PCTEST ENGINEERING LABORATORY, INC.

7185 Oakland Mills Road, Columbia, MD 21046 USA Tel. 410.290.6652 / Fax 410.290.6654 http://www.pctestlab.com



MEASUREMENT REPORT FCC Part 24 & 27 LTE

Applicant Name:

Qualcomm Technologies, Inc. 5775 Morehouse Drive San Diego, CA 92121 United States Date of Testing: 12/23/2015-3/5/2016 Test Site/Location: PCTEST Lab., Columbia, MD, USA Test Report Serial No.: 0Y1607131257-R2.J9C

FCC ID : J9CMTP9900LAA APPLICANT: QUALCOMM TECHNOLOGIES, INC. Application Type: Certification

Application Type: Model(s): EUT Type: FCC Classification: FCC Rule Part(s):

MTP9900LAA LAA Release 13 Small Cell PCS Licensed Transmitter (PCB)

§2; §24; §27

Test Procedure(s): Test Device Serial No.: §2; §24; §27 ANSI/TIA-603-D-2010, KDB 971168 D01 v02r02, KDB 662911 D01 v02r01 *identical prototype* [S/N: 49173051545004]

| | | | | EIRP | |
|------------|-----------------------|------------------------|------------|-------------------|---------------------|
| Mode | Tx Frequency (MHz) | Emission Designator | Modulation | Max. Power (W) | Max. Power (dBm) |
| LTE Band 4 | 2112.5 - 2152.5 | 4M44G7D | QPSK | 4.194 | 36.23 |
| LTE Band 4 | 2115 - 2150 | 8M74G7D | QPSK | 4.386 | 36.42 |
| LTE Band 4 | 2117.5 - 2147.5 | 13M3G7D | QPSK | 4.421 | 36.46 |
| LTE Band 4 | 2120 - 2145 | 18M0G7D | QPSK | 4.356 | 36.39 |
| LTE Band 2 | 1932.5 - 1987.5 | 4M35G7D | QPSK | 3.709 | 35.69 |
| LTE Band 2 | 1935 - 1985 | 8M73G7D | QPSK | 4.336 | 36.37 |
| LTE Band 2 | 1937.5 - 1982.5 | 13M3G7D | QPSK | 4.150 | 36.18 |
| LTE Band 2 | 1940 - 1980 | 17M8G7D | QPSK | 4.321 | 36.36 |

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

This revised Test Report (S/N: 0Y1607131257-R2.J9C) supersedes and replaces the previously issued test report (S/N: 0Y1607131257-R1.J9C) on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Randy Ortanez President



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MEASUREMENT REPORT FCC Part 24 & 27



§2.1033 General Information

| APPLICANT: | Qualcomm Technologies, Inc. | | | | |
|-------------------------|-------------------------------------|------------------|----------------|-------------|--|
| APPLICANT ADDRESS: | 5775 Morehouse Drive | | | | |
| | San Diego, CA 92121, United States | | | | |
| TEST SITE: | PCTEST ENGINEERING LABORATORY, INC. | | | | |
| TEST SITE ADDRESS: | 7185 Oakland Mills Road, Co | lumbia, MD 21045 | USA | | |
| FCC RULE PART(S): | §2; §24; §27 | | | | |
| BASE MODEL: | MTP9900LAA | | | | |
| SKU NUMBER: | 65-F5230-910 | | | | |
| MCN NUMBER: | 10-F5230-006 | | | | |
| FCC ID: | J9CMTP9900LAA | | | | |
| FCC CLASSIFICATION: | PCS Licensed Transmitter (P | CB) | | | |
| FREQUENCY TOLERANCE: | ±0.00025 % (2.5 ppm) | | | | |
| Test Device Serial No.: | 49173051545004 | Production | Pre-Production | Engineering | |
| DATE(S) OF TEST: | 12/23/2015-3/5/2016 | | | | |
| TEST REPORT S/N: | 0Y1607131257-R2.J9C | | | | |

Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.

- PCTEST facility is an FCC registered (PCTEST Reg. No. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451B-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451B-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

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| rtificate of Accreditation | to ISO/IEC 17025:2005 |
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| CHORESCALDS, CORP.(2008), 27 | AND TELECOMPRENE ATOMS |



1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2 Testing Facility

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Internt'I (BWI) airport, the city of Baltimore and the Washington, DC area. (See Figure 1-1).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The site coordinates are 39° 10'23" N latitude and 76° 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2014 on January 22, 2015.



Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Qualcomm LAA Release 13 Small Cell FCC ID: J9CMTP9900LAA**. The test hardware SKU identification number is 65-F5230-910. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

2.2 Device Capabilities

This device contains the following capabilities:

LTE Band 2 (5/10/15/20MHz BW), LTE Band 4 (5/10/15/20MHz BW), LAA (5GHz - UNII-1, UNII-3 (20/40MHz BW)), 802.11a (20MHz BW)

Both LAA and LTE portion of the device are of 2x2 MIMO.

2.3 Test Configuration

The Qualcomm LAA Release 13 Small Cell FCC ID: J9CMTP9900LAA was tested per the guidance of ANSI/TIA-603-D-2010 and KDB 971168 D01 v02r02. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

During LTE testing, one LTE carrier operates in either Band 2 (1930 – 1990MHz) or Band 4 (2110 – 2155MHz) while the other LTE carrier operates in the UNII 1 Band (5150 – 5250MHz) or the UNII 3 Band (5725 – 5850MHz). MIMO operation is considered while two LTE carriers are active (Chain0 and Chain1) in the same band on the same channel.

2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

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3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The measurement procedures described in the document titled "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-D-2010) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168 D01 v02r02) were used in the measurement of the **Qualcomm LAA Release 13 Small Cell FCC ID: J9CMTP9900LAA**.



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3.4 Radiated Power and Radiated Spurious Emissions §2.1053, §24.232(c), §24.238(a), §27.50(d), §27.53(h)

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Clause 5, Figure 5.7 of ANSI C63.4-2014. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction. For measurements below 1GHz, a 72.4cm high PVC support structure is placed on top of the turntable. A 3" (~7.6cm) sheet of high density polystyrene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. Radiated power levels are also investigated with the receive antenna horizontally and vertically polarized. The maximized power level is recorded using the spectrum analyzer, per the guidelines of KDB 971168.

Per the guidance of ANSI/TIA-603-D-2010, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

 $P_{d [dBm]} = P_{g [dBm]} - cable loss [dB] + antenna gain [dBd/dBi]$

Where, P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to $P_{g [dBm]}$ – cable loss $_{[dB]}$. The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10log₁₀(Power [Watts]).

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4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of CISPR 16-4-2. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

| Contribution | Expanded Uncertainty (±dB) |
|-------------------------------------|----------------------------|
| Conducted Bench Top Measurements | 1.13 |
| Radiated Disturbance (<1GHz) | 4.98 |
| Radiated Disturbance (>1GHz) | 5.07 |
| Radiated Disturbance (>18GHz) | 5.09 |

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5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

| Manufacturer | Model | Description | Cal Date | Cal Interval | Cal Due | Serial Number |
|-----------------|--------------------|--|------------|--------------|------------|----------------------|
| - | RE1 | Radiated Emissions Cable Set (UHF/EHF) | 4/28/2015 | Annual | 4/28/2016 | RE1 |
| - | WL40-1 | Conducted Cable Set (40GHz) | 4/20/2015 | Annual | 4/20/2016 | WL40-1 |
| Agilent | 8447D | Broadband Amplifier | 6/12/2015 | Annual | 6/12/2016 | 1937A03348 |
| Agilent | N5183A | MXG Analog Signal Generator | 3/16/2014 | Biennial | 3/16/2016 | MY50141900 |
| Agilent | N9030A | PXA Signal Analyzer (44GHz) | 3/24/2015 | Annual | 3/24/2016 | MY52350166 |
| Com-Power | AL-130 | 9kHz - 30MHz Loop Antenna | 7/30/2015 | Biennial | 7/30/2017 | 121034 |
| Emco | 3115 | Horn Antenna (1-18GHz) | 3/30/2014 | Biennial | 3/30/2016 | 9704-5182 |
| Espec | ESX-2CA | Environmental Chamber | 3/17/2015 | Annual | 3/17/2016 | 17620 |
| ETS Lindgren | 3117 | 1-18 GHz DRG Horn (Medium) | 4/8/2014 | Biennial | 4/8/2016 | 125518 |
| ETS Lindgren | 3160-09 | 18-26.5 GHz Standard Gain Horn | 6/17/2014 | Biennial | 6/17/2016 | 135427 |
| ETS Lindgren | 3164-08 | Quad Ridge Horn Antenna | 3/12/2014 | Biennial | 3/12/2016 | 128337 |
| K & L | 11SH10-3075/U18000 | High Pass Filter | 7/18/2015 | Annual | 7/18/2016 | 11SH10-3075/U18000-2 |
| K & L | 11SH10-6000/T18000 | High Pass Filter | 7/18/2015 | Annual | 7/18/2016 | 11SH10-6000/T18000-1 |
| Mini Circuits | TVA-11-422 | RF Power Amp | N/A | | N/A | QA1317001 |
| Mini Circuits | PWR-SEN-4GHS | USB Power Sensor | 3/11/2015 | Annual | 3/11/2016 | 11401010036 |
| Mini-Circuits | SSG-4000HP | Synthesized Signal Generator | N/A | | N/A | 11208010032 |
| Rhode & Schwarz | TS-PR18 | Pre-Amplifier | 3/5/2015 | Annual | 3/5/2016 | 101622 |
| Rohde & Schwarz | TS-PR18 | 1-18 GHz Pre-Amplifier | 3/5/2015 | Annual | 3/5/2016 | 100071 |
| Rohde & Schwarz | TS-PR26 | 18-26.5 GHz Pre-Amplifier | 3/3/2015 | Annual | 3/3/2016 | 100040 |
| Rohde & Schwarz | ESU26 | EMI Test Receiver (26.5GHz) | 3/12/2015 | Annual | 3/12/2016 | 100342 |
| Rohde & Schwarz | FSW67 | Signal / Spectrum Analyzer | 6/2/2015 | Annual | 6/2/2016 | 103200 |
| Schwarzbeck | UHA 9105 | Dipole Antenna (400 - 1GHz) Tx | 11/18/2015 | Biennial | 11/18/2017 | 91052522TX |
| Schwarzbeck | UHA 9105 | Dipole Antenna (400 - 1GHz) Rx | 11/18/2015 | Biennial | 11/18/2017 | 91052523RX |
| Seekonk | NC-100 | Torque Wrench 5/16", 8" lbs | 3/18/2014 | Biennial | 3/18/2016 | N/A |
| Sunol | JB5 | Bi-Log Antenna (30M - 5GHz) | 3/28/2014 | Biennial | 3/28/2016 | A051107 |
| VWR | 62344-734 | Thermometer with Clock | 2/20/2014 | Biennial | 3/20/2016 | 140140336 |

Table 5-1. Test Equipment

Notes:

- 1. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.
- 2. Items whose calibration date lies within the test date range (e.g. TS-PR26 and TS-PR40) were not used to make calibrated measurements after their calibration due date.

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6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz G = Phase Modulation 7 = Quantized/Digital Info D = Data transmission, telemetry, telecommand

Spurious Radiated Emission – LTE Band

Example: LTE Harmonic at 1564 MHz

The average spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analzyer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.50 dBm so this harmonic was 25.50 dBm – (-24.80).

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7.0 TEST RESULTS

7.1 Summary

| Company Name: | Qualcomm Technologies, Inc. |
|---------------------|--------------------------------|
| FCC ID: | J9CMTP9900LAA |
| FCC Classification: | PCS Licensed Transmitter (PCB) |
| Mode(s): | LTE |

| FCC Part Section(s) | Test Description | Test Limit | Test Condition | Result | Reference |
|--------------------------------|--|---|---------------------|--------|---------------------|
| TRANSMITTER M | ODE (TX) | - | | | |
| 2.1049 | Occupied Bandwidth | N/A | CONDUCTED | PASS | Section 7.2 |
| 2.1046 | Transmitter Conducted Output Power | N/A | | PASS | Section 7.3 |
| 24.232(a)(2), 27.50(d) | Equivalent Isotropic Radiated Power (Band 4, Band 2) | < 1640 Watts/MHz max. EIRP | | PASS | Section 7.3 |
| 2.1051, 24.238(a), 27.53(h) | Out of Band Emissions | > 43 + 10log ₁₀ (P[Watts]) attenuation from fundamental power at Band Edge and for all out-of-band emissions | | PASS | Section 7.4, 7.5 |
| 24.232(d), 27.50(b) | Peak-Average Ratio | < 13 dB | | PASS | Section 7.6 |
| 2.1055, 24.235, 27.54 | Frequency Stability | Fundamental emissions must stay within authorized frequency block (Part 24, 27) | | PASS | Section 7.7 |
| 2.1053, 24.238(a), 27.53(h) | Cabinet Radiated Emissions | > 43 + 10log ₁₀ (P[Watts]) attenuation from fundamental power for all out-of-band emissions | CABINET RADIATED | PASS | Section 7.8 |

Table 7-1. Summary of Test Results

Notes:

- 1. This device was evaluated for compliance using conducted measurements along with cabinet radiated emissions measurements, per KDB 971168.
- 2. All channels, modes, modulations, and channel bandwidths were investigated. The test results shown in the following sections represent the worst case emissions.
- 3. The analyzer plots (Sections 7.2, 7.4, 7.5, 7.6) were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the spectrum analyzer and the EUT at all frequencies of interest. Also included in the correction table were offsets to account for array gain which is comprised of the maximum antenna gain of 6dBi and an additional 3dB due to two antennas transmitting simultaneously.
- 4. All antenna port conducted emissions testing was performed on a test bench with the antenna ports of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.

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7.2 Occupied Bandwidth §2.1049

Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v02r02 - Section 4.2

Test Settings

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 5% of the expected OBW
- 3. VBW \geq 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within

1 – 5% of the 99% occupied bandwidth observed in Step 7

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-1. Test Instrument & Measurement Setup

Test Notes

None

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Chain0



Plot 7-1. Occupied Bandwidth Plot (Band 4 – 5.0MHz QPSK – RB Size 25, Low Channel)



Plot 7-2. Occupied Bandwidth Plot (Band 4 – 5.0MHz QPSK – RB Size 25, Mid Channel)

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Plot 7-3. Occupied Bandwidth Plot (Band 4 – 5.0MHz QPSK – RB Size 25, High Channel)



Plot 7-4. Occupied Bandwidth Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

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Plot 7-6. Occupied Bandwidth Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

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|---|---------------------|---|---------------------------------|--|
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Plot 7-7. Occupied Bandwidth Plot (Band 2 – 5.0MHz QPSK – RB Size 25, Low Channel)



Plot 7-8. Occupied Bandwidth Plot (Band 2 – 5.0MHz QPSK – RB Size 25, Mid Channel)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager |
|-------------------------------|---------------------|---|---------------------------------|
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Plot 7-9. Occupied Bandwidth Plot (Band 2 – 5.0MHz QPSK – RB Size 25, High Channel)



Plot 7-10. Occupied Bandwidth Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

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Plot 7-12. Occupied Bandwidth Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

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Chain1



Plot 7-13. Occupied Bandwidth Plot (Band 4 – 5.0MHz QPSK – RB Size 25, Low Channel)



Plot 7-14. Occupied Bandwidth Plot (Band 4 – 5.0MHz QPSK – RB Size 25, Mid Channel)

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| | | | | |

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Plot 7-15. Occupied Bandwidth Plot (Band 4 – 5.0MHz QPSK – RB Size 25, High Channel)



Plot 7-16. Occupied Bandwidth Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

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Plot 7-18. Occupied Bandwidth Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

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Plot 7-19. Occupied Bandwidth Plot (Band 2 – 5.0MHz QPSK – RB Size 25, Low Channel)



Plot 7-20. Occupied Bandwidth Plot (Band 2 – 5.0MHz QPSK – RB Size 25, Mid Channel)

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Plot 7-21. Occupied Bandwidth Plot (Band 2 – 5.0MHz QPSK – RB Size 25, High Channel)



Plot 7-22. Occupied Bandwidth Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

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| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager |
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7.3 Equivalent Isotropic Radiated Power §2.1046, §24.232(a), §27.50(d)

Test Overview

A transmitter antenna terminal of the EUT is connected to the input of a broadband spectrum analyzer. Measurement is made using the analyzer while the EUT is operating at its maximum output power level and at the appropriate frequencies.

For MIMO measurements, the conducted average (RMS) output powers are added linearly via the "Measure and Sum" technique in KDB 662911 D01 v02r01. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v02r02 – Section 5.2 KDB 662911 D01 v02r01 – Section E)1)

Test Settings

- 1. The signal analyzer's automatic "Channel Power" function was used to perform the conducted output power measurements. The integration bandwidth is set to at least the emission bandwidth.
- 2. RBW = 1 5% of the expected OBW
- 3. VBW \geq 3 x RBW
- 4. Number of sweep points $\geq 2 \times (\text{span/RBW})$
- 5. Sweep = auto couple
- 6. Detector = Average (RMS)
- 7. Trace mode = trace averaging
- 8. Trigger was set to "free run" for all modes
- 9. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

The total directional gain is calculated from the maximum 6dBi antenna gain and the 3dB from $N_{ant} = 2$ (two antennas transmitting simultaneously), per KDB 662911. EIRP compliance is assessed while taking the total directional gain of 9dB into account.

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Equivalent Isotropic Radiated Power (Cont'd) §2.1046, §24.232(a), §27.50(d)

| LTE Band | BW | Channel Frequency (MHz) | 3GPP Channel Number(s) | Directional Gain (dBi) | Chain0 Avg. Conducted Power (dBm) | Chain1 Avg. Conducted Power (dBm) | Total Conducted Power (dBm) | Total EIRP (dBm) | Limit (dBm) | Margin (dB) |
|----------|--------|-------------------------------|------------------------------|---------------------------|---|---|-----------------------------------|---------------------|----------------|----------------|
| | | 2112.5 | 1975 | 9.0 | 23.53 | 23.69 | 26.62 | 35.62 | 62.15 | -35.53 |
| | 5 MHz | 2132.5 | 2175 | 9.0 | 24.12 | 24.31 | 27.23 | 36.23 | 62.15 | -34.92 |
| | | 2152.5 | 2375 | 9.0 | 21.03 | 23.74 | 25.60 | 34.60 | 62.15 | -36.55 |
| | | 2115 | 2000 | 9.0 | 24.47 | 24.35 | 27.42 | 36.42 | 62.15 | -34.73 |
| | 10MHz | 2132.5 | 2175 | 9.0 | 24.11 | 24.18 | 27.16 | 36.16 | 62.15 | -34.99 |
| Pand 4 | | 2150 | 2350 | 9.0 | 22.12 | 24.31 | 26.36 | 35.36 | 62.15 | -35.79 |
| Dallu 4 | | 2117.5 | 2025 | 9.0 | 24.47 | 24.42 | 27.46 | 36.46 | 62.15 | -34.69 |
| | 15 MHz | 2132.5 | 2175 | 9.0 | 24.16 | 24.25 | 27.22 | 36.22 | 62.15 | -34.93 |
| | | 2147.5 | 2325 | 9.0 | 22.19 | 24.01 | 26.20 | 35.20 | 62.15 | -35.94 |
| | 20 MHz | 2120 | 2050 | 9.0 | 24.47 | 24.29 | 27.39 | 36.39 | 62.15 | -34.76 |
| | | 2132.5 | 2175 | 9.0 | 24.32 | 24.37 | 27.36 | 36.36 | 62.15 | -34.79 |
| | | 2145 | 2300 | 9.0 | 24.49 | 23.82 | 27.18 | 36.18 | 62.15 | -34.97 |
| | | 1932.5 | 625 | 9.0 | 23.13 | 23.42 | 26.29 | 35.29 | 62.15 | -35.86 |
| | 5 MHz | 1960 | 900 | 9.0 | 23.28 | 24.05 | 26.69 | 35.69 | 62.15 | -35.46 |
| | | 1987.5 | 1175 | 9.0 | 23.22 | 23.35 | 26.30 | 35.30 | 62.15 | -35.85 |
| | | 1935 | 650 | 9.0 | 23.81 | 24.45 | 27.15 | 36.15 | 62.15 | -35.00 |
| | 10MHz | 1960 | 900 | 9.0 | 24.32 | 24.4 | 27.37 | 36.37 | 62.15 | -34.78 |
| Dand 2 | | 1985 | 1150 | 9.0 | 23.96 | 24.37 | 27.18 | 36.18 | 62.15 | -34.97 |
| Band 2 | | 1937.5 | 675 | 9.0 | 23.74 | 24.47 | 27.13 | 36.13 | 62.15 | -35.02 |
| | 15 MHz | 1960 | 900 | 9.0 | 24.21 | 24.13 | 27.18 | 36.18 | 62.15 | -34.97 |
| | | 1982.5 | 1125 | 9.0 | 24.10 | 24.04 | 27.08 | 36.08 | 62.15 | -35.07 |
| | | 1940 | 700 | 9.0 | 24.39 | 24.3 | 27.36 | 36.36 | 62.15 | -34.79 |
| | 20 MHz | 1960 | 900 | 9.0 | 24.33 | 24.01 | 27.18 | 36.18 | 62.15 | -34.97 |
| | | 1980 | 1100 | 9.0 | 24.28 | 24.04 | 27.17 | 36.17 | 62.15 | -34.98 |

Chain0 + Chain1 (Total Power) – EIRP Calculation

Table 7-25. EIRP (Total Power) Calculations (LTE Bands 2 and 4)

Note:

Per KDB 662911 v02r01 Section E)2), the output power at Chain0 and Chain1 were first measured separately. The measured values were then summed in linear power units then converted back to dBm.

Directional Gain = G_{ant} + 10log₁₀(N_{ant}) = 9dBi, where G_{ant} = 6dBi and N_{ant} = 2

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7.4 Band Edge Emissions at Antenna Terminal §2.1051, §24.238(a), §27.53(h)

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

Test Procedure Used

KDB 971168 D01 v02r02 – Section 6.0 KDB 662911 D01 v02r01 – Section E)3)a)iii)

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the

plot

- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW > 1% of the emission bandwidth
- 4. VBW <u>></u> 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-3. Test Instrument & Measurement Setup

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Test Notes

- 1. Per 24.238(a) and 27.53(h), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
- Per 24.238(a) and 27.53(h), the spurious emission limit is -13dBm. Since this device transmits from two antennas simultaneously, applying the "Measure and add 10 log(N_{ant}) dB", where N_{ant} = 2, guidance from KDB 662911 D01 v02r01 yields an additional correction to the limit of -3dB. The correct out of band conducted emission limit is -13dBm + (-3dB) = -16dBm.

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Chain0



Plot 7-26. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 7-27. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

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| Agilent Spectrum Analyzer - Swept SA | | | | |
|--|--|--|--------------------------|-----------------|
| 💢 RF 50 Ω DC CORREC | SENSE:INT | ALIGNAUTO | 04:08:33 PM Jan 28, 2016 | Frequency |
| | Tria: Free Pup | #Avg Type: RMS AvailHold: 100/100 | | rioquonoy |
| PNO: Wide +++ IEGaint ow | #Atten: 32 dB | Argineia. 100/100 | DET A N N N N N | |
| | | Miles | 4 0 455 07 011- | Auto Tune |
| | | IVIKE | 1 2.100 U/ GHZ | |
| 10 dB/div Ref 22.00 dBm | | | -39.727 dBm | |
| Log | | | | |
| | | | | Center Freq |
| 12.0 | | | | 2.155000000 GHz |
| | | | | |
| 2 00 manual manual manual and a second | | | | |
| 2.00 | | | | Start Fred |
| | | | | 2 45000000 CU- |
| -8.00 | | | | 2.15000000 GHz |
| | V WJ | | | |
| -18.0 | | | | |
| -10.0 | | | -22.00 dBm | Stop Freq |
| | | | | 2.160000000 GHz |
| -28.0 | | | | |
| | | | | |
| -38.0 | <u> </u> | | | CF Step |
| | Margan and and and and and and and and and a | Also and the second sec | | 1.000000 MHz |
| | | a | monoment | <u>Auto</u> Man |
| -48.0 | | | | |
| | | | | Eron Offect |
| -58.0 | | | | Frequiser |
| | | | | 0 Hz |
| | | | | |
| -68.0 | | | | |
| | | | | |
| | | | | |
| Center 2.155000 GHz | | | Span 10.00 MHz | |
| #Res BW 51 kHz #VBW | 150 KHZ* | Sweep 5 | .000 ms (1001 pts) | |
| MSG | | STATUS | | |

Plot 7-28. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 7-29. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

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| Agilent Spectru | m Analyzer - | Swept SA | | | | | | | | | |
|-----------------|---|----------|------------|-----------|------------|--|------------|------------|------------------|----------------|----|
| LXI | RF | 50 Ω DC | CORREC | SEN | ISE:INT | | ALIGN AUTO | 02:35:14 P | M Jan 28, 2016 | Frequency | |
| | | | | Tria Free | Run | #AVg Typ | e: RIVIS | TY | PE A Matatatatat | | |
| | | | IFGain:Low | Atten: 36 | dB | in ghiona | . 1001100 | D | ET A N N N N N | | |
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| -15.0 | | | | | | | | | | Stop Fre | pe |
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| -65.U | | | | | | | | | | | |
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| Contor 1 (| 11000 0 | | | | | | | - Cnon (| | | |
| #Boc BW | 100 KH3 | 12 | #\/P\// | 200 64-2 | | | Swoon_1 | Span 2 | (1001 ptc) | | |
| #RGS DW | | | #4044 | 300 KHZ | | | oweep 2 | | (100 Fpts) | | |
| MSG | | | | | | | STATUS | 5 | | | |

Plot 7-30. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



Plot 7-31. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

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Plot 7-33. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

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| Agilent S | pectrum | Analyzer | - Swept SA | | | | | | | | |
|-------------------|---------|----------|------------|-------------|--|------------|----------|------------|------------|----------------|-----------------|
| L <mark>XI</mark> | | RF | 50 Ω D | C CORREC | SEN | ISE:INT | | ALIGN AUTC | 06:33:06 P | 4 Jan 28, 2016 | Frequency |
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| | | | | | | | | M | (r1 2.109 | 96 GHz | Auto Tune |
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| | | | | | | | | | | | |
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| -15.0 | | | | | | | | | | | Stop Freg |
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| -25.0 | | | | | | 1 | | | | | |
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| -45.0 🗠 | ~~~~~ | ~~~~~ | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | Freq Offset |
| -55.0 | | | | | | | | | | | 0 Hz |
| | | | | | | | | | | | |
| -65.0 | | | | | | | | | | | |
| 05.0 | | | | | | | | | | | |
| | | | | | | | | | | | |
| | - 0.4 | 1000 | | | | | | | | | |
| Cente | er 2.1 | 1000 C | HZ | | | | | | span 2 | 0.00 WHZ | |
| #Res | BW 1 | 60 kH | Z | #VBW | 470 kHz | 5 | | Sweep | 1.000 ms (| 1001 pts) | |
| MSG | | | | | | | | STAT | US | | |
| | | | | | | | | | | | |

Plot 7-34. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 7-35. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Daga 22 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 33 01 105 | | |
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| Agilent | Spectrum | ı Analyze | - Swept SA | | | | | | | | | |
|------------------|----------|---|------------|-----------|-------------|----------|------------|-----------|-------------------|------------|----------------|-----------------|
| <mark>LXI</mark> | | RF | 50 Ω [| DC CORREC | | SEN | ISE:INT | #A | ALIGN AUTO | 06:35:52 P | M Jan 28, 2016 | Frequency |
| | | | | | т, | ia: Free | Dun | #Avg Typ | e: RMS 100/100 | IRA TY | | rioquonoy |
| | | | | PNO: W | ide ⊶ | tten: 36 | dB | Arginola. | 100/100 | D | ET A N N N N N | |
| | _ | | | ir Gain.t | .0w 10 | item ee | 4 D | | | | | Auto Tune |
| | | | | | | | | | IVI | (r1 2.155 | 03 GHz | Auto Tunc |
| 10 dE | 3/div | Ref 2 | 5.00 dB | m | | | | | | -25.1 | 45 dBm | |
| Log | | | | | | | | | | | | |
| | | | | | | | | | | | | Center Freg |
| 15.0 | | | | | | | | | | | | 2 155000000 CH- |
| 10.0 | | | | | | | | | | | | 2.155000000 GH2 |
| | | | | | | | | | | | | |
| 5.00 | - mark | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | human | m | work have a | ~~~ | | | | | | |
| | | | | | | 1 | | | | | | Start Freq |
| 5 00 | { | | | | | | | | | | | 2.140000000 GHz |
| -0.00 | | | | | | | | | | | | |
| | | | | | | 1 | | | | | | |
| -15.0 | H—— | | | | | | | | | | | Stop Fred |
| | | | | | | | 1 | | | | 22.00 dBm | |
| |) | | | | | |)' | | | | -22.00 dbm | 2.170000000 GHZ |
| -25.0 | | | | | | | many | | | | | |
| | | | | | | | | | mon | | | OE Oton |
| -35.0 | | | | | | | | | | | manne | |
| | | | | | | | | | | | | S.000000 Minz |
| | | | | | | | | | | | | Auto |
| -45.0 | | | | | | | | | | | | |
| | | | | | | | | | | | | Erog Offect |
| -55.0 | | | | | | | | | | | | Frequiser |
| | | | | | | | | | | | | 0 Hz |
| | | | | | | | | | | | | |
| -65.0 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Cen | ter 2.1 | 5500 | GHz | | | | | | | Span 3 | 0.00 MHz | |
| #Res | s BW | 160 kH | z | 7 | #VBW 47 | 0 kHz | | | Sweep | 1.467 ms | (1001 pts) | |
| MSG | | | | | | | | | STAT | US | | |
| | | | | | | | | | JIA | | | |

Plot 7-36. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 7-37. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dage 24 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 34 01 105 | | |
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Plot 7-38. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 7-39. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dage 25 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 35 01 105 | | |
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| Agilent | Spectrun | n Analyze | er - Swept | SA | | | | | | | | |
|-------------------|----------|-----------|------------|----|-------------|------------|--------------------------------------|-----------------------------|----------------|-------------------|--|-----------------|
| L <mark>XI</mark> | | RF | 50 Ω | DC | CORREC | SEI | ISE:INT | #Avg Typ | ALIGNAUTO | 06:49:24 P TRA | 4 Jan 28, 2016 E 1 2 3 4 5 6 | Frequency |
| | | | | | PNO: Wide ↔ | Trig: Free | Run | AvgHold | : 100/100 | TY | PE A WARAAAA FT A N N N N N | |
| | _ | | | | IFGain:Low | Atten: 30 | aD | | | | | Auto Tune |
| | | | | | | | | | IVIP | -20 0 | | |
| 10 dB | /div | Ref 2 | 25.00 c | Bm | | | | | | -23.0 | SS UDIII | |
| | | | | | | | | | | | | Center Freq |
| 15.0 | | | | | | | | | | | | 2 15500000 GHz |
| | | | | | | | | | | | | |
| 5.00 | | | | | | | | | | | | |
| | | | | | | λ | | | | | | Start Freq |
| -5.00 | | | | | | 1 | | | | | | 2.150000000 GHz |
| | | | | | | | | | | | | |
| -15.0 | | | | | | | | | | | | Stop From |
| | | | | | | | | | | | -22.00 dBm | 2 16000000 GHz |
| -25.0 | | | | | | - W. | 1 | | | | | 2.10000000 0112 |
| | | | | | | March 1 | - | | | | | |
| -35.0 | | | | | | | - where a construction of the second | and the state of the second | Marria Married | | | CF Step |
| | | | | | | | | | | | and the state of t | Auto Man |
| -45.0 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| -55.0 | | | | | | | | | | | | FreqOffset |
| | | | | | | | | | | | | 0 HZ |
| -65.0 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Cent #Poo | er 2.1 | 5500 | GHz | | #)(D) | N 620 KH- | * | | Swoon | Span 1 | 0.00 MHz | |
| #Res | , тың т | 200 K | 12 | | #VBV | V OZU KHZ | | | Sweep | 5.000 ms (| roo r prs) | |
| MSG | | | | | | | | | STAT | US | | |

Plot 7-40. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 7-41. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dego 26 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 30 01 105 | | |
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Plot 7-42. Lower Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



Plot 7-43. Lower Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dege 27 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 37 01 105 | | |
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Plot 7-45. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dego 29 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 36 01 105 | | |
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Plot 7-46. Lower Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



Plot 7-47. Lower Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dogo 20 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 39 01 105 | | |
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| Agilent Spectrum Analyzer - Swept | t 5A | | | | |
|-----------------------------------|--|---------------|--|--------------------------|-----------------|
| LXI RF 50 Ω | DC CORREC | SENSE:INT | ALIGNAUTO | 06:09:16 PM Jan 28, 2016 | Frequency |
| | | ria: Eroo Dun | #Avg Type: RMS Aug/Hold: 100/100 | | Troqueriey |
| | PNO: Wide ++++ + | Atten: 36 dB | Avginoid. 100/100 | DET A NNNNN | |
| | IFGam.cow | | | | Auto Tune |
| | | | IVIKI | 1 1.990 02 GHZ | /late rane |
| 10 dB/div Ref 25.00 | dBm | | | -34.222 dBm | |
| | | | | | |
| | | | | | Center Freq |
| 15.0 | | | | | 1 99000000 GHz |
| | | | | | 1.000000000000 |
| | | | | | |
| 5.00 | warmen and the second s | ~ | | | Otart Frank |
| | | | | | StartFreq |
| -5.00 | | | | | 1.980000000 GHz |
| | | - ξ | | | |
| | | | | | |
| -15.0 | | | | | Stop Freq |
| | | | | -22.00 dBm | 2 00000000 GHz |
| .25.0 | | | | | 2.0000000000000 |
| 20.0 | | <u></u> | | | |
| ∫ | | ** ' | | | CE Sten |
| -35.0 | | X | | | 2 000000 MHz |
| | | \square | | | Auto Man |
| 45.0 | | | | | |
| -4310 | | - marine | Margan and Mar | | |
| | | | a more and the second | | Freg Offset |
| -55.0 | | | | manna manna and | 0 47 |
| | | | | | 0112 |
| 65.0 | | | | | |
| -85.0 | | | | | |
| | | | | | |
| | | | | 0 | |
| Center 1.99000 GHz | 20 (B) (1) (2) | | | Span 20.00 MHz | |
| #Res BW 100 kHz | #VBW 30 | | Sweep 2 | .533 ms (1001 pts) | |
| MSG | | | STATUS | | |





Plot 7-49. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dego 40 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 40 01 105 | | |
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| Agilent Spectrum Analyzer | - Swept SA | | | | | | | |
|---------------------------|------------------|----------------------------------|----------|----------------|------------|-------------|--|-----------------|
| LXI RF | 50 Ω DC CORREC | SE | NSE:INT | / | ALIGN AUTO | 06:21:14 PM | Jan 28, 2016 | Frequency |
| | | Tria: Fro | o Bun | #Avg Type | 100/100 | TYPE | | rioquonoy |
| | PNO: N IEGain | Nide →→ Hig. He How Atten: 36 | 6 dB | Arginola. | 1007100 | DET | A N N N N N | |
| | ii Gain | | | | Milent | 4 020 / | | Auto Tune |
| | | | | | IVIKE | 11.930 (| JU GHZ | |
| 10 dB/div Ref 2 | 5.00 dBm | | | | | -39.62 | n abm | |
| | | | | | | | | |
| | | | | | | | | Center Freq |
| 15.0 | | | | | | | | 1.93000000 GHz |
| | | | | | | | | |
| 5.00 | | | | | | | | |
| 5.00 | | | | and the second | | | ······································ | Start Fred |
| | | | 1 | | | | | 1 020000000 CH- |
| -5.00 | | | ╞──┤ | | | | | 1.92000000 GH2 |
| | | | | | | | | |
| -15.0 | | | | | | | | |
| 10.0 | | | | | | | | StopFreq |
| | | | | | | | -22.00 dBm | 1.940000000 GHz |
| -25.0 | | | | | | | | |
| | | | | | | | | |
| -35.0 | | | <u> </u> | | | | | CF Step |
| | | | •· | | | | | 2.000000 MHz |
| | | | | | | | | <u>Auto</u> Man |
| -45.0 | | some south the | | | | | | |
| | m | | | | | | | Fred Offset |
| -55.0 | | | | | | | | Trequiser |
| | | | | | | | | 0 HZ |
| | | | | | | | | |
| -65.0 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Center 1.93000 G | SHZ | | | | | Span 20 | .00 MHz | |
| #Res BW 160 kH | Z | #VBW 470 kHz | ð | | sweep 1. | 000 ms (1 | 001 pts) | |
| MSG | | | | | STATUS | | | |

Plot 7-50. Lower Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 7-51. Lower Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dego 41 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 41 01 105 | | |
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| Agilent Sp | pectrum | Analy | zer - Swep | t 5A | | | | | | | | |
|-------------------|--|-------|--|------|--|---|------------|-----------|------------|------------|-----------------------------|-----------------|
| L <mark>XI</mark> | | RF | 50 S | 2 DC | CORREC | 9 | SENSE:INT | #Aug Tup | ALIGN AUTC | 06:24:44 P | M Jan 28, 2016 | Frequency |
| | | | | | PNO Mide ↔ | Trig: Fr | ee Run | Avg Hold: | : 100/100 | TY | PE A WWWWWW | |
| | | | | | IFGain:Low | Atten: | 36 dB | | | D | ET <mark>A N N N N N</mark> | |
| | | | | | | | | | Mk | (r1 1.990 | 00 GHz | Auto Tune |
| 10 dB/c | div | Ref | 25.00 | dBm | | | | | | -37.1 | 29 dBm | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | Center Freq |
| 15.0 | | | | | | | | | | | | 1.990000000 GHz |
| | | | | | | | | | | | | |
| 5.00 🗠 | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | ~~~~ | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | man | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | | | | |
| | | | | | | } | | | | | | Start Freq |
| -5.00 | | | | | | | | | | | <u> </u> | 1.98000000 GHz |
| | | | | | | | | | | | | |
| -15.0 | | | | | | | | | | | | Stop From |
| | | | | | | | | | | | -22.00 dBm | Stop Freq |
| .25.0 | | | | | | Ì | | | | | -22.00 0.00 | 2.00000000 GHZ |
| 20.0 | | | | | | l | 1 | | | | | |
| 25.0 | | | | | | | \ 1 | | | | | CF Step |
| -35.0 | | | | | | | ×. | | | | | 2.000000 MHz |
| | | | | | | | mon | mm | | | | <u>Auto</u> Man |
| -45.0 | | | | | | | | | | mmmmm | | |
| | | | | | | | | | | | | Freq Offset |
| -55.0 | | | | | | | | | | | | 0 Hz |
| | | | | | | | | | | | | |
| -65.0 | | | | | | | | | | | ┼───┤ | |
| | | | | | | | | | | | | |
| Conto | r 1 0 | 0000 | | | | | | | | - Cnon-1 | | |
| #Res | BW 1 | 60 | H7 | | #VBW | 470 kH | 7* | | Sween | 1.000 ms | (1001 pts) | |
| MEG | | | 10.7 | | <i>"</i> ••Bn | | | | 0747 | 110 | (Toor pla) | |
| MSG | | | | | | | | | STAT | 05 | | |





Plot 7-53. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dogo 42 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 42 of 105 | | |
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Plot 7-54. Lower Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-55. Lower Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dego 42 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 43 01 105 | | |
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Plot 7-56. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-57. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dego 44 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 44 01 105 | | |
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Chain1



Plot 7-58. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 7-59. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dego 45 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 45 of 105 | | |
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Plot 7-60. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 7-61. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dego 46 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 46 01 105 | | |
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Plot 7-62. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



Plot 7-63. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dego 47 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 47 01 105 | | |
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Plot 7-65. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dego 49 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 46 01 105 | | |
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| Agilent Spectru | m Analyzer | - Swept SA | | | | | | | | |
|-----------------|------------|--------------------|---------------|------------|-----------------|-----------------------|-------------------|-------------|---------------|-----------------|
| LXI | RF | 50 Ω DC | CORREC | SEN | SE:INT | | ALIGN AUTO | 03:28:48 Pf | 4Feb 01, 2016 | Frequency |
| | | | | Tria: Free | Pup | #Avg Typ | e: RMS 100/100 | TRAC | | ricqueriey |
| | | | PNO: Wide +++ | Atten: 36 | dB | Arginola. | 1007100 | DI | TANNNN | |
| | | | II GUILLOW | | | | Miles | 4 0 440 | 00 CU- | Auto Tune |
| | | | | | | | IVIKI | 1 2.110 | | |
| 10 dB/div | Ref 2 | 5.00 dBm | | | | | | -30.0 | 94 abm | |
| | | | | | | | | | | |
| | | | | | | | | | | Center Freq |
| 15.0 | | | | | | | | | | 2.110000000 GHz |
| | | | | | | | | | | |
| 5.00 | | | | | of molecular | and the second second | - Comprometer | www.www.ww | ······· | |
| 0.00 | | | | | <pre>/***</pre> | | | | | Start Freg |
| | | | | | | | | | | 2 09500000 GHz |
| -5.00 | | | | | | | | | | 2.03000000 0112 |
| | | | | | | | | | | |
| -15.0 | | | | | _ | | | | | Oton From |
| | | | | | | | | | | StopFreq |
| | | | | | | | | | -22.00 dBm | 2.125000000 GHz |
| -25.0 | | | | | | | | | | |
| | | | | | . <u>1</u> | | | | k, | 05.04.0 |
| -35.0 | | | | | · | | | | \ | CF Step |
| | | | | 1 mart | | | | | | S.000000 MHZ |
| | | | man | man | | | | | | Auto Mari |
| -45.0 | man | ~ mar and a marine | | | | | | | | |
| | | | | | | | | | | Fred Offset |
| -55.0 | | | | | | | | | | |
| | | | | | | | | | | 0 112 |
| er 0 | | | | | | | | | | |
| -05.0 | | | | | | | | | | |
| | | | | | | | | | | |
| Comton 2 | 44000 4 | SI I | | | | | | Onen 2 | 0.00 8411- | |
| "Center 2." | 450 64 | - | #\/D\M | 470 kH= | | | Duraan (| Span J | 0.00 IVIHZ | |
| #Res BW | TOU KH | 2 | #VBW | 47 U KHZ | | | sweep 1 | .007 ms (| roor pts) | |
| MSG | | | | | | | STATUS | 5 | | |

Plot 7-66. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 7-67. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | | |
|--|---------------------|---|----------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dogo 40 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 49 01 105 | | |
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| Agilent Spect | rum Analyzer - Swept: | 5A | | | | |
|-------------------|---|-------------------------------------|----------------|-------------------|--------------------------|-----------------|
| L <mark>XI</mark> | RF 50 Ω | DC CORREC | SENSE:INT | ALIGN AUTO | 03:31:28 PM Feb 01, 2016 | Frequency |
| | | PNO: Mido ↔ | Trig: Free Run | Avg Hold: 100/100 | TYPE A WARMAN | |
| | | IFGain:Low | Atten: 36 dB | | DET A N N N N N | |
| | | | | Mk | r1 2.155 00 GHz | Auto Tune |
| 10 dB/div | Ref 25.00 d | lBm | | | -34.848 dBm | |
| Log | | | | | | |
| | | | | | | Center Freq |
| 15.0 | | | | | | 2.155000000 GHz |
| | | | | | | |
| 5.00 | 2 Mar 10 - Mar 10 - Mar 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 | and the reason of the second second | | | | |
| (* | | | | | | Start Freq |
| 5.00 | | | | | | 2.140000000 GHz |
| -3.00 | | | | | | |
| | | | | | | |
| -15.0 | | | | | | Stop Freq |
| | | | | | -22.00 dBm | 2.170000000 GHz |
| -25.0 | | | └──── <u></u> | | | |
| | | | \/1 | | | OF Oton |
| -35.0 / | | | <u> </u> | | | 3 000000 MHz |
| | | | | Maran Maran | | Auto Man |
| -45.0 | | | | | montometere | |
| | | | | | | |
| -55.0 | | | | | | Freq Offset |
| -33.0 | | | | | | 0 Hz |
| | | | | | | |
| -65.0 | | | | | | |
| | | | | | | |
| Center 2 | 15500 GHz | | | | Spap 30.00 MHz | |
| #Res BV | V 150 kHz | #VBW | 470 kHz* | Sweep | 1.667 ms (1001 pts) | |
| MSG | | | | STATU | s | |
| | | | | STATU | | |

Plot 7-68. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 7-69. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

| FCC ID: J9CMTP9900LAA | | ST FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | |
|--|---------------------|--|----------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dege 50 of 105 | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 50 01 105 | |
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Plot 7-70. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 7-71. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Daga E1 of 10E | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 51 01 105 | | |
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| Agilent Spectrur | n Analyzer | - Swept SA | | | | | | | | |
|------------------|------------|--|---------------|------------|---------|-----------|------------|------------|----------------|-----------------|
| LXI | RF | 50 Ω DC | CORREC | SEN | ISE:INT | | ALIGN AUTO | 03:38:00 P | MFeb 01, 2016 | Frequency |
| | | | | Tria: Eroc | Dun | #Avg lyp | e: RMS | TY | | Troqueriey |
| | | | PNO: Wide +++ | Atten: 36 | dB | Arginola. | 1007100 | D | ET A N N N N N | |
| | | | II Gam.cow | | | | 8.41 | | 00.011- | Auto Tune |
| | | | | | | | IVIK | (FI 2.155 | UU GHZ | |
| 10 dB/div | Ref 2: | 5.00 dBm | | | | | | -31.6 | эт авт | |
| | | | | | | | | | | |
| | | | | | | | | | | Center Freq |
| 15.0 | | | | | | | | | | 2.155000000 GHz |
| | | | | | | | | | | |
| 5.00 | | | | | | | | | | |
| | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | | | | | | Start Freg |
| | | | | | | | | | | 2 135000000 CH7 |
| -5.00 | | | | | | | | | | 2.133000000 GH2 |
| | | | | | | | | | | |
| -15.0 | | | | | | | | | | 04 |
| | | | | | | | | | | StopFreq |
| | | | | | | | | | -22.00 dBm | 2.175000000 GHz |
| -25.0 | | | | | 1 | | | | | |
| 1 | | | | | | | | | | |
| -35.0 | | | | | <u></u> | | | | | CF Step |
| | | | | | - www. | www. | | | | 4.000000 MHZ |
| | | | | | | | | mon | | <u>Auto</u> Man |
| -45.0 | | | | | | | | | | |
| | | | | | | | | | | Fred Offset |
| -55.0 | | | | | | | | | | i i cq onsci |
| | | | | | | | | | | 0 H2 |
| 05.0 | | | | | | | | | | |
| -65.0 | | | | | | | | | | |
| | | | | | | | | | | |
| Conton C | 5500- | 311- | | | | | | 0 | | |
| Center 2.1 | 13500 C | SAZ | #\/D\\ | 600 kH- | | | Duvo om | span 4 | 0.00 WIHZ | |
| #Res BW | 200 KH | 2 | #VBW | 020 KHZ | | | sweep | 1.207 ms | TOUT pts) | |
| MSG | | | | | | | STAT | US | | |





Plot 7-73. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Daga 52 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 52 01 105 | | |
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Plot 7-74. Lower Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



Plot 7-75. Lower Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Daga 52 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 55 01 105 | | |
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Plot 7-76. Upper Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



Plot 7-77. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Daga E4 of 10E | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 54 01 105 | | |
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Plot 7-78. Lower Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



Plot 7-79. Lower Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Daga EE of 10E | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 55 01 105 | | |
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| Agilent Spectrum Analyzer | - Swept SA | | | | | | | | |
|---------------------------|------------|-----------------------------|-------------------|---------|------------|------------|-------------|---|-------------------|
| LXI RF | 50 Ω DC | CORREC | SEN | JSE:INT | | ALIGN AUTO | 03:12:06 PM | 4Feb 01, 2016 | Frequency |
| | | | Tria: Free | Dun | #Avg lype | 100/100 | TYP | | Troqueriey |
| | | PNU: Wide ↔ → IEGain:Low | Atten: 36 | dB | in ghiona. | 1001100 | DE | | |
| | | | | | | ML | 4 4 000 | 00 CU- | Auto Tune |
| | | | | | | IVIN | 22 4 | | |
| 10 dB/div Ref 2 | 5.00 dBm | | | | | | -55.4 | oo ubiii | |
| | | | | | | | | | |
| | | | | | | | | | Center Freq |
| 15.0 | | | | | | | | | 1.990000000 GHz |
| | | | | | | | | | |
| 5.00 | man | man | m | | | | | | |
| | | | | | | | | | Start Freq |
| | | | | | | | | | 1.980000000 GHz |
| -0.00 | | | | | | | | | |
| | | | } | | | | | | |
| -15.0 | | | | | | | | | Stop Freq |
| | | | | | | | | -22.00 dBm | 2 00000000 GHz |
| -25.0 | | | | | | | | | 2.000000000000112 |
| | | | $\langle \rangle$ | 1 | | | | | |
| 05.0 | | | | 2 | | | | | CF Step |
| -35.0 | | | | l . | | | | | 2.000000 MHz |
| | | | | کر ا | | | | | <u>Auto</u> Man |
| -45.0 | | | | haven | | | | | |
| | | | | | | manyou | Augusta . | | Ener Offerst |
| -55 በ | | | | | | | | - Marine Mari | Frequise |
| | | | | | | | | | 0 Hz |
| | | | | | | | | | |
| -65.0 | | | | | | | | | |
| | | | | | | | | | |
| Q | NU- | | | | | | 0 | | |
| Center 1.99000 G | | #\(D)A(| 200 64- | | | Swoon | Span 2 | 1001 ptc) | |
| #Res DW 100 KH | 2 | #VDVV | 300 KHZ | | | sweep . | ะ | roor pis) | |
| MSG | | | | | | STATU | IS | | |





Plot 7-81. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dege EC of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 56 01 105 | | |
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Plot 7-83. Lower Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dege E7 of 10E | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 57 01 105 | | |
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| Agilent Spectru | n Analyzer - Swep | t SA | | | | | | | | |
|-----------------|--|-------|--|--|----------------|--|------------|-------------|-------------------------|-----------------|
| LXI | RF 50 S | 2 DC | CORREC | SEN | ISE:INT | | ALIGN AUTO | 03:26:05 Pf | 4Feb 01, 2016 | Frequency |
| | | | | Tui u Fuer | D | #Avg Typ | e: RMS | TRAC | E 1 2 3 4 5 6 | riequency |
| | | | PNO: Wide | Atton: 36 | a Run | Avginoid: | 100/100 | DI | ANNNN | |
| | | | IFGain:Low | Atten. 50 | u D | | | _ | _ | Auto Tup |
| | | | | | | | Mkr | 1 1.990 | 00 GHz | Auto Tuli |
| 10 dB/div | Ref 25.00 | dBm | | | | | | -40.6 | 77 dBm | |
| Log | | | | | | | | | | |
| | | | | | | | | | | Center Free |
| 45.0 | | | | | | | | | | Centerried |
| 15.0 | | | | | | | | | | 1.990000000 GH |
| | | | | | | | | | | |
| 5.00 | warne wa | mount | ······································ | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | | | | |
| | | | |) | | | | | | Start Free |
| | | | | | | | | | | 1 975000000 GH |
| -5.00 | | | | | | | | | | |
| | | | | | | | | | | |
| -15.0 | | | | | | | | | | 04 E |
| | | | | | | | | | | StopFree |
| | | | | | | | | | -22.00 dBm | 2.005000000 GH |
| -25.0 | | | | | | | | | | |
| | | | | | | | | | | |
| 25.0 | | | | 1 | | | | | | CF Step |
| -35.0 | | | | , y | 1 | | | | | 3.000000 MH |
| | | | | | | | | | | <u>Auto</u> Mar |
| -45.0 | | | | | how we are the | | | | | |
| | | | | | | and a second and a second and a second | mummen | 4 | | |
| | | | | | | | | man | | Freq Offse |
| -55.0 | | | | | | | | | m | 0 H |
| | | | | | | | | | and and a second second | |
| -65.0 | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Contor 1 (| | | | | | | | Cnop 2 | | |
| temer 1.9 | | | 41/014/ | 470 kula | e | | Duraan 4 | Span J | 1001 WINZ | |
| #Res BW | 150 KHZ | | #VBW | 470 KHZ | <u> </u> | | sweep 1 | .007 ms (| TOUT pts) | |
| MSG | | | | | | | STATUS | | | |
| | | | | | | | | - | | |





Plot 7-85. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dege 59 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 56 01 105 | | |
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Plot 7-87. Lower Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Dege 50 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 59 01 105 | | |
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| Agilent Spectrur | n Analyzer - Swept SA | | | | | |
|------------------|---|--|--------------|-------------------|----------------------------|-----------------|
| LXI | RF 50 Ω D | C CORREC | SENSE:INT | ALIGN AU | TO 03:43:44 PMFeb 01, 2016 | Frequency |
| | | | | #Avg Type: RMS | TRACE 1 2 3 4 5 6 | riequency |
| | | PNO: Wide 🔸 | Atton: 26 dB | AvgiHold: 100/100 | | |
| | | IFGain:Low | Atten: 36 db | | | |
| | | | | N | /kr1 1.990 00 GHz | Auto Tune |
| | Dof 25.00 dB | m | | | -43.357 dBm | |
| | NCI 20.00 UDI | | | | | |
| - | | | | | | |
| | | | | | | Center Freq |
| 15.0 | | | | | | 1.990000000 GHz |
| | | | | | | |
| F 00 | | | | | | |
| 5.00 | man war | and the second s | | | | Start Eron |
| | | | | | | StartFrey |
| -5 00 | | | | | | 1.970000000 GHz |
| | | | | | | |
| | | | | | | |
| -15.0 | | | | | | Stop Fred |
| | | | | | 22.00 dB- | Coprieq |
| | | | | | -22.00 dBill | 2.010000000 GHz |
| -25.0 | | | | | | |
| | | | | | | |
| 25.0 | | | | | | CF Step |
| -35.0 | | | 1 | | | 4.000000 MHz |
| V | | | ▲ ' | | | <u>Auto</u> Man |
| -45.0 | | | | | | |
| | | | | manna | | |
| | | | | | m | Freq Offset |
| -55.0 | | | | | - Marine - | 0 Hz |
| | | | | | man from the second second | 0112 |
| | | | | | | |
| -65.0 | | | | | | |
| | | | | | | |
| | | | | | | |
| Center 1.9 | 99000 GHz | | | | Span 40.00 MHz | |
| #Res BW | 200 kHz | #VBW | 620 kHz* | Swee | p 1.267 ms (1001 pts) | |
| MSG | | | | 0 | TATUS | |
| MoG | | | | SI | IA105 | |

Plot 7-88. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-89. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

| FCC ID: J9CMTP9900LAA | | FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | Reviewed by: Quality Manager | | |
|--|---------------------|---|---------------------------------|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | Daga 60 of 105 | | |
| 0Y1607131257-R2.J9C | 12/23/2015-3/5/2016 | LAA Release 13 Small Cell | Page 60 01 105 | | |
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