



**NVLAP LAB CODE: 100275-0**

## **FCC Certification Test Report**

### **Product Evaluated**

**Alcatel-Lucent LTE RRH 2x40-07L-AT  
(FCC ID: AS5BBTRX-06)**

### **Customer**

Alcatel-Lucent USA, Inc  
600-700 Mountain Avenue  
Murray Hill, New Jersey 07974-0636 USA

### **Test Laboratory**

**Global Product Compliance Laboratory**  
Alcatel-Lucent USA, Inc  
600-700 Mountain Avenue, Rm 5B-108  
Murray Hill, New Jersey 07974-0636 USA

**Date: Dec 15, 2015**

Prepared By:

*Steve Gordon*

Steve E. Gordon, Compliance Engineer

Approved By:

*Raymond J. Johnson*

Raymond J. Johnson, Technical Manager

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## 1. ATTESTATION OF TEST RESULTS

|   |   |
|---|---|
| <b>Company Name</b>                     | Alcatel-Lucent USA, Inc.  |
| <b>FCC ID</b>                           | AS5BBTRX-06   |
| <b>Product Name</b>                     | Alcatel-Lucent LTE RRH 2x40 07L-AT  |
| <b>Model Name</b>                       | RRH 2x40 07L-AT   |
| <b>Part No</b>                          | N/A   |
| <b>Serial Number(s)</b>                 | 14W333G40063  |
| <b>Test Standard(s)</b>                 | 47 CFR FCC Part 27  |
| <b>Reference(s)</b>                     | <ul style="list-style-type: none"><li>47 CFR FCC Part 2 and Part 15</li><li>FCC KDB 971168 D01, 662911 D01 &amp; D02</li><li>3GPP TS 36.104 v12.6.0 (2015-02)</li></ul> |
| <b>Operating Frequency Band</b>         | 700L (Tx: 729 - 745 MHz and Rx: 699 – 715 MHz), E-UTRAN Band 12   |
| <b>Technology</b>                       | LTE   |
| <b>Test Frequency Range</b>             | 10 MHz – 8.0 GHz  |
| <b>Operation Mode(s)</b>                | 2x2 MIMO  |
| <b>Submission Type</b>                  | Class II Permissive Change  |
| <b>FCC Part 15 Subpart B Compliance</b> | Compliance with Class B   |
| <b>Test Date</b>                        | November 30 – December 9, 2015  |
| <b>Test Laboratory</b>                  | Global Product Compliance Laboratory<br>600-700 Mountain Avenue, Rm 5B-108<br>Murray Hill, New Jersey 07974-0636 USA  |

This is to certify that the above product has been evaluated and found to be in compliance with the Rules and Regulations set forth in the above standard(s). The data and the descriptions about the test setup, procedures and configuration presented in this report are accurate. The results of testing in this report apply only to the product/system which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Per the requirement of Section 2.911(d) Certification of Technical Test Data, I hereby certify that the technical test data are the results of tests either performed or supervised by me.

Steve Gordon  
Member of Technical Staff  
Global Product Compliance Laboratory  
Alcatel-Lucent USA, Inc

## 2. SUMMARY OF THE TEST RESULTS

| 47 CFR FCC Sections     | Description of Tests  | Results In Compliance | Notes |
|-------------------------|---|-----------------------|-------|
| <b>2.1046</b>           | <b>RF Power Output</b>                                      | Yes                   |       |
| <b>2.1047</b>           | <b>Modulation Characteristics</b>                           | NR                    |       |
| <b>2.1049, 27.53(g)</b> | <b>(a) Occupied Bandwidth<br/>(b) Out-of-Band Emissions</b> | Yes                   |       |
| <b>2.1051, 27.53(g)</b> | <b>Spurious Emissions at Antenna Terminals</b>              | Yes                   |       |
| <b>2.1053, 27.53(g)</b> | <b>Field Strength of Spurious Radiation</b>                 | Yes                   |       |
| <b>2.1055, 27.54</b>    | <b>Measurement of Frequency Stability</b>                   | NR                    |       |

NR: Not Required

NA: Not Applicable

### 2.1 Measurement Uncertainty

The results of the calculations to estimate uncertainties for the several test methods and standards are shown in the Table below. These are the worst-case values.

**Worst-Case Estimated Measurement Uncertainties**

| Standard, Method or Procedure   | Condition  | Frequency<br>MHz   | Expanded<br>Uncertainty<br>(k=2)                        |
|---|--|--|---|
| a. Classical Emissions, (e.g., ANSI C63.4, CISPR 11, 14, 22, etc., using ESHS 30, | Conducted Emissions                                | 0.009 - 30   | ±3.5 dB   |
|   | Radiated Emissions<br>(AR-6 Semi-Anechoic Chamber) | 30 MHz – 200MHz H<br>30 MHz – 200 MHz V<br>200 MHz – 1000 MHz H<br>200 MHz – 1000 MHz V<br>1 GHz- 18 GHz | ±4.79 dB<br>±5.12 dB<br>±4.79 dB<br>±4.91 dB<br>±3.3 dB |

#### Measurement uncertainty for Antenna Port Testing:

- 9 kHz to 20 MHz: Frequency = 10 Hz, Amplitude = 0.5 dB
- 20 MHz to 1 GHz: Frequency = 100Hz, Amplitude = 0.5 dB
- 1 GHz to 10 GHz: Frequency = 10 kHz, Amplitude = 0.5 dB

### 3. GENERAL INFORMATION

#### 3.1 Product Descriptions

The equipment under test (EUT) has the following specifications.

**Table 3.1.1 Product Specifications**

| Specification Items         | Description                            |
|-----------------------------|--|
| Product Type                | Remote Radio Head (2Tx, 2Rx), 2x2 MIMO |
| Radio Type                  | Intentional Transceiver                |
| Power Type                  | -48 VDC                                |
| Modulation                  | QPSK, 16QAM, 64QAM                     |
| Operating Frequency Range   | Tx 729-745 MHz/Rx 699-715 MHz          |
| Channel Bandwidth           | 5 MHz                                  |
| Max Conducted Power (Rated) | 46 dBm per port                        |
| Software Version            | ENB_LR15.1                             |
| Hardware Version            | LTE RRH 2x40 07L-AT                    |
| Antenna(s)                  | Refer to Section 3.2                   |

The EUT supports the following carrier configurations:

**Table 3.1.2 EUT Supported Configurations**

| Carrier Bandwidth (MHz) | Maximum No of Carriers per Path | Technology | Supported |
|-------------------------|---------------------------------|------------|-----------|
| 5                       | 2                               | LTE        | ✓         |
| 10                      | 1                               | LTE        | ✓         |

The operating band consists of the following blocks and spectrum:

**Table 3.1.3 EUTRAN 12, 700L Band**

| Blocks | Tx Frequency (MHz) | Rx Frequency (MHz) | Bandwidth (MHz) |
|--------|--------------------|--------------------|-----------------|
| A      | 729 - 734          | 699 - 704          | 5               |
| B      | 734.5 – 739.5      | 704.5 – 709.5      | 5               |
| C      | 740 - 745          | 710 - 715          | 5               |

### **3.2 Antenna Information**

The product does not support integrated antennas.

#### 4. REQUIRED MEASUREMENTS AND RESULTS

The EUT is qualified for a Class II Permissive Change. Per 47CFR FCC Section 2.1033(c)(14), the following certification tests are required by Section 2.1046 through Section 2.1057. The measurement was conducted in accordance with the procedures set out in Section 2.1041.

| 47 CFR FCC Sections | Description of Tests                    | Required | Notes                        |
|---------------------|---|----------|------------------------------|
| 2.1046              | RF Power Output                         | NR       | Verified                     |
| 2.1047              | Modulation Characteristics              | NR       | On file from Original Filing |
| 2.1049, 27.53(g)    | Occupied Bandwidth                      | NR       | On file from Original Filing |
| 2.1049, 27.53(g)    | Out-of-Band Emissions                   | Yes      |                              |
| 2.1051, 27.53(g)    | Spurious Emissions at Antenna Terminals | Yes      |                              |
| 2.1053, 27.53(g)    | Field Strength of Spurious Radiation    | Yes      |                              |
| 2.1055, 27.54       | Measurement of Frequency Stability      | NR       | On file from Original Filing |

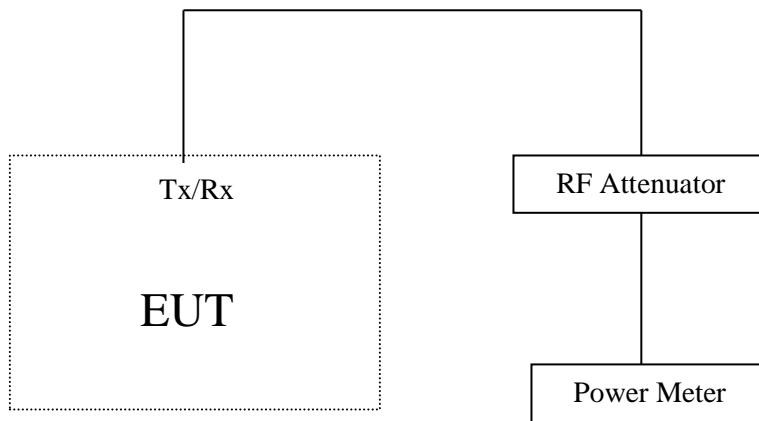
NR: Not Required

#### 4.1 Section 2.1046 MEASUREMENT REQUIRED: RF POWER OUTPUT

NOT REQUIRED.  
PREVIOUSLY SUBMITTED IN ORIGINAL FILING

THE OUTPUT POWER OF EUT PER CARRIER AND PER PORT HAS BEEN VERIFIED.

**Figure 4.1.1 Test Set-Up for Measurement of  
Radio Frequency Power Output**

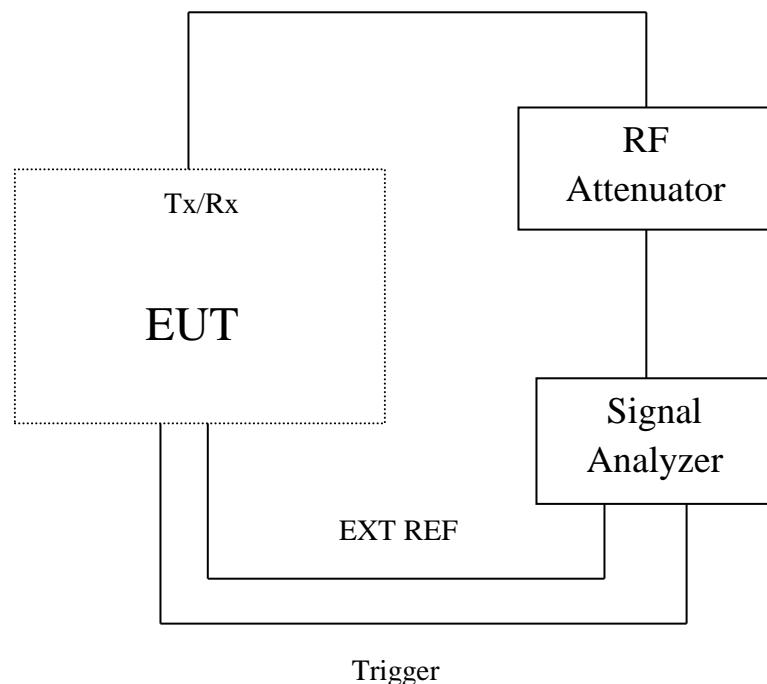


## 4.2 Section 2.1047 MEASUREMENT REQUIRED: MODULATION CHARACTERISTICS

**NOT REQUIRED**  
PREVIOUSLY SUBMITTED IN ORIGINAL FILING

THE MODULATION CHARACTERISTICS OF EUT HAVE BEEN VERIFIED

**Figure 4.2.1 Test Set-Up for Measurement of Modulation Characteristics, Occupied Bandwidth and Out-of-Band Emissions**



### 4.3 Section 2.1049 MEASUREMENT REQUIRED: OCCUPIED BANDWIDTH AND OUT-OF-BAND EMISSIONS

This test measures the Occupied Bandwidth of the transmitting carrier and the Out of Band Emissions in the frequency spectrum immediately outside and adjacent to the transmitting carrier(s).

The occupied bandwidth (OBW) for 5MHz LTE carrier has been measured and provided in the original certification. Only the out-of-band emissions for 5+5MHz configuration were evaluated.

The operating blocks and carrier configurations supported are provided in Section 3.1 Product Descriptions. The EUT transmitting band for wireless communication is governed by the FCC rules in CFR 47, Part 27, Subpart C. The minimum emission requirements and the setting of measurement equipment for the out-of-band emissions measurement of carriers were specified in FCC Part 27.53(g). The FCC's requirements are tabulated in the following table:

**Table 4.3.1 FCC Part 27.53(c) Transmitter Unwanted Emission Limits**

| Frequency   | Required Minimum Attenuation below the Mean Carrier Power $P$ | Resolution Bandwidth of Spectrum Analyzer |
|---|---|---|
| 100 kHz Bands Immediately Outside the Transmitting Frequency Band | $(43 + P \text{ dBW}) \text{ dBc} = -13 \text{ dBm}^*$        | 30  |
| Outside the above Frequency Range                                 | $(43 + P \text{ dBW}) \text{ dBc} = -13 \text{ dBm}^*$        | 100 kHz                                   |

\*For 2x2 MIMO, the limit is reduced by  $10 \cdot \log (2) \text{ dB}$ .

The above requirement was used for the required emission mask and the out-of-band emissions measurement.

The out-of-band emissions measurements were made at the antenna transmitting terminal for QPSK, 16QAM and 64QAM modulations, respectively. The appropriate E-UTRA test model specified in 3GPP TS 36.141 was used for LTE carriers.

The measurements were performed with a spectrum analyzer, which was calibrated in accordance with the ISO 9001 process. The test set-up diagram is same as the one shown in the Figure 4.3.1.

For the out-of-band emissions measurement, the spectrum analyzer was set with a required resolution bandwidth which is equal to at least 1% of carrier bandwidth and a video bandwidth which is equal to at least 3xRBW as shown in the plots of the occupied bandwidth measurement attached in the following pages. The emissions outside the above spans were evaluated in Required Measurement: Out-of-block Spurious Conducted Emissions. The top of the carrier measured with a resolution bandwidth of 30kHz was 22.22 dB below the LTE carrier power (43dBm/carrier) measured with a resolution bandwidth greater than the carrier bandwidth (if available) or a wideband power meter. This 22.22dB offset was due to the fact that  $10 \log (5\text{MHz}/30\text{kHz}) = 22.22 \text{ dB}$ . The RMS average detector was used in all above measurements. The total carrier power level at the antenna terminal was adjusted to the maximum rated mean power +46 dBm (40W) per port.

The following channels are measured:

**Table 4.3.2 Channels Tested for Out-of-Band Emissions**

| Bandwidth    | Block          | DL Frequency (MHz) | UL Frequency (MHz) | Modulations        |
|--------------|----------------|--------------------|--------------------|--------------------|
| <b>5 MHz</b> | <b>A&amp;B</b> | 731.5 & 737        | 701.5 & 707        | QPSK, 16QAM, 64QAM |
| <b>5 MHz</b> | <b>B&amp;C</b> | 737 & 742.5        | 707 & 712.5        | QPSK, 16QAM, 64QAM |
| <b>5 MHz</b> | <b>A&amp;C</b> | 731.5 & 742.5      | 701.5 & 712.5      | QPSK, 16QAM, 64QAM |

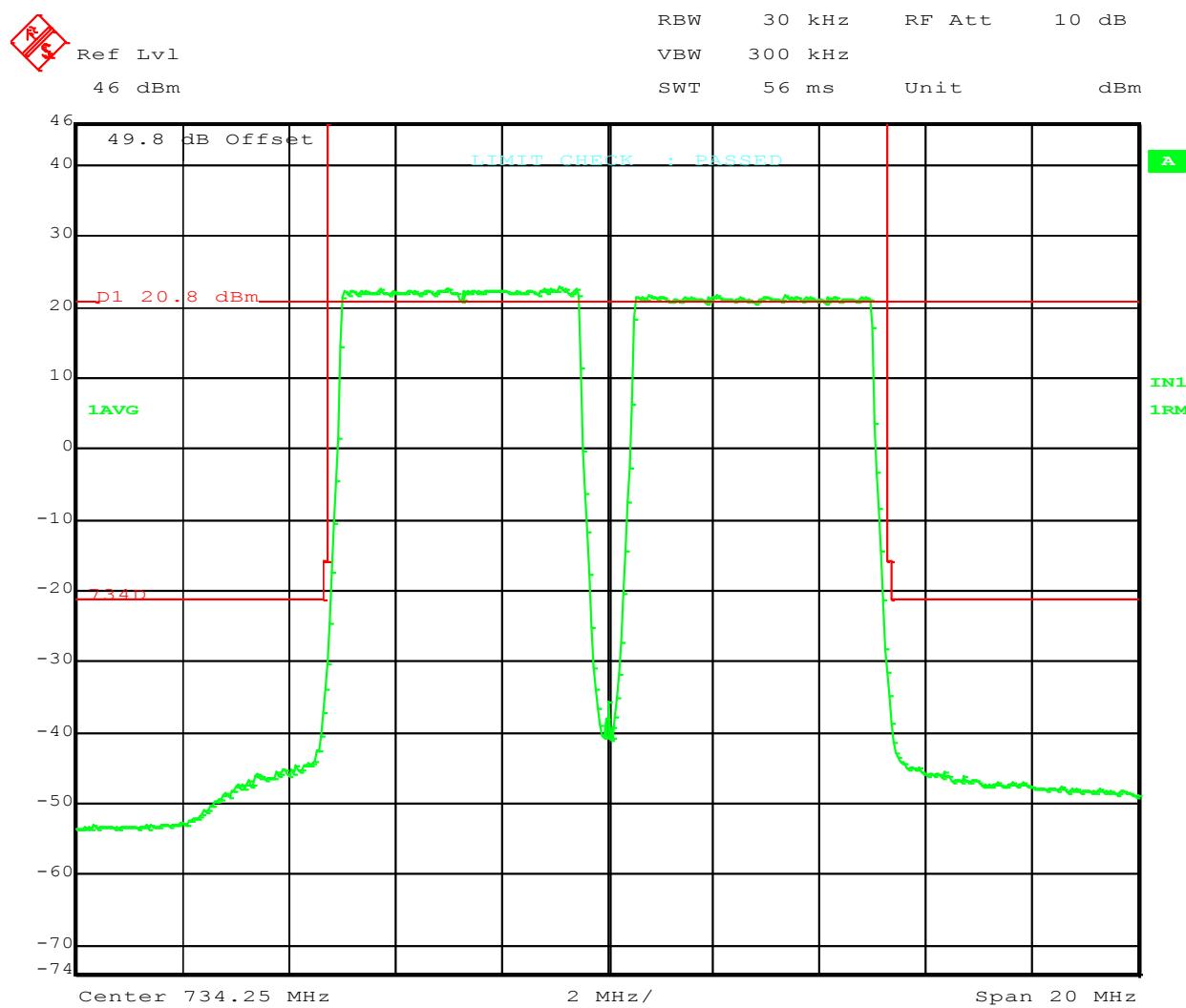
Submitted is one out-of-band emission plot for each carrier bandwidth which has the least margin among all blocks evaluated for each QPSK, 16QAM and 64QAM modulation. The limits specified in FCC Part 27.53(g) are displayed in the plots where 3dB margin for 2x2 MIMO is included.

From the out-of-band emissions plots attached below, it can be seen that all the emissions are under the required FCC emission masks for MIMO operation.

**Results:**

The measurement results of the out-of-band emissions demonstrate the full compliance with the Rules of the Commission for the operating band.

FIGURE 4.3.2 WORST CASE OUT-OF-BAND EMISSIONS PLOT



#### 4.4 Section 2.1051 - MEASUREMENT REQUIRED: SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS

This test measures the emissions of spurious signals which may come from harmonic, parasitic, intermodulation and frequency conversion products and are outside the necessary bandwidth but exclude out-of-band emissions.

The out-of-block spurious emissions at the antenna transmitting terminal were investigated from 10 MHz to the 10<sup>th</sup> harmonic of the carrier, per Section 2.1057(a)(1).

The measurement configurations and carrier setup were same as in Section 4.3. The emission limits and the setting of measurement equipment for the unwanted emissions measurement were given in Table 4.3.3 and Table 4.4.1. Per FCC CFR 47, Sections 2.1051 and 2.1057(c), the spurious emissions attenuated more than 20 dB below the permissible value need not be reported.

**Table 4.4.1 Conducted Spurious Emissions Limit**

| Frequency of Emission (MHz) | Required Limit (2x2 MIMO) (dBm) | Reportable Limit (dBm) | Detector/RBW   |
|-----------------------------|---------------------------------|------------------------|----------------|
| 10 - 800                    | -16                             | -36                    | Average/100kHz |

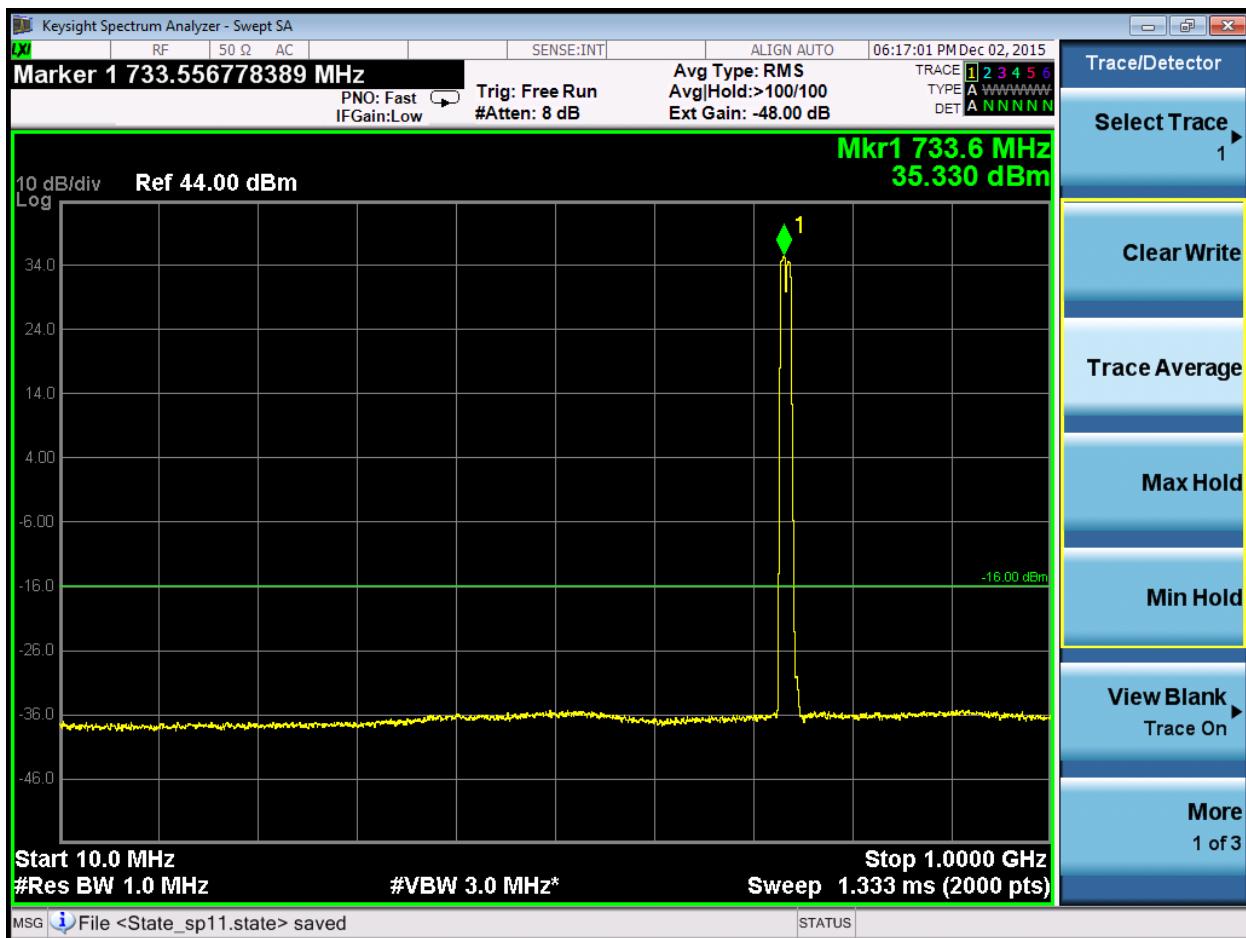
The measurements were performed with a spectrum analyzer in compliance with and calibrated in accordance with ISO 9001 process. The carrier power level at the antenna transmitting terminal was calibrated before the conducted spurious emissions testing for each test. The spectrum analyzer was set to 1MHz resolution bandwidth. The RMS detector average was used.

The spurious emissions were measured for 5+5 MHz carrier bandwidth with QPSK, 16QAM and 64QAM modulations.

##### **Results:**

Over the required frequency spectrum investigated, spurious emissions detected 20 dB below the limit was not reported. The measurements results demonstrated that the subject of the application is in full compliance with the Rules of the Commission.

### FIGURE 4.3.3 TX SPURIOUS EMISSIONS PLOTS



## TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&B, 729 – 739.5 MHz

PWR: 40 Watts; QPSK; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&B, 729 – 739.5 MHz

PWR: 40 Watts; QPSK; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&B, 729 – 739.5 MHz

PWR: 40 Watts; QPSK; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&B, 729 – 739.5 MHz

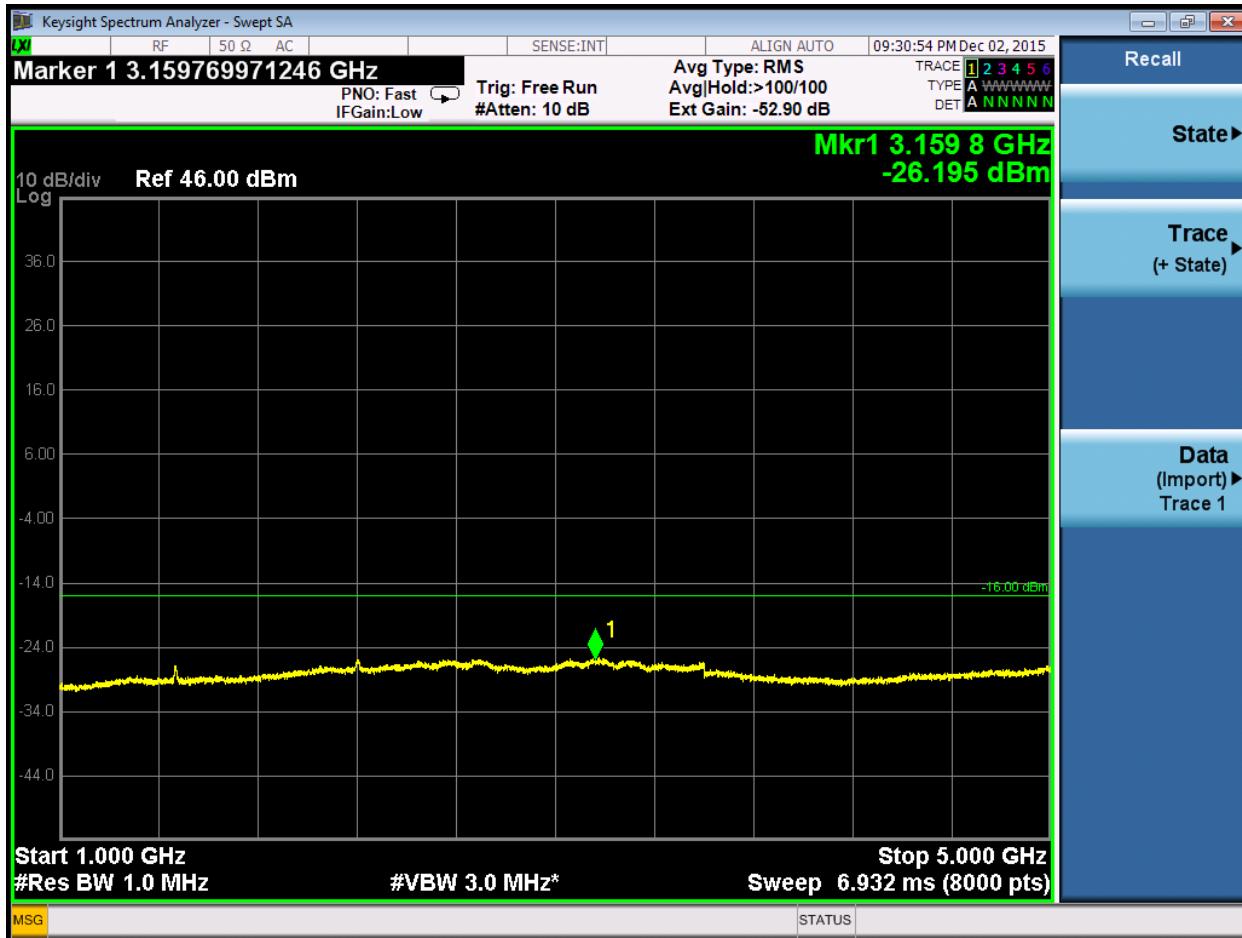
PWR: 40 Watts; 16QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&B, 729 – 739.5 MHz

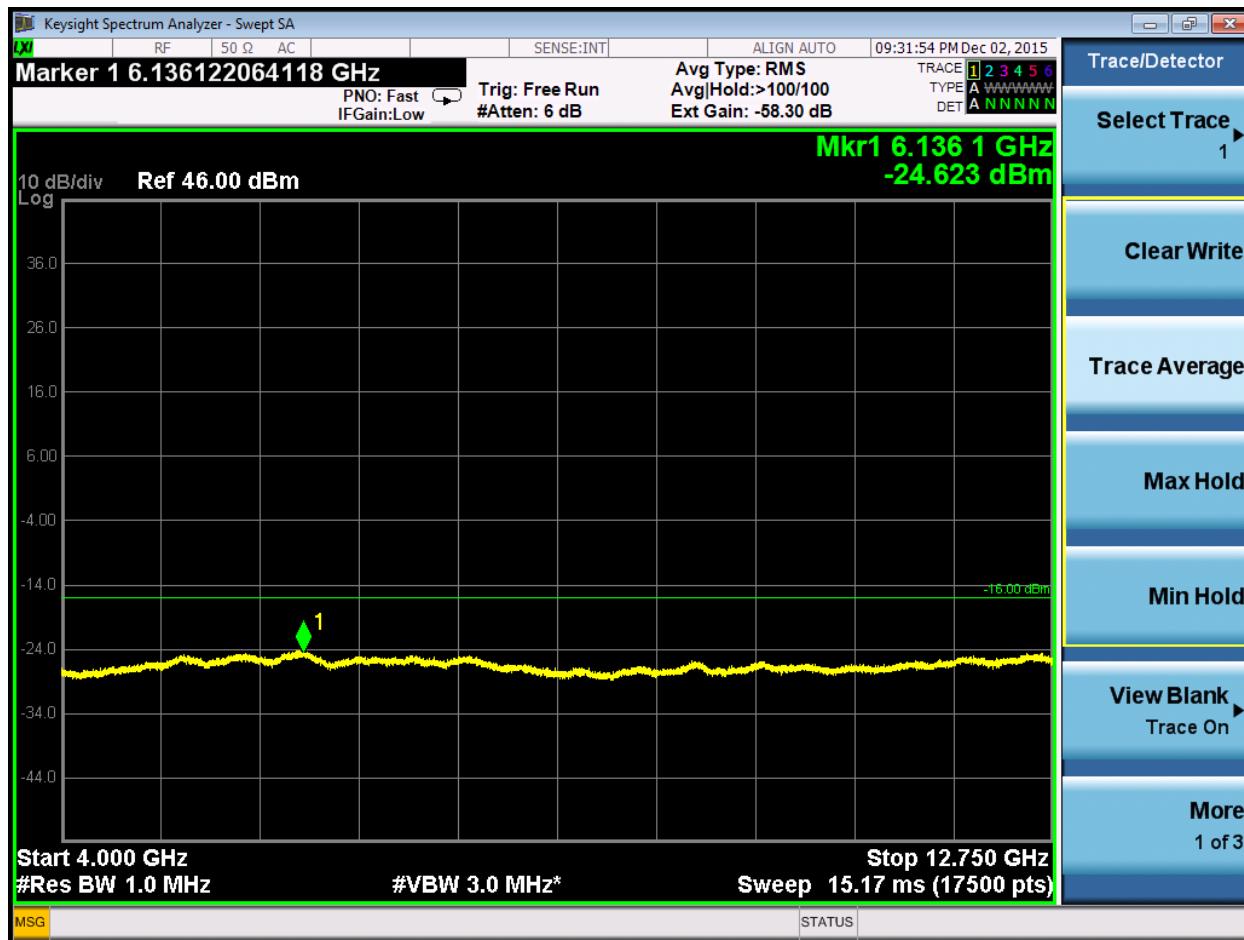
PWR: 40 Watts; 16QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&B, 729 – 739.5 MHz

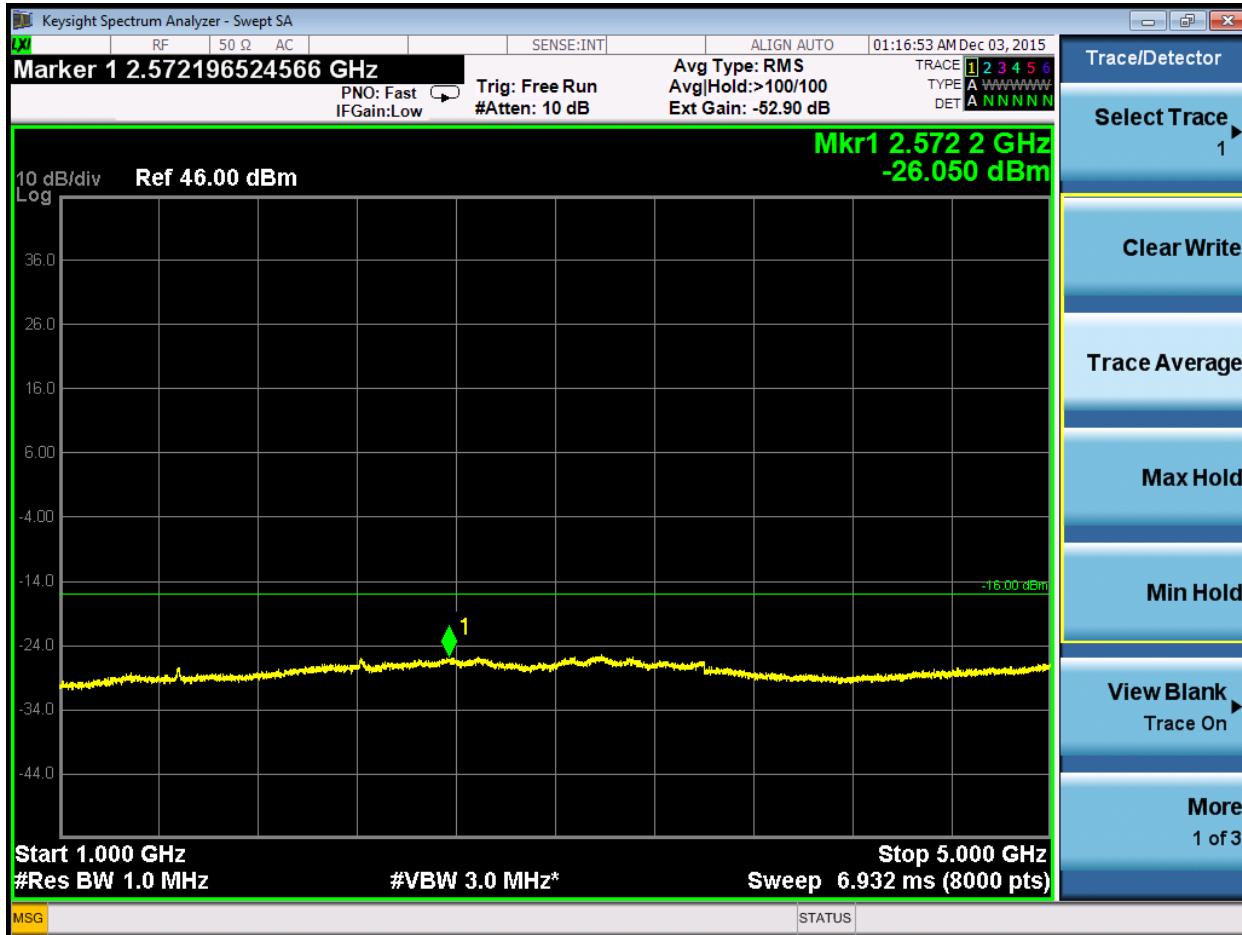
PWR: 40 Watts; 64QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&B, 729 – 739.5 MHz

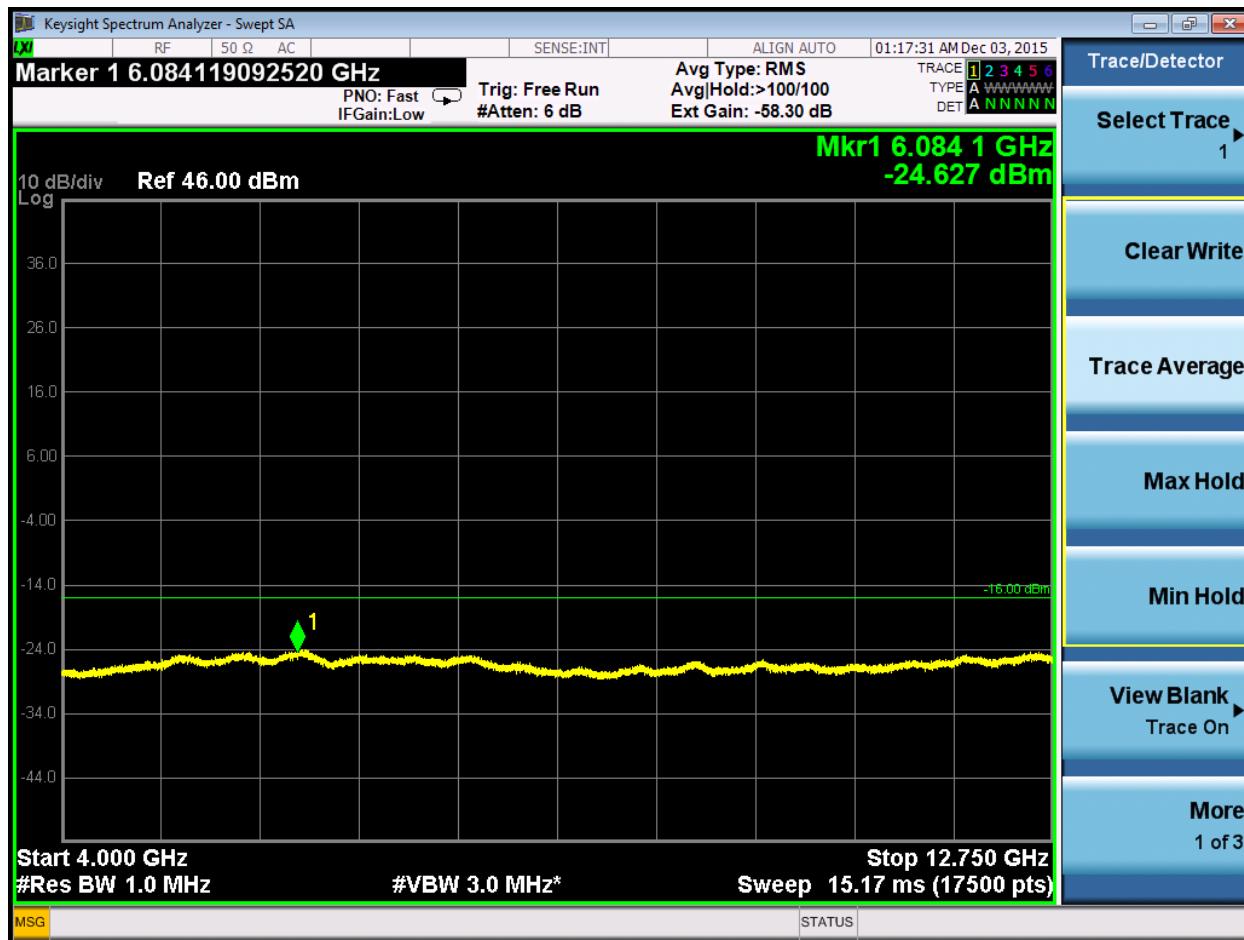
PWR: 40 Watts; 64QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK B&C, 734.5 – 745 MHz

PWR: 40 Watts; QPSK; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK B&C, 734.5 – 745 MHz

PWR: 40 Watts; QPSK; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK B&C, 734.5 – 745 MHz

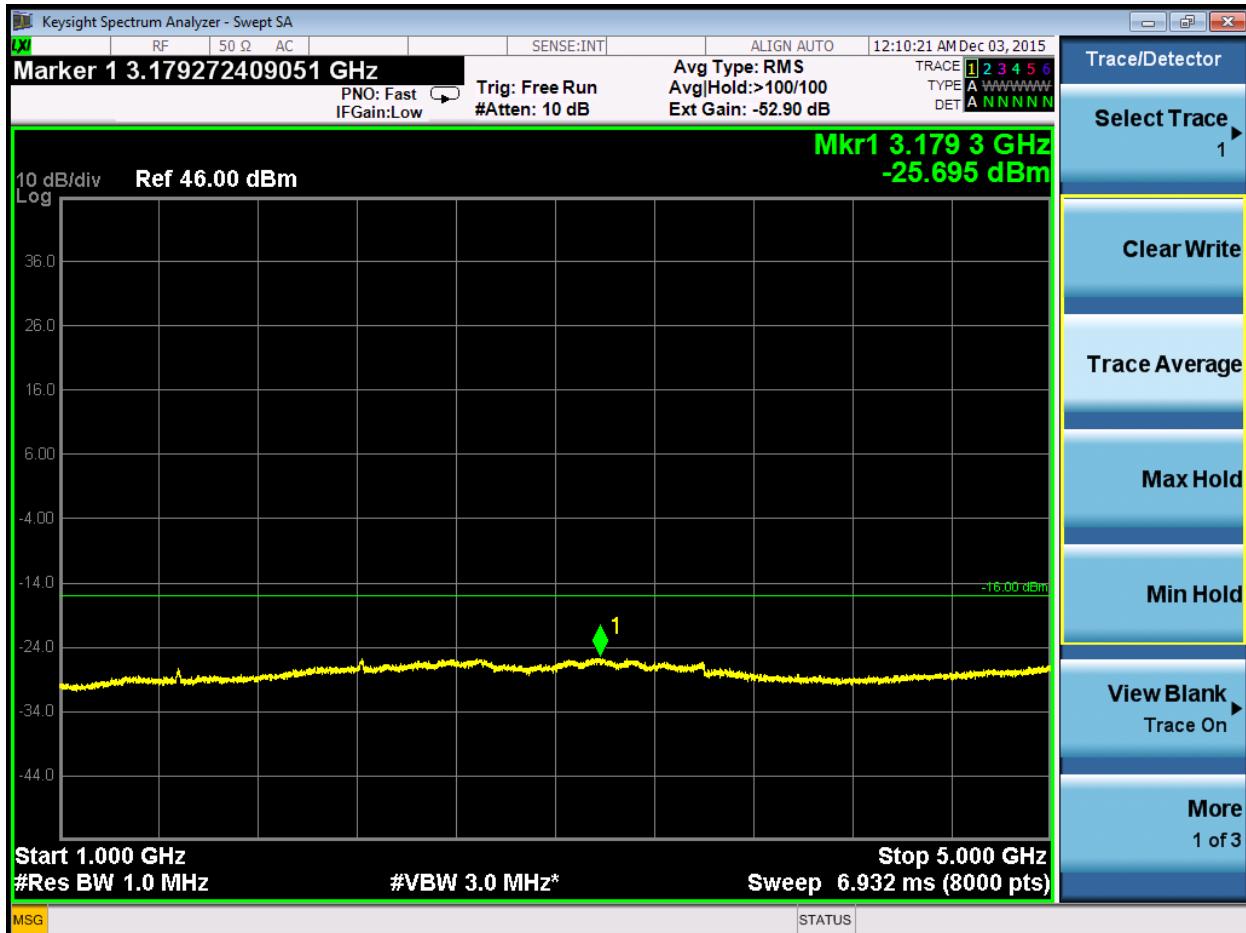
PWR: 40 Watts; 16QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK B&C, 734.5 – 745 MHz

PWR: 40 Watts; 16QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK B&C, 734.5 – 745 MHz

PWR: 40 Watts; 64QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK B&C, 734.5 – 745 MHz

PWR: 40 Watts; 64QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&C, 729 – 745 MHz

PWR: 40 Watts; QPSK; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&C, 729 – 745 MHz

PWR: 40 Watts; QPSK; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&C, 729 – 745 MHz

PWR: 40 Watts; 16QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&C, 729 – 745 MHz

PWR: 40 Watts; 16QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&C, 729 – 745 MHz

PWR: 40 Watts; 64QAM; FCC PRT 27; FCCID: AS5BBTRX-06



TX SPURIOUS EMISSIONS; TEST ENGINEER: SEG; CLASS II CHANGE

LTE RRH 2x40-07L-AT (5+5 MHz); BLK A&C, 729 – 745 MHz

PWR: 40 Watts; 64QAM; FCC PRT 27; FCCID: AS5BBTRX-06

#### **4.5 Section 2.1055 - MEASUREMENT REQUIRED: FREQUENCY STABILITY**

**Data was previously submitted during the original filing process. For this Class II Permissive Change filing, new data is not required.**

## 4.6 Section 2.1053 - MEASUREMENT REQUIRED: FIELD STRENGTH OF SPURIOUS RADIATION

This measurement evaluates the spurious emissions that may be radiated directly from the EUT cabinet, circuits or power leads under normal conditions of installation and operation. The EUT shall be investigated from 30 MHz to the 10<sup>th</sup> harmonic of the carrier, per Section 2.1057(a)(1).

The EUT transmits in the 729-745 MHz frequency band with LTE technology and 2x2 MIMO. It was configured as in the normal mode of the installation and operation with the maximum power output per Table 4.6.1. The test model used for configuring the LTE carrier was described in Section 4.3. All carriers were transmitting to non-radiating 50 Ω resistive loads.

**Table 4.6.1 EUT Configurations**

| Config No | No of Carriers/Port | Tx1 Freq. (MHz)    | Tx2 Freq. (MHz)      | Power/c (dBm) | Carrier BW (MHz) | Modulations |
|-----------|---------------------|--------------------|----------------------|---------------|------------------|-------------|
| 1         | 2                   | 729-734, 740 - 745 | 729 - 734, 740 - 745 | 20            | 5+5              | QPSK/64QAM  |
|           |                     |                    |                      |               |                  |             |

The emission limits and the setting of the measurement equipment for the spurious emissions test given in Section 4.3. FCC sections 2.1051 and 2.1057(c) specify that the spurious emissions attenuated more than 20 dB below the permissible value need not be reported. By using the relation between the electric field strength of an ideal dipole and its excitation power given in Reference Data for Radio Engineers, page 676, 4<sup>th</sup> edition, ITT Corp., the emission limit calculated for electric field strength and its reportable limit equal:

**Table 4.6.2 Calculated Radiated Spurious Emission Limit in Electrical Field Strength**

| Frequency Range (MHz) | Measurement Distance (m) | Required E Limit (2x2 MIMO) (dB $\mu$ V/m) | Reportable E Limit (dB $\mu$ V/m) | Detector/RBW |
|-----------------------|--------------------------|--|-----------------------------------|--------------|
| 10 - 8000             | 3                        | 81.1                                       | 61.1                              | Average/1MHz |

The field strength of radiated spurious emissions measured was determined by

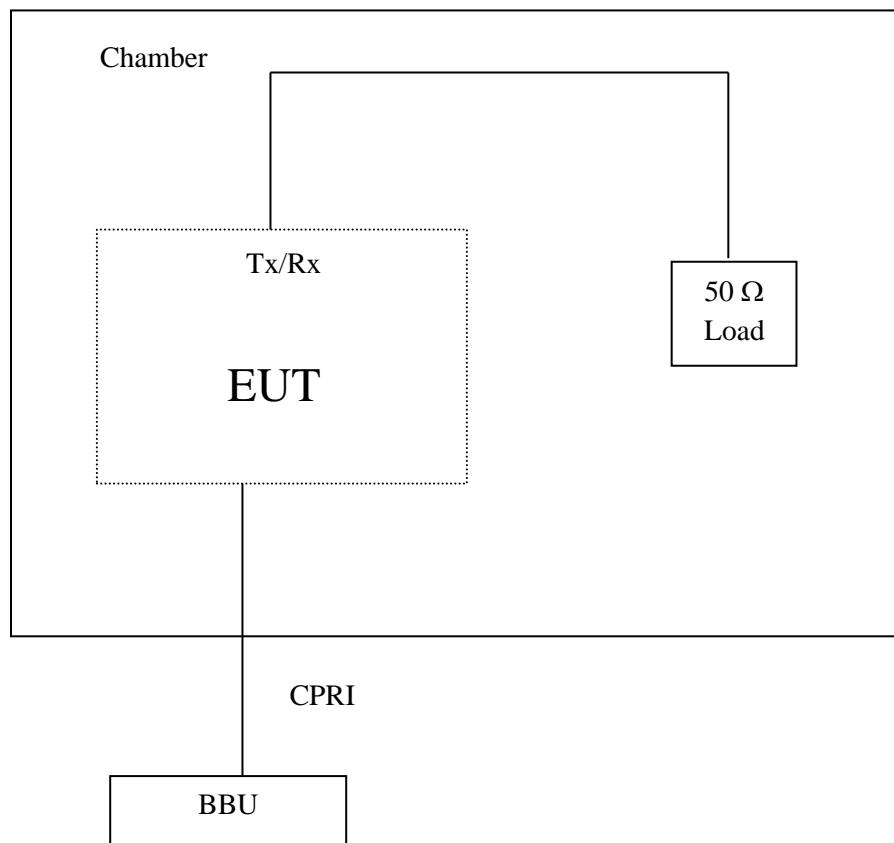
$$E (\text{dB}\mu\text{V}/\text{m}) = V_{\text{meas}} (\text{dB}\mu\text{V}) + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}.$$

Field strength measurements of radiated spurious emissions were made at a semi anechoic room of Global Product Compliance Laboratories of Alcatel-Lucent Murray Hill which was detailed in Section 6. The recommendations of ANSI C63.4 were followed for EUT testing setup, cabling, and measurement approach and procedures. All the measurement equipment used, including antennas, was calibrated in accordance with ISO 9001 process. The EUT setup diagram is given in the Figure 4.6.1. The minimum margin measured per Table 4.6.2 is more than 20dB.

**Results:**

Over the required frequency spectrum investigated, spurious emissions detected 20 dB below the limit was not reported. The measurements results demonstrated that the subject of the application is in full compliance with the Rules of the Commission.

**Figure 4.6.1 Test Set-Up for Measurement of Radiated Spurious Emissions**



## 5. TEST EQUIPMENT

Table 5.1 List of Test Equipment

| Manufacturer          | Model     | Serial Number | Type               | Description                           | GPCL ID | Last Cal   | Interval | Status |
|-----------------------|-----------|---------------|--------------------|---------------------------------------|---------|------------|----------|--------|
| Rohde & Schwarz       | ESI       | DE25338       | Test Receiver      | EMI Test Receiver 20Hz-26.5GHz        | E1190   | 6/19/2014  | 24       | Active |
| Sonoma Instrument Co. | 310N      | 185826        | Amplifier          | 9KHz-1GHz                             | E512    | 1/24/2014  | 24       | Active |
| Weinschel             | 2-6       | BX3430        | Attenuator         | 6 dB DC-18GHz 5 Watt                  | E887    | 3/5/2014   | 24       | Active |
| Extech                | SD700     | Q668960       | Data Logger        | Pressure Humidity Temp data logger    | E1119   | 8/6/2014   | 24       | Active |
| ETS Lindgren          | 3117      | 00135198      | Horn Antenna       | Double-Ridged Waveguide Horn 1-18 GHz | E1073   | 12/10/2014 | 24       | Active |
| A.H. Systems Inc.     | SAS-521-2 | 408           | Biological Antenna | 25 - 2000 MHz                         | E601    | 2/13/2015  | 24       | Active |
| Hewlett Packard       | 8449B     | 3008A00426    | Pre-Amplifier      | Preamplifier 1-26.5 GHz               | E123    | 11/20/2015 | 24       | Active |

## 6. FACILITIES AND ACCREDITATION

All measurement facilities at Alcatel-Lucent Global Product Compliance Laboratory (GPCL) used to collect the measurement data in the test report are located at 600-700 Mountain Avenue, Murray Hill, New Jersey 07974-0636 USA.

The field strength measurements of radiated spurious emissions are made in a FCC registered three meter semi-anechoic chamber AR6 (FCC Site Registration Number: 353147 which is maintained by Alcatel-Lucent in Murray Hill, New Jersey. The sites were constructed and are continuously in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

Alcatel-Lucent Global Product Compliance Laboratory is accredited with the US Department of Commerce National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with criteria established in Title 15, Part 7 Code of Federal Regulations for offering test services for selected test methods in Electromagnetic Compatibility; Voluntary Control Council for Interference (VCCI), Japan; Australian Communications and Media Authority (ACMA). The laboratory is ISO 9001:2008 Certified.

United States Department of Commerce  
National Institute of Standards and Technology



## Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100275-0

**Alcatel-Lucent, Global Product Compliance Lab**  
Murray Hill, NJ

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:*

### **Electromagnetic Compatibility & Telecommunications**

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).*

2015-09-14 through 2016-09-30

Effective Dates



For the National Voluntary Laboratory Accreditation Program

A handwritten signature in blue ink, appearing to read 'Warren R. Mankin'.