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

# CERTIFICATION TEST REPORT

**FOR**

**GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n and NFC**

**MODEL NUMBER: LG-D725, D725, LGD725**

**FCC ID: ZNFD725**

**REPORT NUMBER: 14U17493-1**

**ISSUE DATE: April 28, 2014**

*Prepared for*

**LG ELECTRONICS MOBILECOMM U.S.A., INC**

**1000 SYLVAN AVENUE**

**ENGLEWOOD CLIFFS,**

**NEW JERSEY, 07632, U.S.A**

*Prepared by*

**UL VERIFICATION SERVICES**
**47173 BENICIA STREET**
**FREMONT, CA 94538, U.S.A.**
**TEL: (510) 771-1000**
**FAX: (510) 661-0888**

NVLAP LAB CODE 200065-0

# Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| -- | 4/25/14 | Initial Issue | P. Zhang |
| | | | |



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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** LG ELECTRONICS MOBILECOMM U.S.A., INC.

**EUT DESCRIPTION:** GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n and NFC

**MODEL:** LG-D725, D725, LGD725

**SERIAL NUMBER:** 403KPVH000431(Conducted & Radiated)

**DATE TESTED:** APRIL 2 – 28, 2014

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| FCC PART 22H, 24E, 27E 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

UL Verification Services Inc. By:

PENG ZHANG
CONSUMER TECHNOLOGY DIVISION

PROJECT LEAD
UL Verification Services Inc.

Tested By:

CHARLES VERGONIO
CONSUMER TECHNOLOGY DIVISION

TEST ENGINEER
UL Verification Services Inc.



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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, FCC CFR 47 Part 27.

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ul.com

# 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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

## 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 18000 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 GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n and NFC.

## 5.2. MAXIMUM OUTPUT POWER

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

| FCC Part 22/24 | | | | | | |
|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | Modulation Peak | Conducted | | Radiated | |
| | | | Peak (dBm) | Peak (mW) | Peak (dBm) | Peak (mW) |
| GSM850 | 824~849 | GMSK | 33.2 | 2089.30 | | |
| | 824~849 | GPRS | 33.2 | 2089.30 | 29.491 | 889.41 |
| | 824~849 | EGPRS | 27.7 | 588.84 | 26.671 | 464.62 |
| GSM1900 | 1850~1910 | GMSK | 30.6 | 1148.15 | | |
| | 1850~1910 | GPRS | 30.6 | 1148.15 | 29.03 | 799.83 |
| | 1850~1910 | EGPRS | 26.4 | 436.52 | 27.27 | 533.33 |

| FCC Part 22/24 | | | | | | |
|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | Modulation Peak | Conducted | | Radiated | |
| | | | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| Band 5 | 824~849 | REL99 | 24.6 | 288.40 | 21.591 | 144.24 |
| | 824~849 | HSDPA | 24.7 | 295.12 | 20.781 | 119.7 |
| | 824~849 | HSUPA | 24.4 | 275.42 | | |
| Band 2 | 1850~1910 | REL99 | 23.7 | 234.42 | 23.04 | 201.37 |
| | 1850~1910 | HSDPA | 23.8 | 239.88 | 23.14 | 206.06 |
| | 1850~1910 | HSUPA | 23.6 | 229.09 | | |



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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:

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE17 | 704~716 | 10MHz | QPSK | 24.7 | 295.12 | 20.571 | 114.05 |
| | 704~716 | 10MHz | 16QAM | 23.5 | 223.87 | 19.491 | 88.94 |

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE17 | 704~716 | 5MHz | QPSK | 24.7 | 295.12 | 19.911 | 97.97 |
| | 704~716 | 5MHz | 16QAM | 23.4 | 218.78 | 18.981 | 79.09 |

| FCC Part 22/2 4/27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE7 | 2500~2570 | 20MHz | QPSK | 24.1 | 257.04 | 22 | 158.49 |
| | 2500~2570 | 20MHz | 16QAM | 23.1 | 204.17 | 21.03 | 126.77 |

| FCC Part 22/2 4/27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE7 | 2500~2570 | 15MHz | QPSK | 24.1 | 257.04 | 22.2 | 165.96 |
| | 2500~2570 | 15MHz | 16QAM | 22.9 | 194.98 | 21.3 | 134.9 |

| FCC Part 22/2 4/27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |



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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LTE7 | 2500~2570 | 10MHz | QPSK | 24.2 | 263.03 | 21.72 | 148.59 |
| | 2500~2570 | 10MHz | 16QAM | 22.9 | 194.98 | 20.72 | 118.03 |

| FCC Part 22/2 4/27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE7 | 2500~2570 | 5MHz | QPSK | 24.2 | 263.03 | 20.6 | 114.82 |
| | 2500~2570 | 5MHz | 16QAM | 22.8 | 190.55 | 19.25 | 84.14 |

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE5 | 824~849 | 10MHz | QPSK | 24.7 | 295.12 | 20.541 | 113.27 |
| | 824~849 | 10MHz | 16QAM | 23.5 | 223.87 | 19.521 | 89.56 |

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE5 | 824~849 | 5MHz | QPSK | 24.7 | 295.12 | 20.951 | 124.48 |
| | 824~849 | 5MHz | 16QAM | 23.4 | 218.78 | 19.801 | 95.52 |

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE4 | 1710~1755 | 10MHz | QPSK | 24.7 | 295.12 | 24.69 | 294.44 |
| | 1710~1755 | 10MHz | 16QAM | 23.4 | 218.78 | 23.87 | 243.78 |

| FCC Part 27 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE4 | 1710~1755 | 5MHz | QPSK | 24.7 | 295.12 | 25.88 | 387.26 |



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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1710~1755 | 5MHz | 16QAM | 23.4 | 218.78 | 24.86 | 306.2 |

| FCC Part 24 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE2 | 1850~1910 | 10MHz | QPSK | 24.6 | 288.40 | 24.09 | 256.45 |
| | 1850~1910 | 10MHz | 16QAM | 23.5 | 223.87 | 23.13 | 205.59 |

| FCC Part 24 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | Peak | Avg (dBm) | Avg (mW) | Avg (dBm) | Avg (mW) |
| LTE2 | 1850~1910 | 5MHz | QPSK | 24.7 | 25.88dBm | 24.12 | 258.23 |
| | 1850~1910 | 5MHz | 16QAM | 23.5 | 223.87 | 23.21 | 209.41 |



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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) |
|---|---|
| Band 5, 824~849MHz | -2.08 |
| Band 2, 1850~1910MHz | 0.72 |
| Band 4, 1710~1755MHz | 0.03 |
| Band 17, 704~716MHz | -2.35 |
| LTE7, 2500~2570MHz | -4.28 |



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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 ELECTRONICS | MCS-01WD | DB390078751 | N/A |
| Earphone | LG ELECTRONICS | 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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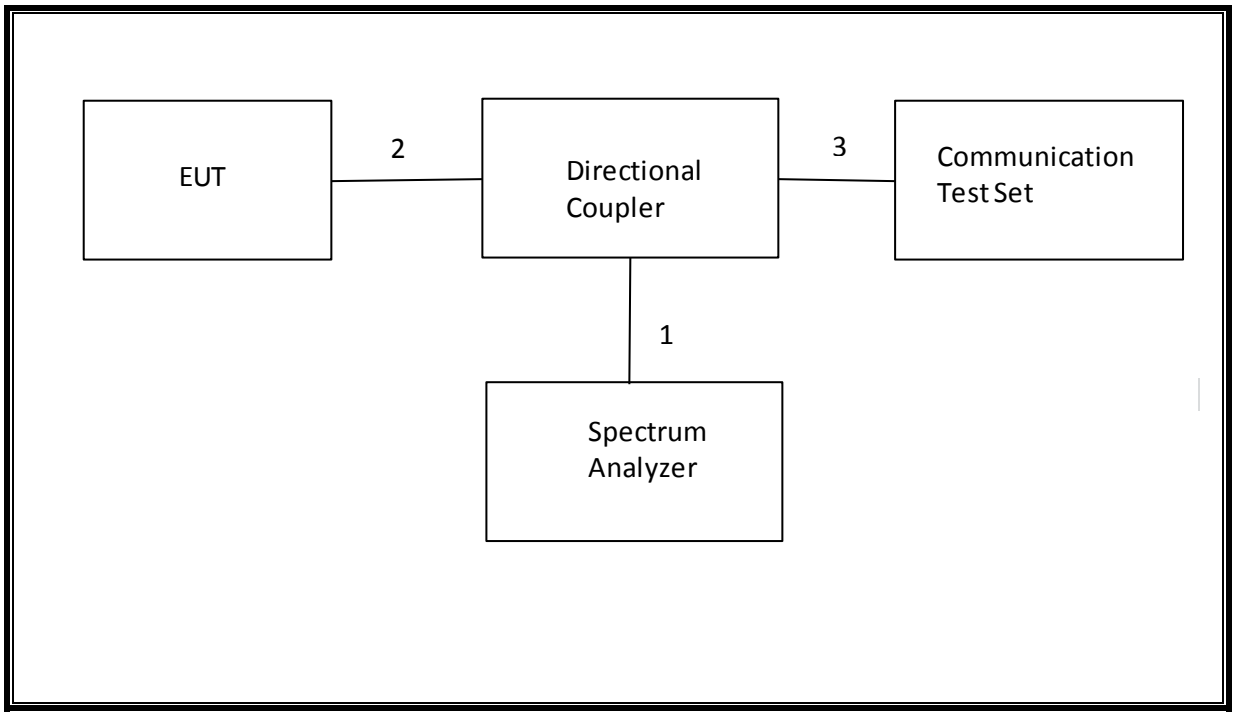
**SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)**



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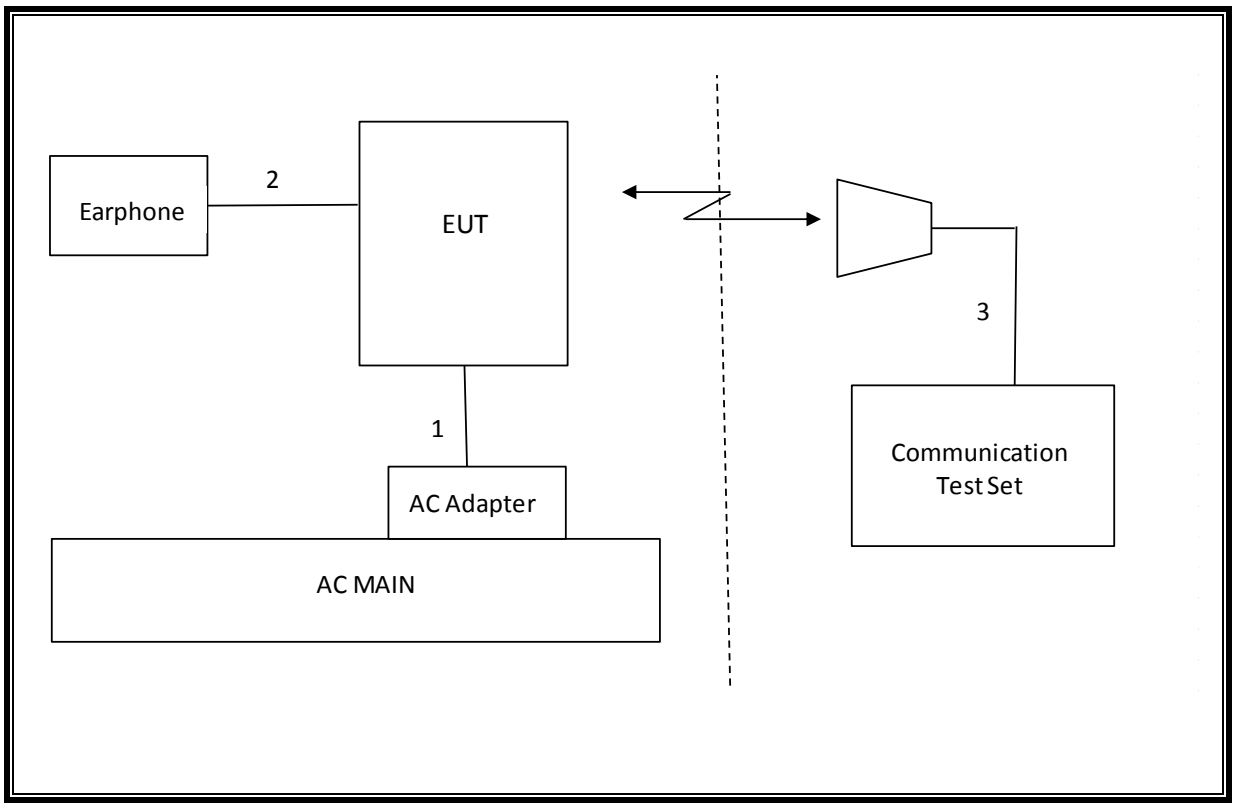
## SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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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 | 08/14/14 |
| Antenna, Horn, 18 GHz | EMCO | 3115 | C00783 | 10/25/14 |
| Antenna, Horn, 18 GHz | EMCO | 3115 | C00784 | 09/25/14 |
| 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 | 07/02/14 |
| DC power supply, 8 V @ 3 A or 15 V | Agilent / HP | E3610A | None | CNR |
| Vector signal generator, 6 GHz | Agilent / HP | E4438C | None | 07/06/14 |
| Antenna, Tuned Dipole 400~1000 | ETS | 3121C DB4 | C00993 | 02/14/15 |
| Directional Coupler | RF-Lambda | RFDC5M06G15 | None | CNR |



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# 7. Summary Table

| FCC Part Section | RSS Section(s) | Test Description | Test Limit | Test Condition | Test Result | Worst Case |
|---|---|---|---|---|---|---|
| 2.1049 | N/A | Occupied Band width (99%) | N/A | Conducted | Pass | 17.85MHz |
| 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 | -18.543dBm |
| 27.53(m) | RSS-199(4.5) | | -25dBm | | Pass | -25.34dBm |
| 2.1046 | N/A | Conducted output power | N/A | | Pass | 33.2dBm |
| 27.53(m) | RSS-199(4.5) | Emission Mask | | | Pass | Band 7 |
| 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 | 0.017PPM |
| 22.913(a)(2) | RSS-132(4.4) | Effective Radiated Power | 38 dBm | Radiated | Pass | 29.49dBm |
| 27.50(b)(10) | N/A | | 34.77 dBm | | Pass | 20.57dBm |
| 24.232(c )<br>27.50(h)(2) | RSS-133(6.4)<br>RSS-199(4.4) | Equivalent Isotropic Radiated Power | 33dBm | | Pass | 29.03dBm |
| 27.50(d)(4) | RSS-139(6.4) | | 30dBm | | Pass | 25.88dBm |
| 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 | -30.8dBm |
| 27.53(m) | RSS-199(4.5) | | -25dBm | | Pass | -26.9dBm |



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# 8. RF POWER OUTPUT VERIFICATION

## 8.1. GSM/GPRS/EDGE

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900

Press Connection control to choose the different menus

Press RESET > choose all to reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM+GPRS or GSM+EGPRS

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config. off

MS Signal Press Slot Config bottom on the right twice to select and change the number of time slots and power setting

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850/900

> 30 dBm for GPRS1800/1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type >Off

P0> 4 dB

Slot Config > Unchanged (if already set under MS Signal)

TCH > choose desired test channel

Hopping > Off

Main Timeslot >3 (Default)

Network Coding Scheme > CS4 (GPRS) and MCS5 ~ MCS9 (EGPRS)

Bit Stream > 2E9-1PSR Bit Pattern

AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal On to turn on the signal and change settings



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### 8.1.1. GSM OUTPUT POWER RESULT

| Band | Mode | Ch. | f(MHz) | 1 time slot | 2 time slot |
|---|---|---|---|---|---|
| | | | | Peak (dBm) | Peak (dBm) |
| GSM850 | GMSK | 128 | 824.2 | 33.2 | |
| | | 190 | 836.6 | 33.1 | |
| | | 251 | 848.8 | 33.0 | |
| | GPRS | 128 | 824.2 | 33.2 | 31.5 |
| | | 190 | 836.6 | 33.2 | 31.6 |
| | | 251 | 848.8 | 33.0 | 31.5 |
| | EGPRS | 128 | 824.2 | 27.7 | 25.4 |
| | | 190 | 836.6 | 27.6 | 25.4 |
| | | 251 | 848.8 | 27.6 | 25.6 |
| GSM1900 | GMSK | 512 | 1850.2 | 30.6 | |
| | | 661 | 1880 | 30.6 | |
| | | 810 | 1909.8 | 30.4 | |
| | GPRS | 512 | 1850.2 | 30.6 | 28.6 |
| | | 661 | 1880 | 30.6 | 28.5 |
| | | 810 | 1909.8 | 30.4 | 28.5 |
| | EGPRS | 512 | 1850.2 | 26.3 | 24.5 |
| | | 661 | 1880 | 26.3 | 24.5 |
| | | 810 | 1909.8 | 26.4 | 24.6 |



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## 8.2. UMTS REL 99

**TEST PROCEDURE**

The following summary of these settings are illustrated below:

| | | |
|---|---|---|
| | Mode | Rel99 |
| | Subtest | - |
| WCDMA General Settings | Loopback Mode | Test Mode 1 |
| | Rel99 RMC | 12.2kbps RMC |
| | HSDPA FRC | Not Applicable |
| | HSUPA Test | Not Applicable |
| | Power Control Algorithm | Algorithm2 |
| | βc | Not Applicable |
| | βd | Not Applicable |
| | βec | Not Applicable |
| | βc/βd | 8/15 |
| | βhs | Not Applicable |
| | βed | Not Applicable |

### 8.2.1. UMTS REL 99 OUTPUT POWER RESULT

| Band | Mode | Ch. | f(MHz) | Conducted Power (dBm) Avg (dBm) |
|---|---|---|---|---|
| Band 5 | REL99 | 4132 | 826.4 | 24.6 |
| | | 4183 | 836.6 | 24.5 |
| | | 4233 | 846.6 | 24.6 |
| Band 2 | REL99 | 9262 | 1852.4 | 23.7 |
| | | 9400 | 1880 | 23.7 |
| | | 9538 | 1907.6 | 23.6 |



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## 8.3. UMTS HSDPA

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

| | Mode | Rel5 HSDPA | | | |
|---|---|---|---|---|---|
| | Subtest | 1 | 2 | 3 | 4 |
| WCDMA General Settings | Loopback Mode | Test Mode 1 | | | |
| | Rel99 RMC | 12.2kbps RMC | | | |
| | HSDPA FRC | H-Set1 | | | |
| | Power Control Algorithm | Algorithm 2 | | | |
| | βc | 2/15 | 12/15 | 15/15 | 15/15 |
| | βd | 15/15 | 15/15 | 8/15 | 4/15 |
| | Bd (SF) | 64 | | | |
| | βc/βd | 2/15 | 12/15 | 15/8 | 15/4 |
| | βhs | 4/15 | 24/15 | 30/15 | 30/15 |
| | MPR (dB) | 0 | 0 | 0.5 | 0.5 |
| HSDPA Specific Settings | $D_{ACK}$ | 8 | | | |
| | $D_{NAK}$ | 8 | | | |
| | DCQI | 8 | | | |
| | Ack-Nack repetition factor | 3 | | | |
| | CQI Feedback (Table 5.2B.4) | 4ms | | | |
| | CQI Repetition Factor (Table 5.2B.4) | 2 | | | |
| | Ahs =βhs/βc | 30/15 | | | |

### 8.3.1. UMTS HSDPA OUTPUT POWER RESULT

| Band | Mode | Subset | Ch. | f(MHz) | Conducted Power (dBm) Avg (dBm) |
|---|---|---|---|---|---|
| Band 5 | HSDPA | 1 | 4132 | 826.4 | 24.6 |
| | | | 4183 | 836.6 | 24.5 |
| | | | 4233 | 846.6 | 24.7 |
| | | 2 | 4132 | 826.4 | 24.7 |
| | | | 4183 | 836.6 | 24.6 |
| | | | 4233 | 846.6 | 24.6 |
| | | 3 | 4132 | 826.4 | 24.2 |
| | | | 4183 | 836.6 | 24.2 |
| | | | 4233 | 846.6 | 24.2 |
| | | 4 | 4132 | 826.4 | 24.2 |
| | | | 4183 | 836.6 | 24.1 |
| | | | 4233 | 846.6 | 24.2 |
| Band 2 | HSDPA | 1 | 9262 | 1852.4 | 23.5 |



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| | | | | | |
|---|---|---|---|---|---|
| | | | 9400 | 1880 | 23.8 |
| | | | 9538 | 1907.6 | 23.7 |
| | | 2 | 9262 | 1852.4 | 23.8 |
| | | | 9400 | 1880 | 23.8 |
| | | | 9538 | 1907.6 | 23.8 |
| | | 3 | 9262 | 1852.4 | 23.3 |
| | | | 9400 | 1880 | 23.2 |
| | | | 9538 | 1907.6 | 23.2 |
| | | 4 | 9262 | 1852.4 | 23.3 |
| | | | 9400 | 1880 | 23.2 |
| | | | 9538 | 1907.6 | 23.2 |



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## 8.3.2. UMTS HSUPA

**TEST PROCEDURE**

The following summary of these settings are illustrated below: (ETSI TS 134.121-1 Table C.11.1)

| | Mode | Rel6 HSUPA | Rel6 HSUPA | Rel6 HSUPA | Rel6 HSUPA | Rel6 HSUPA |
|---|---|---|---|---|---|---|
| | Subtest | 1 | 2 | 3 | 4 | 5 |
| WCDMA General Settings | Loopback Mode | Test Mode 1 | | | | |
| | P-CPICH (dB) | -10 | | | | |
| | P-CCPCH (dB) | -12 | | | | |
| | SCH (dB) | -12 | | | | |
| | PICH(dB) | -15 | | | | |
| | DPCH (dB) | -9 | | | | |
| | HS-SCCH_1 (dB) | -8 | | | | |
| | HS-PDSCH (dB) | -3 | | | | |
| | Rel99 RMC | 12.2kbps RMC | | | | |
| | HSDPA FRC | H-Set1 | | | | |
| | HSUPA Test | HSUPA Loopback | | | | |
| | Power Control Algorithm | Algorithm2 | | | | |
| | Bc | 11/15 | 6/15 | 15/15 | 2/15 | 15/15 |
| | Bd | 15/15 | 15/15 | 9/15 | 15/15 | 15/15 |
| | Bec | 209/225 | 12/15 | 30/15 | 2/15 | 5/15 |
| | βc/βd | 11/15 | 6/15 | 15/9 | 2/15 | 15/15 |
| | Bhs | 22/15 | 12/15 | 30/15 | 4/15 | 30/15 |
| | βed (note1) | 1309/225 | 94/75 | 47/15<br>47/15 | 56/75 | 134/15 |
| | MPR | 0 | 2 | 1 | 2 | 0 |
| HSDPA Specific Settings | DACK | 8 | | | | |
| | DNAK | 8 | | | | |
| | DCQI | 8 | | | | |
| | Ack-Nack repetition factor | 3 | | | | |
| | CQI Feedback (Table 5.2B.4) | 4ms | | | | |
| | CQI Repetition Factor (Table 5.2B.4) | 2 | | | | |
| | Ahs = βhs/βc | 30/15 | | | | |
| HSUPA Specific Settings | D E-DPCCH | 6 | 8 | 8 | 5 | 7 |
| | DHARQ | 0 | 0 | 0 | 0 | 0 |
| | AG Index | 20 | 12 | 15 | 17 | 21 |
| | Reference E-TFCIs | 5 | 5 | 2 | 5 | 5 |
| | ETFCI (from 34.121 Table C.11.1.3) | 75 | 67 | 92 | 71 | 81 |
| | Associated Max UL Data Rate kbps | 242.1 | 174.9 | 482.8 | 205.8 | 308.9 |
| | Reference E_TFCIs | E-TFCI 11<br>E-TFCI PO 4<br>E-TFCI 67<br>E-TFCI PO 18<br>E-TFCI 71<br>E-TFCI PO 23<br>E-TFCI 75<br>E-TFCI PO 26<br>E-TFCI 81<br>E-TFCI PO 27 | | E-TFCI 11<br>E-TFCI PO 4<br>E-TFCI 92<br>E-TFCI PO 18 | E-TFCI 11<br>E-TFCI PO 4<br>E-TFCI 67<br>E-TFCI PO 18<br>E-TFCI 71<br>E-TFCI PO 23<br>E-TFCI 75<br>E-TFCI PO 26<br>E-TFCI 81<br>E-TFCI PO 27 | |

Note1: βed cannot be set directly, it is set by Absolute Grant Value.





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### 8.3.3. UMTS HSUPA OUTPUT POWER RESULT

| Band | Mode | Subset | Ch. | f(MHz) | Conducted Power (dBm) Avg (dBm) |
|---|---|---|---|---|---|
| Band 5 | HSUPA | 1 | 4132 | 826.4 | 24.3 |
| | | | 4183 | 836.6 | 23.8 |
| | | | 4233 | 846.6 | 23.5 |
| | | 2 | 4132 | 826.4 | 23.1 |
| | | | 4183 | 836.6 | 22.9 |
| | | | 4233 | 846.6 | 22.5 |
| | | 3 | 4132 | 826.4 | 23.2 |
| | | | 4183 | 836.6 | 23.1 |
| | | | 4233 | 846.6 | 23.5 |
| | | 4 | 4132 | 826.4 | 23.2 |
| | | | 4183 | 836.6 | 23.1 |
| | | | 4233 | 846.6 | 23.0 |
| | | 5 | 4132 | 826.4 | 23.6 |
| | | | 4183 | 836.6 | 23.5 |
| | | | 4233 | 846.6 | 24.4 |
| Band 2 | HSUPA | 1 | 9262 | 1852.4 | 22.6 |
| | | | 9400 | 1880 | 23.1 |
| | | | 9538 | 1907.6 | 22.9 |
| | | 2 | 9262 | 1852.4 | 21.6 |
| | | | 9400 | 1880 | 22.0 |
| | | | 9538 | 1907.6 | 22.1 |
| | | 3 | 9262 | 1852.4 | 22.2 |
| | | | 9400 | 1880 | 22.6 |
| | | | 9538 | 1907.6 | 22.3 |
| | | 4 | 9262 | 1852.4 | 22.5 |
| | | | 9400 | 1880 | 21.9 |
| | | | 9538 | 1907.6 | 22.1 |
| | | 5 | 9262 | 1852.4 | 22.6 |
| | | | 9400 | 1880 | 23.4 |
| | | | 9538 | 1907.6 | 23.6 |



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# 8.4. LTE OUTPUT VERIFICATION

## 8.4.1. LTE OUTPUT RESULT

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1855 MHz | 1880 MHz | 1905 MHz |
| LTE Band 2 | 10 | QPSK | 1 | 0 | 0 | 0 | 24.5 | 24.6 | 24.6 |
| | | | 1 | 25 | 0 | 0 | 24.6 | 24.6 | 24.5 |
| | | | 1 | 49 | 0 | 0 | 24.5 | 24.6 | 24.5 |
| | | | 25 | 0 | 1 | 1 | 23.6 | 23.6 | 23.6 |
| | | | 25 | 12 | 1 | 1 | 23.6 | 23.7 | 23.5 |
| | | | 25 | 25 | 1 | 1 | 23.6 | 23.7 | 23.6 |
| | | | 50 | 0 | 1 | 1 | 23.6 | 23.7 | 23.6 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.4 | 23.5 | 23.5 |
| | | | 1 | 25 | 1 | 1 | 23.4 | 23.4 | 23.4 |
| | | | 1 | 49 | 1 | 1 | 23.4 | 23.5 | 23.4 |
| | | | 25 | 0 | 2 | 2 | 22.6 | 22.7 | 22.7 |
| | | | 25 | 12 | 2 | 2 | 22.6 | 22.7 | 22.6 |
| | | | 25 | 25 | 2 | 2 | 22.6 | 22.7 | 22.6 |
| | | | 50 | 0 | 2 | 2 | 22.6 | 22.7 | 22.6 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
| | | | | | | | 1852.5 MHz | 1880 MHz | 1907.5 MHz |
| LTE Band 2 | 5 | QPSK | 1 | 0 | 0 | 0 | 24.6 | 24.7 | 24.6 |
| | | | 1 | 12 | 0 | 0 | 24.5 | 24.6 | 24.5 |
| | | | 1 | 24 | 0 | 0 | 24.6 | 24.6 | 24.6 |
| | | | 12 | 0 | 1 | 1 | 23.6 | 23.7 | 23.6 |
| | | | 12 | 7 | 1 | 1 | 23.6 | 23.7 | 23.6 |
| | | | 12 | 13 | 1 | 1 | 23.6 | 23.7 | 23.6 |
| | | | 25 | 0 | 1 | 1 | 23.6 | 23.7 | 23.6 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.3 | 23.5 | 23.4 |
| | | | 1 | 12 | 1 | 1 | 23.4 | 23.4 | 23.3 |
| | | | 1 | 24 | 1 | 1 | 23.4 | 23.5 | 23.4 |
| | | | 12 | 0 | 2 | 2 | 22.6 | 22.7 | 22.6 |
| | | | 12 | 7 | 2 | 2 | 22.7 | 22.7 | 22.6 |
| | | | 12 | 13 | 2 | 2 | 22.7 | 22.7 | 22.7 |
| | | | 25 | 0 | 2 | 2 | 22.7 | 22.7 | 22.7 |



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| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1715 MHz | 1732.5 MHz | 1750 MHz |
| LTE Band 4 | 10 | QPSK | 1 | 0 | 0 | 0 | 24.6 | 24.6 | 24.6 |
| | | | 1 | 25 | 0 | 0 | 24.5 | 24.5 | 24.7 |
| | | | 1 | 49 | 0 | 0 | 24.5 | 24.6 | 24.7 |
| | | | 25 | 0 | 1 | 1 | 23.5 | 23.6 | 23.6 |
| | | | 25 | 12 | 1 | 1 | 23.5 | 23.5 | 23.6 |
| | | | 25 | 25 | 1 | 1 | 23.6 | 23.5 | 23.6 |
| | | | 50 | 0 | 1 | 1 | 23.6 | 23.6 | 23.6 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.4 | 23.4 | 23.4 |
| | | | 1 | 25 | 1 | 1 | 23.3 | 23.3 | 23.4 |
| | | | 1 | 49 | 1 | 1 | 23.3 | 23.4 | 23.4 |
| | | | 25 | 0 | 2 | 2 | 22.6 | 22.7 | 22.7 |
| | | | 25 | 12 | 2 | 2 | 22.5 | 22.5 | 22.7 |
| | | | 25 | 25 | 2 | 2 | 22.6 | 22.6 | 22.6 |
| | | | 50 | 0 | 2 | 2 | 22.6 | 22.6 | 22.6 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1715 MHz | 1732.5 MHz | 1752.5 MHz |
| LTE Band 4 | 5 | QPSK | 1 | 0 | 0 | 0 | 24.5 | 24.5 | 24.7 |
| | | | 1 | 12 | 0 | 0 | 24.5 | 24.5 | 24.7 |
| | | | 1 | 24 | 0 | 0 | 24.6 | 24.6 | 24.7 |
| | | | 12 | 0 | 1 | 1 | 23.6 | 23.5 | 23.6 |
| | | | 12 | 7 | 1 | 1 | 23.5 | 23.5 | 23.6 |
| | | | 12 | 13 | 1 | 1 | 23.5 | 23.5 | 23.6 |
| | | | 25 | 0 | 1 | 1 | 23.5 | 23.5 | 23.5 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.3 | 23.3 | 23.4 |
| | | | 1 | 12 | 1 | 1 | 23.3 | 23.2 | 23.4 |
| | | | 1 | 24 | 1 | 1 | 23.4 | 23.3 | 23.4 |
| | | | 12 | 0 | 2 | 2 | 22.6 | 22.5 | 22.7 |
| | | | 12 | 7 | 2 | 2 | 22.6 | 22.6 | 22.7 |
| | | | 12 | 13 | 2 | 2 | 22.6 | 22.6 | 22.6 |
| | | | 25 | 0 | 2 | 2 | 22.7 | 22.6 | 22.7 |



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| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 829 MHz | 836.5 MHz | 844 MHz |
| LTE Band 5 | 10 | QPSK | 1 | 0 | 0 | 0 | 24.6 | 24.5 | 24.6 |
| | | | 1 | 25 | 0 | 0 | 24.6 | 24.6 | 24.6 |
| | | | 1 | 49 | 0 | 0 | 24.5 | 24.6 | 24.7 |
| | | | 25 | 0 | 1 | 1 | 23.6 | 23.5 | 23.6 |
| | | | 25 | 12 | 1 | 1 | 23.6 | 23.6 | 23.6 |
| | | | 25 | 25 | 1 | 1 | 23.6 | 23.6 | 23.6 |
| | | | 50 | 0 | 1 | 1 | 23.6 | 23.6 | 23.6 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.5 | 23.4 | 23.4 |
| | | | 1 | 25 | 1 | 1 | 23.4 | 23.4 | 23.4 |
| | | | 1 | 49 | 1 | 1 | 23.4 | 23.4 | 23.5 |
| | | | 25 | 0 | 2 | 2 | 22.7 | 22.6 | 22.6 |
| | | | 25 | 12 | 2 | 2 | 22.6 | 22.6 | 22.5 |
| | | | 25 | 25 | 2 | 2 | 22.6 | 22.5 | 22.6 |
| | | | 50 | 0 | 2 | 2 | 22.7 | 22.6 | 22.6 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
| | | | | | | | 826.5 MHz | 836.5 MHz | 846.5 MHz |
| LTE Band 5 | 5 | QPSK | 1 | 0 | 0 | 0 | 24.5 | 24.5 | 24.6 |
| | | | 1 | 12 | 0 | 0 | 24.6 | 24.6 | 24.6 |
| | | | 1 | 24 | 0 | 0 | 24.6 | 24.6 | 24.7 |
| | | | 12 | 0 | 1 | 1 | 23.5 | 23.6 | 23.6 |
| | | | 12 | 7 | 1 | 1 | 23.6 | 23.6 | 23.6 |
| | | | 12 | 13 | 1 | 1 | 23.6 | 23.5 | 23.6 |
| | | | 25 | 0 | 1 | 1 | 23.6 | 23.6 | 23.6 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.2 | 23.3 | 23.3 |
| | | | 1 | 12 | 1 | 1 | 23.4 | 23.3 | 23.3 |
| | | | 1 | 24 | 1 | 1 | 23.4 | 23.4 | 23.4 |
| | | | 12 | 0 | 2 | 2 | 22.5 | 22.6 | 22.6 |
| | | | 12 | 7 | 2 | 2 | 22.6 | 22.6 | 22.6 |
| | | | 12 | 13 | 2 | 2 | 22.6 | 22.6 | 22.6 |
| | | | 25 | 0 | 2 | 2 | 22.7 | 22.7 | 22.7 |



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| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2510 MHz | 2535 MHz | 2560 MHz |
| LTE Band 7 | 20 | QPSK | 1 | 0 | 0 | 0 | 23.7 | 24.1 | 24.0 |
| | | | 1 | 49 | 0 | 0 | 23.7 | 24.0 | 24.0 |
| | | | 1 | 99 | 0 | 0 | 23.9 | 24.1 | 23.7 |
| | | | 50 | 0 | 1 | 1 | 22.7 | 23.0 | 23.0 |
| | | | 50 | 24 | 1 | 1 | 22.7 | 23.0 | 22.9 |
| | | | 50 | 50 | 1 | 1 | 22.7 | 22.9 | 22.8 |
| | | | 100 | 0 | 1 | 1 | 22.7 | 22.9 | 22.9 |
| | | 16QAM | 1 | 0 | 1 | 1 | 22.8 | 23.1 | 23.1 |
| | | | 1 | 49 | 1 | 1 | 22.8 | 23.0 | 23.0 |
| | | | 1 | 99 | 1 | 1 | 23.0 | 23.0 | 22.8 |
| | | | 50 | 0 | 2 | 2 | 21.8 | 22.1 | 22.0 |
| | | | 50 | 24 | 2 | 2 | 21.7 | 22.0 | 22.0 |
| | | | 50 | 50 | 2 | 2 | 21.8 | 22.1 | 21.9 |
| | | | 100 | 0 | 2 | 2 | 21.8 | 22.0 | 22.0 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
| | | | | | | | 2507.5 MHz | 2535 MHz | 2562.5 MHz |
| LTE Band 7 | 15 | QPSK | 1 | 0 | 0 | 0 | 23.8 | 24.1 | 24.1 |
| | | | 1 | 37 | 0 | 0 | 23.6 | 24.0 | 24.0 |
| | | | 1 | 74 | 0 | 0 | 23.9 | 24.1 | 23.8 |
| | | | 36 | 0 | 1 | 1 | 22.7 | 23.0 | 23.0 |
| | | | 36 | 20 | 1 | 1 | 22.7 | 23.0 | 23.0 |
| | | | 36 | 39 | 1 | 1 | 22.8 | 23.0 | 22.9 |
| | | | 75 | 0 | 1 | 1 | 22.7 | 23.0 | 23.0 |
| | | 16QAM | 1 | 0 | 1 | 1 | 22.6 | 22.8 | 22.8 |
| | | | 1 | 37 | 1 | 1 | 22.5 | 22.8 | 22.8 |
| | | | 1 | 74 | 1 | 1 | 22.6 | 22.9 | 22.6 |
| | | | 36 | 0 | 2 | 2 | 21.8 | 22.1 | 22.0 |
| | | | 36 | 20 | 2 | 2 | 21.7 | 22.0 | 22.0 |
| | | | 36 | 39 | 2 | 2 | 21.7 | 22.0 | 21.9 |
| | | | 75 | 0 | 2 | 2 | 21.7 | 22.0 | 22.0 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
| | | | | | | | 2505 MHz | 2535 MHz | 2565 MHz |
| LTE Band 7 | 10 | QPSK | 1 | 0 | 0 | 0 | 23.8 | 24.2 | 24.0 |
| | | | 1 | 25 | 0 | 0 | 23.7 | 24.1 | 23.9 |
| | | | 1 | 49 | 0 | 0 | 23.7 | 24.2 | 23.7 |
| | | | 25 | 0 | 1 | 0 | 22.7 | 23.1 | 22.9 |
| | | | 25 | 12 | 1 | 0 | 22.7 | 23.0 | 22.9 |
| | | | 25 | 25 | 1 | 0 | 22.7 | 23.0 | 22.8 |
| | | | 50 | 0 | 1 | 0 | 22.7 | 23.0 | 22.9 |
| | | 16QAM | 1 | 0 | 1 | 0 | 22.7 | 22.9 | 22.8 |
| | | | 1 | 25 | 1 | 0 | 22.6 | 22.8 | 22.7 |
| | | | 1 | 49 | 1 | 0 | 22.5 | 22.9 | 22.5 |
| | | | 25 | 0 | 2 | 0 | 21.8 | 22.2 | 22.0 |
| | | | 25 | 12 | 2 | 0 | 21.8 | 22.0 | 21.9 |
| | | | 25 | 25 | 2 | 0 | 21.7 | 22.1 | 21.8 |
| | | | 50 | 0 | 2 | 0 | 21.8 | 22.1 | 21.9 |



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| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2502.5 MHz | 2535 MHz | 2567.5 MHz |
| LTE Band 7 | 5 | QPSK | 1 | 0 | 0 | 0 | 23.8 | 24.2 | 24.0 |
| | | | 1 | 12 | 0 | 0 | 23.7 | 24.1 | 23.9 |
| | | | 1 | 24 | 0 | 0 | 23.8 | 24.2 | 23.8 |
| | | | 12 | 0 | 1 | 1 | 22.8 | 23.0 | 22.9 |
| | | | 12 | 6 | 1 | 1 | 22.8 | 23.0 | 22.9 |
| | | | 12 | 13 | 1 | 1 | 22.8 | 23.0 | 22.9 |
| | | | 25 | 0 | 1 | 1 | 22.7 | 23.0 | 22.9 |
| | | 16QAM | 1 | 0 | 1 | 1 | 22.6 | 22.8 | 22.7 |
| | | | 1 | 12 | 1 | 1 | 22.4 | 22.7 | 22.6 |
| | | | 1 | 24 | 1 | 1 | 22.6 | 22.8 | 22.6 |
| | | | 12 | 0 | 2 | 2 | 21.8 | 22.0 | 21.9 |
| | | | 12 | 6 | 2 | 2 | 21.8 | 22.1 | 22.0 |
| | | | 12 | 13 | 2 | 2 | 21.8 | 22.1 | 21.9 |
| | | | 25 | 0 | 2 | 2 | 21.8 | 22.2 | 21.9 |



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| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) |
|---|---|---|---|---|---|---|---|
| | | | | | | | 710 MHz |
| LTE Band 17 | 10 | QPSK | 1 | 0 | 0 | 0 | 24.7 |
| | | | 1 | 25 | 0 | 0 | 24.7 |
| | | | 1 | 49 | 0 | 0 | 24.4 |
| | | | 25 | 0 | 1 | 1 | 23.6 |
| | | | 25 | 12 | 1 | 1 | 23.6 |
| | | | 25 | 25 | 1 | 1 | 23.6 |
| | | | 50 | 0 | 1 | 1 | 23.6 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.5 |
| | | | 1 | 25 | 1 | 1 | 23.5 |
| | | | 1 | 49 | 1 | 1 | 23.4 |
| | | | 25 | 0 | 2 | 2 | 22.6 |
| | | | 25 | 12 | 2 | 2 | 22.6 |
| | | | 25 | 25 | 2 | 2 | 22.6 |
| | | | 50 | 0 | 2 | 2 | 22.6 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | Target MPR | Meas. MPR | Avg Pwr (dBm) |
| | | | | | | | 710 MHz |
| LTE Band 17 | 5 | QPSK | 1 | 0 | 0 | 0 | 24.7 |
| | | | 1 | 12 | 0 | 0 | 24.7 |
| | | | 1 | 24 | 0 | 0 | 24.7 |
| | | | 12 | 0 | 1 | 1 | 23.6 |
| | | | 12 | 7 | 1 | 1 | 23.6 |
| | | | 12 | 13 | 1 | 1 | 23.7 |
| | | | 25 | 0 | 1 | 1 | 23.6 |
| | | 16QAM | 1 | 0 | 1 | 1 | 23.4 |
| | | | 1 | 12 | 1 | 1 | 23.4 |
| | | | 1 | 24 | 1 | 1 | 23.4 |
| | | | 12 | 0 | 2 | 2 | 22.6 |
| | | | 12 | 7 | 2 | 2 | 22.6 |
| | | | 12 | 13 | 2 | 2 | 22.7 |
| | | | 25 | 0 | 2 | 2 | 22.7 |



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# 9. PEAK TO AVERAGE RATIO

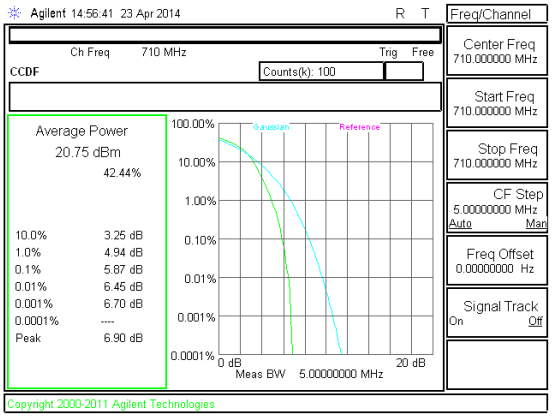
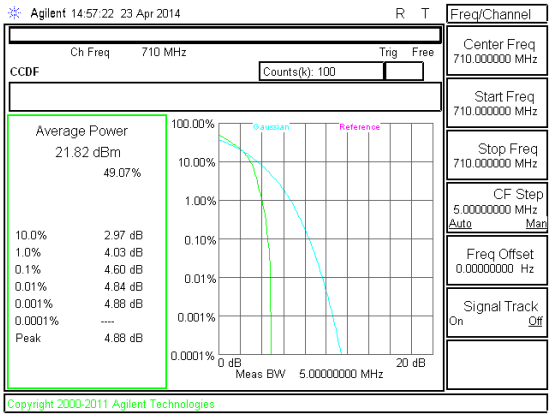
**Test Procedure**

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

**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.

## 9.1. CONDUCTED PEAK TO AVERAGE RESULT

| | | |
|---|---|---|
| Band<br>LTE17<br>10MHz<br>16QAM |  <br>Band LTE17 10MHz 16QAM Mid channel |  <br>Band LTE17 10MHz QPSK Mid channel |



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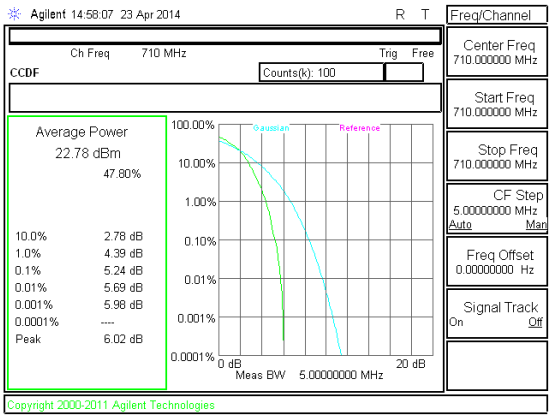
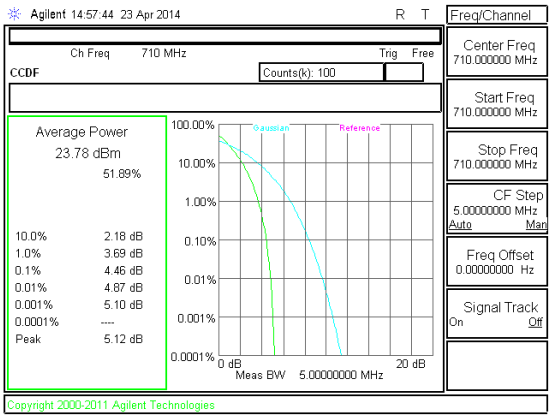
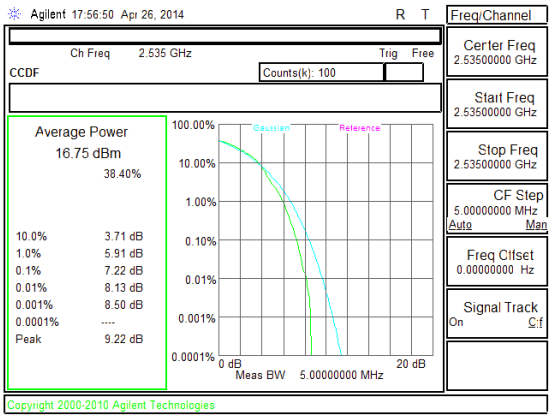
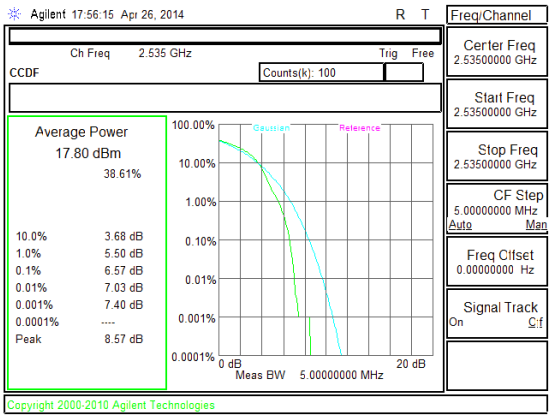
| | | |
|---|---|---|
| Band LTE17 5MHz 16QAM |  <br>Band LTE17 5MHz 16QAM Mid channel |  <br>Band LTE17 5MHz QPSK Mid channel |
| Band LTE7 20MHz 16QAM |  <br>Band LTE7 20MHz 16QAM Mid channel |  <br>Band LTE7 20MHz QPSK Mid channel |



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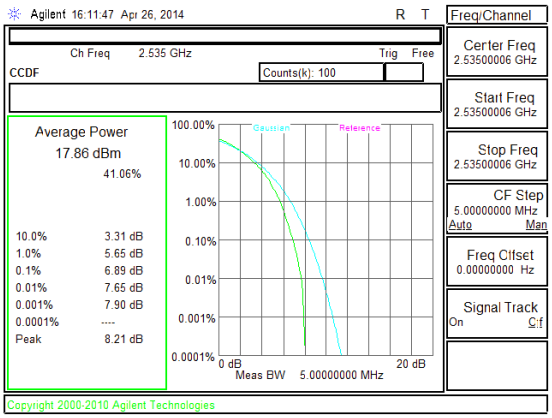
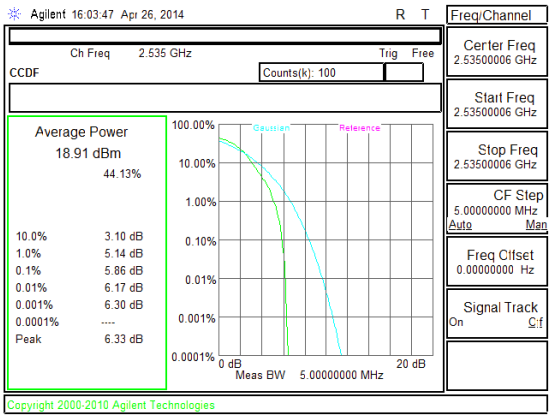
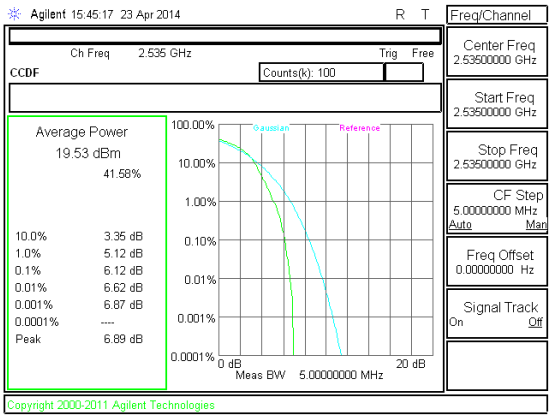
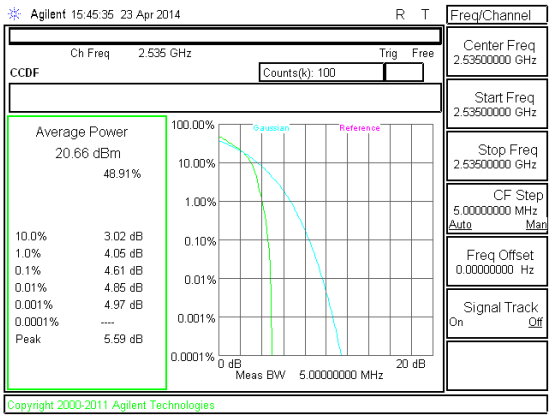
| | | |
|---|---|---|
| Band LTE7 15MHz 16QAM |  <br>Band LTE7 15MHz 16QAM Mid channel |  <br>Band LTE7 15MHz QPSK Mid channel |
| Band LTE7 10MHz 16QAM |  <br>Band LTE7 10MHz 16QAM Mid channel |  <br>Band LTE7 10MHz QPSK Mid channel |



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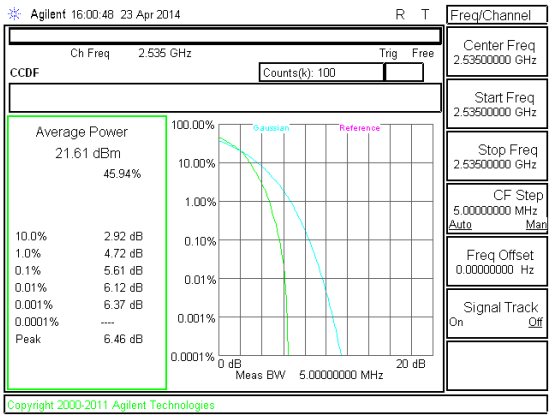
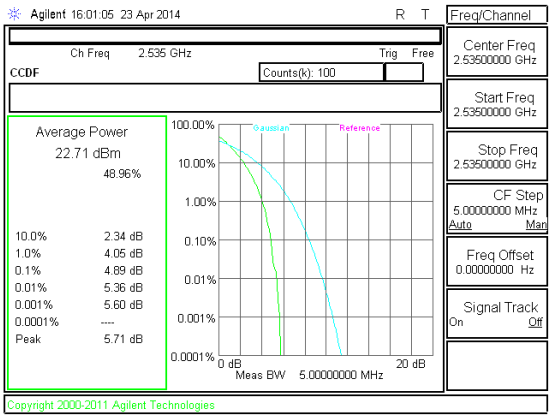
| | | |
|---|---|---|
| Band LTE7 5MHz 16QAM |  <br>Band LTE7 5MHz 16QAM Mid channel |  <br>Band LTE7 5MHz QPSK Mid channel |



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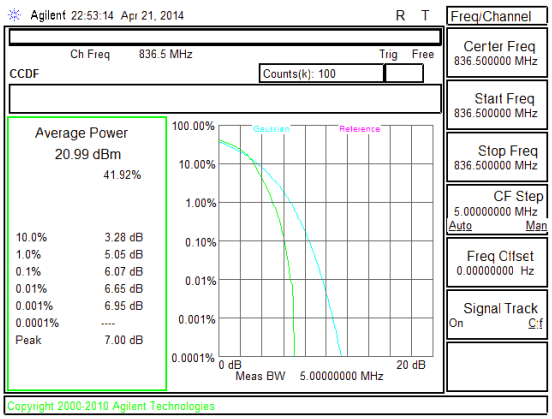
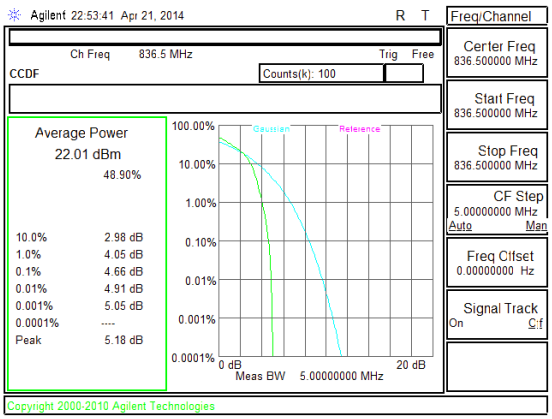
Band LTE5 10MHz 16QAM

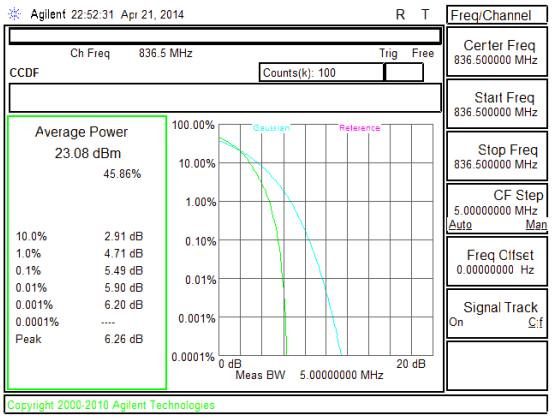



Band LTE5 10MHz 16QAM Mid channel

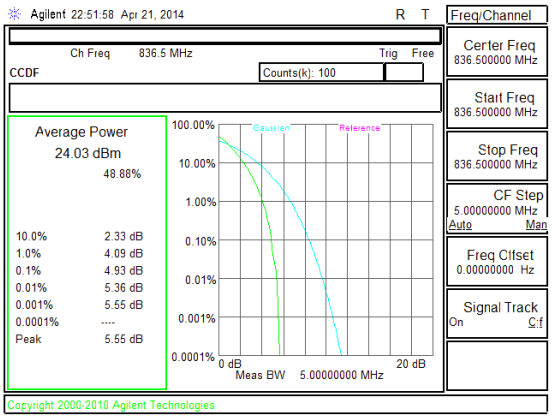



Band LTE5 10MHz QPSK Mid channel

Band LTE5 5MHz 16QAM




Band LTE5 5MHz 16QAM Mid channel




Band LTE5 5MHz QPSK Mid channel



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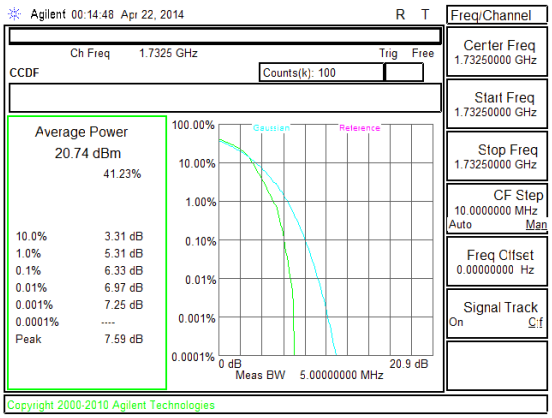
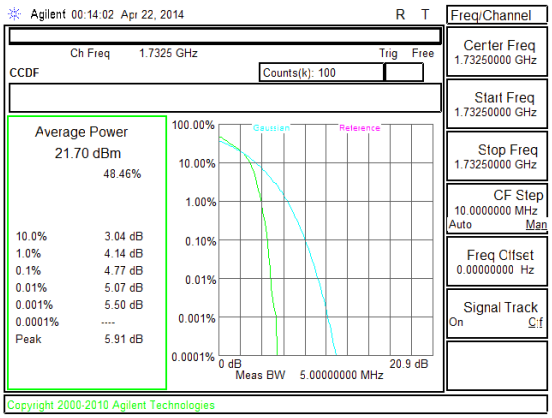
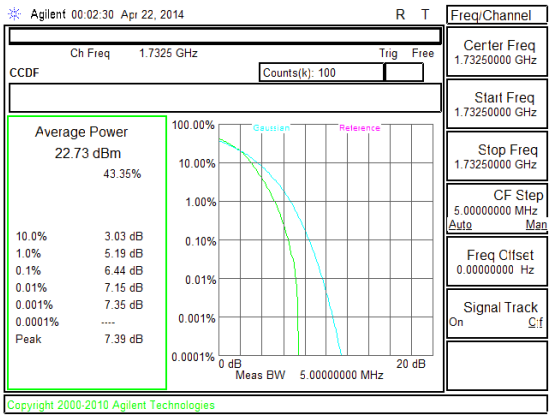
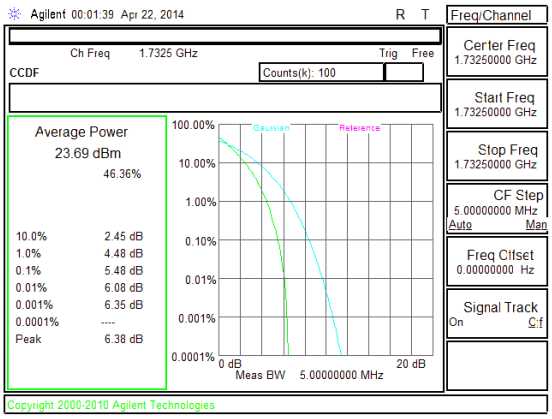
| | | |
|---|---|---|
| Band LTE4 10MHz 16QAM |  <br>Band LTE4 10MHz 16QAM Mid channel |  <br>Band LTE4 10MHz QPSK Mid channel |
| Band LTE4 5MHz 16QAM |  <br>Band LTE4 5MHz 16QAM Mid channel |  <br>Band LTE4 5MHz QPSK Mid channel |



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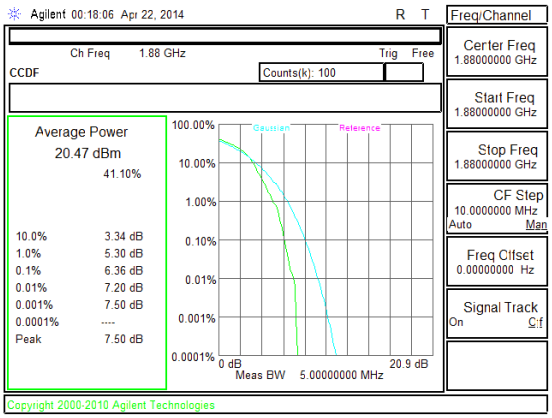
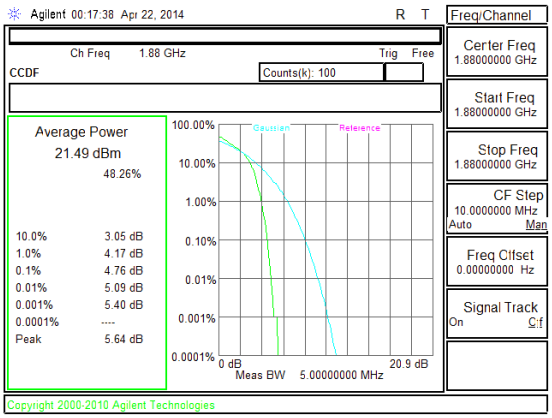
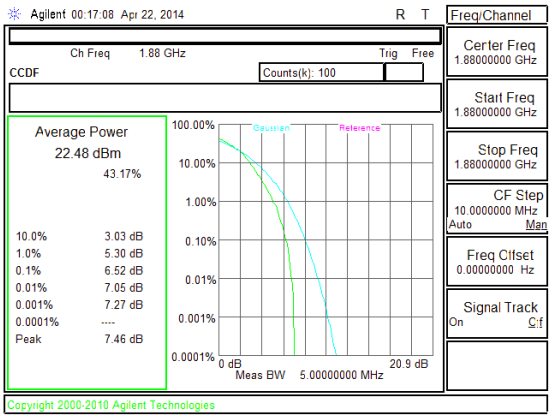
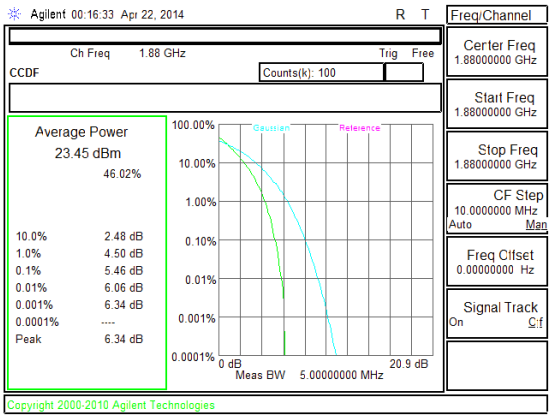
| | | |
|---|---|---|
| Band LTE2 10MHz 16QAM |  <br>Band LTE2 10MHz 16QAM Mid channel |  <br>Band LTE2 10MHz QPSK Mid channel |
| Band LTE2 5MHz 16QAM |  <br>Band LTE2 5MHz 16QAM Mid channel |  <br>Band LTE2 5MHz QPSK Mid channel |



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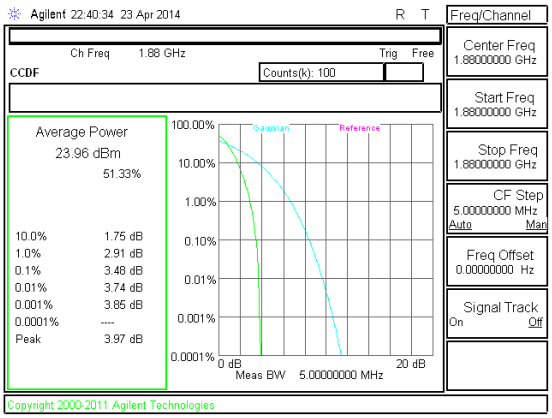
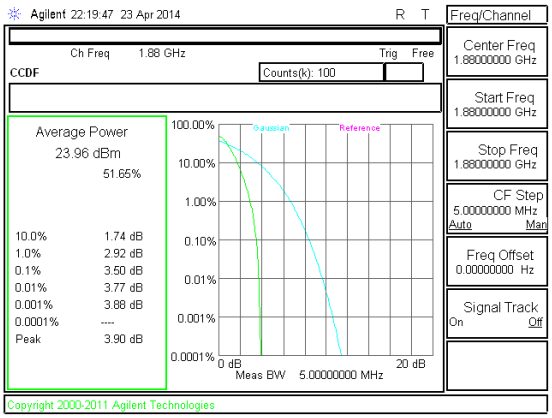
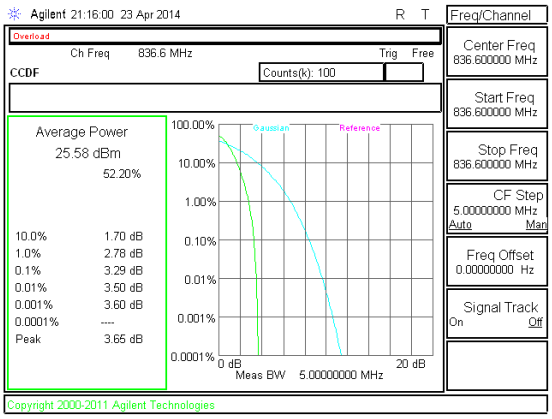
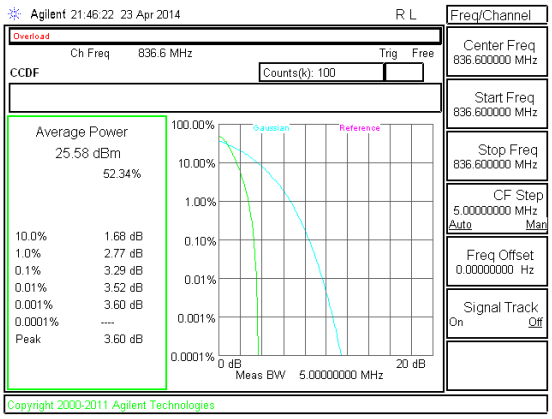
| | | |
|---|---|---|
| Band<br><br>Band 2<br><br>HSDPA |  <br>Band WCDMA B2 HSDPA |  <br>Band WCDMA B2 REL99 |
| Band<br><br>Band 5<br><br>HSDPA |  <br>Band WCDMA B5 HSDPA |  <br>Band WCDMA B5 REL99 |



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# 10. LIMITS AND CONDUCTED RESULTS

## 10.1. 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 v02r01 - 06/07/2013)



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### 10.1.1. OCCUPIED BANDWIDTH RESULTS

| Band | Mode | Channel | f (MHz) | 99% BW (KHz) | -26dB BW (KHz) |
|---|---|---|---|---|---|
| GSM850 | GPRS | 128 | 824.2 | 250.63 | 332.19 |
| | | 190 | 836.6 | 251.76 | 332.58 |
| | | 251 | 848.8 | 250.76 | 329.96 |
| | EGPRS | 128 | 824.2 | 255.42 | 330.17 |
| | | 190 | 836.6 | 251.71 | 324.15 |
| | | 251 | 848.8 | 253.6 | 319.87 |
| GSM1900 | GPRS | 512 | 1850.2 | 248.89 | 328.9 |
| | | 661 | 1880 | 251.61 | 333.46 |
| | | 810 | 1909.8 | 252.21 | 332.77 |
| | EGPRS | 512 | 1850.2 | 260.17 | 336.97 |
| | | 661 | 1880 | 252.99 | 328.12 |
| | | 810 | 1909.8 | 253.17 | 335.45 |
| Band | Mode | Channel | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
| Band 5 | REL99 | 4132 | 826.4 | 4.14 | 4.61 |
| | | 4183 | 836.6 | 4.14 | 4.61 |
| | | 4233 | 846.6 | 4.14 | 4.63 |
| | HSDPA | 4132 | 826.4 | 4.14 | 4.6 |
| | | 4183 | 836.6 | 4.14 | 4.58 |
| | | 4233 | 846.6 | 4.13 | 4.63 |
| Band 2 | REL99 | 9262 | 1852.4 | 4.15 | 4.62 |
| | | 9400 | 1880 | 4.14 | 4.61 |
| | | 9538 | 1907.6 | 4.16 | 4.6 |
| | HSDPA | 9262 | 1852.4 | 4.12 | 4.6 |
| | | 9400 | 1880 | 4.15 | 4.59 |
| | | 9538 | 1907.6 | 4.16 | 4.61 |



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### 10.1.2. LTE OCCUPIED BANDWIDTH RESULTS

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE17 | 10 | QPSK | 50/0 | 709 | 8.93 | 9.71 |
| | | | 50/0 | 710 | 8.96 | 9.81 |
| | | | 50/0 | 711 | 8.95 | 9.7 |
| | | 16QAM | 50/0 | 709 | 8.94 | 9.58 |
| | | | 50/0 | 710 | 8.94 | 9.75 |
| | | | 50/0 | 711 | 8.94 | 9.69 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE17 | 5 | QPSK | 25/0 | 706.5 | 4.48 | 4.9 |
| | | | 25/0 | 710 | 4.46 | 4.87 |
| | | | 25/0 | 713.5 | 4.47 | 4.9 |
| | | 16QAM | 25/0 | 706.5 | 4.48 | 4.89 |
| | | | 25/0 | 710 | 4.48 | 4.94 |
| | | | 25/0 | 713.5 | 4.48 | 4.94 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE7 | 20 | QPSK | 100/0 | 2510 | 17.85 | 18.99 |
| | | | 100/0 | 2535 | 17.78 | 19.00 |
| | | | 100/0 | 2560 | 17.80 | 18.88 |
| | | 16QAM | 100/0 | 2510 | 17.83 | 19.16 |
| | | | 100/0 | 2535 | 17.83 | 19.14 |
| | | | 100/0 | 2560 | 17.81 | 19.06 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE7 | 15 | QPSK | 75/0 | 2507.5 | 13.39 | 14.31 |
| | | | 75/0 | 2535 | 13.39 | 14.31 |
| | | | 75/0 | 2562.5 | 13.39 | 14.39 |
| | | 16QAM | 75/0 | 2507.5 | 13.38 | 14.46 |
| | | | 75/0 | 2535 | 13.37 | 14.37 |



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| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 75/0 | 2562.5 | 13.40 | 14.40 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE7 | 10 | QPSK | 50/0 | 2505 | 8.83 | 9.69 |
| | | | 50/0 | 2535 | 8.92 | 9.70 |
| | | | 50/0 | 2565 | 8.93 | 9.78 |
| | | 16QAM | 50/0 | 2505 | 8.94 | 9.70 |
| | | | 50/0 | 2535 | 8.92 | 9.69 |
| | | | 50/0 | 2565 | 8.94 | 9.75 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE7 | 5 | QPSK | 25/0 | 2502.5 | 4.46 | 4.90 |
| | | | 25/0 | 2535 | 4.46 | 4.90 |
| | | | 25/0 | 2567.5 | 4.47 | 4.91 |
| | | 16QAM | 25/0 | 2502.5 | 4.48 | 4.97 |
| | | | 25/0 | 2535 | 4.46 | 4.88 |
| | | | 25/0 | 2567.5 | 4.59 | 5.10 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE5 | 10 | QPSK | 50/0 | 829 | 8.84 | 9.21 |
| | | | 50/0 | 836.5 | 8.88 | 9.24 |
| | | | 50/0 | 844 | 8.9 | 9.17 |
| | | 16QAM | 50/0 | 829 | 8.84 | 9.21 |
| | | | 50/0 | 836.5 | 8.9 | 9.18 |
| | | | 50/0 | 844 | 8.9 | 9.37 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE5 | 5 | QPSK | 25/0 | 826.5 | 4.48 | 4.61 |
| | | | 25/0 | 836.5 | 4.46 | 4.73 |
| | | | 25/0 | 846.5 | 4.46 | 4.63 |
| | | 16QAM | 25/0 | 826.5 | 4.46 | 4.67 |



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| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 25/0 | 836.5 | 4.46 | 4.6 |
| | | | 25/0 | 846.5 | 4.45 | 4.62 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE4 | 10 | QPSK | 50/0 | 1715 | 8.71 | 9.14 |
| | | | 50/0 | 1732.5 | 8.86 | 9.17 |
| | | | 50/0 | 1750 | 8.95 | 9.22 |
| | | 16QAM | 50/0 | 1715 | 8.81 | 9.4 |
| | | | 50/0 | 1732.5 | 8.96 | 9.2 |
| | | | 50/0 | 1750 | 8.9 | 9.22 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE4 | 5 | QPSK | 25/0 | 1712.5 | 4.43 | 4.7 |
| | | | 25/0 | 1732.5 | 4.43 | 4.7 |
| | | | 25/0 | 1752.5 | 4.42 | 4.59 |
| | | 16QAM | 25/0 | 1712.5 | 4.4 | 4.62 |
| | | | 25/0 | 1732.5 | 4.44 | 4.64 |
| | | | 25/0 | 1752.5 | 4.45 | 4.63 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE2 | 10 | QPSK | 50/0 | 1855 | 8.92 | 9.23 |
| | | | 50/0 | 1880 | 8.93 | 9.15 |
| | | | 50/0 | 1905 | 8.94 | 9.19 |
| | | 16QAM | 50/0 | 1855 | 8.88 | 9.6 |
| | | | 50/0 | 1880 | 8.91 | 9.4 |
| | | | 50/0 | 1905 | 8.89 | 9.33 |

| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|---|
| LTE2 | 5 | QPSK | 25/0 | 1852.5 | 4.47 | 4.74 |
| | | | 25/0 | 1880 | 4.47 | 4.79 |
| | | | 25/0 | 1907.5 | 4.45 | 4.69 |



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| | | | | | | |
|---|---|---|---|---|---|---|
| | | 16QAM | 25/0 | 1852.5 | 4.44 | 4.8 |
| | | | 25/0 | 1880 | 4.49 | 4.7 |
| | | | 25/0 | 1907.5 | 4.44 | 4.49 |



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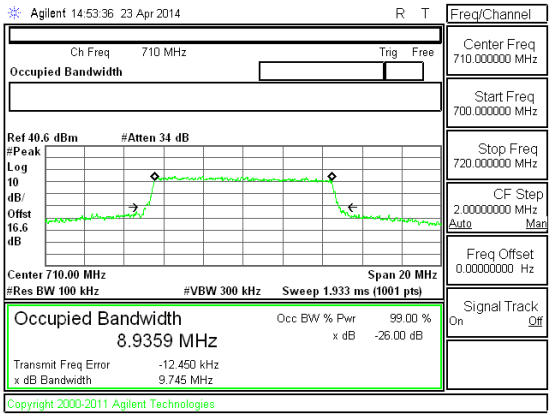
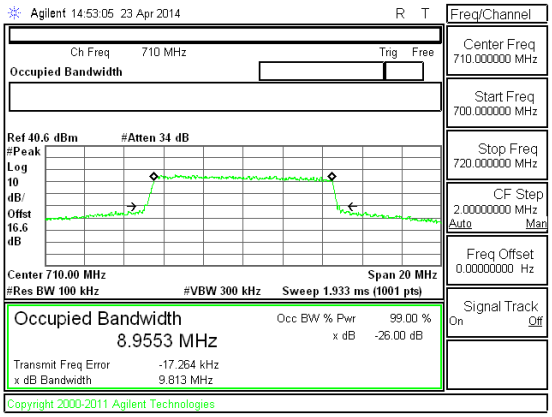
## 10.1.3. OCCUPIED BANDWIDTH PLOTS

| | | |
|---|---|---|
| Band LTE17 10MHz 16QAM |  <br>Band LTE17 10MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE17 10MHz OBW QPSK Mid Channel FRB.gif |



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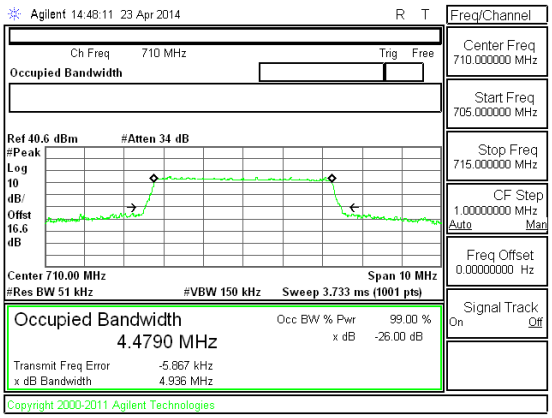
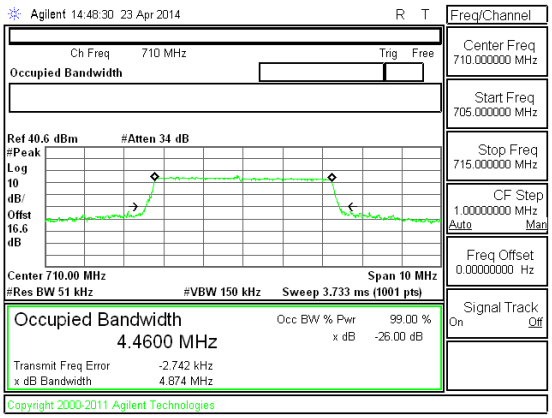
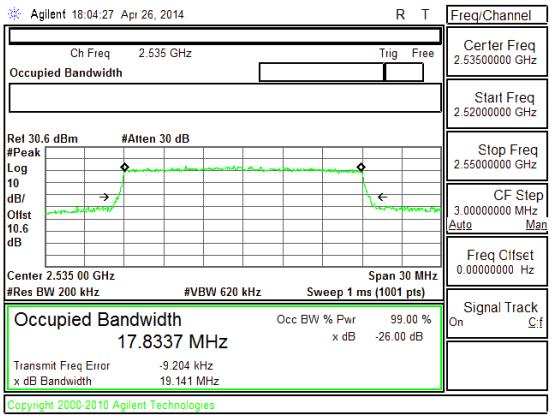
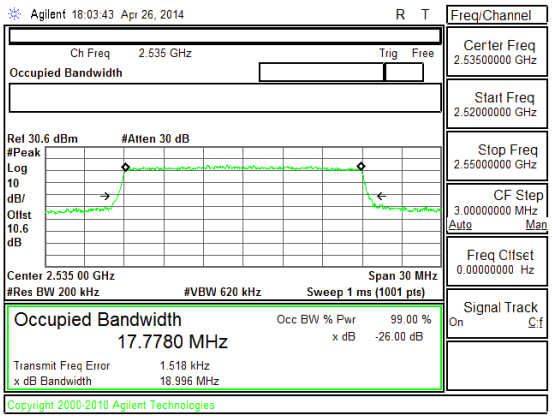
| | | |
|---|---|---|
| Band LTE17 5MHz 16QAM |  <br>Band LTE17 5MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE17 5MHz OBW QPSK Mid Channel FRB.gif |
| Band LTE7 20MHz 16QAM |  <br>Band LTE7 20MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE7 20MHz OBW QPSK Mid Channel FRB.gif |



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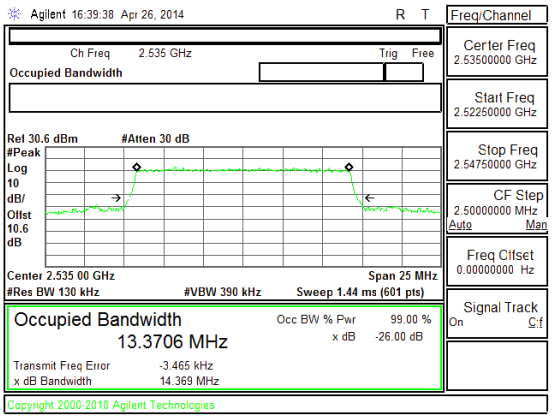
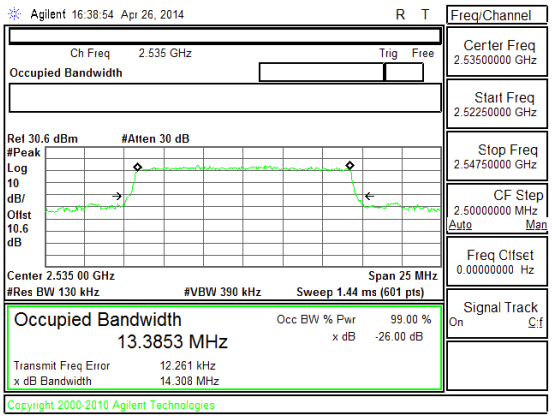
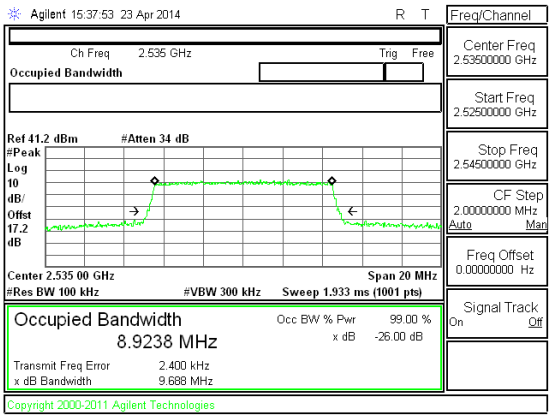
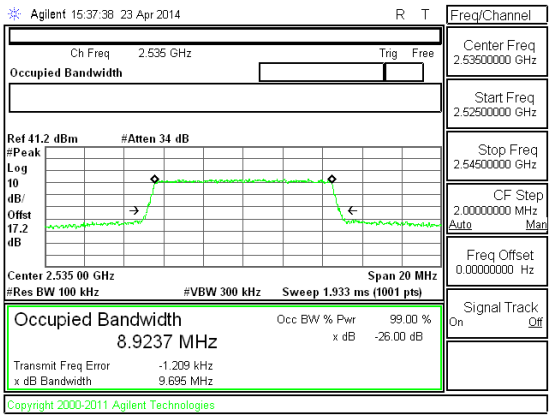
| | | |
|---|---|---|
| Band LTE7 15MHz 16QAM |  <br>Band LTE7 15MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE7 15MHz OBW QPSK Mid Channel FRB.gif |
| Band LTE7 10MHz 16QAM |  <br>Band LTE7 10MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE7 10MHz OBW QPSK Mid Channel FRB.gif |



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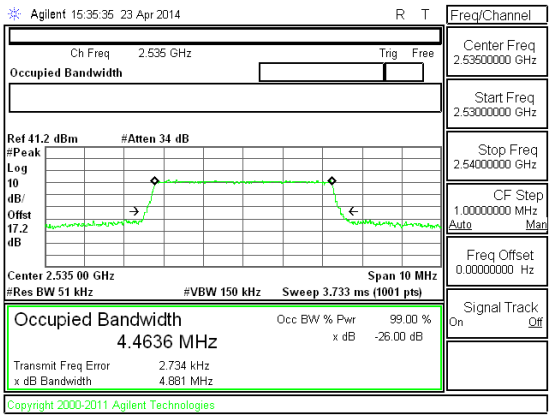
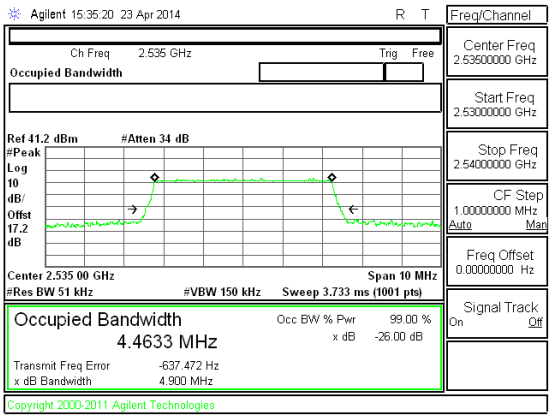
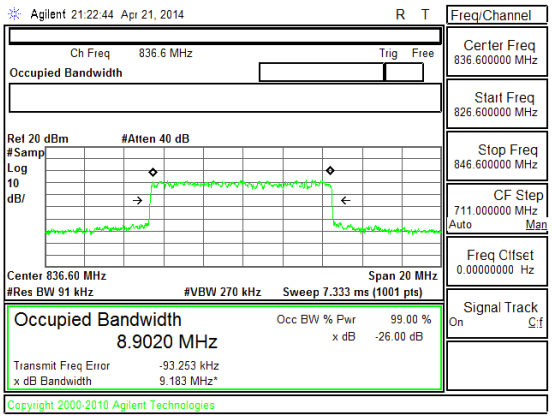
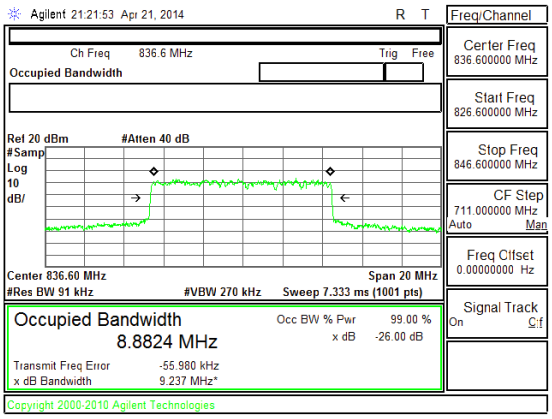
| | | |
|---|---|---|
| Band LTE7 5MHz 16QAM |  <br>Band LTE7 5MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE7 5MHz OBW QPSK Mid Channel FRB.gif |
| Band LTE5 10MHz 16QAM |  <br>Band LTE5 10MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif |



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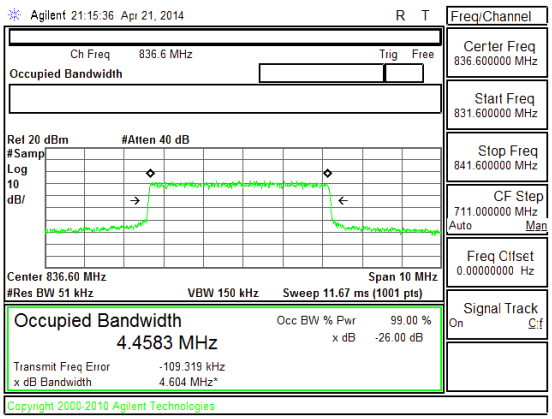
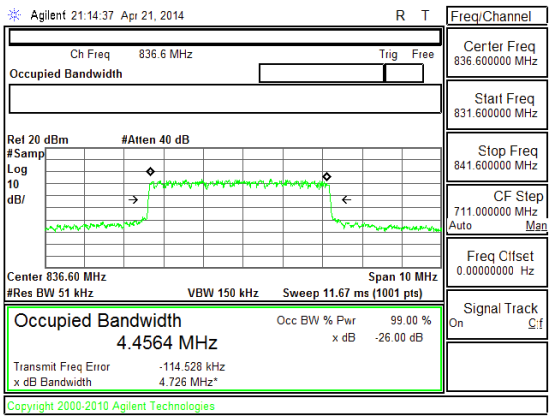
| | | |
|---|---|---|
| Band<br>LTE5<br>5MHz<br>16QAM |  <br>Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE5 5MHz OBW QPSK Mid Channel FRB.gif |



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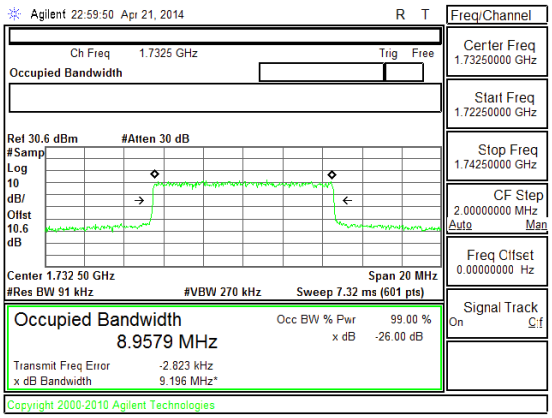
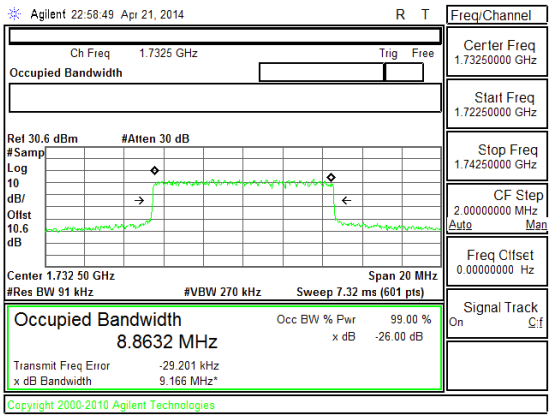
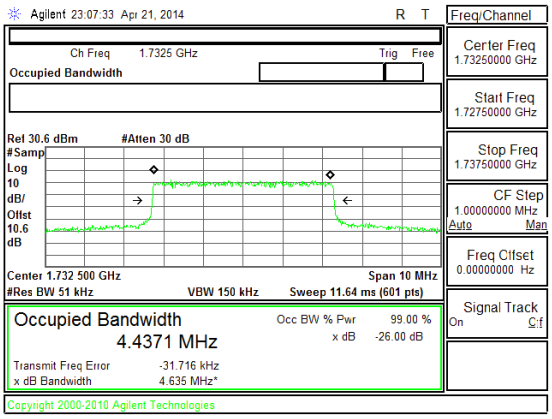
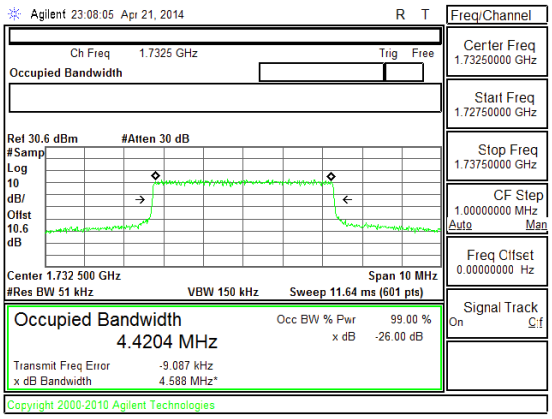
| | | |
|---|---|---|
| Band LTE4 10MHz 16QAM |  <br>Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif |
| Band LTE4 5MHz 16QAM |  <br>Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif |



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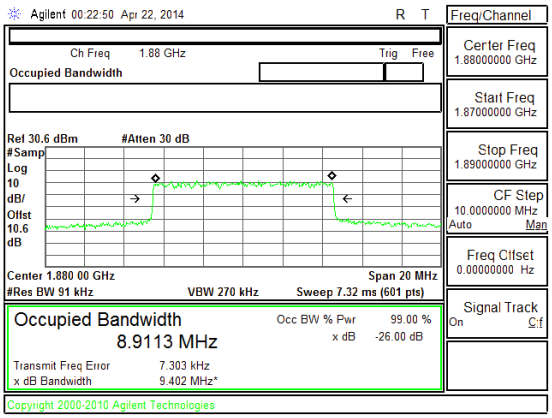
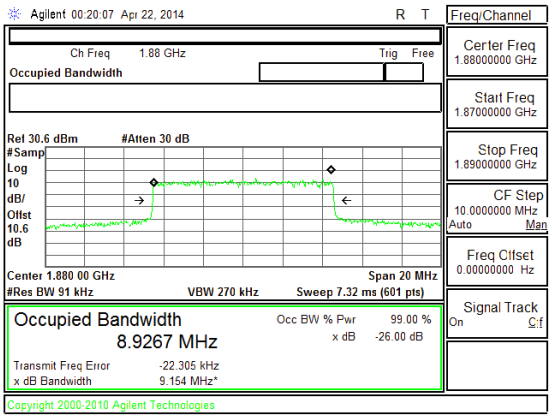
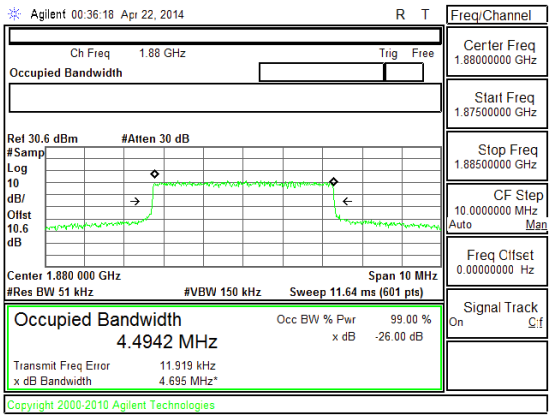
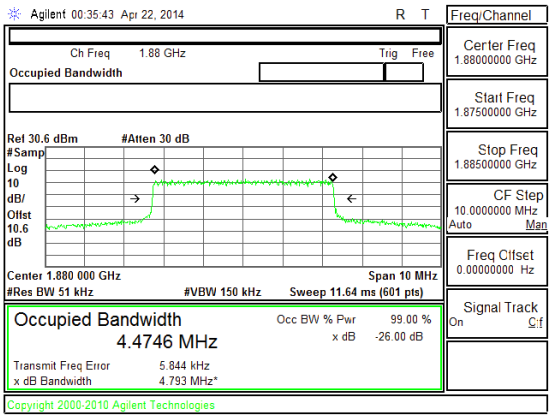
| | | |
|---|---|---|
| Band LTE2 10MHz 16QAM |  <br>Band LTE2 10MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE2 10MHz OBW QPSK Mid Channel FRB.gif |
| Band LTE2 5MHz 16QAM |  <br>Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif |  <br>Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif |



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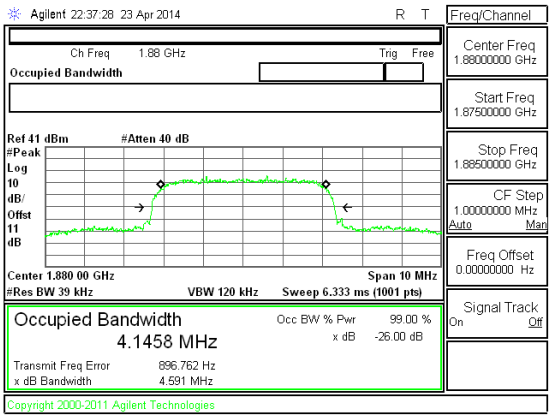
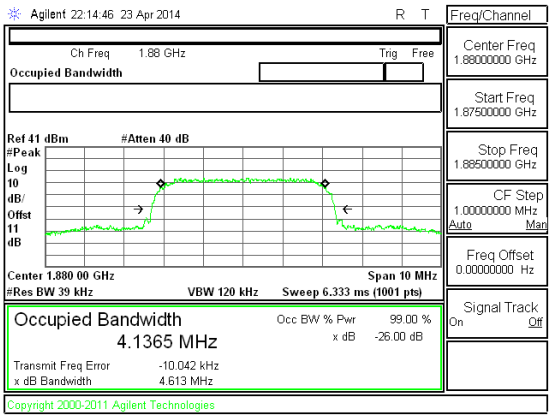
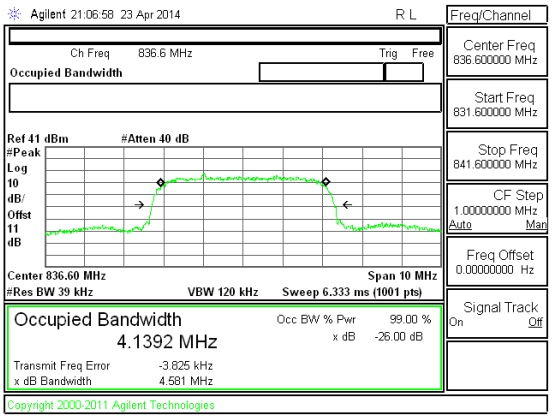
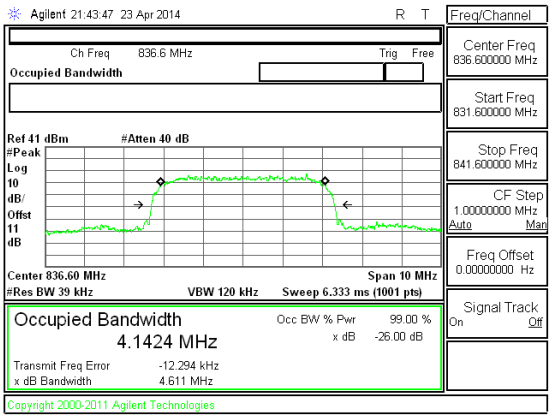
| | | |
|---|---|---|
| Band<br><br>Band 2<br><br>HSDPA |  <br>Band WCDMA B2 HSDPA OBW |  <br>Band WCDMA B2 REL99 OBW |
| Band<br><br>Band 5<br><br>HSDPA |  <br>Band WCDMA B5 HSDPA OBW |  <br>Band WCDMA B5 REL99 OBW |



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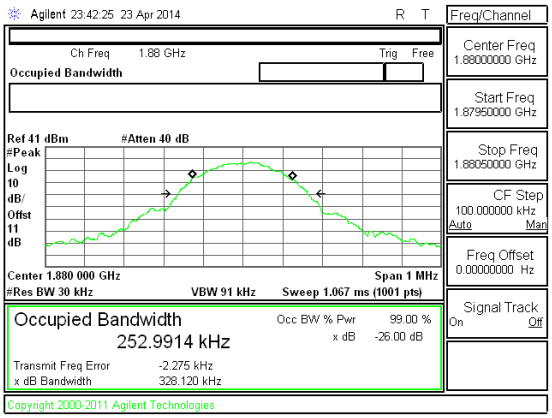
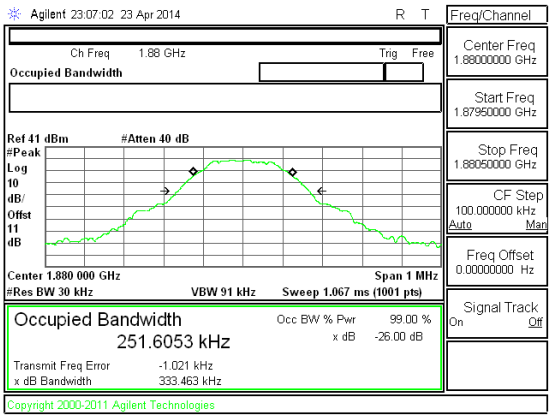
Band GSM1900 EGPRS

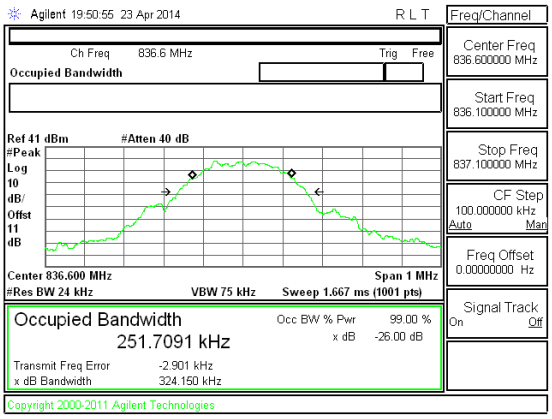



Band GSM1900 EGPRS OBW Mid channel



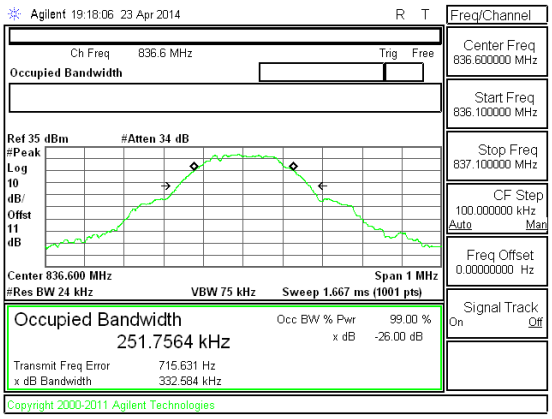

Band GSM1900 GPRS OBW Mid channel

Band GSM850 EGPRS




Band GSM850 EGPRS OBW Mid channel

Band GSM850 GPRS




Band GSM850 GPRS OBW Mid channel



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## 10.2. BAND EDGE EMISSIONS

**RULE PART(S)**

FCC: §22.359, §24.238, §27

**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.

**TEST PROCEDURE**

Per KDB 971168 D01 Power Meas License Digital Systems v02r01
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.

**RESULTS**



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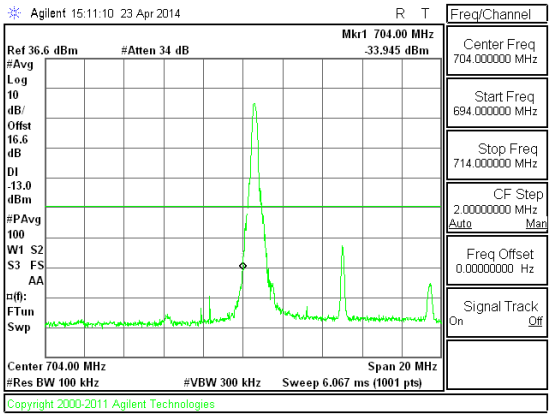
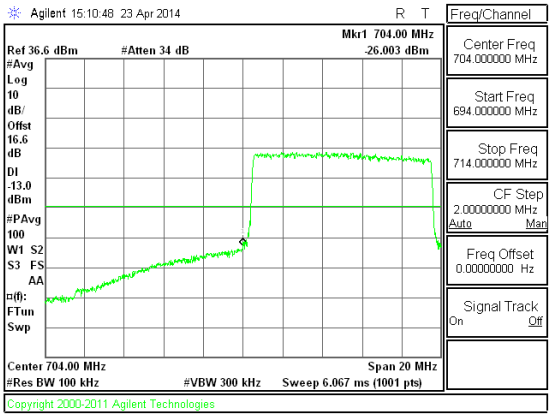
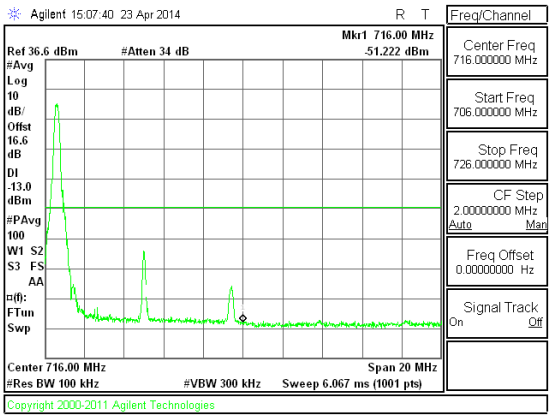
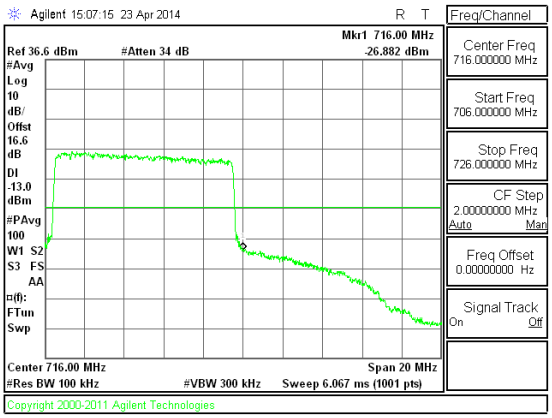
### 10.2.1. BAND EDGE PLOTS

| | | |
|---|---|---|
| Band LTE17 10MHz 16QAM |  <br>Band LTE17 10MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE17 10MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE17 10MHz 16QAM |  <br>Band LTE17 10MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE17 10MHz CBE 16QAM High Channel FRB.gif |



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| | | |
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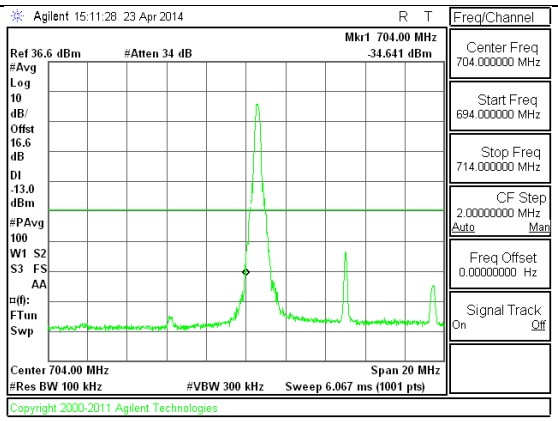
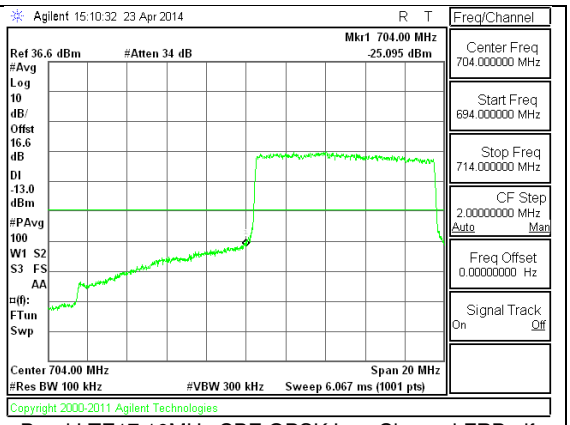
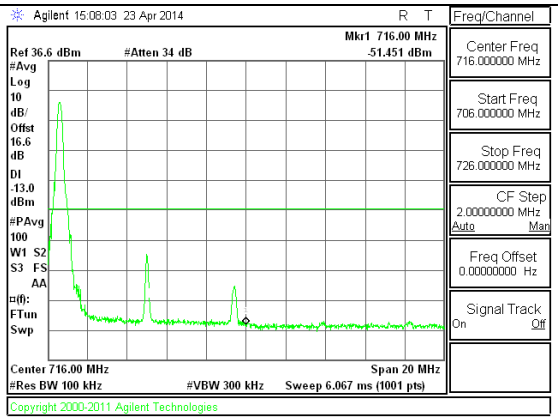
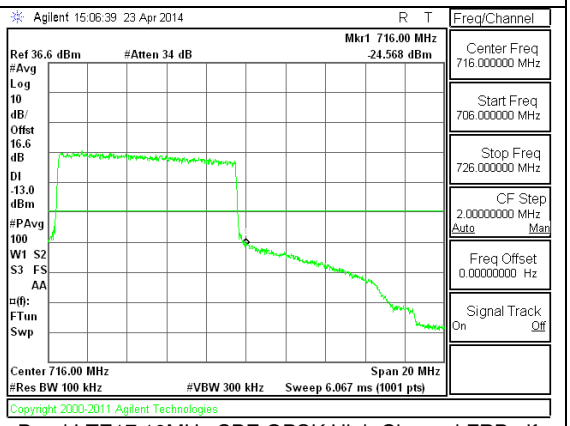
| Band LTE17 10MHz QPSK |  <br>Band LTE17 10MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE17 10MHz CBE QPSK Low Channel FRB.gif |
| Band LTE17 10MHz QPSK |  <br>Band LTE17 10MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE17 10MHz CBE QPSK High Channel FRB.gif |



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| | | |
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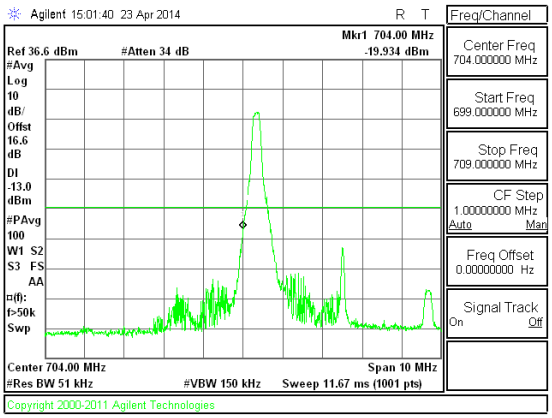
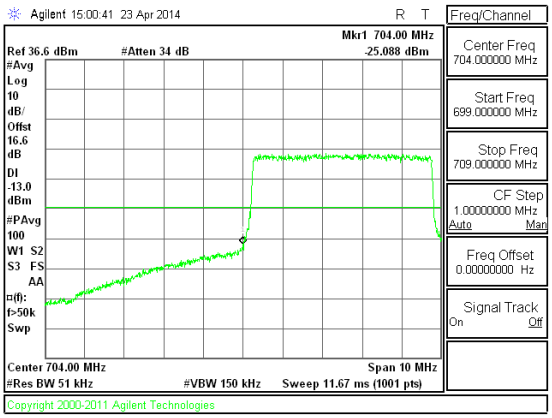
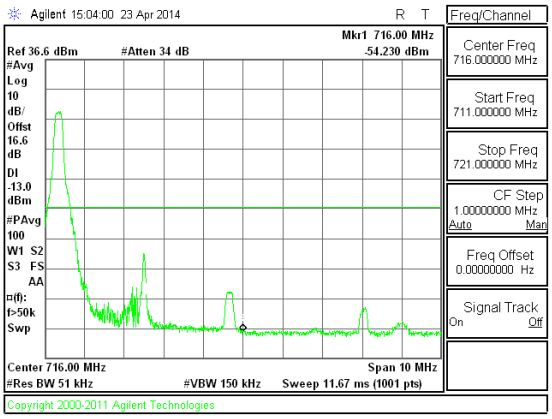
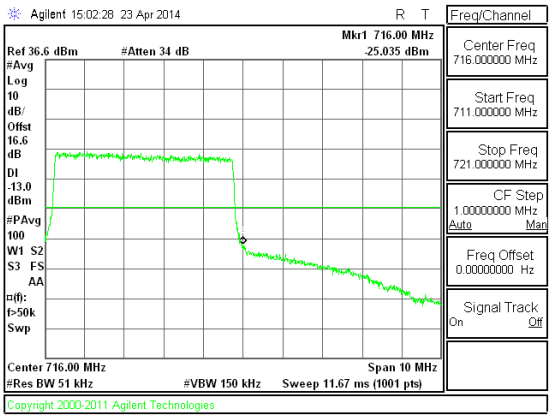
| Band LTE17 5MHz 16QAM |  <br>Band LTE17 5MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE17 5MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE17 5MHz 16QAM |  <br>Band LTE17 5MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE17 5MHz CBE 16QAM High Channel FRB.gif |



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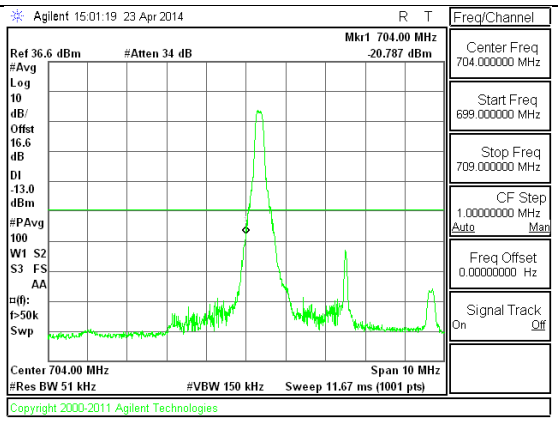
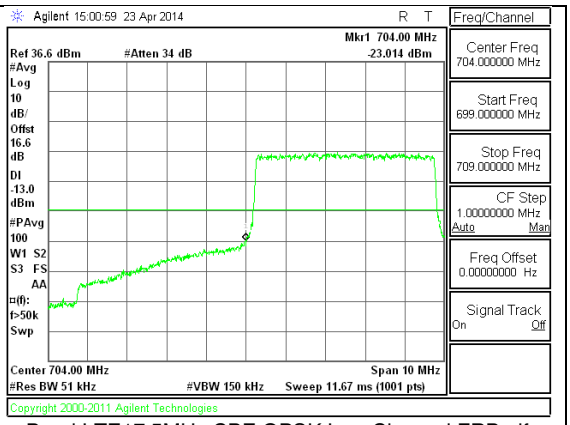
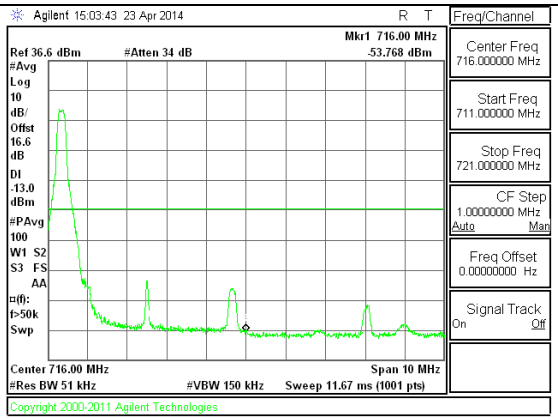
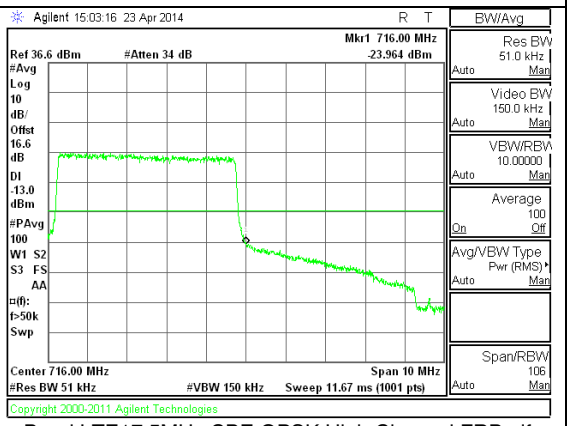
| | | |
|---|---|---|
| Band LTE17 5MHz QPSK |  <br>Band LTE17 5MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE17 5MHz CBE QPSK Low Channel FRB.gif |
| Band LTE17 5MHz QPSK |  <br>Band LTE17 5MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE17 5MHz CBE QPSK High Channel FRB.gif |



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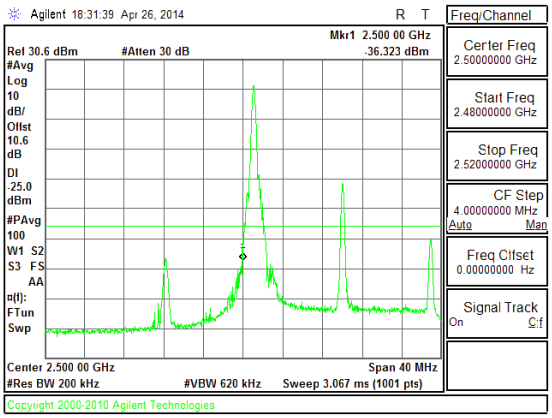
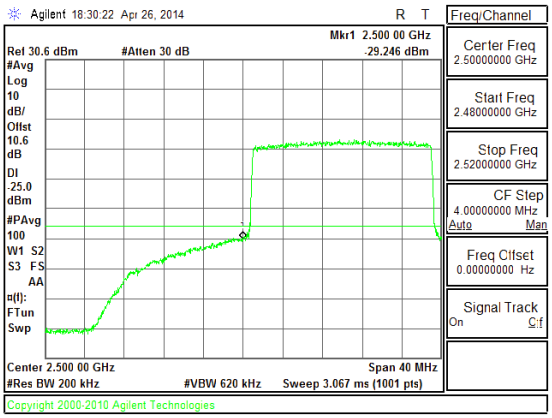
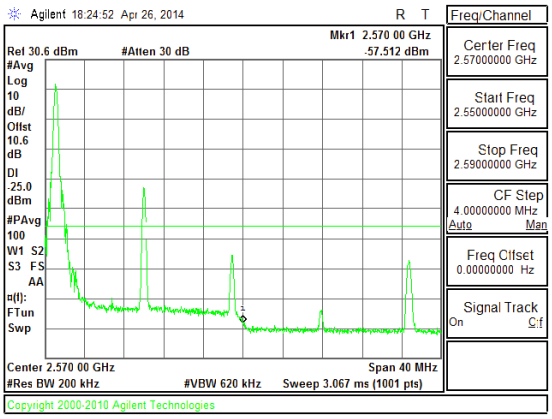
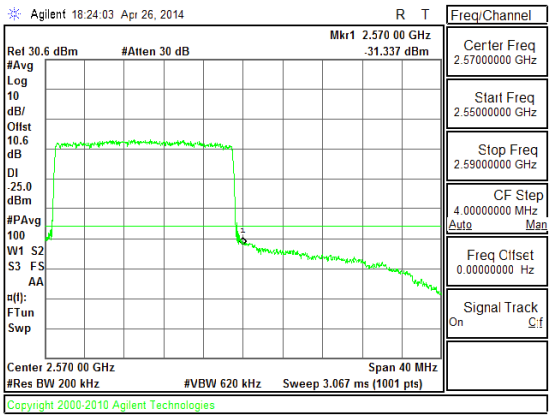
| | | |
|---|---|---|
| Band LTE7 20MHz 16QAM |  <br>Band LTE7 20MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE7 20MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE7 20MHz 16QAM |  <br>Band LTE7 20MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE7 20MHz CBE 16QAM High Channel FRB.gif |



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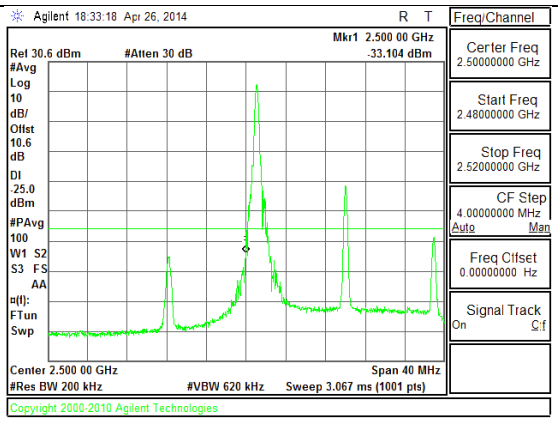
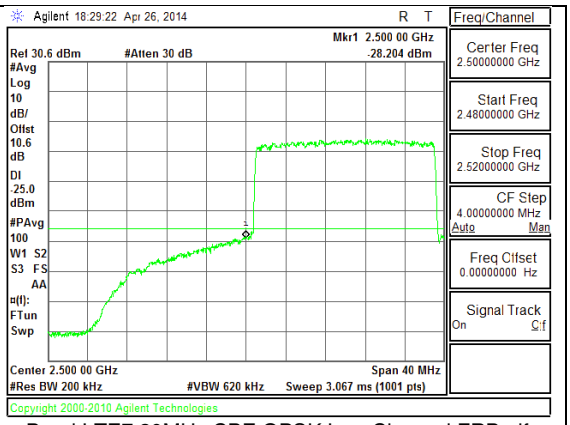
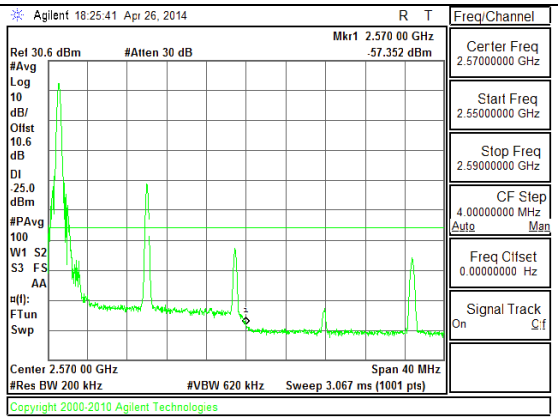
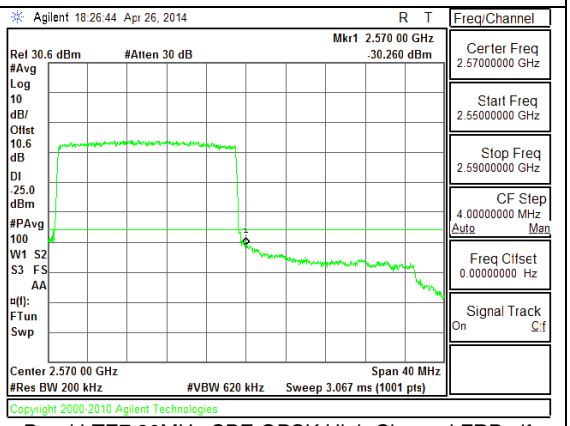
| | | |
|---|---|---|
| Band LTE7 20MHz QPSK |  <br>Band LTE7 20MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE7 20MHz CBE QPSK Low Channel FRB.gif |
| Band LTE7 20MHz QPSK |  <br>Band LTE7 20MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE7 20MHz CBE QPSK High Channel FRB.gif |



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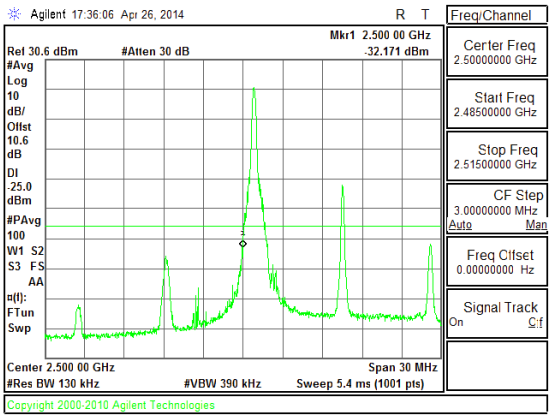
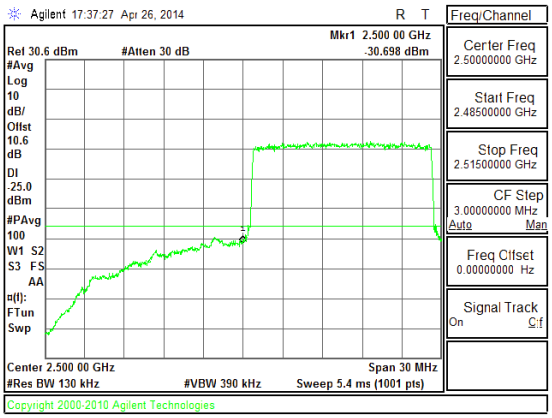
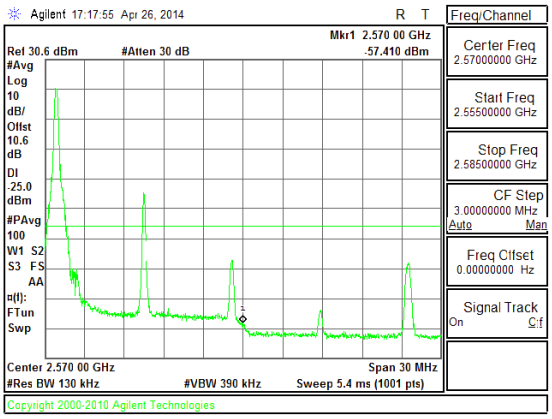
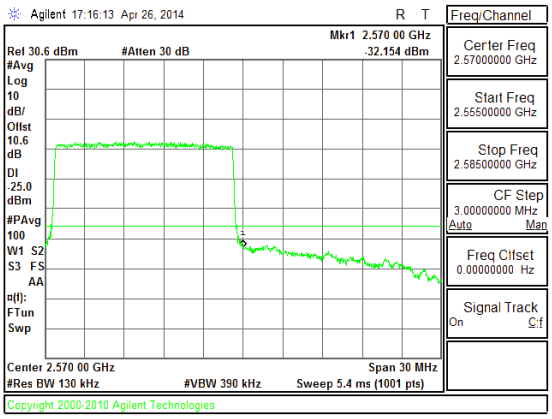
| | | |
|---|---|---|
| Band LTE7 15MHz 16QAM |  <br>Band LTE7 15MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE7 15MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE7 15MHz 16QAM |  <br>Band LTE7 15MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE7 15MHz CBE 16QAM High Channel FRB.gif |



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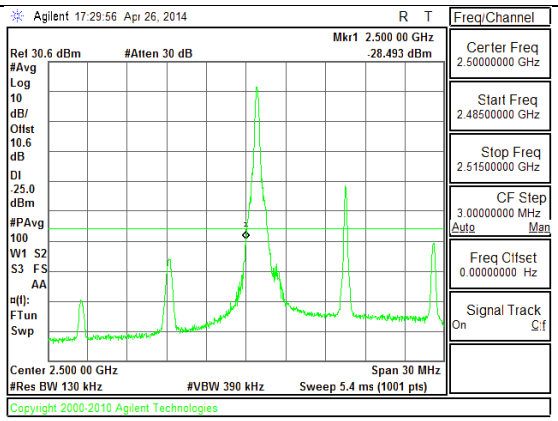
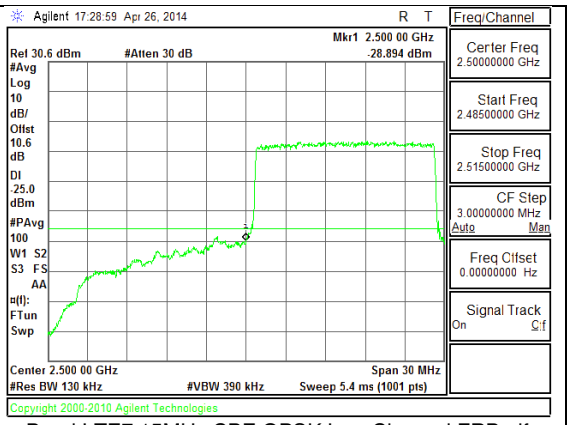
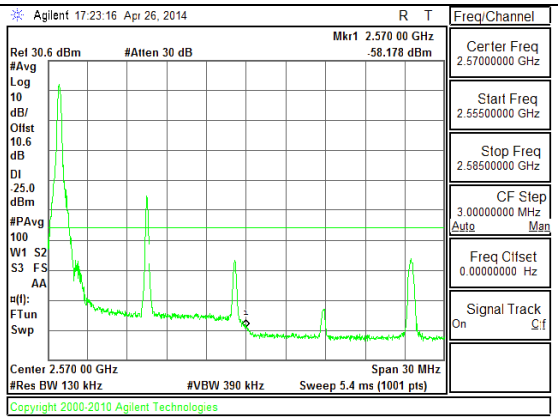
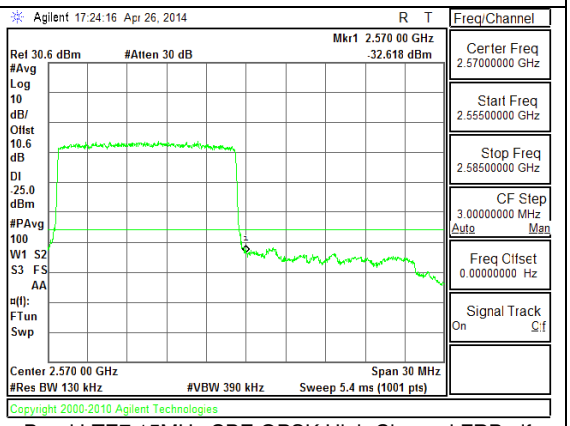
| Band LTE7 15MHz QPSK |  <br>Band LTE7 15MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE7 15MHz CBE QPSK Low Channel FRB.gif |
| Band LTE7 15MHz QPSK |  <br>Band LTE7 15MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE7 15MHz CBE QPSK High Channel FRB.gif |



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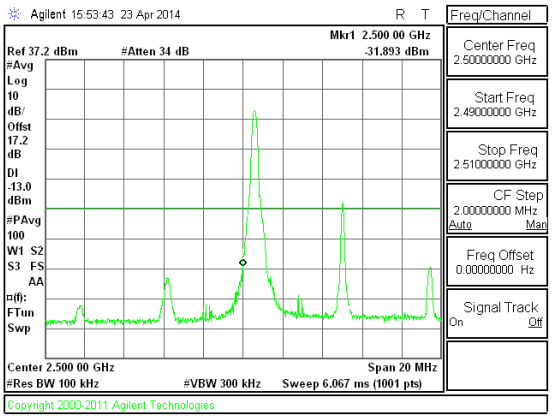
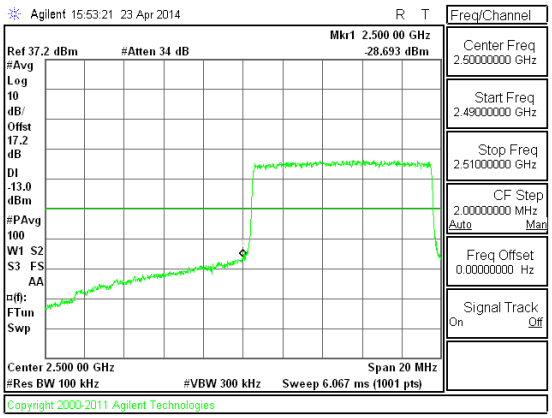
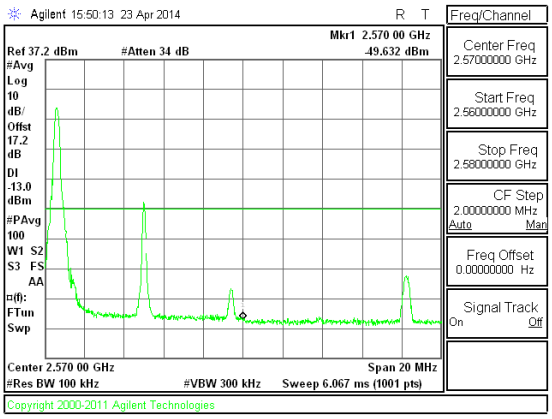
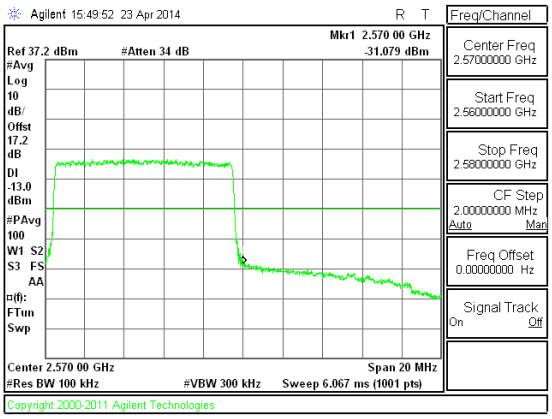
| | | |
|---|---|---|
| Band LTE7 10MHz 16QAM |  <br>Band LTE7 10MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE7 10MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE7 10MHz 16QAM |  <br>Band LTE7 10MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE7 10MHz CBE 16QAM High Channel FRB.gif |



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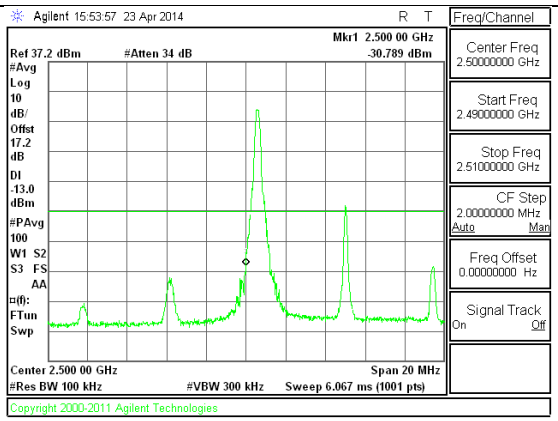
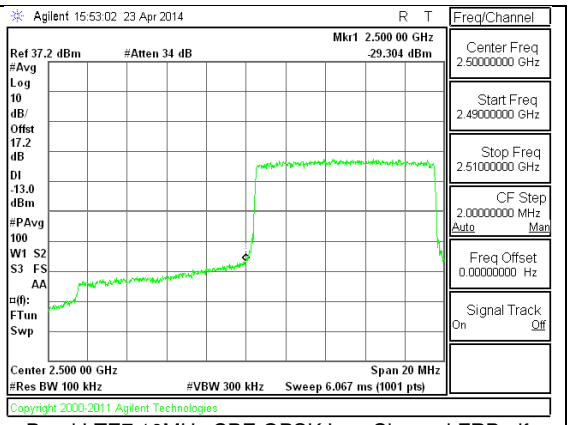
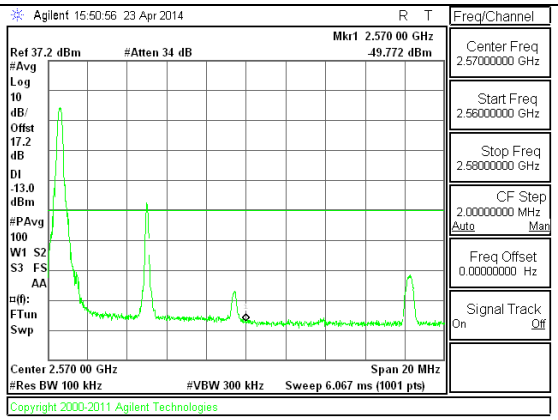
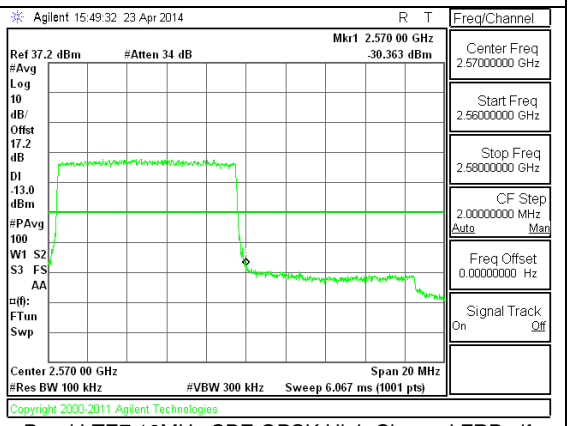
| Band LTE7 10MHz QPSK |  <br>Band LTE7 10MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE7 10MHz CBE QPSK Low Channel FRB.gif |
| Band LTE7 10MHz QPSK |  <br>Band LTE7 10MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE7 10MHz CBE QPSK High Channel FRB.gif |



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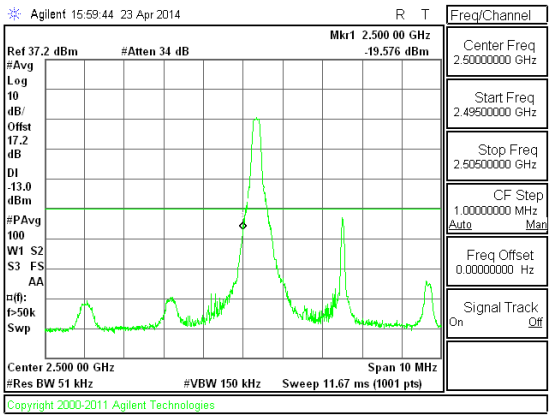
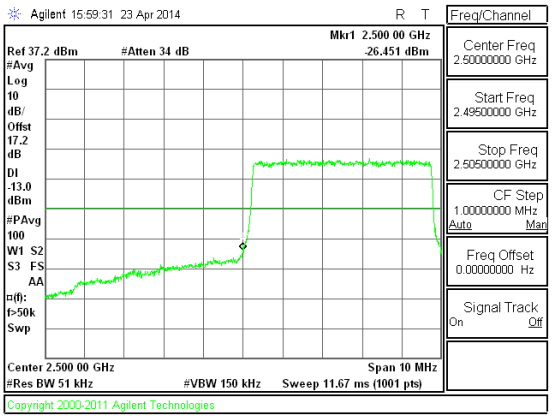
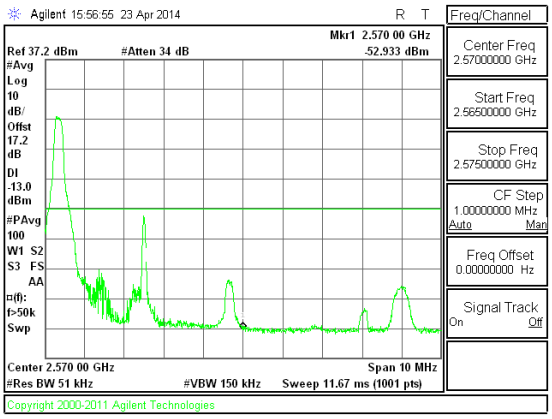
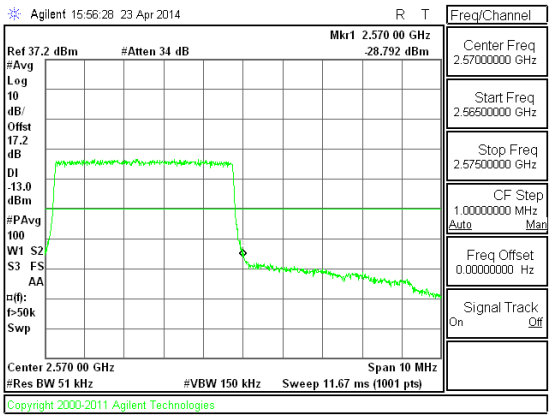
| | | |
|---|---|---|
| Band LTE7 5MHz 16QAM |  <br>Band LTE7 5MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE7 5MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE7 5MHz 16QAM |  <br>Band LTE7 5MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE7 5MHz CBE 16QAM High Channel FRB.gif |



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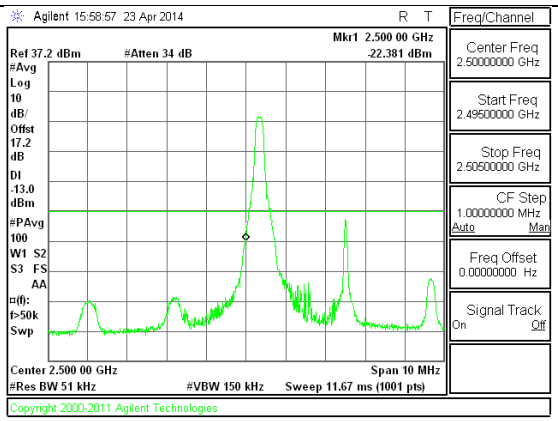
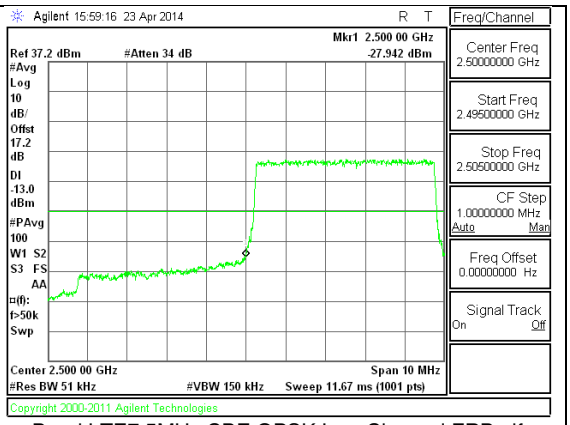
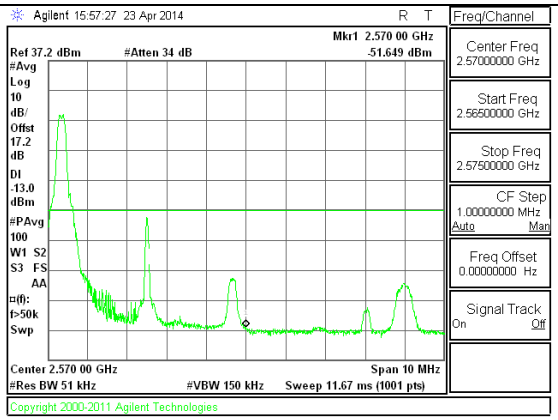
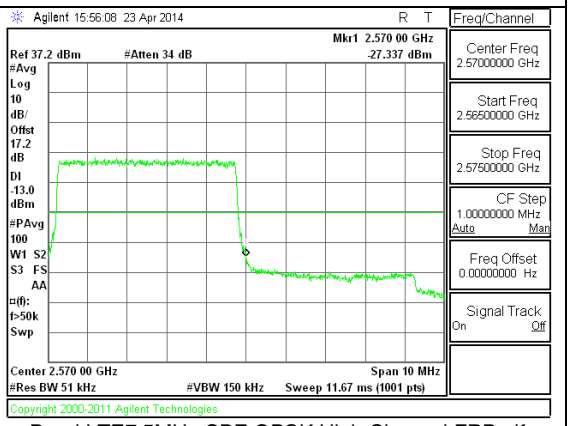
| | | |
|---|---|---|
| Band LTE7 5MHz QPSK |  <br>Band LTE7 5MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE7 5MHz CBE QPSK Low Channel FRB.gif |
| Band LTE7 5MHz QPSK |  <br>Band LTE7 5MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE7 5MHz CBE QPSK High Channel FRB.gif |



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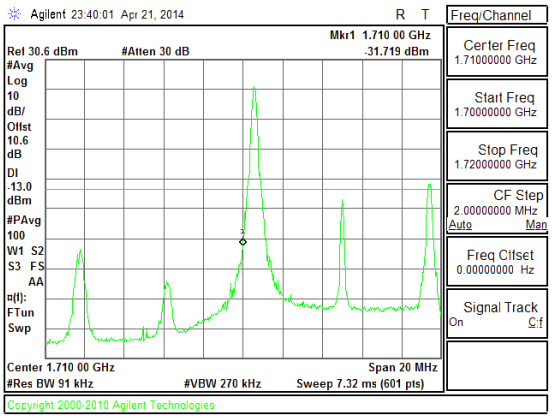
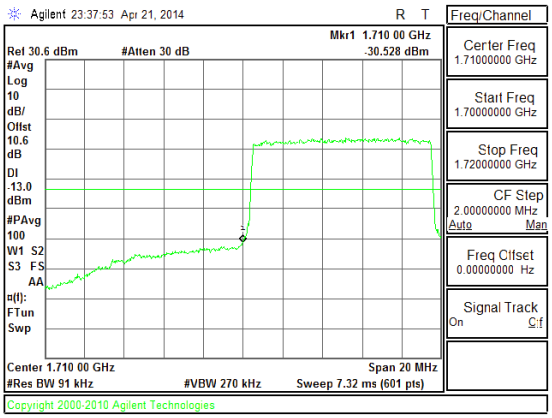
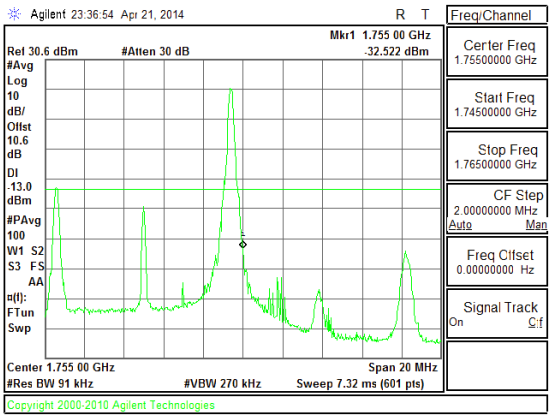
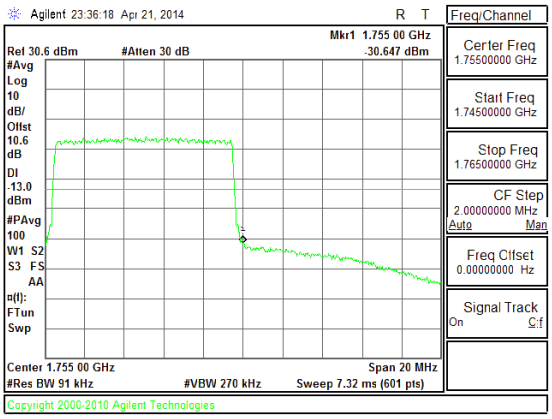
| | | |
|---|---|---|
| Band LTE4 10MHz 16QAM |  <br>Band LTE4 10MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE4 10MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE4 10MHz 16QAM |  <br>Band LTE4 10MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE4 10MHz CBE 16QAM High Channel FRB.gif |



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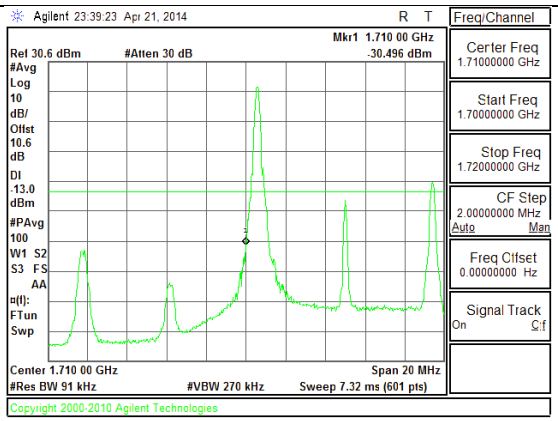
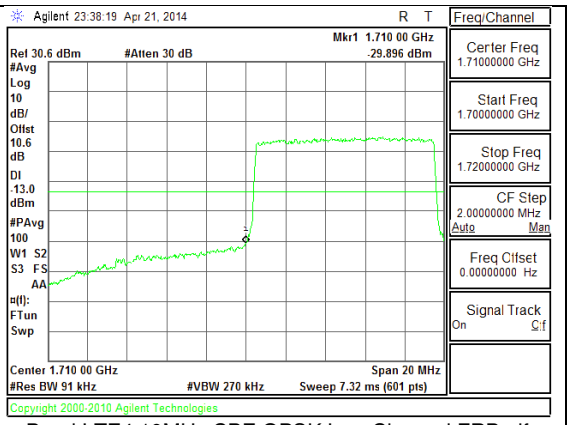
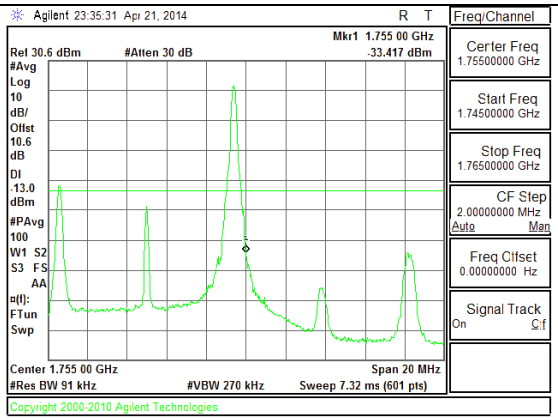
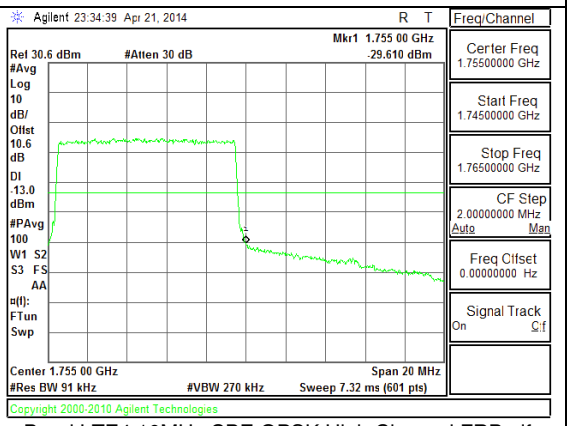
| | | |
|---|---|---|
| Band LTE4 10MHz QPSK |  <br>Band LTE4 10MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE4 10MHz CBE QPSK Low Channel FRB.gif |
| Band LTE4 10MHz QPSK |  <br>Band LTE4 10MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE4 10MHz CBE QPSK High Channel FRB.gif |



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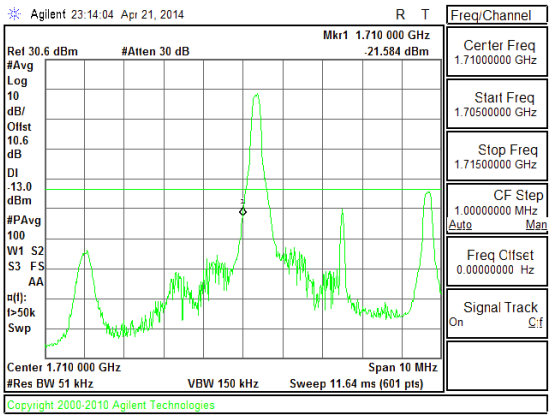
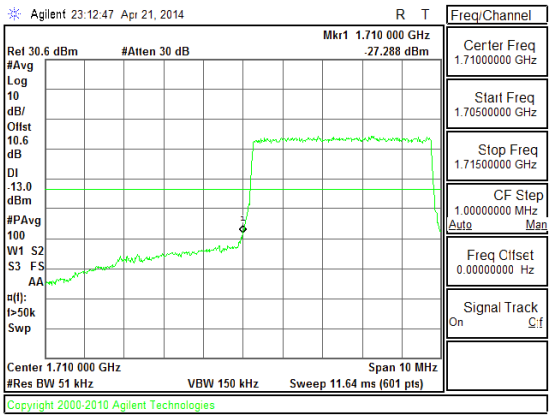
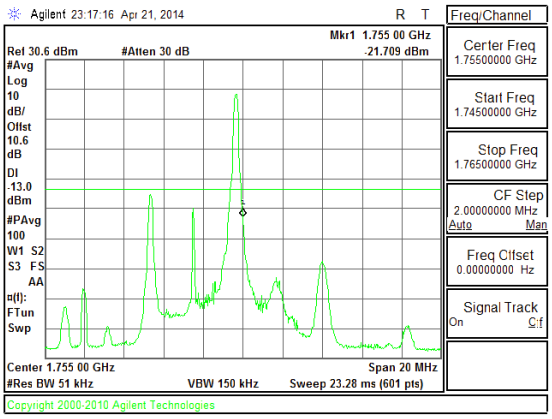
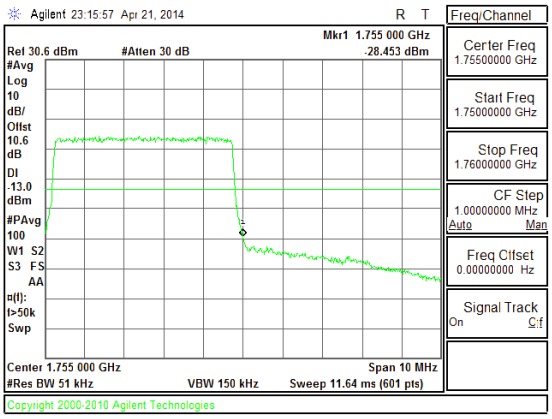
|---|---|---|
| Band LTE4 5MHz 16QAM |  <br>Band LTE4 5MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE4 5MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE4 5MHz 16QAM |  <br>Band LTE4 5MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE4 5MHz CBE 16QAM High Channel FRB.gif |



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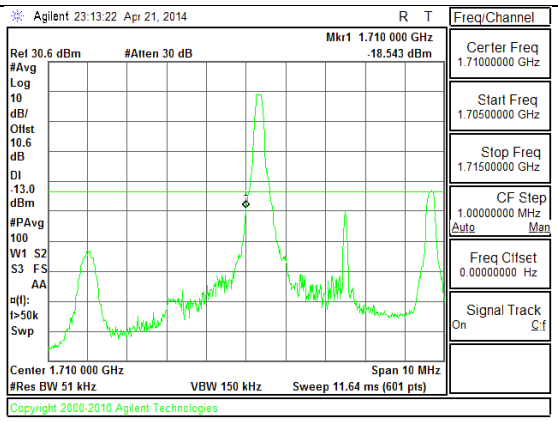
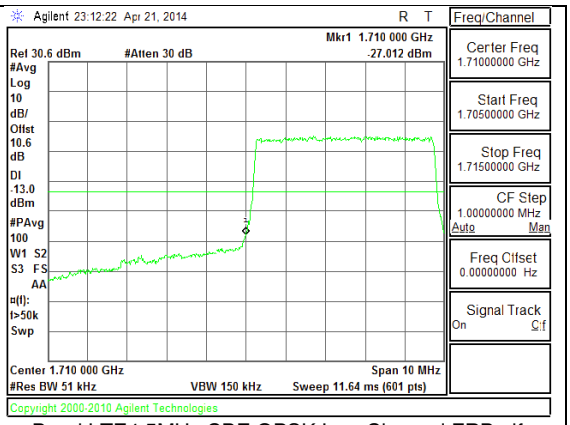
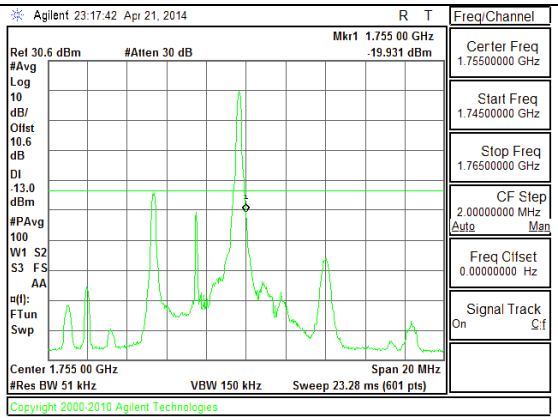
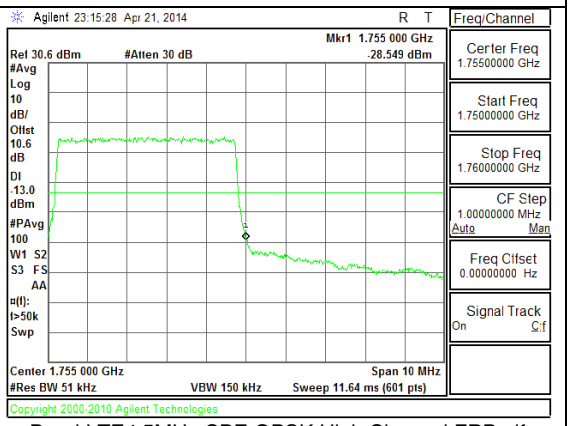
|---|---|---|
| Band LTE4 5MHz QPSK |  <br>Band LTE4 5MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE4 5MHz CBE QPSK Low Channel FRB.gif |
| Band LTE4 5MHz QPSK |  <br>Band LTE4 5MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE4 5MHz CBE QPSK High Channel FRB.gif |



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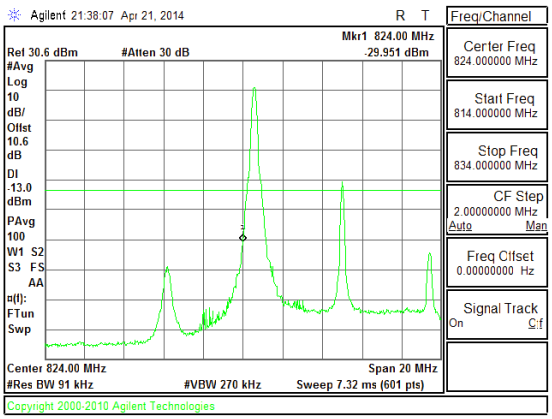
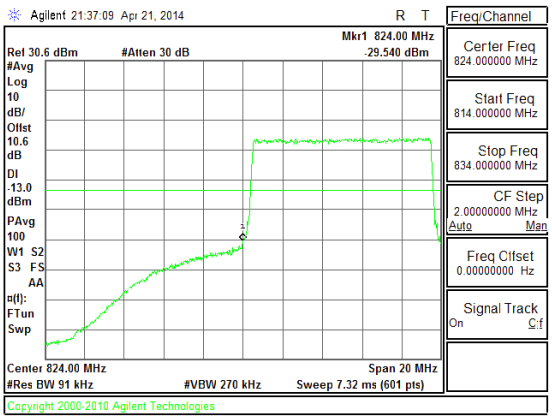
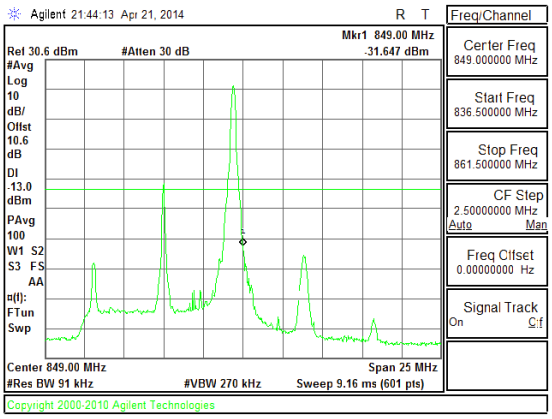
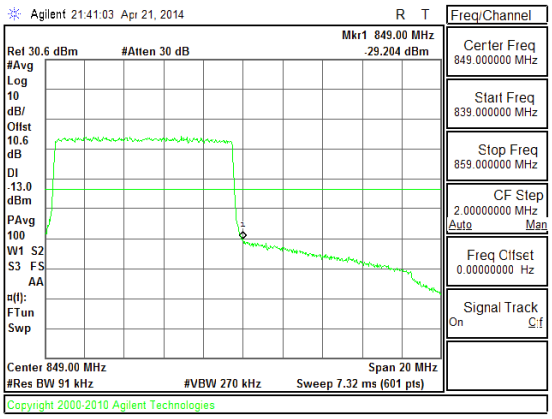
|---|---|---|
| Band LTE5 10MHz 16QAM |  <br>Band LTE5 10MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE5 10MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE5 10MHz 16QAM |  <br>Band LTE5 10MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE5 10MHz CBE 16QAM High Channel FRB.gif |



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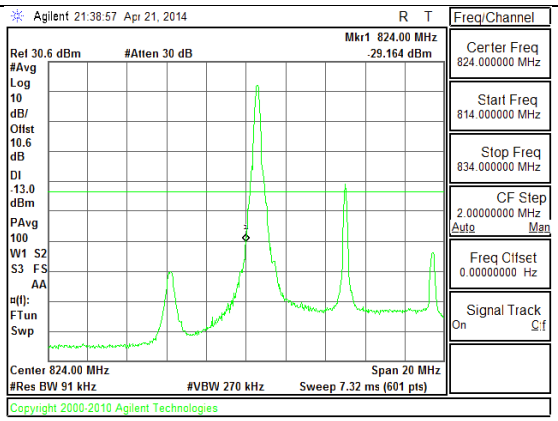
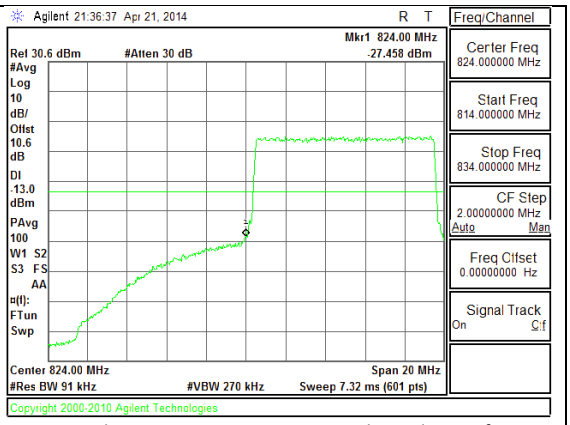
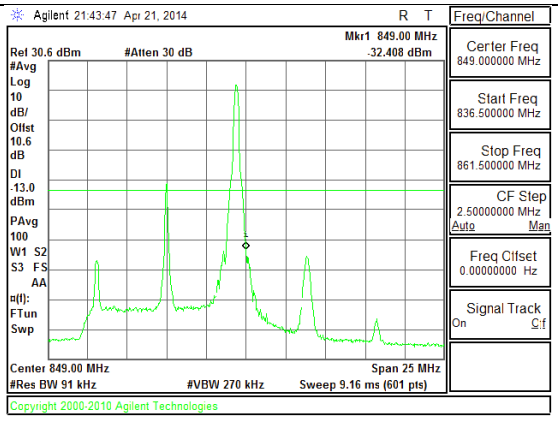
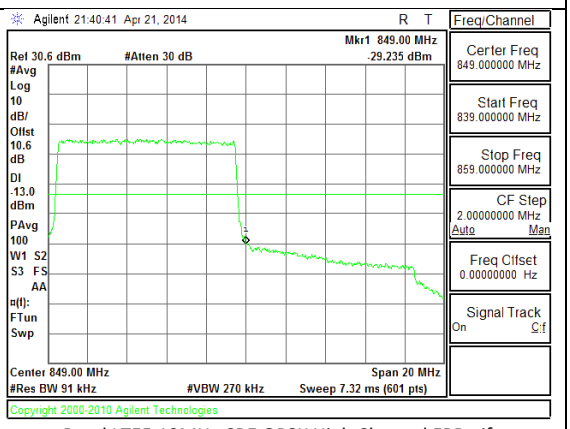
| Band LTE5 10MHz QPSK |  <br>Band LTE5 10MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE5 10MHz CBE QPSK Low Channel FRB.gif |
| Band LTE5 10MHz QPSK |  <br>Band LTE5 10MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE5 10MHz CBE QPSK High Channel FRB.gif |



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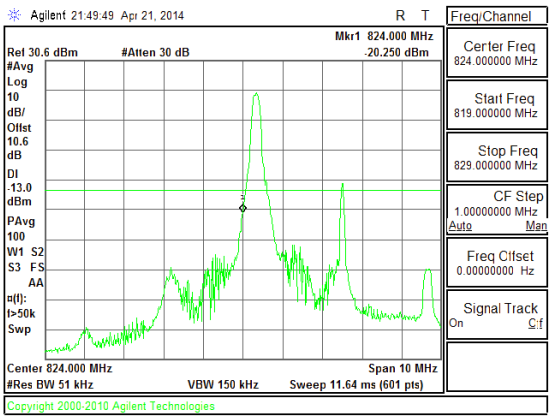
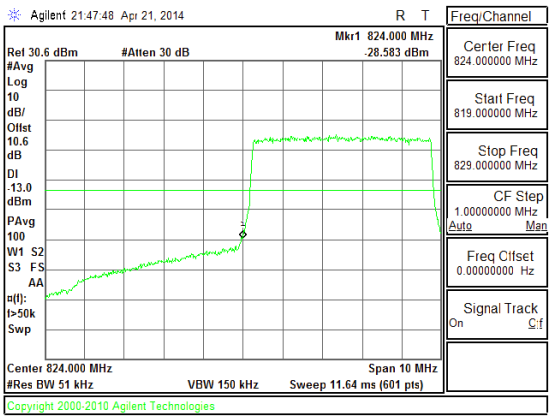
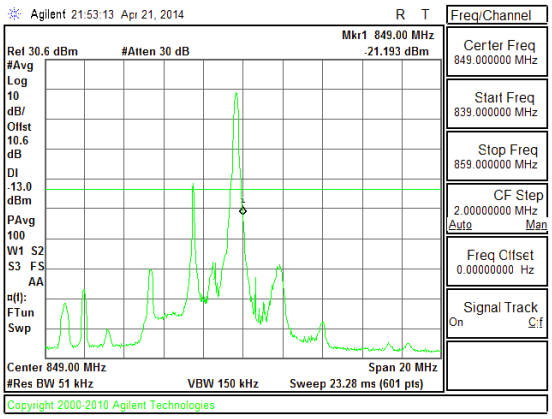
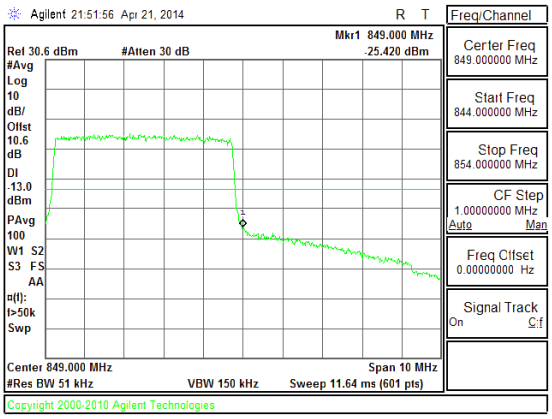
| Band LTE5 5MHz 16QAM |  <br>Band LTE5 5MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE5 5MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE5 5MHz 16QAM |  <br>Band LTE5 5MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE5 5MHz CBE 16QAM High Channel FRB.gif |



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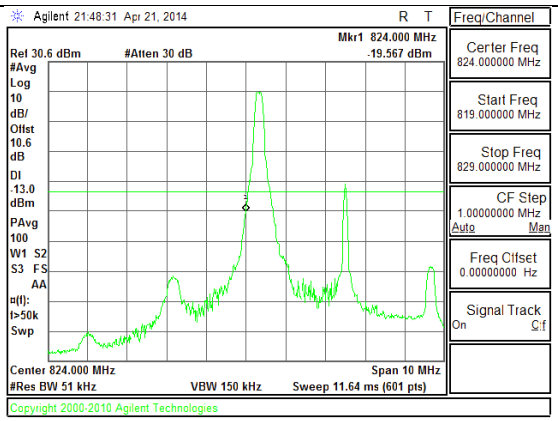
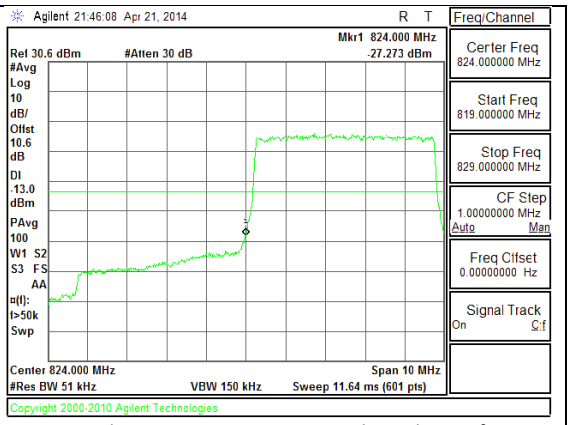
Band LTE5 5MHz QPSK




Band LTE5 5MHz CBE QPSK Low Channel 1RB.gif

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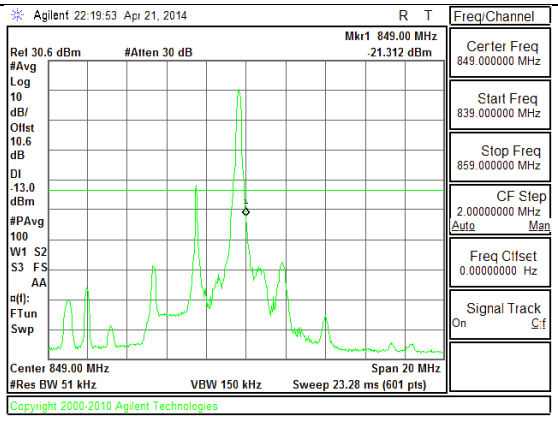
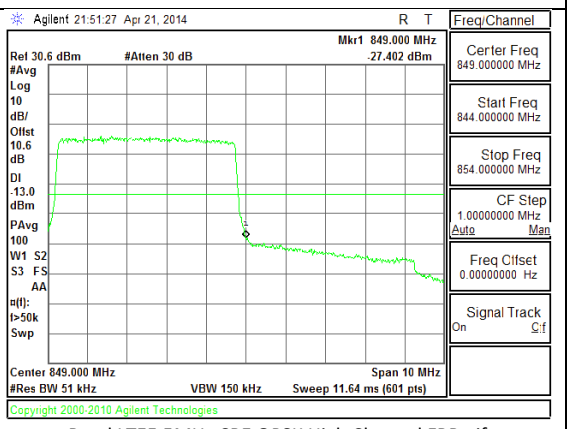
Band LTE5 5MHz QPSK




Band LTE5 5MHz CBE QPSK High Channel 1RB.gif




Band LTE5 5MHz CBE QPSK High Channel FRB.gif



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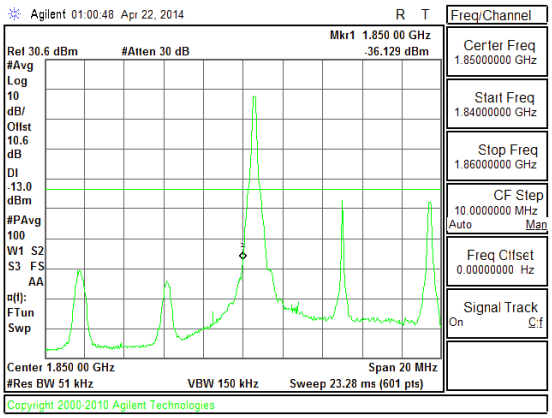
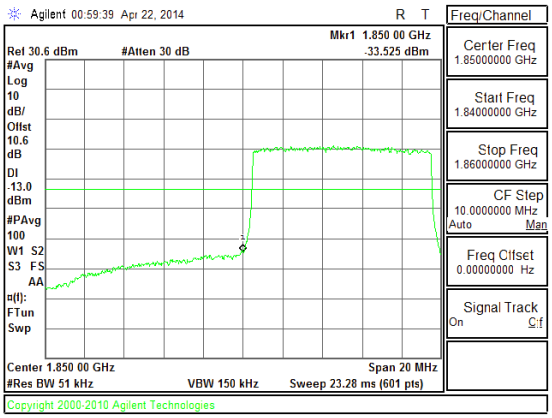
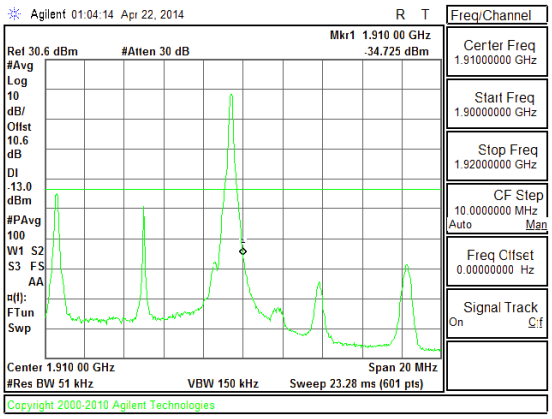
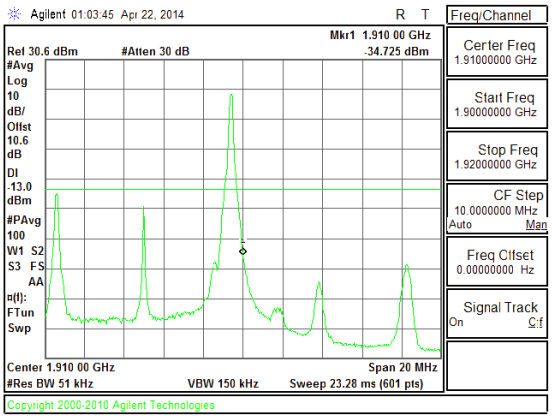
| | | |
|---|---|---|
| Band LTE2 10MHz 16QAM |  <br>Band LTE2 10MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE2 10MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE2 10MHz 16QAM |  <br>Band LTE2 10MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE2 10MHz CBE 16QAM High Channel FRB.gif |



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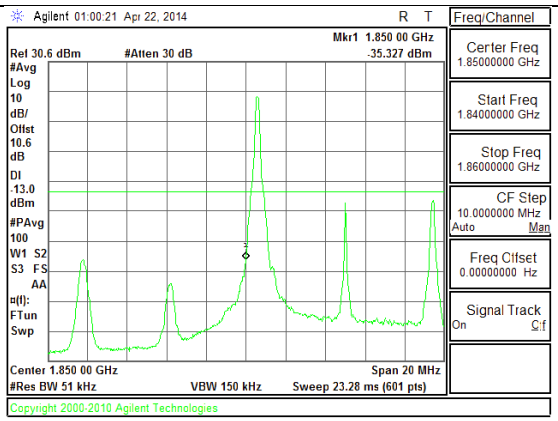
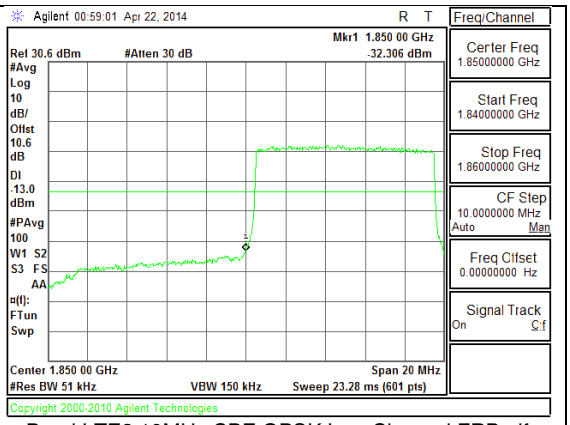
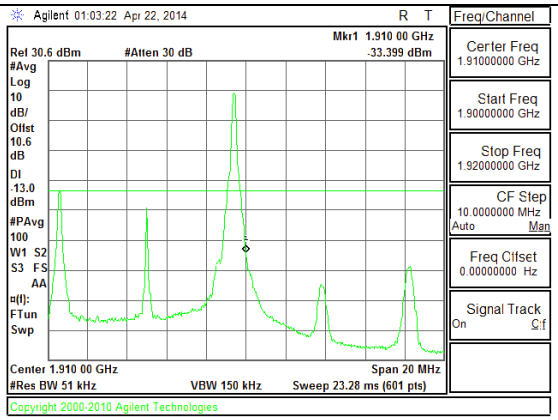
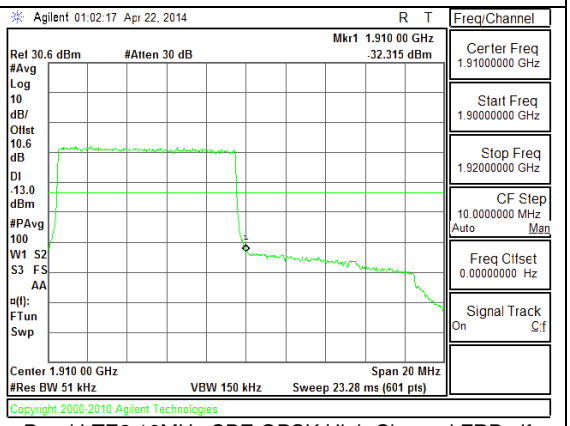
| | | |
|---|---|---|
| Band LTE2 10MHz QPSK |  <br>Band LTE2 10MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE2 10MHz CBE QPSK Low Channel FRB.gif |
| Band LTE2 10MHz QPSK |  <br>Band LTE2 10MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE2 10MHz CBE QPSK High Channel FRB.gif |



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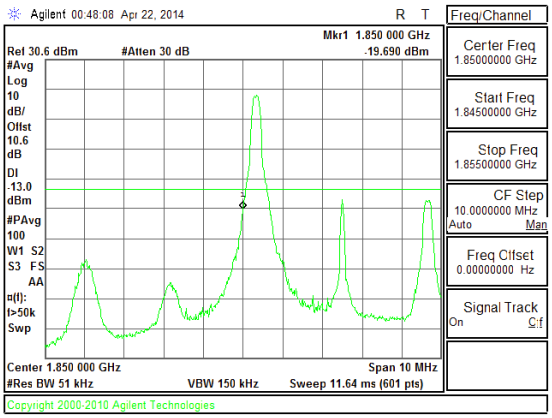
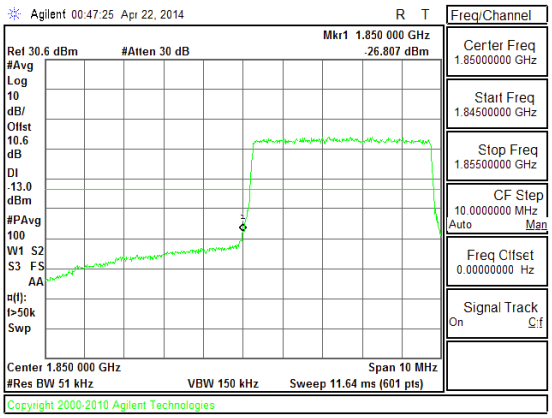
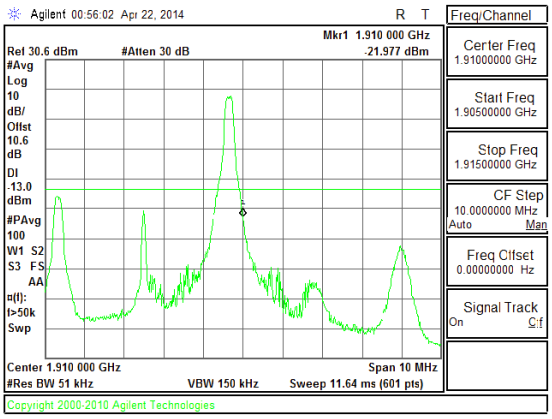
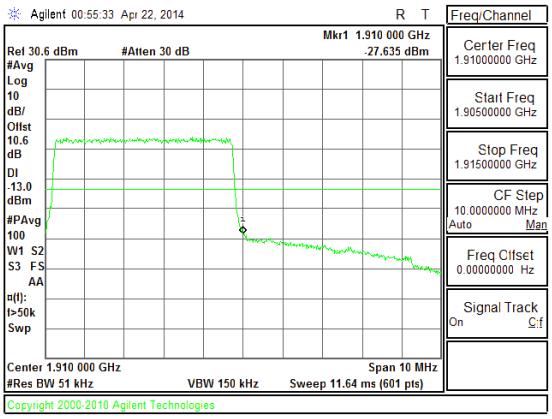
| | | |
|---|---|---|
| Band LTE2 5MHz 16QAM |  <br>Band LTE2 5MHz CBE 16QAM Low Channel 1RB.gif |  <br>Band LTE2 5MHz CBE 16QAM Low Channel FRB.gif |
| Band LTE2 5MHz 16QAM |  <br>Band LTE2 5MHz CBE 16QAM High Channel 1RB.gif |  <br>Band LTE2 5MHz CBE 16QAM High Channel FRB.gif |



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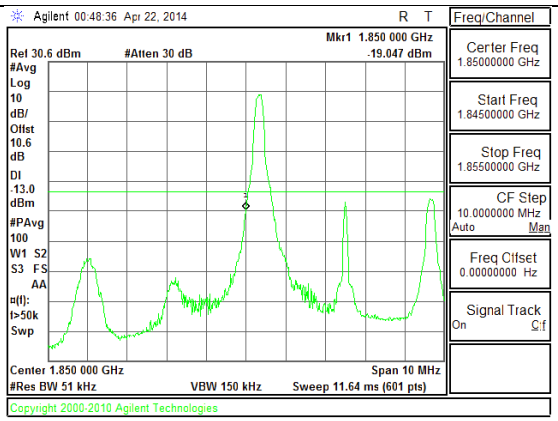
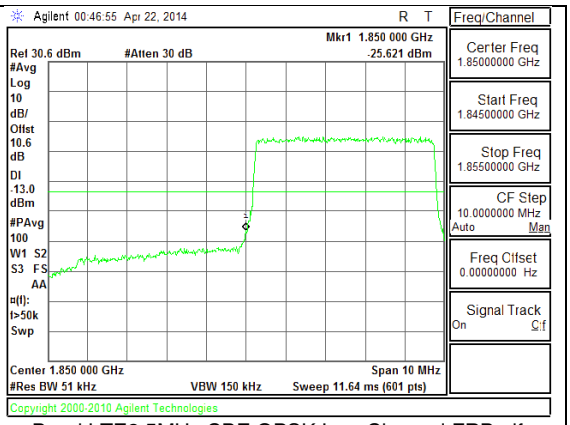
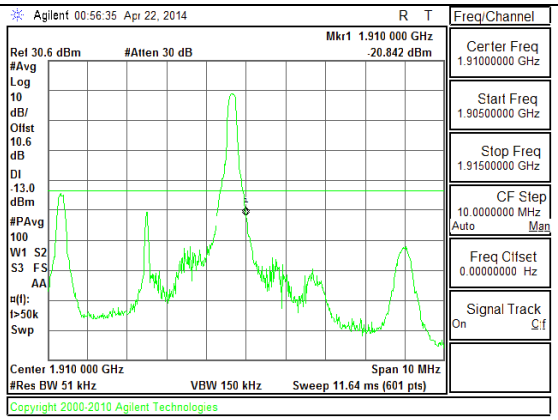
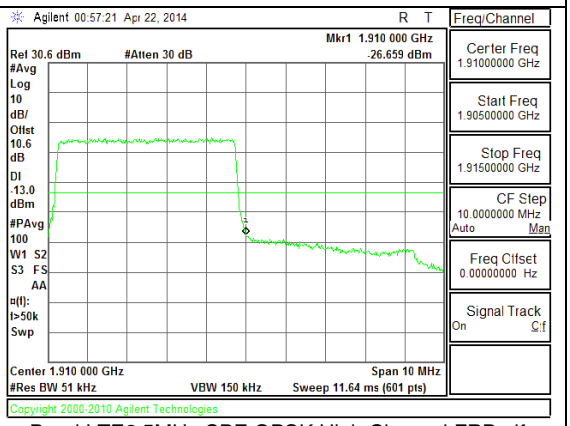
| | | |
|---|---|---|
| Band LTE2 5MHz QPSK |  <br>Band LTE2 5MHz CBE QPSK Low Channel 1RB.gif |  <br>Band LTE2 5MHz CBE QPSK Low Channel FRB.gif |
| Band LTE2 5MHz QPSK |  <br>Band LTE2 5MHz CBE QPSK High Channel 1RB.gif |  <br>Band LTE2 5MHz CBE QPSK High Channel FRB.gif |



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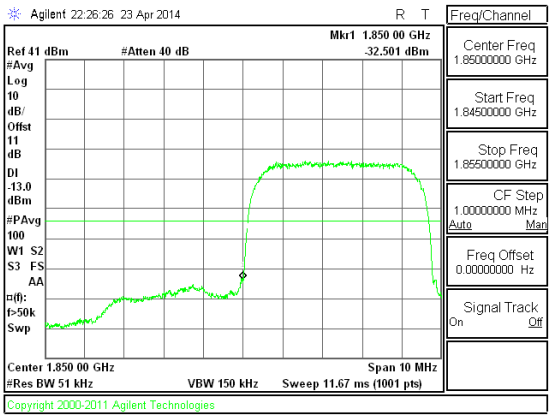
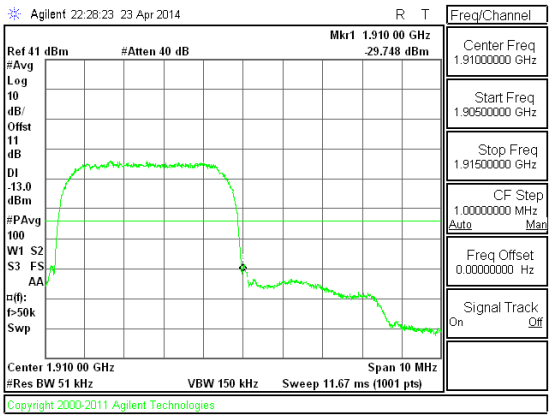
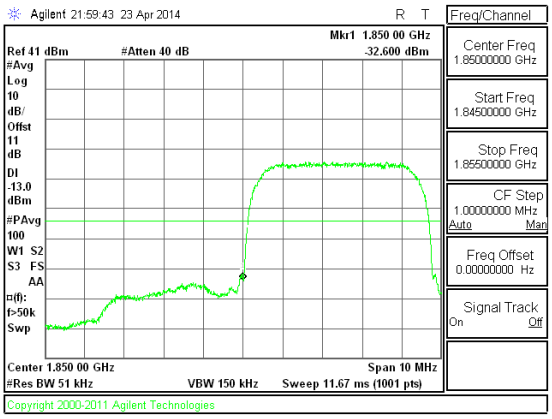
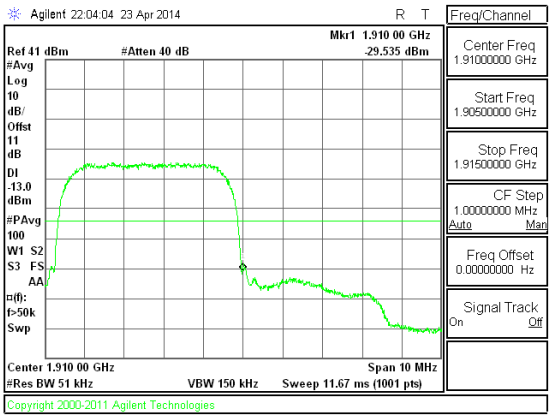
| | | |
|---|---|---|
| Band<br><br>Band 2<br><br>HSDPA |  <br>Band WCDMA B2 HSDPA CBE |  <br>Band WCDMA B2 HSDPA CBE |
| Band<br><br>Band 2<br><br>REL99 |  <br>Band WCDMA B2 REL99 CBE |  <br>Band WCDMA B2 REL99 CBE |



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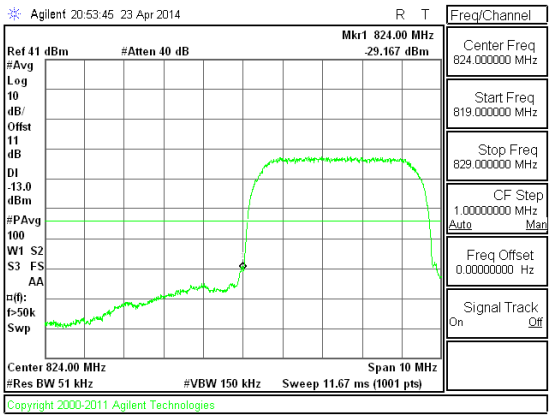
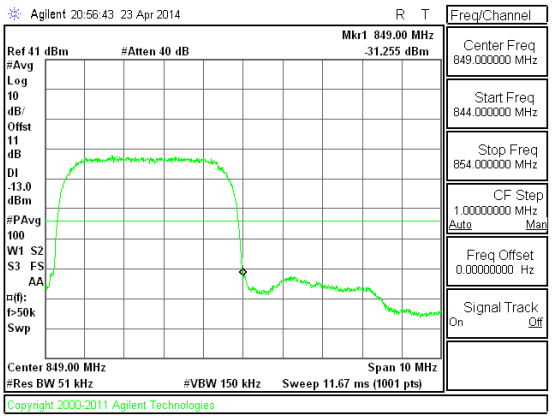
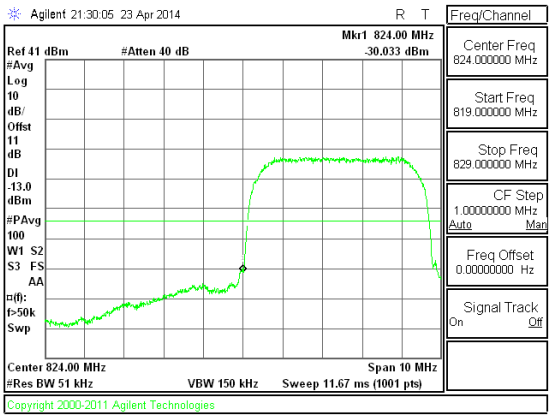
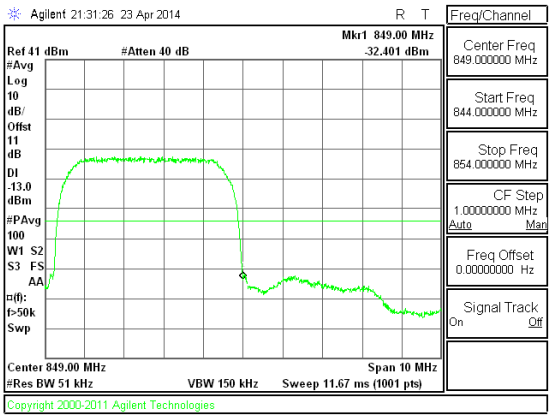
| | | |
|---|---|---|
| Band<br><br>Band 5<br><br>HSDPA |  <br>Band WCDMA B5 HSDPA CBE |  <br>Band WCDMA B5 HSDPA CBE |
| Band<br><br>Band 5<br><br>REL99 |  <br>Band WCDMA B5 REL99 CBE |  <br>Band WCDMA B5 REL99 CBE |



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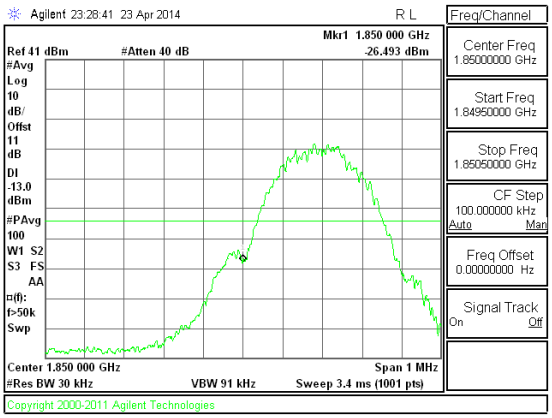
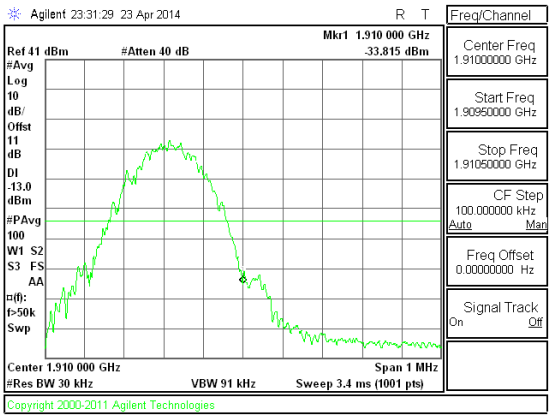
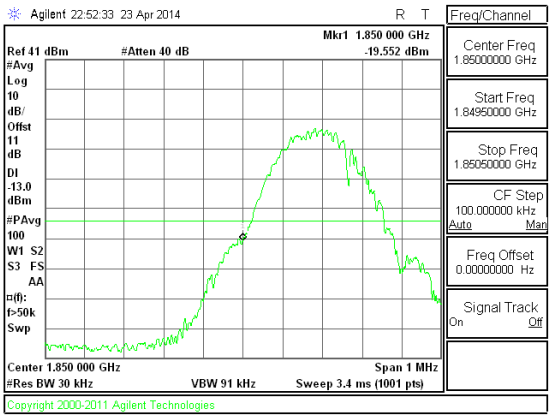
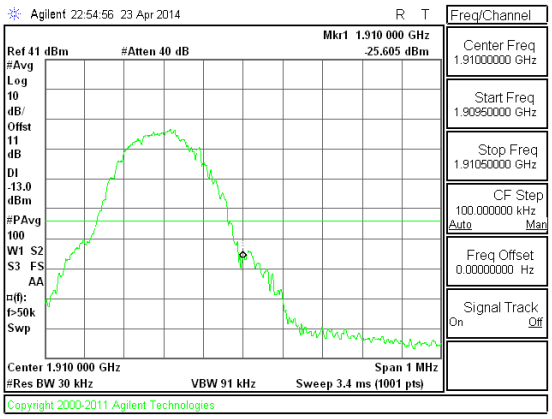
| | | |
|---|---|---|
| Band<br><br>GSM1900<br><br>EGPRS |  <br>Band GSM1900 EGPRS CBE Low channel |  <br>Band GSM1900 EGPRS CBE High channel |
| Band<br><br>GSM1900<br><br>GPRS |  <br>Band GSM1900 GPRS CBE Low channel |  <br>Band GSM1900 GPRS CBE High channel |



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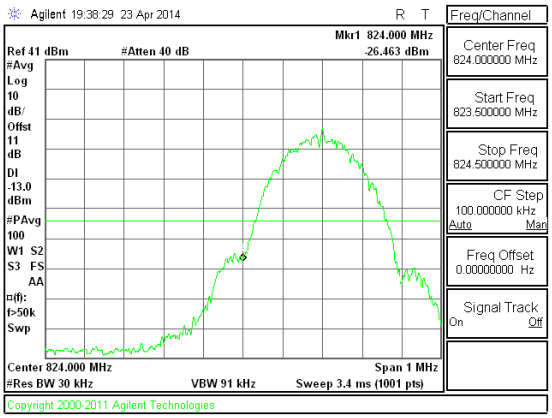
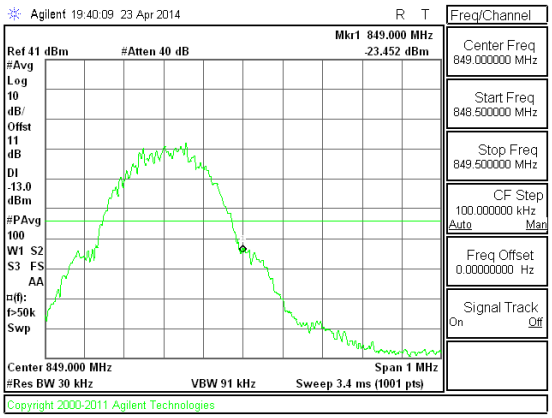
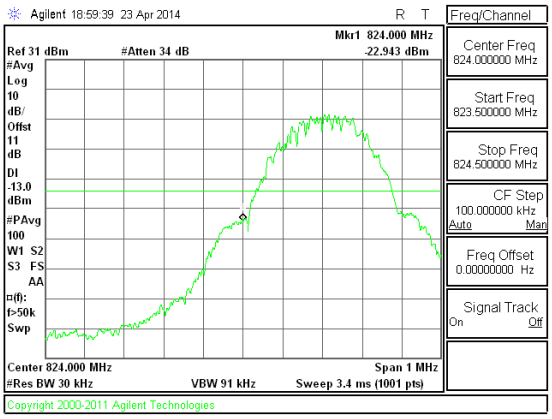
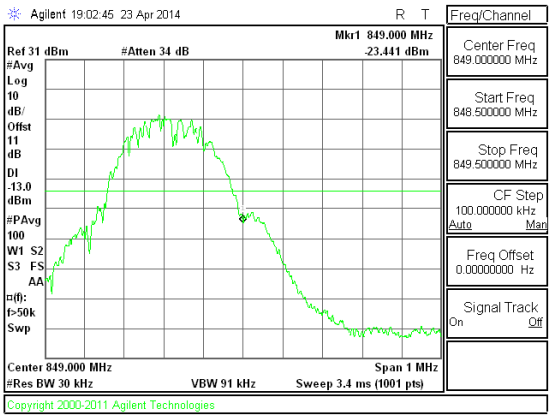
| | | |
|---|---|---|
| Band GSM850 EGPRS |  <br>Band GSM850 EGPRS CBE Low channel |  <br>Band GSM850 EGPRS CBE High channel |
| Band GSM850 GPRS |  <br>Band GSM850 GPRS CBE Low channel |  <br>Band GSM850 GPRS CBE High channel |



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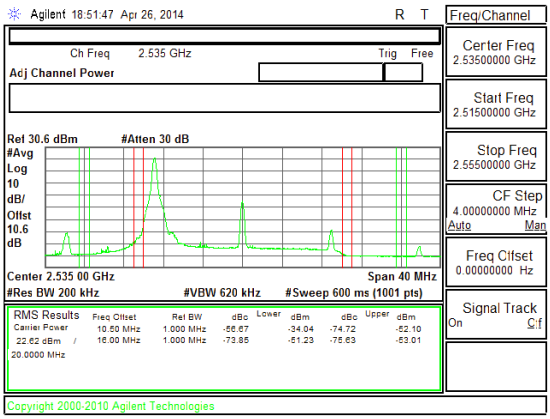
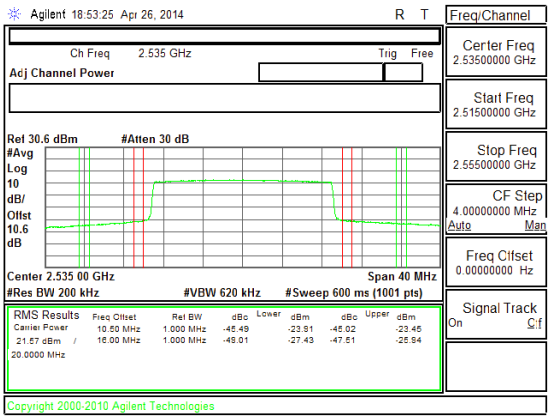
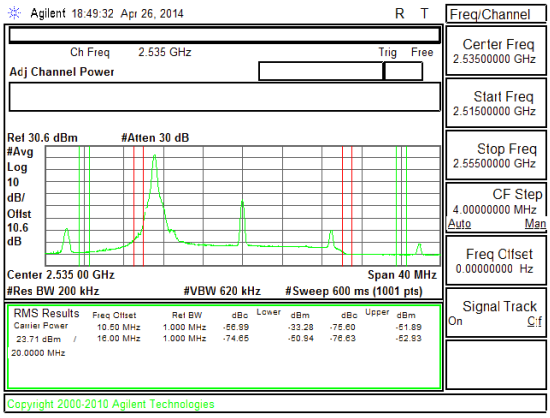
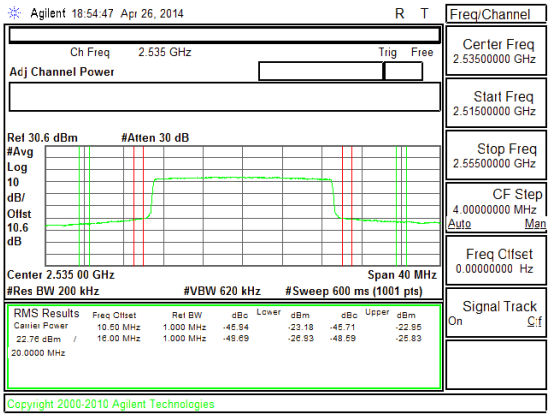
## 10.2.2. EMISSION MASK PLOTS

| | | |
|---|---|---|
| Band 7 20MHz 16QAM |  |  |
| Band 7 20MHz QPSK |  |  |



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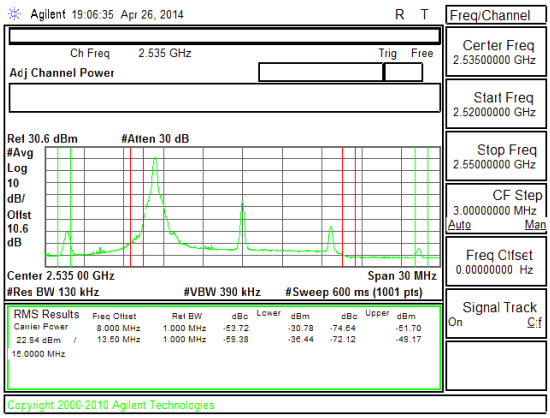
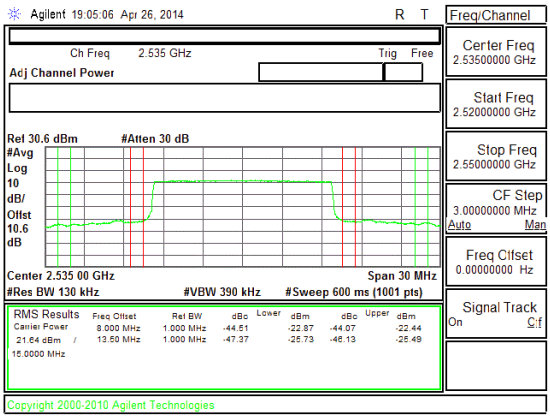
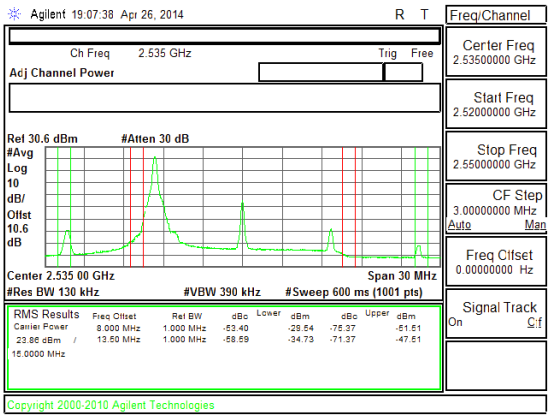
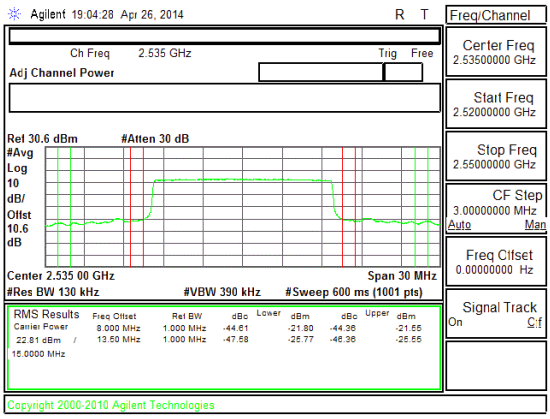
| | | |
|---|---|---|
| Band 7 15MHz 16QAM |  |  |
| Band 7 15MHz QPSK |  |  |



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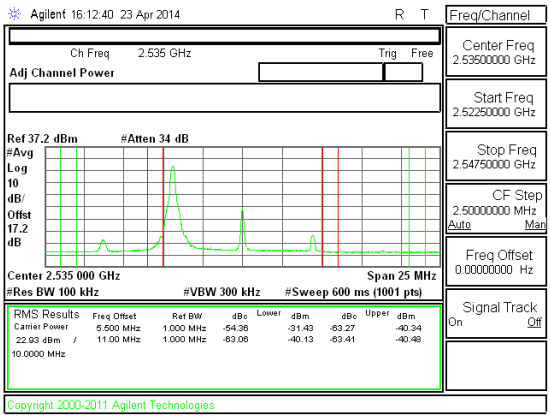
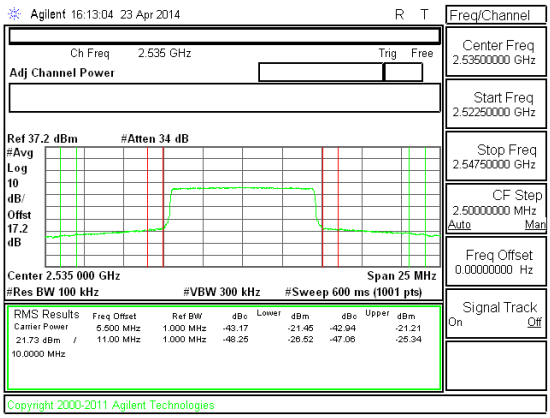
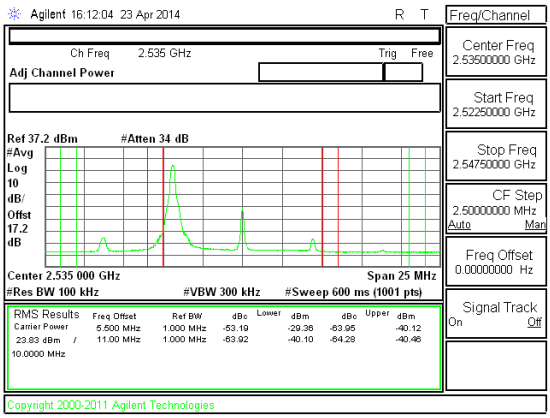
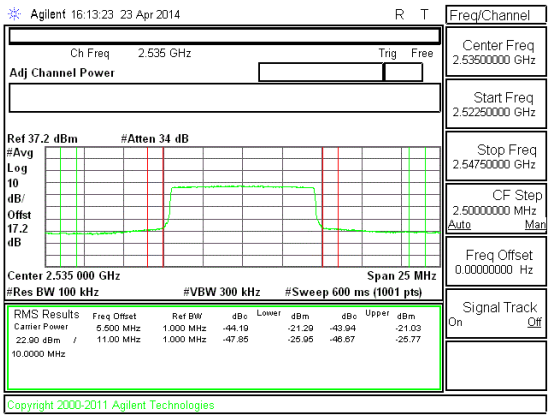
| | | |
|---|---|---|
| Band 7 10MHz 16QAM |  |  |
| Band 7 10MHz QPSK |  |  |



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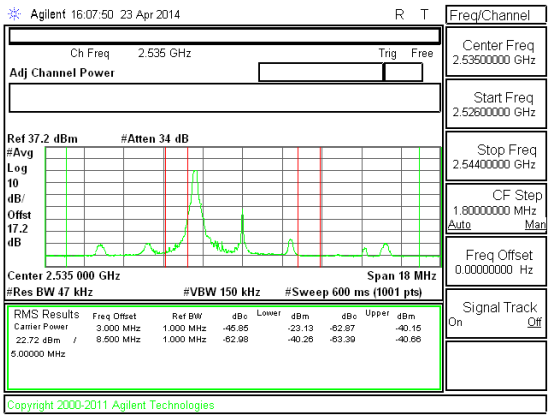
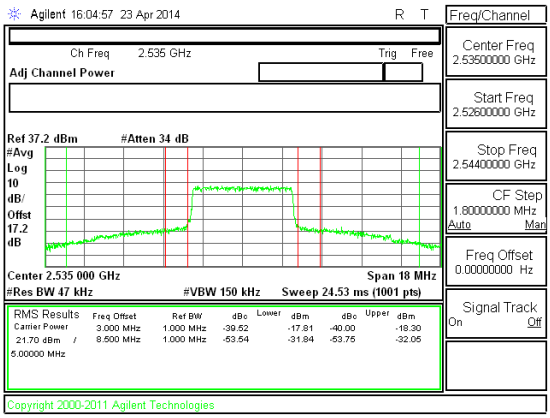
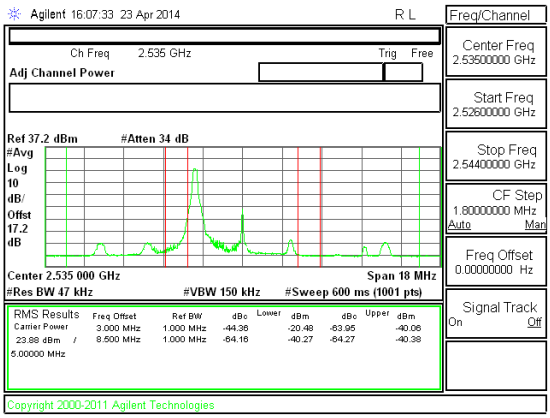
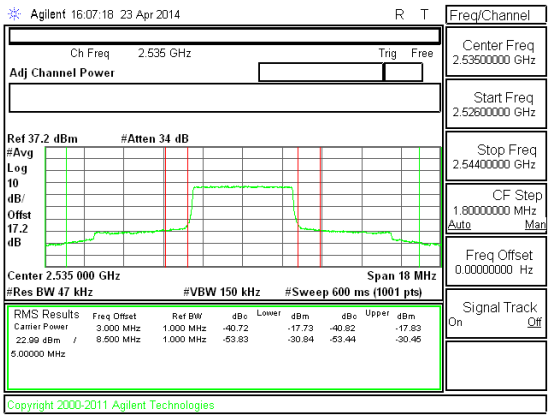
| | | |
|---|---|---|
| Band 7 5MHz 16QAM |  |  |
| Band 7 5MHz QPSK |  |  |



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## 10.3. OUT OF BAND EMISSIONS

**RULE PART(S)**

FCC: §2.1051, §22.901, §22.917, §24.238 and §27

**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.

**TEST PROCEDURE**

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

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.

**SOP**

For each out of band emissions measurement:

- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

**RESULTS**



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### 10.3.1. OUT OF BAND EMISSIONS RESULT

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE17 | 10 | QPSK | 709 | -23.36 | -13 | -10.36 |
| | | | 710 | -24.98 | -13 | -11.98 |
| | | | 711 | -25.04 | -13 | -12.04 |
| | | 16QAM | 709 | -25.81 | -13 | -12.81 |
| | | | 710 | -25.06 | -13 | -12.06 |
| | | | 711 | -25.81 | -13 | -12.81 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE17 | 5 | QPSK | 706.5 | -22.6 | -13 | -9.6 |
| | | | 710 | -25.26 | -13 | -12.26 |
| | | | 713.5 | -24.71 | -13 | -11.71 |
| | | 16QAM | 706.5 | -24.37 | -13 | -11.37 |
| | | | 710 | -24.02 | -13 | -11.02 |
| | | | 713.5 | -23.5 | -13 | -10.5 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE7 | 20 | QPSK | 2510 | -35.1 | -13 | -22.1 |
| | | | 2535 | -35.45 | -13 | -22.45 |
| | | | 2560 | -35.46 | -13 | -22.46 |
| | | 16QAM | 2510 | -35.81 | -13 | -22.81 |
| | | | 2535 | -35.98 | -13 | -22.98 |
| | | | 2560 | -34.26 | -13 | -21.26 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE7 | 15 | QPSK | 2507.5 | -34.84 | -13 | -21.84 |
| | | | 2535 | -35.86 | -13 | -22.86 |
| | | | 2562.5 | -34.54 | -13 | -21.54 |
| | | 16QAM | 2507.5 | -35.68 | -13 | -22.68 |
| | | | 2535 | -35.23 | -13 | -22.23 |



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| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 2562.5 | -35.14 | -13 | -22.14 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE7 | 10 | QPSK | 2505 | -23.28 | -13 | -10.28 |
| | | | 2535 | -23.99 | -13 | -10.99 |
| | | | 2565 | -23.09 | -13 | -10.09 |
| | | 16QAM | 2505 | -24.74 | -13 | -11.74 |
| | | | 2535 | -23.6 | -13 | -10.6 |
| | | | 2565 | -24.47 | -13 | -11.47 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE7 | 5 | QPSK | 2502.5 | -22.59 | -13 | -9.59 |
| | | | 2535 | -23.48 | -13 | -10.48 |
| | | | 2567.5 | -23.5 | -13 | -10.5 |
| | | 16QAM | 2502.5 | -23.77 | -13 | -10.77 |
| | | | 2535 | -22.92 | -13 | -9.92 |
| | | | 2567.5 | -24.39 | -13 | -11.39 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE5 | 10 | QPSK | 829 | -36.33 | -13 | -23.33 |
| | | | 836.5 | -36.29 | -13 | -23.29 |
| | | | 844 | -37.91 | -13 | -24.91 |
| | | 16QAM | 829 | -36.72 | -13 | -23.72 |
| | | | 836.5 | -37.66 | -13 | -24.66 |
| | | | 844 | -36.91 | -13 | -23.91 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE5 | 5 | QPSK | 826.5 | -34.99 | -13 | -21.99 |
| | | | 836.5 | -36.52 | -13 | -23.52 |
| | | | 846.5 | -36.41 | -13 | -23.41 |
| | | 16QAM | 826.5 | -34.99 | -13 | -21.99 |



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|---|---|---|---|---|---|---|
| | | | 836.5 | -37.45 | -13 | -24.45 |
| | | | 846.5 | -36.38 | -13 | -23.38 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE4 | 10 | QPSK | 1715 | -36.5 | -13 | -23.5 |
| | | | 1732.5 | -35.89 | -13 | -22.89 |
| | | | 1750 | -35.55 | -13 | -22.55 |
| | | 16QAM | 1715 | -36.16 | -13 | -23.16 |
| | | | 1732.5 | -37.14 | -13 | -24.14 |
| | | | 1750 | -36.64 | -13 | -23.64 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE4 | 5 | QPSK | 1712.5 | -36.46 | -13 | -23.46 |
| | | | 1732.5 | -37.08 | -13 | -24.08 |
| | | | 1752.5 | -36.24 | -13 | -23.24 |
| | | 16QAM | 1712.5 | -35.42 | -13 | -22.42 |
| | | | 1732.5 | -34.8 | -13 | -21.8 |
| | | | 1752.5 | -35.95 | -13 | -22.95 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE2 | 10 | QPSK | 1855 | -36.71 | -13 | -23.71 |
| | | | 1880 | -35.15 | -13 | -22.15 |
| | | | 1905 | -37.26 | -13 | -24.26 |
| | | 16QAM | 1855 | -34.86 | -13 | -21.86 |
| | | | 1880 | -35.84 | -13 | -22.84 |
| | | | 1905 | -36.82 | -13 | -23.82 |

| Band | BW (MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|
| LTE2 | 5 | QPSK | 1852.5 | -37.68 | -13 | -24.68 |
| | | | 1880 | -38.12 | -13 | -25.12 |
| | | | 1907.5 | -36.41 | -13 | -23.41 |



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| | | | | | | |
|---|---|---|---|---|---|---|
| | | 16QAM | 1852.5 | -35.96 | -13 | -22.96 |
| | | | 1880 | -36.47 | -13 | -23.47 |
| | | | 1907.5 | -36.75 | -13 | -23.75 |

| Band | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|
| GSM850 | GPRS | 824.2 | -28.98 | -13 | -15.98 |
| | | 836.6 | -28.44 | -13 | -15.44 |
| | | 848.8 | -28.83 | -13 | -15.83 |
| | EGPRS | 824.2 | -22.93 | -13 | -9.93 |
| | | 836.6 | -22.4 | -13 | -9.4 |
| | | 848.8 | -22.63 | -13 | -9.63 |
| GSM1900 | GPRS | 1850.2 | -23.09 | -13 | -10.09 |
| | | 1880 | -22.65 | -13 | -9.65 |
| | | 1909.8 | -22.08 | -13 | -9.08 |
| | EGPRS | 1850.2 | -22.11 | -13 | -9.11 |
| | | 1880 | -21.78 | -13 | -8.78 |
| | | 1909.8 | -22.64 | -13 | -9.64 |
| Band 5 | REL99 | 826.4 | -23.26 | -13 | -10.26 |
| | | 836.6 | -22.6 | -13 | -9.6 |
| | | 846.6 | -23.08 | -13 | -10.08 |
| | HSDPA | 826.4 | -22.92 | -13 | -9.92 |
| | | 836.6 | -22.48 | -13 | -9.48 |
| | | 846.6 | -23.3 | -13 | -10.3 |
| Band 2 | REL99 | 1852.4 | -23.26 | -13 | -10.26 |
| | | 1880 | -22.52 | -13 | -9.52 |
| | | 1907.6 | -23.02 | -13 | -10.02 |
| | HSDPA | 1852.4 | -22.23 | -13 | -9.23 |
| | | 1880 | -23.08 | -13 | -10.08 |
| | | 1907.6 | -25.33 | -13 | -12.33 |



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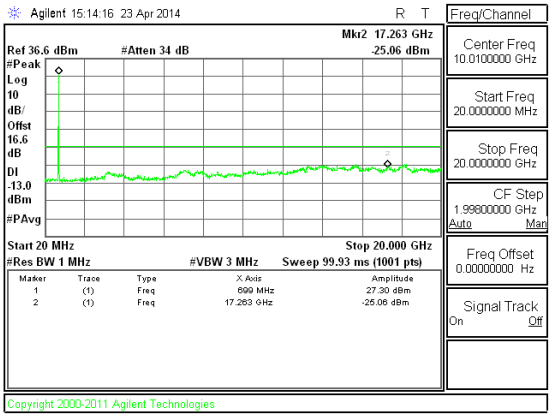
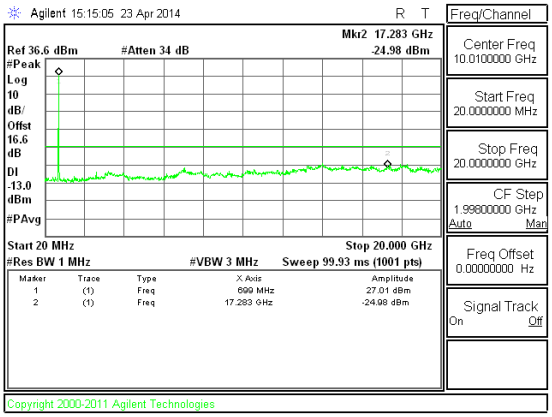
## 10.3.2. OUT OF BAND EMISSIONS PLOTS

| | | |
|---|---|---|
| Band LTE17 10MHz 16QAM |  <br>Band LTE17 10MHz CSE 16QAM Mid channel |  <br>Band LTE17 10MHz CSE QPSK Mid channel |



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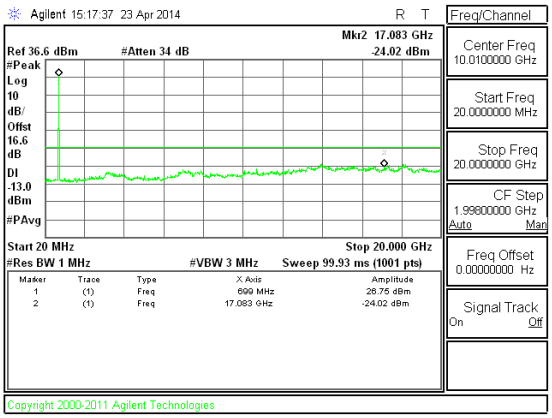
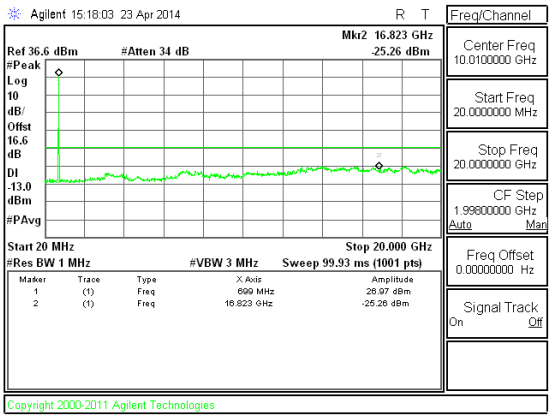
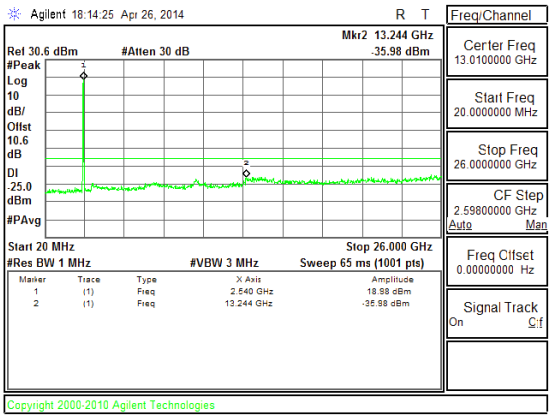
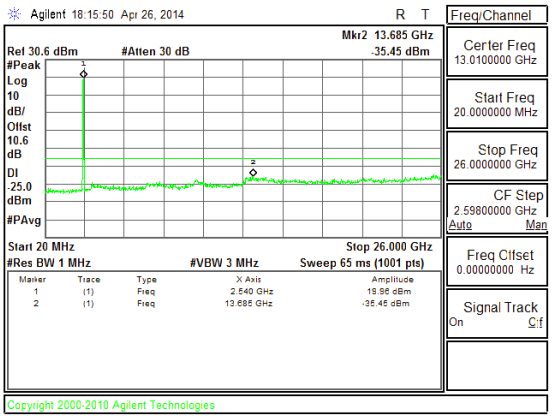
| | | |
|---|---|---|
| Band LTE17 5MHz 16QAM |  <br>Band LTE17 5MHz CSE 16QAM Mid channel |  <br>Band LTE17 5MHz CSE QPSK Mid channel |
| Band LTE7 20MHz 16QAM |  <br>Band LTE7 20MHz CSE 16QAM Mid channel |  <br>Band LTE7 20MHz CSE QPSK Mid channel |





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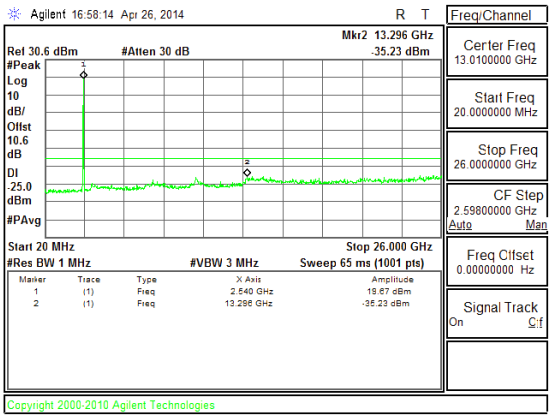
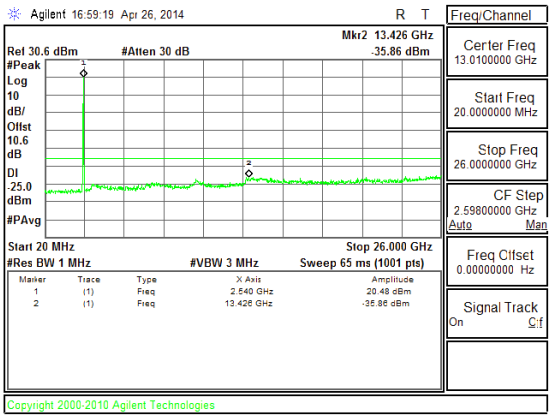
Band LTE7 15MHz 16QAM

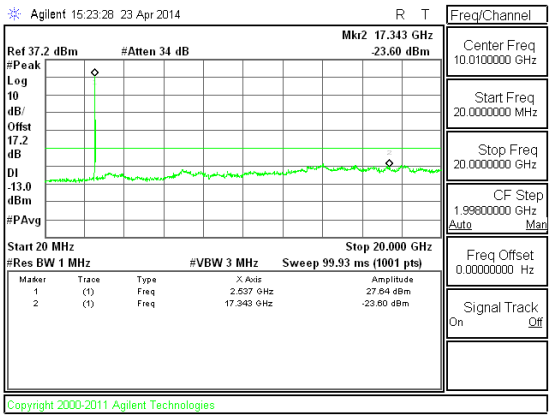



Band LTE7 15MHz CSE 16QAM Mid channel

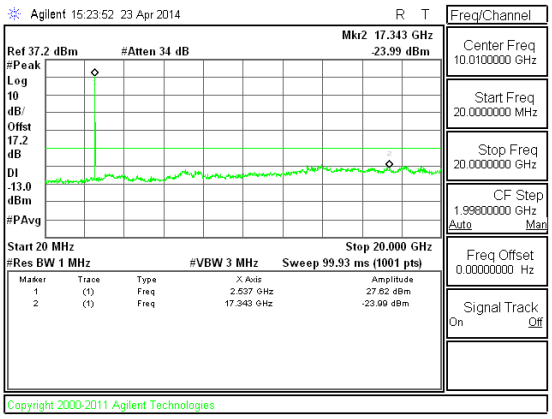



Band LTE7 15MHz CSE QPSK Mid channel

Band LTE7 10MHz 16QAM




Band LTE7 10MHz CSE 16QAM Mid channel




Band LTE7 10MHz CSE QPSK Mid channel



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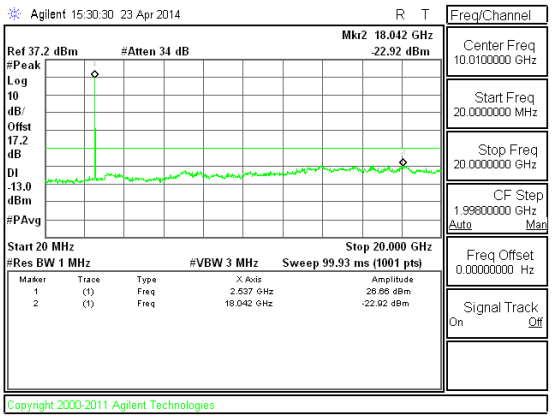
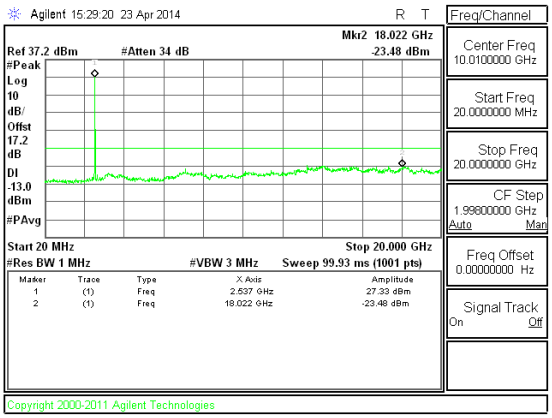
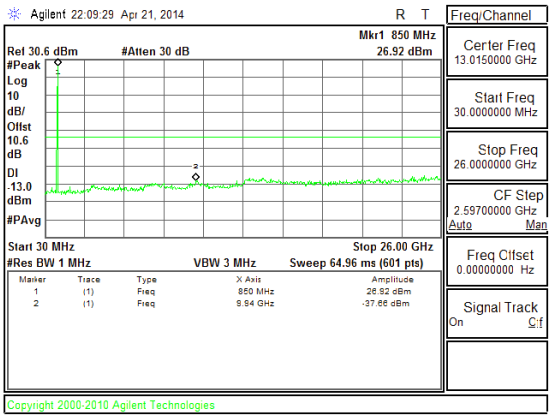
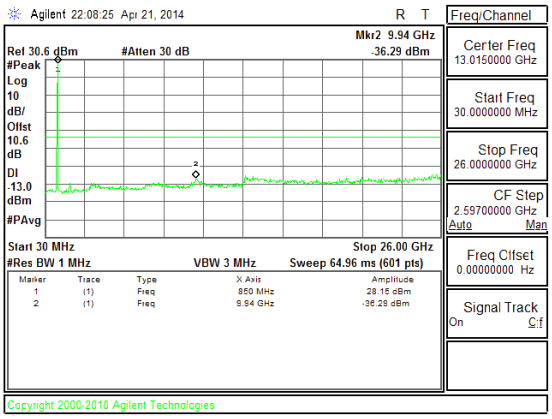
| | | |
|---|---|---|
| Band LTE7 5MHz 16QAM |  <br>Band LTE7 5MHz CSE 16QAM Mid channel |  <br>Band LTE7 5MHz CSE QPSK Mid channel |
| Band LTE5 10MHz 16QAM |  <br>Band LTE5 10MHz CSE 16QAM Mid channel |  <br>Band LTE5 10MHz CSE QPSK Mid channel |



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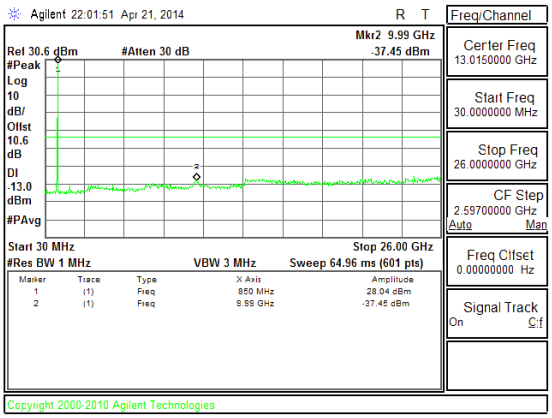
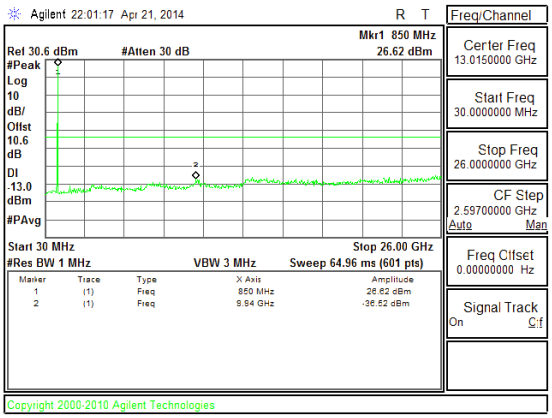
| | | |
|---|---|---|
| Band<br>LTE5<br>5MHz<br>16QAM |  <br><br>Band LTE5 5MHz CSE 16QAM Mid channel |  <br><br>Band LTE5 5MHz CSE QPSK Mid channel |



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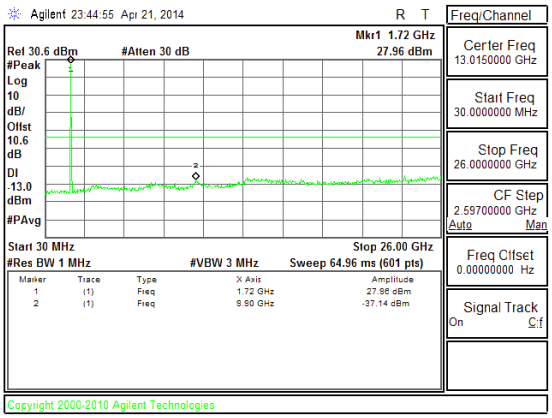
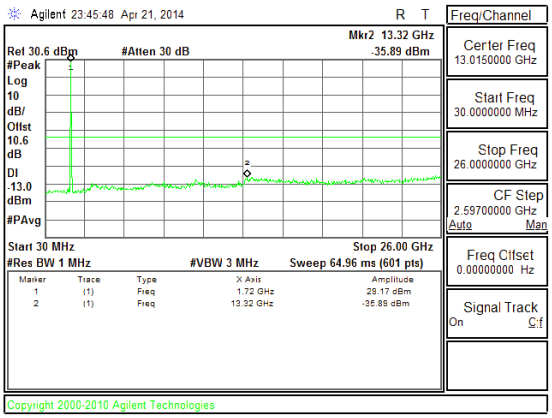
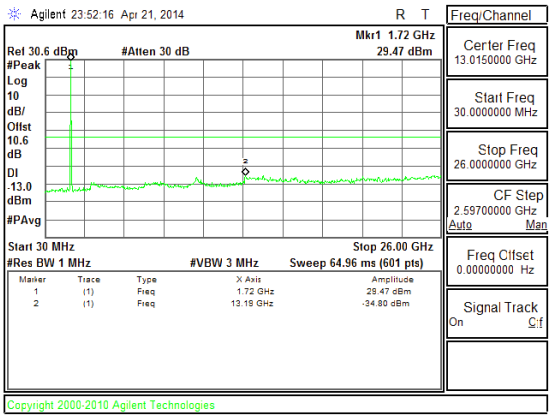
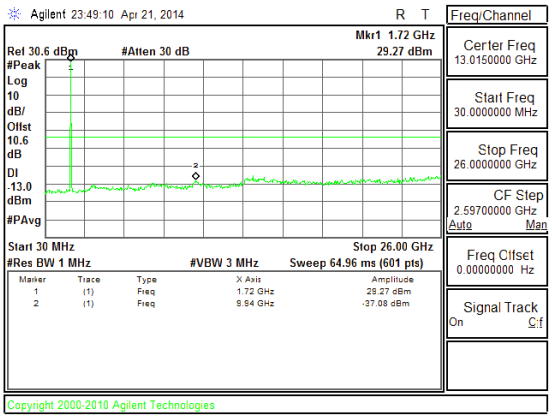
| | | |
|---|---|---|
| Band LTE4 10MHz 16QAM |  <br>Band LTE4 10MHz CSE 16QAM Mid channel |  <br>Band LTE4 10MHz CSE QPSK Mid channel |
| Band LTE4 5MHz 16QAM |  <br>Band LTE4 5MHz CSE 16QAM Mid channel |  <br>Band LTE4 5MHz CSE QPSK Mid channel |



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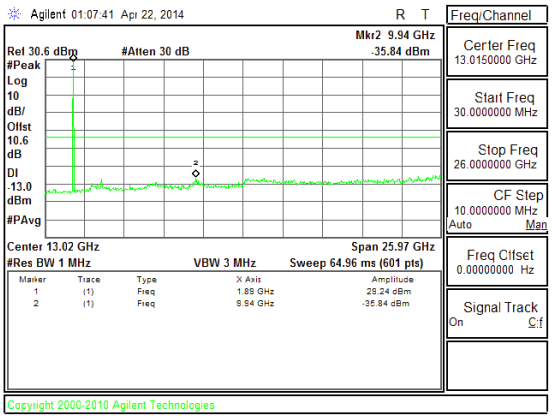
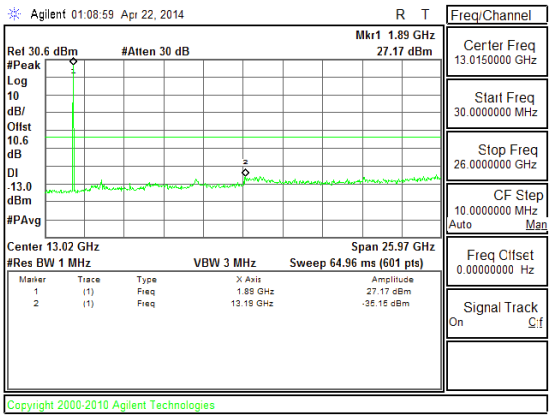
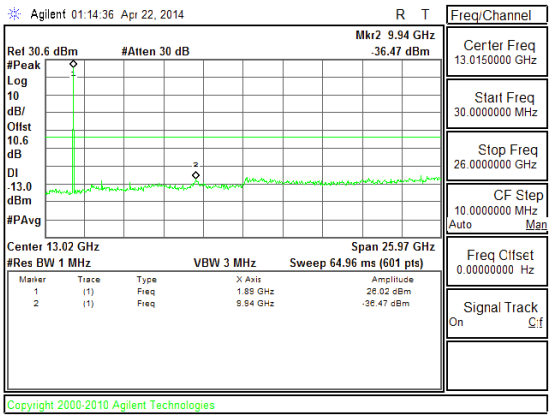
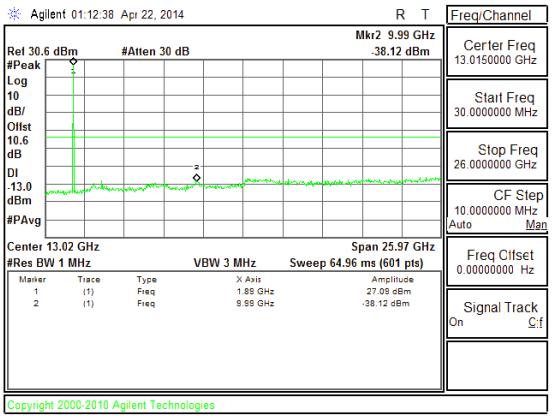
| | | |
|---|---|---|
| Band LTE2 10MHz 16QAM |  <br>Band LTE2 10MHz CSE 16QAM Mid channel |  <br>Band LTE2 10MHz CSE QPSK Mid channel |
| Band LTE2 5MHz 16QAM |  <br>Band LTE2 5MHz CSE 16QAM Mid channel |  <br>Band LTE2 5MHz CSE QPSK Mid channel |



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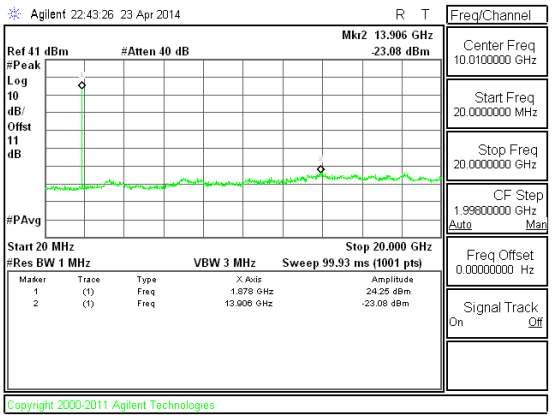
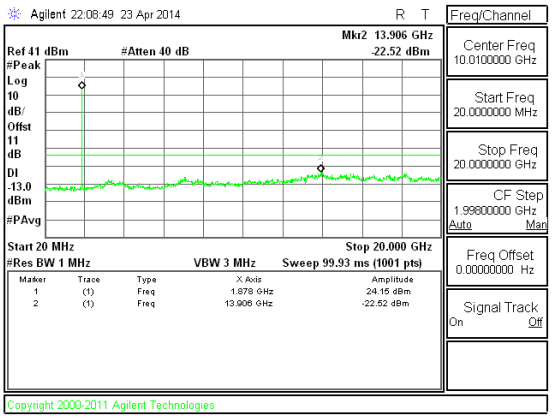
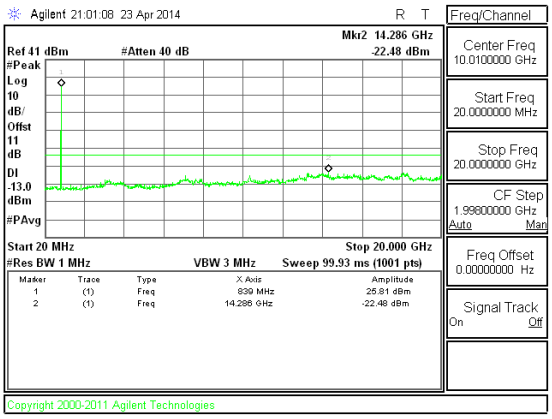
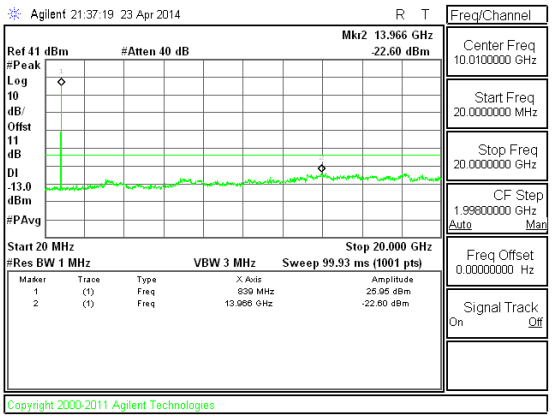
| | | |
|---|---|---|
| Band<br><br>Band 2<br><br>HSDPA |  <br><br>Band WCDMA B2 HSDPA CSE |  <br><br>Band WCDMA B2 REL99 CSE |
| Band<br><br>Band 5<br><br>HSDPA |  <br><br>Band WCDMA B5 HSDPA CSE |  <br><br>Band WCDMA B5 REL99 CSE |



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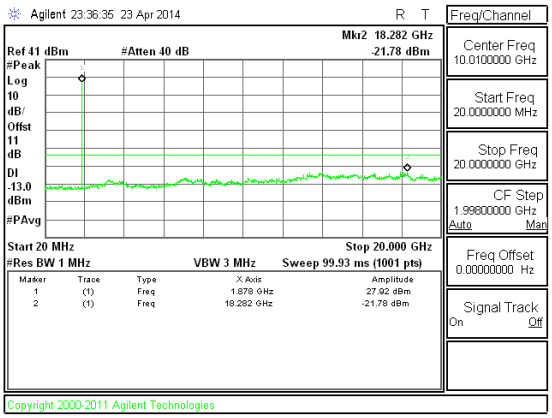
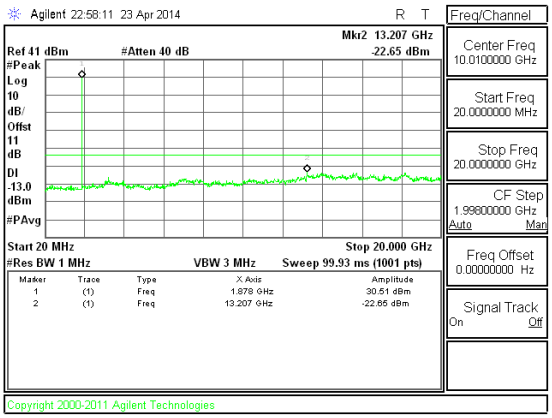
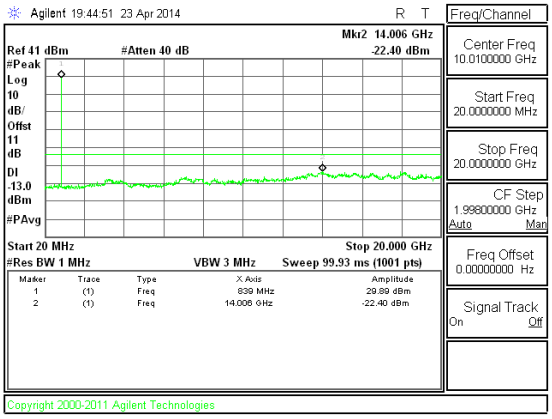
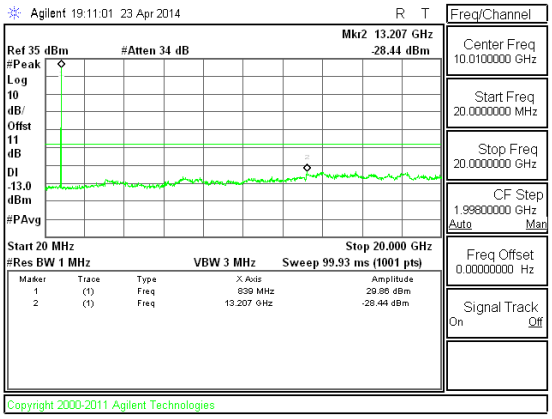
| | | |
|---|---|---|
| Band<br><br>GSM1900<br><br>EGPRS |  <br>Band GSM1900 EGPRS CSE Mid channel |  <br>Band GSM1900 GPRS CSE Mid channel |
| Band<br><br>GSM850<br><br>EGPRS |  <br>Band GSM850 EGPRS CSE Mid channel |  <br>Band GSM850 GPRS CSE Mid channel |



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## 10.4. FREQUENCY STABILITY

**RULE PART(S)**

FCC: §2.1055, §22.355, §24.235, and §27.54

**LIMITS**

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

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

§27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

**TEST PROCEDURE**

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

**RESULTS**

See the following pages.



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## 10.4.1. FREQUENCY STABILITY RESULTS

**LTE BAND 7 – MID CHANNEL**

| Reference Frequency: Cellular Mid Channel 2535.000019 MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 6337.500 Hz | | | | |
|---|---|---|---|---|
| Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.80 | 50 | 2535.000062 | -0.017 | 2.5 |
| 3.80 | 40 | 2535.000057 | -0.015 | 2.5 |
| 3.80 | 30 | 2535.000033 | -0.006 | 2.5 |
| ***3.80*** | ***20*** | ***2535.000018*** | ***0*** | ***2.5*** |
| 3.80 | 10 | 2535.000014 | 0.002 | 2.5 |
| 3.80 | 0 | 2535.000005 | 0.005 | 2.5 |
| 3.80 | -10 | 2535.000007 | 0.004 | 2.5 |
| 3.80 | -20 | 2535.000009 | 0.004 | 2.5 |
| 3.80 | -30 | 2535.000010 | 0.003 | 2.5 |

| Reference Frequency: Cellular Mid Channel 2535.000019 MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 6337.500 Hz | | | | |
|---|---|---|---|---|
| Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| ***3.80*** | ***20*** | ***2535.000018*** | ***0*** | ***2.5*** |
| 4.30 | 20 | 2535.000043 | *-0.010* | 2.5 |
| 3.30 | 20 | 2535.000021 | *-0.001* | 2.5 |



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**LTE BAND 2 – MID CHANNEL (1880.0 MHz)**

| Reference Frequency: Cellular Mid Channel 1879.999996MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 4700.000 Hz | | | | |
|---|---|---|---|---|
| Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.80 | 50 | 1879.999992 | 0.002 | 2.5 |
| 3.80 | 40 | 1879.999994 | 0.001 | 2.5 |
| 3.80 | 30 | 1879.999995 | 0.001 | 2.5 |
| ***3.80*** | ***20*** | ***1879.999996*** | ***0*** | 2.5 |
| 3.80 | 10 | 1879.999993 | 0.002 | 2.5 |
| 3.80 | 0 | 1879.999996 | 0.000 | 2.5 |
| 3.80 | -10 | 1879.999997 | -0.001 | 2.5 |
| 3.80 | -20 | 1879.999993 | 0.002 | 2.5 |
| 3.80 | -30 | 1879.999996 | 0.000 | 2.5 |

| Reference Frequency: Cellular Mid Channel 1879.999996MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 4700.000 Hz | | | | |
|---|---|---|---|---|
| Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| ***3.80*** | ***20*** | ***1879.999996*** | ***0*** | ***2.5*** |
| 3.30 | 20 | 1879.999995 | *0.001* | 2.5 |
| 4.30 | 20 | 1879.999993 | *0.002* | 2.5 |



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**LTE BAND 5 – MID CHANNEL (836.5 MHz)**

| Reference Frequency: Cellular Mid Channel 836.499998C<br>Limit: to stay +- 2.5 ppm = 2091.250 Hz | | | | |
|---|---|---|---|---|
| Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.80 | 50 | 836.499995 | 0.004 | 2.5 |
| 3.80 | 40 | 836.499996 | 0.002 | 2.5 |
| 3.80 | 30 | 836.499997 | 0.001 | 2.5 |
| ***3.80*** | ***20*** | ***836.499998*** | ***0*** | 2.5 |
| 3.80 | 10 | 836.499997 | 0.001 | 2.5 |
| 3.80 | 0 | 836.499997 | 0.001 | 2.5 |
| 3.80 | -10 | 836.499998 | 0.000 | 2.5 |
| 3.80 | -20 | 836.499998 | 0.000 | 2.5 |
| 3.80 | -30 | 836.499997 | 0.001 | 2.5 |

| Reference Frequency: Cellular Mid Channel 836.499998MHz @ 20°C<br>Limit: to stay +- 2.5 ppm = 2091.250 Hz | | | | |
|---|---|---|---|---|
| Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| ***3.80*** | ***20*** | ***836.499998*** | ***0*** | ***2.5*** |
| 3.30 | 20 | 836.499997 | *0.001* | 2.5 |
| 4.30 | 20 | 836.499996 | *0.002* | 2.5 |



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**LTE BAND 17 – MID CHANNEL**

| Reference Frequency: Mid Channel 710 MHz @ 20ºC<br>Limit: within the authorized block or +- 2.5 ppm = 1775.000 Hz | | | | |
|---|---|---|---|---|
| Power Supply (Vdc) | Environment Temperature (*C) | Frequency Deviation Measureed with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.80 | 50 | 709.999988 | -0.004 | 2.5 |
| 3.80 | 40 | 709.999988 | -0.004 | 2.5 |
| 3.80 | 30 | 709.999986 | -0.001 | 2.5 |
| 3.80 | ***20*** | ***709.999985*** | ***0*** | ***2.5*** |
| 3.80 | 10 | 709.999984 | 0.001 | 2.5 |
| 3.80 | 0 | 709.999991 | -0.008 | 2.5 |
| 3.80 | -10 | 709.999995 | -0.014 | 2.5 |
| 3.80 | -20 | 709.999993 | -0.011 | 2.5 |
| 3.80 | -30 | 709.999992 | -0.010 | 2.5 |

| Reference Frequency: Mid Channel 710.000010 MHz @ 20ºC<br>Limit: within the authorized block or +- 2.5 ppm = 1775.000 Hz | | | | |
|---|---|---|---|---|
| Power Supply (Vdc) | Environment Temperature (*C) | Frequency Deviation Measureed with Time Elapse | | |
| | | | Delta (ppm) | Limit (ppm) |
| ***3.80*** | ***20*** | ***709.999985*** | ***0.00000*** | ***2.5*** |
| 4.30 | 20 | 709.999987 | *-0.00282* | 2.5 |
| 3.30 | 20 | 709.999984 | *0.00141* | 2.5 |



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**LTE BAND 4 – MID CHANNEL**

| Reference Frequency: PCS Mid Channel 1732.5MHz @ 20ºC<br>Limit: within the authorized block or +- 2.5 ppm = 4331.250 Hz | | | | |
|---|---|---|---|---|
| Power Supply (Vdc) | Environment Temperature (*C) | Frequency Deviation Measureed with Time Elapse (MHz) | Delta (ppm) | Limit (ppm) |
| 3.80 | 50 | 1732.500012 | -0.010 | 2.5 |
| 3.80 | 40 | 1732.500010 | -0.009 | 2.5 |
| 3.80 | 30 | 1732.500011 | -0.010 | 2.5 |
| 3.80 | ***20*** | ***1732.499994*** | ***0*** | ***2.5*** |
| 3.80 | 10 | 1732.499993 | 0.001 | 2.5 |
| 3.80 | 0 | 1732.499993 | 0.001 | 2.5 |
| 3.80 | -10 | 1732.499992 | 0.001 | 2.5 |
| 3.80 | -20 | 1732.499990 | 0.002 | 2.5 |
| 3.80 | -30 | 1732.499989 | 0.003 | 2.5 |

| Reference Frequency: PCS Mid Channel 1732.500012 MHz @ 20ºC<br>Limit: within the authorized block or +- 2.5 ppm = 4331.250 Hz | | | | |
|---|---|---|---|---|
| Power Supply (Vdc) | Environment Temperature (*C) | Frequency Deviation Measureed with Time Elapse | Delta (ppm) | Limit (ppm) |
| ***3.80*** | ***20*** | ***1732.499994*** | ***0.00000*** | ***2.5*** |
| 4.30 | 20 | 1732.499992 | *0.00115* | 2.5 |
| 3.30 | 20 | 1732.499991 | *0.00173* | 2.5 |



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# 11. RADIATED TEST RESULTS

## 11.1. RADIATED POWER (ERP & EIRP)

**RULE PART(S)**

FCC: §2.1046, §22.913, §24.232, and § 27

**LIMITS**

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

**TEST RESULTS**

### 11.1.1. ERP/EIRP Results

| Band | Mode | Channel | f(MHz) | ERP / EIRP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| Band 2 | REL99 | 9262 | 1852.4 | 22.87 | 193.64 |
| | | 9400 | 1880 | 23.04 | 201.37 |
| | | 9538 | 1907.6 | 22.75 | 188.36 |
| | HSDPA | 9262 | 1852.4 | 22.47 | 176.6 |
| | | 9400 | 1880 | 23.14 | 206.06 |
| | | 9538 | 1907.6 | 22.48 | 177.01 |

| Band | Mode | Channel | f(MHz) | ERP / EIRP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| Band 5 | REL99 | 4132 | 826.4 | 21.591 | 144.24 |
| | | 4183 | 836.6 | 20.771 | 119.43 |
| | | 4233 | 846.6 | 19.421 | 87.52 |
| | HSDPA | 4132 | 826.4 | 20.781 | 119.7 |
| | | 4183 | 836.6 | 20.631 | 115.64 |
| | | 4233 | 846.6 | 19.201 | 83.2 |



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| Band | Mode | Channel | f(MHz) | ERP / EIRP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| GSM1900 | GPRS | 512 | 1850.2 | 29.03 | 799.83 |
| | | 661 | 1880 | 28.65 | 732.82 |
| | | 810 | 1909.8 | 28.42 | 695.02 |
| | EGPRS | 512 | 1850.2 | 26.5 | 446.68 |
| | | 661 | 1880 | 27.27 | 533.33 |
| | | 810 | 1909.8 | 27 | 501.19 |

| Band | Mode | Channel | f(MHz) | ERP / EIRP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| GSM850 | GPRS | 128 | 824.2 | 29.491 | 889.41 |
| | | 190 | 836.6 | 27.571 | 571.61 |
| | | 251 | 848.8 | 27.561 | 570.3 |
| | EGPRS | 128 | 824.2 | 26.671 | 464.62 |
| | | 190 | 836.6 | 25.821 | 382.03 |
| | | 251 | 848.8 | 24.261 | 266.75 |



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### 11.1.2. LTE ERP/EIRP Results

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE17 | 10 | QPSK | 1/0 | 709 | 19.651 | 92.28 |
| | | | 1/0 | 710 | 20.531 | 113.01 |
| | | | 1/0 | 711 | 20.571 | 114.05 |
| | | 16QAM | 1/0 | 709 | 18.801 | 75.88 |
| | | | 1/0 | 710 | 19.491 | 88.94 |
| | | | 1/0 | 711 | 19.481 | 88.74 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE17 | 5 | QPSK | 1/0 | 706.5 | 19.591 | 91.01 |
| | | | 1/0 | 710 | 19.911 | 97.97 |
| | | | 1/0 | 713.5 | 19.881 | 97.3 |
| | | 16QAM | 1/0 | 706.5 | 18.711 | 74.32 |
| | | | 1/0 | 710 | 18.941 | 78.36 |
| | | | 1/0 | 713.5 | 18.981 | 79.09 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE7 | 20 | QPSK | 1/0 | 2510 | 20.85 | 121.62 |
| | | | 1/0 | 2535 | 21.9 | 154.88 |
| | | | 1/0 | 2560 | 22 | 158.49 |
| | | 16QAM | 1/0 | 2510 | 20.13 | 103.04 |
| | | | 1/0 | 2535 | 20.6 | 114.82 |
| | | | 1/0 | 2560 | 21.03 | 126.77 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE7 | 15 | QPSK | 1/0 | 2507.5 | 22.2 | 165.96 |



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| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 1/0 | 2535 | 21.1 | 128.82 |
| | | | 1/0 | 2562.5 | 20.3 | 107.15 |
| | | 16QAM | 1/0 | 2507.5 | 21.3 | 134.9 |
| | | | 1/0 | 2535 | 20.4 | 109.65 |
| | | | 1/0 | 2562.5 | 18.8 | 75.86 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE7 | 10 | QPSK | 1/0 | 2505 | 21.22 | 132.43 |
| | | | 1/0 | 2535 | 21.72 | 148.59 |
| | | | 1/0 | 2565 | 20.99 | 125.6 |
| | | 16QAM | 1/0 | 2505 | 20.17 | 103.99 |
| | | | 1/0 | 2535 | 20.72 | 118.03 |
| | | | 1/0 | 2565 | 19.86 | 96.83 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE7 | 5 | QPSK | 1/0 | 2502.5 | 20.1 | 102.33 |
| | | | 1/0 | 2535 | 20.6 | 114.82 |
| | | | 1/0 | 2567.5 | 19.57 | 90.57 |
| | | 16QAM | 1/0 | 2502.5 | 18.94 | 78.34 |
| | | | 1/0 | 2535 | 19.25 | 84.14 |
| | | | 1/0 | 2567.5 | 18.8 | 75.86 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE5 | 10 | QPSK | 1/0 | 829 | 20.541 | 113.27 |
| | | | 1/0 | 836.5 | 20.351 | 108.42 |
| | | | 1/0 | 844 | 20.411 | 109.93 |
| | | 16QAM | 1/0 | 829 | 19.521 | 89.56 |
| | | | 1/0 | 836.5 | 19.271 | 84.55 |



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| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 1/0 | 844 | 19.381 | 86.72 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE5 | 5 | QPSK | 1/0 | 826.5 | 20.951 | 124.48 |
| | | | 1/0 | 836.5 | 18.211 | 66.24 |
| | | | 1/0 | 846.5 | 19.391 | 86.92 |
| | | 16QAM | 1/0 | 826.5 | 19.801 | 95.52 |
| | | | 1/0 | 836.5 | 17.101 | 51.3 |
| | | | 1/0 | 846.5 | 18.341 | 68.25 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE4 | 10 | QPSK | 1/0 | 1715 | 24.08 | 255.86 |
| | | | 1/0 | 1732.5 | 24.69 | 294.44 |
| | | | 1/0 | 1750 | 24.27 | 267.3 |
| | | 16QAM | 1/0 | 1715 | 23.14 | 206.06 |
| | | | 1/0 | 1732.5 | 23.87 | 243.78 |
| | | | 1/0 | 1750 | 23.36 | 216.77 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE4 | 5 | QPSK | 1/0 | 1712.5 | 25.29 | 338.06 |
| | | | 1/0 | 1732.5 | 25.88 | 387.26 |
| | | | 1/0 | 1752.5 | 25.51 | 355.63 |
| | | 16QAM | 1/0 | 1712.5 | 24.3 | 269.15 |
| | | | 1/0 | 1732.5 | 24.86 | 306.2 |
| | | | 1/0 | 1752.5 | 24.66 | 292.42 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |



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| | | | | | | |
|---|---|---|---|---|---|---|
| LTE2 | 10 | QPSK | 1/0 | 1855 | 24.09 | 256.45 |
| | | | 1/0 | 1880 | 23.2 | 208.93 |
| | | | 1/0 | 1905 | 23.91 | 246.04 |
| | | 16QAM | 1/0 | 1855 | 23.13 | 205.59 |
| | | | 1/0 | 1880 | 22.29 | 169.43 |
| | | | 1/0 | 1905 | 22.9 | 194.98 |

| Band | BW (MHz) | Mode | RB/RB Size | f (MHz) | ERP / EIRP | |
|---|---|---|---|---|---|---|
| | | | | | dBm | mW |
| LTE2 | 5 | QPSK | 1/0 | 1852.5 | 24.12 | 258.23 |
| | | | 1/0 | 1880 | 23.4 | 218.78 |
| | | | 1/0 | 1907.5 | 24.09 | 256.45 |
| | | 16QAM | 1/0 | 1852.5 | 23.21 | 209.41 |
| | | | 1/0 | 1880 | 22.35 | 171.79 |
| | | | 1/0 | 1907.5 | 23 | 199.53 |



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### 11.1.3. ERP/EIRP DATA

Band

LTE17

10MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** R. Alegre
**Configuration:** EUT only
**Mode:** LTE Band 17_10MHz_16QAM

**Test Equipment:**
**Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 709.00 | 13.91 | V | 0.9 | 0.0 | 13.01 | 38.5 | -25.4 | |
| 709.00 | 19.70 | H | 0.9 | 0.0 | 18.80 | 38.5 | -19.6 | |
| Mid Ch | | | | | | | | |
| 710.00 | 15.31 | V | 0.9 | 0.0 | 14.41 | 38.5 | -24.0 | |
| 710.00 | 20.39 | H | 0.9 | 0.0 | 19.49 | 38.5 | -19.0 | |
| High Ch | | | | | | | | |
| 711.00 | 14.99 | V | 0.9 | 0.0 | 14.09 | 38.5 | -24.4 | |
| 711.00 | 20.38 | H | 0.9 | 0.0 | 19.48 | 38.5 | -19.0 | |

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm



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Band

LTE17

10MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** R. Alegre
**Configuration:** EUT only
**Mode:** LTE Band 17_10MHz_QPSK

**Test Equipment:**
**Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 709.00 | 15.09 | V | 0.9 | 0.0 | 14.19 | 38.5 | -24.3 | |
| 709.00 | 20.55 | H | 0.9 | 0.0 | 19.65 | 38.5 | -18.8 | |
| Mid Ch | | | | | | | | |
| 710.00 | 16.41 | V | 0.9 | 0.0 | 15.51 | 38.5 | -22.9 | |
| 710.00 | 21.43 | H | 0.9 | 0.0 | 20.53 | 38.5 | -17.9 | |
| High Ch | | | | | | | | |
| 711.00 | 16.27 | V | 0.9 | 0.0 | 15.37 | 38.5 | -23.1 | |
| 711.00 | 21.47 | H | 0.9 | 0.0 | 20.57 | 38.5 | -17.9 | |

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm



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Band

LTE17

5MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** R. Alegre
**Configuration:** EUT only
**Mode:** LTE Band 17_5MHz_16QAM

**Test Equipment:**
**Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 706.50 | 13.07 | V | 0.9 | 0.0 | 12.17 | 38.5 | -26.3 | |
| 706.50 | 19.61 | H | 0.9 | 0.0 | 18.71 | 38.5 | -19.7 | |
| Mid Ch | | | | | | | | |
| 710.00 | 14.97 | V | 0.9 | 0.0 | 14.07 | 38.5 | -24.4 | |
| 710.00 | 19.84 | H | 0.9 | 0.0 | 18.94 | 38.5 | -19.5 | |
| High Ch | | | | | | | | |
| 713.50 | 14.04 | V | 0.9 | 0.0 | 13.14 | 38.5 | -25.3 | |
| 713.50 | 19.88 | H | 0.9 | 0.0 | 18.98 | 38.5 | -19.5 | |

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm



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Band

LTE17

5MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** R. Alegre
**Configuration:** EUT only
**Mode:** LTE Band 17_5MHz_QPSK

**Test Equipment:**
**Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 706.50 | 14.08 | V | 0.9 | 0.0 | 13.18 | 38.5 | -25.3 | |
| 706.50 | 20.49 | H | 0.9 | 0.0 | 19.59 | 38.5 | -18.9 | |
| Mid Ch | | | | | | | | |
| 710.00 | 15.96 | V | 0.9 | 0.0 | 15.06 | 38.5 | -23.4 | |
| 710.00 | 20.81 | H | 0.9 | 0.0 | 19.91 | 38.5 | -18.5 | |
| High Ch | | | | | | | | |
| 713.50 | 15.07 | V | 0.9 | 0.0 | 14.17 | 38.5 | -24.3 | |
| 713.50 | 20.78 | H | 0.9 | 0.0 | 19.88 | 38.5 | -18.6 | |

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm



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Band

LTE7

20MHz

16QAM

**High Frequency Substitution Measurement**
**Compliance Certification Services Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** Kiya/Oren
**Configuration:** EUT only, X-position
**Mode:** LTE B7 20M 16QAM

**Test Equipment:**
**Receiving: Sunol T119, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Horn T59 3115, 4ft SMA Cable (SN # 244640 002)**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2510.00 | 6.26 | V | 0.9 | 9.5 | 14.83 | 38.5 | -23.6 | |
| 2510.00 | 11.56 | H | 0.9 | 9.5 | 20.13 | 38.5 | -18.3 | |
| Mid Ch | | | | | | | | |
| 2535.00 | 6.43 | V | 0.9 | 9.5 | 15.03 | 38.5 | -23.4 | |
| 2535.00 | 12.00 | H | 0.9 | 9.5 | 20.60 | 38.5 | -17.9 | |
| High Ch | | | | | | | | |
| 2560.00 | 9.14 | V | 0.9 | 9.7 | 17.94 | 38.5 | -20.5 | |
| 2560.00 | 12.23 | H | 0.9 | 9.7 | 21.03 | 38.5 | -17.4 | |

Rev. 3.17.11



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Band

LTE7

20MHz

QPSK

**High Frequency Substitution Measurement**
**Compliance Certification Services Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** Kiya/Oren
**Configuration:** EUT only, X-position
**Mode:** LTE B7 20M QPSK

**Test Equipment:**
**Receiving: Sunol T119, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Horn T59 3115, 4ft SMA Cable (SN # 244640 002)**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2510.00 | 7.17 | V | 0.9 | 9.5 | 15.74 | 38.5 | -22.7 | |
| 2510.00 | 12.28 | H | 0.9 | 9.5 | 20.85 | 38.5 | -17.6 | |
| Mid Ch | | | | | | | | |
| 2535.00 | 7.56 | V | 0.9 | 9.5 | 16.16 | 38.5 | -22.3 | |
| 2535.00 | 13.30 | H | 0.9 | 9.5 | 21.90 | 38.5 | -16.6 | |
| High Ch | | | | | | | | |
| 2560.00 | 9.86 | V | 0.9 | 9.7 | 18.66 | 38.5 | -19.8 | |
| 2560.00 | 13.20 | H | 0.9 | 9.7 | 22.00 | 38.5 | -16.5 | |

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Band

LTE7

15MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** Kiya/Oren
**Configuration:** EUT only, X-position
**Mode:** LTE B7 15M 16QAM

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2507.50 | 6.60 | V | 0.9 | 9.5 | 15.20 | 33.0 | -17.8 | |
| 2507.50 | 12.70 | H | 0.9 | 9.5 | 21.30 | 33.0 | -11.7 | |
| Mid Ch | | | | | | | | |
| 2535.00 | 6.50 | V | 0.9 | 9.5 | 15.10 | 33.0 | -17.9 | |
| 2535.00 | 11.80 | H | 0.9 | 9.5 | 20.40 | 33.0 | -12.6 | |
| High Ch | | | | | | | | |
| 2562.50 | 8.30 | V | 0.9 | 9.6 | 17.00 | 33.0 | -16.0 | |
| 2562.50 | 10.10 | H | 0.9 | 9.6 | 18.80 | 33.0 | -14.2 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE7

15MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** Kiya/Oren
**Configuration:** EUT only, X-position
**Mode:** LTE B7 15M QPSK

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2507.50 | 7.70 | V | 0.9 | 9.5 | 16.30 | 33.0 | -16.7 | |
| 2507.50 | 13.60 | H | 0.9 | 9.5 | 22.20 | 33.0 | -10.8 | |
| Mid Ch | | | | | | | | |
| 2535.00 | 7.70 | V | 0.9 | 9.5 | 16.30 | 33.0 | -16.7 | |
| 2535.00 | 12.50 | H | 0.9 | 9.5 | 21.10 | 33.0 | -11.9 | |
| High Ch | | | | | | | | |
| 2562.50 | 9.90 | V | 0.9 | 9.6 | 18.60 | 33.0 | -14.4 | |
| 2562.50 | 11.60 | H | 0.9 | 9.6 | 20.30 | 33.0 | -12.7 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE7

10MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG**
**Project #: 14U17493**
**Date: 4/21/14**
**Test Engineer: R. Alegre**
**Configuration: EUT**
**Mode: LTE7, 10MHz, 16QAM**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2505.00 | 7.74 | V | 0.9 | 9.5 | 16.36 | 33.0 | -16.6 | |
| 2505.00 | 11.55 | H | 0.9 | 9.5 | 20.17 | 33.0 | -12.8 | |
| Mid Ch | | | | | | | | |
| 2535.00 | 7.96 | V | 0.9 | 9.5 | 16.58 | 33.0 | -16.4 | |
| 2535.00 | 12.10 | H | 0.9 | 9.5 | 20.72 | 33.0 | -12.3 | |
| High Ch | | | | | | | | |
| 2565.00 | 7.37 | V | 0.9 | 9.5 | 16.02 | 33.0 | -17.0 | |
| 2565.00 | 11.21 | H | 0.9 | 9.5 | 19.86 | 33.0 | -13.1 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE7

10MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG**
**Project #: 14U17493**
**Date: 4/21/14**
**Test Engineer: R. Alegre**
**Configuration: EUT**
**Mode: LTE7, 10MHz, QPSK**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2505.00 | 8.86 | V | 0.9 | 9.5 | 17.48 | 33.0 | -15.5 | |
| 2505.00 | 12.60 | H | 0.9 | 9.5 | 21.22 | 33.0 | -11.8 | |
| Mid Ch | | | | | | | | |
| 2535.00 | 8.96 | V | 0.9 | 9.5 | 17.58 | 33.0 | -15.4 | |
| 2535.00 | 13.10 | H | 0.9 | 9.5 | 21.72 | 33.0 | -11.3 | |
| High Ch | | | | | | | | |
| 2565.00 | 8.50 | V | 0.9 | 9.5 | 17.15 | 33.0 | -15.9 | |
| 2565.00 | 12.34 | H | 0.9 | 9.5 | 20.99 | 33.0 | -12.0 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE7

5MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG**
**Project #: 14U17493**
**Date: 4/21/14**
**Test Engineer: R. Alegre**
**Configuration: EUT**
**Mode: LTE7, 5MHz, 16QAM**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2502.50 | 2.80 | V | 0.9 | 9.5 | 11.42 | 33.0 | -21.6 | |
| 2502.50 | 10.32 | H | 0.9 | 9.5 | 18.94 | 33.0 | -14.1 | |
| Mid Ch | | | | | | | | |
| 2535.00 | 3.68 | V | 0.9 | 9.5 | 12.30 | 33.0 | -20.7 | |
| 2535.00 | 10.63 | H | 0.9 | 9.5 | 19.25 | 33.0 | -13.8 | |
| High Ch | | | | | | | | |
| 2567.50 | 3.49 | V | 0.9 | 9.5 | 12.14 | 33.0 | -20.9 | |
| 2567.50 | 10.15 | H | 0.9 | 9.5 | 18.80 | 33.0 | -14.2 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE7

5MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG**
**Project #: 14U17493**
**Date: 4/21/14**
**Test Engineer: R. Alegre**
**Configuration: EUT**
**Mode: LTE7, 5MHz, QPSK**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2502.50 | 4.00 | V | 0.9 | 9.5 | 12.62 | 33.0 | -20.4 | |
| 2502.50 | 11.48 | H | 0.9 | 9.5 | 20.10 | 33.0 | -12.9 | |
| Mid Ch | | | | | | | | |
| 2535.00 | 5.11 | V | 0.9 | 9.5 | 13.73 | 33.0 | -19.3 | |
| 2535.00 | 11.98 | H | 0.9 | 9.5 | 20.60 | 33.0 | -12.4 | |
| High Ch | | | | | | | | |
| 2567.50 | 4.36 | V | 0.9 | 9.5 | 13.01 | 33.0 | -20.0 | |
| 2567.50 | 10.92 | H | 0.9 | 9.5 | 19.57 | 33.0 | -13.4 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE5

10MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 4/22/14**
**Test Engineer: R. Alegre**
**Configuration: EUT ONLY**
**Mode: LTE5 10MHz FUND 16QAM**

**Test Equipment:**
**Receiving: Sunol T407, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 829.00 | 15.87 | V | 0.9 | 0.0 | 14.97 | 38.5 | -23.5 | |
| 829.00 | 20.42 | H | 0.9 | 0.0 | 19.52 | 38.5 | -18.9 | |
| Mid Ch | | | | | | | | |
| 836.50 | 13.32 | V | 0.9 | 0.0 | 12.42 | 38.5 | -26.0 | |
| 836.50 | 20.17 | H | 0.9 | 0.0 | 19.27 | 38.5 | -19.2 | |
| High Ch | | | | | | | | |
| 844.00 | 14.22 | V | 0.9 | 0.0 | 13.32 | 38.5 | -25.1 | |
| 844.00 | 20.28 | H | 0.9 | 0.0 | 19.38 | 38.5 | -19.1 | |

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm



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Band

LTE5

10MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 4/22/14**
**Test Engineer: R. Alegre**
**Configuration: EUT ONLY**
**Mode: LTE5 10MHz FUND QPSK**

**Test Equipment:**
**Receiving: Sunol T407, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 829.00 | 16.55 | V | 0.9 | 0.0 | 15.65 | 38.5 | -22.8 | |
| 829.00 | 21.44 | H | 0.9 | 0.0 | 20.54 | 38.5 | -17.9 | |
| Mid Ch | | | | | | | | |
| 836.50 | 14.05 | V | 0.9 | 0.0 | 13.15 | 38.5 | -25.3 | |
| 836.50 | 21.25 | H | 0.9 | 0.0 | 20.35 | 38.5 | -18.1 | |
| High Ch | | | | | | | | |
| 844.00 | 15.23 | V | 0.9 | 0.0 | 14.33 | 38.5 | -24.1 | |
| 844.00 | 21.31 | H | 0.9 | 0.0 | 20.41 | 38.5 | -18.0 | |

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm



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Band

LTE5

5MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 4/22/14**
**Test Engineer: R. Alegre**
**Configuration: EUT ONLY**
**Mode: LTE5 5MHz FUND 16QAM**

**Test Equipment:**
**Receiving: Sunol T407, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 826.50 | 14.53 | V | 0.9 | 0.0 | 13.63 | 38.5 | -24.8 | |
| 826.50 | 20.70 | H | 0.9 | 0.0 | 19.80 | 38.5 | -18.6 | |
| Mid Ch | | | | | | | | |
| 836.50 | 14.03 | V | 0.9 | 0.0 | 13.13 | 38.5 | -25.3 | |
| 836.50 | 18.00 | H | 0.9 | 0.0 | 17.10 | 38.5 | -21.3 | |
| High Ch | | | | | | | | |
| 846.50 | 14.13 | V | 0.9 | 0.0 | 13.23 | 38.5 | -25.2 | |
| 846.50 | 19.24 | H | 0.9 | 0.0 | 18.34 | 38.5 | -20.1 | |

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm



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Band

LTE5

5MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 4/22/14**
**Test Engineer: R. Alegre**
**Configuration: EUT ONLY**
**Mode: LTE5 5MHz FUND QPSK**

**Test Equipment:**
**Receiving: Sunol T407, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 826.50 | 15.58 | V | 0.9 | 0.0 | 14.68 | 38.5 | -23.8 | |
| 826.50 | 21.85 | H | 0.9 | 0.0 | 20.95 | 38.5 | -17.5 | |
| Mid Ch | | | | | | | | |
| 836.50 | 14.95 | V | 0.9 | 0.0 | 14.05 | 38.5 | -24.4 | |
| 836.50 | 19.11 | H | 0.9 | 0.0 | 18.21 | 38.5 | -20.2 | |
| High Ch | | | | | | | | |
| 846.50 | 15.12 | V | 0.9 | 0.0 | 14.22 | 38.5 | -24.2 | |
| 846.50 | 20.29 | H | 0.9 | 0.0 | 19.39 | 38.5 | -19.1 | |

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm



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Band

LTE4

10MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 04/19/14**
**Test Engineer: R. Alegre**
**Configuration: EUT Only**
**Mode: LTE B4 10MHz 16QAM**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1715.00 | 10.72 | V | 0.9 | 8.3 | 18.16 | 30.0 | -11.8 | |
| 1715.00 | 15.70 | H | 0.9 | 8.3 | 23.14 | 30.0 | -6.9 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 9.68 | V | 0.9 | 8.2 | 17.03 | 30.0 | -13.0 | |
| 1732.50 | 16.52 | H | 0.9 | 8.2 | 23.87 | 30.0 | -6.1 | |
| High Ch | | | | | | | | |
| 1750.00 | 8.89 | V | 0.9 | 8.2 | 16.24 | 30.0 | -13.8 | |
| 1750.00 | 16.01 | H | 0.9 | 8.2 | 23.36 | 30.0 | -6.6 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE4

10MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 04/19/14**
**Test Engineer: R. Alegre**
**Configuration: EUT Only**
**Mode: LTE B4 10MHz QPSK**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1715.00 | 11.56 | V | 0.9 | 8.3 | 19.00 | 30.0 | -11.0 | |
| 1715.00 | 16.64 | H | 0.9 | 8.3 | 24.08 | 30.0 | -5.9 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 10.64 | V | 0.9 | 8.2 | 17.99 | 30.0 | -12.0 | |
| 1732.50 | 17.34 | H | 0.9 | 8.2 | 24.69 | 30.0 | -5.3 | |
| High Ch | | | | | | | | |
| 1750.00 | 9.81 | V | 0.9 | 8.2 | 17.16 | 30.0 | -12.8 | |
| 1750.00 | 16.92 | H | 0.9 | 8.2 | 24.27 | 30.0 | -5.7 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE4

5MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 04/19/14**
**Test Engineer: R. Alegre**
**Configuration: EUT Only**
**Mode: LTE B4 5MHz 16QAM**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1712.50 | 9.31 | V | 0.9 | 8.3 | 16.75 | 30.0 | -13.3 | |
| 1712.50 | 16.86 | H | 0.9 | 8.3 | 24.30 | 30.0 | -5.7 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 7.33 | V | 0.9 | 8.2 | 14.68 | 30.0 | -15.3 | |
| 1732.50 | 17.51 | H | 0.9 | 8.2 | 24.86 | 30.0 | -5.1 | |
| High Ch | | | | | | | | |
| 1752.50 | 6.44 | V | 0.9 | 8.2 | 13.79 | 30.0 | -16.2 | |
| 1752.50 | 17.31 | H | 0.9 | 8.2 | 24.66 | 30.0 | -5.3 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE4

5MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 04/19/14**
**Test Engineer: R. Alegre**
**Configuration: EUT Only**
**Mode: LTE B4 5MHz QPSK**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1712.50 | 10.25 | V | 0.9 | 8.3 | 17.69 | 30.0 | -12.3 | |
| 1712.50 | 17.85 | H | 0.9 | 8.3 | 25.29 | 30.0 | -4.7 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 8.29 | V | 0.9 | 8.2 | 15.64 | 30.0 | -14.4 | |
| 1732.50 | 18.53 | H | 0.9 | 8.2 | 25.88 | 30.0 | -4.1 | |
| High Ch | | | | | | | | |
| 1752.50 | 7.32 | V | 0.9 | 8.2 | 14.67 | 30.0 | -15.3 | |
| 1752.50 | 18.16 | H | 0.9 | 8.2 | 25.51 | 30.0 | -4.5 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE2

10MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 04/19/14**
**Test Engineer: R. Alegre**
**Configuration: EUT Only**
**Mode: LTE B2 10MHz 16QAM**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1855.00 | 14.24 | V | 0.9 | 7.9 | 21.29 | 33.0 | -11.7 | |
| 1855.00 | 16.08 | H | 0.9 | 7.9 | 23.13 | 33.0 | -9.9 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 14.53 | V | 0.9 | 7.9 | 21.58 | 33.0 | -11.4 | |
| 1880.00 | 15.24 | H | 0.9 | 7.9 | 22.29 | 33.0 | -10.7 | |
| High Ch | | | | | | | | |
| 1905.00 | 14.37 | V | 0.9 | 7.8 | 21.32 | 33.0 | -11.7 | |
| 1905.00 | 15.95 | H | 0.9 | 7.8 | 22.90 | 33.0 | -10.1 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE2

10MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 04/19/14**
**Test Engineer: R. Alegre**
**Configuration: EUT Only**
**Mode: LTE B2 10MHz QPSK**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1855.00 | 15.15 | V | 0.9 | 7.9 | 22.20 | 33.0 | -10.8 | |
| 1855.00 | 17.04 | H | 0.9 | 7.9 | 24.09 | 33.0 | -8.9 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 15.45 | V | 0.9 | 7.9 | 22.50 | 33.0 | -10.5 | |
| 1880.00 | 16.15 | H | 0.9 | 7.9 | 23.20 | 33.0 | -9.8 | |
| High Ch | | | | | | | | |
| 1905.00 | 15.40 | V | 0.9 | 7.8 | 22.35 | 33.0 | -10.7 | |
| 1905.00 | 16.96 | H | 0.9 | 7.8 | 23.91 | 33.0 | -9.1 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE2

5MHz

16QAM

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 04/19/14**
**Test Engineer: R. Alegre**
**Configuration: EUT Only**
**Mode: LTE B2 5MHz 16QAM**

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1852.50 | 14.16 | V | 0.9 | 7.9 | 21.21 | 33.0 | -11.8 | |
| 1852.50 | 16.16 | H | 0.9 | 7.9 | 23.21 | 33.0 | -9.8 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 13.52 | V | 0.9 | 7.9 | 20.57 | 33.0 | -12.4 | |
| 1880.00 | 15.30 | H | 0.9 | 7.9 | 22.35 | 33.0 | -10.7 | |
| High Ch | | | | | | | | |
| 1907.50 | 14.44 | V | 0.9 | 7.8 | 21.39 | 33.0 | -11.6 | |
| 1907.50 | 16.05 | H | 0.9 | 7.8 | 23.00 | 33.0 | -10.0 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

LTE2

5MHz

QPSK

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company: LG Electronics**
**Project #: 14U17493**
**Date: 04/19/14**
**Test Engineer: R. Alegre**
**Configuration: EUT Only**
**Mode: LTE B2 5MHz QPSK**

**Test Equipment:**
**Receiving: Horn 119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1852.50 | 15.01 | V | 0.9 | 7.9 | 22.06 | 33.0 | -10.9 | |
| 1852.50 | 17.07 | H | 0.9 | 7.9 | 24.12 | 33.0 | -8.9 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 14.29 | V | 0.9 | 7.9 | 21.34 | 33.0 | -11.7 | |
| 1880.00 | 16.35 | H | 0.9 | 7.9 | 23.40 | 33.0 | -9.6 | |
| High Ch | | | | | | | | |
| 1907.50 | 15.23 | V | 0.9 | 7.8 | 22.18 | 33.0 | -10.8 | |
| 1907.50 | 17.14 | H | 0.9 | 7.8 | 24.09 | 33.0 | -8.9 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

Band 2

HSDPA

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** Kiya/Oren
**Configuration:** Z Position, EUT only
**Mode:** WCDMA_HSDPA_1900

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1852.40 | 14.80 | V | 0.85 | 7.9 | 21.80 | 33.0 | -11.2 | |
| 1852.40 | 15.47 | H | 0.85 | 7.9 | 22.47 | 33.0 | -10.5 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 13.53 | V | 0.85 | 7.9 | 20.53 | 33.0 | -12.5 | |
| 1880.00 | 16.14 | H | 0.85 | 7.9 | 23.14 | 33.0 | -9.9 | |
| High Ch | | | | | | | | |
| 1907.60 | 13.27 | V | 0.85 | 7.9 | 20.27 | 33.0 | -12.7 | |
| 1907.60 | 15.48 | H | 0.85 | 7.9 | 22.48 | 33.0 | -10.5 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

Band 2

REL99

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** Kiya/Oren
**Configuration:** Z Position, EUT only
**Mode:** WCDMA_Rel 99_1900

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1852.40 | 15.30 | V | 0.85 | 7.9 | 22.30 | 33.0 | -10.7 | |
| 1852.40 | 15.87 | H | 0.85 | 7.9 | 22.87 | 33.0 | -10.1 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 14.35 | V | 0.85 | 7.9 | 21.35 | 33.0 | -11.7 | |
| 1880.00 | 16.04 | H | 0.85 | 7.9 | 23.04 | 33.0 | -10.0 | |
| High Ch | | | | | | | | |
| 1907.60 | 14.80 | V | 0.85 | 7.9 | 21.80 | 33.0 | -11.2 | |
| 1907.60 | 15.75 | H | 0.85 | 7.9 | 22.75 | 33.0 | -10.3 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

Band 5

HSDPA

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** Kiya/Oren
**Configuration:** EUT, X Position
**Mode:** WCDMA_HSDPA_850

**Test Equipment:**
**Receiving: Sunol T407, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 826.40 | 12.83 | V | 0.9 | 0.0 | 11.93 | 38.5 | -26.5 | |
| 826.40 | 21.68 | H | 0.9 | 0.0 | 20.78 | 38.5 | -17.7 | |
| Mid Ch | | | | | | | | |
| 836.60 | 13.17 | V | 0.9 | 0.0 | 12.27 | 38.5 | -26.2 | |
| 836.60 | 21.53 | H | 0.9 | 0.0 | 20.63 | 38.5 | -17.8 | |
| High Ch | | | | | | | | |
| 846.60 | 13.57 | V | 0.9 | 0.0 | 12.67 | 38.5 | -25.8 | |
| 846.60 | 20.10 | H | 0.9 | 0.0 | 19.20 | 38.5 | -19.2 | |

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm



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Band

Band 5

REL99

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** Kiya/Oren
**Configuration:** EUT, X Position
**Mode:** WCDMA_REL99_850

**Test Equipment:**
**Receiving: Sunol T407, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 826.40 | 13.28 | V | 0.9 | 0.0 | 12.38 | 38.5 | -26.1 | |
| 826.40 | 22.49 | H | 0.9 | 0.0 | 21.59 | 38.5 | -16.9 | |
| Mid Ch | | | | | | | | |
| 836.60 | 13.38 | V | 0.9 | 0.0 | 12.48 | 38.5 | -26.0 | |
| 836.60 | 21.67 | H | 0.9 | 0.0 | 20.77 | 38.5 | -17.7 | |
| High Ch | | | | | | | | |
| 846.60 | 13.48 | V | 0.9 | 0.0 | 12.58 | 38.5 | -25.9 | |
| 846.60 | 20.32 | H | 0.9 | 0.0 | 19.42 | 38.5 | -19.0 | |

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm



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Band

GSM1900

EGPRS

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** Kiya/Oren
**Configuration:** EUT only Z position
**Mode:** EGPRS 1900MHz

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1850.20 | 19.23 | V | 0.85 | 7.9 | 26.23 | 33.0 | -6.8 | |
| 1850.20 | 19.50 | H | 0.85 | 7.9 | 26.50 | 33.0 | -6.5 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 18.63 | V | 0.85 | 7.9 | 25.63 | 33.0 | -7.4 | |
| 1880.00 | 20.27 | H | 0.85 | 7.9 | 27.27 | 33.0 | -5.7 | |
| High Ch | | | | | | | | |
| 1909.80 | 20.00 | V | 0.85 | 7.9 | 27.00 | 33.0 | -6.0 | |
| 1909.80 | 18.52 | H | 0.85 | 7.9 | 25.52 | 33.0 | -7.5 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

GSM1 900

GPRS

**High Frequency Substitution Measurement**
**UL Verification Services, Inc. Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** Kiya/Oren
**Configuration:** EUT only Z position
**Mode:** GPRS 1900MHz

**Test Equipment:**
**Receiving: Horn T119, and Chamber C SMA Cables**
**Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1850.20 | 22.03 | V | 0.85 | 7.9 | 29.03 | 33.0 | -4.0 | |
| 1850.20 | 21.16 | H | 0.85 | 7.9 | 28.16 | 33.0 | -4.8 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 20.60 | V | 0.85 | 7.9 | 27.60 | 33.0 | -5.4 | |
| 1880.00 | 21.65 | H | 0.85 | 7.9 | 28.65 | 33.0 | -4.4 | |
| High Ch | | | | | | | | |
| 1909.80 | 21.42 | V | 0.85 | 7.9 | 28.42 | 33.0 | -4.6 | |
| 1909.80 | 19.78 | H | 0.85 | 7.9 | 26.78 | 33.0 | -6.2 | |

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm



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Band

GSM850

EGPRS

**High Frequency Substitution Measurement**
**Compliance Certification Services Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** Kiya/Oren
**Configuration:** EUT only X-position
**Mode:** EGRPS 850MHz

**Test Equipment:**
**Receiving: Sunol T185, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 824.20 | 18.47 | V | 0.9 | 0.0 | 17.57 | 38.5 | -20.9 | |
| 824.20 | 27.57 | H | 0.9 | 0.0 | 26.67 | 38.5 | -11.8 | |
| Mid Ch | | | | | | | | |
| 836.60 | 19.05 | V | 0.9 | 0.0 | 18.15 | 38.5 | -20.3 | |
| 836.60 | 26.72 | H | 0.9 | 0.0 | 25.82 | 38.5 | -12.6 | |
| High Ch | | | | | | | | |
| 848.80 | 17.68 | V | 0.9 | 0.0 | 16.78 | 38.5 | -21.7 | |
| 848.80 | 25.16 | H | 0.9 | 0.0 | 24.26 | 38.5 | -14.2 | |

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Band

GSM850

GPRS

**High Frequency Substitution Measurement**
**Compliance Certification Services Chamber C**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/22/14
**Test Engineer:** R. Alegre
**Configuration:** EUT only
**Mode:** GRPS 850MHz

**Test Equipment:**
**Receiving: Sunol T407, and 3m Chamber N-type Cable (Setup this one for testing EUT)**
**Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.**

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 824.20 | 20.15 | V | 0.9 | 0.0 | 19.25 | 38.5 | -19.2 | |
| 824.20 | 30.39 | H | 0.9 | 0.0 | 29.49 | 38.5 | -9.0 | |
| Mid Ch | | | | | | | | |
| 836.60 | 22.04 | V | 0.9 | 0.0 | 21.14 | 38.5 | -17.3 | |
| 836.60 | 28.47 | H | 0.9 | 0.0 | 27.57 | 38.5 | -10.9 | |
| High Ch | | | | | | | | |
| 848.80 | 21.66 | V | 0.9 | 0.0 | 20.76 | 38.5 | -17.7 | |
| 848.80 | 28.46 | H | 0.9 | 0.0 | 27.56 | 38.5 | -10.9 | |

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## 11.2. FIELD STRENGTH OF SPURIOUS RADIATION

**RULE PART(S)**

FCC: §2.1053, §22.917, §24.238, and §27

**LIMIT**

§22.917 (e) and §24.238 (a): Out of band emissions. 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

**RESULTS**



UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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## 11.2.1. SPURIOUS RADIATION DATA

**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** TX, LTE B17 10MHz har 16QAM

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 5m Chamber A | T145 8449B | Filter 1 | Part 22 |

Band: LTE17 10MHz 16QAM

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, (709MHz) | | | | | | | | | |
| 1.418 | -27.6 | V | 3.0 | 33.1 | 1.0 | -59.7 | -13.0 | -46.7 | |
| 2.127 | -27.9 | V | 3.0 | 31.6 | 1.0 | -58.5 | -13.0 | -45.5 | |
| 2.836 | -30.4 | V | 3.0 | 31.0 | 1.0 | -60.4 | -13.0 | -47.4 | |
| 1.418 | -28.7 | H | 3.0 | 33.1 | 1.0 | -60.8 | -13.0 | -47.8 | |
| 2.127 | -29.1 | H | 3.0 | 31.6 | 1.0 | -59.6 | -13.0 | -46.6 | |
| 2.836 | -30.6 | H | 3.0 | 31.0 | 1.0 | -60.6 | -13.0 | -47.6 | |
| | | | | | | | | | |
| Mid Ch, (710MHz) | | | | | | | | | |
| 1.420 | -27.6 | V | 3.0 | 33.1 | 1.0 | -59.7 | -13.0 | -46.7 | |
| 2.130 | -27.9 | V | 3.0 | 31.6 | 1.0 | -58.5 | -13.0 | -45.5 | |
| 2.840 | -29.0 | V | 3.0 | 31.0 | 1.0 | -59.1 | -13.0 | -46.1 | |
| 1.420 | -27.7 | H | 3.0 | 33.1 | 1.0 | -59.8 | -13.0 | -46.8 | |
| 2.130 | -29.3 | H | 3.0 | 31.6 | 1.0 | -59.9 | -13.0 | -46.9 | |
| 2.840 | -30.7 | H | 3.0 | 31.0 | 1.0 | -60.8 | -13.0 | -47.8 | |
| | | | | | | | | | |
| High Ch, (711MHz) | | | | | | | | | |
| 1.422 | -27.7 | V | 3.0 | 33.1 | 1.0 | -59.8 | -13.0 | -46.8 | |
| 2.133 | -28.5 | V | 3.0 | 31.6 | 1.0 | -59.1 | -13.0 | -46.1 | |
| 2.844 | -30.2 | V | 3.0 | 31.0 | 1.0 | -60.2 | -13.0 | -47.2 | |
| 1.422 | -29.5 | H | 3.0 | 33.1 | 1.0 | -61.6 | -13.0 | -48.6 | |
| 2.133 | -29.5 | H | 3.0 | 31.6 | 1.0 | -60.1 | -13.0 | -47.1 | |
| 2.844 | -30.8 | H | 3.0 | 31.0 | 1.0 | -60.9 | -13.0 | -47.9 | |

Rev. 03.03.09



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** TX, LTE B17 10MHz har QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 5m Chamber A | T145 8449B | Filter 1 | Part 22 |

Band LTE17 10MHz QPSK

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, (709MHz) | | | | | | | | | |
| 1.418 | -27.8 | V | 3.0 | 33.1 | 1.0 | -59.9 | -13.0 | -46.9 | |
| 2.127 | -27.1 | V | 3.0 | 31.6 | 1.0 | -57.6 | -13.0 | -44.6 | |
| 2.836 | -30.1 | V | 3.0 | 31.0 | 1.0 | -60.1 | -13.0 | -47.1 | |
| 1.418 | -29.6 | H | 3.0 | 33.1 | 1.0 | -61.7 | -13.0 | -48.7 | |
| 2.127 | -29.6 | H | 3.0 | 31.6 | 1.0 | -60.2 | -13.0 | -47.2 | |
| 2.836 | -30.9 | H | 3.0 | 31.0 | 1.0 | -60.9 | -13.0 | -47.9 | |
| Mid Ch, (710MHz) | | | | | | | | | |
| 1.420 | -27.6 | V | 3.0 | 33.1 | 1.0 | -59.6 | -13.0 | -46.6 | |
| 2.130 | -28.0 | V | 3.0 | 31.6 | 1.0 | -58.6 | -13.0 | -45.6 | |
| 2.840 | -29.9 | V | 3.0 | 31.0 | 1.0 | -59.9 | -13.0 | -46.9 | |
| 1.420 | -28.8 | H | 3.0 | 33.1 | 1.0 | -60.8 | -13.0 | -47.8 | |
| 2.130 | -29.3 | H | 3.0 | 31.6 | 1.0 | -59.9 | -13.0 | -46.9 | |
| 2.840 | -30.4 | H | 3.0 | 31.0 | 1.0 | -60.4 | -13.0 | -47.4 | |
| High Ch, (711MHz) | | | | | | | | | |
| 1.422 | -27.1 | V | 3.0 | 33.1 | 1.0 | -59.2 | -13.0 | -46.2 | |
| 2.133 | -25.7 | V | 3.0 | 31.6 | 1.0 | -56.2 | -13.0 | -43.2 | |
| 2.844 | -29.2 | V | 3.0 | 31.0 | 1.0 | -59.2 | -13.0 | -46.2 | |
| 1.422 | -29.4 | H | 3.0 | 33.1 | 1.0 | -61.5 | -13.0 | -48.5 | |
| 2.133 | -29.8 | H | 3.0 | 31.6 | 1.0 | -60.4 | -13.0 | -47.4 | |
| 2.844 | -30.5 | H | 3.0 | 31.0 | 1.0 | -60.5 | -13.0 | -47.5 | |

Rev. 03.03.09



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** TX, LTE B17 5MHz har 16QAM

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | Part 22 |

Band

LTE17

5MHz

16QAM

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, (706.5MHz) | | | | | | | | | |
| 1.413 | -30.3 | V | 3.0 | 33.1 | 1.0 | -62.4 | -13.0 | -49.4 | |
| 2.120 | -22.7 | V | 3.0 | 31.6 | 1.0 | -53.3 | -13.0 | -40.3 | |
| 2.826 | -24.4 | V | 3.0 | 31.0 | 1.0 | -54.4 | -13.0 | -41.4 | |
| 1.413 | -30.1 | H | 3.0 | 33.1 | 1.0 | -62.2 | -13.0 | -49.2 | |
| 2.120 | -23.3 | H | 3.0 | 31.6 | 1.0 | -53.9 | -13.0 | -40.9 | |
| 2.826 | -23.7 | H | 3.0 | 31.0 | 1.0 | -53.7 | -13.0 | -40.7 | |
| | | | | | | | | | |
| Mid Ch, (710MHz) | | | | | | | | | |
| 1.420 | -31.8 | V | 3.0 | 33.1 | 1.0 | -63.8 | -13.0 | -50.8 | |
| 2.130 | -24.5 | V | 3.0 | 31.6 | 1.0 | -55.1 | -13.0 | -42.1 | |
| 2.840 | -24.8 | V | 3.0 | 31.0 | 1.0 | -54.8 | -13.0 | -41.8 | |
| 1.420 | -29.9 | H | 3.0 | 33.1 | 1.0 | -62.0 | -13.0 | -49.0 | |
| 2.130 | -26.9 | H | 3.0 | 31.6 | 1.0 | -57.5 | -13.0 | -44.5 | |
| 2.840 | -23.4 | H | 3.0 | 31.0 | 1.0 | -53.5 | -13.0 | -40.5 | |
| | | | | | | | | | |
| High Ch, (713.5MHz) | | | | | | | | | |
| 1.427 | -29.8 | V | 3.0 | 33.1 | 1.0 | -61.9 | -13.0 | -48.9 | |
| 2.141 | -22.7 | V | 3.0 | 31.6 | 1.0 | -53.3 | -13.0 | -40.3 | |
| 2.854 | -22.8 | V | 3.0 | 31.0 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 1.427 | -29.5 | H | 3.0 | 33.1 | 1.0 | -61.5 | -13.0 | -48.5 | |
| 2.141 | -24.0 | H | 3.0 | 31.6 | 1.0 | -54.5 | -13.0 | -41.5 | |
| 2.854 | -22.9 | H | 3.0 | 31.0 | 1.0 | -52.9 | -13.0 | -39.9 | |

Rev. 03.03.09



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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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** TX, LTE B17 5MHz har QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | Part 22 |

| Band | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | Low Ch, (706.5MHz) | | | | | | | | | |
| LTE17 | 1.413 | -30.1 | V | 3.0 | 33.1 | 1.0 | -62.2 | -13.0 | -49.2 | |
| | 2.120 | -23.4 | V | 3.0 | 31.6 | 1.0 | -54.0 | -13.0 | -41.0 | |
| 5MHz | 2.826 | -24.2 | V | 3.0 | 31.0 | 1.0 | -54.2 | -13.0 | -41.2 | |
| | 1.413 | -30.1 | H | 3.0 | 33.1 | 1.0 | -62.2 | -13.0 | -49.2 | |
| QPSK | 2.120 | -23.4 | H | 3.0 | 31.6 | 1.0 | -54.0 | -13.0 | -41.0 | |
| | 2.826 | -24.4 | H | 3.0 | 31.0 | 1.0 | -54.5 | -13.0 | -41.5 | |
| | Mid Ch, (710MHz) | | | | | | | | | |
| | 1.420 | -30.7 | V | 3.0 | 33.1 | 1.0 | -62.8 | -13.0 | -49.8 | |
| | 2.130 | -24.9 | V | 3.0 | 31.6 | 1.0 | -55.5 | -13.0 | -42.5 | |
| | 2.840 | -24.3 | V | 3.0 | 31.0 | 1.0 | -54.3 | -13.0 | -41.3 | |
| | 1.420 | -30.1 | H | 3.0 | 33.1 | 1.0 | -62.1 | -13.0 | -49.1 | |
| | 2.130 | -26.2 | H | 3.0 | 31.6 | 1.0 | -56.7 | -13.0 | -43.7 | |
| | 2.840 | -24.3 | H | 3.0 | 31.0 | 1.0 | -54.3 | -13.0 | -41.3 | |
| | High Ch, (713.5MHz) | | | | | | | | | |
| | 1.427 | -29.7 | V | 3.0 | 33.1 | 1.0 | -61.8 | -13.0 | -48.8 | |
| | 2.141 | -22.7 | V | 3.0 | 31.6 | 1.0 | -53.3 | -13.0 | -40.3 | |
| | 2.854 | -22.8 | V | 3.0 | 31.0 | 1.0 | -52.8 | -13.0 | -39.8 | |
| | 1.427 | -29.4 | H | 3.0 | 33.1 | 1.0 | -61.5 | -13.0 | -48.5 | |
| | 2.141 | -24.0 | H | 3.0 | 31.6 | 1.0 | -54.5 | -13.0 | -41.5 | |
| | 2.854 | -22.9 | H | 3.0 | 31.0 | 1.0 | -52.9 | -13.0 | -39.9 | |

Rev. 03.03.09



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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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** Kiya/Oren
**Configuration:** X Position, w/AC Charger and headphones
**Mode:** TX, LTE band 7, 20MHz, 16QAM

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | Part 27 |

Band: LTE7 20MHz 16QAM

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, (2510 MHz) | | | | | | | | | |
| 5.020 | -12.4 | V | 3.0 | 28.9 | 1.0 | -40.3 | -25.0 | -15.3 | |
| 7.530 | -18.6 | V | 3.0 | 26.3 | 1.0 | -43.9 | -25.0 | -18.9 | |
| 10.040 | -11.3 | V | 3.0 | 23.1 | 1.0 | -33.4 | -25.0 | -8.4 | |
| 5.020 | -8.1 | H | 3.0 | 28.9 | 1.0 | -36.0 | -25.0 | -11.0 | |
| 7.530 | -18.3 | H | 3.0 | 26.3 | 1.0 | -43.6 | -25.0 | -18.6 | |
| 10.040 | -6.4 | H | 3.0 | 23.1 | 1.0 | -28.5 | -25.0 | -3.5 | |
| Mid Ch, (2535MHz) | | | | | | | | | |
| 5.070 | -13.3 | V | 3.0 | 28.8 | 1.0 | -41.1 | -25.0 | -16.1 | |
| 7.650 | -19.3 | V | 3.0 | 26.2 | 1.0 | -44.4 | -25.0 | -19.4 | |
| 10.140 | -13.3 | V | 3.0 | 23.1 | 1.0 | -35.3 | -25.0 | -10.3 | |
| 5.070 | -8.8 | H | 3.0 | 28.8 | 1.0 | -36.6 | -25.0 | -11.6 | |
| 7.650 | -18.9 | H | 3.0 | 26.2 | 1.0 | -44.1 | -25.0 | -19.1 | |
| 10.140 | -14.6 | H | 3.0 | 23.1 | 1.0 | -36.6 | -25.0 | -11.6 | |
| High Ch, (2560 MHz) | | | | | | | | | |
| 5.120 | -13.2 | V | 3.0 | 28.8 | 1.0 | -41.0 | -25.0 | -16.0 | |
| 7.680 | -18.8 | V | 3.0 | 26.1 | 1.0 | -43.9 | -25.0 | -18.9 | |
| 10.240 | -13.8 | V | 3.0 | 23.0 | 1.0 | -35.8 | -25.0 | -10.8 | |
| 5.120 | -9.5 | H | 3.0 | 28.8 | 1.0 | -37.3 | -25.0 | -12.3 | |
| 7.680 | -18.7 | H | 3.0 | 26.1 | 1.0 | -43.8 | -25.0 | -18.8 | |
| 10.240 | -15.2 | H | 3.0 | 23.0 | 1.0 | -37.3 | -25.0 | -12.3 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** Kiya/Oren
**Configuration:** X Position, w/AC Charger and headphones
**Mode:** TX, LTE band 7, 20MHz, QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | Part 27 |

Band

LTE7

20MHz

QPSK

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, (2510 MHz) | | | | | | | | | |
| 5.020 | -12.8 | V | 3.0 | 28.9 | 1.0 | -40.7 | -25.0 | -15.7 | |
| 7.530 | -17.4 | V | 3.0 | 26.3 | 1.0 | -42.7 | -25.0 | -17.7 | |
| 10.040 | -10.6 | V | 3.0 | 23.1 | 1.0 | -32.7 | -25.0 | -7.7 | |
| 5.020 | -9.3 | H | 3.0 | 28.9 | 1.0 | -37.2 | -25.0 | -12.2 | |
| 7.530 | -18.5 | H | 3.0 | 26.3 | 1.0 | -43.8 | -25.0 | -18.8 | |
| 10.040 | -7.0 | H | 3.0 | 23.1 | 1.0 | -29.1 | -25.0 | -4.1 | |
| Mid Ch, (2535MHz) | | | | | | | | | |
| 5.070 | -12.3 | V | 3.0 | 28.8 | 1.0 | -40.2 | -25.0 | -15.2 | |
| 7.650 | -19.3 | V | 3.0 | 26.2 | 1.0 | -44.4 | -25.0 | -19.4 | |
| 10.140 | -11.2 | V | 3.0 | 23.1 | 1.0 | -33.2 | -25.0 | -8.2 | |
| 5.070 | -7.7 | H | 3.0 | 28.8 | 1.0 | -35.5 | -25.0 | -10.5 | |
| 7.650 | -18.5 | H | 3.0 | 26.2 | 1.0 | -43.6 | -25.0 | -18.6 | |
| 10.140 | -13.6 | H | 3.0 | 23.1 | 1.0 | -35.6 | -25.0 | -10.6 | |
| High Ch, (2560 MHz) | | | | | | | | | |
| 5.120 | -11.2 | V | 3.0 | 28.8 | 1.0 | -39.0 | -25.0 | -14.0 | |
| 7.680 | -18.5 | V | 3.0 | 26.1 | 1.0 | -43.6 | -25.0 | -18.6 | |
| 10.240 | -8.5 | V | 3.0 | 23.0 | 1.0 | -30.5 | -25.0 | -5.5 | |
| 5.120 | -8.4 | H | 3.0 | 28.8 | 1.0 | -36.2 | -25.0 | -11.2 | |
| 7.680 | -18.4 | H | 3.0 | 26.1 | 1.0 | -43.5 | -25.0 | -18.5 | |
| 10.240 | -13.0 | H | 3.0 | 23.0 | 1.0 | -35.0 | -25.0 | -10.0 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** Kiya/Oren
**Configuration:** X Position, w/AC Charger and headphones
**Mode:** TX, LTE band 7, 15MHz, 16QAM

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | Part 27 |

Band

LTE7

15MHz

16QAM

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, (2507 MHz) | | | | | | | | | |
| 5.014 | -12.2 | V | 3.0 | 28.9 | 1.0 | -40.1 | -25.0 | -15.1 | |
| 7.521 | -17.5 | V | 3.0 | 26.3 | 1.0 | -42.9 | -25.0 | -17.9 | |
| 10.028 | -7.3 | V | 3.0 | 23.1 | 1.0 | -29.3 | -25.0 | -4.3 | |
| 5.014 | -5.4 | H | 3.0 | 28.9 | 1.0 | -33.3 | -25.0 | -8.3 | |
| 7.521 | -18.6 | H | 3.0 | 26.3 | 1.0 | -43.9 | -25.0 | -18.9 | |
| 10.028 | -12.2 | H | 3.0 | 23.1 | 1.0 | -34.3 | -25.0 | -9.3 | |
| Mid Ch, (2535 MHz) | | | | | | | | | |
| 5.070 | -13.2 | V | 3.0 | 28.8 | 1.0 | -41.0 | -25.0 | -16.0 | |
| 7.650 | -18.2 | V | 3.0 | 26.2 | 1.0 | -43.3 | -25.0 | -18.3 | |
| 10.140 | -7.2 | V | 3.0 | 23.1 | 1.0 | -29.2 | -25.0 | -4.2 | |
| 5.070 | -6.1 | H | 3.0 | 28.8 | 1.0 | -33.9 | -25.0 | -8.9 | |
| 7.650 | -17.9 | H | 3.0 | 26.2 | 1.0 | -43.0 | -25.0 | -18.0 | |
| 10.140 | -14.2 | H | 3.0 | 23.1 | 1.0 | -36.3 | -25.0 | -11.3 | |
| High Ch, (2562 MHz) | | | | | | | | | |
| 5.124 | -11.0 | V | 3.0 | 28.8 | 1.0 | -38.8 | -25.0 | -13.8 | |
| 7.686 | -19.6 | V | 3.0 | 26.1 | 1.0 | -44.7 | -25.0 | -19.7 | |
| 10.248 | -11.1 | V | 3.0 | 23.0 | 1.0 | -33.1 | -25.0 | -8.1 | |
| 5.124 | -6.2 | H | 3.0 | 28.8 | 1.0 | -34.0 | -25.0 | -9.0 | |
| 7.686 | -18.5 | H | 3.0 | 26.1 | 1.0 | -43.6 | -25.0 | -18.6 | |
| 10.248 | -14.1 | H | 3.0 | 23.0 | 1.0 | -36.2 | -25.0 | -11.2 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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Band

LTE7

15MHz

QPSK

**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** Kiya/Oren
**Configuration:** X Position, w/AC Charger and headphones
**Mode:** TX, LTE band 7, 15MHz, QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | Part 27 |

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, (2507 MHz) | | | | | | | | | |
| 5.014 | -11.9 | V | 3.0 | 28.9 | 1.0 | -39.8 | -25.0 | -14.8 | |
| 7.521 | -17.3 | V | 3.0 | 26.3 | 1.0 | -42.6 | -25.0 | -17.6 | |
| 10.028 | -5.7 | V | 3.0 | 23.1 | 1.0 | -27.8 | -25.0 | -2.8 | |
| 5.014 | -4.8 | H | 3.0 | 28.9 | 1.0 | -32.7 | -25.0 | -7.7 | |
| 7.521 | -18.5 | H | 3.0 | 26.3 | 1.0 | -43.8 | -25.0 | -18.8 | |
| 10.028 | -10.8 | H | 3.0 | 23.1 | 1.0 | -32.9 | -25.0 | -7.9 | |
| Mid Ch, (2535 MHz) | | | | | | | | | |
| 5.070 | -12.1 | V | 3.0 | 28.8 | 1.0 | -39.9 | -25.0 | -14.9 | |
| 7.650 | -17.9 | V | 3.0 | 26.2 | 1.0 | -43.0 | -25.0 | -18.0 | |
| 10.140 | -4.9 | V | 3.0 | 23.1 | 1.0 | -26.9 | -25.0 | -1.9 | |
| 5.070 | -5.7 | H | 3.0 | 28.8 | 1.0 | -33.6 | -25.0 | -8.6 | |
| 7.650 | -18.0 | H | 3.0 | 26.2 | 1.0 | -43.2 | -25.0 | -18.2 | |
| 10.140 | -13.9 | H | 3.0 | 23.1 | 1.0 | -35.9 | -25.0 | -10.9 | |
| High Ch, (2562 MHz) | | | | | | | | | |
| 5.124 | -11.0 | V | 3.0 | 28.8 | 1.0 | -38.8 | -25.0 | -13.8 | |
| 7.686 | -18.9 | V | 3.0 | 26.1 | 1.0 | -44.0 | -25.0 | -19.0 | |
| 10.248 | -10.7 | V | 3.0 | 23.0 | 1.0 | -32.7 | -25.0 | -7.7 | |
| 5.124 | -5.4 | H | 3.0 | 28.8 | 1.0 | -33.2 | -25.0 | -8.2 | |
| 7.686 | -18.7 | H | 3.0 | 26.1 | 1.0 | -43.9 | -25.0 | -18.9 | |
| 10.248 | -13.0 | H | 3.0 | 23.0 | 1.0 | -35.0 | -25.0 | -10.0 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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**UL Verification Services**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | LG |
| **Project #:** | 14U17493 |
| **Date:** | 04/25/14 |
| **Test Engineer:** | R. Alegre |
| **Configuration:** | EUT with AC charger |
| **Mode:** | TX, LTE BAND 7, 10MHz BW,16QAM |

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | FCC Part 27 |

Band

LTE7

10MHz

16QAM

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel (2505MHz) | | | | | | | | | |
| 5.010 | -17.4 | V | 3.0 | 34.8 | 1.0 | -51.2 | -25.0 | -26.2 | |
| 7.515 | -13.0 | V | 3.0 | 34.9 | 1.0 | -46.9 | -25.0 | -21.9 | |
| 10.020 | -10.8 | V | 3.0 | 35.4 | 1.0 | -45.2 | -25.0 | -20.2 | |
| 5.010 | -18.3 | H | 3.0 | 34.8 | 1.0 | -52.1 | -25.0 | -27.1 | |
| 7.515 | -12.1 | H | 3.0 | 34.9 | 1.0 | -46.0 | -25.0 | -21.0 | |
| 10.020 | -9.9 | H | 3.0 | 35.4 | 1.0 | -44.3 | -25.0 | -19.3 | |
| Mid Channel (2535MHz) | | | | | | | | | |
| 5.070 | -18.4 | V | 3.0 | 34.7 | 1.0 | -52.2 | -25.0 | -27.2 | |
| 7.605 | -14.1 | V | 3.0 | 34.9 | 1.0 | -48.0 | -25.0 | -23.0 | |
| 10.122 | -11.7 | V | 3.0 | 35.3 | 1.0 | -46.0 | -25.0 | -21.0 | |
| 5.070 | -16.8 | H | 3.0 | 34.7 | 1.0 | -50.5 | -25.0 | -25.5 | |
| 7.605 | -13.0 | H | 3.0 | 34.9 | 1.0 | -47.0 | -25.0 | -22.0 | |
| 10.122 | -9.3 | H | 3.0 | 35.3 | 1.0 | -43.6 | -25.0 | -18.6 | |
| High Channel (2565MHz) | | | | | | | | | |
| 5.130 | -18.4 | V | 3.0 | 34.7 | 1.0 | -52.1 | -25.0 | -27.1 | |
| 7.689 | -13.0 | V | 3.0 | 35.0 | 1.0 | -47.0 | -25.0 | -22.0 | |
| 10.260 | -11.9 | V | 3.0 | 35.2 | 1.0 | -46.2 | -25.0 | -21.2 | |
| 5.130 | -17.9 | H | 3.0 | 34.7 | 1.0 | -51.6 | -25.0 | -26.6 | |
| 7.689 | -11.0 | H | 3.0 | 35.0 | 1.0 | -45.0 | -25.0 | -20.0 | |
| 10.260 | -9.2 | H | 3.0 | 35.2 | 1.0 | -43.4 | -25.0 | -18.4 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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Band

LTE7

10MHz

QPSK

**UL Verification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** TX, LTE BAND 7, 10MHz BW,QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | FCC Part 27 |

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel (2505MHz) | | | | | | | | | |
| 5.010 | -17.2 | V | 3.0 | 34.8 | 1.0 | -51.0 | -25.0 | -26.0 | |
| 7.515 | -13.1 | V | 3.0 | 34.9 | 1.0 | -47.0 | -25.0 | -22.0 | |
| 10.020 | -11.0 | V | 3.0 | 35.4 | 1.0 | -45.4 | -25.0 | -20.4 | |
| 5.010 | -18.2 | H | 3.0 | 34.8 | 1.0 | -52.0 | -25.0 | -27.0 | |
| 7.515 | -11.9 | H | 3.0 | 34.9 | 1.0 | -45.9 | -25.0 | -20.9 | |
| 10.020 | -10.6 | H | 3.0 | 35.4 | 1.0 | -44.9 | -25.0 | -19.9 | |
| Mid Channel (2535MHz) | | | | | | | | | |
| 5.070 | -18.4 | V | 3.0 | 34.7 | 1.0 | -52.1 | -25.0 | -27.1 | |
| 7.605 | -13.9 | V | 3.0 | 34.9 | 1.0 | -47.8 | -25.0 | -22.8 | |
| 10.122 | -11.7 | V | 3.0 | 35.3 | 1.0 | -46.0 | -25.0 | -21.0 | |
| 5.070 | -16.7 | H | 3.0 | 34.7 | 1.0 | -50.4 | -25.0 | -25.4 | |
| 7.605 | -13.0 | H | 3.0 | 34.9 | 1.0 | -46.9 | -25.0 | -21.9 | |
| 10.122 | -11.2 | H | 3.0 | 35.3 | 1.0 | -45.5 | -25.0 | -20.5 | |
| High Channel (2565MHz) | | | | | | | | | |
| 5.130 | -17.7 | V | 3.0 | 34.7 | 1.0 | -51.4 | -25.0 | -26.4 | |
| 7.689 | -13.0 | V | 3.0 | 35.0 | 1.0 | -46.9 | -25.0 | -21.9 | |
| 10.260 | -12.0 | V | 3.0 | 35.2 | 1.0 | -46.2 | -25.0 | -21.2 | |
| 5.130 | -17.8 | H | 3.0 | 34.7 | 1.0 | -51.5 | -25.0 | -26.5 | |
| 7.689 | -12.6 | H | 3.0 | 35.0 | 1.0 | -46.6 | -25.0 | -21.6 | |
| 10.260 | -10.9 | H | 3.0 | 35.2 | 1.0 | -45.1 | -25.0 | -20.1 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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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Band

LTE7

5MHz

16QAM

**UL Verification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** TX, LTE BAND 7, 5MHz BW,16QAM

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | FCC Part 27 |

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel (2502.5MHz) | | | | | | | | | |
| 5.005 | -17.8 | V | 3.0 | 35.3 | 1.0 | -52.1 | -25.0 | -27.1 | |
| 7.508 | -14.9 | V | 3.0 | 35.7 | 1.0 | -49.6 | -25.0 | -24.6 | |
| 10.010 | -9.8 | V | 3.0 | 35.5 | 1.0 | -44.4 | -25.0 | -19.4 | |
| 5.005 | -19.4 | H | 3.0 | 35.3 | 1.0 | -53.7 | -25.0 | -28.7 | |
| 7.508 | -11.0 | H | 3.0 | 35.7 | 1.0 | -45.7 | -25.0 | -20.7 | |
| 10.010 | -9.4 | H | 3.0 | 35.5 | 1.0 | -43.9 | -25.0 | -18.9 | |
| Mid Channel (2535MHz) | | | | | | | | | |
| 5.070 | -18.5 | V | 3.0 | 35.3 | 1.0 | -52.9 | -25.0 | -27.9 | |
| 7.605 | -13.9 | V | 3.0 | 35.7 | 1.0 | -48.6 | -25.0 | -23.6 | |
| 10.140 | -11.9 | V | 3.0 | 35.4 | 1.0 | -46.3 | -25.0 | -21.3 | |
| 5.007 | -19.1 | H | 3.0 | 35.3 | 1.0 | -53.5 | -25.0 | -28.5 | |
| 7.605 | -11.6 | H | 3.0 | 35.7 | 1.0 | -46.3 | -25.0 | -21.3 | |
| 10.140 | -12.6 | H | 3.0 | 35.4 | 1.0 | -47.0 | -25.0 | -22.0 | |
| High Channel (2567.5MHz) | | | | | | | | | |
| 5.135 | -18.2 | V | 3.0 | 35.3 | 1.0 | -52.5 | -25.0 | -27.5 | |
| 7.703 | -13.7 | V | 3.0 | 35.7 | 1.0 | -48.4 | -25.0 | -23.4 | |
| 10.270 | -10.1 | V | 3.0 | 35.3 | 1.0 | -44.4 | -25.0 | -19.4 | |
| 5.135 | -15.0 | H | 3.0 | 35.3 | 1.0 | -49.3 | -25.0 | -24.3 | |
| 7.703 | -13.0 | H | 3.0 | 35.7 | 1.0 | -47.7 | -25.0 | -22.7 | |
| 10.270 | -10.5 | H | 3.0 | 35.3 | 1.0 | -44.8 | -25.0 | -19.8 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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**UL Verification Services**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | LG |
| **Project #:** | 14U17493 |
| **Date:** | 04/25/14 |
| **Test Engineer:** | R. Alegre |
| **Configuration:** | EUT with AC charger |
| **Mode:** | TX, LTE BAND 7, 5MHz BW,QPSK |

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | FCC Part 27 |

Band LTE7 5MHz QPSK

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel (2502.5MHz) | | | | | | | | | |
| 5.005 | -17.5 | V | 3.0 | 35.3 | 1.0 | -51.9 | -25.0 | -26.9 | |
| 7.508 | -13.9 | V | 3.0 | 35.7 | 1.0 | -48.6 | -25.0 | -23.6 | |
| 10.010 | -9.8 | V | 3.0 | 35.5 | 1.0 | -44.3 | -25.0 | -19.3 | |
| 5.005 | -19.0 | H | 3.0 | 35.3 | 1.0 | -53.3 | -25.0 | -28.3 | |
| 7.508 | -11.1 | H | 3.0 | 35.7 | 1.0 | -45.8 | -25.0 | -20.8 | |
| 10.010 | -9.7 | H | 3.0 | 35.5 | 1.0 | -44.2 | -25.0 | -19.2 | |
| Mid Channel (2535MHz) | | | | | | | | | |
| 5.007 | -18.3 | V | 3.0 | 35.3 | 1.0 | -52.6 | -25.0 | -27.6 | |
| 7.605 | -13.7 | V | 3.0 | 35.7 | 1.0 | -48.4 | -25.0 | -23.4 | |
| 10.140 | -12.8 | V | 3.0 | 35.4 | 1.0 | -47.2 | -25.0 | -22.2 | |
| 5.007 | -19.3 | H | 3.0 | 35.3 | 1.0 | -53.6 | -25.0 | -28.6 | |
| 7.605 | -11.6 | H | 3.0 | 35.7 | 1.0 | -46.3 | -25.0 | -21.3 | |
| 10.140 | -12.2 | H | 3.0 | 35.4 | 1.0 | -46.6 | -25.0 | -21.6 | |
| High Channel (2567.5MHz) | | | | | | | | | |
| 5.135 | -18.1 | V | 3.0 | 35.3 | 1.0 | -52.5 | -25.0 | -27.5 | |
| 7.703 | -13.7 | V | 3.0 | 35.7 | 1.0 | -48.3 | -25.0 | -23.3 | |
| 10.270 | -9.5 | V | 3.0 | 35.3 | 1.0 | -43.8 | -25.0 | -18.8 | |
| 5.135 | -15.0 | H | 3.0 | 35.3 | 1.0 | -49.4 | -25.0 | -24.4 | |
| 7.703 | -12.9 | H | 3.0 | 35.7 | 1.0 | -47.6 | -25.0 | -22.6 | |
| 10.270 | -10.4 | H | 3.0 | 35.3 | 1.0 | -44.8 | -25.0 | -19.8 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** TX, LTE BAND 5, 10MHz BW,16QAM

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | Part 24 |

| Band | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | Low Channel (829MHz) | | | | | | | | | |
| LTE5 | 1.658 | -26.8 | V | 3.0 | 37.4 | 1.0 | -63.1 | -13.0 | -50.1 | |
| | 2.487 | -22.0 | V | 3.0 | 36.4 | 1.0 | -57.4 | -13.0 | -44.4 | |
| 10MHz | 3.316 | -21.8 | V | 3.0 | 35.8 | 1.0 | -56.6 | -13.0 | -43.6 | |
| | 1.658 | -26.8 | H | 3.0 | 37.4 | 1.0 | -63.1 | -13.0 | -50.1 | |
| 16QAM | 2.487 | -23.9 | H | 3.0 | 36.4 | 1.0 | -59.3 | -13.0 | -46.3 | |
| | 3.316 | -21.6 | H | 3.0 | 35.8 | 1.0 | -56.4 | -13.0 | -43.4 | |
| | Mid Channel (836.5MHz) | | | | | | | | | |
| | 1.673 | -27.7 | V | 3.0 | 37.3 | 1.0 | -64.0 | -13.0 | -51.0 | |
| | 2.509 | -23.9 | V | 3.0 | 36.4 | 1.0 | -59.2 | -13.0 | -46.2 | |
| | 3.346 | -23.4 | V | 3.0 | 35.8 | 1.0 | -58.2 | -13.0 | -45.2 | |
| | 1.673 | -27.2 | H | 3.0 | 37.3 | 1.0 | -63.5 | -13.0 | -50.5 | |
| | 2.509 | -25.1 | H | 3.0 | 36.4 | 1.0 | -60.4 | -13.0 | -47.4 | |
| | 3.346 | -23.1 | H | 3.0 | 35.8 | 1.0 | -57.9 | -13.0 | -44.9 | |
| | High Channel (844MHz) | | | | | | | | | |
| | 1.688 | -26.7 | V | 3.0 | 37.3 | 1.0 | -63.1 | -13.0 | -50.1 | |
| | 2.532 | -24.3 | V | 3.0 | 36.3 | 1.0 | -59.7 | -13.0 | -46.7 | |
| | 3.376 | -23.4 | V | 3.0 | 35.7 | 1.0 | -58.1 | -13.0 | -45.1 | |
| | 1.688 | -27.9 | H | 3.0 | 37.3 | 1.0 | -64.2 | -13.0 | -51.2 | |
| | 2.532 | -25.9 | H | 3.0 | 36.3 | 1.0 | -61.3 | -13.0 | -48.3 | |
| | 3.376 | -22.7 | H | 3.0 | 35.7 | 1.0 | -57.4 | -13.0 | -44.4 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

1.0



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** TX, LTE BAND 5, 10MHz BW,QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | Part 24 |

| Band | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | Low Channel (829MHz) | | | | | | | | | |
| LTE5 | 1.658 | -26.4 | V | 3.0 | 37.4 | 1.0 | -62.7 | -13.0 | -49.7 | |
| | 2.487 | -21.9 | V | 3.0 | 36.4 | 1.0 | -57.3 | -13.0 | -44.3 | |
| 10MHz | 3.316 | -21.7 | V | 3.0 | 35.8 | 1.0 | -56.5 | -13.0 | -43.5 | |
| | 1.658 | -26.5 | H | 3.0 | 37.4 | 1.0 | -62.9 | -13.0 | -49.9 | |
| QPSK | 2.487 | -24.6 | H | 3.0 | 36.4 | 1.0 | -59.9 | -13.0 | -46.9 | |
| | 3.316 | -21.5 | H | 3.0 | 35.8 | 1.0 | -56.2 | -13.0 | -43.2 | |
| | Mid Channel (836.5MHz) | | | | | | | | | |
| | 1.673 | -27.7 | V | 3.0 | 37.3 | 1.0 | -64.0 | -13.0 | -51.0 | |
| | 2.509 | -24.0 | V | 3.0 | 36.4 | 1.0 | -59.4 | -13.0 | -46.4 | |
| | 3.346 | -23.0 | V | 3.0 | 35.8 | 1.0 | -57.7 | -13.0 | -44.7 | |
| | 1.673 | -26.9 | H | 3.0 | 37.3 | 1.0 | -63.3 | -13.0 | -50.3 | |
| | 2.509 | -26.0 | H | 3.0 | 36.4 | 1.0 | -61.4 | -13.0 | -48.4 | |
| | 3.346 | -23.0 | H | 3.0 | 35.8 | 1.0 | -57.7 | -13.0 | -44.7 | |
| | High Channel (844MHz) | | | | | | | | | |
| | 1.688 | -25.9 | V | 3.0 | 37.3 | 1.0 | -62.2 | -13.0 | -49.2 | |
| | 2.532 | -23.6 | V | 3.0 | 36.3 | 1.0 | -59.0 | -13.0 | -46.0 | |
| | 3.376 | -22.4 | V | 3.0 | 35.7 | 1.0 | -57.1 | -13.0 | -44.1 | |
| | 1.688 | -27.7 | H | 3.0 | 37.3 | 1.0 | -64.0 | -13.0 | -51.0 | |
| | 2.532 | -25.9 | H | 3.0 | 36.3 | 1.0 | -61.2 | -13.0 | -48.2 | |
| | 3.376 | -22.5 | H | 3.0 | 35.7 | 1.0 | -57.2 | -13.0 | -44.2 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

1.0



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Band

LTE5

5MHz

16QAM

## Compliance Certification Services
## Above 1GHz High Frequency Substitution Measurement

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** TX, LTE BAND 5, 5MHz BW,16QAM

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | Part 24 |

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel (826.5MHz) | | | | | | | | | |
| 1.653 | -27.0 | V | 3.0 | 37.4 | 1.0 | -63.4 | -13.0 | -50.4 | |
| 2.479 | -21.5 | V | 3.0 | 36.4 | 1.0 | -56.9 | -13.0 | -43.9 | |
| 3.306 | -19.9 | V | 3.0 | 35.8 | 1.0 | -54.7 | -13.0 | -41.7 | |
| 1.653 | -26.6 | H | 3.0 | 37.4 | 1.0 | -62.9 | -13.0 | -49.9 | |
| 2.479 | -25.2 | H | 3.0 | 36.4 | 1.0 | -60.6 | -13.0 | -47.6 | |
| 3.306 | -22.0 | H | 3.0 | 35.8 | 1.0 | -56.8 | -13.0 | -43.8 | |
| Mid Channel (836.5MHz) | | | | | | | | | |
| 1.673 | -27.8 | V | 3.0 | 37.3 | 1.0 | -64.1 | -13.0 | -51.1 | |
| 2.509 | -23.4 | V | 3.0 | 36.4 | 1.0 | -58.7 | -13.0 | -45.7 | |
| 3.346 | -22.7 | V | 3.0 | 35.8 | 1.0 | -57.4 | -13.0 | -44.4 | |
| 1.673 | -26.8 | H | 3.0 | 37.3 | 1.0 | -63.1 | -13.0 | -50.1 | |
| 2.509 | -23.4 | H | 3.0 | 36.4 | 1.0 | -58.8 | -13.0 | -45.8 | |
| 3.346 | -22.5 | H | 3.0 | 35.8 | 1.0 | -57.3 | -13.0 | -44.3 | |
| High Channel (846.5MHz) | | | | | | | | | |
| 1.693 | -27.5 | V | 3.0 | 37.3 | 1.0 | -63.8 | -13.0 | -50.8 | |
| 2.539 | -24.1 | V | 3.0 | 36.3 | 1.0 | -59.4 | -13.0 | -46.4 | |
| 3.386 | -21.7 | V | 3.0 | 35.7 | 1.0 | -56.4 | -13.0 | -43.4 | |
| 1.693 | -27.0 | H | 3.0 | 37.3 | 1.0 | -63.3 | -13.0 | -50.3 | |
| 2.539 | -26.4 | H | 3.0 | 36.3 | 1.0 | -61.7 | -13.0 | -48.7 | |
| 3.386 | -22.6 | H | 3.0 | 35.7 | 1.0 | -57.3 | -13.0 | -44.3 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

1.0



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** TX, LTE BAND 5, 5MHz BW,QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | Part 24 |

| Band | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | Low Channel (826.5MHz) | | | | | | | | | |
| LTE5 | 1.653 | -26.9 | V | 3.0 | 37.4 | 1.0 | -63.3 | -13.0 | -50.3 | |
| | 2.479 | -21.8 | V | 3.0 | 36.4 | 1.0 | -57.2 | -13.0 | -44.2 | |
| 5MHz | 3.306 | -20.8 | V | 3.0 | 35.8 | 1.0 | -55.6 | -13.0 | -42.6 | |
| | 1.653 | -26.7 | H | 3.0 | 37.4 | 1.0 | -63.0 | -13.0 | -50.0 | |
| | 2.479 | -24.2 | H | 3.0 | 36.4 | 1.0 | -59.6 | -13.0 | -46.6 | |
| QPSK | 3.306 | -21.2 | H | 3.0 | 35.8 | 1.0 | -56.0 | -13.0 | -43.0 | |
| | Mid Channel (836.5MHz) | | | | | | | | | |
| | 1.673 | -27.6 | V | 3.0 | 37.3 | 1.0 | -63.9 | -13.0 | -50.9 | |
| | 2.509 | -23.1 | V | 3.0 | 36.4 | 1.0 | -58.4 | -13.0 | -45.4 | |
| | 3.346 | -23.0 | V | 3.0 | 35.8 | 1.0 | -57.7 | -13.0 | -44.7 | |
| | 1.673 | -28.7 | H | 3.0 | 37.3 | 1.0 | -65.0 | -13.0 | -52.0 | |
| | 2.509 | -21.8 | H | 3.0 | 36.4 | 1.0 | -57.2 | -13.0 | -44.2 | |
| | 3.346 | -21.6 | H | 3.0 | 35.8 | 1.0 | -56.3 | -13.0 | -43.3 | |
| | High Channel (846.5MHz) | | | | | | | | | |
| | 1.693 | -26.8 | V | 3.0 | 37.3 | 1.0 | -63.1 | -13.0 | -50.1 | |
| | 2.539 | -24.3 | V | 3.0 | 36.3 | 1.0 | -59.7 | -13.0 | -46.7 | |
| | 3.386 | -21.7 | V | 3.0 | 35.7 | 1.0 | -56.4 | -13.0 | -43.4 | |
| | 1.693 | -26.5 | H | 3.0 | 37.3 | 1.0 | -62.8 | -13.0 | -49.8 | |
| | 2.539 | -25.8 | H | 3.0 | 36.3 | 1.0 | -61.2 | -13.0 | -48.2 | |
| | 3.386 | -22.3 | H | 3.0 | 35.7 | 1.0 | -57.0 | -13.0 | -44.0 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

1.0



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/23/14
**Test Engineer:** R. Alegre
**Configuration:** EUT, AC charger, and Earphone
**Mode:** TX, LTE band 4, 10MHz BW, 16QAM

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | Part 24 |

Band LTE4 10MHz 16QAM

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, (1715 MHz) | | | | | | | | | |
| 3.430 | -2.0 | V | 3.0 | 30.4 | 1.0 | -31.5 | -13.0 | -18.5 | |
| 5.145 | -14.1 | V | 3.0 | 28.8 | 1.0 | -41.9 | -13.0 | -28.9 | |
| 6.860 | -16.6 | V | 3.0 | 27.1 | 1.0 | -42.7 | -13.0 | -29.7 | |
| 3.430 | -3.8 | H | 3.0 | 30.4 | 1.0 | -33.2 | -13.0 | -20.2 | |
| 5.145 | -11.1 | H | 3.0 | 28.8 | 1.0 | -38.9 | -13.0 | -25.9 | |
| 6.860 | -15.8 | H | 3.0 | 27.1 | 1.0 | -42.0 | -13.0 | -29.0 | |
| | | | | | | | | | |
| Mid Ch, (1732.5 MHz) | | | | | | | | | |
| 3.465 | -1.9 | V | 3.0 | 30.4 | 1.0 | -31.3 | -13.0 | -18.3 | |
| 5.198 | -17.6 | V | 3.0 | 28.7 | 1.0 | -45.3 | -13.0 | -32.3 | |
| 6.930 | -16.0 | V | 3.0 | 27.1 | 1.0 | -42.0 | -13.0 | -29.0 | |
| 3.465 | -2.6 | H | 3.0 | 30.4 | 1.0 | -32.0 | -13.0 | -19.0 | |
| 5.198 | -10.8 | H | 3.0 | 28.7 | 1.0 | -38.5 | -13.0 | -25.5 | |
| 6.930 | -15.2 | H | 3.0 | 27.1 | 1.0 | -41.3 | -13.0 | -28.3 | |
| | | | | | | | | | |
| High Ch, (1750 MHz) | | | | | | | | | |
| 3.500 | -1.4 | V | 3.0 | 30.4 | 1.0 | -30.8 | -13.0 | -17.8 | |
| 5.250 | -10.4 | V | 3.0 | 28.7 | 1.0 | -38.0 | -13.0 | -25.0 | |
| 7.000 | -15.9 | V | 3.0 | 27.0 | 1.0 | -41.9 | -13.0 | -28.9 | |
| 3.500 | -7.2 | H | 3.0 | 30.4 | 1.0 | -36.6 | -13.0 | -23.6 | |
| 5.250 | -6.2 | H | 3.0 | 28.7 | 1.0 | -33.9 | -13.0 | -20.9 | |
| 7.000 | -14.3 | H | 3.0 | 27.0 | 1.0 | -40.3 | -13.0 | -27.3 | |

Rev. 03.03.09



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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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/23/14
**Test Engineer:** R. Alegre
**Configuration:** EUT, AC charger, and Earphone
**Mode:** TX, LTE band 4, 10MHz BW, QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | Part 24 |

Band LTE4 10MHz QPSK

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, (1715 MHz) | | | | | | | | | |
| 3.430 | -1.7 | V | 3.0 | 30.4 | 1.0 | -31.1 | -13.0 | -18.1 | |
| 5.145 | -14.1 | V | 3.0 | 28.8 | 1.0 | -41.9 | -13.0 | -28.9 | |
| 6.860 | -16.7 | V | 3.0 | 27.1 | 1.0 | -42.9 | -13.0 | -29.9 | |
| 3.430 | -3.8 | H | 3.0 | 30.4 | 1.0 | -33.2 | -13.0 | -20.2 | |
| 5.145 | -12.0 | H | 3.0 | 28.8 | 1.0 | -39.8 | -13.0 | -26.8 | |
| 6.860 | -16.0 | H | 3.0 | 27.1 | 1.0 | -42.1 | -13.0 | -29.1 | |
| Mid Ch, (1732.5 MHz) | | | | | | | | | |
| 3.465 | -2.0 | V | 3.0 | 30.4 | 1.0 | -31.4 | -13.0 | -18.4 | |
| 5.198 | -18.4 | V | 3.0 | 28.7 | 1.0 | -46.1 | -13.0 | -33.1 | |
| 6.930 | -16.4 | V | 3.0 | 27.1 | 1.0 | -42.5 | -13.0 | -29.5 | |
| 3.465 | -4.6 | H | 3.0 | 30.4 | 1.0 | -34.0 | -13.0 | -21.0 | |
| 5.198 | -9.7 | H | 3.0 | 28.7 | 1.0 | -37.4 | -13.0 | -24.4 | |
| 6.930 | -14.8 | H | 3.0 | 27.1 | 1.0 | -40.8 | -13.0 | -27.8 | |
| High Ch, (1750 MHz) | | | | | | | | | |
| 3.500 | -1.6 | V | 3.0 | 30.4 | 1.0 | -30.9 | -13.0 | -17.9 | |
| 5.250 | -9.4 | V | 3.0 | 28.7 | 1.0 | -37.1 | -13.0 | -24.1 | |
| 7.000 | -15.4 | V | 3.0 | 27.0 | 1.0 | -41.4 | -13.0 | -28.4 | |
| 3.500 | -7.5 | H | 3.0 | 30.4 | 1.0 | -36.9 | -13.0 | -23.9 | |
| 5.250 | -6.1 | H | 3.0 | 28.7 | 1.0 | -33.7 | -13.0 | -20.7 | |
| 7.000 | -12.9 | H | 3.0 | 27.0 | 1.0 | -38.9 | -13.0 | -25.9 | |

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**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/23/14
**Test Engineer:** R. Alegre
**Configuration:** EUT, AC charger, and Earphone
**Mode:** TX, LTE band 4, 5MHz BW, 16 QAM

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | Part 24 |

Band
LTE4
5MHz
16QAM

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, (1712.5 MHz) | | | | | | | | | |
| 3.425 | -4.9 | V | 3.0 | 30.4 | 1.0 | -34.3 | -13.0 | -21.3 | |
| 5.138 | -9.3 | V | 3.0 | 28.8 | 1.0 | -37.1 | -13.0 | -24.1 | |
| 6.850 | -16.9 | V | 3.0 | 27.1 | 1.0 | -43.1 | -13.0 | -30.1 | |
| 3.425 | -2.4 | H | 3.0 | 30.4 | 1.0 | -31.8 | -13.0 | -18.8 | |
| 5.138 | -7.3 | H | 3.0 | 28.8 | 1.0 | -35.1 | -13.0 | -22.1 | |
| 6.850 | -16.9 | H | 3.0 | 27.1 | 1.0 | -43.0 | -13.0 | -30.0 | |
| Mid Ch, (1732.5 MHz) | | | | | | | | | |
| 3.465 | -5.0 | V | 3.0 | 30.4 | 1.0 | -34.4 | -13.0 | -21.4 | |
| 5.198 | -7.9 | V | 3.0 | 28.7 | 1.0 | -35.6 | -13.0 | -22.6 | |
| 6.930 | -16.8 | V | 3.0 | 27.1 | 1.0 | -42.9 | -13.0 | -29.9 | |
| 3.465 | -2.2 | H | 3.0 | 30.4 | 1.0 | -31.6 | -13.0 | -18.6 | |
| 5.198 | -6.2 | H | 3.0 | 28.7 | 1.0 | -33.9 | -13.0 | -20.9 | |
| 6.930 | -14.9 | H | 3.0 | 27.1 | 1.0 | -40.9 | -13.0 | -27.9 | |
| High Ch, (1752.5 MHz) | | | | | | | | | |
| 3.505 | -4.5 | V | 3.0 | 30.4 | 1.0 | -33.9 | -13.0 | -20.9 | |
| 5.258 | -10.1 | V | 3.0 | 28.6 | 1.0 | -37.7 | -13.0 | -24.7 | |
| 7.010 | -14.9 | V | 3.0 | 27.0 | 1.0 | -40.9 | -13.0 | -27.9 | |
| 3.505 | -4.6 | H | 3.0 | 30.4 | 1.0 | -34.0 | -13.0 | -21.0 | |
| 5.258 | -7.4 | H | 3.0 | 28.6 | 1.0 | -35.0 | -13.0 | -22.0 | |
| 7.010 | -15.8 | H | 3.0 | 27.0 | 1.0 | -41.7 | -13.0 | -28.7 | |

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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/23/14
**Test Engineer:** R. Alegre
**Configuration:** EUT, AC charger, and Earphone
**Mode:** TX, LTE band 4, 5MHz BW, QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T145 8449B | Filter 1 | Part 24 |

| Band | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | Low Ch, (1712.5 MHz) | | | | | | | | | |
| LTE4 | 3.425 | -4.2 | V | 3.0 | 30.4 | 1.0 | -33.7 | -13.0 | -20.7 | |
| | 5.138 | -9.2 | V | 3.0 | 28.8 | 1.0 | -37.0 | -13.0 | -24.0 | |
| 5MHz | 6.850 | -16.5 | V | 3.0 | 27.1 | 1.0 | -42.6 | -13.0 | -29.6 | |
| | 3.425 | -2.1 | H | 3.0 | 30.4 | 1.0 | -31.5 | -13.0 | -18.5 | |
| QPSK | 5.138 | -7.3 | H | 3.0 | 28.8 | 1.0 | -35.1 | -13.0 | -22.1 | |
| | 6.850 | -15.8 | H | 3.0 | 27.1 | 1.0 | -42.0 | -13.0 | -29.0 | |
| | Mid Ch, (1732.5 MHz) | | | | | | | | | |
| | 3.465 | -4.1 | V | 3.0 | 30.4 | 1.0 | -33.5 | -13.0 | -20.5 | |
| | 5.198 | -8.3 | V | 3.0 | 28.7 | 1.0 | -36.0 | -13.0 | -23.0 | |
| | 6.930 | -16.6 | V | 3.0 | 27.1 | 1.0 | -42.7 | -13.0 | -29.7 | |
| | 3.465 | -1.5 | H | 3.0 | 30.4 | 1.0 | -30.9 | -13.0 | -17.9 | |
| | 5.198 | -6.4 | H | 3.0 | 28.7 | 1.0 | -34.1 | -13.0 | -21.1 | |
| | 6.930 | -15.1 | H | 3.0 | 27.1 | 1.0 | -41.1 | -13.0 | -28.1 | |
| | High Ch, (1752.5 MHz) | | | | | | | | | |
| | 3.505 | -4.9 | V | 3.0 | 30.4 | 1.0 | -34.2 | -13.0 | -21.2 | |
| | 5.258 | -9.3 | V | 3.0 | 28.6 | 1.0 | -36.9 | -13.0 | -23.9 | |
| | 7.010 | -15.0 | V | 3.0 | 27.0 | 1.0 | -41.0 | -13.0 | -28.0 | |
| | 3.505 | -4.4 | H | 3.0 | 30.4 | 1.0 | -33.8 | -13.0 | -20.8 | |
| | 5.258 | -7.2 | H | 3.0 | 28.6 | 1.0 | -34.9 | -13.0 | -21.9 | |
| | 7.010 | -14.8 | H | 3.0 | 27.0 | 1.0 | -40.7 | -13.0 | -27.7 | |

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Band

LTE2

10MHz

16QAM

**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| | LG |
| **Company:** | 14U17493 |
| **Project #:** | 04/23/14 |
| **Date:** | R. Alegre |
| **Test Engineer:** | EUT, AC charger, and Earphone |
| **Configuration:** | EUT with AC charger |
| **Mode:** | LTE2_10M_16QAM |

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T343 8449B | Filter 1 | Part 24 |

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1855.0MHz | | | | | | | | | |
| 3.710 | -17.5 | V | 3.0 | 35.4 | 1.0 | -51.9 | -13.0 | -38.9 | |
| 5.565 | -12.5 | V | 3.0 | 34.7 | 1.0 | -46.2 | -13.0 | -33.2 | |
| 7.420 | -16.0 | V | 3.0 | 34.9 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 3.710 | -14.7 | H | 3.0 | 35.4 | 1.0 | -49.0 | -13.0 | -36.0 | |
| 5.565 | -14.5 | H | 3.0 | 34.7 | 1.0 | -48.2 | -13.0 | -35.2 | |
| 7.420 | -15.0 | H | 3.0 | 34.9 | 1.0 | -48.9 | -13.0 | -35.9 | |
| Mid Ch, 1880.0MHz | | | | | | | | | |
| 3.760 | -19.0 | V | 3.0 | 35.3 | 1.0 | -53.4 | -13.0 | -40.4 | |
| 5.640 | -8.5 | V | 3.0 | 34.7 | 1.0 | -42.3 | -13.0 | -29.3 | |
| 7.520 | -14.7 | V | 3.0 | 34.9 | 1.0 | -48.6 | -13.0 | -35.6 | |
| 3.760 | -11.7 | H | 3.0 | 35.3 | 1.0 | -46.0 | -13.0 | -33.0 | |
| 5.640 | -13.0 | H | 3.0 | 34.7 | 1.0 | -46.8 | -13.0 | -33.8 | |
| 7.520 | -12.6 | H | 3.0 | 34.9 | 1.0 | -46.5 | -13.0 | -33.5 | |
| High Ch, 1905 MHz | | | | | | | | | |
| 3.810 | -15.0 | V | 3.0 | 35.3 | 1.0 | -49.3 | -13.0 | -36.3 | |
| 5.715 | -8.8 | V | 3.0 | 34.7 | 1.0 | -42.5 | -13.0 | -29.5 | |
| 7.620 | -15.7 | V | 3.0 | 34.9 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 3.810 | -12.1 | H | 3.0 | 35.3 | 1.0 | -46.4 | -13.0 | -33.4 | |
| 5.715 | -12.2 | H | 3.0 | 34.7 | 1.0 | -46.0 | -13.0 | -33.0 | |
| 7.620 | -13.9 | H | 3.0 | 34.9 | 1.0 | -47.8 | -13.0 | -34.8 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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Band

LTE2

10MHz

QPSK

**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/23/14
**Test Engineer:** R. Alegre
**Configuration:** EUT, AC charger, and Earphone
**Mode:** LTE2_10M_QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T343 8449B | Filter 1 | Part 22 |

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1855.0MHz | | | | | | | | | |
| 3.710 | -17.0 | V | 3.0 | 35.4 | 1.0 | -51.4 | -13.0 | -38.4 | |
| 5.565 | -12.1 | V | 3.0 | 34.7 | 1.0 | -45.8 | -13.0 | -32.8 | |
| 7.420 | -15.9 | V | 3.0 | 34.9 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 3.710 | -13.9 | H | 3.0 | 35.4 | 1.0 | -48.3 | -13.0 | -35.3 | |
| 5.565 | -14.4 | H | 3.0 | 34.7 | 1.0 | -48.1 | -13.0 | -35.1 | |
| 7.420 | -14.8 | H | 3.0 | 34.9 | 1.0 | -48.7 | -13.0 | -35.7 | |
| Mid Ch, 1880.0MHz | | | | | | | | | |
| 3.760 | -18.5 | V | 3.0 | 35.3 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 5.640 | -8.8 | V | 3.0 | 34.7 | 1.0 | -42.5 | -13.0 | -29.5 | |
| 7.520 | -15.6 | V | 3.0 | 34.9 | 1.0 | -49.5 | -13.0 | -36.5 | |
| 3.760 | -12.9 | H | 3.0 | 35.3 | 1.0 | -47.2 | -13.0 | -34.2 | |
| 5.640 | -12.6 | H | 3.0 | 34.7 | 1.0 | -46.3 | -13.0 | -33.3 | |
| 7.520 | -12.6 | H | 3.0 | 34.9 | 1.0 | -46.5 | -13.0 | -33.5 | |
| High Ch, 1905 MHz | | | | | | | | | |
| 3.810 | -16.1 | V | 3.0 | 35.3 | 1.0 | -50.4 | -13.0 | -37.4 | |
| 5.715 | -8.5 | V | 3.0 | 34.7 | 1.0 | -42.2 | -13.0 | -29.2 | |
| 7.620 | -15.4 | V | 3.0 | 34.9 | 1.0 | -49.4 | -13.0 | -36.4 | |
| 3.810 | -14.9 | H | 3.0 | 35.3 | 1.0 | -49.2 | -13.0 | -36.2 | |
| 5.715 | -11.6 | H | 3.0 | 34.7 | 1.0 | -45.4 | -13.0 | -32.4 | |
| 7.620 | -13.3 | H | 3.0 | 34.9 | 1.0 | -47.3 | -13.0 | -34.3 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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Band

LTE2

5MHz

16QAM

**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/23/14
**Test Engineer:** R. Alegre
**Configuration:** EUT, AC charger, and Earphone
**Mode:** LTE2_5M_16QAM

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T343 8449B | Filter 1 | Part 24 |

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1852.5MHz | | | | | | | | | |
| 3.705 | -20.8 | V | 3.0 | 35.4 | 1.0 | -55.1 | -13.0 | -42.1 | |
| 5.557 | -3.4 | V | 3.0 | 34.7 | 1.0 | -37.2 | -13.0 | -24.2 | |
| 7.410 | -15.4 | V | 3.0 | 34.9 | 1.0 | -49.3 | -13.0 | -36.3 | |
| 3.705 | -12.3 | H | 3.0 | 35.4 | 1.0 | -46.7 | -13.0 | -33.7 | |
| 5.557 | -3.6 | H | 3.0 | 34.7 | 1.0 | -37.3 | -13.0 | -24.3 | |
| 7.410 | -14.6 | H | 3.0 | 34.9 | 1.0 | -48.5 | -13.0 | -35.5 | |
| Mid Ch, 1880.0MHz | | | | | | | | | |
| 3.760 | -19.2 | V | 3.0 | 35.3 | 1.0 | -53.6 | -13.0 | -40.6 | |
| 5.640 | -0.7 | V | 3.0 | 34.7 | 1.0 | -34.4 | -13.0 | -21.4 | |
| 7.520 | -13.4 | V | 3.0 | 34.9 | 1.0 | -47.3 | -13.0 | -34.3 | |
| 3.760 | -0.9 | H | 3.0 | 35.3 | 1.0 | -35.2 | -13.0 | -22.2 | |
| 5.640 | -6.3 | H | 3.0 | 34.7 | 1.0 | -40.0 | -13.0 | -27.0 | |
| 7.520 | -13.1 | H | 3.0 | 34.9 | 1.0 | -47.1 | -13.0 | -34.1 | |
| High Ch, 1907.5 MHz | | | | | | | | | |
| 3.815 | -8.3 | V | 3.0 | 35.3 | 1.0 | -42.6 | -13.0 | -29.6 | |
| 5.722 | -4.0 | V | 3.0 | 34.7 | 1.0 | -37.7 | -13.0 | -24.7 | |
| 7.630 | -11.7 | V | 3.0 | 34.9 | 1.0 | -45.7 | -13.0 | -32.7 | |
| 3.815 | -6.2 | H | 3.0 | 35.3 | 1.0 | -40.5 | -13.0 | -27.5 | |
| 5.722 | -3.6 | H | 3.0 | 34.7 | 1.0 | -37.3 | -13.0 | -24.3 | |
| 7.630 | -10.6 | H | 3.0 | 34.9 | 1.0 | -44.6 | -13.0 | -31.6 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/23/14
**Test Engineer:** R. Alegre
**Configuration:** EUT, AC charger, and Earphone
**Mode:** LTE2_5M_QPSK

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T343 8449B | Filter 1 | Part 24 |

Band
LTE2
5MHz
QPSK

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1852.5MHz | | | | | | | | | |
| 3.705 | -18.6 | V | 3.0 | 35.4 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 5.557 | -0.9 | V | 3.0 | 34.7 | 1.0 | -34.7 | -13.0 | -21.7 | |
| 7.410 | -11.9 | V | 3.0 | 34.9 | 1.0 | -45.8 | -13.0 | -32.8 | |
| 3.705 | -13.1 | H | 3.0 | 35.4 | 1.0 | -47.5 | -13.0 | -34.5 | |
| 5.557 | -1.6 | H | 3.0 | 34.7 | 1.0 | -35.3 | -13.0 | -22.3 | |
| 7.410 | -14.3 | H | 3.0 | 34.9 | 1.0 | -48.2 | -13.0 | -35.2 | |
| Mid Ch, 1880.0MHz | | | | | | | | | |
| 3.760 | -19.0 | V | 3.0 | 35.3 | 1.0 | -53.3 | -13.0 | -40.3 | |
| 5.640 | 0.6 | V | 3.0 | 34.7 | 1.0 | -33.1 | -13.0 | -20.1 | |
| 7.520 | -14.0 | V | 3.0 | 34.9 | 1.0 | -47.9 | -13.0 | -34.9 | |
| 3.760 | -1.0 | H | 3.0 | 35.3 | 1.0 | -35.3 | -13.0 | -22.3 | |
| 5.640 | -6.3 | H | 3.0 | 34.7 | 1.0 | -40.1 | -13.0 | -27.1 | |
| 7.520 | -14.1 | H | 3.0 | 34.9 | 1.0 | -48.0 | -13.0 | -35.0 | |
| High Ch, 1907.5 MHz | | | | | | | | | |
| 3.815 | -8.2 | V | 3.0 | 35.3 | 1.0 | -42.5 | -13.0 | -29.5 | |
| 5.722 | -4.5 | V | 3.0 | 34.7 | 1.0 | -38.2 | -13.0 | -25.2 | |
| 7.630 | -11.5 | V | 3.0 | 34.9 | 1.0 | -45.5 | -13.0 | -32.5 | |
| 3.815 | -6.0 | H | 3.0 | 35.3 | 1.0 | -40.3 | -13.0 | -27.3 | |
| 5.722 | -2.7 | H | 3.0 | 34.7 | 1.0 | -36.4 | -13.0 | -23.4 | |
| 7.630 | -10.5 | H | 3.0 | 34.9 | 1.0 | -44.4 | -13.0 | -31.4 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** Tx, 1900MHz HSDPA

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | Part 24 |

| Band | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | Low Ch, 1852.4MHz | | | | | | | | | |
| Band 2 | 3.705 | -21.0 | V | 3.0 | 35.4 | 1.0 | -55.4 | -13.0 | -42.4 | |
| | 5.557 | -19.1 | V | 3.0 | 34.7 | 1.0 | -52.8 | -13.0 | -39.8 | |
| | 7.409 | -14.7 | V | 3.0 | 34.9 | 1.0 | -48.6 | -13.0 | -35.6 | |
| HSDPA | 3.705 | -23.2 | H | 3.0 | 35.4 | 1.0 | -57.6 | -13.0 | -44.6 | |
| | 5.557 | -18.6 | H | 3.0 | 34.7 | 1.0 | -52.3 | -13.0 | -39.3 | |
| | 7.409 | -13.4 | H | 3.0 | 34.9 | 1.0 | -47.3 | -13.0 | -34.3 | |
| | | | | | | | | | | |
| | Mid Ch, 1880MHz | | | | | | | | | |
| | 3.760 | -21.4 | V | 3.0 | 35.3 | 1.0 | -55.7 | -13.0 | -42.7 | |
| | 5.640 | -19.6 | V | 3.0 | 34.7 | 1.0 | -53.4 | -13.0 | -40.4 | |
| | 7.520 | -15.3 | V | 3.0 | 34.9 | 1.0 | -49.2 | -13.0 | -36.2 | |
| | 3.760 | -19.3 | H | 3.0 | 35.3 | 1.0 | -53.6 | -13.0 | -40.6 | |
| | 5.640 | -17.4 | H | 3.0 | 34.7 | 1.0 | -51.2 | -13.0 | -38.2 | |
| | 7.520 | -14.9 | H | 3.0 | 34.9 | 1.0 | -48.9 | -13.0 | -35.9 | |
| | | | | | | | | | | |
| | High Ch, 1907.6MHz | | | | | | | | | |
| | 3.815 | -21.4 | V | 3.0 | 35.3 | 1.0 | -55.7 | -13.0 | -42.7 | |
| | 5.723 | -18.3 | V | 3.0 | 34.7 | 1.0 | -52.0 | -13.0 | -39.0 | |
| | 7.630 | -15.1 | V | 3.0 | 34.9 | 1.0 | -49.0 | -13.0 | -36.0 | |
| | 3.815 | -21.7 | H | 3.0 | 35.3 | 1.0 | -56.0 | -13.0 | -43.0 | |
| | 5.723 | -16.8 | H | 3.0 | 34.7 | 1.0 | -50.5 | -13.0 | -37.5 | |
| | 7.630 | -14.8 | H | 3.0 | 34.9 | 1.0 | -48.7 | -13.0 | -35.7 | |

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Band

Band 2

REL99

**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** Tx, 1900MHz Rel 99

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | Part 24 |

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1852.4MHz | | | | | | | | | |
| 3.705 | -21.7 | V | 3.0 | 35.4 | 1.0 | -56.1 | -13.0 | -43.1 | |
| 5.557 | -18.6 | V | 3.0 | 34.7 | 1.0 | -52.4 | -13.0 | -39.4 | |
| 7.409 | -16.4 | V | 3.0 | 34.9 | 1.0 | -50.3 | -13.0 | -37.3 | |
| 3.705 | -21.7 | H | 3.0 | 35.4 | 1.0 | -56.1 | -13.0 | -43.1 | |
| 5.557 | -16.1 | H | 3.0 | 34.7 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 7.409 | -14.3 | H | 3.0 | 34.9 | 1.0 | -48.2 | -13.0 | -35.2 | |
| | | | | | | | | | |
| Mid Ch, 1880MHz | | | | | | | | | |
| 3.760 | -21.6 | V | 3.0 | 35.3 | 1.0 | -55.9 | -13.0 | -42.9 | |
| 5.640 | -19.1 | V | 3.0 | 34.7 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 7.520 | -15.8 | V | 3.0 | 34.9 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 3.760 | -19.9 | H | 3.0 | 35.3 | 1.0 | -54.2 | -13.0 | -41.2 | |
| 5.640 | -17.8 | H | 3.0 | 34.7 | 1.0 | -51.5 | -13.0 | -38.5 | |
| 7.520 | -15.0 | H | 3.0 | 34.9 | 1.0 | -48.9 | -13.0 | -35.9 | |
| | | | | | | | | | |
| High Ch, 1907.6MHz | | | | | | | | | |
| 3.815 | -21.4 | V | 3.0 | 35.3 | 1.0 | -55.7 | -13.0 | -42.7 | |
| 5.723 | -18.1 | V | 3.0 | 34.7 | 1.0 | -51.8 | -13.0 | -38.8 | |
| 7.630 | -15.7 | V | 3.0 | 34.9 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 3.815 | -20.9 | H | 3.0 | 35.3 | 1.0 | -55.2 | -13.0 | -42.2 | |
| 5.723 | -16.6 | H | 3.0 | 34.7 | 1.0 | -50.4 | -13.0 | -37.4 | |
| 7.630 | -15.0 | H | 3.0 | 34.9 | 1.0 | -48.9 | -13.0 | -35.9 | |

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Band

Band 5

HSDPA

**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** WCDMA_HSDPA_ 850

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | Part 24 |

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 826.40MHz | | | | | | | | | |
| 1.652 | -26.5 | V | 3.0 | 37.4 | 1.0 | -62.9 | -13.0 | -49.9 | |
| 2.479 | -21.6 | V | 3.0 | 36.4 | 1.0 | -57.0 | -13.0 | -44.0 | |
| 3.306 | -23.5 | V | 3.0 | 35.8 | 1.0 | -58.3 | -13.0 | -45.3 | |
| 1.652 | -27.2 | H | 3.0 | 37.4 | 1.0 | -63.6 | -13.0 | -50.6 | |
| 2.479 | -23.2 | H | 3.0 | 36.4 | 1.0 | -58.6 | -13.0 | -45.6 | |
| 3.306 | -22.2 | H | 3.0 | 35.8 | 1.0 | -56.9 | -13.0 | -43.9 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1.673 | -27.9 | V | 3.0 | 37.3 | 1.0 | -64.3 | -13.0 | -51.3 | |
| 2.510 | -23.4 | V | 3.0 | 36.4 | 1.0 | -58.8 | -13.0 | -45.8 | |
| 3.346 | -23.4 | V | 3.0 | 35.8 | 1.0 | -58.1 | -13.0 | -45.1 | |
| 1.673 | -28.7 | H | 3.0 | 37.3 | 1.0 | -65.1 | -13.0 | -52.1 | |
| 2.510 | -24.7 | H | 3.0 | 36.4 | 1.0 | -60.0 | -13.0 | -47.0 | |
| 3.346 | -23.2 | H | 3.0 | 35.8 | 1.0 | -57.9 | -13.0 | -44.9 | |
| High Ch, 846.6MHz | | | | | | | | | |
| 1.693 | -27.4 | V | 3.0 | 37.3 | 1.0 | -63.7 | -13.0 | -50.7 | |
| 2.539 | -24.2 | V | 3.0 | 36.3 | 1.0 | -59.6 | -13.0 | -46.6 | |
| 3.386 | -23.1 | V | 3.0 | 35.7 | 1.0 | -57.8 | -13.0 | -44.8 | |
| 1.693 | -27.2 | H | 3.0 | 37.3 | 1.0 | -63.5 | -13.0 | -50.5 | |
| 2.539 | -22.3 | H | 3.0 | 36.3 | 1.0 | -57.6 | -13.0 | -44.6 | |
| 3.386 | -23.7 | H | 3.0 | 35.7 | 1.0 | -58.4 | -13.0 | -45.4 | |

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Note: No other emissions were detected above the system noise floor.



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Band

Band 5

REL99

**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** WCDMA_Rel 99_ 850

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | Part 24 |

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 826.40MHz | | | | | | | | | |
| 1.652 | -25.9 | V | 3.0 | 37.4 | 1.0 | -62.2 | -13.0 | -49.2 | |
| 2.479 | -21.4 | V | 3.0 | 36.4 | 1.0 | -56.7 | -13.0 | -43.7 | |
| 3.306 | -22.7 | V | 3.0 | 35.8 | 1.0 | -57.5 | -13.0 | -44.5 | |
| 1.652 | -28.1 | H | 3.0 | 37.4 | 1.0 | -64.4 | -13.0 | -51.4 | |
| 2.479 | -22.3 | H | 3.0 | 36.4 | 1.0 | -57.7 | -13.0 | -44.7 | |
| 3.306 | -22.0 | H | 3.0 | 35.8 | 1.0 | -56.8 | -13.0 | -43.8 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1.673 | -27.1 | V | 3.0 | 37.3 | 1.0 | -63.5 | -13.0 | -50.5 | |
| 2.510 | -23.1 | V | 3.0 | 36.4 | 1.0 | -58.5 | -13.0 | -45.5 | |
| 3.346 | -22.6 | V | 3.0 | 35.8 | 1.0 | -57.4 | -13.0 | -44.4 | |
| 1.673 | -28.7 | H | 3.0 | 37.3 | 1.0 | -65.1 | -13.0 | -52.1 | |
| 2.510 | -23.4 | H | 3.0 | 36.4 | 1.0 | -58.7 | -13.0 | -45.7 | |
| 3.346 | -23.2 | H | 3.0 | 35.8 | 1.0 | -57.9 | -13.0 | -44.9 | |
| High Ch, 846.6MHz | | | | | | | | | |
| 1.693 | -27.2 | V | 3.0 | 37.3 | 1.0 | -63.5 | -13.0 | -50.5 | |
| 2.539 | -23.6 | V | 3.0 | 36.3 | 1.0 | -58.9 | -13.0 | -45.9 | |
| 3.386 | -22.3 | V | 3.0 | 35.7 | 1.0 | -57.0 | -13.0 | -44.0 | |
| 1.693 | -25.6 | H | 3.0 | 37.3 | 1.0 | -61.9 | -13.0 | -48.9 | |
| 2.539 | -21.9 | H | 3.0 | 36.3 | 1.0 | -57.2 | -13.0 | -44.2 | |
| 3.386 | -22.2 | H | 3.0 | 35.7 | 1.0 | -56.9 | -13.0 | -43.9 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** EGPRS 1900

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T343 8449B | Filter 1 | Part 24 |

Band: GSM1900 EGPRS

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1850MHz | | | | | | | | | |
| 3.700 | -9.6 | V | 3.0 | 35.4 | 1.0 | -44.0 | -13.0 | -31.0 | |
| 5.550 | -16.8 | V | 3.0 | 34.7 | 1.0 | -50.5 | -13.0 | -37.5 | |
| 7.400 | -15.3 | V | 3.0 | 34.9 | 1.0 | -49.2 | -13.0 | -36.2 | |
| 3.700 | -10.0 | H | 3.0 | 35.4 | 1.0 | -44.4 | -13.0 | -31.4 | |
| 5.550 | -16.0 | H | 3.0 | 34.7 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 7.400 | -14.0 | H | 3.0 | 34.9 | 1.0 | -47.9 | -13.0 | -34.9 | |
| | | | | | | | | | |
| Mid Ch, 1880.0MHz | | | | | | | | | |
| 3.760 | -6.3 | V | 3.0 | 35.3 | 1.0 | -40.6 | -13.0 | -27.6 | |
| 5.640 | -8.8 | V | 3.0 | 34.7 | 1.0 | -42.5 | -13.0 | -29.5 | |
| 7.520 | -15.4 | V | 3.0 | 34.9 | 1.0 | -49.3 | -13.0 | -36.3 | |
| 3.760 | -7.9 | H | 3.0 | 35.3 | 1.0 | -42.2 | -13.0 | -29.2 | |
| 5.640 | -11.7 | H | 3.0 | 34.7 | 1.0 | -45.4 | -13.0 | -32.4 | |
| 7.520 | -15.1 | H | 3.0 | 34.9 | 1.0 | -49.1 | -13.0 | -36.1 | |
| | | | | | | | | | |
| High Ch, 1909.8 MHz | | | | | | | | | |
| 3.820 | -4.5 | V | 3.0 | 35.3 | 1.0 | -38.8 | -13.0 | -25.8 | |
| 5.729 | -10.9 | V | 3.0 | 34.7 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 7.639 | -14.0 | V | 3.0 | 35.0 | 1.0 | -48.0 | -13.0 | -35.0 | |
| 3.820 | -16.9 | H | 3.0 | 35.3 | 1.0 | -51.2 | -13.0 | -38.2 | |
| 5.729 | -9.3 | H | 3.0 | 34.7 | 1.0 | -43.1 | -13.0 | -30.1 | |
| 7.639 | -13.2 | H | 3.0 | 35.0 | 1.0 | -47.1 | -13.0 | -34.1 | |

Rev. 03.03.09



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** GPRS 1900

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T343 8449B | Filter 1 | Part 24 |

Band: GSM1 900 GPRS

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1850MHz | | | | | | | | | |
| 3.700 | -9.4 | V | 3.0 | 35.4 | 1.0 | -43.8 | -13.0 | -30.8 | |
| 5.550 | -16.3 | V | 3.0 | 34.7 | 1.0 | -50.0 | -13.0 | -37.0 | |
| 7.400 | -15.7 | V | 3.0 | 34.9 | 1.0 | -49.6 | -13.0 | -36.6 | |
| 3.700 | -9.1 | H | 3.0 | 35.4 | 1.0 | -43.5 | -13.0 | -30.5 | |
| 5.550 | -15.4 | H | 3.0 | 34.7 | 1.0 | -49.2 | -13.0 | -36.2 | |
| 7.400 | -14.0 | H | 3.0 | 34.9 | 1.0 | -47.9 | -13.0 | -34.9 | |
| | | | | | | | | | |
| Mid Ch, 1880.0MHz | | | | | | | | | |
| 3.760 | -5.1 | V | 3.0 | 35.3 | 1.0 | -39.4 | -13.0 | -26.4 | |
| 5.640 | -10.4 | V | 3.0 | 34.7 | 1.0 | -44.1 | -13.0 | -31.1 | |
| 7.520 | -15.4 | V | 3.0 | 34.9 | 1.0 | -49.3 | -13.0 | -36.3 | |
| 3.760 | -7.7 | H | 3.0 | 35.3 | 1.0 | -42.1 | -13.0 | -29.1 | |
| 5.640 | -11.6 | H | 3.0 | 34.7 | 1.0 | -45.4 | -13.0 | -32.4 | |
| 7.520 | -14.9 | H | 3.0 | 34.9 | 1.0 | -48.9 | -13.0 | -35.9 | |
| | | | | | | | | | |
| High Ch, 1909.8 MHz | | | | | | | | | |
| 3.820 | -4.4 | V | 3.0 | 35.3 | 1.0 | -38.6 | -13.0 | -25.6 | |
| 5.729 | -11.5 | V | 3.0 | 34.7 | 1.0 | -45.2 | -13.0 | -32.2 | |
| 7.639 | -15.7 | V | 3.0 | 35.0 | 1.0 | -49.6 | -13.0 | -36.6 | |
| 3.820 | -15.9 | H | 3.0 | 35.3 | 1.0 | -50.2 | -13.0 | -37.2 | |
| 5.729 | -9.2 | H | 3.0 | 34.7 | 1.0 | -43.0 | -13.0 | -30.0 | |
| 7.639 | -14.4 | H | 3.0 | 35.0 | 1.0 | -48.4 | -13.0 | -35.4 | |

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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** EGPRS 850

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | Part 24 |

| Band | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | Low Ch, 824.2MHz | | | | | | | | | |
| GSM850 EGPRS | 1.648 | -25.8 | V | 3.0 | 37.4 | 1.0 | -62.2 | -13.0 | -49.2 | |
| | 2.473 | -24.1 | V | 3.0 | 36.4 | 1.0 | -59.5 | -13.0 | -46.5 | |
| | 3.297 | -21.8 | V | 3.0 | 35.8 | 1.0 | -56.6 | -13.0 | -43.6 | |
| | 1.648 | -26.5 | H | 3.0 | 37.4 | 1.0 | -62.9 | -13.0 | -49.9 | |
| | 2.473 | -23.2 | H | 3.0 | 36.4 | 1.0 | -58.6 | -13.0 | -45.6 | |
| | 3.297 | -22.1 | H | 3.0 | 35.8 | 1.0 | -56.9 | -13.0 | -43.9 | |
| | Mid Ch, 836.6MHz | | | | | | | | | |
| | 1.673 | -28.2 | V | 3.0 | 37.3 | 1.0 | -64.5 | -13.0 | -51.5 | |
| | 2.510 | -24.9 | V | 3.0 | 36.4 | 1.0 | -60.2 | -13.0 | -47.2 | |
| | 3.346 | -22.2 | V | 3.0 | 35.8 | 1.0 | -57.0 | -13.0 | -44.0 | |
| | 1.673 | -26.3 | H | 3.0 | 37.3 | 1.0 | -62.7 | -13.0 | -49.7 | |
| | 2.510 | -26.3 | H | 3.0 | 36.4 | 1.0 | -61.7 | -13.0 | -48.7 | |
| | 3.346 | -22.0 | H | 3.0 | 35.8 | 1.0 | -56.7 | -13.0 | -43.7 | |
| | High Ch, 848.8MHz | | | | | | | | | |
| | 1.698 | -24.8 | V | 3.0 | 37.3 | 1.0 | -61.1 | -13.0 | -48.1 | |
| | 2.547 | -23.8 | V | 3.0 | 36.3 | 1.0 | -59.2 | -13.0 | -46.2 | |
| | 3.395 | -22.6 | V | 3.0 | 35.7 | 1.0 | -57.3 | -13.0 | -44.3 | |
| | 1.698 | -26.5 | H | 3.0 | 37.3 | 1.0 | -62.8 | -13.0 | -49.8 | |
| | 2.547 | -23.8 | H | 3.0 | 36.3 | 1.0 | -59.2 | -13.0 | -46.2 | |
| | 3.395 | -23.2 | H | 3.0 | 35.7 | 1.0 | -57.9 | -13.0 | -44.9 | |

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.



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**Compliance Certification Services**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** LG
**Project #:** 14U17493
**Date:** 04/25/14
**Test Engineer:** R. Alegre
**Configuration:** EUT with AC charger
**Mode:** GPRS 850

| Chamber | Pre-amplifer | Filter | Limit |
|---|---|---|---|
| 3m Chamber | T34 8449B | Filter 1 | Part 24 |

Band: GSM850 GPRS

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 824.2MHz | | | | | | | | | |
| 1.648 | -24.8 | V | 3.0 | 37.4 | 1.0 | -61.2 | -13.0 | -48.2 | |
| 2.473 | -24.0 | V | 3.0 | 36.4 | 1.0 | -59.4 | -13.0 | -46.4 | |
| 3.297 | -22.8 | V | 3.0 | 35.8 | 1.0 | -57.6 | -13.0 | -44.6 | |
| 1.648 | -26.6 | H | 3.0 | 37.4 | 1.0 | -63.0 | -13.0 | -50.0 | |
| 2.473 | -13.2 | H | 3.0 | 36.4 | 1.0 | -48.6 | -13.0 | -35.6 | |
| 3.297 | -22.1 | H | 3.0 | 35.8 | 1.0 | -56.9 | -13.0 | -43.9 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1.673 | -28.1 | V | 3.0 | 37.3 | 1.0 | -64.5 | -13.0 | -51.5 | |
| 2.510 | -24.8 | V | 3.0 | 36.4 | 1.0 | -60.1 | -13.0 | -47.1 | |
| 3.346 | -23.1 | V | 3.0 | 35.8 | 1.0 | -57.9 | -13.0 | -44.9 | |
| 1.673 | -26.2 | H | 3.0 | 37.3 | 1.0 | -62.5 | -13.0 | -49.5 | |
| 2.510 | -26.1 | H | 3.0 | 36.4 | 1.0 | -61.5 | -13.0 | -48.5 | |
| 3.346 | -22.0 | H | 3.0 | 35.8 | 1.0 | -56.7 | -13.0 | -43.7 | |
| High Ch, 848.8MHz | | | | | | | | | |
| 1.698 | -24.3 | V | 3.0 | 37.3 | 1.0 | -60.6 | -13.0 | -47.6 | |
| 2.547 | -23.8 | V | 3.0 | 36.3 | 1.0 | -59.1 | -13.0 | -46.1 | |
| 3.395 | -22.4 | V | 3.0 | 35.7 | 1.0 | -57.1 | -13.0 | -44.1 | |
| 1.698 | -26.6 | H | 3.0 | 37.3 | 1.0 | -62.9 | -13.0 | -49.9 | |
| 2.547 | -23.9 | H | 3.0 | 36.3 | 1.0 | -59.2 | -13.0 | -46.2 | |
| 3.395 | -23.1 | H | 3.0 | 35.7 | 1.0 | -57.8 | -13.0 | -44.8 | |

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Note: No other emissions were detected above the system noise floor.



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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