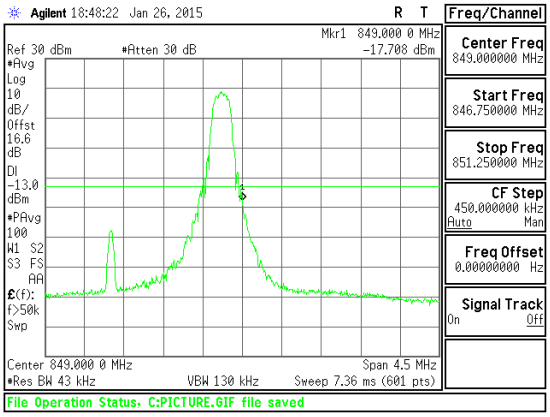
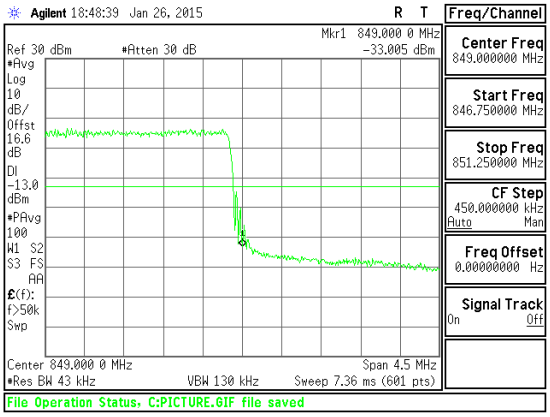
| | | |
|---|---|---|
| Band LTE5 3MHz QPSK |  <br>Band LTE5 3MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE5 3MHz CBE QPSK Low Channel FRB.gif |
| Band LTE5 3MHz QPSK |  <br>Band LTE5 3MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE5 3MHz CBE QPSK High Channel FRB.gif |



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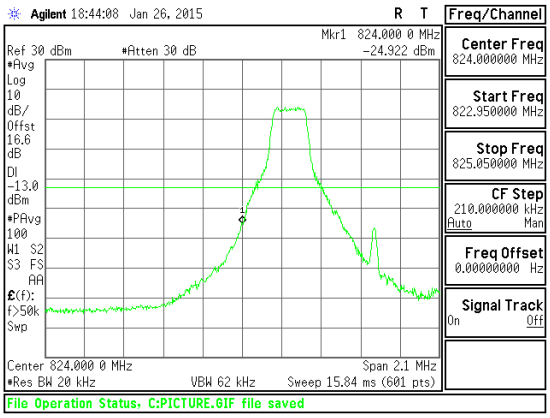
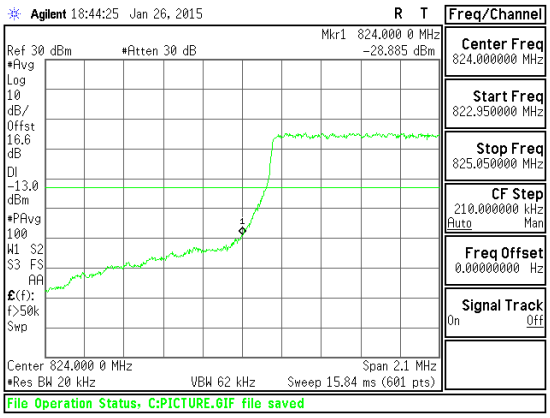
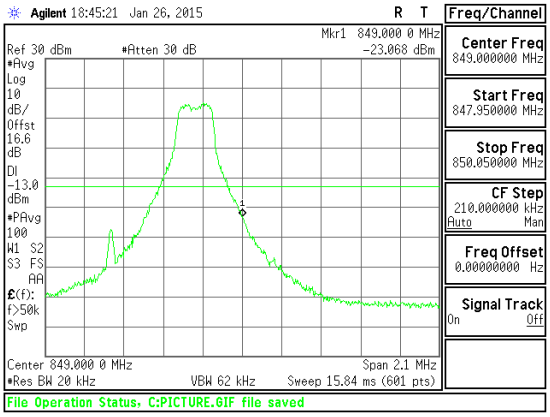
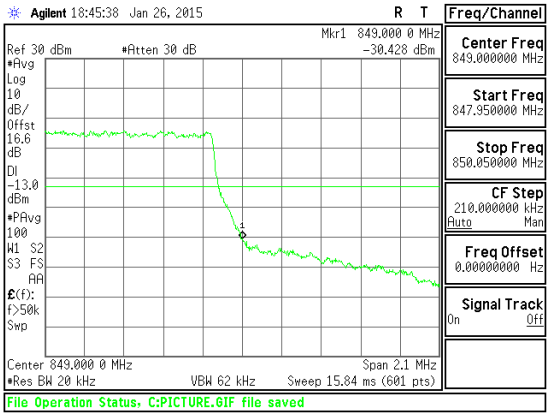
| | | |
|---|---|---|
| Band<br>LTE5<br>1.4MHz<br>16QAM |  <br>Band LTE5 1.4MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE5 1.4MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE5<br>1.4MHz<br>16QAM |  <br>Band LTE5 1.4MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE5 1.4MHz CBE 16QAM High Channel FRB.gif |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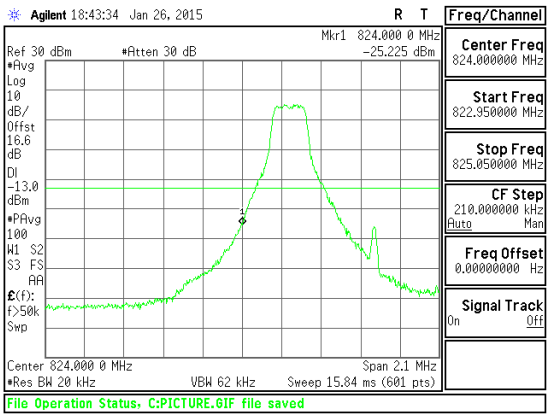
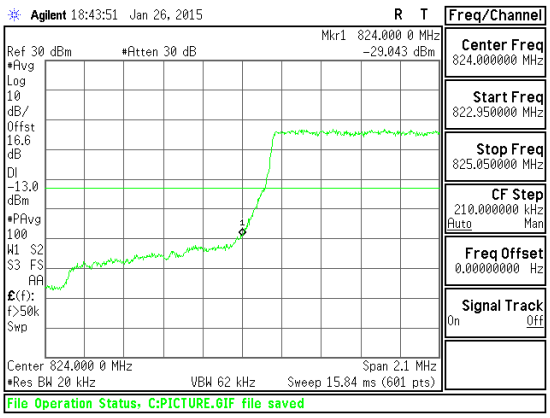
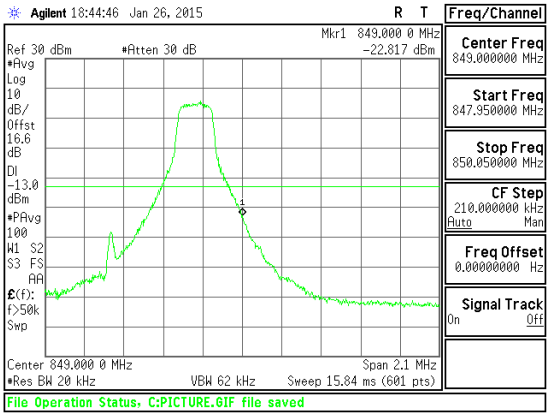
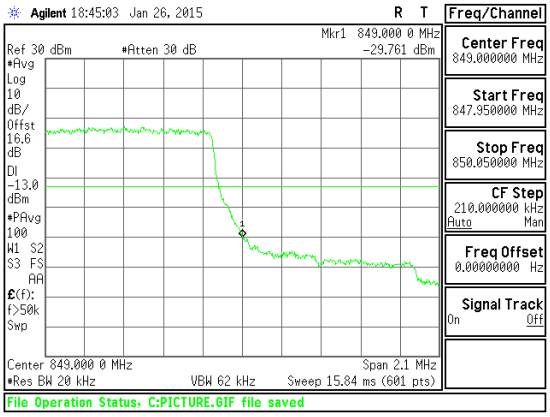
| | | |
|---|---|---|
| Band LTE5 1.4MHz QPSK |  <br>Band LTE5 1.4MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE5 1.4MHz CBE QPSK Low Channel FRB.gif |
| Band LTE5 1.4MHz QPSK |  <br>Band LTE5 1.4MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE5 1.4MHz CBE QPSK High Channel FRB.gif |



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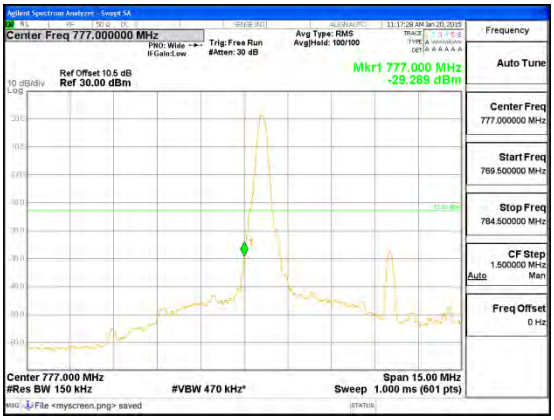
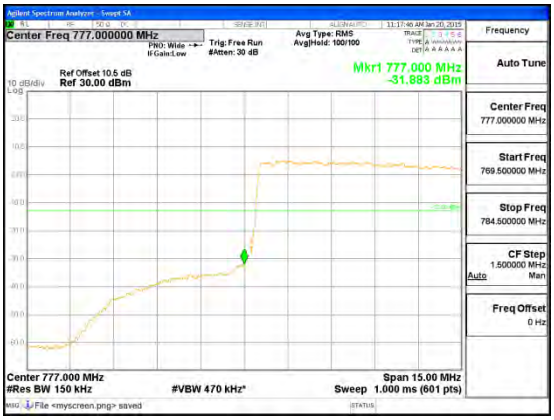
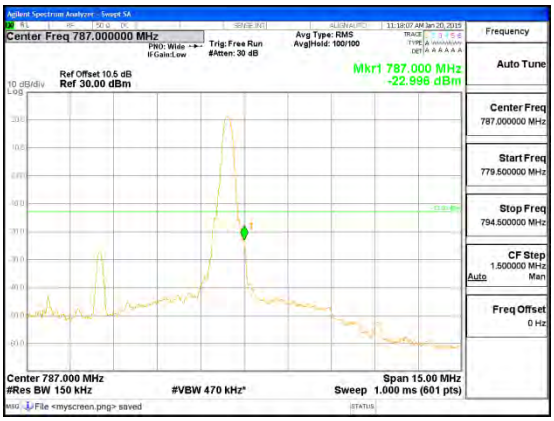
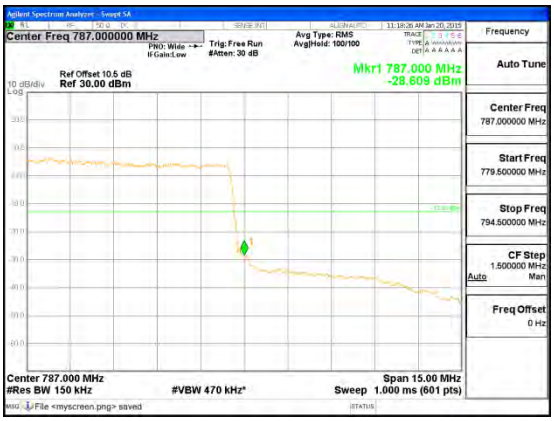
## LTE Band 13

| | | |
|---|---|---|
| Band<br>LTE13<br>10MHz<br>16QAM |  <br>Band LTE13 10MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE13 10MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE13<br>10MHz<br>16QAM |  <br>Band LTE13 10MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE13 10MHz CBE 16QAM High Channel FRB.gif |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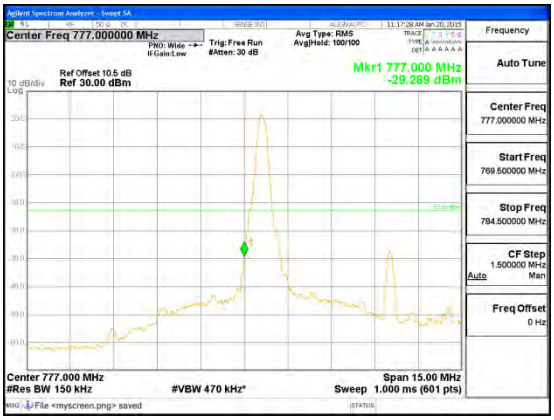
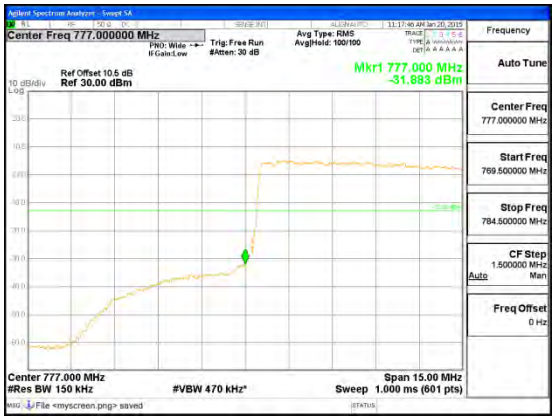
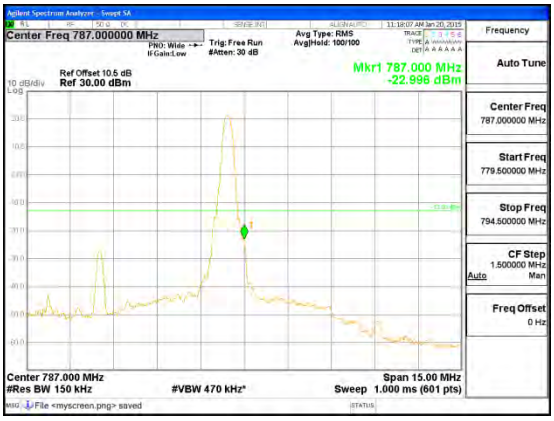
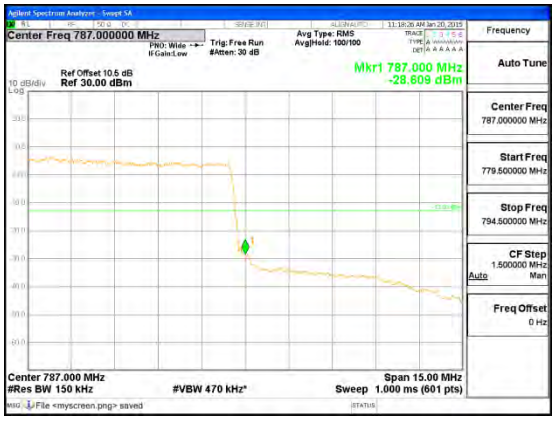
| | | |
|---|---|---|
| Band<br>LTE13<br>10MHz<br>QPSK |  <br>Band LTE13 10MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE13 10MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE13<br>10MHz<br>QPSK |  <br>Band LTE13 10MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE13 10MHz CBE QPSK High Channel FRB.gif |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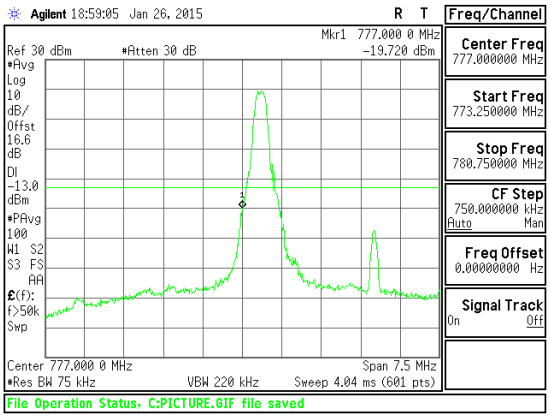
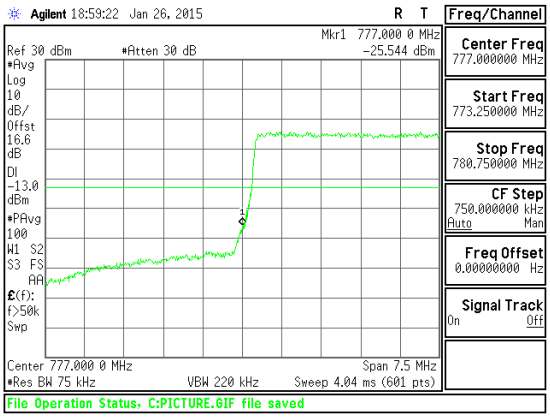
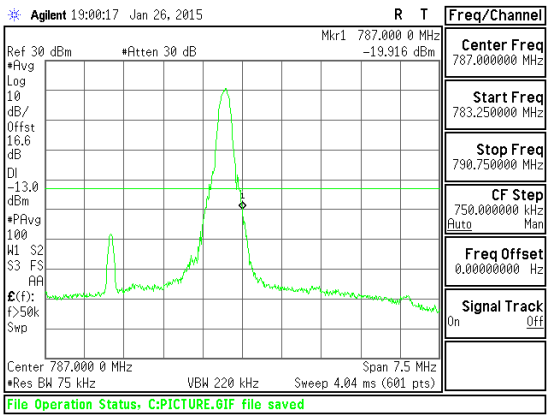
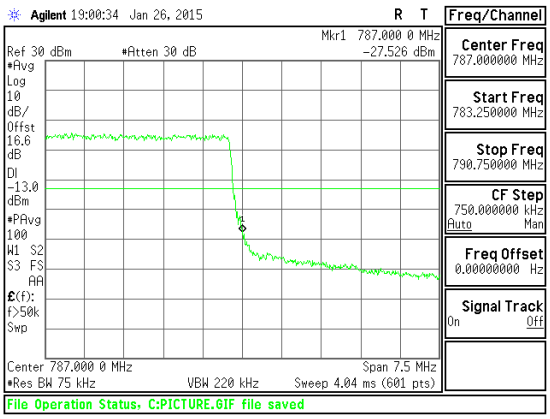
| | | |
|---|---|---|
| Band<br>LTE13<br>5MHz<br>16QAM |  <br>Band LTE13 5MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE13 5MHz CBE 16QAM Low Channel FRB.gif |
| Band<br>LTE13<br>5MHz<br>16QAM |  <br>Band LTE13 5MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE13 5MHz CBE 16QAM High Channel FRB.gif |

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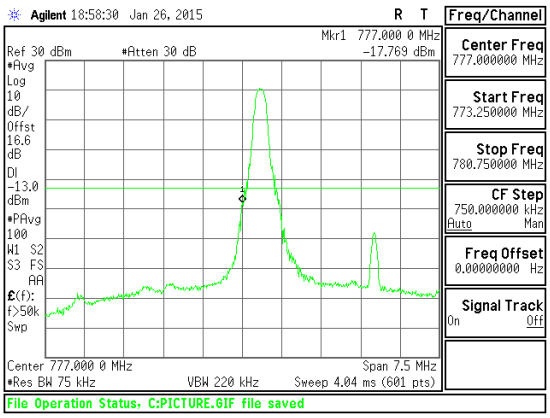
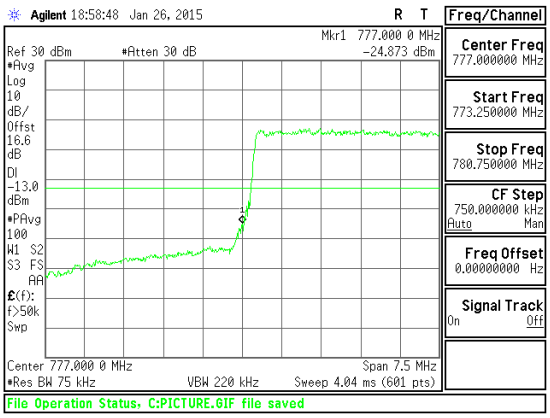
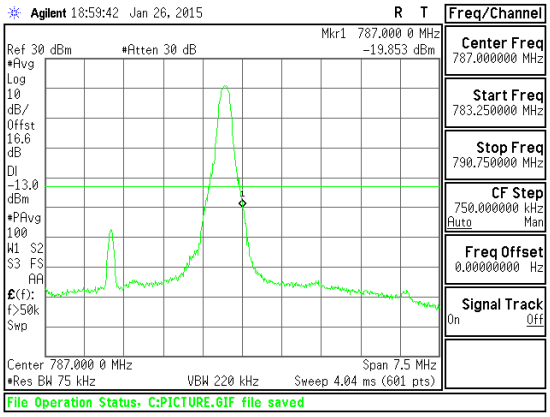
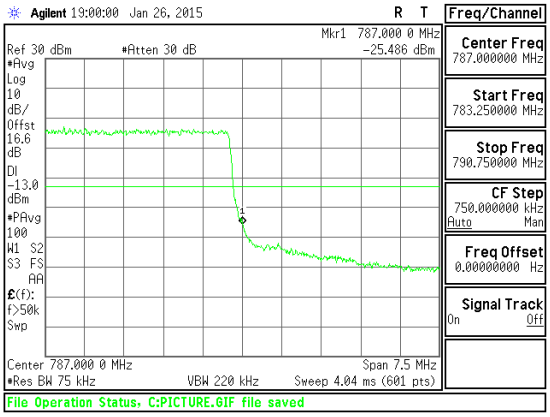
| | | |
|---|---|---|
| Band<br>LTE13<br>5MHz<br>QPSK |  <br>Band LTE13 5MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE13 5MHz CBE QPSK Low Channel FRB.gif |
| Band<br>LTE13<br>5MHz<br>QPSK |  <br>Band LTE13 5MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE13 5MHz CBE QPSK High Channel FRB.gif |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## 11.3. OUT OF BAND EMISSIONS

**RULE PART(S)**

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53

**LIMITS**

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.

Part 27: (m)(4) For mobile station, the attenuation factor shall be not less than 43+10Log(P)dB at the channel edge and (55+10Log(P)dB) at 5.5MHz from the channel edges.

**TEST PROCEDURE**

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

**MODES TESTED**

CDMA, LTE

**RESULTS**



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### 11.3.1. OUT OF BAND EMISSIONS RESULT

**CDMA**

| Band | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|
| BC0 | 1xRTT | 824.7 | -28.22 | -13 | -15.22 |
| | | 836.52 | -28.78 | -13 | -15.78 |
| | | 848.31 | -27.81 | -13 | -14.81 |
| BC1 | | 1851.25 | -28.31 | -13 | -15.31 |
| | | 1880 | -27.03 | -13 | -14.03 |
| | | 1908.75 | -27.22 | -13 | -14.22 |

| Band | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|
| BC0 | EVDO | 824.7 | -28.41 | -13 | -15.41 |
| | | 836.52 | -27.86 | -13 | -14.86 |
| | | 848.31 | -29.85 | -13 | -16.85 |
| BC1 | | 1851.25 | -32.40 | -13 | -19.40 |
| | | 1880 | -33.00 | -13 | -20.00 |
| | | 1908.75 | -33.27 | -13 | -20.27 |


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**LTE Band 2**

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE2 | 20 | QPSK | 1860 | -18.179 | -13 | -5.179 |
| | | | 1880 | -19.641 | -13 | -6.641 |
| | | | 1900 | -17.909 | -13 | -4.909 |
| | | 16QAM | 1860 | -18.421 | -13 | -5.421 |
| | | | 1880 | -20.752 | -13 | -7.752 |
| | | | 1900 | -17.242 | -13 | -4.242 |
| | 15 | QPSK | 1857.5 | -19.392 | -13 | -6.392 |
| | | | 1880 | -25.374 | -13 | -12.374 |
| | | | 1902.5 | -24.296 | -13 | -11.296 |
| | | 16QAM | 1857.5 | -19.922 | -13 | -6.922 |
| | | | 1880 | -24.452 | -13 | -11.452 |
| | | | 1902.5 | -18.816 | -13 | -5.816 |
| | 10 | QPSK | 1855 | -21.151 | -13 | -8.151 |
| | | | 1880 | -18.246 | -13 | -5.246 |
| | | | 1905 | -18.209 | -13 | -5.209 |
| | | 16QAM | 1855 | -21.284 | -13 | -8.284 |
| | | | 1880 | -17.798 | -13 | -4.798 |
| | | | 1905 | -20.396 | -13 | -7.396 |
| | 5 | QPSK | 1852.5 | -24.242 | -13 | -11.242 |
| | | | 1880 | -24.495 | -13 | -11.495 |
| | | | 1907.5 | -17.109 | -13 | -4.109 |
| | | 16QAM | 1852.5 | -25.439 | -13 | -12.439 |
| | | | 1880 | -21.455 | -13 | -8.455 |
| | | | 1907.5 | -21.554 | -13 | -8.554 |


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| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE2 | 3 | QPSK | 1851.5 | -33.737 | -13 | -20.74 |
| | | | 1880 | -33.355 | -13 | -20.36 |
| | | | 1908.5 | -33.300 | -13 | -20.30 |
| | | 16QAM | 1851.5 | -33.641 | -13 | -20.64 |
| | | | 1880 | -33.049 | -13 | -20.05 |
| | | | 1908.5 | -33.306 | -13 | -20.31 |
| | 1.4 | QPSK | 1850.7 | -33.438 | -13 | -20.44 |
| | | | 1880 | -33.110 | -13 | -20.11 |
| | | | 1909.3 | -33.480 | -13 | -20.48 |
| | | 16QAM | 1850.7 | -33.442 | -13 | -20.44 |
| | | | 1880 | -33.660 | -13 | -20.66 |
| | | | 1909.3 | -32.547 | -13 | -19.55 |


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**LTE Band 4**

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE4 | 20 | QPSK | 1720 | -19.846 | -13 | -6.846 |
| | | | 1732.5 | -25.445 | -13 | -12.445 |
| | | | 1745 | -24.874 | -13 | -11.874 |
| | | 16QAM | 1720 | -19.190 | -13 | -6.19 |
| | | | 1732.5 | -24.258 | -13 | -11.258 |
| | | | 1745 | -24.038 | -13 | -11.038 |
| | 15 | QPSK | 1717.5 | -19.926 | -13 | -6.926 |
| | | | 1732.5 | -24.823 | -13 | -11.823 |
| | | | 1747.5 | -21.868 | -13 | -8.868 |
| | | 16QAM | 1717.5 | -17.992 | -13 | -4.992 |
| | | | 1732.5 | -25.262 | -13 | -12.262 |
| | | | 1747.5 | -22.497 | -13 | -9.497 |
| | 10 | QPSK | 1715 | -21.913 | -13 | -8.913 |
| | | | 1732.5 | -24.032 | -13 | -11.032 |
| | | | 1750 | -21.786 | -13 | -8.786 |
| | | 16QAM | 1715 | -21.713 | -13 | -8.713 |
| | | | 1732.5 | -23.737 | -13 | -10.737 |
| | | | 1750 | -22.024 | -13 | -9.024 |
| | 5 | QPSK | 1712.5 | -24.203 | -13 | -11.203 |
| | | | 1732.5 | -25.093 | -13 | -12.093 |
| | | | 1752.5 | -21.236 | -13 | -8.236 |
| | | 16QAM | 1712.5 | -24.488 | -13 | -11.488 |
| | | | 1732.5 | -24.689 | -13 | -11.689 |
| | | | 1752.5 | -18.777 | -13 | -5.777 |


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