Report On

Radio Testing of the
Nokia Siemens Networks Oy
Flexi Multiradio 10 BTS RF module 2.6GHz
Radio Access technology: E-UTRA (TDD)
In accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 27

COMMERCIAL-IN-CONFIDENCE

FCC ID: VBNFZHE-02

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Product Service

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This report has been up-issued to Issue 2 to amend Annex A.

Product Service

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Product Service

SECTION 1

REPORT SUMMARY

Radio Testing of the
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Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Radio Testing of the Nokia Siemens Networks Oy Flexi Multiradio 10 BTS RF module 2.6GHz Radio Access technology: E-UTRA (TDD) In accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 27.

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 Siemens Networks Oy
Model Number(s)	FZHE
Serial Number(s)	RY132201016
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 2 (2012) FCC CFR 47 Part 27 (2012)
Order Number Date	556/90455786 06 September 2013
Start of Test	25 June 2013
Finish of Test	11 September 2013
Name of Engineer(s)	Rami Salomäki Jari Veijola

Product Service

SECTION 2

DISCLAIMERS AND COPYRIGHT

2.1 DISCLAIMERS AND COPYRIGHT

This report relates only to the actual item/items tested.

Product Service

ANNEX A

NOKIA SIEMENS NETWORKS TEST REPORT NO: D502853116

Product Service

TEST REPORT NO: D502853116

FCC ID: VBNFZHE-02

Date:	Oulu 23. Oct 2013
Pages:	209
Appendices:	-

Equipment Under Test:	Flexi Multiradio 10 BTS RF module 2.6GHz Radio Access technology: E-UTRA (TDD)
Type:	FZHE
Manufacturer:	Nokia Siemens Networks Oy
Address:	P.O. Box 319, Kaapelitie 4, FI-90620, Oulu, Finland
Task:	Conformance test according to the specificarions mentioned below
Test Specification(s):	FCC 47 CFR part 2 (2012) and part 27 (2012)
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**
Jaakko Sirviö R&D Line Manager NSN	23. Oct 2013	

CONTENTS

1. SUMMARY

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

Test No.	Measurement	FCC Rule	Page Number of this Report	Result
1	RF Power Output	§ 2.1046, § 27.50	8	compliant
2	Modulation Characteristics	§ 2.1047, § 2.201	14	compliant
3	Occupied Bandwidth	§ 2.1049	15	compliant
4	Spurious Emissions at Antenna Terminals	§ 2.1051, § 2.1057, § 27.53	20	compliant
5	Field Strength of Spurious Radiation	§ 2.1053, § 2.1057, § 27.53, § 27.55	33	compliant
6	Frequency Stability	§ 2.1055, § 27.54	35	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 v01r02.

1.1 Test Laboratory

Nokia Siemens Networks Oy

P.O. Box 319,

Kaapelitie 4,

FI-90620, Oulu, Finland

Jaakko Sirvio

FCC Reg. No: 411251

1.2 Time Schedule

Test No.	1, 2, 3, 4	5	6
Start of Test:	13 Aug 2013	25 Jun 2013	04 Sep 2013
End of Test:	11 Sep 2013	26 Jun 2013	06 Sep 2013

1.3 Participants

Name	Function	Signature
Rami Salomäki (NSN)	Testing, Setup of EUT	
Jari Veijola (NSN)	Testing, Setup of EUT	

2. EQUIPMENT UNDER TEST

The EUT is a LTE Base transceiver station RF module 2.6GHz with 8 power amplifiers.

The BTS performs the full RAN function of LTE system (evolved UTRA). This is sometimes refered 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 BTSs are optionally connected directly to each others 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 RF module 2.6GHz**	
Radio Access Technology	E-UTRA	
Duplex mode	Time Division Duplex (TDD)	
Channel Bandwidth	10MHz (Config. A), 20MHz (Config. B)	
Supply Voltage	48.0 V DC	
Frequency Bands		
Channel Bandwidth 10MHz	Lowest tunable freq.	2501.0MHz
	Middle freq.	2593.0MHz
	Highest tunable freq.	2685.0MHz
Channel Bandwidth 20MHz	Lowest tunable freq.	2506.0MHz
	Middle freq.	2593.0MHz
	Highest tunable freq.	2680.0MHz
Single carrier		
Rated Output Power (Prat)	15W (41.8dBm) conducted	
Downlink/Uplink ratio	6/3 to 8/1	
	RX	**TX**
Number of Antenna Ports	8 (ANT1 to ANT8)	8 (ANT1 to ANT8)
MiMo	Yes	Yes

Table 2 Overview of EUT configuration

The tests were performed with one EUT at the antenna ports ANT1, ANT2, ANT3, ANT4, ANT5, ANT6, ANT7 or ANT8.

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

Module Name	Serial-No.	Module Type	Config.
FZHE	RY132201016	Radio module	A, B
Other Modules	**Module Type**		**Config.**
FSMF	System module		A, B
FTIF	Transmission module		A, B

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 and 64QAM 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

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. This ensures that the measurements of the emission characteristics of the transmitter are pursuant to § 2.1049.

Test models E-TM1.1, E-TM3.1 and E-TM3.2 have uplink/downlink ratio 3:6.

3. TEST CONFIGURATION

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

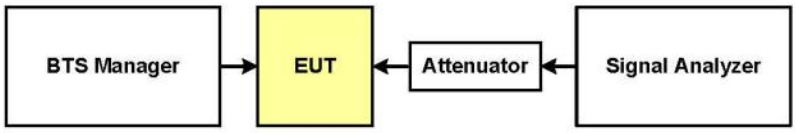

Figure 1 Test Configuration (single output)

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 53 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.

4. TEST RESULTS

4.1 Test No. 1: RF Power Output (§ 2.1046, § 27.50)

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 dBW + 10log(X/Y) 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: 33dBW + 10log(10MHz/5.5MHz) dBW = 34.26 dBW = ~2667W

4.1.2. Test Procedure and Results

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 (see screenshots). 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.

The following table shows the measured output powers at the antenna connector. Screenshots of the measurements are included on pages 54 of this report.

Config A:

Carrier Frequency [MHz]	RF Power Output		PAPR 0.1%	Result
	[dBm]	[W]	[dB]	
QPSK-Modulation ANT1				
2501.0	41.29	13.45860	7.13	compliant
2593.0	41.69	14.75707	7.13	compliant
2685.0	41.20	13.18257	7.01	compliant
QPSK-Modulation ANT2				
2501.0	41.36	13.67729	7.19	compliant
2593.0	41.71	14.82518	7.01	compliant
2685.0	41.02	12.64736	7.10	compliant
QPSK-Modulation ANT3				
2501.0	41.47	14.02814	7.13	compliant
2593.0	41.58	14.38799	7.07	compliant
2685.0	41.17	13.09182	7.10	compliant
QPSK-Modulation ANT4				
2501.0	41.69	14.75707	7.10	compliant
2593.0	41.80	15.13561	7.04	compliant
2685.0	41.65	14.62177	7.01	compliant
QPSK-Modulation ANT5				
2501.0	41.20	13.18257	7.10	compliant
2593.0	41.55	14.28894	7.07	compliant
2685.0	40.98	12.53141	7.07	compliant
QPSK-Modulation ANT6				
2501.0	41.11	12.91219	7.22	compliant
2593.0	41.27	13.39677	6.81	compliant
2685.0	40.71	11.77606	7.07	compliant
QPSK-Modulation ANT7				
2501.0	40.89	12.27439	7.22	compliant
2593.0	41.36	13.67729	6.93	compliant
2685.0	40.81	12.05036	7.01	compliant
QPSK-Modulation ANT8				
2501.0	40.97	12.50259	7.10	compliant
2593.0	41.36	13.67729	7.07	compliant
2685.0	41.01	12.61828	7.10	compliant
QPSK-Modulation ANT1+ANT2+ANT3+ANT4+ANT5+ANT6+ANT7+ANT8 Calculated Total				
2501.0	50.28542	106.79284	-	compliant
2593.0	50.57461	114.14613	-	compliant
2685.0	50.10807	102.51963	-	compliant
16QAM-Modulation ANT1				
2501.0	41.52	14.19058	7.33	compliant
2593.0	41.61	14.48772	7.07	compliant
2685.0	41.17	13.09182	7.10	compliant
16QAM-Modulation ANT2				
2501.0	41.00	12.58925	7.13	compliant
2593.0	41.69	14.75707	6.96	compliant
2685.0	41.19	13.15225	7.07	compliant
16QAM-Modulation ANT3				
2501.0	41.15	13.03167	7.10	compliant
2593.0	41.61	14.48772	6.96	compliant

2685.0	41.16	13.06171	7.10	compliant
16QAM-Modulation ANT4				
2501.0	41.34	13.61445	7.13	compliant
2593.0	41.78	15.06607	6.96	compliant
2685.0	41.57	14.35489	6.78	compliant
16QAM-Modulation ANT5				
2501.0	41.09	12.85287	6.84	compliant
2593.0	41.51	14.15794	7.22	compliant
2685.0	41.11	12.91219	7.04	compliant
16QAM-Modulation ANT6				
2501.0	41.08	12.82331	7.07	compliant
2593.0	41.64	14.58814	7.04	compliant
2685.0	40.96	12.47384	7.07	compliant
16QAM-Modulation ANT7				
2501.0	40.72	11.80321	7.16	compliant
2593.0	41.23	13.27394	7.07	compliant
2685.0	40.66	11.64126	7.10	compliant
16QAM-Modulation ANT8				
2501.0	40.93	12.38797	6.87	compliant
2593.0	41.34	13.61445	6.78	compliant
2685.0	40.88	12.24616	7.10	compliant
16QAM-Modulation ANT1+ANT2+ANT3+ANT4+ANT5+ANT6+ANT7+ANT8 Calculated Total				
2501.0	50.14072	103.29329	-	compliant
2593.0	50.58551	114.43304	-	compliant
2685.0	50.12559	102.93412	-	compliant
64QAM-Modulation ANT1				
2501.0	41.42	13.86756	7.13	compliant
2593.0	41.69	14.75707	6.96	compliant
2685.0	41.22	13.24342	7.01	compliant
64QAM-Modulation ANT2				
2501.0	41.16	13.06171	7.10	compliant
2593.0	41.91	15.52387	7.04	compliant
2685.0	41.09	12.85287	7.10	compliant
64QAM-Modulation ANT3				
2501.0	41.06	12.76439	7.13	compliant
2593.0	41.37	13.70882	7.01	compliant
2685.0	41.24	13.30454	6.84	compliant
64QAM-Modulation ANT4				
2501.0	41.41	13.83566	7.13	compliant
2593.0	41.92	15.55966	7.19	compliant
2685.0	41.46	13.99587	7.07	compliant
64QAM-Modulation ANT5				
2501.0	41.07	12.79381	7.07	compliant
2593.0	41.46	13.99587	7.01	compliant
2685.0	40.78	11.96741	7.01	compliant
64QAM-Modulation ANT6				
2501.0	40.75	11.88502	7.13	compliant
2593.0	41.47	14.02814	6.87	compliant
2685.0	40.87	12.21800	7.01	compliant
64QAM-Modulation ANT7				
2501.0	40.67	11.66810	7.22	compliant
2593.0	41.12	12.94196	6.96	compliant
2685.0	40.68	11.69499	7.10	compliant

64QAM-Modulation ANT8				
2501.0	40.83	12.10598	7.16	compliant
2593.0	41.27	13.39677	7.07	compliant
2685.0	40.81	12.05036	6.90	compliant
64QAM-Modulation ANT1+ANT2+ANT3+ANT4+ANT5+ANT6+ANT7+ANT8 Calculated Total				
2501.0	50.08525	101.98223	-	compliant
2593.0	50.56570	113.91214	-	compliant
2685.0	50.05727	101.32745	-	compliant

Table 4 RF Power Output (10 MHz Channel BW)

Config B:

Carrier Frequency [MHz]	RF Power Output		PAPR	Result
	[dBm]	[W]	[dB]	
QPSK-Modulation ANT1				
2506.0	41.50	14.12538	7.07	compliant
2593.0	41.66	14.65548	6.90	compliant
2680.0	41.38	13.74042	6.96	compliant
QPSK-Modulation ANT2				
2506.0	41.57	14.35489	7.10	compliant
2593.0	41.86	15.34617	6.90	compliant
2680.0	41.15	13.03167	6.90	compliant
QPSK-Modulation ANT3				
2506.0	41.64	14.58814	7.10	compliant
2593.0	41.51	14.15794	6.84	compliant
2680.0	41.30	13.48963	6.93	compliant
QPSK-Modulation ANT4				
2506.0	41.71	14.82518	7.16	compliant
2593.0	41.92	15.55966	6.87	compliant
2680.0	41.76	14.99685	6.90	compliant
QPSK-Modulation ANT5				
2506.0	41.36	13.67729	7.10	compliant
2593.0	41.74	14.92794	6.96	compliant
2680.0	41.17	13.09182	6.96	compliant
QPSK-Modulation ANT6				
2506.0	41.48	14.06048	7.01	compliant
2593.0	41.68	14.72313	6.90	compliant
2680.0	41.18	13.12200	6.96	compliant
QPSK-Modulation ANT7				
2506.0	41.61	14.48772	7.10	compliant
2593.0	41.77	15.03142	6.87	compliant
2680.0	41.15	13.03167	7.01	compliant
QPSK-Modulation ANT8				
2506.0	41.54	14.25608	7.13	compliant
2593.0	41.64	14.58814	6.96	compliant
2680.0	41.37	13.70882	6.90	compliant
QPSK-Modulation ANT1+ANT2+ANT3+ANT4+ANT5+ANT6+ANT7+ANT8 Calculated Total				
2506.0	50.58332	114.37515	-	compliant
2593.0	50.75510	118.98987	-	compliant
2680.0	50.34279	108.21287	-	compliant
16QAM-Modulation ANT1				
2506.0	41.51	14.15794	7.07	compliant
2593.0	41.65	14.62177	6.75	compliant

2680.0	41.38	13.74042	6.84	compliant
16QAM-Modulation ANT2				
2506.0	41.37	13.70882	7.10	compliant
2593.0	41.74	14.92794	6.67	compliant
2680.0	41.29	13.45860	6.87	compliant
16QAM-Modulation ANT3				
2506.0	41.34	13.61445	7.10	compliant
2593.0	41.29	13.45860	6.84	compliant
2680.0	41.57	14.35489	6.87	compliant
16QAM-Modulation ANT4				
2506.0	41.49	14.09289	7.10	compliant
2593.0	41.97	15.73983	6.90	compliant
2680.0	41.67	14.68926	6.93	compliant
16QAM-Modulation ANT5				
2506.0	41.19	13.15225	7.04	compliant
2593.0	41.84	15.27566	6.90	compliant
2680.0	40.79	11.99499	6.90	compliant
16QAM-Modulation ANT6				
2506.0	41.96	15.70363	7.04	compliant
2593.0	41.71	14.82518	6.75	compliant
2680.0	41.61	14.48772	6.99	compliant
16QAM-Modulation ANT7				
2506.0	40.97	12.50259	7.01	compliant
2593.0	41.78	15.06607	6.99	compliant
2680.0	41.56	14.32188	6.96	compliant
16QAM-Modulation ANT8				
2506.0	41.12	12.94196	7.07	compliant
2593.0	41.69	14.75707	6.87	compliant
2680.0	41.55	14.28894	6.93	compliant
16QAM-Modulation ANT1+ANT2+ANT3+ANT4+ANT5+ANT6+ANT7+ANT8 Calculated Total				
2506.0	50.40897	109.87452	-	compliant
2593.0	50.74349	118.67213	-	compliant
2680.0	50.46638	111.33671	-	compliant
64QAM-Modulation ANT1				
2506.0	41.66	14.65548	7.07	compliant
2593.0	41.56	14.32188	6.87	compliant
2680.0	41.43	13.89953	6.96	compliant
64QAM-Modulation ANT2				
2506.0	41.47	14.02814	7.10	compliant
2593.0	41.73	14.89361	6.84	compliant
2680.0	41.33	13.58313	6.93	compliant
64QAM-Modulation ANT3				
2506.0	41.38	13.74042	7.07	compliant
2593.0	41.38	13.74042	6.78	compliant
2680.0	41.52	14.19058	6.87	compliant
64QAM-Modulation ANT4				
2506.0	41.64	14.58814	7.10	compliant
2593.0	41.91	15.52387	6.78	compliant
2680.0	41.68	14.72313	6.96	compliant
64QAM-Modulation ANT5				
2506.0	41.64	14.58814	7.10	compliant
2593.0	41.83	15.24053	6.93	compliant
2680.0	41.50	14.12538	7.01	compliant

64QAM-Modulation ANT6				
2506.0	41.19	13.15225	7.07	compliant
2593.0	41.63	14.55459	6.93	compliant
2680.0	41.18	13.12200	7.01	compliant
64QAM-Modulation ANT7				
2506.0	41.28	13.42765	7.16	compliant
2593.0	41.74	14.92794	6.96	compliant
2680.0	41.34	13.61445	7.01	compliant
64QAM-Modulation ANT8				
2506.0	41.38	13.74042	7.07	compliant
2593.0	41.49	14.09289	6.96	compliant
2680.0	41.41	13.83566	6.93	compliant
64QAM-Modulation ANT1+ANT2+ANT3+ANT4+ANT5+ANT6+ANT7+ANT8 Calculated Total				
2506.0	50.48910	111.92064	-	compliant
2593.0	50.69282	117.29573	-	compliant
2680.0	50.45690	111.09385	-	compliant

Table 5 RF Power Output (20 MHz Channel BW)

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

4.2 Test No. 2: Modulation Characteristics (§ 2.1047, § 2.201)

The occupied bandwidth was measured to be 9 MHz (Config. A) and 18 MHz (Config. B), which represents the 99% power bandwidth (see the following section and screenshots on pages 86).

Therefore, the modulation characteristic of the base stations transceiver is:

Config A: 9M00D9W (Channel bandwidth 10 MHz)

Config B: 18M0D9W (Channel bandwidth 20 MHz)

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

Sample modulation screenshots are on page 79, in I/Q constallation diagrams and tables, showing QPSK, 16QAM and 64QAM –modulation generation.

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

4.3 Test No. 3: Occupied Bandwidth (§ 2.1049)

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.

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 30 kHz (less than 1% of bandwidth; see screenshots on page 86 for details). The following tables summarizes the results:

Config A:

Carrier Frequency [MHz]	Occupied Bandwidth [MHz]	Result
QPSK-Modulation ANT1		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9161	compliant
QPSK-Modulation ANT2		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9307	compliant
QPSK-Modulation ANT3		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9161	compliant
QPSK-Modulation ANT4		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9161	compliant
QPSK-Modulation ANT5		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9015	compliant
QPSK-Modulation ANT6		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9015	compliant
QPSK-Modulation ANT7		
2501.0	8.9015	compliant
2593.0	8.9161	compliant
2685.0	8.9015	compliant
QPSK-Modulation ANT8		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9015	compliant

16QAM-Modulation ANT1		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9015	compliant
16QAM-Modulation ANT2		
2501.0	8.9015	compliant
2593.0	8.9161	compliant
2685.0	8.9161	compliant
16QAM-Modulation ANT3		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9161	compliant
16QAM-Modulation ANT4		
2501.0	8.9015	compliant
2593.0	8.9161	compliant
2685.0	8.9015	compliant
16QAM-Modulation ANT5		
2501.0	8.8868	compliant
2593.0	8.8868	compliant
2685.0	8.8868	compliant
16QAM-Modulation ANT6		
2501.0	8.8868	compliant
2593.0	8.8868	compliant
2685.0	8.8868	compliant
16QAM-Modulation ANT7		
2501.0	8.8868	compliant
2593.0	8.8868	compliant
2685.0	8.8868	1compliant
16QAM-Modulation ANT8		
2501.0	8.8868	compliant
2593.0	8.8868	compliant
2685.0	8.8868	compliant
64QAM-Modulation ANT1		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9161	compliant
64QAM-Modulation ANT2		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9161	compliant
64QAM-Modulation ANT3		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9161	compliant
64QAM-Modulation ANT4		
2501.0	8.9161	compliant
2593.0	8.9161	compliant
2685.0	8.9161	compliant
64QAM-Modulation ANT5		
2501.0	8.9014	compliant
2593.0	8.9161	compliant
2685.0	8.9014	compliant

64QAM-Modulation ANT6		
2501.0	8.9014	compliant
2593.0	8.9014	compliant
2685.0	8.9014	compliant
64QAM-Modulation ANT7		
2501.0	8.9014	compliant
2593.0	8.9014	compliant
2685.0	8.9014	compliant
64QAM-Modulation ANT8		
2501.0	8.9014	compliant
2593.0	8.9014	compliant
2685.0	8.9014	compliant
Measurement Uncertainty:		±48kHz

Table 6 Occupied Bandwidth (10 MHz Channel BW)

Config B:

Carrier Frequency [MHz]	Occupied Bandwidth [MHz]	Result
QPSK-Modulation ANT1		
2506.0	17.8311	compliant
2593.0	17.8602	compliant
2680.0	17.8311	compliant
QPSK-Modulation ANT2		
2506.0	17.8311	compliant
2593.0	17.8602	compliant
2680.0	17.8311	compliant
QPSK-Modulation ANT3		
2506.0	17.8311	compliant
2593.0	17.8602	compliant
2680.0	17.8311	compliant
QPSK-Modulation ANT4		
2506.0	17.8311	compliant
2593.0	17.8602	compliant
2680.0	17.8311	compliant
QPSK-Modulation ANT5		
2506.0	17.8311	compliant
2593.0	17.8602	compliant
2680.0	17.8311	compliant
QPSK-Modulation ANT6		
2506.0	17.8311	compliant
2593.0	17.8602	compliant
2680.0	17.8311	compliant
QPSK-Modulation ANT7		
2506.0	17.8311	compliant
2593.0	17.8602	compliant
2680.0	17.8311	compliant
QPSK-Modulation ANT8		
2506.0	17.8311	compliant
2593.0	17.8311	compliant
2680.0	17.8311	compliant

16QAM-Modulation ANT1		
2506.0	17.8020	compliant
2593.0	17.8020	compliant
2680.0	17.8020	compliant
16QAM-Modulation ANT2		
2506.0	17.8020	compliant
2593.0	17.8020	compliant
2680.0	17.7729	compliant
16QAM-Modulation ANT3		
2506.0	17.8020	compliant
2593.0	17.8020	compliant
2680.0	17.8020	compliant
16QAM-Modulation ANT4		
2506.0	17.8020	compliant
2593.0	17.8020	compliant
2680.0	17.8020	compliant
16QAM-Modulation ANT5		
2506.0	17.8020	compliant
2593.0	17.8020	compliant
2680.0	17.8020	compliant
16QAM-Modulation ANT6		
2506.0	17.8020	compliant
2593.0	17.8020	compliant
2680.0	17.8020	compliant
16QAM-Modulation ANT7		
2506.0	17.8020	compliant
2593.0	17.8020	compliant
2680.0	17.8020	compliant
16QAM-Modulation ANT8		
2506.0	17.8020	compliant
2593.0	17.8020	compliant
2680.0	17.8020	compliant
64QAM-Modulation ANT1		
2506.0	17.8311	compliant
2593.0	17.8311	compliant
2680.0	17.8311	compliant
64QAM-Modulation ANT2		
2506.0	17.8311	compliant
2593.0	17.8311	compliant
2680.0	17.8311	compliant
64QAM-Modulation ANT3		
2506.0	17.8311	compliant
2593.0	17.8020	compliant
2680.0	17.8311	compliant
64QAM-Modulation ANT4		
2506.0	17.8311	compliant
2593.0	17.8020	compliant
2680.0	17.8311	compliant
64QAM-Modulation ANT5		
2506.0	17.8311	compliant
2593.0	17.8020	compliant
2680.0	17.8311	compliant

64QAM-Modulation ANT6		
2506.0	17.8311	compliant
2593.0	17.8602	compliant
2680.0	17.8311	compliant
64QAM-Modulation ANT7		
2506.0	17.8311	compliant
2593.0	17.8020	compliant
2680.0	17.8311	compliant
64QAM-Modulation ANT8		
2506.0	17.8311	compliant
2593.0	17.8020	compliant
2680.0	17.8311	compliant
Measurement Uncertainty:		±48kHz

Table 7 Occupied Bandwidth (20 MHz Channel BW)

The occupied bandwidth was found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules.

4.4 Test No. 4: Spurious Emissions at Antenna Terminals (§ 2.1051, § 2.1057, § 27.53)

4.4.1. Limits

Para. No. 27.53(l). For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts.

(l)(2) For fixed and temporary fixed digital stations, the attenuation shall be not less than 43 + 10 log (P) dB (P = transmitter power in Watts).

The compliance limit was calculated in the following way:

Maximum transmitter output power [W]:	P
Maximum transmitter output power [dBm]:	30 + 10 log10 P (conversion from W to dBm)
Attenuation required by FCC:	43 + 10 log10 P

Compliance limit = Maximum transmitter output power - Required attenuation

= 30 + 10 log10 P - (43 + 10 log10 P) = -13 dBm

For MiMo output from 8 TX -antenna connectors, each antenna connectors were measured individually and each individual limit lime was reduced by 10log(8). Limit line was calculated to show -22.03dB emission limit, according to FCC KDB 662911 D01 guidance.

4.4.2. Test Procedure and Results

The tests were carried out in accordance with § 27.53. For all frequency ranges except two (immediately below and above the carrier frequency block) a 1 MHz resolution bandwidth was used for the measurements.

In the 1 MHz frequency bands immediately outside and adjacent to the carrier frequency block the resolution bandwidth is lowered to 1% of the 26 dB occupied bandwidth of the transmitted carrier.

According to § 2.1057, all emissions including the fundamental frequency from the lowest radio frequency generated in the equipment, without going below 9 kHz, up to the 10th harmonic were investigated.

The following tables summarize the worst case detected emission levels (see screenshots on pages 111 for details). The external attenuation (cable loss of the set up) is already added in the results. It can be seen separately as the 'Offset' value in the screenshots.

Config A Lower band edge:

Carrier Frequency: 2501.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation ANT1			
	2496	-30.77	compliant
QPSK-Modulation ANT2			
	2496	-31.88	compliant
QPSK-Modulation ANT3			
	2496	-29.72	compliant
QPSK-Modulation ANT4			
	2496	-29.43	compliant
QPSK-Modulation ANT5			
	2496	-31.97	compliant
QPSK-Modulation ANT6			
	2496	-30.26	compliant
QPSK-Modulation ANT7			
	2496	-32.27	compliant
QPSK-Modulation ANT8			
	2496	-33.26	compliant
16QAM-Modulation ANT1			
	2496	-31.44	compliant
16QAM-Modulation ANT2			
	2496	-25.96	compliant
16QAM-Modulation ANT3			
	2496	-25.82	compliant
16QAM-Modulation ANT4			
	2496	-25.18	compliant
16QAM-Modulation ANT5			
	2496	-31.16	compliant
16QAM-Modulation ANT6			
	2496	-30.77	compliant
16QAM-Modulation ANT7			
	2496	-29.01	compliant
16QAM-Modulation ANT8			
	2496	-32.26	compliant
64QAM-Modulation ANT1			
	2496	-29.85	compliant
64QAM-Modulation ANT2			
	2496	-29.12	compliant

64QAM-Modulation ANT3			
	2496	-32.2	compliant
64QAM-Modulation ANT4			
	2496	-25.85	compliant
64QAM-Modulation ANT5			
	2496	-28.3	compliant
64QAM-Modulation ANT6			
	2496	-30.58	compliant
64QAM-Modulation ANT7			
	2496	-32.06	compliant
64QAM-Modulation ANT8			
	2496	-34.18	compliant
Measurement Uncertainty:		f < 1.0GHz: ±1.1dB, 1.0GHz ≤ f <3.6GHz: ±1.2dB, 3.6GHz ≤ f <8.0GHz: ±1.6dB, 8.0GHz ≤ f: ±1.9dB	

Table 8 Spurious Emissions (Lower bande edge) (10 MHz CH BW)

Config A Upper band edge:

Carrier Frequency: 2685.0.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation ANT1			
	2690	-27.07	compliant
QPSK-Modulation ANT2			
	2690	-26.77	compliant
QPSK-Modulation ANT3			
	2690	-26.83	compliant
QPSK-Modulation ANT4			
	2690	-26.69	compliant
QPSK-Modulation ANT5			
	2690	-28.92	compliant
QPSK-Modulation ANT6			
	2690	-26.09	compliant
QPSK-Modulation ANT7			
	2690	-27.16	compliant
QPSK-Modulation ANT8			
	2690	-29.78	compliant
16QAM-Modulation ANT1			
	2690	-28.45	compliant
16QAM-Modulation ANT2			
	2690	-27.05	compliant
16QAM-Modulation ANT3			
	2690	-27.61	compliant
16QAM-Modulation ANT4			
	2690	-30.07	compliant
16QAM-Modulation ANT5			
	2690	-28.71	compliant
16QAM-Modulation ANT6			
	2690	-30.04	compliant
16QAM-Modulation ANT7			
	2690	-28.63	compliant
16QAM-Modulation ANT8			
	2690	-30.58	compliant
64QAM-Modulation ANT1			
	2690	-27.09	compliant
64QAM-Modulation ANT2			
	2690	-27.5	compliant

64QAM-Modulation ANT3			
	2690	-26.32	compliant
64QAM-Modulation ANT4			
	2690	-26.36	compliant
64QAM-Modulation ANT1			
	2690	-25.72	compliant
64QAM-Modulation ANT2			
	2690	-27.02	compliant
64QAM-Modulation ANT3			
	2690	-26.05	compliant
64QAM-Modulation ANT4			
	2690	-27.25	compliant
Measurement Uncertainty:		f < 1.0GHz: ±1.1dB, 1.0GHz ≤ f <3.6GHz: ±1.2dB, 3.6GHz ≤ f <8.0GHz: ±1.6dB, 8.0GHz ≤ f: ±1.9dB	

Table 9 Spurious Emissions (Upper band edge) (10 MHz CH BW)

Config A Spurious emissions:

Carrier Frequency: 2593.0 MHz			
Frequency Range [MHz]	**Emission Frequency [MHz]**	**Maximum Emission Level [dBm]**	**Result**
QPSK-Modulation ANT1			
0.009 - 26900	5180.9	-30.76	compliant
QPSK-Modulation ANT2			
0.009 - 26900	5181	-30.7	compliant
QPSK-Modulation ANT3			
0.009 - 26900	5180.9	-30.59	compliant
QPSK-Modulation ANT4			
0.009 - 26900	5181	-30.17	compliant
QPSK-Modulation ANT5			
0.009 - 26900	5181	-30.15	compliant
QPSK-Modulation ANT6			
0.009 - 26900	5180.9	-30.32	compliant
QPSK-Modulation ANT7			
0.009 - 26900	5180.9	-30.38	compliant
QPSK-Modulation ANT8			
0.009 - 26900	5180.9	-30.25	compliant
16QAM-Modulation ANT1			
0.009 – 26900	5181	-30.32	compliant
16QAM-Modulation ANT2			
0.009 – 26900	5181	-30.41	compliant
16QAM-Modulation ANT3			
0.009 – 26900	5180.9	-30.68	compliant
16QAM-Modulation ANT4			
0.009 – 26900	5181	-30.02	compliant
16QAM-Modulation ANT5			
0.009 – 26900	5181	-30.46	compliant
16QAM-Modulation ANT6			
0.009 – 26900	5180.9	-30.23	compliant
16QAM-Modulation ANT7			
0.009 – 26900	5180.9	-30.43	compliant
16QAM-Modulation ANT8			
0.009 – 26900	5180.9	-30.72	compliant
64QAM-Modulation ANT1			
0.009 – 26900	5181	-30.6	compliant
64QAM-Modulation ANT2			
0.009 – 26900	5180.9	-30.48	compliant

64QAM-Modulation ANT3			
0.009 – 26900	5180.9	-30.94	compliant
64QAM-Modulation ANT4			
0.009 – 26900	5181	-30.52	compliant
64QAM-Modulation ANT5			
0.009 – 26900	5181	-30.25	compliant
64QAM-Modulation ANT6			
0.009 – 26900	5180.9	-30.32	compliant
64QAM-Modulation ANT7			
0.009 – 26900	5180.9	-30.71	compliant
64QAM-Modulation ANT8			
0.009 – 26900	5180.9	-30.4	compliant
Measurement Uncertainty:		f < 1.0GHz: ±1.1dB, 1.0GHz ≤ f <3.6GHz: ±1.2dB, 3.6GHz ≤ f <8.0GHz: ±1.6dB, 8.0GHz ≤ f: ±1.9dB	

Table 10 Spurious Emissions (10 MHz Channel BW)

Config B Lower band edge:

Carrier Frequency: 2506.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation ANT1			
	2496.0	-26.64	compliant
QPSK-Modulation ANT2			
	2496.0	-25.89	compliant
QPSK-Modulation ANT3			
	2496.0	-26.12	compliant
QPSK-Modulation ANT4			
	2496.0	-26.42	compliant
QPSK-Modulation ANT5			
	2496.0	-26.96	compliant
QPSK-Modulation ANT6			
	2496.0	-26.19	compliant
QPSK-Modulation ANT7			
	2496.0	-26.51	compliant
QPSK-Modulation ANT8			
	2496.0	-26.01	compliant
16QAM-Modulation ANT1			
	2496.0	-26.84	compliant
16QAM-Modulation ANT2			
	2496.0	-25.21	compliant
16QAM-Modulation ANT3			
	2496.0	-25.60	compliant
16QAM-Modulation ANT4			
	2496.0	-25.61	compliant
16QAM-Modulation ANT5			
	2496.0	-27.42	compliant
16QAM-Modulation ANT6			
	2496.0	-31.59	compliant
16QAM-Modulation ANT7			
	2496.0	-25.97	compliant
16QAM-Modulation ANT8			
	2496.0	-26.39	compliant
64QAM-Modulation ANT1			
	2496.0	-25.99	compliant
64QAM-Modulation ANT2			
	2496.0	-25.64	compliant

64QAM-Modulation ANT3			
	2496.0	-25.61	compliant
64QAM-Modulation ANT4			
	2496.0	-26.03	compliant
64QAM-Modulation ANT5			
	2496.0	-26.75	compliant
64QAM-Modulation ANT6			
	2496.0	-25.49	compliant
64QAM-Modulation ANT7			
	2496.0	-25.76	compliant
64QAM-Modulation ANT8			
	2496.0	-27.35	compliant
Measurement Uncertainty:		f < 1.0GHz: ±1.1dB, 1.0GHz ≤ f <3.6GHz: ±1.2dB, 3.6GHz ≤ f <8.0GHz: ±1.6dB, 8.0GHz ≤ f: ±1.9dB	

Table 11 Spurious Emissions (Lower band edge) (20 MHz CH BW)

Config B Upper band edge:

Carrier Frequency: 2680.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation ANT1			
	2690.0	-25.24	compliant
QPSK-Modulation ANT2			
	2690.0	-24.98	compliant
QPSK-Modulation ANT3			
	2690.0	-24.63	compliant
QPSK-Modulation ANT4			
	2690.0	-24.21	compliant
QPSK-Modulation ANT5			
	2690.0	-26.49	compliant
QPSK-Modulation ANT6			
	2690.0	-24.78	compliant
QPSK-Modulation ANT7			
	2690.0	-25.42	compliant
QPSK-Modulation ANT8			
	2690.0	-24.42	compliant
16QAM-Modulation ANT1			
	2690.0	-26.27	compliant
16QAM-Modulation ANT2			
	2690.0	-24.22	compliant
16QAM-Modulation ANT3			
	2690.0	-23.98	compliant
16QAM-Modulation ANT4			
	2690.0	-25.12	compliant
16QAM-Modulation ANT5			
	2690.0	-26.27	compliant
16QAM-Modulation ANT6			
	2690.0	-26.97	compliant
16QAM-Modulation ANT7			
	2690.0	-24	compliant
16QAM-Modulation ANT8			
	2690.0	-25.31	compliant
64QAM-Modulation ANT1			
	2690.0	-25.08	compliant
64QAM-Modulation ANT2			
	2690.0	-24.16	compliant

64QAM-Modulation ANT3			
	2690.0	-25.80	compliant
64QAM-Modulation ANT4			
	2690.0	-25.49	compliant
64QAM-Modulation ANT5			
	2690.0	-26.7	compliant
64QAM-Modulation ANT6			
	2690.0	-26.25	compliant
64QAM-Modulation ANT7			
	2690.0	-26.82	compliant
64QAM-Modulation ANT8			
	2690.0	-24.37	compliant
Measurement Uncertainty:		f < 1.0GHz: ±1.1dB, 1.0GHz ≤ f <3.6GHz: ±1.2dB, 3.6GHz ≤ f <8.0GHz: ±1.6dB, 8.0GHz ≤ f: ±1.9dB	

Table 12 Spurious Emissions (Upper band edge) (20 MHz CH BW)

Config B Spurious emissions:

Carrier Frequency: 2593.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation ANT1			
0.009 – 26900	5181.0	-31.01	compliant
QPSK-Modulation ANT2			
0.009 – 26900	5193.0	-31.40	compliant
QPSK-Modulation ANT3			
0.009 – 26900	5181.0	-30.83	compliant
QPSK-Modulation ANT4			
0.009 – 26900	5181.0	-30.50	compliant
QPSK-Modulation ANT5			
0.009 – 26900	5181.0	-32.48	compliant
QPSK-Modulation ANT6			
0.009 – 26900	5180.9	-30.59	compliant
QPSK-Modulation ANT7			
0.009 – 26900	5180.9	-30.47	compliant
QPSK-Modulation ANT8			
0.009 – 26900	5180.9	-30.85	compliant
16QAM-Modulation ANT1			
0.009 – 26900	5181.0	-30.76	compliant
16QAM-Modulation ANT2			
0.009 – 26900	5181.0	-31.19	compliant
16QAM-Modulation ANT3			
0.009 – 26900	5181.0	-30.93	compliant
16QAM-Modulation ANT4			
0.009 – 26900	5181.0	-31.11	compliant
16QAM-Modulation ANT5			
0.009 – 26900	5181.0	-30.29	compliant
16QAM-Modulation ANT6			
0.009 – 26900	5180.9	-31.13	compliant
16QAM-Modulation ANT7			
0.009 – 26900	5180.9	-30.43	compliant
16QAM-Modulation ANT8			
0.009 – 26900	5180.9	-30.88	compliant
64QAM-Modulation ANT1			
0.009 – 26900	5193.0	-31.15	compliant
64QAM-Modulation ANT2			
0.009 – 26900	5181.0	-30.66	compliant

64QAM-Modulation ANT3			
0.009 – 26900	5181.0	-30.76	compliant
64QAM-Modulation ANT4			
0.009 – 26900	5181.0	-30.81	compliant
64QAM-Modulation ANT5			
0.009 – 26900	5181.0	-30.81	compliant
64QAM-Modulation ANT6			
0.009 – 26900	5180.9	-30.39	compliant
64QAM-Modulation ANT7			
0.009 – 26900	5180.9	-30.76	compliant
64QAM-Modulation ANT8			
0.009 – 26900	5180.9	-31.05	compliant
Measurement Uncertainty:		f < 1.0GHz: ±1.1dB, 1.0GHz ≤ f <3.6GHz: ±1.2dB, 3.6GHz ≤ f <8.0GHz: ±1.6dB, 8.0GHz ≤ f: ±1.9dB	

Table 13 Spurious Emissions (20 MHz Channel BW)

The measured conducted emission levels were found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules.

4.5 Test No. 5: Field Strength of Spurious Radiation (§ 2.1053, § 2.1057, § 27.53)

4.5.1. Limits

Para. No. 27.53(m). For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts.

(m)(2) For digital base stations, the attenuation shall be not less than 43 + 10 log (P) dB (P = transmitter power in Watts).

4.5.2. Test Configuration

The measurements were performed in an anechoic chamber. The radiated test site complies with the site attenuation requirements listed in ANSI C63.4 2003 and is listed with the FCC.

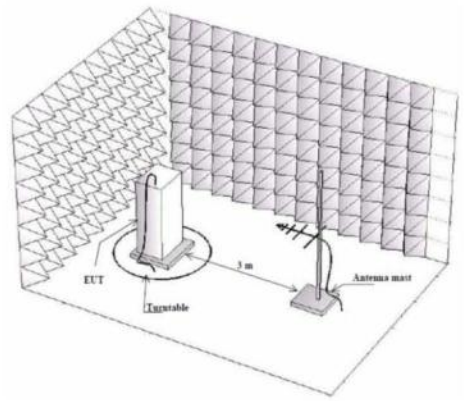

Figure 2 Test Configuration

Photographs of the EUT in the anechoic chamber are shown on page 208 of this measurement report.

4.5.3. Test Procedure and Results

TIA/EIA-603-C-2004, Section 2.2.12

The test was performed in a semi-anechoic shielded room. The EUT was placed on a non-conductive 0.8 m high table standing on the turntable. During the test in the frequency range 30 - 26500 MHz the distance from the EUT to the measuring antenna was 3 m. In order to find the maximum levels of the disturbance radiation the angle of the turntable, the height of the measuring antenna were varied during the tests. The test was performed with the measuring antenna being both in horizontal and vertical polarizations.

Vertical and horizontal polarizations in the frequency range 30 - 26500 MHz was first measured by using the peak detector. During the peak detector scan the turntable was rotated from 0° to 360° with 30° step with the antenna heights 1.0 m and 2.5 m.

The limit of -13 dBm has been calculated to correspond 84.4 dB (µV/m). Spurious emissions closer than 20 dB to the limit was measured with average detector.

According to § 2.1057, all emissions from the lowest radio frequency generated in the equipment, without going below 9 kHz, up to the 10th harmonic were investigated.

The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The EUT was replaced with a reference substitution antenna with a known gain referenced to an isotropic radiator $G_{Antenna[dBi]}$. This antenna was fed with a signal at the spurious frequency $P_{Gen[dBm]}$. The level of the signal was adjusted to repeat the previously measured level. The resulting

EIRP is the signal level fed to the reference antenna corrected for gain referenced to an isotropic.

The formula below was used to calculate the EIRP of the EUT.

$$P_{EIRP[dbm]} = P_{Gen[dBm]} - L_{Cable[dB]} + G_{Antenna[dBi]}$$

Worst case detected emission levels are reported in the following table (refer to spectral plots included on pages 100 for details). The antenna factor and cable loss is according to the manufacturer's specification.

Config B:

Carrier Frequency: 2506.0 MHz, 2593.0 MHz and 2680.0 MHz			
Frequency Range [MHz]	**Emission Frequency [MHz]**	**Maximum Emission Level [dBm]**	**Result**
QPSK-Modulation TX1			
30 - 26500	More than 20dB below limit -13 dBm		compliant
Measurement Uncertainty:			±5.4dB

Table 14 Field Strength of Spurious Radiation (20 MHz Channel BW)

The measured emission levels were found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules.

4.6 Test No. 6: Frequency Stability (§ 2.1055, § 27.54)

4.6.1. Purpose

Frequency stability measurements were performed to verify that the frequency deviation of the emission stays within the licensee's frequency block under extreme temperature

4.6.2. Limits

Para. No. 27.54. (-30 °C to +50 °C) and supply voltage conditions according to § 2.1055.

4.6.3. Test Configuration

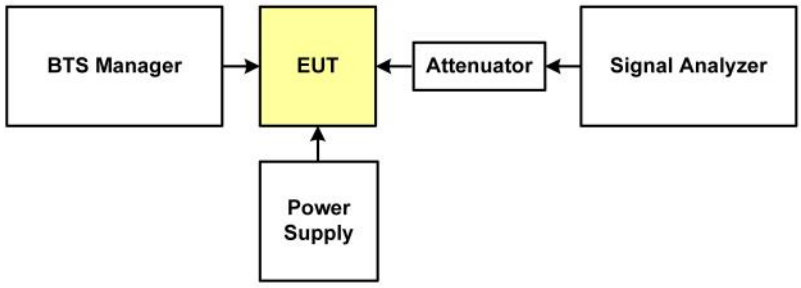

Figure 3 Test Configuration for frequency stability with voltage variation

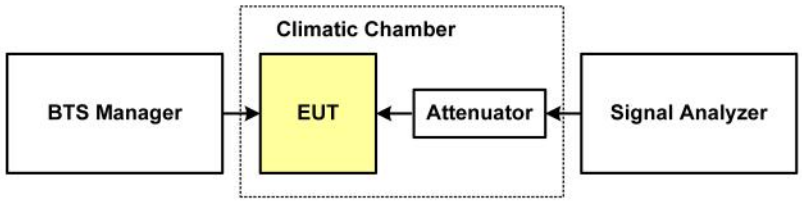

Figure 4 Test Configuration for frequency stability with temperature variation

A complete list of the measurement equipment is included on page 53 of this measurement report.

4.6.4. Test Procedure and Results

Frequency Stability with Temperature Variation:

The supply voltage of the EUT was set to the nominal value and the temperature of the environmental chamber was varied in 10 degree steps from -30 degrees celsius to +50 degrees celsius. The EUT was allowed to stabilize at each temperature and the frequency error was measured.

Config A:

Carrier Frequency: 2593.0 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						
-48.0	-30.0	-7.96	-0,003	129	0.05	compliant
-48.0	-20.0	-4.23	-0,002	129	0.05	compliant
-48.0	-10.0	-4.57	-0,002	129	0.05	compliant
-48.0	0.0	-7.58	-0,003	129	0.05	compliant
-48.0	10.0	-6.84	-0,003	129	0.05	compliant
-48.0	30.0	-7.04	-0,003	129	0.05	compliant
-48.0	40.0	-5.53	-0,002	129	0.05	compliant
-48.0	50.0	6.96	0,003	129	0.05	compliant
QPSK Modulation ANT2						
-48.0	-30.0	-5.56	-0,002	129	0.05	compliant
-48.0	-20.0	-7.11	-0,003	129	0.05	compliant
-48.0	-10.0	-2.04	-0,001	129	0.05	compliant
-48.0	0.0	-7.52	-0,003	129	0.05	compliant
-48.0	10.0	-6.09	-0,002	129	0.05	compliant
-48.0	30.0	-8.20	-0,003	129	0.05	compliant
-48.0	40.0	7.21	0,003	129	0.05	compliant
-48.0	50.0	5.92	0,002	129	0.05	compliant
QPSK Modulation ANT3						
-48.0	-30.0	-6.21	-0,002	129	0.05	compliant
-48.0	-20.0	-2.98	-0,001	129	0.05	compliant
-48.0	-10.0	-7.00	-0,003	129	0.05	compliant
-48.0	0.0	-6.16	-0,002	129	0.05	compliant
-48.0	10.0	-7.01	-0,003	129	0.05	compliant
-48.0	30.0	9.69	0,004	129	0.05	compliant
-48.0	40.0	6.71	0,003	129	0.05	compliant
-48.0	50.0	7.04	0,003	129	0.05	compliant
QPSK Modulation ANT4						
-48.0	-30.0	-7.00	-0,003	129	0.05	compliant
-48.0	-20.0	-6.68	-0,003	129	0.05	compliant

-48.0	-10.0	-2.84	-0,001	129	0.05	compliant
-48.0	0.0	-9.41	-0,004	129	0.05	compliant
-48.0	10.0	-4.51	-0,002	129	0.05	compliant
-48.0	30.0	8.40	0,003	129	0.05	compliant
-48.0	40.0	7.36	0,003	129	0.05	compliant
-48.0	50.0	-8.99	-0,003	129	0.05	compliant
QPSK Modulation ANT5						
-48	-30	-6.770	-0.003	129	0.05	compliant
-48	-20	5.690	0.002	129	0.05	compliant
-48	-10	6.800	0.003	129	0.05	compliant
-48	0	8.280	0.003	129	0.05	compliant
-48	10	11.290	0.004	129	0.05	compliant
-48	30	7.660	0.003	129	0.05	compliant
-48	40	7.410	0.003	129	0.05	compliant
-48	50	11.500	0.004	129	0.05	compliant
QPSK Modulation ANT6						
-48	-30	11.650	0.004	129	0.05	compliant
-48	-20	4.170	0.002	129	0.05	compliant
-48	-10	10.320	0.004	129	0.05	compliant
-48	0	8.370	0.003	129	0.05	compliant
-48	10	9.710	0.004	129	0.05	compliant
-48	30	8.700	0.003	129	0.05	compliant
-48	40	8.340	0.003	129	0.05	compliant
-48	50	9.730	0.004	129	0.05	compliant
QPSK Modulation ANT7						
-48	-30	5.540	0.002	129	0.05	compliant
-48	-20	5.130	0.002	129	0.05	compliant
-48	-10	5.930	0.002	129	0.05	compliant
-48	0	10.740	0.004	129	0.05	compliant
-48	10	8.960	0.003	129	0.05	compliant
-48	30	9.410	0.004	129	0.05	compliant
-48	40	10.060	0.004	129	0.05	compliant
-48	50	8.840	0.003	129	0.05	compliant
QPSK Modulation ANT8						
-48	-30	6.030	0.002	129	0.05	compliant
-48	-20	4.750	0.002	129	0.05	compliant
-48	-10	5.070	0.002	129	0.05	compliant
-48	0	8.500	0.003	129	0.05	compliant
-48	10	8.430	0.003	129	0.05	compliant
-48	30	8.460	0.003	129	0.05	compliant
-48	40	8.830	0.003	129	0.05	compliant
-48	50	9.290	0.004	129	0.05	compliant

16QAM Modulation ANT1						
-48.0	-30.0	-5.76	-0,002	129	0.05	compliant
-48.0	-20.0	-4.21	-0,002	129	0.05	compliant
-48.0	-10.0	-4.94	-0,002	129	0.05	compliant
-48.0	0.0	-6.12	-0,002	129	0.05	compliant
-48.0	10.0	-6.99	-0,003	129	0.05	compliant
-48.0	30.0	7.44	0,003	129	0.05	compliant
-48.0	40.0	-8.68	-0,003	129	0.05	compliant
-48.0	50.0	-8.04	-0,003	129	0.05	compliant
16QAM Modulation ANT2						
-48.0	-30.0	-8.36	-0,003	129	0.05	compliant
-48.0	-20.0	-5.64	-0,002	129	0.05	compliant
-48.0	-10.0	-7.90	-0,003	129	0.05	compliant
-48.0	0.0	-7.55	-0,003	129	0.05	compliant
-48.0	10.0	-5.89	-0,002	129	0.05	compliant
-48.0	30.0	-7.38	-0,003	129	0.05	compliant
-48.0	40.0	4.88	0,002	129	0.05	compliant
-48.0	50.0	8.52	0,003	129	0.05	compliant
16QAM Modulation ANT3						
-48.0	-30.0	-4.15	-0,002	129	0.05	compliant
-48.0	-20.0	-7.84	-0,003	129	0.05	compliant
-48.0	-10.0	-6.45	-0,002	129	0.05	compliant
-48.0	0.0	-6.44	-0,002	129	0.05	compliant
-48.0	10.0	-4.98	-0,002	129	0.05	compliant
-48.0	30.0	-7.39	-0,003	129	0.05	compliant
-48.0	40.0	3.87	0,001	129	0.05	compliant
-48.0	50.0	-6.65	-0,003	129	0.05	compliant
16QAM Modulation ANT4						
-48.0	-30.0	-7.60	-0,003	129	0.05	compliant
-48.0	-20.0	-6.35	-0,002	129	0.05	compliant
-48.0	-10.0	-4.32	-0,002	129	0.05	compliant
-48.0	0.0	-5.89	-0,002	129	0.05	compliant
-48.0	10.0	-6.02	-0,002	129	0.05	compliant
-48.0	30.0	-9.05	-0,003	129	0.05	compliant
-48.0	40.0	-6.71	-0,003	129	0.05	compliant
-48.0	50.0	-8.63	-0,003	129	0.05	compliant
16QAM Modulation ANT5						
-48	-30	5.460	0.002	129	0.05	compliant
-48	-20	8.040	0.003	129	0.05	compliant
-48	-10	6.830	0.003	129	0.05	compliant
-48	0	9.400	0.004	129	0.05	compliant
-48	10	8.200	0.003	129	0.05	compliant

-48	30	9.020	0.003	129	0.05	compliant
-48	40	6.780	0.003	129	0.05	compliant
-48	50	10.550	0.004	129	0.05	compliant
16QAM Modulation ANT6						
-48	-30	-5.530	-0.002	129	0.05	compliant
-48	-20	10.220	0.004	129	0.05	compliant
-48	-10	7.050	0.003	129	0.05	compliant
-48	0	8.210	0.003	129	0.05	compliant
-48	10	9.390	0.004	129	0.05	compliant
-48	30	9.840	0.004	129	0.05	compliant
-48	40	7.170	0.003	129	0.05	compliant
-48	50	9.520	0.004	129	0.05	compliant
16QAM Modulation ANT7						
-48	-30	-3.190	-0.001	129	0.05	compliant
-48	-20	3.690	0.001	129	0.05	compliant
-48	-10	-6.040	-0.002	129	0.05	compliant
-48	0	7.560	0.003	129	0.05	compliant
-48	10	8.970	0.003	129	0.05	compliant
-48	30	8.600	0.003	129	0.05	compliant
-48	40	8.640	0.003	129	0.05	compliant
-48	50	-6.060	-0.002	129	0.05	compliant
16QAM Modulation ANT8						
-48	-30	4.940	0.002	129	0.05	compliant
-48	-20	-6.030	-0.002	129	0.05	compliant
-48	-10	6.670	0.003	129	0.05	compliant
-48	0	9.250	0.004	129	0.05	compliant
-48	10	-7.850	-0.003	129	0.05	compliant
-48	30	8.050	0.003	129	0.05	compliant
-48	40	5.590	0.002	129	0.05	compliant
-48	50	-5.770	-0.002	129	0.05	compliant
64QAM Modulation ANT1						
-48.0	-30.0	-7.21	-0,003	129	0.05	compliant
-48.0	-20.0	-5.45	-0,002	129	0.05	compliant
-48.0	-10.0	-6.06	-0,002	129	0.05	compliant
-48.0	0.0	-8.20	-0,003	129	0.05	compliant
-48.0	10.0	-5.10	-0,002	129	0.05	compliant
-48.0	30.0	7.94	0,003	129	0.05	compliant
-48.0	40.0	7.16	0,003	129	0.05	compliant
-48.0	50.0	-4.64	-0,002	129	0.05	compliant
64QAM Modulation ANT2						
-48.0	-30.0	-5.69	-0,002	129	0.05	compliant
-48.0	-20.0	-3.41	-0,001	129	0.05	compliant

-48.0	-10.0	-2.69	-0,001	129	0.05	compliant
-48.0	0.0	7.12	0,003	129	0.05	compliant
-48.0	10.0	-5.72	-0,002	129	0.05	compliant
-48.0	30.0	9.11	0,004	129	0.05	compliant
-48.0	40.0	-6.10	-0,002	129	0.05	compliant
-48.0	50.0	8.51	0,003	129	0.05	compliant
64QAM Modulation ANT3						
-48.0	-30.0	-5.75	-0,002	129	0.05	compliant
-48.0	-20.0	-3.24	-0,001	129	0.05	compliant
-48.0	-10.0	-4.41	-0,002	129	0.05	compliant
-48.0	0.0	-6.02	-0,002	129	0.05	compliant
-48.0	10.0	-7.17	-0,003	129	0.05	compliant
-48.0	30.0	8.66	0,003	129	0.05	compliant
-48.0	40.0	10.61	0,004	129	0.05	compliant
-48.0	50.0	8.57	0,003	129	0.05	compliant
64QAM Modulation ANT4						
-48.0	-30.0	-8.81	-0,003	129	0.05	compliant
-48.0	-20.0	-8.49	-0,003	129	0.05	compliant
-48.0	-10.0	-3.11	-0,001	129	0.05	compliant
-48.0	0.0	-6.79	-0,003	129	0.05	compliant
-48.0	10.0	-8.25	-0,003	129	0.05	compliant
-48.0	30.0	5.53	0,002	129	0.05	compliant
-48.0	40.0	8.29	0,003	129	0.05	compliant
-48.0	50.0	8.24	0,003	129	0.05	compliant
64QAM Modulation ANT5						
-48	-30	8.860	0.003	129	0.05	compliant
-48	-20	6.000	0.002	129	0.05	compliant
-48	-10	7.370	0.003	129	0.05	compliant
-48	0	10.540	0.004	129	0.05	compliant
-48	10	10.040	0.004	129	0.05	compliant
-48	30	11.400	0.004	129	0.05	compliant
-48	40	7.970	0.003	129	0.05	compliant
-48	50	9.300	0.004	129	0.05	compliant
64QAM Modulation ANT6						
-48	-30	8.630	0.003	129	0.05	compliant
-48	-20	5.670	0.002	129	0.05	compliant
-48	-10	6.940	0.003	129	0.05	compliant
-48	0	8.120	0.003	129	0.05	compliant
-48	10	10.590	0.004	129	0.05	compliant
-48	30	9.370	0.004	129	0.05	compliant
-48	40	7.800	0.003	129	0.05	compliant
-48	50	9.780	0.004	129	0.05	compliant

64QAM Modulation ANT7						
-48	-30	8.590	0.003	129	0.05	compliant
-48	-20	7.520	0.003	129	0.05	compliant
-48	-10	4.890	0.002	129	0.05	compliant
-48	0	9.820	0.004	129	0.05	compliant
-48	10	10.810	0.004	129	0.05	compliant
-48	30	8.640	0.003	129	0.05	compliant
-48	40	10.960	0.004	129	0.05	compliant
-48	50	10.800	0.004	129	0.05	compliant
64QAM Modulation ANT8						
-48	-30	5.860	0.002	129	0.05	compliant
-48	-20	6.940	0.003	129	0.05	compliant
-48	-10	7.720	0.003	129	0.05	compliant
-48	0	8.530	0.003	129	0.05	compliant
-48	10	9.170	0.004	129	0.05	compliant
-48	30	7.220	0.003	129	0.05	compliant
-48	40	8.850	0.003	129	0.05	compliant
-48	50	9.930	0.004	129	0.05	compliant
Measurement Uncertainty:					±1.0 Hz	

Table 15 Frequency stability with temp. var. (10 MHz Channel BW)

Config B :

Carrier Frequency: 2593.0 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						
-48.0	-30.0	-8.93	-0,003	129	0.05	compliant
-48.0	-20.0	-7.74	-0,003	129	0.05	compliant
-48.0	-10.0	-4.73	-0,002	129	0.05	compliant
-48.0	0.0	-8.22	-0,003	129	0.05	compliant
-48.0	10.0	-4.39	-0,002	129	0.05	compliant
-48.0	30.0	-12.23	-0,005	129	0.05	compliant
-48.0	40.0	-11.84	-0,005	129	0.05	compliant
-48.0	50.0	-2.87	-0,001	129	0.05	compliant
QPSK Modulation ANT2						
-48.0	-30.0	-7.14	-0,003	129	0.05	compliant
-48.0	-20.0	-10.57	-0,004	129	0.05	compliant
-48.0	-10.0	-5.90	-0,002	129	0.05	compliant
-48.0	0.0	-5.93	-0,002	129	0.05	compliant
-48.0	10.0	-5.24	-0,002	129	0.05	compliant

-48.0	30.0	-10.98	-0,004	129	0.05	compliant
-48.0	40.0	-10.69	-0,004	129	0.05	compliant
-48.0	50.0	-7.79	-0,003	129	0.05	compliant
QPSK Modulation ANT3						
-48.0	-30.0	-11.77	-0,005	129	0.05	compliant
-48.0	-20.0	-7.19	-0,003	129	0.05	compliant
-48.0	-10.0	-4.44	-0,002	129	0.05	compliant
-48.0	0.0	10.53	0,004	129	0.05	compliant
-48.0	10.0	-5.21	-0,002	129	0.05	compliant
-48.0	30.0	-10.76	-0,004	129	0.05	compliant
-48.0	40.0	-10.12	-0,004	129	0.05	compliant
-48.0	50.0	-5.98	-0,002	129	0.05	compliant
QPSK Modulation ANT4						
-48.0	-30.0	-9.30	-0,004	129	0.05	compliant
-48.0	-20.0	-8.84	-0,003	129	0.05	compliant
-48.0	-10.0	-6.19	-0,002	129	0.05	compliant
-48.0	0.0	8.76	0,003	129	0.05	compliant
-48.0	10.0	5.99	0,002	129	0.05	compliant
-48.0	30.0	27.35	0,011	129	0.05	compliant
-48.0	40.0	-13.98	-0,005	129	0.05	compliant
-48.0	50.0	-4.11	-0,002	129	0.05	compliant
QPSK Modulation ANT5						
-48	-30	11.690	0.005	129	0.05	compliant
-48	-20	4.830	0.002	129	0.05	compliant
-48	-10	8.020	0.003	129	0.05	compliant
-48	0	-6.030	-0.002	129	0.05	compliant
-48	10	6.970	0.003	129	0.05	compliant
-48	30	-4.150	-0.002	129	0.05	compliant
-48	40	-2.690	-0.001	129	0.05	compliant
-48	50	-5.860	-0.002	129	0.05	compliant
QPSK Modulation ANT6						
-48	-30	-4.800	-0.002	129	0.05	compliant
-48	-20	5.040	0.002	129	0.05	compliant
-48	-10	5.910	0.002	129	0.05	compliant
-48	0	-10.140	-0.004	129	0.05	compliant
-48	10	9.010	0.003	129	0.05	compliant
-48	30	6.270	0.002	129	0.05	compliant
-48	40	3.700	0.001	129	0.05	compliant
-48	50	6.760	0.003	129	0.05	compliant
QPSK Modulation ANT7						
-48	-30	-3.940	-0.002	129	0.05	compliant
-48	-20	-8.150	-0.003	129	0.05	compliant

-48	-10	-9.130	-0.004	129	0.05	compliant
-48	0	-11.910	-0.005	129	0.05	compliant
-48	10	7.770	0.003	129	0.05	compliant
-48	30	4.090	0.002	129	0.05	compliant
-48	40	-5.190	-0.002	129	0.05	compliant
-48	50	5.700	0.002	129	0.05	compliant
QPSK Modulation ANT8						
-48	-30	4.370	0.002	129	0.05	compliant
-48	-20	-4.940	-0.002	129	0.05	compliant
-48	-10	-6.390	-0.002	129	0.05	compliant
-48	0	10.570	0.004	129	0.05	compliant
-48	10	7.150	0.003	129	0.05	compliant
-48	30	-6.270	-0.002	129	0.05	compliant
-48	40	4.730	0.002	129	0.05	compliant
-48	50	7.430	0.003	129	0.05	compliant
16QAM Modulation ANT1						
-48.0	-30.0	-10.71	-0,004	129	0.05	compliant
-48.0	-20.0	-7.40	-0,003	129	0.05	compliant
-48.0	-10.0	-5.53	-0,002	129	0.05	compliant
-48.0	0.0	-9.47	-0,004	129	0.05	compliant
-48.0	10.0	5.10	0,002	129	0.05	compliant
-48.0	30.0	-9.90	-0,004	129	0.05	compliant
-48.0	40.0	-6.95	-0,003	129	0.05	compliant
-48.0	50.0	-4.15	-0,002	129	0.05	compliant
16QAM Modulation ANT2						
-48.0	-30.0	-4.88	-0,002	129	0.05	compliant
-48.0	-20.0	-10.89	-0,004	129	0.05	compliant
-48.0	-10.0	-4.58	-0,002	129	0.05	compliant
-48.0	0.0	-8.79	-0,003	129	0.05	compliant
-48.0	10.0	-4.65	-0,002	129	0.05	compliant
-48.0	30.0	-8.97	-0,003	129	0.05	compliant
-48.0	40.0	-9.83	-0,004	129	0.05	compliant
-48.0	50.0	-8.65	-0,003	129	0.05	compliant
16QAM Modulation ANT3						
-48.0	-30.0	-9.39	-0,004	129	0.05	compliant
-48.0	-20.0	-9.71	-0,004	129	0.05	compliant
-48.0	-10.0	-4.32	-0,002	129	0.05	compliant
-48.0	0.0	-8.27	-0,003	129	0.05	compliant
-48.0	10.0	-7.76	-0,003	129	0.05	compliant
-48.0	30.0	-6.72	-0,003	129	0.05	compliant
-48.0	40.0	-11.39	-0,004	129	0.05	compliant
-48.0	50.0	-6.60	-0,003	129	0.05	compliant

16QAM Modulation ANT4						
-48.0	-30.0	-9.51	-0,004	129	0.05	compliant
-48.0	-20.0	-7.11	-0,003	129	0.05	compliant
-48.0	-10.0	-9.18	-0,004	129	0.05	compliant
-48.0	0.0	-10.05	-0,004	129	0.05	compliant
-48.0	10.0	-8.27	-0,003	129	0.05	compliant
-48.0	30.0	-13.21	-0,005	129	0.05	compliant
-48.0	40.0	-8.59	-0,003	129	0.05	compliant
-48.0	50.0	-8.22	-0,003	129	0.05	compliant
16QAM Modulation ANT5						
-48	-30	4.110	0.002	129	0.05	compliant
-48	-20	6.700	0.003	129	0.05	compliant
-48	-10	7.460	0.003	129	0.05	compliant
-48	0	-6.870	-0.003	129	0.05	compliant
-48	10	6.420	0.002	129	0.05	compliant
-48	30	-4.110	-0.002	129	0.05	compliant
-48	40	4.370	0.002	129	0.05	compliant
-48	50	5.980	0.002	129	0.05	compliant
16QAM Modulation ANT6						
-48	-30	5.810	0.002	129	0.05	compliant
-48	-20	-3.400	-0.001	129	0.05	compliant
-48	-10	-9.070	-0.003	129	0.05	compliant
-48	0	-7.050	-0.003	129	0.05	compliant
-48	10	7.370	0.003	129	0.05	compliant
-48	30	3.760	0.001	129	0.05	compliant
-48	40	3.400	0.001	129	0.05	compliant
-48	50	6.860	0.003	129	0.05	compliant
16QAM Modulation ANT7						
-48	-30	9.270	0.004	129	0.05	compliant
-48	-20	5.870	0.002	129	0.05	compliant
-48	-10	-4.960	-0.002	129	0.05	compliant
-48	0	10.770	0.004	129	0.05	compliant
-48	10	6.140	0.002	129	0.05	compliant
-48	30	-2.920	-0.001	129	0.05	compliant
-48	40	2.880	0.001	129	0.05	compliant
-48	50	5.750	0.002	129	0.05	compliant
16QAM Modulation ANT8						
-48	-30	-4.900	-0.002	129	0.05	compliant
-48	-20	-6.620	-0.003	129	0.05	compliant
-48	-10	-5.480	-0.002	129	0.05	compliant
-48	0	6.720	0.003	129	0.05	compliant
-48	10	5.830	0.002	129	0.05	compliant

-48	30	-4.530	-0.002	129	0.05	compliant
-48	40	4.150	0.002	129	0.05	compliant
-48	50	7.380	0.003	129	0.05	compliant
64QAM Modulation ANT1						
-48.0	-30.0	-8.83	-0,003	129	0.05	compliant
-48.0	-20.0	-11.08	-0,004	129	0.05	compliant
-48.0	-10.0	-5.97	-0,002	129	0.05	compliant
-48.0	0.0	-4.88	-0,002	129	0.05	compliant
-48.0	10.0	-5.03	-0,002	129	0.05	compliant
-48.0	30.0	-8.52	-0,003	129	0.05	compliant
-48.0	40.0	-11.22	-0,004	129	0.05	compliant
-48.0	50.0	-7.71	-0,003	129	0.05	compliant
64QAM Modulation ANT2						
-48.0	-30.0	-4.53	-0,002	129	0.05	compliant
-48.0	-20.0	-5.78	-0,002	129	0.05	compliant
-48.0	-10.0	-3.59	-0,001	129	0.05	compliant
-48.0	0.0	-8.24	-0,003	129	0.05	compliant
-48.0	10.0	6.24	0,002	129	0.05	compliant
-48.0	30.0	-7.97	-0,003	129	0.05	compliant
-48.0	40.0	-8.27	-0,003	129	0.05	compliant
-48.0	50.0	-5.52	-0,002	129	0.05	compliant
64QAM Modulation ANT3						
-48.0	-30.0	-11.71	-0,005	129	0.05	compliant
-48.0	-20.0	-8.92	-0,003	129	0.05	compliant
-48.0	-10.0	-6.35	-0,002	129	0.05	compliant
-48.0	0.0	-7.25	-0,003	129	0.05	compliant
-48.0	10.0	-4.70	-0,002	129	0.05	compliant
-48.0	30.0	-7.08	-0,003	129	0.05	compliant
-48.0	40.0	-10.03	-0,004	129	0.05	compliant
-48.0	50.0	-6.56	-0,003	129	0.05	compliant
64QAM Modulation ANT4						
-48.0	-30.0	-8.98	-0,003	129	0.05	compliant
-48.0	-20.0	-8.62	-0,003	129	0.05	compliant
-48.0	-10.0	-3.16	-0,001	129	0.05	compliant
-48.0	0.0	-9.01	-0,003	129	0.05	compliant
-48.0	10.0	-6.48	-0,002	129	0.05	compliant
-48.0	30.0	-23.89	-0,009	129	0.05	compliant
-48.0	40.0	-8.58	-0,003	129	0.05	compliant
-48.0	50.0	-6.94	-0,003	129	0.05	compliant
64QAM Modulation ANT5						
-48	-30	-9.320	-0.004	129	0.05	compliant
-48	-20	5.520	0.002	129	0.05	compliant

-48	-10	-5.800	-0.002	129	0.05	compliant
-48	0	-6.490	-0.003	129	0.05	compliant
-48	10	6.770	0.003	129	0.05	compliant
-48	30	-4.000	-0.002	129	0.05	compliant
-48	40	-3.470	-0.001	129	0.05	compliant
-48	50	-6.390	-0.002	129	0.05	compliant
64QAM Modulation ANT6						
-48	-30	-4.820	-0.002	129	0.05	compliant
-48	-20	5.220	0.002	129	0.05	compliant
-48	-10	6.480	0.002	129	0.05	compliant
-48	0	8.060	0.003	129	0.05	compliant
-48	10	8.730	0.003	129	0.05	compliant
-48	30	5.340	0.002	129	0.05	compliant
-48	40	-6.770	-0.003	129	0.05	compliant
-48	50	-6.560	-0.003	129	0.05	compliant
64QAM Modulation ANT7						
-48	-30	7.660	0.003	129	0.05	compliant
-48	-20	-7.980	-0.003	129	0.05	compliant
-48	-10	-10.370	-0.004	129	0.05	compliant
-48	0	-8.860	-0.003	129	0.05	compliant
-48	10	-6.730	-0.003	129	0.05	compliant
-48	30	-5.070	-0.002	129	0.05	compliant
-48	40	-4.720	-0.002	129	0.05	compliant
-48	50	-6.500	-0.003	129	0.05	compliant
64QAM Modulation ANT8						
-48	-30	-5.240	-0.002	129	0.05	compliant
-48	-20	-5.580	-0.002	129	0.05	compliant
-48	-10	7.410	0.003	129	0.05	compliant
-48	0	-5.120	-0.002	129	0.05	compliant
-48	10	10.310	0.004	129	0.05	compliant
-48	30	-4.260	-0.002	129	0.05	compliant
-48	40	5.180	0.002	129	0.05	compliant
-48	50	-6.150	-0.002	129	0.05	compliant
Measurement Uncertainty:					±1.0 Hz	

Table 16 Frequency stability with temp. var. (20 MHz Channel BW)

Frequency Stability with Voltage Variation:

The EUT was placed in a climatic chamber and allowed to stabilize at +20 degrees celsius for at least 30 minutes. With the supply voltage of the EUT set to 85% of the nominal value, the frequency error was measure. This procedure was repeated at 100% and 115% of the nominal supply voltage value.

Config A:

Carrier Frequency: 2593.0 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						
-40.8	20.0	8.01	0,003	129	0.05	compliant
-48.0	20.0	7.73	0,003	129	0.05	compliant
-55.2	20.0	9.80	0,004	129	0.05	compliant
QPSK Modulation ANT2						
-40.8	20.0	8.78	0,003	129	0.05	compliant
-48.0	20.0	8.43	0,003	129	0.05	compliant
-55.2	20.0	7.96	0,003	129	0.05	compliant
QPSK Modulation ANT3						
-40.8	20.0	-5.71	-0,002	129	0.05	compliant
-48.0	20.0	-7.48	-0,003	129	0.05	compliant
-55.2	20.0	9.25	0,004	129	0.05	compliant
QPSK Modulation ANT4						
-40.8	20.0	-7.42	-0,003	129	0.05	compliant
-48.0	20.0	-6.18	-0,002	129	0.05	compliant
-55.2	20.0	-5.54	-0,002	129	0.05	compliant
QPSK Modulation ANT5						
-40.8	20	10.640	0.004	129	0.05	compliant
-48	20	9.520	0.004	129	0.05	compliant
-55.2	20	9.680	0.004	129	0.05	compliant
QPSK Modulation ANT6						
-40.8	20	8.350	0.003	129	0.05	compliant
-48	20	11.880	0.005	129	0.05	compliant
-55.2	20	7.870	0.003	129	0.05	compliant
QPSK Modulation ANT7						
-40.8	20	9.520	0.004	129	0.05	compliant
-48	20	10.630	0.004	129	0.05	compliant
-55.2	20	7.610	0.003	129	0.05	compliant
QPSK Modulation ANT8						
-40.8	20	8.220	0.003	129	0.05	compliant
-48	20	9.050	0.003	129	0.05	compliant
-55.2	20	8.460	0.003	129	0.05	compliant