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# Report On

Radio Testing of the Nokia Solutions and Networks Oy  
AirScale Base Station RRH 2600 MHz  
Radio Access technology: E-UTRA (FDD)  
In accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 27, Industry  
Canada RSS-199 and Industry Canada RSS-GEN

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FCC ID: VBNAHHB-01      IC: 661AI-AHHB



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**REPORT ON**

Radio Testing of the Nokia Solutions and Networks Oy  
AirScale Base Station RRH 2600 MHz  
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In accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 27,  
Industry Canada RSS-199 and Industry Canada RSS-GEN

Document 75942250 Report 01 Issue 2

June 2018

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**DATED**

01 June 2018



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## **SECTION 1**

### **REPORT SUMMARY**

Radio Testing of the Nokia Solutions and Networks Oy  
AirScale Base Station RRH 2600 MHz  
Radio Access technology: E-UTRA (FDD)

In accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 27, Industry Canada RSS-199 and  
Industry Canada RSS-GEN



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## 1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Radio Testing of the Nokia Solutions and Networks Oy AirScale Base Station RRH 2600 MHz Radio Access technology: E-UTRA (FDD) in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 27, Industry Canada RSS-199 and Industry Canada RSS-GEN.

Objective	To perform Radio Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Nokia Solutions and Networks Oy
Model Number(s)	AHHB
Serial Number(s)	L1180321043
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 2 (2017) FCC CFR 47 Part 27 (2017) Industry Canada RSS-199 issue 3 (2016) Industry Canada RSS-GEN issue 5 (2018)
Order Number	90864986
Date	23 March 2018
Start of Test	15 February 2018
Finish of Test	23 April 2018
Name of Engineer(s)	Sami Riuttanen Kimmo Huuki

**This report has been up issued to Issue 2 and should be read in place of Issue 1. This report has been up issued to include a change to the embedded Nokia Test Reort.**

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## **SECTION 2**

### **DISCLAIMERS AND COPYRIGHT**

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## 2.1 DISCLAIMERS AND COPYRIGHT

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## ANNEX A

**NOKIA SOLUTIONS AND NETWORKS OY TEST REPORT NO: D564660096**



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Nokia Networks

**TEST REPORT NO: D564660096****FCC ID: VBNAHHB-01****IC ID: 661AI-AHHB**

<b>Date:</b>	Oulu 30. April 2018
<b>Pages:</b>	301
<b>Appendices:</b>	-

Equipment Under Test:	Airscale Base Station RRH 2600MHz Radio Access technology: E-UTRA (FDD)
Type:	AHHB
Manufacturer:	Nokia Solutions and Networks Oy
Address:	P.O. Box 319, Kaapelitie 4, FI-90620, Oulu, Finland
Task:	Conformance test according to the specifications mentioned below
Test Specification(s):	FCC 47 CFR part 2 (2017) and FCC 47 CFR part 27 (2017) Industry Canada RSS-199 issue 3 (2016) Industry Canada RSS-Gen issue 5 (2018)
Result:	The EUT complies with the requirements of the specification

The results relate only to the items tested as described in this test report.

**Approved by:****Date****Signature**

Jari Virta  
R&D Line Manager  
Nokia Solutions and  
Networks Oy

30. April 2018



FCC ID: VBNAHIIIB-01  
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## 1. SUMMARY

The following tests were performed according to the FCC and IC rules in order to verify the compliance of the EUT with the FCC and IC requirements:

Test No.	Measurement	FCC Rule and RSS Paragraph	Page Number of this Report	Result
1	RF Power Output Transmitter Output Power	§ 2.1046, § 27.50 RSS-199, 4.4 RSS-Gen, 6.12 SRSP-517	9	compliant
2	Modulation Characteristics	§ 2.1047, § 2.201 RSS-199, 4.1 RSS-Gen.	29	compliant
3	Occupied Bandwidth	§ 2.1049 RSS-GEN, 6.7	30	compliant
4	Spurious Emissions at Antenna Terminals Transmitter Unwanted Emission (Conducted)	§ 2.1051, § 2.1057, § 27.53 RSS-199, 4.5 RSS-Gen, 6.13	45	compliant
5	Field Strength of Spurious Radiation	§ 2.1053, § 2.1057, § 27.53, RSS-199	74	compliant
6	Transmitter Frequency Stability	§ 2.1055, § 27.54 RSS-Gen, 6.11	72	compliant
7	Receiver Spurious Emissions (Conducted)	RSS-Gen, 7	96	compliant

**Table 1 Results – Summary**

In accordance with the FCC Rule §15.3 (z) the equipment was tested with the limits that are valid for an *unintentional radiator*.

Measurements guidance: FCC OET laboratory KDB: 662911 D01 Multiple Transmitter Output v02r01 and FCC KDB 971168 D01 Power Meas License Digital Systems v03r01.

### 1.1 Test Laboratory:

Nokia Solutions and Networks Oy

Kaapelitie 4,

FI-90620, Oulu, Finland

Jari Virta

FCC Reg. No: 411251

OATS number: 661AI-1

Testing laboratory accreditation number: T297

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## 1.2 Time Schedule

Test No.	1, 2, 3, 4	5	6
Start of Test:	15.2.2018	26.2.2018	15.2.2018
End of Test:	23.4.2018	28.2.2018	23.4.2018

## 1.3 Participants

Name	Function	Signature
RF Test person (Nokia) Kimmo Huuki	Testing, Setup of EUT	
EMC Test person (Nokia) Sami Riuttanen	Test no 5, Setup of EUT	

## 2. EQUIPMENT UNDER TEST

The EUT is a LTE Base transceiver station RRH 2600 MHz with 4 power amplifiers.

The BTS performs the full RAN function of LTE system (evolved UTRA). This is sometimes referred to as collapsed RAN, where equivalent functions of former 3G BTS and 3G RNC are all integrated into BTS. BTS is connected directly to the core network via S1 interface, and to mobile stations via Air interface (Uu). In addition BTS's are optionally connected directly to each other via X2 interface for handover purposes.

The tested equipment is representative for serial production.

## 2.1 Configuration of EUT

The used different EUT configurations are shown by the following table.

Module Type	Flexi Multiradio BTS RRH 2600MHz	
Radio Access Technology	E-UTRA	
Duplex mode	Frequency Division Duplex (FDD)	
Channel Bandwidth	Single carrier 5MHz (Config A) Single carrier 10MHz (Config B) Single carrier 15MHz (Config C) Single carrier 20MHz (Config D) Dual carrier 5+5MHz (Config E) Dual carrier 10+10MHz (Config F) Dual carrier 15+15MHz (Config G) Dual carrier 20+20MHz (Config H)	
Supply Voltage	120V AC	
Frequency Bands		
Channel Bandwidth 5 MHz	Lowest tunable freq. Single carrier	2622.5 MHz
	Dual carriers	2622.5/2627.5 MHz
	Middle freq. Single carrier	2655 MHz



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	Dual carriers	2652.5/2657.5 MHz
	<b>Highest</b> tunable freq. Single carrier	2687.5 MHz
	Dual carriers	2682.5/2687.5 MHz
Channel Bandwidth 10 MHz	<b>Lowest</b> tunable freq. Single carrier	2625 MHz
	Dual carriers	2625/2635 MHz
	<b>Middle</b> freq. Single carrier	2655 MHz
	Dual carriers	2650/2660 MHz
	<b>Highest</b> tunable freq. Single carrier	2685 MHz
	Dual carriers	2675/2685 MHz
Channel Bandwidth 15 MHz	<b>Lowest</b> tunable freq. Single carrier	2627.5 MHz
	Dual carriers	2627.5/2642.5 MHz
	<b>Middle</b> freq. Single carrier	2655 MHz
	Dual carriers	2647.5/2662.5 MHz
	<b>Highest</b> tunable freq. Single carrier	2682.5 MHz
	Dual carriers	2667.5/2682.5 MHz
Channel Bandwidth 20 MHz	<b>Lowest</b> tunable freq. Single carrier	2630 MHz
	Dual carriers	2630/2650 MHz
	<b>Middle</b> freq. Single carrier	2655 MHz
	Dual carriers	2645/2665 MHz
	<b>Highest</b> tunable freq. Single carrier	2680 MHz
	Dual carriers	2660/2680 MHz
<b>Single carrier</b>		
Rated Output Power (Prat)	40W(46dBm) conducted / carrier	
<b>Dual carriers</b>		
Rated Output Power (Prat)	20W(43dBm) conducted / carrier	
Downlink/Uplink ratio	6/3 to 8/1	
	RX	TX
Number of Antenna Ports	4 (ANT1 to ANT4)	4 (ANT1 to ANT4)
MIMO	Yes	Yes

**Table 2 Overview of EUT configuration**



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The tests were performed with one EUT at the antenna ports ANT1, ANT2, ANT3, ANT4.

The used different EUT configurations are shown by the following table.

Module Name	Serial-No.	Module Type	Config.
AHHB	L1180321043	RRH	A, B, C, D, E, F, G, H
<b>Other Modules</b>	<b>Module Type</b>		<b>Config.</b>
AMIA	AirScale Subrack		A, B, C, D, E, F, G, H
ASIA	AirScale Common unit		A, B, C, D, E, F, G, H
ABIA	AirScale Capacity unit		A, B, C, D, E, F, G, H
APAA	Airscale AC-DC Power Unit		A, B, C, D, E, F, G, H

**Table 3 Configuration of EUT**

For a functional description of the modules, please refer to the appropriate related parts and exhibit sections of this certification application.

## 2.2 Operating Conditions

The EUT supports QPSK, 16QAM, 64QAM and 256QAM modulation. If not stated otherwise, the following standard setup procedure for the EUT was used:

The transmitter was set up according to 3GPP TS 36.141 E-UTRA Test Models (E-TM) for all tests:

- E-TM 1.1: All QPSK modulation testing
- E-TM 3.1: All 64QAM modulation testing
- E-TM 3.2: All 16QAM modulation testing
- E-TM 3.1A: All 256QAM modulation testing

During the measurements, one carrier channel was tested at a time. The carrier was set to the maximum power level to ensure the maximum emission amplitudes during all measurements.

During the tests, the Flexi Multiradio BTS is transmitting a pseudo random bit pattern on the data channels.

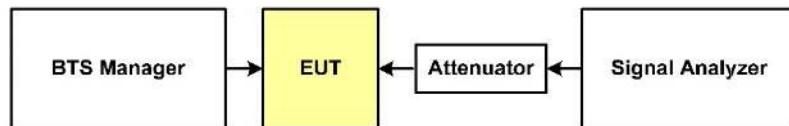


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### 3. TEST CONFIGURATION

If not stated otherwise, the following measurement configuration was used to perform all measurements (see figure below).



**Figure 1 Test Configuration (single output)**

The RF output of the transceiver (cell) under test is connected to a signal analyzer via a high power attenuator to protect the input of the signal analyzer from high RF power levels. A description of the analyzer settings is given in each of the sections describing the measurements. The other transceivers are terminated.

A complete list of the measurement equipment is included on page 102 of this measurement report.

#### 3.1 Calibration of the Test Equipment

All relevant test equipment has a valid calibration from an external calibration laboratory. Additionally the signal analyzer has a built-in self-calibration procedure. This calibration procedure was activated prior to the measurements so that the analyzer is deemed accurate. High quality cables were used to connect the measurement equipment to the EUT. The actual loss of the attenuator and the cables was measured with a high precision network analyzer and taken into account for all measurements.



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#### 4. TEST RESULTS

##### 4.1 Test No.1: RF Power Output (§ 2.1046, § 27.50, RSS-199, RSS-Gen, SRPS-517)

###### 4.1.1. Limits

Para. No. 27.50 (h).(1) Main, booster and base stations. (i) The maximum EIRP of a main, booster or base station shall not exceed  $33 \text{ dBW} + 10\log(X/Y) \text{ dBW}$ , where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition, except as provided in paragraph (h)(1)(ii) of this section.  
 Sample calculation:  $33\text{dBW} + 10\log(10\text{MHz}/5.5\text{MHz}) \text{ dBW} = 34.26 \text{ dBW} = \sim 2667\text{W}$   
 Test Procedure and Results

RSS-199 para. no. 4.4: The equivalent isotropically radiated power (e.i.r.p.) of base and fixed station equipment shall comply with the e.i.r.p. limit in SRSP-517.

RSS-199 para. no. 4.4: The PAPR of the transmitter output power of base and fixed station equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

The EUT has been tested without any antennas. Compliance with ERP/EIRP requirements will be addressed at the time of licensing by the installer as required by Industry Canada. Licences must take into account the maximum permissible antenna gain when used in combination with the power settings/measurements recorded in this report to prevent the radiated power exceeding the applicable requirements.

Detachable Antenna: The maximum output power at the antenna terminals was measured using a signal analyzer.

The RF power was measured with a frequency sweep across the carrier. The carrier power was calculated from the signal analyzer by integration over the result. The base station maximum output power is the sum of the measured carrier power and the external attenuation (cable loss of the test set up).

For the MiMo output, RF power output was measured from each antenna port individually and the results summed mathematically in accordance to FCC KDB 662911 D01 -guidance.

Peak to average power (PAPR) was examined using CCDF method and 0.1% value recorded in dB to the tables below.



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Measured laboratory room temperature and humidity during the tests				
Date	Temperature Min-Max:		Humidity Min-Max:	
15 Feb – 23 Apr 2018	23.2 °C	25.2 °C	3.5 RH%	17.6 RH%

**Config A:**

Carrier Frequency [MHz]	RF Power Output		PAPR	Result
	[dBm]	[W]	[dB]	
QPSK-Modulation ANT1				
2622.5	45.44	34.99	7.33	compliant
2655	45.37	34.46	7.30	compliant
2687.5	45.23	33.34	7.30	compliant
QPSK-Modulation ANT2				
2622.5	45.36	34.37	7.33	compliant
2655	45.53	35.72	7.30	compliant
2687.5	45.11	32.43	7.33	compliant
QPSK-Modulation ANT3				
2622.5	44.59	28.79	7.33	compliant
2655	44.65	29.20	7.30	compliant
2687.5	44.42	27.67	7.33	compliant
QPSK-Modulation ANT4				
2622.5	45.29	33.80	7.36	compliant
2655	45.31	33.96	7.30	compliant
2687.5	44.98	31.47	7.33	compliant
QPSK-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2622.5	51.20	131.95	-	compliant
2655	51.25	133.34	-	compliant
2687.5	50.97	124.91	-	compliant
16QAM-Modulation ANT1				
2622.5	45.47	35.21	7.36	compliant
2655	45.39	34.57	7.30	compliant
2687.5	45.28	33.73	7.33	compliant
16QAM-Modulation ANT2				
2622.5	45.38	34.52	7.36	compliant
2655	45.47	35.22	7.30	compliant
2687.5	45.07	32.15	7.33	compliant
16QAM-Modulation ANT3				
2622.5	44.60	28.83	7.36	compliant

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2655	44.62	29.01	7.30	compliant
2687.5	44.40	27.52	7.33	compliant
16QAM-Modulation ANT4				
2622.5	45.33	34.12	7.33	compliant
2655	45.27	33.66	7.30	compliant
2687.5	44.98	31.50	7.33	compliant
16QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2622.5	51.23	132.68	-	compliant
2655	51.22	132.46	-	compliant
2687.5	50.97	124.90	-	compliant
64QAM-Modulation ANT1				
2622.5	45.40	34.66	7.36	compliant
2655	45.38	34.49	7.30	compliant
2687.5	45.23	33.31	7.33	compliant
64QAM-Modulation ANT2				
2622.5	45.28	33.74	7.36	compliant
2655	45.49	35.42	7.33	compliant
2687.5	45.04	31.89	7.33	compliant
64QAM-Modulation ANT3				
2622.5	44.58	28.71	7.36	compliant
2655	44.58	28.68	7.33	compliant
2687.5	44.40	27.53	7.33	compliant
64QAM-Modulation ANT4				
2622.5	45.26	33.57	7.36	compliant
2655	45.24	33.46	7.33	compliant
2687.5	45.01	31.71	7.32	compliant
256QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2622.5	51.16	130.69	-	compliant
2655	51.21	132.05	-	compliant
2687.5	50.95	124.45	-	compliant
256QAM-Modulation ANT1				
2622.5	44.52	28.34	7.36	compliant
2655	43.45	22.15	7.30	compliant
2687.5	44.13	25.87	7.33	compliant
256QAM-Modulation ANT2				
2622.5	45.28	33.73	7.33	compliant
2655	45.47	35.22	7.30	compliant

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2687.5	45.07	32.12	7.33	compliant
<b>256QAM-Modulation ANT3</b>				
2622.5	44.58	28.68	7.33	compliant
2655	44.61	28.88	7.30	compliant
2687.5	43.63	23.09	7.33	compliant
<b>256QAM-Modulation ANT4</b>				
2622.5	45.25	33.53	7.33	compliant
2655	45.22	33.23	7.30	compliant
2687.5	45.00	31.65	7.36	compliant
<b>256QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				
2622.5	50.94	124.27	-	compliant
2655	50.77	119.47	-	compliant
2687.5	50.52	112.74	-	compliant

**Table 4 RF Power Output (5 MHz Channel BW)****Config B:**

Carrier Frequency [MHz]	RF Power Output		PAPR [dB]	Result
	[dBm]	[W]		
<b>QPSK-Modulation ANT1</b>				
2625	45.62	36.51	7.42	compliant
2655	45.41	34.77	7.30	compliant
2685	45.45	35.05	7.36	compliant
<b>QPSK-Modulation ANT2</b>				
2625	45.57	36.09	7.36	compliant
2655	45.57	36.05	7.28	compliant
2685	45.34	34.23	7.36	compliant
<b>QPSK-Modulation ANT3</b>				
2625	44.84	30.45	7.42	compliant
2655	44.71	29.61	7.33	compliant
2685	44.72	29.63	7.39	compliant
<b>QPSK-Modulation ANT4</b>				
2625	45.57	36.03	7.42	compliant
2655	45.42	34.87	7.30	compliant
2685	45.46	35.12	7.36	compliant
<b>QPSK-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				
2625	51.43	139.07	-	compliant
2655	51.31	135.31	-	compliant



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2685	51.27	134.03	-	compliant
16QAM-Modulation ANT1				
2625	45.64	36.62	7.42	compliant
2655	45.38	34.55	7.30	compliant
2685	45.48	35.35	7.36	compliant
16QAM-Modulation ANT2				
2625	45.63	36.59	7.42	compliant
2655	45.59	36.20	7.30	compliant
2685	45.31	33.95	7.36	compliant
16QAM-Modulation ANT3				
2625	44.85	30.56	7.45	compliant
2655	44.72	29.66	7.30	compliant
2685	44.70	29.48	7.36	compliant
16QAM-Modulation ANT4				
2625	45.60	36.35	7.45	compliant
2655	45.43	34.93	7.30	compliant
2685	45.42	34.85	7.36	compliant
16QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2625	36.35	140.13	-	compliant
2655	34.93	135.34	-	compliant
2685	34.85	133.63	-	compliant
64QAM-Modulation ANT1				
2625	45.64	36.63	7.39	compliant
2655	45.43	34.92	7.28	compliant
2685	45.43	34.88	7.33	compliant
64QAM-Modulation ANT2				
2625	45.59	36.21	7.42	compliant
2655	45.55	35.88	7.30	compliant
2685	45.35	34.24	7.36	compliant
64QAM-Modulation ANT3				
2625	44.83	30.43	7.42	compliant
2655	44.69	29.44	7.28	compliant
2685	44.68	29.36	7.36	compliant
64QAM-Modulation ANT4				
2625	45.53	35.76	7.30	compliant
2655	45.46	35.14	7.36	compliant
2685	45.38	34.53	7.33	compliant



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64QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2625	51.43	139.02	-	compliant
2655	51.32	135.38	-	compliant
2685	51.24	133.02	-	compliant
256QAM-Modulation ANT1				
2625	45.61	36.38	7.42	compliant
2655	45.42	34.82	7.28	compliant
2685	45.47	35.27	7.33	compliant
256QAM-Modulation ANT2				
2625	44.53	28.41	7.42	compliant
2655	43.84	24.23	7.28	compliant
2685	44.38	27.39	7.33	compliant
256QAM-Modulation ANT3				
2625	44.82	30.35	7.42	compliant
2655	44.71	29.56	7.30	compliant
2685	44.68	29.40	7.36	compliant
256QAM-Modulation ANT4				
2625	45.56	35.95	7.42	compliant
2655	45.47	35.23	7.30	compliant
2685	45.43	34.95	7.36	compliant
256QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2625	51.18	131.08	-	compliant
2655	50.93	123.83	-	compliant
2685	51.04	127.00	-	compliant

**Table 5 RF Power Output (10 MHz Channel BW)**

**Config C:**

Carrier Frequency [MHz]	RF Power Output		PAPR [dB]	Result
	[dBm]	[W]		
QPSK-Modulation ANT1				
2627.5	45.75	37.61	7.50	compliant
2655	45.50	35.47	7.26	compliant
2682.5	45.62	36.51	7.42	compliant
QPSK-Modulation ANT2				
2627.5	45.71	37.22	7.52	compliant
2655	45.70	37.17	7.28	compliant
2682.5	45.49	35.44	7.42	compliant



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QPSK-Modulation ANT3				
2627.5	44.87	30.67	7.52	compliant
2655	44.73	29.74	7.28	compliant
2682.5	44.77	30.00	7.46	compliant
QPSK-Modulation ANT4				
2627.5	45.60	36.34	7.50	compliant
2655	45.42	34.83	7.26	compliant
2682.5	45.52	35.60	7.42	compliant
QPSK-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2627.5	51.52	141.84	-	compliant
2655	51.37	137.21	-	compliant
2682.5	51.38	137.55	-	compliant
16QAM-Modulation ANT1				
2627.5	45.72	37.32	7.48	compliant
2655	45.51	35.54	7.28	compliant
2682.5	45.54	35.82	7.38	compliant
16QAM-Modulation ANT2				
2627.5	45.67	36.94	7.50	compliant
2655	45.60	36.27	7.28	compliant
2682.5	45.53	35.70	7.38	compliant
16QAM-Modulation ANT3				
2627.5	44.83	30.40	7.50	compliant
2655	44.74	29.80	7.26	compliant
2682.5	44.78	30.06	7.40	compliant
16QAM-Modulation ANT4				
2627.5	45.62	36.44	7.48	compliant
2655	45.44	35.01	7.26	compliant
2682.5	45.49	35.41	7.40	compliant
16QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2627.5	51.50	141.11	-	compliant
2655	51.35	136.61	-	compliant
2682.5	51.37	136.98	-	compliant
64QAM-Modulation ANT1				
2627.5	45.74	37.49	7.50	compliant
2655	45.48	35.30	7.26	compliant
2682.5	45.62	36.50	7.38	compliant
64QAM-Modulation ANT2				

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2627.5	45.69	37.03	7.52	compliant
2655	45.62	36.50	7.26	compliant
2682.5	45.48	35.33	7.38	compliant
64QAM-Modulation ANT3				
2627.5	44.89	30.86	7.50	compliant
2655	44.76	29.91	7.26	compliant
2682.5	44.76	29.96	7.48	compliant
64QAM-Modulation ANT4				
2627.5	45.56	35.94	7.50	compliant
2655	45.43	34.91	7.26	compliant
2682.5	45.50	35.48	7.26	compliant
64QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2627.5	51.50	141.32	-	compliant
2655	51.36	136.62	-	compliant
2682.5	51.38	137.27	-	compliant
256QAM-Modulation ANT1				
2627.5	45.73	37.38	7.50	compliant
2655	45.49	35.39	7.28	compliant
2682.5	45.61	36.43	7.38	compliant
256QAM-Modulation ANT2				
2627.5	45.71	37.25	7.50	compliant
2655	45.56	35.95	7.26	compliant
2682.5	45.49	35.42	7.38	compliant
256QAM-Modulation ANT3				
2627.5	44.90	30.88	7.50	compliant
2655	44.76	29.91	7.26	compliant
2682.5	44.74	29.76	7.42	compliant
256QAM-Modulation ANT4				
2627.5	45.55	35.88	7.48	compliant
2655	45.42	34.83	7.26	compliant
2682.5	45.51	35.56	7.40	compliant
256QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2627.5	51.50	141.39	-	compliant
2655	51.34	136.07	-	compliant
2682.5	51.37	137.16	-	compliant

**Table 6 RF Power Output (15 MHz Channel BW)**



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**Config D:**

Carrier Frequency [MHz]	RF Power Output		PAPR	Result
	[dBm]	[W]	[dB]	
QPSK-Modulation ANT1				
2630	45.71	37.28	7.54	compliant
2655	45.52	35.62	7.24	compliant
2680	45.68	36.98	7.42	compliant
QPSK-Modulation ANT2				
2630	45.69	37.05	7.56	compliant
2655	45.66	36.78	7.24	compliant
2680	45.64	36.65	7.42	compliant
QPSK-Modulation ANT3				
2630	44.96	31.33	7.54	compliant
2655	44.80	30.19	7.24	compliant
2680	44.86	30.63	7.46	compliant
QPSK-Modulation ANT4				
2630	45.72	37.34	7.54	compliant
2655	45.49	35.42	7.24	compliant
2680	45.60	36.29	7.46	compliant
QPSK-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2630	51.55	143.01	-	compliant
2655	51.40	138.02	-	compliant
2680	51.48	140.56	-	compliant
16QAM-Modulation ANT1				
2630	45.74	37.49	7.52	compliant
2655	45.50	35.46	7.24	compliant
2680	45.66	36.82	7.40	compliant
16QAM-Modulation ANT2				
2630	45.60	36.31	7.54	compliant
2655	45.61	36.41	7.24	compliant
2680	45.53	35.75	7.40	compliant
16QAM-Modulation ANT3				
2630	44.92	31.04	7.54	compliant
2655	44.77	29.98	7.24	compliant
2680	44.85	30.57	7.44	compliant
16QAM-Modulation ANT4				
2630	45.68	36.98	7.52	compliant
2655	45.48	35.32	7.24	compliant

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2680	45.67	36.91	7.42	compliant
16QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2630	51.52	141.82	-	compliant
2655	51.37	137.16	-	compliant
2680	51.46	140.06	-	compliant
64QAM-Modulation ANT1				
2630	45.74	37.54	7.52	compliant
2655	45.43	34.94	7.24	compliant
2680	45.68	36.95	7.38	compliant
64QAM-Modulation ANT2				
2630	45.59	36.25	7.54	compliant
2655	45.57	36.04	7.24	compliant
2680	45.59	36.25	7.40	compliant
64QAM-Modulation ANT3				
2630	44.91	30.98	7.54	compliant
2655	44.78	30.05	7.24	compliant
2680	44.85	30.58	7.44	compliant
64QAM-Modulation ANT4				
2630	45.71	37.21	7.52	compliant
2655	45.41	34.77	7.24	compliant
2680	45.61	36.43	7.42	compliant
256QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2630	51.52	141.98	-	compliant
2655	51.33	135.79	-	compliant
2680	51.47	140.20	-	compliant
256QAM-Modulation ANT1				
2630	45.70	37.17	7.52	compliant
2655	45.51	35.60	7.24	compliant
2680	45.63	36.56	7.40	compliant
256QAM-Modulation ANT2				
2630	45.62	36.48	7.52	compliant
2655	45.64	36.63	7.26	compliant
2680	45.64	36.64	7.44	compliant
256QAM-Modulation ANT3				
2630	44.94	31.20	7.54	compliant
2655	44.81	30.28	7.24	compliant
2680	44.85	30.52	7.44	compliant

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256QAM-Modulation ANT4				
2630	45.67	36.86	7.50	compliant
2655	45.47	35.27	7.24	compliant
2680	44.56	28.55	7.44	compliant
256QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2630	51.51	141.71	-	compliant
2655	51.39	137.78	-	compliant
2680	51.21	132.27	-	compliant

**Table 7 RF Power Output (20 MHz Channel BW)****Config E:**

Carrier Frequency [MHz]	RF Power Output		PAPR [dB]	Result
	[dBm]	[W]		
QPSK-Modulation ANT1				
2622.5/2627.5	42.51/42.86	17.81/19.31	-	compliant
2652.5/2657.5	42.49/42.56	17.75/18.03	-	compliant
2682.5/2687.5	42.71/42.26	18.67/16.83	-	compliant
QPSK-Modulation ANT2				
2622.5/2627.5	42.44/42.74	17.52/18.79	-	compliant
2652.5/2657.5	42.62/42.79	18.27/19.01	-	compliant
2682.5/2687.5	42.53/42.12	17.93/16.30	-	compliant
QPSK-Modulation ANT3				
2622.5/2627.5	41.65/42.00	14.62/15.85	-	compliant
2652.5/2657.5	41.65/41.93	14.62/15.59	-	compliant
2682.5/2687.5	41.91/41.47	15.52/14.03	-	compliant
QPSK-Modulation ANT4				
2622.5/2627.5	42.39/42.69	17.34/18.59	-	compliant
2652.5/2657.5	42.39/42.57	17.33/18.07	-	compliant
2682.5/2687.5	42.68/42.06	18.53/16.06	-	compliant
QPSK-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2622.5/2627.5	51.46	139.83	-	compliant
2652.5/2657.5	51.42	138.65	-	compliant
2682.5/2687.5	51.27	133.87	-	compliant
16QAM-Modulation ANT1				
2622.5/2627.5	42.49/42.88	17.75/19.41	-	compliant
2652.5/2657.5	42.53/42.56	17.93/18.04	-	compliant

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2682.5/2687.5	42.75/42.29	18.83/16.95	-	compliant
<b>16QAM-Modulation ANT2</b>				
2622.5/2627.5	42.43/42.79	17.49/18.99	-	compliant
2652.5/2657.5	42.61/42.78	18.23/18.95	-	compliant
2682.5/2687.5	42.56/42.10	18.04/16.23	-	compliant
<b>16QAM-Modulation ANT3</b>				
2622.5/2627.5	41.68/42.02	14.74/15.92	-	compliant
2652.5/2657.5	41.75/41.91	14.95/15.51	-	compliant
2682.5/2687.5	41.93/41.48	15.58/14.06	-	compliant
<b>16QAM-Modulation ANT4</b>				
2622.5/2627.5	41.68/42.77	14.74/18.94	-	compliant
2652.5/2657.5	41.75/42.63	14.95/18.33	-	compliant
2682.5/2687.5	41.93/42.16	15.58/16.46	-	compliant
<b>16QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				
2622.5/2627.5	51.40	137.97	-	compliant
2652.5/2657.5	51.36	136.88	-	compliant
2682.5/2687.5	51.20	131.73	-	compliant
<b>64QAM-Modulation ANT1</b>				
2622.5/2627.5	42.52/42.88	17.87/19.43	-	compliant
2652.5/2657.5	42.59/42.59	18.15/18.14	-	compliant
2682.5/2687.5	42.76/42.29	18.86/16.96	-	compliant
<b>64QAM-Modulation ANT2</b>				
2622.5/2627.5	42.41/42.75	17.43/18.85	-	compliant
2652.5/2657.5	42.63/42.78	18.33/18.95	-	compliant
2682.5/2687.5	42.54/42.16	17.97/16.43	-	compliant
<b>64QAM-Modulation ANT3</b>				
2622.5/2627.5	41.65/42.00	14.62/15.85	-	compliant
2652.5/2657.5	41.68/41.93	14.71/15.59	-	compliant
2682.5/2687.5	41.93/41.48	15.59/14.05	-	compliant
<b>64QAM-Modulation ANT4</b>				
2622.5/2627.5	42.37/42.75	17.24/18.84	-	compliant
2652.5/2657.5	42.41/42.61	17.43/18.22	-	compliant
2682.5/2687.5	42.73/42.14	18.74/16.36	-	compliant
<b>64QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				
2622.5/2627.5	51.47	140.13	-	compliant
2652.5/2657.5	51.45	139.51	-	compliant
2682.5/2687.5	51.30	134.96	-	compliant

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256QAM-Modulation ANT1				
2622.5/2627.5	42.52/42.92	17.86/19.58	-	compliant
2652.5/2657.5	42.55/42.65	17.99/18.39	-	compliant
2682.5/2687.5	42.75/42.30	18.86/16.97	-	compliant
256QAM-Modulation ANT2				
2622.5/2627.5	42.38/42.77	17.32/18.92	-	compliant
2652.5/2657.5	42.62/42.80	18.27/19.07	-	compliant
2682.5/2687.5	42.51/42.09	17.82/16.19	-	compliant
256QAM-Modulation ANT3				
2622.5/2627.5	41.61/42.00	14.50/15.86	-	compliant
2652.5/2657.5	41.68/41.91	14.73/15.53	-	compliant
2682.5/2687.5	41.92/41.48	15.55/14.06	-	compliant
256QAM-Modulation ANT4				
2622.5/2627.5	42.40/42.74	17.39/18.81	-	compliant
2652.5/2657.5	42.40/42.61	17.39/18.26	-	compliant
2682.5/2687.5	42.71/42.10	18.68/16.23	-	compliant
256QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2622.5/2627.5	51.47	140.26	-	compliant
2652.5/2657.5	51.45	139.64	-	compliant
2682.5/2687.5	51.28	134.35	-	compliant

**Table 8 RF Power Output (5+5 MHz Channel BW)****Config F:**

Carrier Frequency [MHz]	RF Power Output		PAPR [dB]	Result
	[dBm]	[W]		
QPSK-Modulation ANT1				
2625/2635	42.62/42.88	18.29/19.39	-	compliant
2650/2660	42.49/42.68	17.74/18.53	-	compliant
2675/2685	42.86/42.43	19.30/17.48	-	compliant
QPSK-Modulation ANT2				
2625/2635	42.51/42.66	17.83/18.46	-	compliant
2650/2660	42.57/42.85	18.07/19.26	-	compliant
2675/2685	42.88/42.22	19.42/16.69	-	compliant
QPSK-Modulation ANT3				
2625/2635	41.76/41.97	15.00/15.75	-	compliant
2650/2660	41.75/41.96	14.98/15.71	-	compliant
2675/2685	42.04/41.55	16.01/14.29	-	compliant
QPSK-Modulation ANT4				

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2625/2635	42.43/42.88	17.51/19.40	-	compliant
2650/2660	42.42/42.63	17.48/18.32	-	compliant
2675/2685	42.85/42.31	19.25/17.04	-	compliant
QPSK-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2625/2635	51.51	141.63	-	compliant
2650/2660	51.46	140.08	-	compliant
2675/2685	51.45	139.48	-	compliant
16QAM-Modulation ANT1				
2625/2635	42.59/42.77	18.16/18.92	-	compliant
2650/2660	42.51/42.69	17.82/18.59	-	compliant
2675/2685	42.85/42.41	19.26/17.40	-	compliant
16QAM-Modulation ANT2				
2625/2635	42.59/42.65	18.16/18.41	-	compliant
2650/2660	42.58/42.81	18.11/19.10	-	compliant
2675/2685	42.78/42.27	18.97/16.88	-	compliant
16QAM-Modulation ANT3				
2625/2635	41.76/41.98	15.01/15.77	-	compliant
2650/2660	41.73/41.98	14.90/15.76	-	compliant
2675/2685	42.00/41.58	15.85/14.39	-	compliant
16QAM-Modulation ANT4				
2625/2635	42.38/42.89	17.30/19.44	-	compliant
2650/2660	42.38/42.61	17.29/18.24	-	compliant
2675/2685	42.84/42.29	19.22/16.93	-	compliant
16QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2625/2635	51.50	141.17	-	compliant
2650/2660	51.46	139.81	-	compliant
2675/2685	51.43	138.90	-	compliant
64QAM-Modulation ANT1				
2625/2635	42.60/42.90	18.20/19.51	-	compliant
2650/2660	42.55/42.68	17.97/18.54	-	compliant
2675/2685	42.83/42.43	19.17/17.51	-	compliant
64QAM-Modulation ANT2				
2625/2635	42.47/42.64	17.66/18.37	-	compliant
2650/2660	42.56/42.80	18.05/19.05	-	compliant
2675/2685	42.78/42.24	18.99/16.76	-	compliant
64QAM-Modulation ANT3				
2625/2635	41.73/41.95	14.90/15.67	-	compliant

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2650/2660	40.38/40.93	10.92/12.38	-	compliant
2675/2685	41.25/40.83	13.34/12.10	-	compliant
<b>64QAM-Modulation ANT4</b>				
2625/2635	42.40/42.86	17.38/19.30	-	compliant
2650/2660	42.41/42.66	17.40/18.45	-	compliant
2675/2685	42.84/42.33	19.22/17.09	-	compliant
<b>64QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				
2625/2635	51.49	140.98	-	compliant
2650/2660	51.23	132.77	-	compliant
2675/2685	51.28	134.17	-	compliant
<b>256QAM-Modulation ANT1</b>				
2625/2635	42.60/42.85	18.21/19.29	-	compliant
2650/2660	42.59/42.75	18.16/18.84	-	compliant
2675/2685	42.86/42.39	19.32/17.33	-	compliant
<b>256QAM-Modulation ANT2</b>				
2625/2635	41.27/41.01	13.39/12.63	-	compliant
2650/2660	40.35/41.03	10.83/12.67	-	compliant
2675/2685	41.45/41.12	13.95/12.94	-	compliant
<b>256QAM-Modulation ANT3</b>				
2625/2635	40.64/40.37	11.59/10.88	-	compliant
2650/2660	39.81/40.47	9.57/11.15	-	compliant
2675/2685	40.99/40.60	12.55/11.47	-	compliant
<b>256QAM-Modulation ANT4</b>				
2625/2635	42.43/42.86	17.49/19.34	-	compliant
2650/2660	42.38/42.60	17.29/18.20	-	compliant
2675/2685	42.86/42.31	19.33/17.03	-	compliant
<b>256QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				
2625/2635	50.89	122.83	-	compliant
2650/2660	50.67	116.71	-	compliant
2675/2685	50.93	123.92	-	compliant

**Table 9 RF Power Output (10+10MHz channel BW)****Config G:**

Carrier Frequency [MHz]	RF Power Output		PAPR [dB]	Result
	[dBm]	[W]		
<b>QPSK-Modulation ANT1</b>				
2627.5/2642.5	42.67/42.86	18.49/19.32	-	compliant



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2647.5/2662.5	42.66/42.78	18.43/18.96	-	compliant
2667.5/2682.5	42.99/42.52	19.92/17.86	-	compliant
QPSK-Modulation ANT2				
2627.5/2642.5	42.56/42.69	18.02/18.58	-	compliant
2647.5/2662.5	42.59/42.87	18.16/19.38	-	compliant
2667.5/2682.5	43.04/42.41	20.15/17.42	-	compliant
QPSK-Modulation ANT3				
2627.5/2642.5	41.75/41.99	14.95/15.80	-	compliant
2647.5/2662.5	41.78/42.05	15.07/16.05	-	compliant
2667.5/2682.5	42.23/41.63	16.72/14.55	-	compliant
QPSK-Modulation ANT4				
2627.5/2642.5	42.46/42.79	17.64/19.01	-	compliant
2647.5/2662.5	42.45/42.65	17.59/18.39	-	compliant
2667.5/2682.5	42.81/42.44	19.10/17.54	-	compliant
QPSK-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2627.5/2642.5	51.52	141.80	-	compliant
2647.5/2662.5	51.52	142.02	-	compliant
2667.5/2682.5	51.56	143.26	-	compliant
16QAM-Modulation ANT1				
2627.5/2642.5	42.64/42.91	18.36/19.54	-	compliant
2647.5/2662.5	42.68/42.76	18.54/18.90	-	compliant
2667.5/2682.5	42.97/42.55	19.82/17.98	-	compliant
16QAM-Modulation ANT2				
2627.5/2642.5	42.56/42.61	18.02/18.23	-	compliant
2647.5/2662.5	42.53/42.81	17.91/19.09	-	compliant
2667.5/2682.5	43.09/42.41	20.35/17.42	-	compliant
16QAM-Modulation ANT3				
2627.5/2642.5	41.77/42.01	15.02/15.87	-	compliant
2647.5/2662.5	41.76/42.02	14.98/15.93	-	compliant
2667.5/2682.5	42.21/41.60	16.65/14.46	-	compliant
16QAM-Modulation ANT4				
2627.5/2642.5	42.46/42.76	17.63/18.89	-	compliant
2647.5/2662.5	42.53/42.62	17.92/18.27	-	compliant
2667.5/2682.5	42.79/42.38	19.00/17.30	-	compliant
16QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2627.5/2642.5	51.52	141.80	-	compliant
2647.5/2662.5	51.52	142.02	-	compliant

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2667.5/2682.5	51.56	143.26	-	compliant
<b>64QAM-Modulation ANT1</b>				
2627.5/2642.5	42.62/42.82	18.27/19.16	-	compliant
2647.5/2662.5	42.71/42.85	18.65/19.27	-	compliant
2667.5/2682.5	42.92/42.50	19.60/17.77	-	compliant
<b>64QAM-Modulation ANT2</b>				
2627.5/2642.5	42.48/42.66	17.69/18.43	-	compliant
2647.5/2662.5	42.58/42.88	18.11/19.40	-	compliant
2667.5/2682.5	43.01/42.38	19.99/17.28	-	compliant
<b>64QAM-Modulation ANT3</b>				
2627.5/2642.5	41.74/42.01	14.93/15.88	-	compliant
2647.5/2662.5	41.75/42.03	14.95/15.95	-	compliant
2667.5/2682.5	42.20/41.60	16.61/14.46	-	compliant
<b>64QAM-Modulation ANT4</b>				
2627.5/2642.5	42.50/42.77	17.78/18.91	-	compliant
2647.5/2662.5	42.51/42.69	17.81/18.56	-	compliant
2667.5/2682.5	42.84/42.43	19.25/17.48	-	compliant
<b>64QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				
2627.5/2642.5	51.49	141.05	-	compliant
2647.5/2662.5	51.54	142.71	-	compliant
2667.5/2682.5	51.54	142.44	-	compliant
<b>256QAM-Modulation ANT1</b>				
2627.5/2642.5	42.62/42.88	18.30/19.40	-	compliant
2647.5/2662.5	42.65/42.79	18.39/19.02	-	compliant
2667.5/2682.5	42.97/42.50	19.83/17.80	-	compliant
<b>256QAM-Modulation ANT2</b>				
2627.5/2642.5	42.51/42.68	17.83/18.53	-	compliant
2647.5/2662.5	42.59/42.87	18.17/19.36	-	compliant
2667.5/2682.5	43.01/42.38	20.01/17.31	-	compliant
<b>256QAM-Modulation ANT3</b>				
2627.5/2642.5	41.75/41.99	14.96/15.83	-	compliant
2647.5/2662.5	41.80/42.02	15.13/15.93	-	compliant
2667.5/2682.5	42.19/41.64	16.55/14.60	-	compliant
<b>256QAM-Modulation ANT4</b>				
2627.5/2642.5	42.51/42.79	17.81/19.02	-	compliant
2647.5/2662.5	42.52/42.70	17.87/18.62	-	compliant
2667.5/2682.5	42.89/42.45	19.47/17.56	-	compliant
<b>256QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				

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2627.5/2642.5	51.51	141.67	-	compliant
2647.5/2662.5	51.54	142.49	-	compliant
2667.5/2682.5	51.56	143.13	-	compliant

**Table 10 RF Power Output (15+15MHz channel BW)****Config H:**

Carrier Frequency [MHz]	RF Power Output		PAPR [dB]	Result
	[dBm]	[W]		
<b>QPSK-Modulation ANT1</b>				
2630/2650	42.59/42.71	18.15/18.65	-	compliant
2645/2665	42.71/42.82	18.65/19.16	-	compliant
2660/2680	42.80/42.49	19.05/17.76	-	compliant
<b>QPSK-Modulation ANT2</b>				
2630/2650	42.60/42.64	18.18/18.36	-	compliant
2645/2665	42.57/42.87	18.09/19.35	-	compliant
2660/2680	42.98/42.49	19.87/17.74	-	compliant
<b>QPSK-Modulation ANT3</b>				
2630/2650	41.75/41.93	14.96/15.58	-	compliant
2645/2665	41.77/41.99	15.02/15.81	-	compliant
2660/2680	42.15/41.56	16.39/14.33	-	compliant
<b>QPSK-Modulation ANT4</b>				
2630/2650	42.50/42.58	17.80/18.11	-	compliant
2645/2665	42.54/42.66	17.94/18.47	-	compliant
2660/2680	42.89/42.24	19.47/16.76	-	compliant
<b>QPSK-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				
2630/2650	51.45	139.78	-	compliant
2645/2665	51.54	142.49	-	compliant
2660/2680	51.50	141.36	-	compliant
<b>16QAM-Modulation ANT1</b>				
2630/2650	42.75/42.60	18.84/18.22	-	compliant
2645/2665	42.84/42.71	19.24/18.68	-	compliant
2660/2680	42.96/42.40	19.79/17.37	-	compliant
<b>16QAM-Modulation ANT2</b>				
2630/2650	42.57/42.65	18.05/18.42	-	compliant
2645/2665	42.55/42.92	17.97/19.58	-	compliant
2660/2680	42.95/42.45	19.72/17.58	-	compliant
<b>16QAM-Modulation ANT3</b>				



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2630/2650	41.78/41.84	15.06/15.28	-	compliant
2645/2665	41.79/42.03	15.11/15.97	-	compliant
2660/2680	40.81/40.80	12.04/12.03	-	compliant
<b>16QAM-Modulation ANT4</b>				
2630/2650	41.03/40.89	12.69/12.27	-	compliant
2645/2665	40.56/41.47	11.39/14.02	-	compliant
2660/2680	41.29/41.14	13.45/13.01	-	compliant
<b>16QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				
2630/2650	51.10	128.82	-	compliant
2645/2665	51.20	131.97	-	compliant
2660/2680	50.97	125.00	-	compliant
<b>64QAM-Modulation ANT1</b>				
2630/2650	42.69/42.54	18.57/17.93	-	compliant
2645/2665	42.85/42.69	19.29/18.57	-	compliant
2660/2680	42.90/42.41	19.50/17.41	-	compliant
<b>64QAM-Modulation ANT2</b>				
2630/2650	42.54/42.55	17.95/18.01	-	compliant
2645/2665	40.85/41.47	12.17/14.03	-	compliant
2660/2680	41.36/41.42	13.66/13.86	-	compliant
<b>64QAM-Modulation ANT3</b>				
2630/2650	41.84/41.84	15.27/15.27	-	compliant
2645/2665	41.84/42.06	15.26/16.06	-	compliant
2660/2680	42.14/41.63	16.35/14.55	-	compliant
<b>64QAM-Modulation ANT4</b>				
2630/2650	40.85/40.65	12.17/11.63	-	compliant
2645/2665	40.45/41.32	11.09/13.54	-	compliant
2660/2680	41.07/41.25	12.80/13.33	-	compliant
<b>64QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total</b>				
2630/2650	51.03	126.79	-	compliant
2645/2665	50.79	120.01	-	compliant
2660/2680	50.84	121.47	-	compliant
<b>256QAM-Modulation ANT1</b>				
2630/2650	42.62/42.72	18.27/18.72	-	compliant
2645/2665	42.87/42.63	19.34/18.31	-	compliant
2660/2680	42.96/42.44	19.75/17.54	-	compliant
<b>256QAM-Modulation ANT2</b>				
2630/2650	42.58/42.63	18.12/18.31	-	compliant

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2645/2665	42.56/42.86	18.03/19.32	-	compliant
2660/2680	42.98/42.44	19.88/17.55	-	compliant
256QAM-Modulation ANT3				
2630/2650	41.79/41.84	15.10/15.27	-	compliant
2645/2665	41.85/42.05	15.31/16.04	-	compliant
2660/2680	42.14/41.61	16.36/14.49	-	compliant
256QAM-Modulation ANT4				
2630/2650	42.45/42.63	17.59/18.34	-	compliant
2645/2665	42.81/42.56	19.08/18.02	-	compliant
2660/2680	42.74/42.43	18.80/17.49	-	compliant
256QAM-Modulation ANT1+ANT2+ANT3+ANT4 Calculated Total				
2630/2650	51.45	139.72	-	compliant
2645/2665	51.57	143.46	-	compliant
2660/2680	51.52	141.87	-	compliant

**Table 11 RF Power Output (20+20MHz channel BW)**

The base station maximum output power and PAPR were found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules and IC RSS specifications.



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#### **4.2 Test No. 2: Modulation Characteristics (§ 2.1047, § 2.201, RSS-199, RSS-Gen.)**

The occupied bandwidth was measured to be 4.5MHz (Config. A), 9.5MHz (Config. B), 14.5MHz (Config. C), 20MHz (Config. D), 2x4.5MHz (Config. E), 2x9.5MHz (Config. F), 2x14.5MHz (Config. G), 2x20MHz (Config. H) which represents the 99% power bandwidth (see the following section and screenshots on pages 107).

Therefore, the modulation characteristics of the base stations transceiver are:

- Config A: 4M50D9W** (Channel bandwidth 5MHz)
- Config B: 9M00D9W** (Channel bandwidth 10MHz)
- Config C: 14M50D9W** (Channel bandwidth 15MHz)
- Config D: 19M00D9W** (Channel bandwidth 20MHz)
- Config E: 9M50D9W** (Channel bandwidth 5+5MHz)
- Config F: 19M00D9W** (Channel bandwidth 10+10MHz)
- Config G: 29M50D9W** (Channel bandwidth 15+15MHz)
- Config H: 39M00D9W** (Channel bandwidth 20+20MHz)

No further testing is required under this section of the FCC and IC rules. No measurements other than the occupied bandwidth are required.

Sample modulation screenshots are on page 103, in I/Q constellation diagrams and tables, showing QPSK, 16QAM, 64QAM and 256QAM – modulation generation.

The modulation characteristics were found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules and IC RSS specifications.



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#### 4.3 Test No. 3: Occupied Bandwidth (§ 2.1049, RSS-Gen.)

##### 4.3.1. Limits

Para. No. 2.1049. The 99% occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to 0.5% of the emitted power.

RSS-Gen. para. no. 6.7: The transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as measured.

##### 4.3.2. Test Procedure and Results

The 99% occupied bandwidth of the carrier emission is measured using a signal analyzer with Resolution Bandwidth set to 100-500 kHz (at least 1% of the bandwidth; see screenshots of highest emission antenna on page 1077 for details). The following tables summarize the results of all antennas and carriers:

Measured laboratory room temperature and humidity during the tests			
Date	Temperature Min-Max:	Humidity Min-Max:	
15 Feb – 23 Apr 2018	23.2°C	25.2°C	3.5 RH%      17.6 RH%

**Config A:**

Carrier Frequency [MHz]	Occupied Bandwidth [MHz]	Result
<b>OPSK-Modulation ANT1</b>		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant
<b>OPSK-Modulation ANT2</b>		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant
<b>QPSK-Modulation ANT3</b>		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant
<b>OPSK-Modulation ANT4</b>		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant
<b>16QAM-Modulation ANT1</b>		



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2622.5	4.45	compliant
2655	4.46	compliant
2687.5	4.46	compliant
<b>16QAM-Modulation ANT2</b>		
2622.5	4.46	compliant
2655	4.46	compliant
2687.5	4.45	compliant
<b>16QAM-Modulation ANT3</b>		
2622.5	4.46	compliant
2655	4.46	compliant
2687.5	4.46	compliant
<b>16QAM-Modulation ANT4</b>		
2622.5	4.45	compliant
2655	4.46	compliant
2687.5	4.45	compliant
<b>64QAM-Modulation ANT1</b>		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant
<b>64QAM-Modulation ANT2</b>		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant
<b>64QAM-Modulation ANT3</b>		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant
<b>64QAM-Modulation ANT4</b>		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant
<b>256QAM-Modulation ANT1</b>		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant
<b>256QAM-Modulation ANT2</b>		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant

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256QAM-Modulation ANT3		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.46	compliant
256QAM-Modulation ANT4		
2622.5	4.48	compliant
2655	4.48	compliant
2687.5	4.48	compliant
Measurement Uncertainty:		±48kHz

**Table 12 Occupied Bandwidth (5 MHz Channel BW)****Config B:**

Carrier Frequency [MHz]	Occupied Bandwidth [MHz]	Result
QPSK-Modulation ANT1		
2625	8.91	compliant
2655	8.95	compliant
2685	8.91	compliant
OPSK-Modulation ANT2		
2625	8.91	compliant
2655	8.93	compliant
2685	8.91	compliant
OPSK-Modulation ANT3		
2625	8.91	compliant
2655	8.95	compliant
2685	8.91	compliant
QPSK-Modulation ANT4		
2625	8.91	compliant
2655	8.95	compliant
2685	8.91	compliant
16QAM-Modulation ANT1		
2625	8.88	compliant
2655	8.91	compliant
2685	8.93	compliant
16QAM-Modulation ANT2		
2625	8.88	compliant
2655	8.91	compliant
2685	8.91	compliant
16QAM-Modulation ANT3		

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2625	8.91	compliant
2655	8.91	compliant
2685	8.93	compliant
<b>16QAM-Modulation ANT4</b>		
2625	8.88	compliant
2655	8.91	compliant
2685	8.93	compliant
<b>64QAM-Modulation ANT1</b>		
2625	8.91	compliant
2655	8.93	compliant
2685	8.91	compliant
<b>64QAM-Modulation ANT2</b>		
2625	8.91	compliant
2655	8.93	compliant
2685	8.91	compliant
<b>64QAM-Modulation ANT3</b>		
2625	8.91	compliant
2655	8.95	compliant
2685	8.91	compliant
<b>64QAM-Modulation ANT4</b>		
2625	8.91	compliant
2655	8.95	compliant
2685	8.91	compliant
<b>256QAM-Modulation ANT1</b>		
2625	8.91	compliant
2655	8.95	compliant
2685	8.91	compliant
<b>256QAM-Modulation ANT2</b>		
2625	8.91	compliant
2655	8.95	compliant
2685	8.91	compliant
<b>256QAM-Modulation ANT3</b>		
2625	8.91	compliant
2655	8.95	compliant
2685	8.91	compliant
<b>256QAM-Modulation ANT4</b>		
2625	8.91	compliant
2655	8.95	compliant
2685	8.91	compliant

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