

EXHIBIT 9**TEST REPORT**

This test report presents the measurement data required by the Commission for certifying the Class II Permissive Change of the Alcatel-Lucent 1900 RRH 2x60 Distributed Base Station with a new RF power amplifier 1900A, subject of this application, for LTE application and operation in the domestic PCS A, B, C, D, E and F bands (1930-1990MHz), E-UTRAN Band II, under AS5ONEBTS-27.

As stated before, the distributed wireless RRH base station system is comprised of two separate modules 1) the BBU and 2) the RRH. These two modules are interconnected by CPRI through optic fiber or metallic coax cables. All RF functionality is contained in the RRH, including transceiver, power amplifier and transmitting and receiving filters. The BBU provides the digital I and Q baseband signals, plus the timing reference signal to the RRH. The BBU and RRH units can be co-located or remotely located.

The 1900 LTE RRH 2x60W has two transmitting antenna ports and supports transmit diversity and/or 2x2 MIMO operation. The 1900 LTE RRH 2x60W can provide up to 60 Watts (47.8dBm) per LTE carrier (5MHz or 10MHz bandwidth carriers), 60 Watts (47.8dBm) per port and 120 Watts (50.8dBm) per RRH at the base station transmitting antenna terminals. The 1900 LTE RRH 2x60W is powered by -48VDC and available in indoor and outdoor versions.

As stated before, the RF transceiver of RRH 2x60 1900A LTE is identical to that of RRH 2x60 1900 LTE. Only the 1900 RF power amplifier and the Tx/Rx filter were replaced. In RRH 2x60 1900A, in addition to the change in RF power amplifier and Tx/Rx filter, there are no modifications in the transmitting and receiving frequency ranges, the basic carrier frequency determining circuitry, the basic modulation circuit, the network interface circuitry and RF transceiver which were certified under AS5ONEBTS-27 for the RRH 2x60 1900 LTE. Therefore, only the characteristics impacted by the RF power amplifier and Tx/Rx filter changes were evaluated.

All testing results submitted in this report were performed on the -48VDC RRH 2x60 1900A LTE during the period of May 8~ June 11, 2013. The above RRH 2x60 1900A LTE passed FCC Part 15 Class A radiated emissions requirements.

The measurement results have demonstrated that Alcatel-Lucent 1900 2x60W LTE RRH with 1900A RF power amplifier is in full compliance with the Rules of the Commission.

SUBEXHIBIT 9.1**Section 2.1033 (c)(14) REQUIRED MEASUREMENT DATA**

The required measurement data is presented in the following exhibits as follows:

SUBEXHIBIT 9.2	Section 2.1046	Measurements Required: RF Power Output
SUBEXHIBIT 9.3	Section 2.1049, 24.238	Measurements Required: Occupied Bandwidth and Out-of-Band Emissions
SUBEXHIBIT 9.4	Sections 2.1051, 24.238	Measurements Required: Spurious Emissions at Antenna Terminals
SUBEXHIBIT 9.5	Sections 2.1053, 24.238	Measurements Required: Field Strength of Spurious Radiation
SUBEXHIBIT 9.6	Section 2.947	List of Test Equipment Used

SUBEXHIBIT 9.2**Section 2.1046 MEASUREMENT REQUIRED: RF POWER OUTPUT**

This test is a measurement of the total RF power level transmitted at the antenna-transmitting terminal (J4), as shown in the accompanying test set-up diagram. The radio was tuned to a channel which is transmitting in the 1930-1990 MHz frequency band. The power level of the base station was calibrated to allow the base station to operate at the manufacturer's maximum rated mean power level, i.e., +47.8dBm (60W) per carrier for LTE, +47.8 dBm (60W) per port and +50.8dBm (120W) per unit at the antenna-transmitting terminal.

For LTE, the RF power output with QPSK, 16QAM and 64QAM modulation were measured respectively.

Power measurements were made with a Power Meter in the average mode. The test set-up for conducting the RF power output measurement is shown in the following figure. Before the testing was started, the Base Station was given a sufficient "warm-up" period as required.

The maximum rated mean power at the antenna transmitting terminal was measured for a single carrier (both 5MHz and 10MHz bandwidth) with LTE technology across the PCS band 1930-1990MHz. The RF power output measured for each configuration was shown as "Ref Lvl" in the plots provided in SubExhibit 9.3.

For 5MHz bandwidth carrier, two carriers which correspond to the lowest and highest carriers in each A, B and C bands and one carrier in each D, E and F bands were measured with QPSK, 16QAM and 64QAM modulations, respectively.

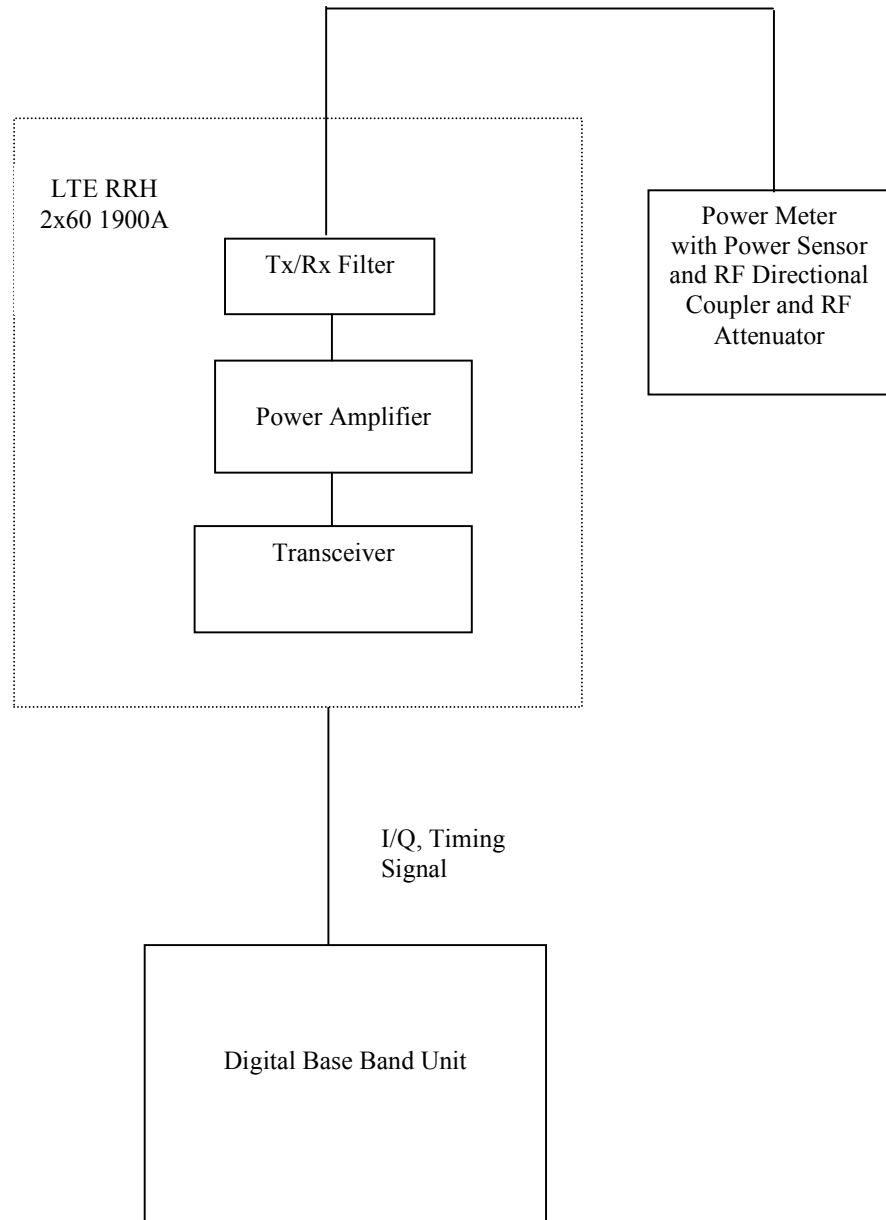
For 10MHz bandwidth carrier, two carriers which are near the low band edge and the high band edge in each A, B and C bands were measured with QPSK, 16QAM and 64QAM modulations, respectively.

The Peak-to-Average Power Ratio (PAPR) of RRH 2x60 1900A has also been selectively reverified per KDB 971168 procedures for both 5MHz and 10MHz carriers. The PAPR values (0.1% probability) of RRH 2x60 1900A measured are consistent with that of RRH 2x60 1900 and all are below 13dB.

Results:

The maximum rated mean RF power outputs of the Alcatel-Lucent RRH 2x60 1900A LTE at its antenna transmitting terminals across the PCS frequency band 1930 – 1990 MHz measured are 60W (+47.8 dBm) per carrier, 60W (+47.8 dBm) per port and 120W (+50.8dBm) per unit, within ± 1 dB derivation, and are in full compliance with the Rules of the Commission.

**FIGURE 9.2.1 TEST SET-UP FOR MEASUREMENT OF
RADIO FREQUENCY POWER OUTPUT**



SUBEXHIBIT 9.3

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

The 1900 LTE 2x60W RRH transmits in the domestic 1900 Band (Tx: 1930-1990 MHz and Rx: 1850-1910 MHz) with LTE and 2x60W.

The two 60MHz bandwidth PCS spectrum is divided into 6 blocks (A, B, C, D, E and F) as shown in the following table.

Table 9.3.1 PCS Bands

PCS Blocks	Tx Frequency (MHz)	Rx Frequency (MHz)	Bandwidth (MHz)
A	1930 - 1945	1850 - 1865	15
B	1950 - 1965	1870 - 1885	15
C	1975 - 1990	1895 - 1910	15
D	1945 - 1950	1865 - 1870	5
E	1965 - 1970	1885 - 1890	5
F	1970 - 1975	1890 - 1895	5

The 1900 LTE RRH 2x60W Distributed Base station system supports one-carrier and multiple-carrier configurations per transmitting path with LTE technology. However, the current software release supports one 5MHz or one 10MHz LTE single carrier per transmitting path only.

The occupied bandwidth and out-of-band emissions measurements were made at the antenna transmitting terminal (J4) at the lowest and highest available channels in each of the PCS A, B and C frequency bands and one carrier (5MHz) in each D, E and F bands, for both 5MHz and 10MHz LTE carriers with QPSK, 16QAM and/or 64QAM modulations, respectively. At each of the carrier frequencies, the carrier power level at the antenna terminal was calibrated to the maximum rated mean power +47.8 dBm (60W) per carrier per port.

The minimum emission requirements and the setting of measurement equipment for the occupied bandwidth measurement of a 1900 carrier were specified in FCC Part 24.238. The FCC's requirements are tabulated in the following table, where MIMO requirement/margin is not included.

Table 9.3.2 FCC Part 24.238 Transmitter Unwanted Emission Limits

Frequency	Required Minimum Attenuation below the Mean Carrier Power P	Minimum Resolution Bandwidth of Spectrum Analyzer
1MHz Bands Immediately Outside the Transmitting Frequency Band	$(43 + P \text{ dBW}) \text{ dBc}$	50kHz for 5MHz carrier and 100kHz for 10MHz carrier
Outside the above Frequency Range	$(43 + P \text{ dBW}) \text{ dBc}$	1 MHz

The requirement of FCC Part 24.238 was used as the required emission limit mask in the LTE measurement. For 2x2 MIMO operation, a 3dB ($=10\log 2$) margin is required for the emissions measured on one port.

The measurements were performed with a Rohde & Schwarz EMI Receiver, which was calibrated in accordance with ISO 9001 process. The test set-up diagram is same as the one shown in the Figure 9.3.1.

For the 99% occupied bandwidth measurement, the spectrum analyzer was set with a span up to 20 MHz.

For the out-of-band emissions measurement, the spectrum analyzer was set with a 40MHz span. The emissions outside the above span were evaluated in Measurement Required: Spurious Emissions at Antenna Terminals.

For a 5MHz LTE carrier measurement, the spectrum analyzer was set with a 50 kHz resolution bandwidth as shown in the plot of the occupied bandwidth measurement attached in the following pages. The top of the spectrum analyzer display reticule, i.e., Ref Lvl, was set to the maximum mean output power of the LTE carrier if measured with a resolution bandwidth greater than the carrier bandwidth 5 MHz. Thus the maximum mean output power of the LTE carrier, measured with a 50 kHz resolution bandwidth, aligns with the top of the spectrum analyzer display reticule (Ref Lvl) minus 20dB for a 5MHz carrier. The 20 dB offset for a 5MHz LTE carrier was due to the fact that $10 \log (50\text{kHz}/5\text{MHz}) = -20 \text{ dB}$.

For a 10MHz LTE carrier measurement, the spectrum analyzer was set with a 100 kHz resolution bandwidth as shown in the plots of the occupied bandwidth measurement attached in the following pages. The top of the spectrum analyzer display reticule, i.e., Ref Lvl, was set to the maximum mean output power of the LTE carrier if measured with a resolution bandwidth greater than the carrier bandwidth 10 MHz. Thus the maximum mean output power of the LTE carrier, measured with a 100 kHz resolution bandwidth, aligns with the top of the spectrum analyzer display reticule (Ref Lvl) minus 20dB for a 10MHz carrier. The 20 dB offset for a 10MHz LTE carrier was due to the fact that $10 \log (100\text{kHz}/10\text{MHz}) = -20 \text{ dB}$.

Two 99% Occupied Bandwidth plots were submitted which have the largest bandwidth among all the modulations QPSK, 16QAM and 64 QAM evaluated for a 5MHz LTE carrier and a 10MHz LTE carrier, respectively.

One emission plot is submitted for each 5MHz carrier and 10MHz carrier, respectively, which has the least margin among all PCS channels with QPSK, 16QAM or 64QAM modulations evaluated. The limits specified in FCC Part 24.238 are displayed in the plots. From the worst occupied bandwidth and out-of-band plots attached in the following, it can be seen that all the waveforms measured on one antenna port are under the required FCC emission mask with more than 3dB margin.

Results:

The occupied bandwidth and out-of-band emissions measured on one antenna port are under the required FCC emission mask with more than 3dB margin. The measurement results demonstrate the full compliance with the Rules of the Commission at the lowest, middle and highest channels of PCS band for 2x2 MIMO operation.

FIGURE 9.3.1 TEST SET-UP FOR MEASUREMENT OF OCCUPIED BANDWIDTH AND OUT-OF-BAND EMISSIONS

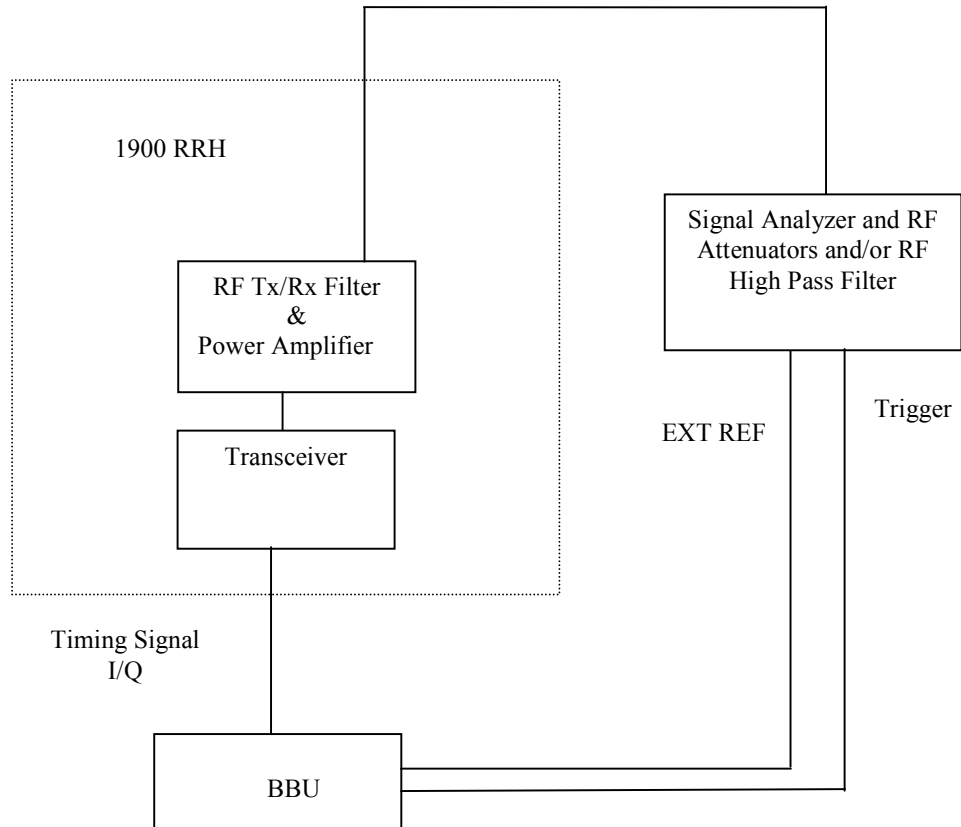


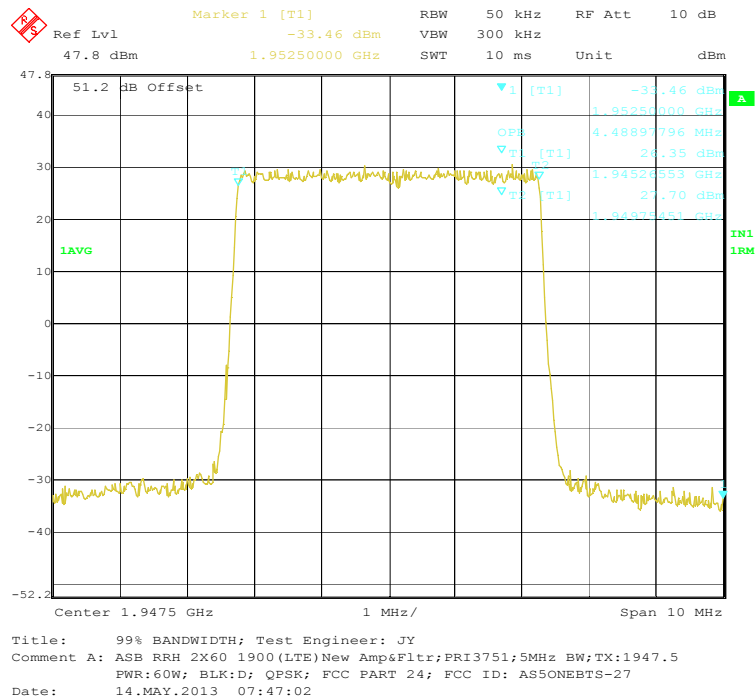
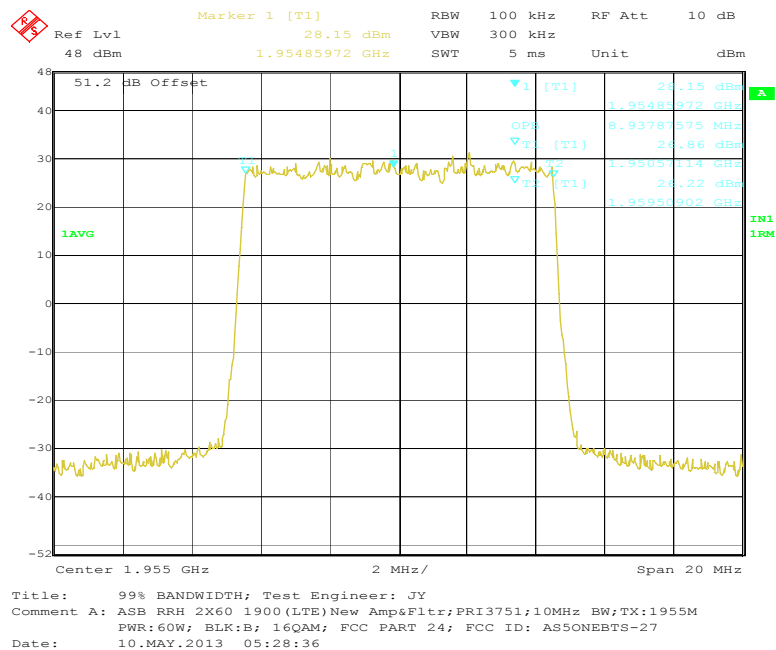
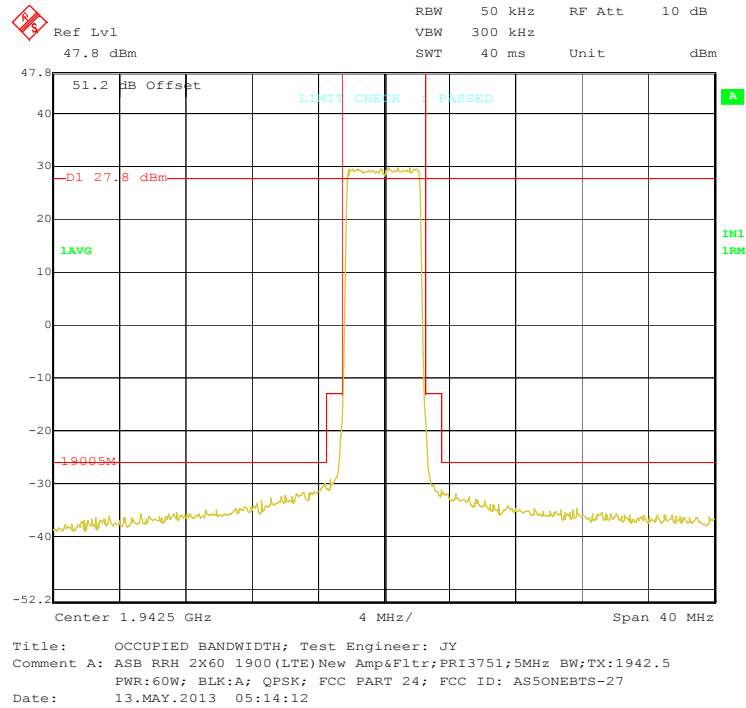
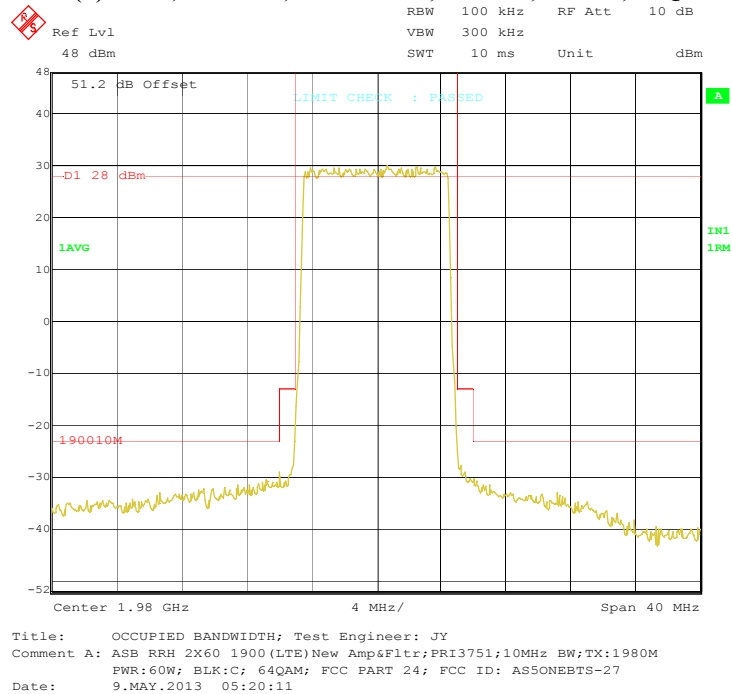
FIGURE 9.3.2 99% OCCUPIED BANDWIDTH PLOTS**(a) 5MHZ LTE CHANNEL 1947.50 MHz D BAND WITH QPSK MODULATION — 4.49MHZ****(b) 10MHZ LTE CHANNEL 1955 MHz B BAND WITH 16QAM MODULATION — 8.94MHZ**

FIGURE 9.3.3 OCCUPIED BANDWIDTH AND OUT-OF-BAND EMISSIONS PLOTS**(a) LTE, A BAND, 1942.50MHZ, 5MHZ, 60W/C, QPSK****(b) LTE, C BAND, 1980.0MHZ, 10MHZ, 60W/C, 64QAM**

SUBEXHIBIT 9.4**Section 2.1051 MEASUREMENT REQUIRED: SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS**

The out-of-block spurious emissions at the antenna transmitting terminal were investigated from 10 MHz to the 10th harmonic of the carrier or 20 GHz, per Section 2.1057(a)(1).

The carrier setup and configurations are same as in Sub-exhibit 9.3.

The emission limitations and the setting of measurement equipment for the unwanted emissions measurement of 5MHz or 10MHz LTE carrier were specified in 24.238 and provided in Sub-exhibit 9.3.

For the mean output power of +47.8 dBm (60 W) at J4, the required spurious emissions attenuation per $(43 + P \text{ dBW}) \text{ dBc}$, is 60.8dBc. FCC CFR 47, 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. So the reportable limit is -80.8 dBc. For 2x2 MIMO operation, an additional 3dB ($=10\log 2$) margin is required for the emissions measured on one port.

The measurements were performed with a Rohde & Schwarz EMI Receiver, which was calibrated in accordance with ISO 9001 process. The test set-up diagram is given in the Figure 9.3.1.

The spurious emissions measurement was made at the antenna transmitting terminal (J4) at the lowest and highest available channels in each of the PCS A, B and C frequency bands and one carrier (5MHz) in each D, E and F bands, for both 5MHz and 10MHz LTE carriers with QPSK, 16QAM and/or 64QAM modulations, respectively. 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 a 1MHz resolution bandwidth. The r.m.s detector was used.

The spurious emissions evaluated in the frequency range of 10MHz to 20GHz are well under the required emission limit with more than 23dB margins. Therefore, there are no reportable emissions.

Results:

The out-of-block spurious emissions of the Alcatel-Lucent RRH 2x60 1900A LTE with 2x2 MIMO operation in the entire spectrum investigated (10MHz to 20GHz) are under the required emission limit with sufficient margins. The measurement results demonstrate that the subject of the application is in full compliance with the Rules of the Commission.

SUBEXHIBIT 9.5**Section 2.1053 MEASUREMENT REQUIRED: FIELD STRENGTH OF SPURIOUS RADIATION**

The field strength measurements of radiated spurious emissions were made in a FCC (Site Registration Number: 515091) and IC (Filing Number: 6933F-5) registered three meter semi-anechoic chamber AR-5 which is maintained by Alcatel-Lucent in Murray Hill, New Jersey.

The -48VDC LTE 1900 2x60W RRH with new 1900A RF amplifier was investigated from 30 MHz to the 10th harmonic of the carrier or 20 GHz, per Section 2.1057(a)(1). The equipment under test (EUT) was configured as in the normal mode of the installation and operation. The recommendations of ANSI C63.4-2009 were followed for EUT testing setup and cabling.

The base station was configured to transmit one 5MHz LTE carrier on each Tx1 and Tx2 with the maximum mean power of 60W each. The test models used for configuring LTE carriers were described in Sub-exhibit 9.2. All carriers were transmitting to non-radiating 50 Ω resistive loads.

The emission limitations and the setting of measurement equipment for the conducted spurious emissions measurement of a 1900 carrier were specified in 24.238 and shown in Sub-Exhibit 9.2.

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, 4th edition, ITT Corp., the emission limit calculated equals

Frequency of Emission (MHz)	Separation Distance (m)	E (dB μ V/m)	Detector/RBW
10-20,000	3	84.1	Average/1MHz

The field strength of radiated spurious emissions measured was determined by

$$E \text{ (dB}\mu\text{V/m)} = V_{\text{meas}} \text{ (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB1/m)}.$$

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. Therefore, the reportable limit with a 3dB for 2x2 MIMO operation at 3 meter is 61.1 dB μ V/m.

All the measurement equipment used, including antennas, was calibrated in accordance with ISO 9001 process. The EUT setup diagram is given in the Figure 9.6.1.

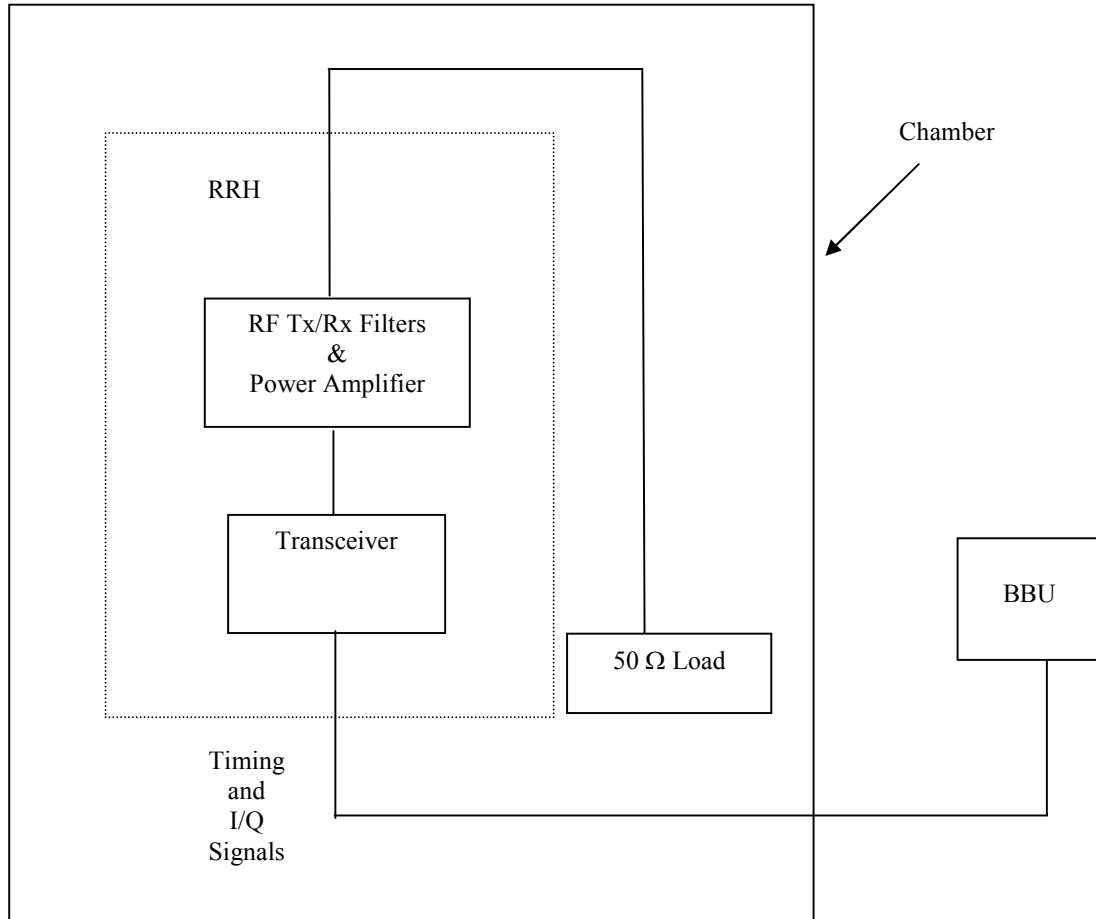
The spurious emissions evaluated are well under the required reportable emissions limit specified in Section 24.238. Therefore, there are no reportable emissions.

The above 1900 2x60W LTE RRH passed FCC Part 15 Class A radiated emissions requirements as well.

Results:

Over the frequency spectrum investigated (30MHz to 20GHz), no reportable radiated spurious emissions were detected. The measurement results of the Alcatel-Lucent RRH 2x60 1900A LTE, subject of this application, demonstrate the full compliance with the Rules of the Commission.

FIGURE 9.5.1 EUT FOR MEASUREMENT OF RADIATED SPURIOUS EMISSIONS



SUBEXHIBIT 9.6**Section 2.947 LISTING OF TEST EQUIPMENT USED**

Equipment	Manufacturer	Model	Serial No.	Calibrated Date	Due Cal. Date
Power Meter	HP	437B	3125U21135	10/2/2012	10/2/2013
Power Sensor	HP	8481A	MY41096522	2/27/2013	3/27/2014
EMI Test Receiver (20Hz to 40 GHz)	Rohde & Schwarz	ESIB40	100121	3/7/2013	3/7/2014
EMI Test Receiver (20Hz to 40 GHz)	Rohde & Schwarz	ESIB40	100121	3/7/2013	3/7/2014
Spectrum Analyzer 9kHz-22GHz	Agilent	8593E	4105A04615	7/24/2012	7/24/2013
Attenuator 6dB (25W)	Weinschel	2-6	BX3438	3/1/2013	3/1/2014
Attenuator 10dB (25W)	Weinschel	46-10-34, E1096	CB9725	5/16/2012	5/16/2013
Attenuator (50 W)	Weinschel	47-30-34, E796	BX1061	9/27/2012	9/27/2013
Attenuator (150W)	Weinschel	66-20-34, E 815	BW7320	3/27/2013	3/27/2014
PCS High Pass Filter	Trilithic	5HC2850/216-00-1.8-LK	2008022154	NA	NA
Directional Coupler (2-18GHz)	HP	772D, E371	2839A01006	N/A	N/A
Biological Antenna 25-2000MHz	A.H. Systems	SAS-521-2	408	2/15/2013	2/15/2015
Double Ridged Horn Ant. 1-18GHz	EMCO	3117	00135198	9/9/2012	9/9/2014
Double Ridged Horn Ant. 18-40GHz	EMC Test System	3116	2539	3/22/2013	3/22/2015
Pre-amplifier 1-26.5GHz	Hewlett-Packard	8449B	3008A00426	7/23/2012	7/23/2013
Pre-amplifier 9kHz-1GHz	Sonoma Instrument	310N	186747	8/18/2012	8/18/2013
PCS High Pass Filter (2.85-18.05GHz)	Trilithic	5HC2850/1805 0-1.8-KK	200113078	NA	