

FCC TEST REPORT

Test Report No. : T39286-00-00KJ

1 July 2015

Date of issue

Type / Model Name : 9764 Compact Metro Cell Outdoor / MECLGA41**Product Description** : 9764 Compact Metro Cell Outdoor B41 2x6W**Applicant** : Alcatel-Lucent Deutschland AG

Address : Lorenzstraße 10

70435 STUTTGART, GERMANY

Manufacturer : FLEXTRONICS Romania SRL

Address : Calea Torontalui DN6

30000 TIMISOARA, ROMANIA

Licence holder : Alcatel-Lucent

Address : 148/152 route de la Reine

92100 BOULOGNE-BILLANCOURT, FRANCE

Test Result according to the
standards listed in clause 1 test
standards:**POSITIVE**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

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Attachment A as separately supplement

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 2, Subpart J - General (September, 2014)

Part 2, Subpart J, Section 2.1033 (c)(14)	Applications for equipment other than that operating under parts 15 and 18 of the rules shall be accompanied by a technical report containing the following information
Part 2, Subpart J, Section 2.1046	RF power output
Part 2, Subpart J, Section 2.1047	Modulation characteristics
Part 2, Subpart J, Section 2.1049	Occupied bandwidth
Part 2, Subpart J, Section 2.1051	Spurious emissions at antenna terminals
Part 2, Subpart J, Section 2.1053	Field strength of spurious radiation
Part 2, Subpart J, Section 2.1055	Frequency stability

FCC Rules and Regulations Part 27, Subpart C - General (September, 2014)

Part 27, Subpart C, Section 27.50	Power limits and duty cycle.
Part 27, Subpart C, Section 27.53	Emission limits
Part 27, Subpart C, Section 27.54	Frequency stability

OET Rules 412172 D01	(November, 2011)	Guidelines for Determining the Effective Radiated Power (ERP) and Equivalent Isotropically Radiated Power (EIRP) of a RF Transmitting System
OET Rules 662911 D01	(October, 2013)	Emission Testing of Transmitters with Multiple Outputs in the Same Band
OET Rules 662911 D02	(October, 2011)	MIMO with Cross-Polarized Antenna
OET Rules 971168 D01	(October, 2014)	Measurement Guidance for Certification of Licensed Digital Transmitters
OET Rules 971168 D02	(October, 2014)	Measurement Guidance for Specific Service Rules
ANSI C63.4: 2009		Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
ANSI / TIA-603-C: 2004		Land Mobile FM or PM – Communication Equipment – Measurement and Performance Standards
CISPR 16-4-2: 2013		Uncertainty in EMC measurement

2 Test result summary

LTE base station using digital modulation: QPSK, 16QAM and 64QAM

Operating in the 2496 MHz – 2690 MHz band

Test Case	Description	Requirements	Result
BRS & EBS Band			
2.1046 27.50(h)(1) KDB 971168 D01 (5.1.1)	RF power output	EIRP not exceed 33 dBW + 10log(X/Y) dBW	Pass
2.1047 KDB 971168 D01 (3)	Modulation characteristics	Digital modulation	Pass
27.50(B) KDB 971168 D01 (5.7.1)	Peak-to-average power ratio (PAPR)	Peak-to-average power ratio not exceed 13 dB	Pass
2.1049 27.50(m)(6) KDB 971168 D01 (4.1)	Emission bandwidth (26 dB)	Emission bandwidth below 26 dB	Pass
2.1049(h)	Occupied bandwidth (99 %)	(not specified)	Pass
2.1051 27.53(m)(6)	Band edges compliance	Below -13 dBm / 1%*EBW, in 1 MHz range	Pass
2.1051 27.53(m)(6) KDB 971168 D01 (6)	Spurious emissions at antenna terminals	Below -13 dBm from 9 kHz to 10 th harmonics	Pass
2.1053 KDB 971168 D01 (7)	Field strength of spurious radiation	Below -13 dBm from 9 kHz to 10 th harmonics	Pass
2.1055 27.54 KDB 971168 D01 (9)	Frequency stability	Stay within the authorized bands of operation	Pass

2.1 Final assessment

The equipment under test **fulfills** the EMC requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 20 April 2015

Testing concluded on : 23 June 2015

Checked by:

Tested by:

Klaus Gegenfurter
Teamleader Radio

Josef Knab
Radio Team

3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EUT – Detailed photos see attachment A

3.2 Short description of the equipment under test (EUT)

This application for the 9764 Compact Metro Cell Outdoor B41 2x6W under FCC ID: 2AEEH-CMCOB41AC2X6, is for operation in the domestic Broadband Radio Service (BRS) and the Educational Broadband Service (EBS) bands with a LTE signal. The data summarized below is in the form presently used by the Commission's Radio Equipment List.

Manufacturer:	Alcatel-Lucent
Equipment Identification:	3BK 61423 AAAB 01
Frequency Range:	2496 – 2690 MHz
Output Power:	+27.8 dBm (0.6 W) to +37.8 dBm (6 W) varied by software for cell sizing
Frequency Tolerance:	±0.1 ppm
Temperature Range:	-40 °C to +50 °C

The 9764 Compact Metro Cell Outdoor (CMCO) B41 2x6W is a small, lightweight Base Station Unit designed to fill coverage gaps between macro cells in a LTE network. It can be easily mounted on walls, lamp posts and poles. The 9764 CMCO consists of the RF components, the baseband unit and the backhaul module. As options a Wi-Fi access point module and two types of integrated antennas can be added. It is also possible to use external antennas via normal antenna connectors of type N.

The 9764 CMCO contains two identical transceiver paths and is typically operated as 2x2 multiple input multiple output (MIMO) configuration. Each transceiver has a RF output power of maximal 6 watts at the External Antenna Connector (EAC) port.

The radio design is FPGA generated pre-distorted baseband signal delivered to a TX ROC (Radio On Chip) with direct upconversion to the RF frequency. Then the signal passes through the power amplifier and transmit filter to the antenna port (EAC).

The 9764 CMCO is designed to transmit in the frequency band of 2496 - 2690 MHz with a 20 MHz carrier emission bandwidth. The signal modulation is QPSK, 16QAM or 64QAM.

Number of tested samples:	1
Serial number:	LBALLU-RT151781495
Firmware version:	FV_ENB_LR1403_JD_E00046
Software release	LR14.3

EUT configuration:

(The CDF filled by the applicant can be viewed at the test laboratory.)

3.3 Variants of the EUT

There are no variants of the EUT.

3.4 Operation frequency and channel plan

E-UTRA Band	Duplex Mode	Downlink (TX)		Uplink (RX)	
		Frequency (MHz)			
41	TDD	2496	2690	2496	2690
		Channel Number			
		39650	41589	39650	41589

BW _{Channel} (MHz)	Channel	Frequency (MHz)
20	Bottom	2506.0
	Middle	2593.0
	Top	2680.0

3.5 Power supply system utilised

Power supply voltage, V_{nom} : 110 V AC / 60 Hz / 1 ϕ

3.6 Peripheral devices and interface cables

The following peripheral devices and interface cables are connected during the measurements:

- Desktop PC Model : HP Compaq dc7900
- Spectrum analyzer Model : Agilent, PXA 9030A with LTE-TDD option
- Power analyzer Model : Tektronics, PA1000
 - unscreened power cables
 - customer specific cables

3.7 Determination of worst case conditions for final measurement

The radiated emission test was performed with “Dual Element Antenna” which has an antenna gain of 9.5 dBi. Following channels and test modes are selected as worst case for the final tests:

FCC Measurement, E-UTRA Band 41

Description	Channel bandwidth	Modulation			Channel			Antenna	
	20 MHz	QPSK	16QAM	64QAM	B	M	T	A	B
RF power output	X	X	X	X	---	X	---	X	X
Modulation characteristics	X	X	X	X	---	X	---	X	---
Peak to average ratio (PAR)	X	X	X	X	---	X	---	X	---
Emission bandwidth (26 dB)	X	X	X	X	---	X	---	X	---
Occupied bandwidth (99 %)	X	X	X	X	---	X	---	X	---
Band edge	X	X	X	X	X	---	X	X	---
Spurious emissions at transmit antenna port	X	X	X	X	---	X	---	X	---
Field strength of spurious radiation	X	---	---	X	---	X	---	X	---
Frequency stability, temperature change	X	---	---	X	---	X	---	X	---
Frequency stability, voltage change	X	---	---	X	---	X	---	X	---

X measured
--- not measured

All test modes used 100 RB (resource blocks) this corresponds to 100% load. The offset is therefore zero.

An pre-measurement has shown, that a lower number over RB (for example 1 RB), the output power becomes smaller. The height of the envelop curve is still similar. Therefore all following measurements where performed with the worst case condition of 100 RB.

3.7.1 Test jig

No test jig is used.

3.7.2 Test software

The test software for the EUT provides a special factory mode to set up different E-UTRA test models to transmit data during the tests with maximum output power and different modulations.

Output power: 2 x 6 Watt (2 x 37.8 dBm)

Modulation: QPSK, 16QAM and 64QAM

For E-UTRA TDD, test models are derived based on the uplink/downlink configuration 3 and special subframe configuration 8. Number of frames for the test models is 2.

Configurations of TDD eNB test models

Downlink-to-uplink Switch-point periodicity	Number of UL/DL sub-frames per radio frame (10 ms)		DwPTS	GP	UpPTS
	DL	UL			
10ms	6	3	$24144 \cdot T_s$	$2192 \cdot T_s$	$4384 \cdot T_s$

3.7.3 Test Modes

Test Mode	Test Modes Description
E-TM1.1	3GPP TS 36.141, clause 6.1.1.1, E-TM 1.1, QPSK modulation
E-TM3.2	3GPP TS 36.141, clause 6.1.1.5, E-TM 3.2, 16QAM modulation
E-TM3.1	3GPP TS 36.141, clause 6.1.1.4, E-TM 3.1, 64QAM modulation

4 TEST ENVIRONMENT

4.1 Address of the test laboratories

**CSA Group Bayern GmbH
Ohmstrasse 1-4
94342 STRASSKIRCHEN
GERMANY**

**Alcatel-Lucent Deutschland AG
Lorenzstraße 10
70435 STUTTGART
GERMANY**

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 °C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

5 TEST CONDITIONS AND RESULTS

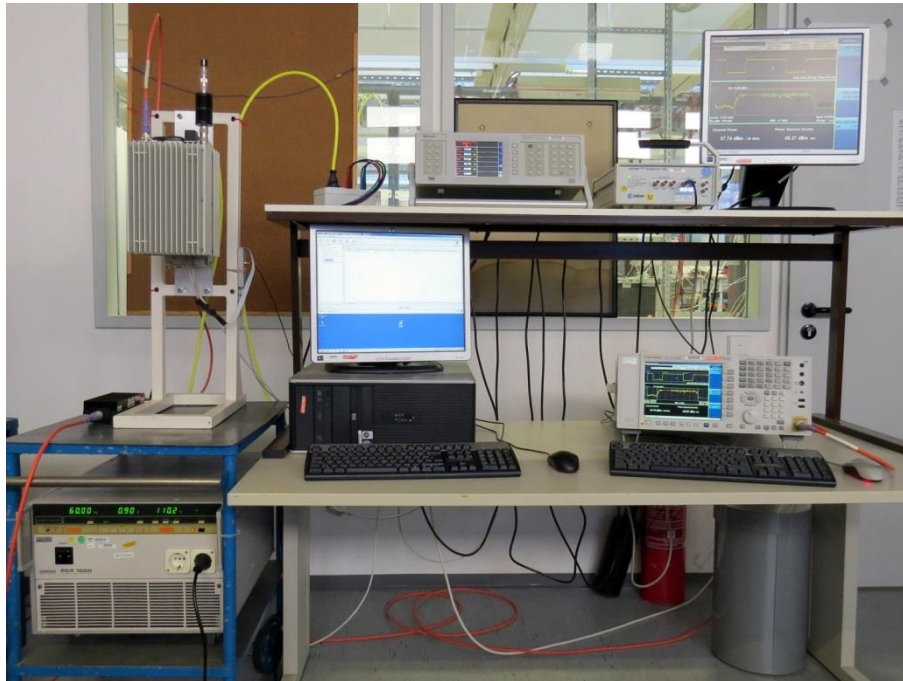
5.1 RF power output

For test instruments and accessories used see section 6 Part **SEC3**.

5.1.1 Description of the test location

Test location: Room 008/00/132

5.1.2 Photo documentation of the test set-up



5.1.3 Applicable standard

According to FCC Part 27, Section 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. Description of Measurement

5.1.4 Description of measurement – Measurement guidance KDB 971168 D01 (5.1.1)

The RF power output is measured conducted using a spectrum analyser with the function “LTE - Channel Power”. The EUT is set in TX continuous mode and E-UTRA test model described below while measuring. The EUT is measured at antenna port 1 and port 2. The resulting values are listed in the following tables.

The measurement values at antenna port 1 and port 2 are converted into linear values and the antenna 1 and antenna 2 is summed and converted back into log values. The resulting values are also listed in the following tables.

5.1.5 Spectrum analyser settings

The settings are automatically changed by analyser software and is dependent to the used channel bandwidth. Please refer to the test result plots under point 5.1.6.1. & 5.1.6.2.

5.1.6 Test result table

Antenna	Modulation	E-UTRA Test Model	Channel	RF power output (dBm)	RF power output (Watt)
1	QPSK	E-TM1.1	B	---	---
			M	37.7	5.93
			T	---	---
	16QAM	E-TM3.2	B	---	---
			M	37.5	5.66
			T	---	---
	64QAM	E-TM3.1	B	---	---
			M	37.8	6.04
			T	---	---
2	QPSK	E-TM1.1	B	---	---
			M	37.7	5.86
			T	---	---
	16QAM	E-TM3.2	B	---	---
			M	37.5	5.56
			T	---	---
	64QAM	E-TM3.1	B	---	---
			M	37.8	6.00
			T	---	---
Sum of Ant.1 & Ant.2	QPSK	E-TM1.1	B	---	---
			M	40.7	11.79
			T	---	---
	16QAM	E-TM3.2	B	---	---
			M	40.5	11.22
			T	---	---
	64QAM	E-TM3.1	B	---	---
			M	40.8	12.04
			T	---	---

5.1.6.1 Test result plot – Antenna port 1

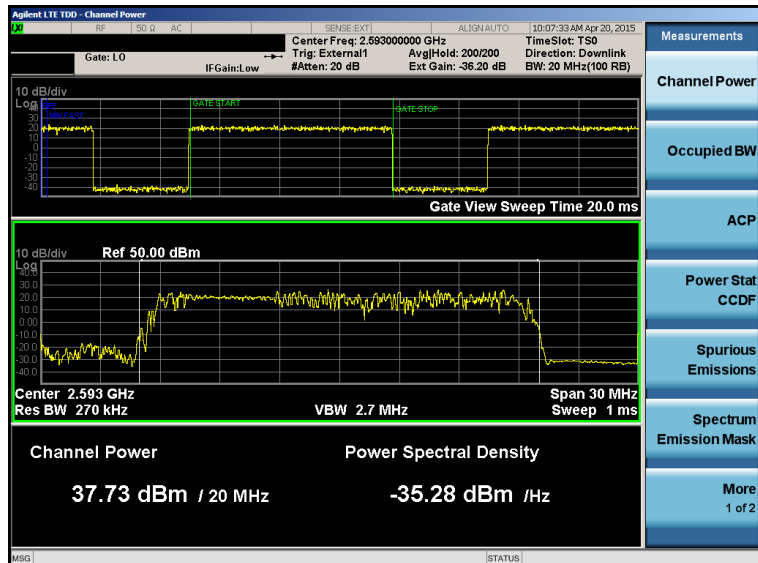
Modulation: QPSK

E.UTRA Test Model: E-TM1.1

CH: M

CH BW: 20 MHz

Antenna port: 1



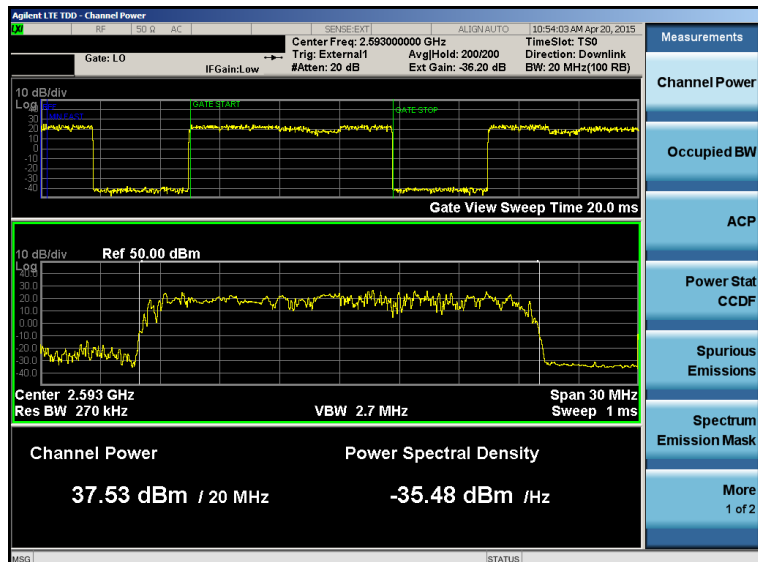
Modulation: 16QAM

E.UTRA Test Model: E-TM3.2

CH: M

CH BW: 20 MHz

Antenna port: 1



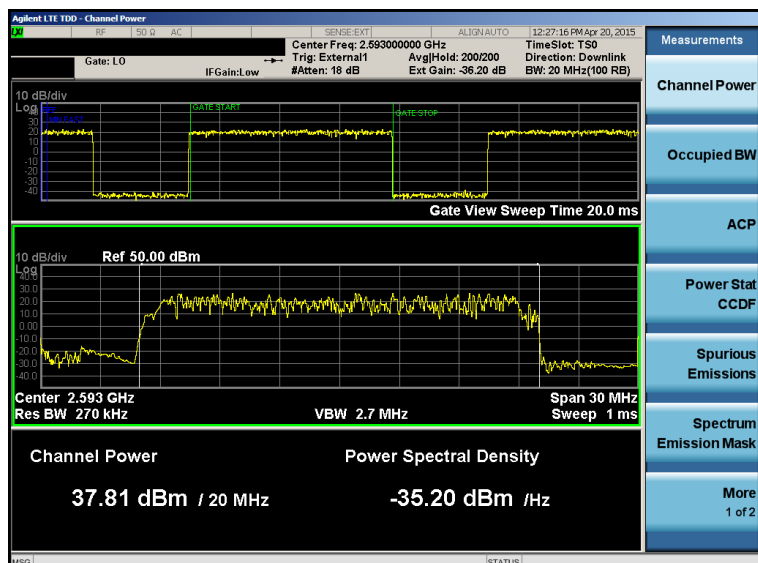
Modulation: 64QAM

E.UTRA Test Model: E-TM3.1

CH: M

CH BW: 20 MHz

Antenna port: 1



5.1.6.2 Test result plot – Antenna port 2

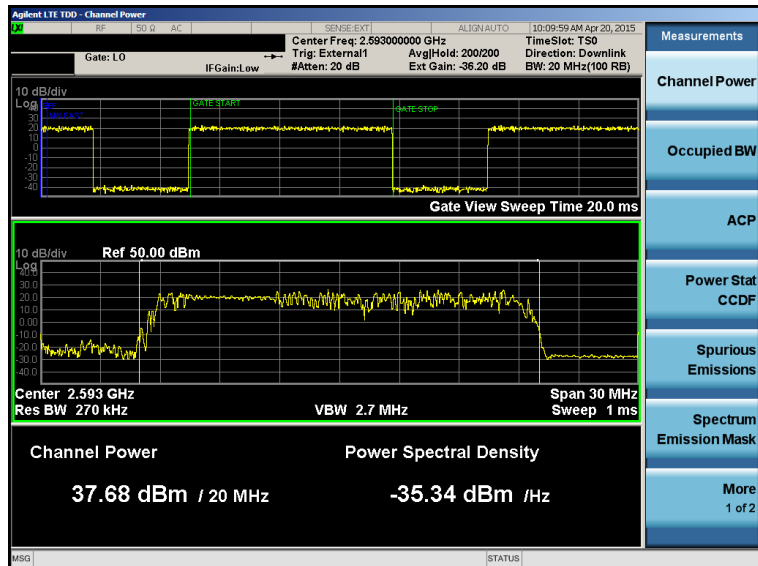
Modulation: QPSK

E.UTRA Test Model: E-TM1.1

CH: M

CH BW: 20 MHz

Antenna port: 2



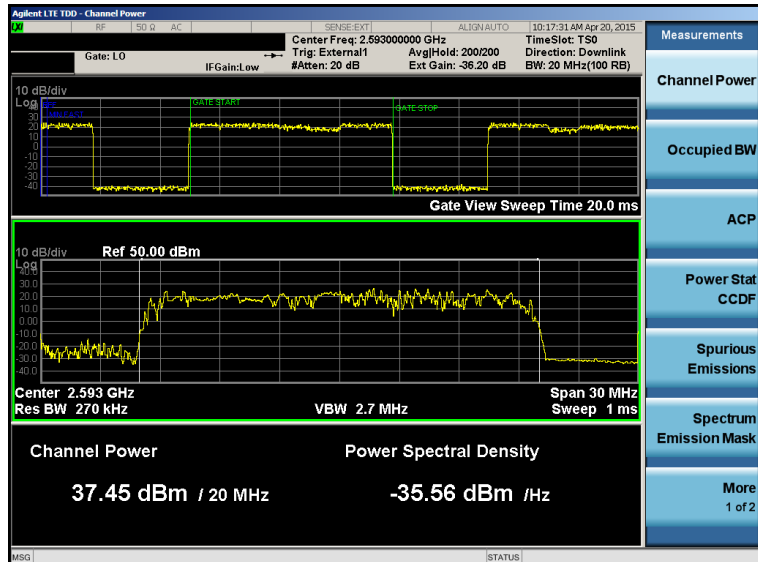
Modulation: 16QAM

E.UTRA Test Model: E-TM3.2

CH: M

CH BW: 20 MHz

Antenna port: 2



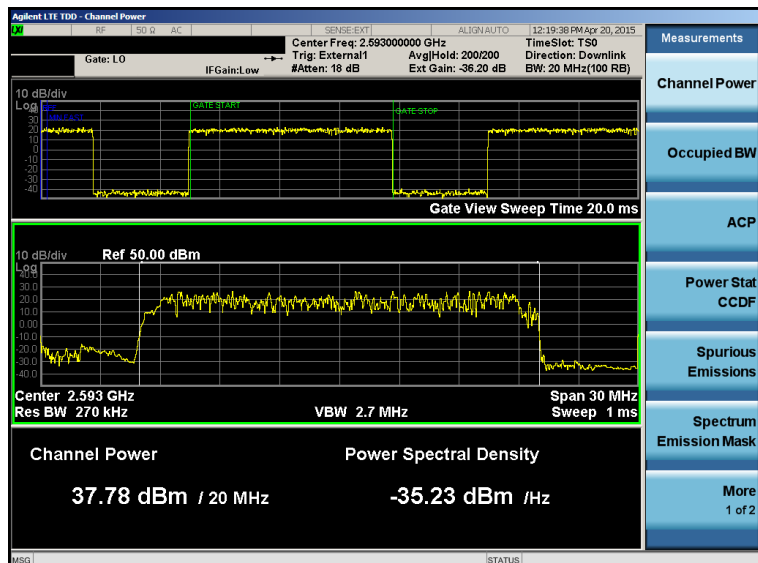
Modulation: 64QAM

E.UTRA Test Model: E-TM3.1

CH: M

CH BW: 20 MHz

Antenna port: 2



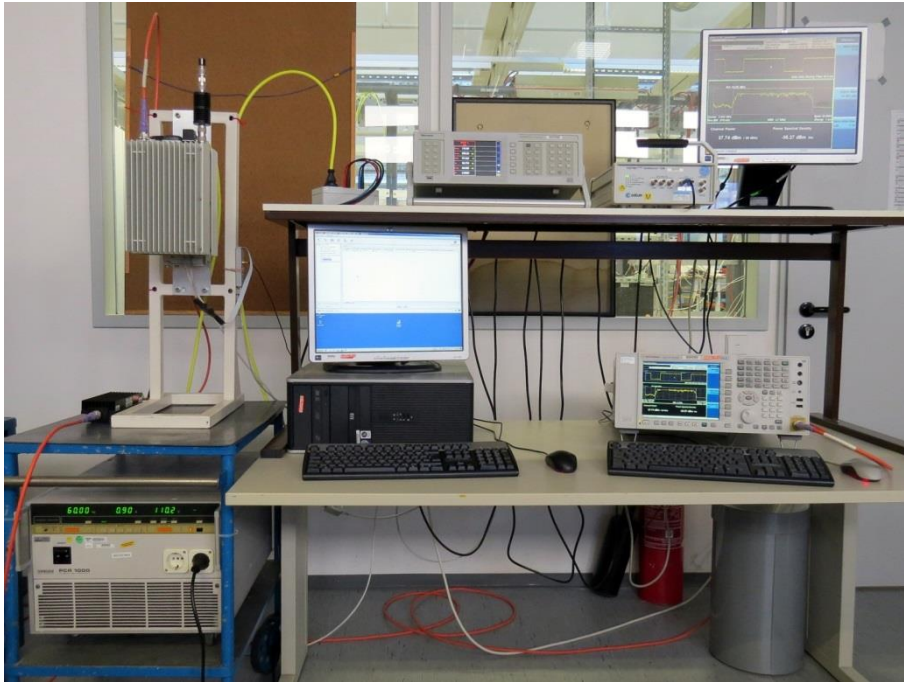
5.2 Modulation characteristics

For test instruments and accessories used see section 6 Part MB.

5.2.1 Description of the test location

Test location: Room 008/00/132

5.2.2 Photo documentation of the test set-up



5.2.3 Applicable standard

According to FCC Part 2, Section 2.1033(c):

(13) For equipment employing digital modulation techniques, a detailed description of the modulation system to be used, including the response characteristics (frequency, phase and amplitude) of any filters provided, and a description of the modulating wavetrain, shall be submitted for the maximum rated conditions under which the equipment will be operated.

5.2.4 Description of measurement – Measurement guidance KDB 971168 D01 (3)

The modulation characteristic is measured conducted using a spectrum analyser with the function “LTE - Modulation Analysis”. The EUT is set in TX continuous mode while measuring. The EUT is measured at antenna port 1. The resulting values are listed in the following tables.

5.2.5 Spectrum analyser settings

The settings are automatically changed by analyser software and is dependent to the used channel bandwidth. Please refer to the test result plots under point 5.2.6.1.

5.2.6 Test result table

Antenna	Modulation	E-UTRA Test Model	Channel	Modulation Character- istics
1	QPSK	E-TM1.1	B	---
			M	Passed
			T	---
	16QAM	E-TM3.2	B	---
			M	Passed
			T	---
	64QAM	E-TM3.1	B	---
			M	Passed
			T	---

5.2.6.1 Test result plot – Antenna port 1

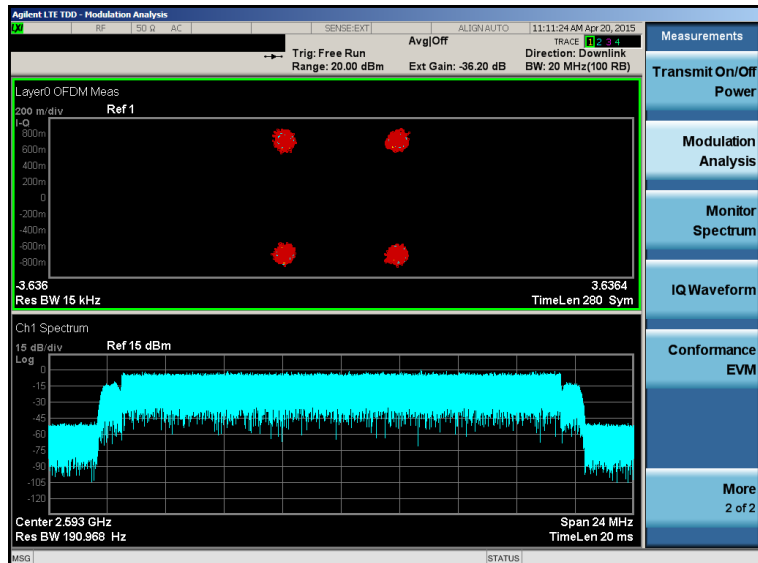
Modulation: QPSK

E.UTRA Test Model: E-TM1.1

CH: M

CH BW: 20 MHz

Antenna port: 1



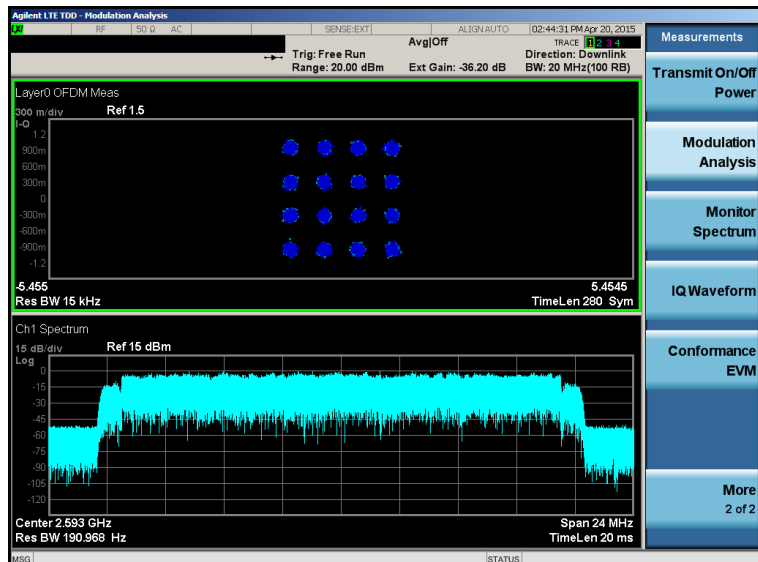
Modulation: 16QAM

E.UTRA Test Model: E-TM3.2

CH: M

CH BW: 20 MHz

Antenna port: 1



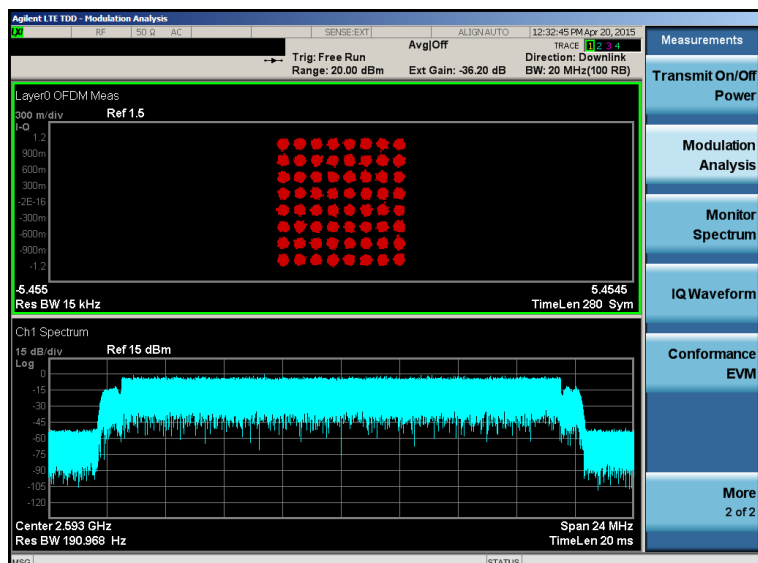
Modulation: 64QAM

E.UTRA Test Model: E-TM3.1

CH: M

CH BW: 20 MHz

Antenna port: 1



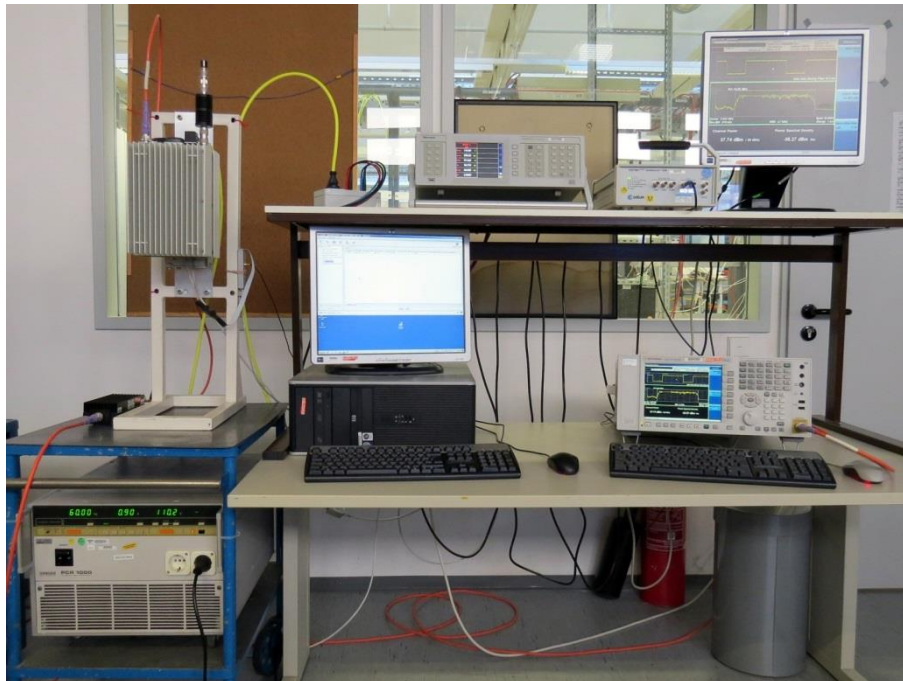
5.3 Peak to average power ratio (PAPR)

For test instruments and accessories used see section 6 Part **SEC3**.

5.3.1 Description of the test location

Test location: Room 008/00/132

5.3.2 Photo documentation of the test set-up



5.3.3 Applicable standard

According to FCC Part 27, Section 27.50(B):

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

5.3.4 Description of measurement – Measurement guidance KDB 971168 D01 (5.7.1)

The peak-to-average power ratio (PAPR) is measured conducted using a spectrum analyser with the function “LTE – Power Stat CCDF”. The EUT is set in TX continuous mode while measuring. The EUT is measured at antenna port 1. The resulting values are listed in the following tables.

5.3.5 Spectrum analyser settings

The settings are automatically changed by analyser software and is dependent to the used channel bandwidth. Please refer to the test result plots under point 5.3.6.1.

5.3.6 Test result table

Antenna	Modulation	E-UTRA Test Model	Channel	PAR (dB)	Limit (dB)
1	QPSK	E-TM1.1	B	---	13.0
			M	7.17	
			T	---	
	16QAM	E-TM3.2	B	---	
			M	7.87	
			T	---	
	64QAM	E-TM3.1	B	---	
			M	7.12	
			T	---	

5.3.6.1 Test result plot – Antenna port 1

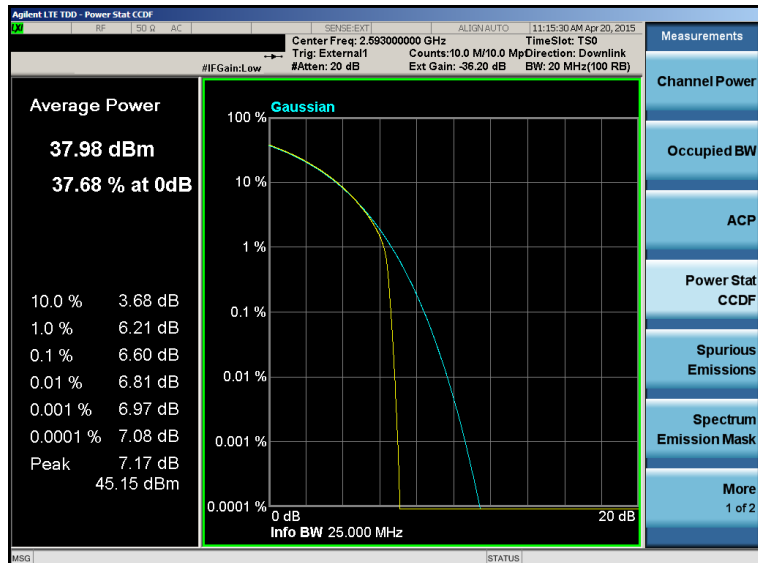
Modulation: QPSK

E.UTRA Test Model: E-TM1.1

CH: M

CH BW: 20 MHz

Antenna port: 1



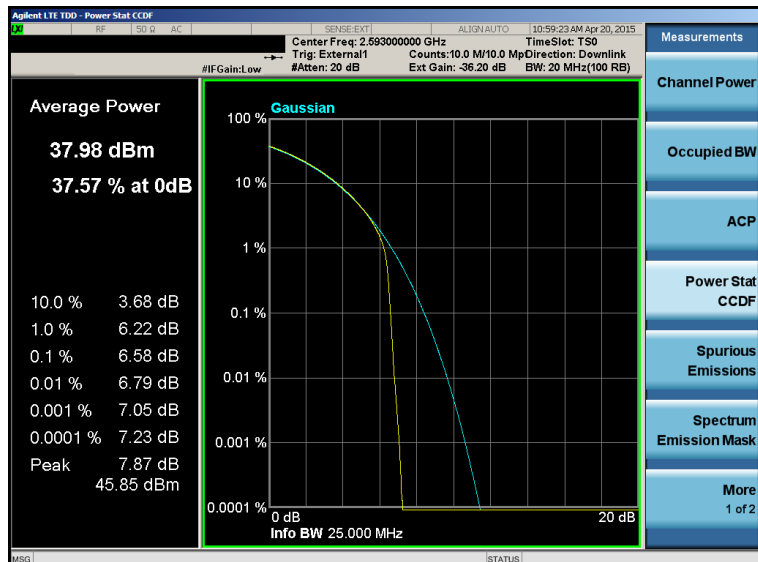
Modulation: 16QAM

E.UTRA Test Model: E-TM3.2

CH: M

CH BW: 20 MHz

Antenna port: 1



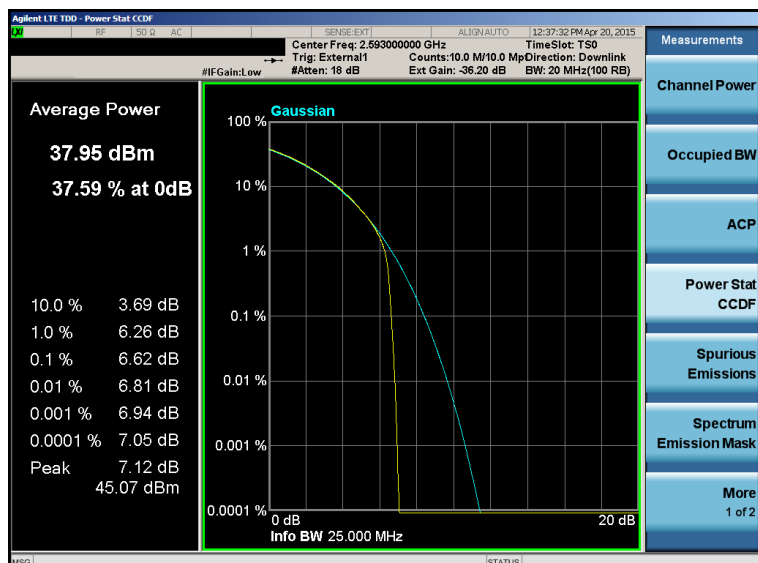
Modulation: 64QAM

E.UTRA Test Model: E-TM3.1

CH: M

CH BW: 20 MHz

Antenna port: 1



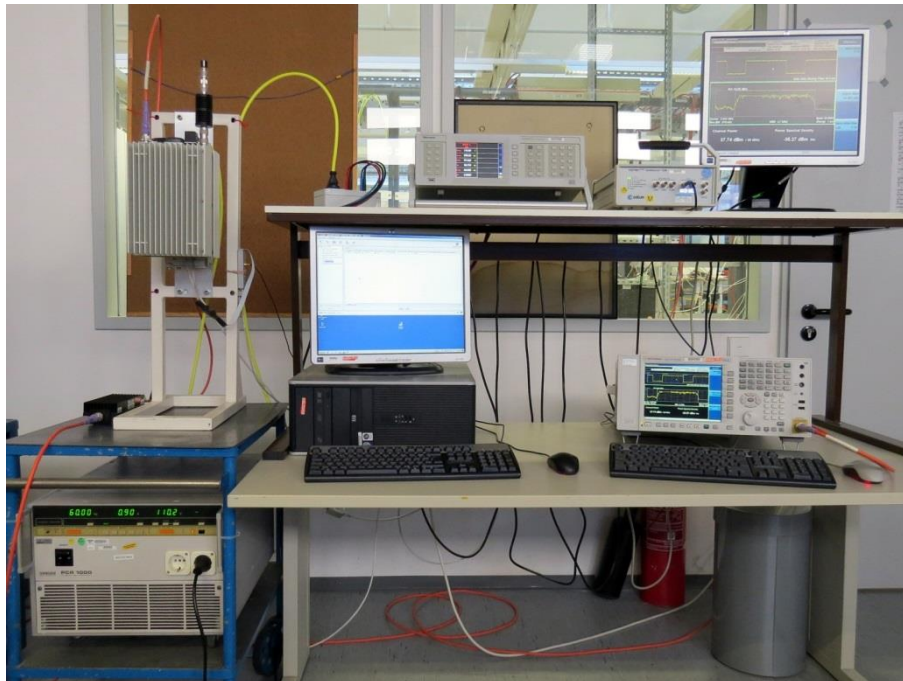
5.4 Emission bandwidth

For test instruments and accessories used see section 6 Part MB.

5.4.1 Description of the test location

Test location: Room 008/00/132

5.4.2 Photo documentation of the test set-up



5.4.3 Applicable standard

According to FCC Part 2, Section 2.53(m):

(6) ...The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

According to FCC Part 2, Section 2.1049(h):

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable:

(h) Transmitters employing digital modulation techniques—when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through any filter networks, pseudo-random generators or other devices required in normal service. Additionally, the occupied bandwidth shall be shown for operation with any devices used for modifying the spectrum when such devices are optional at the discretion of the user.

5.4.4 Description of measurement – Measurement guidance KDB 971168 D01 (4.1 & 4.2)

The emission bandwidth is measured conducted using a spectrum analyser with the function “LTE – Occupied BW”. The EUT is set in TX continuous mode while measuring. The EUT is measured at antenna port 1. The resulting values are listed in the following tables.

5.4.5 Spectrum analyser settings

RBW:	VBW:	Span:	Detector:	Trigger:	Sweep time:
30 kHz	1 MHz	40 MHz	AV (10 Sweeps)	External1	52.8 ms

5.4.6 Test result table

Antenna	Modulation	E-UTRA Test Model	26 dB Bandwidth (MHz)			99 % Bandwidth (MHz)		
			B	M	T	B	M	T
1	QPSK	E-TM1.1	---	19.79	---	---	18.20	---
	16QAM	E-TM3.2	---	19.69	---	---	17.88	---
	64QAM	E-TM3.1	---	19.74	---	---	17.99	---

5.4.6.1 Test result plot – Antenna port 1

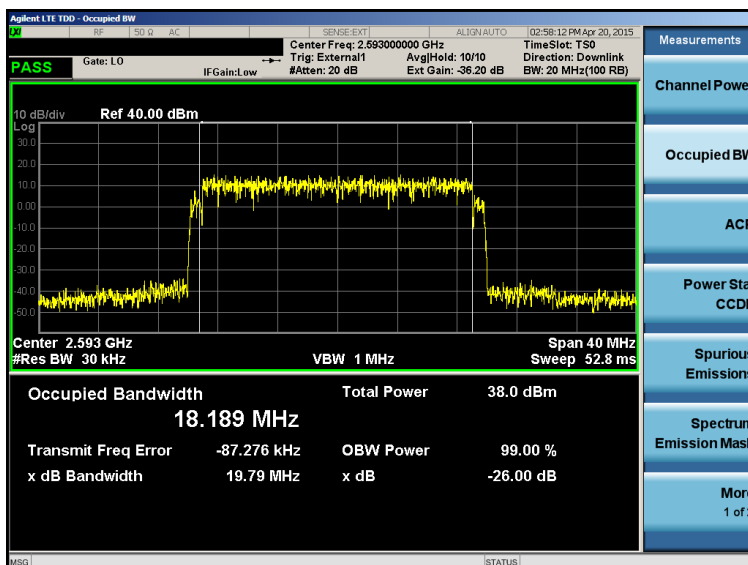
Modulation: QPSK

E.UTRA Test Model: E-TM1.1

CH: M

CH BW: 20 MHz

Antenna port: 1



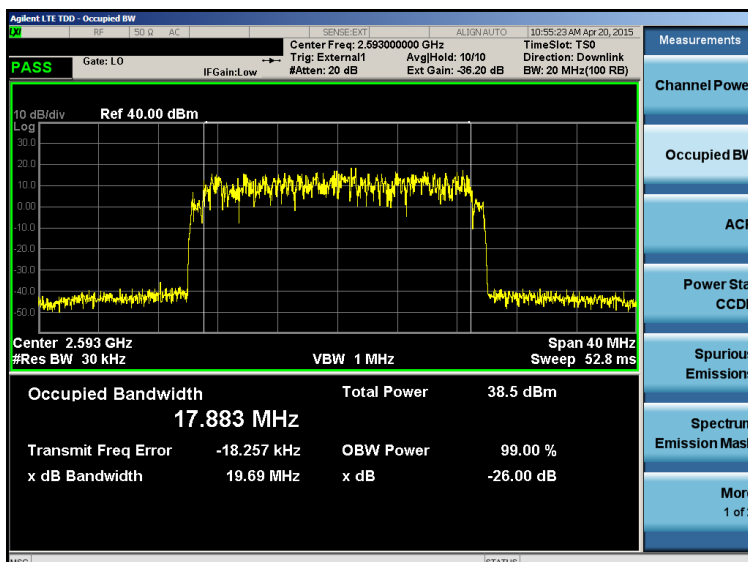
Modulation: 16QAM

E.UTRA Test Model: E-TM3.2

CH: M

CH BW: 20 MHz

Antenna port: 1



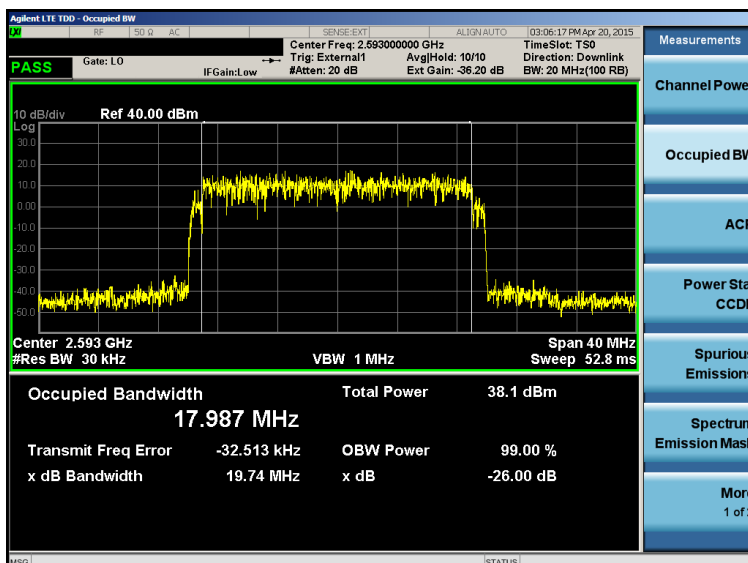
Modulation: 64QAM

E.UTRA Test Model: E-TM3.1

CH: M

CH BW: 20 MHz

Antenna port: 1



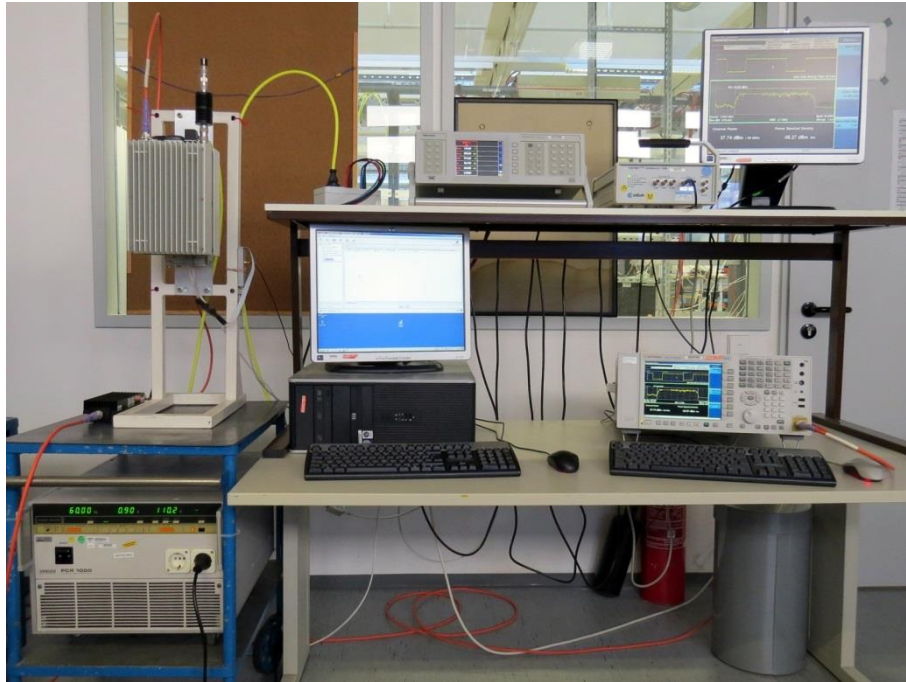
5.5 Band edge

For test instruments and accessories used see section 6 Part **MB**.

5.5.1 Description of the test location

Test location: Room 008/00/132

5.5.2 Photo documentation of the test set-up



5.5.3 Applicable standard

According to FCC Part 27, Section 27.53(m):

(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495 - 2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495 - 2496 MHz).

Pursuant to FCC OET RULES 662911 D01 and D02 for two antenna MIMO mode of operations, the FCC limit of -13 dBm shall be 3 dB more stringent, therefore all channel edge and out of band spurious emissions shall be -16 dBm. Further limits are adjusted for lower resolution BW using $10 \log(100\text{kHz}/1\% \text{ of channel BW})$.

5.5.4 Limit calculation

The -24.24 dBm level was computed as follows.

The limit is specified as

$$-\{43+10\log(\text{mean power output in watts})\} \text{ dB} = -13 \text{ dBm}$$

Within the 1st MHz outside the band the limit of -13 dBm is specified when measured with a 1% bandwidth. When measured with a different bandwidth the adjustment is made against 1% of the signal bandwidth.

Since the carrier is a 20 MHz bandwidth signal and the 1% signal bandwidth is 200 kHz, the limit is adjusted to

$$-13 + 10\text{LOG}(30 \text{ kHz}/200 \text{ kHz}) \text{ dBm} = -21.24 \text{ dBm}$$

When accounting for a 2 Transmitter signal, (per KDB 662911 D01 Multiple Transmitter Output v01r01), the level needs be adjusted by $10\text{LOG}(n)$ where n = number of outputs. The adjustment for $n=2$ is:

$$3 \text{ dB} = 10\text{LOG}(2)$$

The resultant limit for 2 TX operation is $-21.24 \text{ dBm} - 3 \text{ dB} = \underline{\underline{-24.24 \text{ dBm}}}$

5.5.5 Description of measurement – Measurement guidance

The emission bandwidth is measured conducted using a spectrum analyser. The EUT is set in TX continuous mode while measuring. The EUT is measured at antenna port 1. The resulting values are listed in the following tables.

5.5.6 Spectrum analyser settings

RBW:	VBW:	Span:	Detector:	Trigger:	Sweep time:
30 kHz	1 MHz	2 MHz	RMS	Free Run	5 sec.

5.5.7 Test result table

Antenna	Modulation	E-UTRA Test Model	Channel	Band edges emissions (dBm)	Limit (dBm)	Spectrum Mask
1	QPSK	E-TM1.1	B	-33.92	-24.24	Passed
			M	---	---	---
			T	-33.27	-24.24	Passed
	16QAM	E-TM3.2	B	-34.71	-24.24	Passed
			M	---	---	---
			T	-33.38	-24.24	Passed
	64QAM	E-TM3.1	B	-34.54	-24.24	Passed
			M	---	---	---
			T	-32.24	-24.24	Passed

5.5.7.1 Test result plot – Antenna port 1

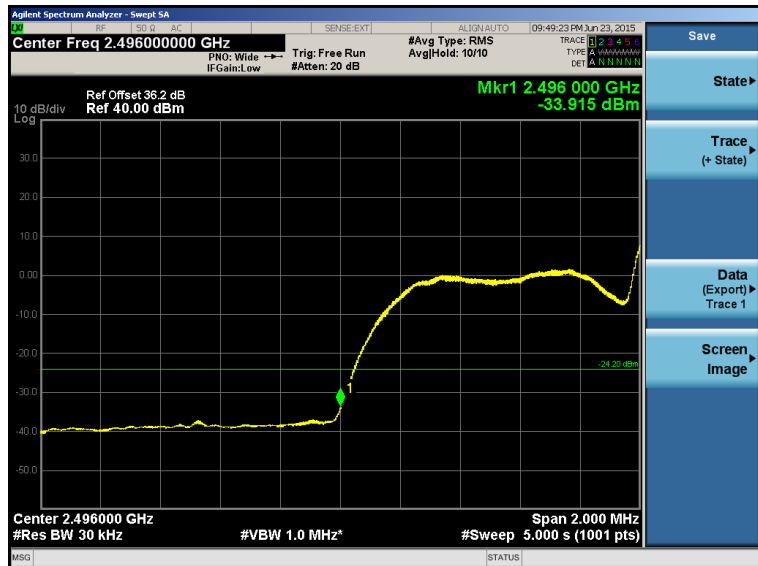
Modulation: QPSK

E.UTRA Test Model: E-TM1.1

CH: B

CH BW: 20 MHz

Antenna port: 1



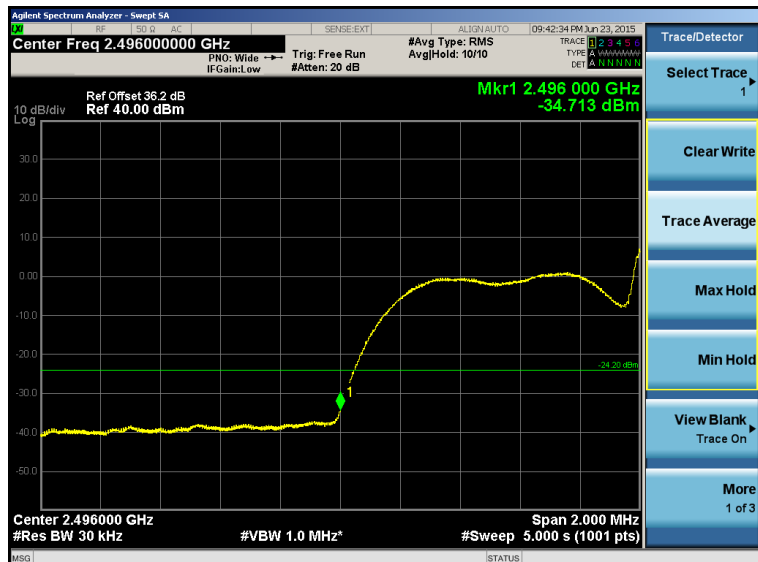
Modulation: 16QAM

E.UTRA Test Model: E-TM3.2

CH: B

CH BW: 20 MHz

Antenna port: 1



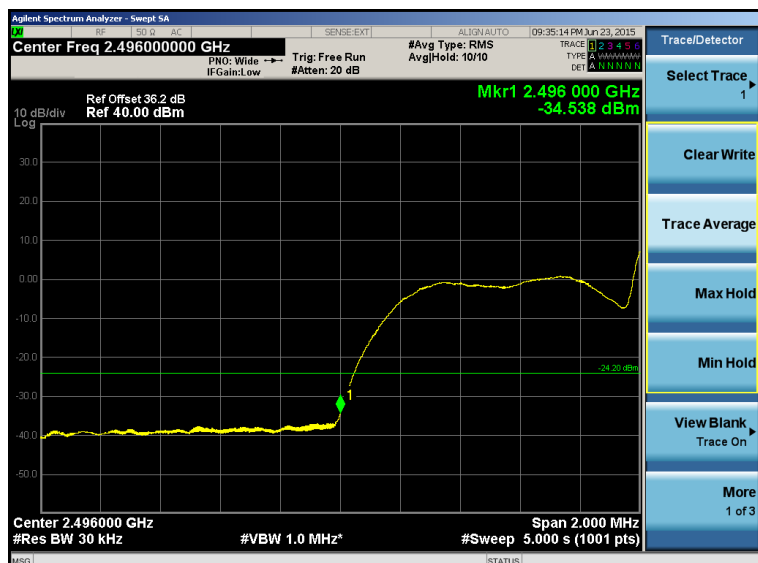
Modulation: 64QAM

E.UTRA Test Model: E-TM3.1

CH: B

CH BW: 20 MHz

Antenna port: 1



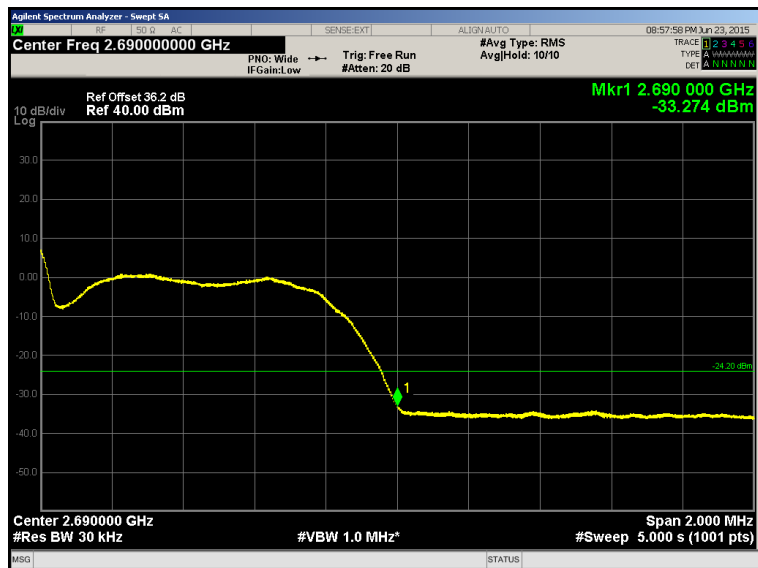
Modulation: QPSK

E.UTRA Test Model: E-TM1.1

CH: T

CH BW: 20 MHz

Antenna port: 1



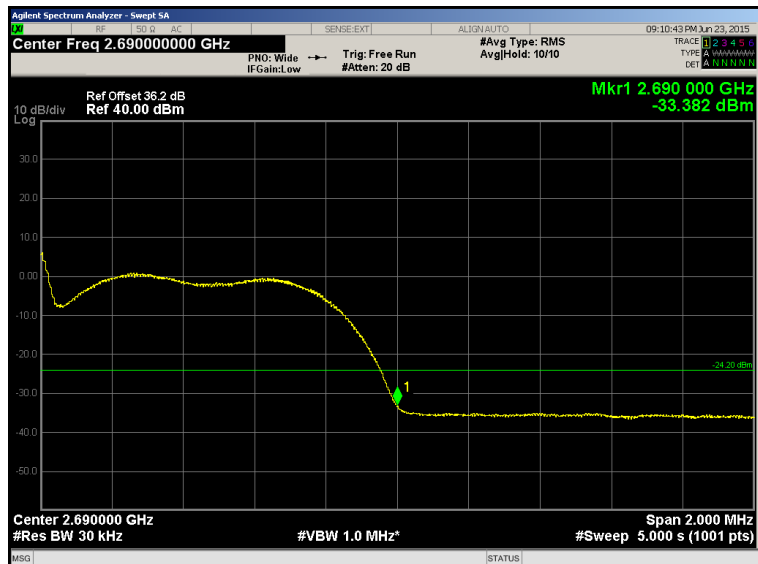
Modulation: 16QAM

E.UTRA Test Model: E-TM3.2

CH: T

CH BW: 20 MHz

Antenna port: 1



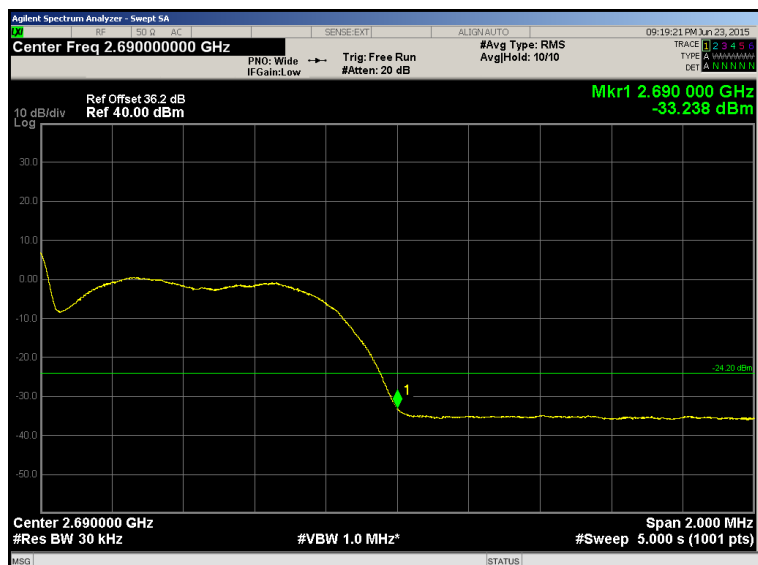
Modulation: 64QAM

E.UTRA Test Model: E-TM3.1

CH: T

CH BW: 20 MHz

Antenna port: 1



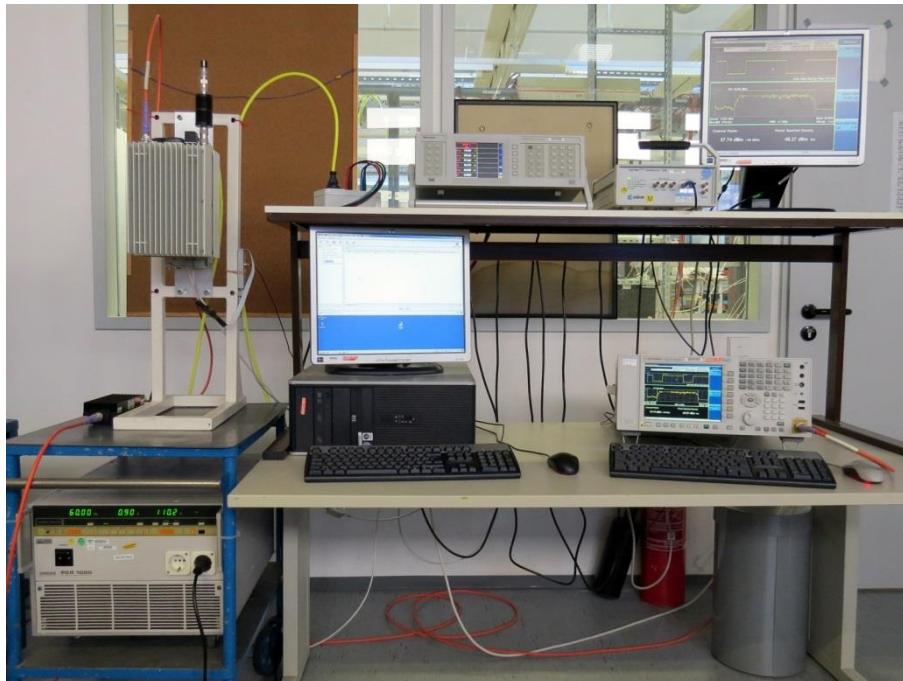
5.6 Spurious emissions at antenna terminals

For test instruments and accessories used see section 6 Part **SEC1-3**.

5.6.1 Description of the test location

Test location: Room 008/00/132

5.6.2 Photo documentation of the test set-up



5.6.3 Applicable standard

According to FCC Part 27, Section 27.53(m):

(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495 - 2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495 - 2496 MHz).

Pursuant to FCC OET RULES 662911 D01 and D02 for two antenna MIMO mode of operations, the FCC limit of -13 dBm shall be 3 dB more stringent, therefore all channel edge and out of band spurious emissions shall be -16 dBm. Further limits are adjusted for lower resolution BW using 10 log (100kHz/1% of channel BW)

5.6.4 Description of measurement – Measurement guidance KDB 971168 D01 (6)

The spurious emission at the antenna terminal is measured conducted using a spectrum analyser. The EUT is set in TX continuous mode while measuring. The EUT is measured at antenna port 1. The resulting values are listed in the following tables.

5.6.5 Spectrum analyser settings
9 kHz to 150 kHz:

RBW:	VBW:	Span:	Detector:	Trigger:	Sweep time:
1 kHz	3 kHz	-	RMS	Free run	20 sec.

150 kHz to 30 MHz:

RBW:	VBW:	Span:	Detector:	Trigger:	Sweep time:
10 kHz	30 kHz	-	RMS	Free run	20 sec.

30 MHz to 1 GHz:

RBW:	VBW:	Span:	Detector:	Trigger:	Sweep time:
100 kHz	300 kHz	-	RMS	Free run	20 sec.

1 GHz to 27 GHz:

RBW:	VBW:	Span:	Detector:	Trigger:	Sweep time:
1 MHz	3 MHz	-	RMS	Free run	20 sec.

5.6.6 Test result tables
QPSK-Modulation

Channel	Start Frequency (MHz)	Stop Frequency (MHz)	Antenna 1		Limit (dBm)
			Peak (dBm)	Frequency (MHz)	
Middle	0.009	0.15	-62.25	0.13	-16.0
	0.15	30	-65.33	29.86	
	30	1000	-54.35	31.94	
	1000	3500	-38.36	3157.50	
	3500	12750	-43.02	12320.80	
	12750	25930	-30.37	23986.50	

16QAM-Modulation

Channel	Start Frequency (MHz)	Stop Frequency (MHz)	Antenna 1		Limit (dBm)
			Peak (dBm)	Frequency (MHz)	
Middle	0.009	0.15	-62.72	0.13	-16.0
	0.15	30	-65.04	29.86	
	30	1000	-51.77	31.94	
	1000	3500	-38.40	3151.50	
	3500	12750	-42.25	12750.00	
	12750	25930	-30.85	24003.00	

64QAM-Modulation

Channel	Start Frequency (MHz)	Stop Frequency (MHz)	Antenna 1		Limit (dBm)
			Peak (dBm)	Frequency (MHz)	
Middle	0.009	0.15	-63.24	0.13	-16.0
	0.15	30	-65.11	29.80	
	30	1000	-54.52	31.55	
	1000	3500	-38.42	3154.00	
	3500	12750	-42.32	12748.15	
	12750	25930	-30.86	23975.50	

5.6.6.1 Test result plot – Antenna port 1

Modulation: QPSK

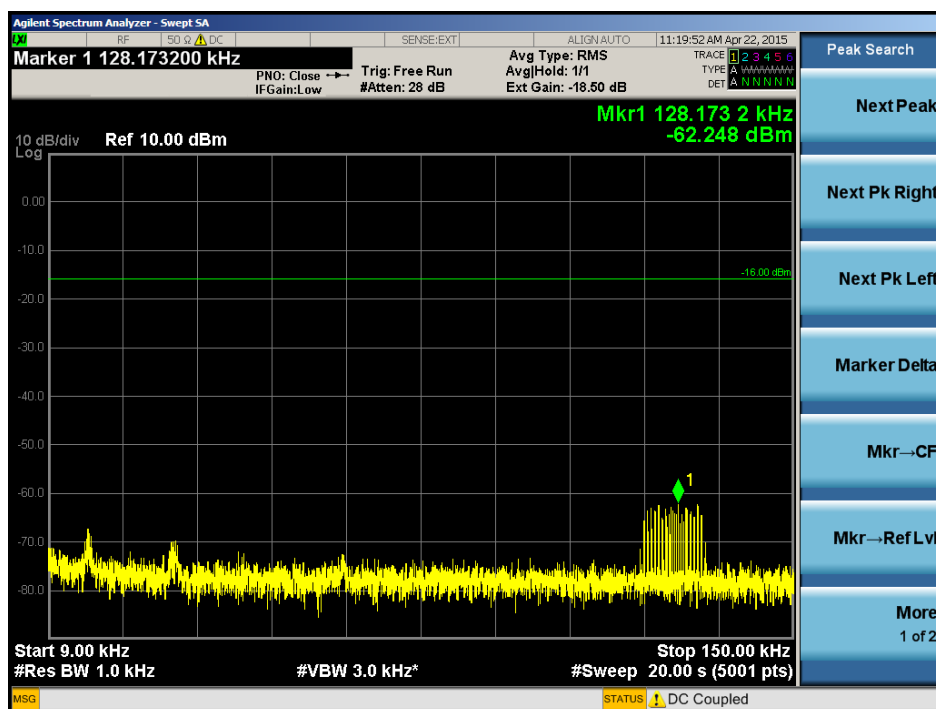
E.UTRA Test Model: E-TM1.1

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
9 kHz to 150 kHz



Modulation: QPSK

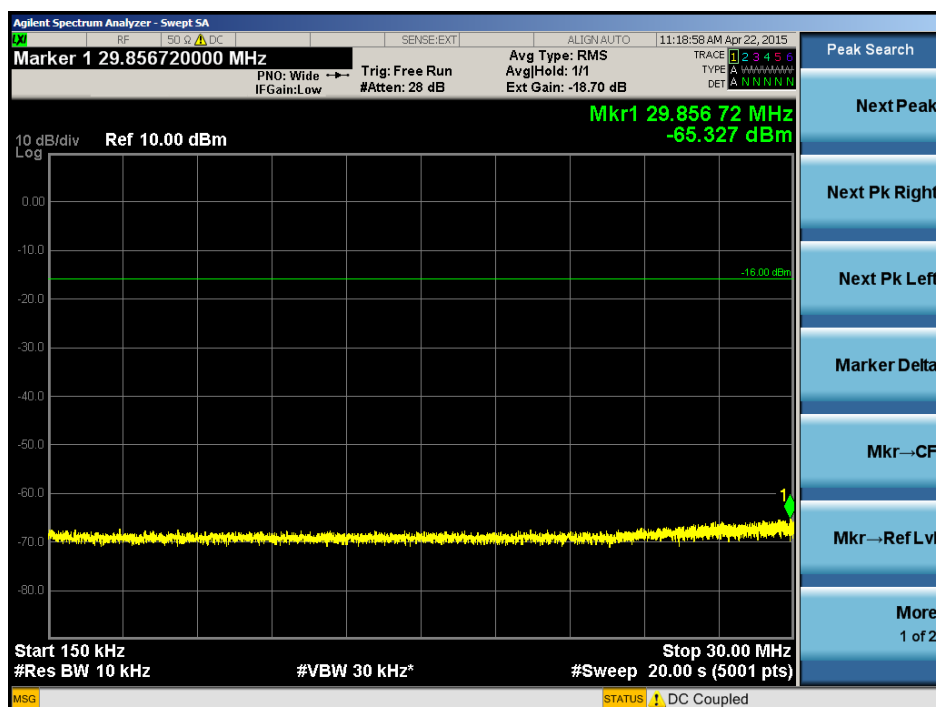
E.UTRA Test Model: E-TM1.1

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
150 kHz to 30 MHz



Modulation: QPSK

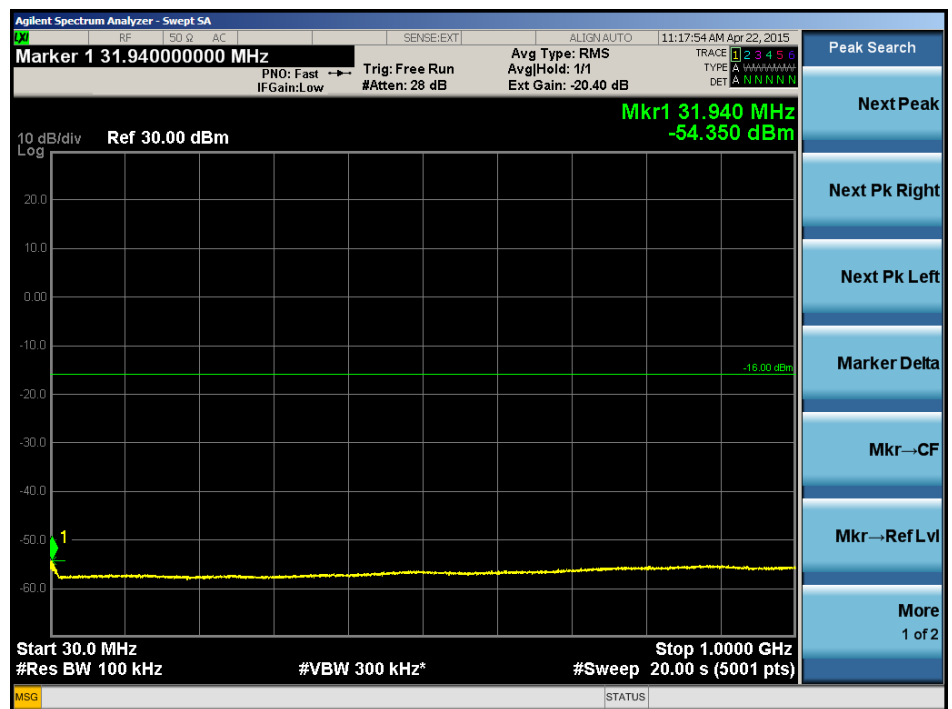
E.UTRA Test Model: E-TM1.1

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
30 MHz to 1000 MHz



Modulation: QPSK

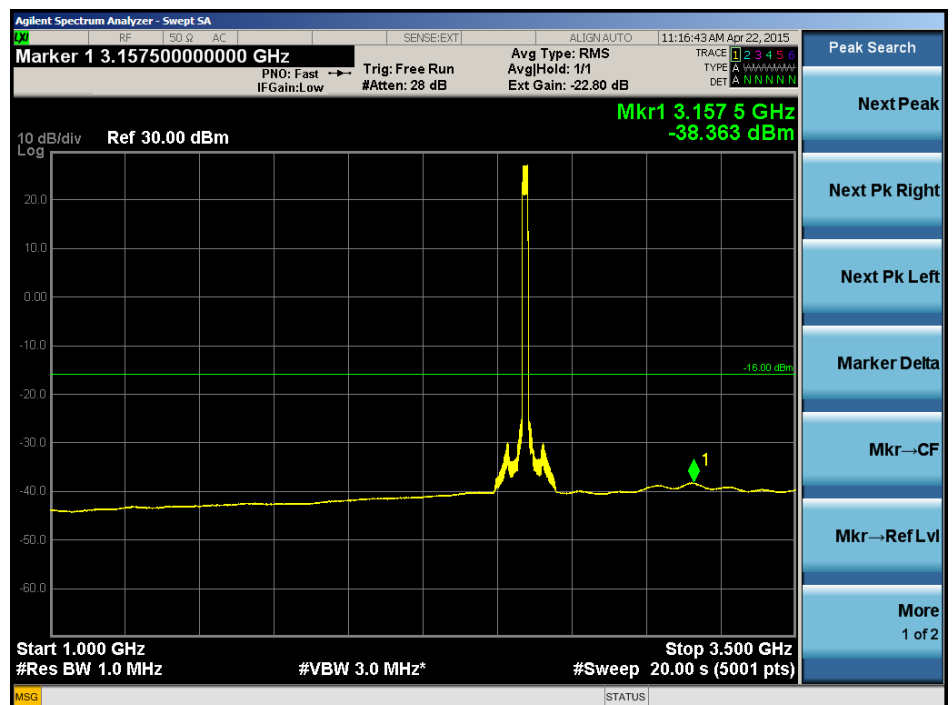
E.UTRA Test Model: E-TM1.1

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
1 GHz to 3.5 GHz



Modulation: QPSK

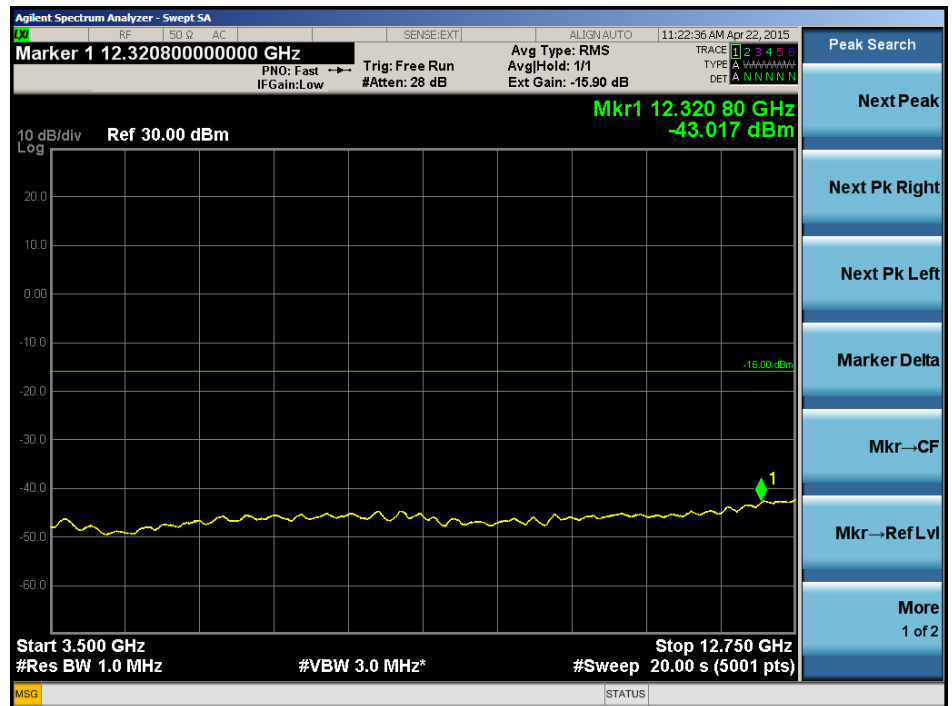
E.UTRA Test Model: E-TM1.1

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
3.5 GHz to 12.75 GHz



Modulation: QPSK

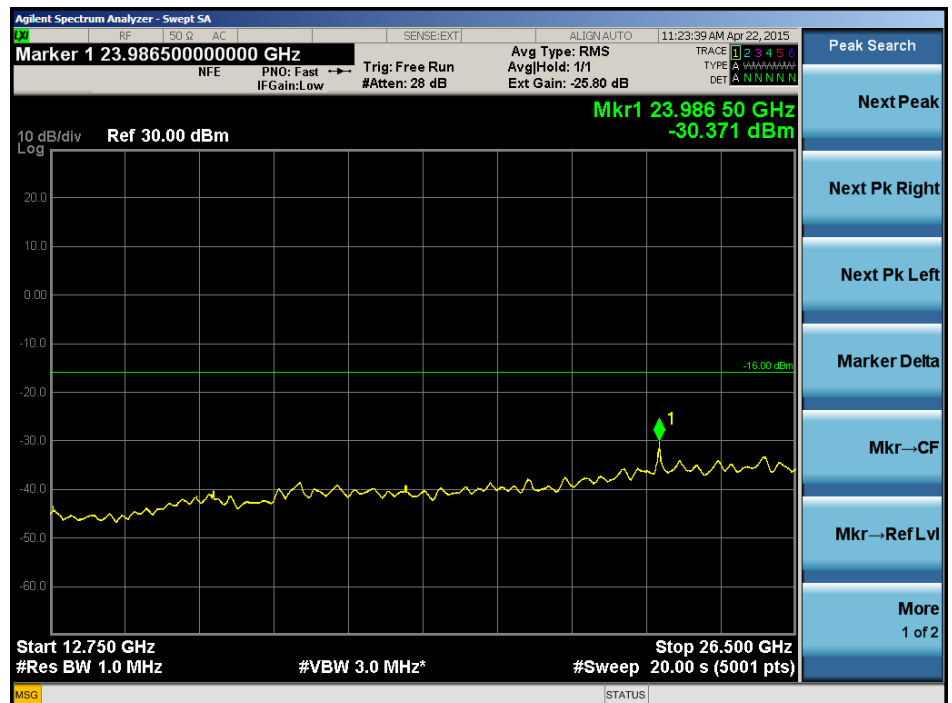
E.UTRA Test Model: E-TM1.1

CH: M

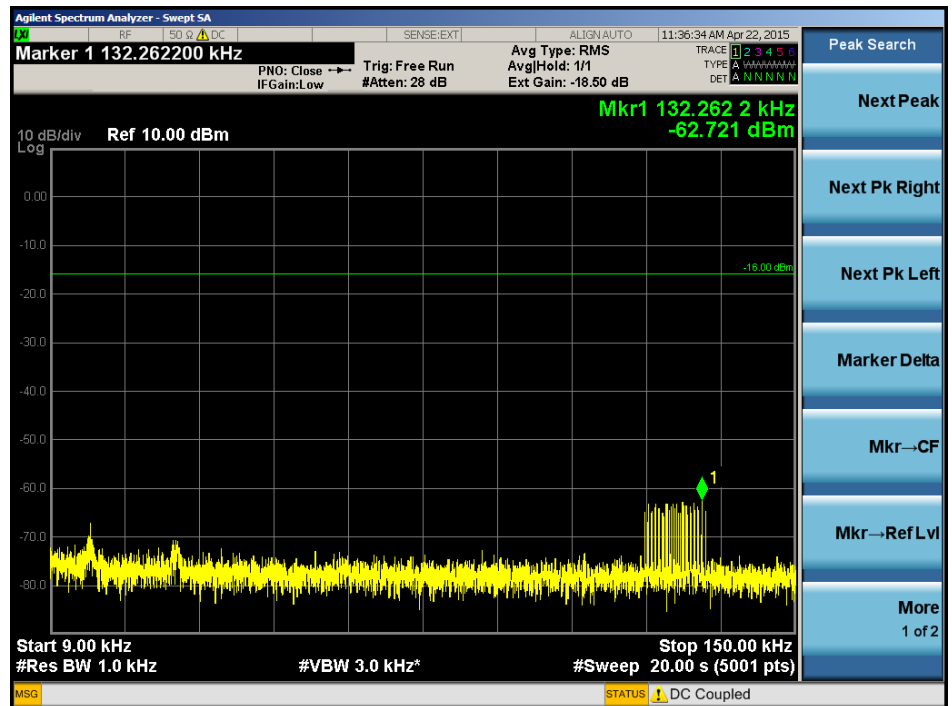
CH BW: 20 MHz

Antenna port: 1

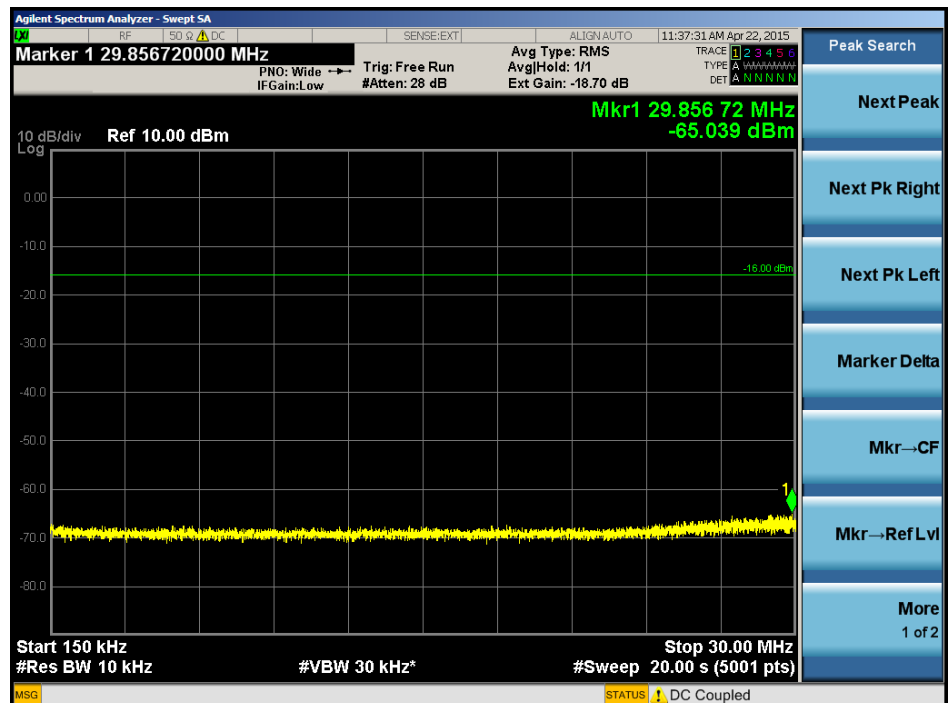
Frequency range:
12.75 GHz to 26.5 GHz



Modulation: 16QAM
E.UTRA Test Model: E-TM3.2
CH: M
CH BW: 20 MHz
Antenna port: 1
Frequency range:
9 kHz to 150 kHz



Modulation: 16QAM
E.UTRA Test Model: E-TM3.2
CH: M
CH BW: 20 MHz
Antenna port: 1
Frequency range:
150 kHz to 30 MHz



Modulation: 16QAM

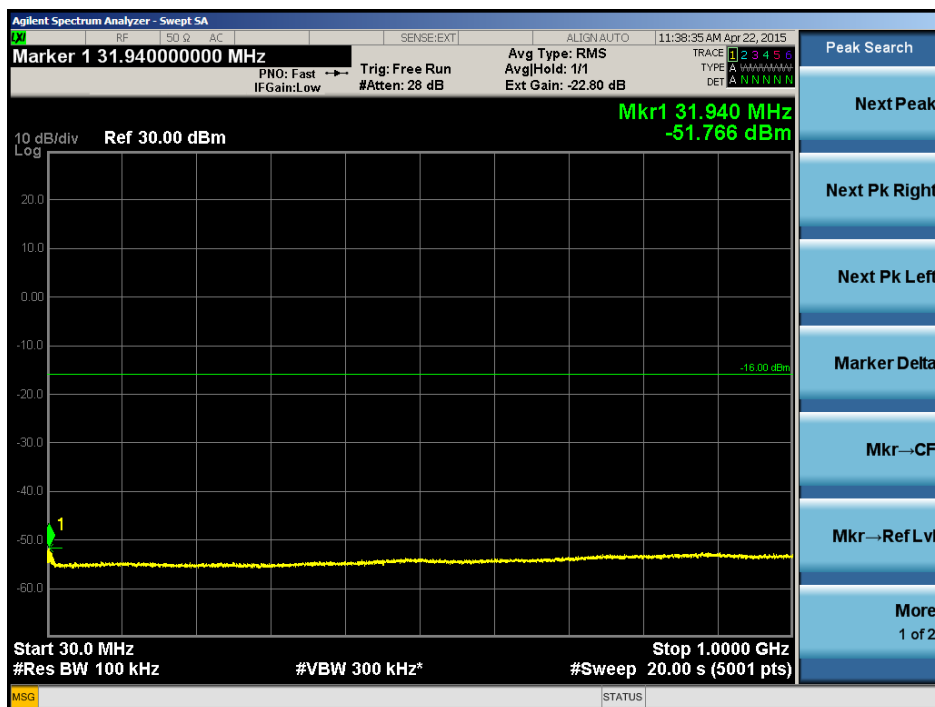
E.UTRA Test Model: E-TM3.2

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
30 MHz to 1000 MHz



Modulation: 16QAM

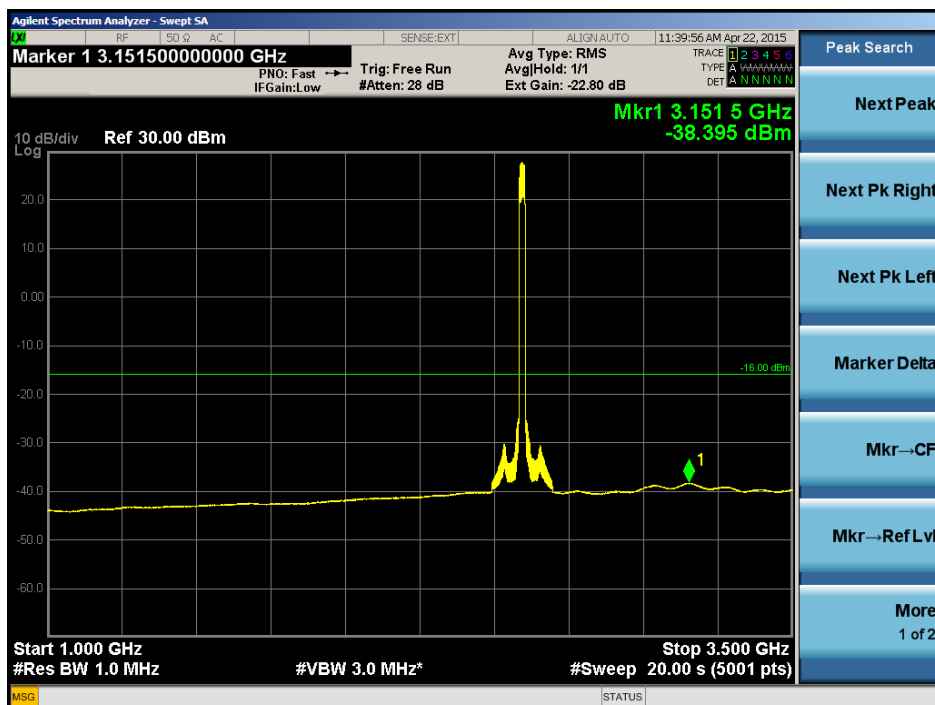
E.UTRA Test Model: E-TM3.2

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
1 GHz to 3.5 GHz



Modulation: 16QAM

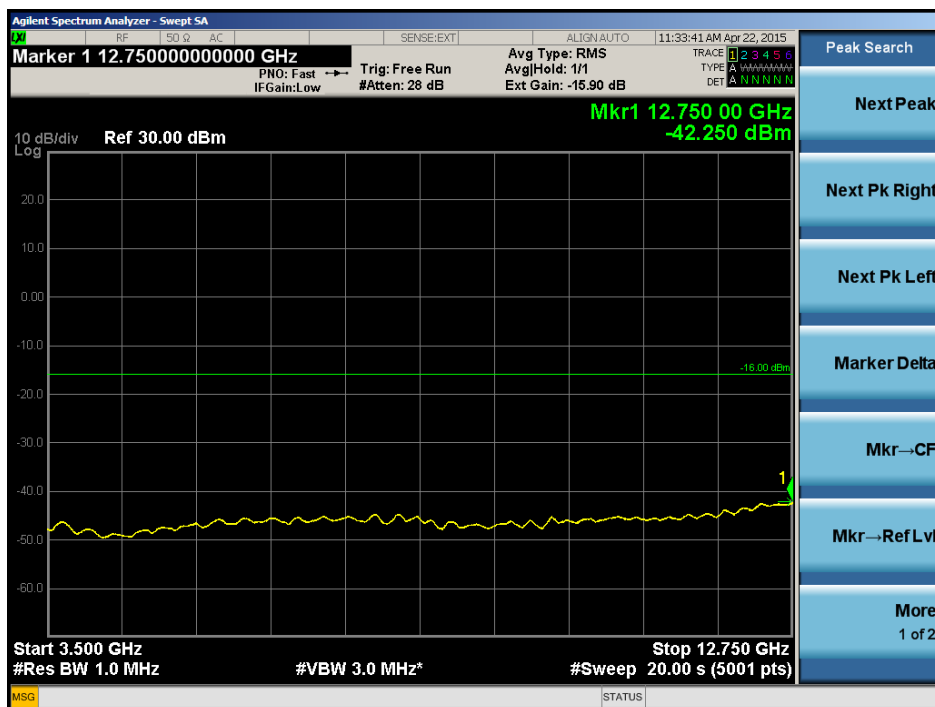
E.UTRA Test Model: E-TM3.2

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
3.5 GHz to 12.75 GHz



Modulation: 16QAM

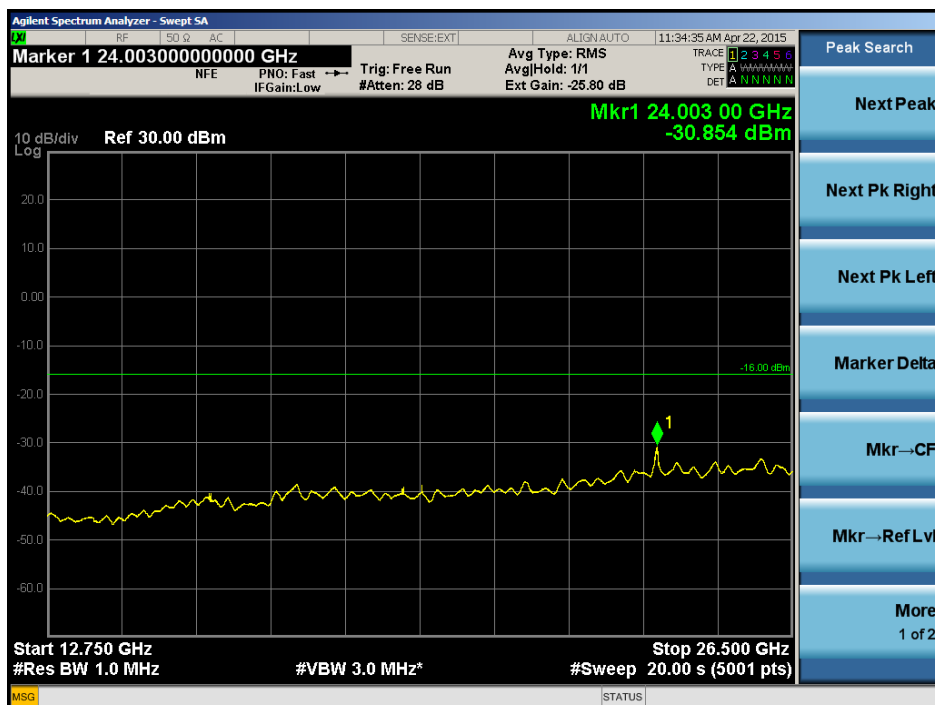
E.UTRA Test Model: E-TM3.2

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
12.75 GHz to 26.5 GHz



Modulation: 64QAM

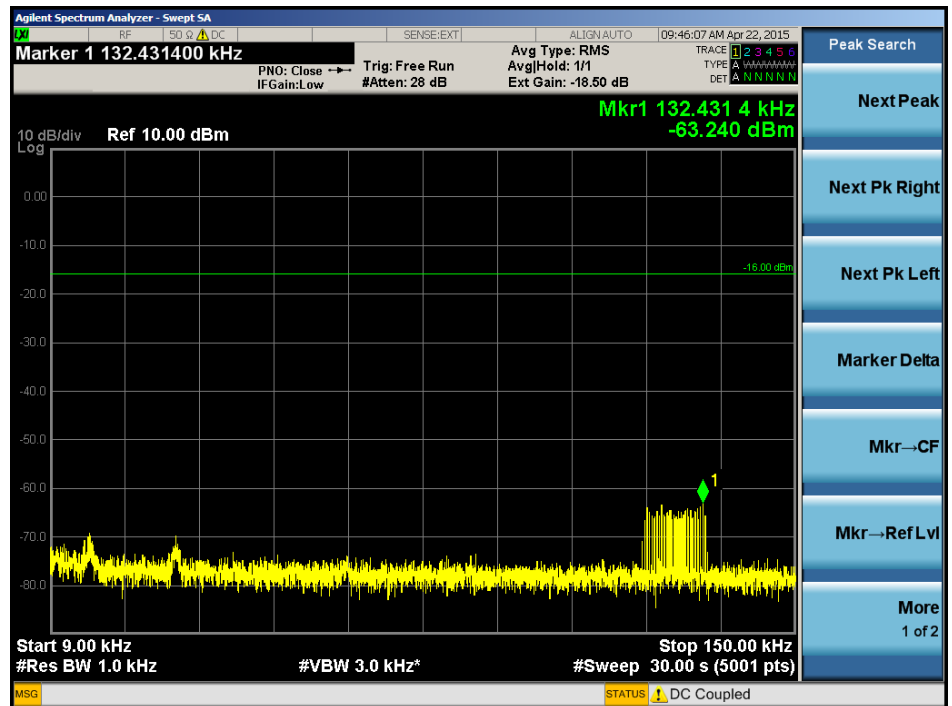
E.UTRA Test Model: E-TM3.1

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
9 kHz to 150 kHz



Modulation: 64QAM

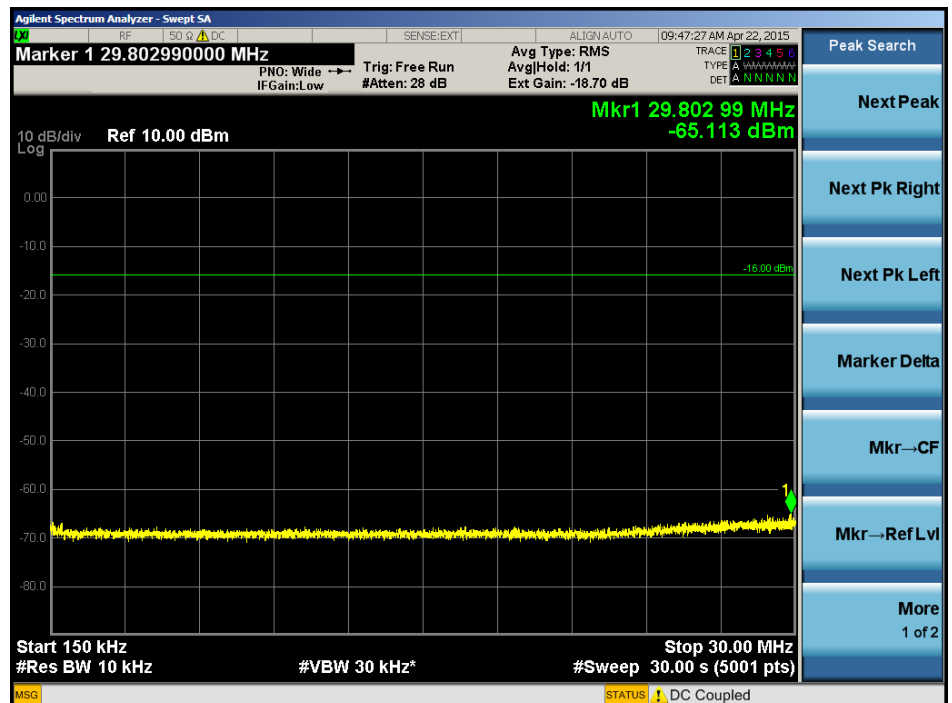
E.UTRA Test Model: E-TM3.1

CH: M

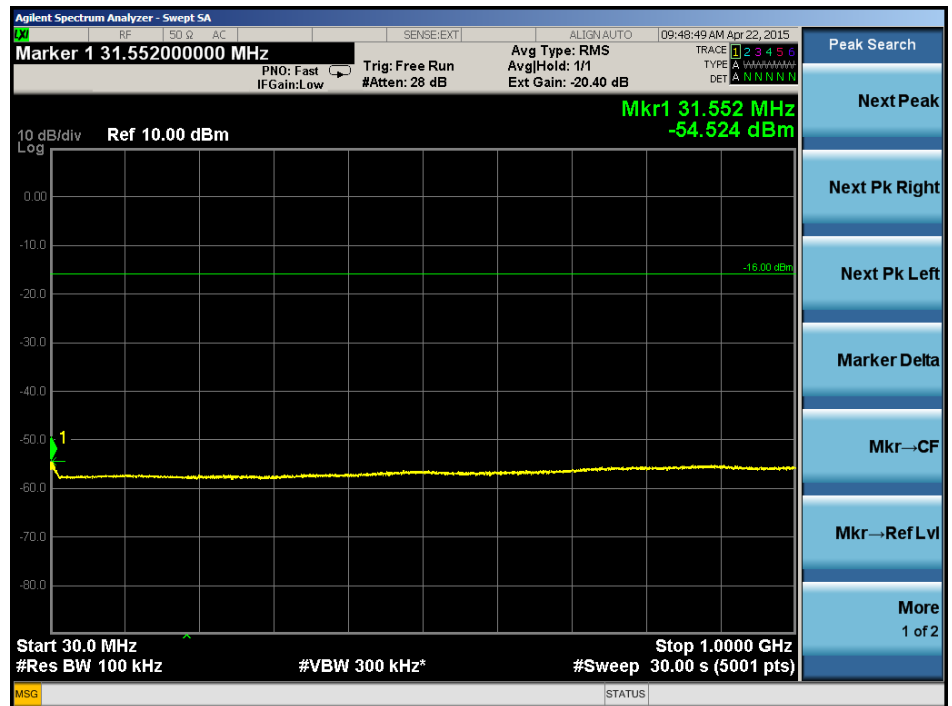
CH BW: 20 MHz

Antenna port: 1

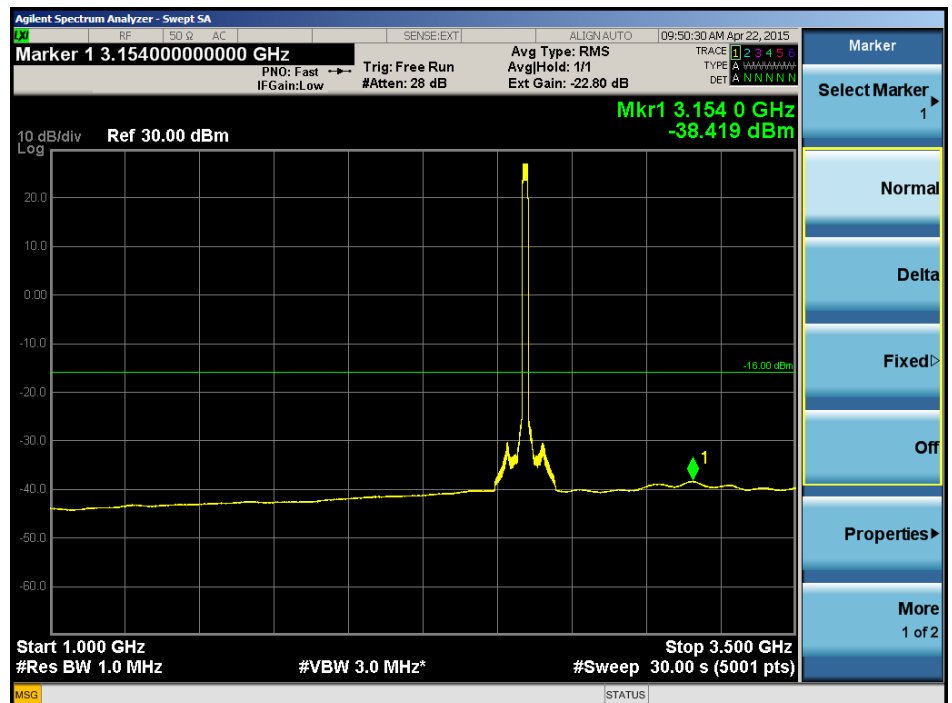
Frequency range:
150 kHz to 30 MHz



Modulation: 64QAM
E.UTRA Test Model: E-TM3.1
CH: M
CH BW: 20 MHz
Antenna port: 1
Frequency range:
30 MHz to 1000 MHz



Modulation: 64QAM
E.UTRA Test Model: E-TM3.1
CH: M
CH BW: 20 MHz
Antenna port: 1
Frequency range:
1 GHz to 3.5 GHz



Modulation: 64QAM

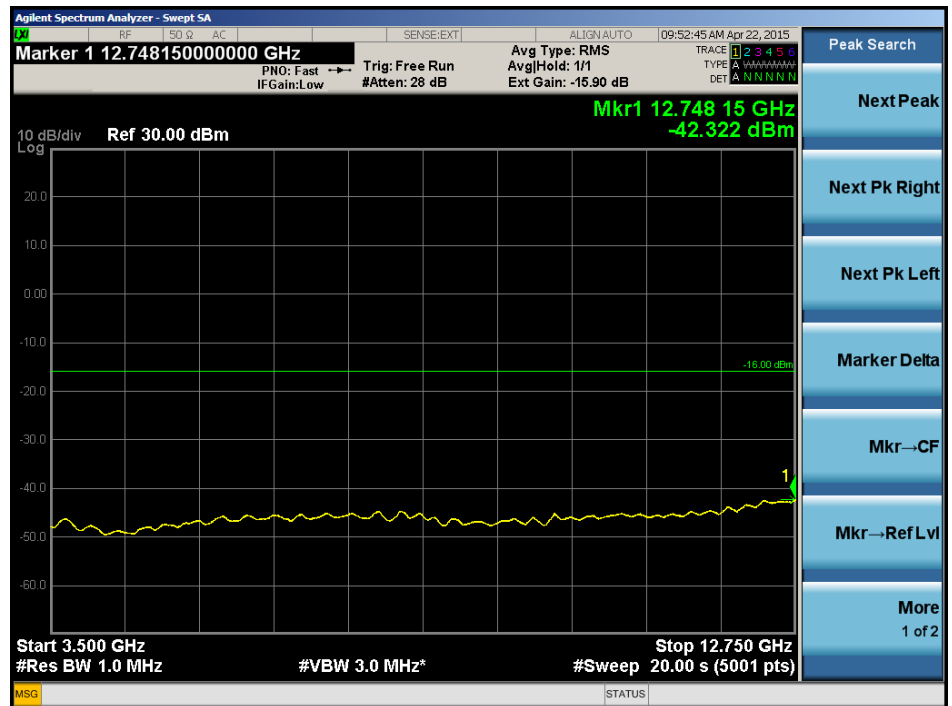
E.UTRA Test Model: E-TM3.1

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
3.5 GHz to 12.75 GHz



Modulation: 64QAM

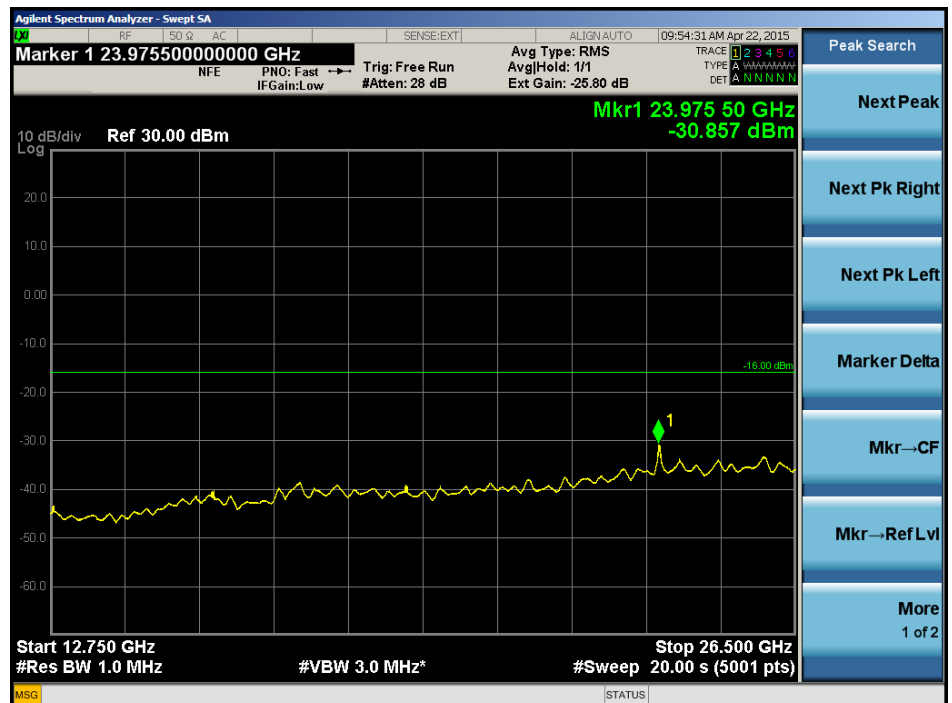
E.UTRA Test Model: E-TM3.1

CH: M

CH BW: 20 MHz

Antenna port: 1

Frequency range:
12.75 GHz to 26.5 GHz



5.7 Field strength of spurious radiation

For test instruments and accessories used see section 6 Part **SER 1**, **SER 2**, **SER 3**.

5.7.1 Description of the test location

Test location: OATS 1
Test location: Anechoic chamber 1

5.7.2 Photo documentation of the test set-up

Open area test site, 9 kHz - 30 MHz (test distance: 3 m)

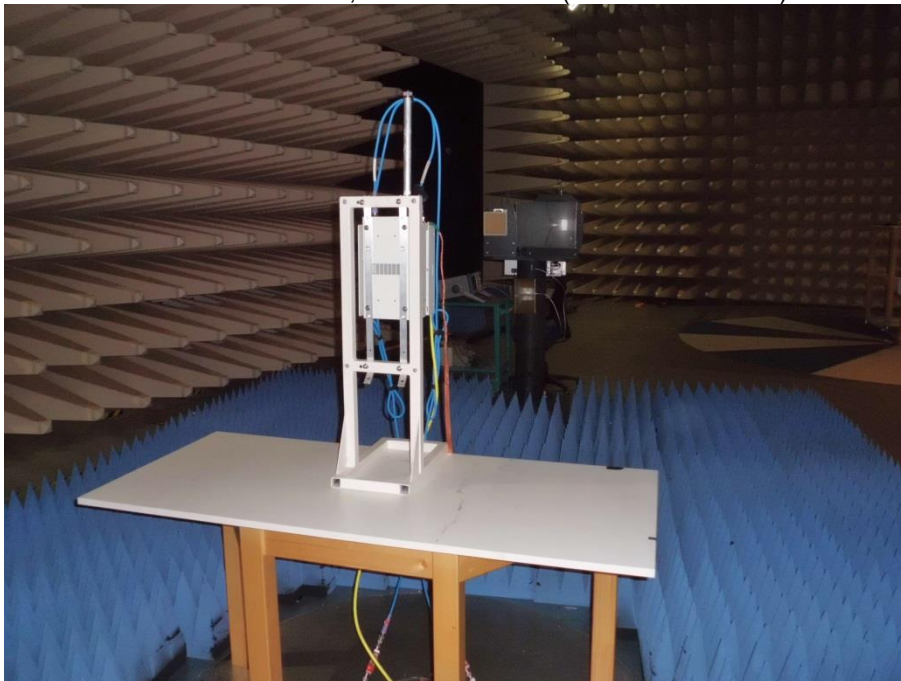


Open area test site, 30 MHz - 1000 MHz (test distance: 10 m)

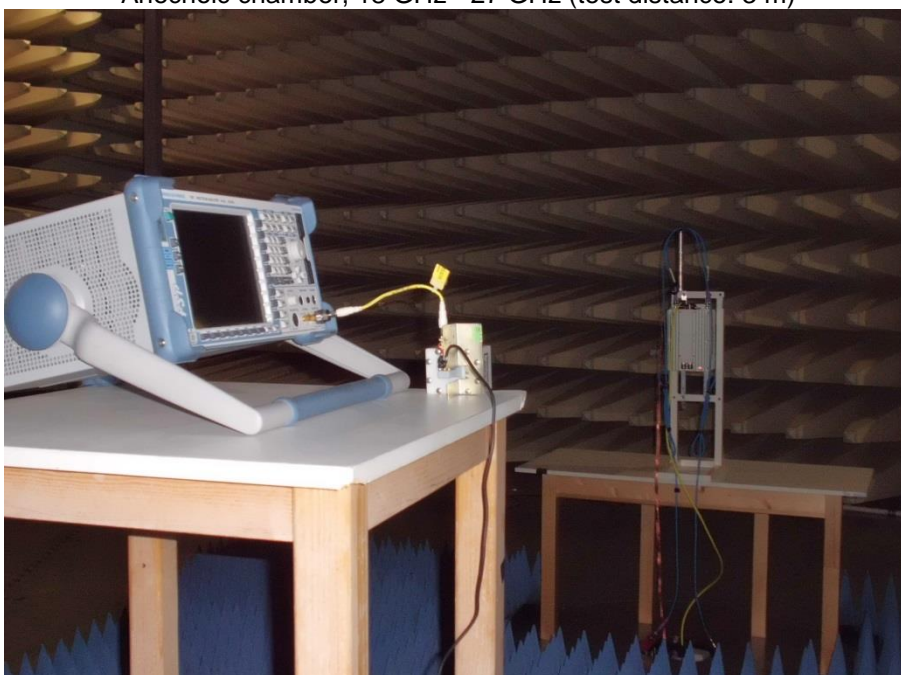


FCC ID: 2AEEH-CMCOB41AC2X6

Anechoic chamber, 1 GHz - 18 GHz (test distance: 3 m)



Anechoic chamber, 18 GHz - 27 GHz (test distance: 3 m)



5.7.3 Applicable standard

According to FCC Part 27, Section 27.53(m):

(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495 - 2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495 - 2496 MHz).

Pursuant to FCC OET RULES 662911 D01 and D02 for two antenna MIMO mode of operations, the FCC limit of -13 dBm shall be 3 dB more stringent, therefore all channel edge and out of band spurious emissions shall be -16 dBm. Further limits are adjusted for lower resolution BW using 10 log (100kHz/1% of channel BW)

5.7.4 Description of measurement – Measurement guidance KDB 971168 D01 (7)

The spurious emission at the antenna terminal is measured radiated using a spectrum analyser. The EUT is set in TX continuous mode while measuring. The EUT is measured at antenna port 1. The resulting values are listed in the following tables.

5.7.5 Spectrum analyser settings

9 kHz to 150 kHz:

RBW:	VBW:	Span:	Detector:	Trigger:	Sweep time:
1 kHz	3 kHz	-	RMS	Free run	10 sec.

150 kHz to 30 MHz:

RBW:	VBW:	Span:	Detector:	Trigger:	Sweep time:
10 kHz	30 kHz	-	RMS	Free run	10 sec.

30 MHz to 1 GHz:

RBW:	VBW:	Span:	Detector:	Trigger:	Sweep time:
100 kHz	300 kHz	-	RMS	Free run	10 sec.

1 GHz to 27 GHz:

RBW:	VBW:	Span:	Detector:	Trigger:	Sweep time:
1 MHz	3 MHz	-	RMS	Free run	10 sec.

5.7.6 Test result table

Modulation: QPSK - CH: M - CH BW: 20 MHz - Antenna port: 1 & 2 - RX Antenna vertical								
Start frequency	Stop frequency	RBW	VBW	Frequency	Max emission observed	Limit	Margin	Verdict
(MHz)	(MHz)	(kHz)	(kHz)	(MHz)	(dBm)	(dBm)	dB	
0.009	0.075	1	3	0.009	-32.5	-16.0	16.5	OK
0.075	0.15	1	3	0.150	-51.9	-16.0	35.9	OK
0.15	10	10	30	2.221	-34.2	-16.0	18.2	OK
10	20	10	30	11.116	-55.4	-16.0	39.4	OK
20	30	10	30	21.250	-71.0	-16.0	55.0	OK
30	200	100	300	199.75	-71.4	-16.0	55.4	OK
200	400	100	300	210.42	-68.7	-16.0	52.7	OK
400	600	100	300	597.33	-73.9	-16.0	57.9	OK
600	800	100	300	744.77	-70.1	-16.0	54.1	OK
800	1000	100	300	964.84	-67.4	-16.0	51.4	OK
1000	3000	1000	3000	2584.8	-21.0	-16.0	5.0	---
3000	6000	1000	3000	5182.3	-60.2	-16.0	44.2	OK
6000	9000	1000	3000	8830.0	-61.5	-16.0	45.5	OK
12000	15000	1000	3000	12757.9	-51.0	-16.0	35.0	OK
15000	18000	1000	3000	17091.8	-50.8	-16.0	34.8	OK
18000	21000	1000	3000	20282.6	-62.3	-16.0	46.3	OK
21000	24000	1000	3000	21822.8	-60.9	-16.0	44.9	OK
24000	27000	1000	3000	26772.8	-58.1	-16.0	42.1	OK

--- fundamental frequency

Modulation: QPSK - CH: M - CH BW: 20 MHz - Antenna port: 1 & 2 - RX Antenna horizontal								
Start frequency	Stop frequency	RBW	VBW	Frequency	Max emission observed	Limit	Margin	Verdict
(MHz)	(MHz)	(kHz)	(kHz)	(MHz)	(dBm)	(dBm)	dB	
30	200	100	300	199.14	-72.0	-16.0	56.0	OK
200	400	100	300	209.21	-68.8	-16.0	52.8	OK
400	600	100	300	595.39	-75.5	-16.0	59.5	OK
600	800	100	300	781.14	-72.5	-16.0	56.5	OK
800	1000	100	300	979.27	-68.7	-16.0	52.7	OK
1000	3000	1000	3000	2585.5	-20.5	-16.0	4.5	---
3000	6000	1000	3000	4000.0	-58.7	-16.0	42.7	OK
6000	9000	1000	3000	8886.9	-61.8	-16.0	45.8	OK
12000	15000	1000	3000	12750.0	-51.6	-16.0	35.6	OK
15000	18000	1000	3000	17104.9	-52.4	-16.0	36.4	OK
18000	21000	1000	3000	20210.6	-61.6	-16.0	45.6	OK
21000	24000	1000	3000	21809.3	-59.3	-16.0	43.3	OK
24000	27000	1000	3000	26850.4	-55.8	-16.0	39.8	OK

--- fundamental frequency

5.7.7 Test result remarks

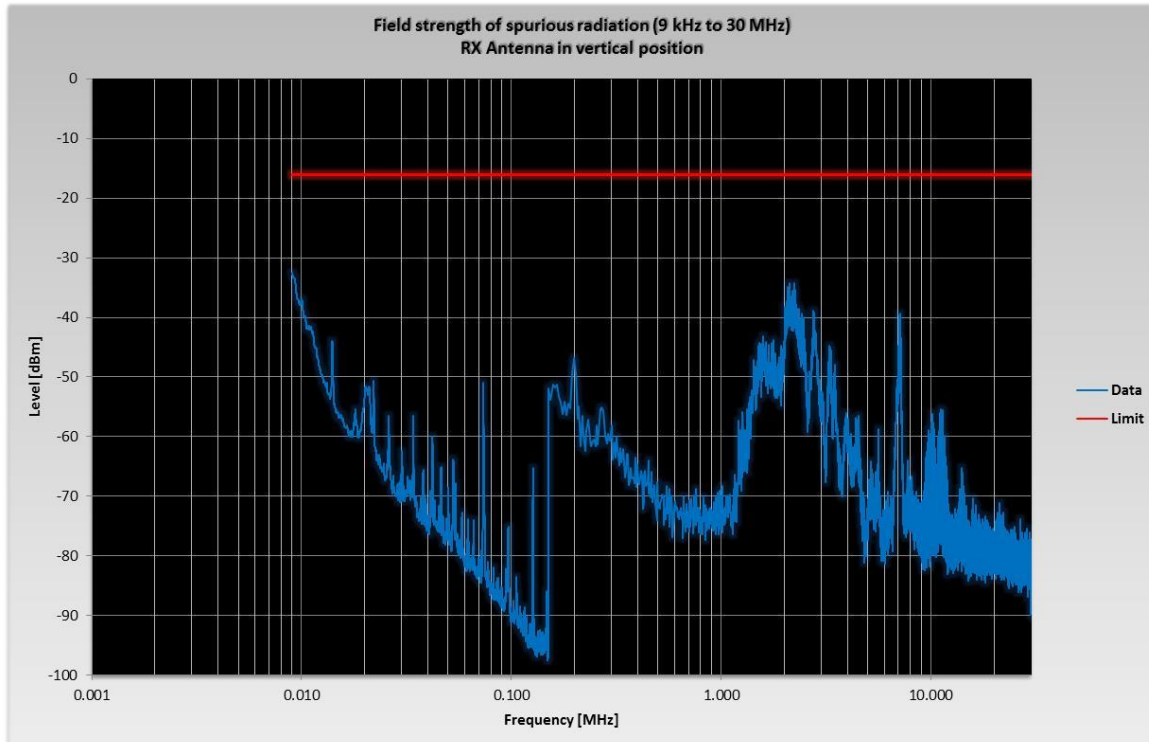
For this particular test, the field strength of any spurious radiation is required to be less then -16 dBm.

No harmonics above noise floor were found (<20 dB to the limit) over the frequency range from 9 kHz

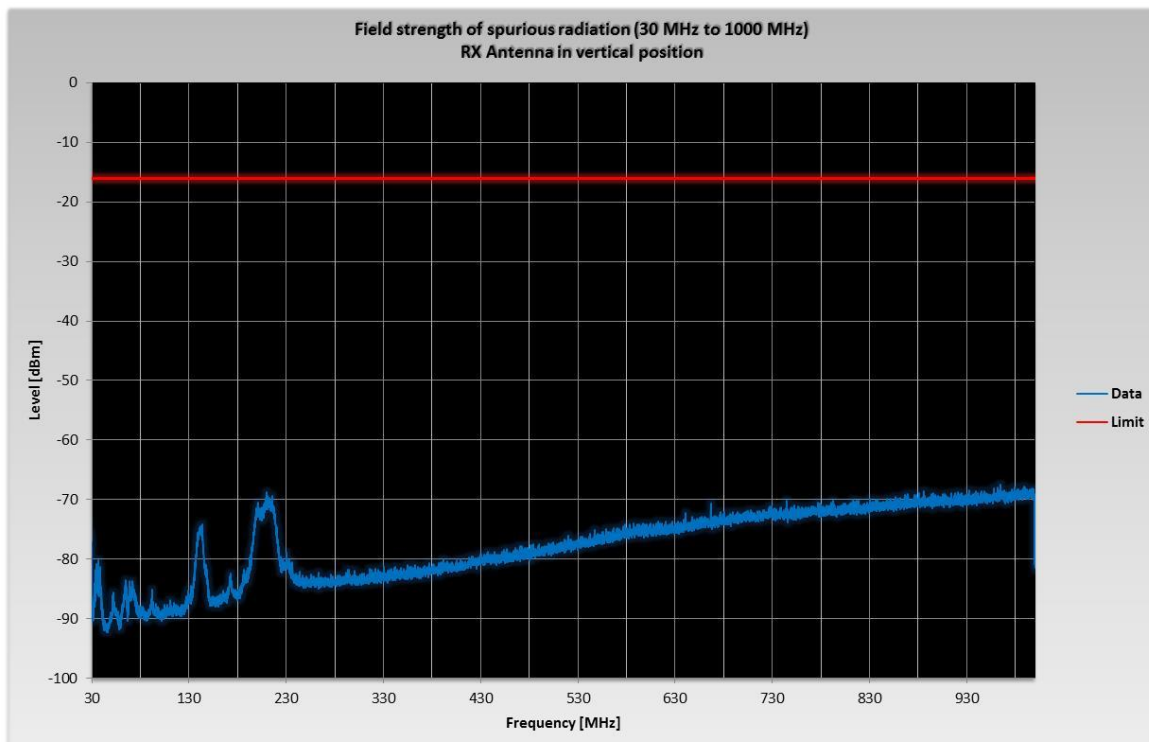
to 27 GHz. Therefore no final measurement where performend.

5.7.7.1 Test result plot – 64QAM

Modulation: 64QAM - CH: M - CH BW: 20 MHz - Antenna port: 1 & 2 - Frequency range: 9 kHz to 30 MHz

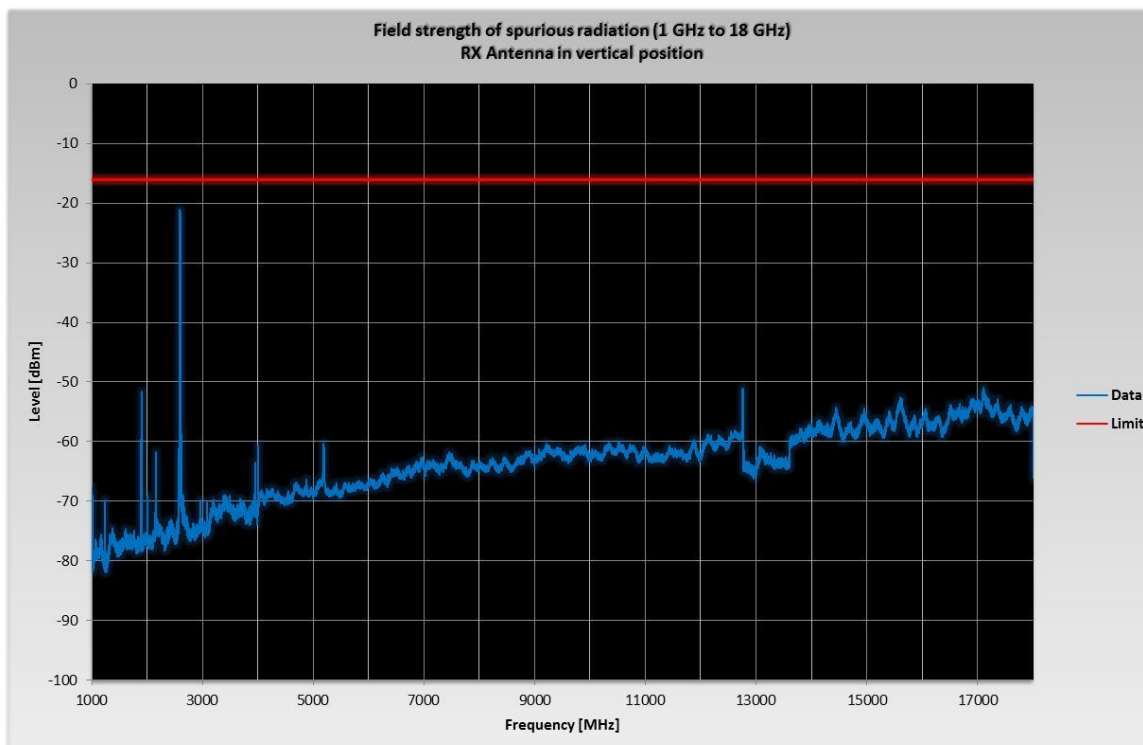


Modulation: 64QAM - CH: M - CH BW: 20 MHz - Antenna port: 1 & 2 - Frequency range: 30 MHz to 1000 MHz

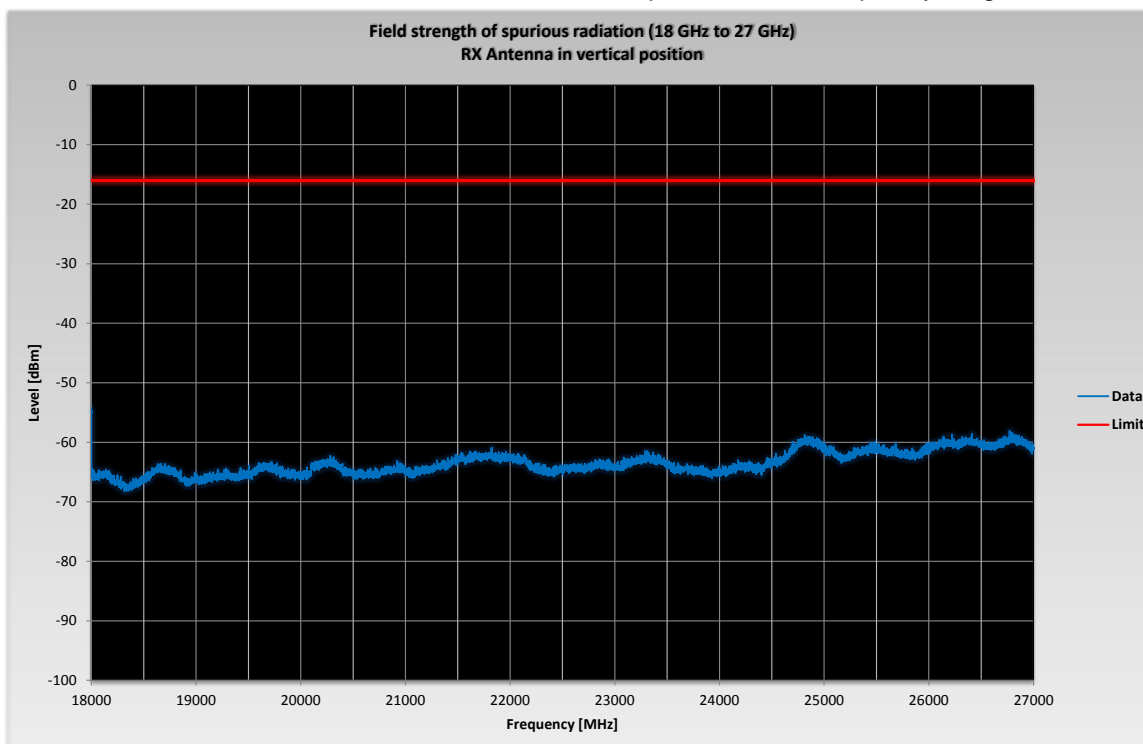


FCC ID: 2AEEH-CMCOB41AC2X6

Modulation: 64QAM - CH: M - CH BW: 20 MHz - Antenna port: 1 & 2 - Frequency range: 1 GHz to 18 GHz

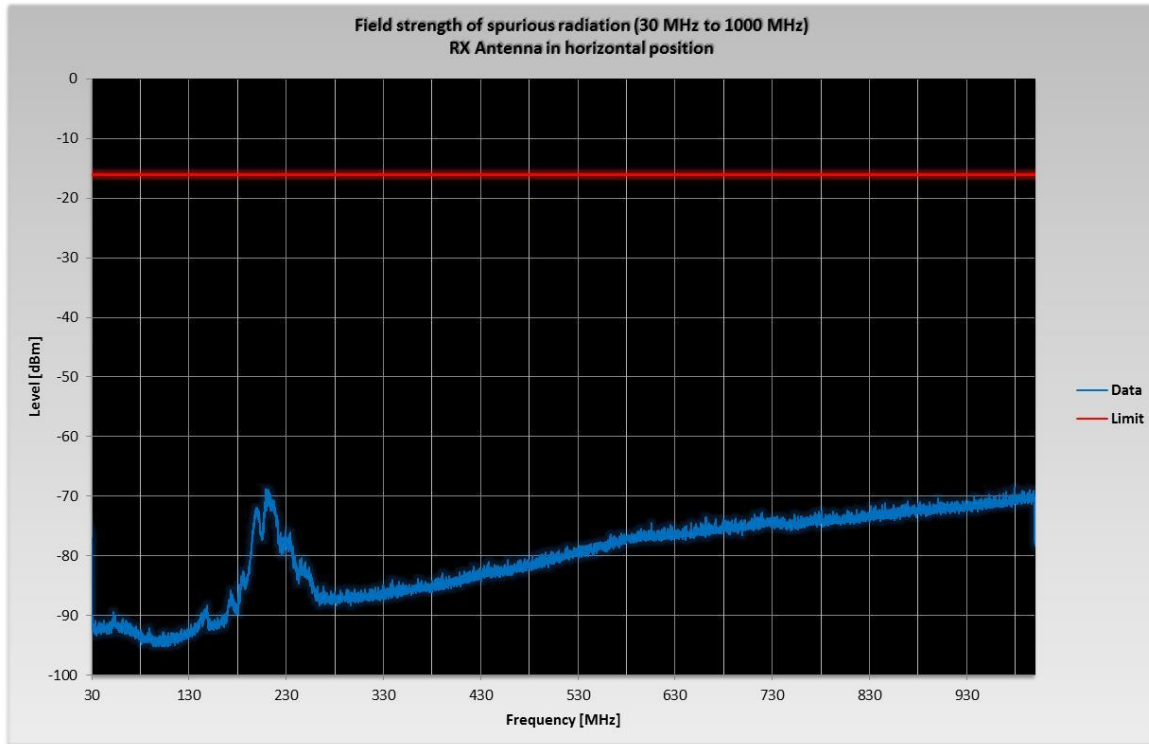


Modulation: 64QAM - CH: M - CH BW: 20 MHz - Antenna port: 1 & 2 - Frequency range: 18 GHz to 27 GHz

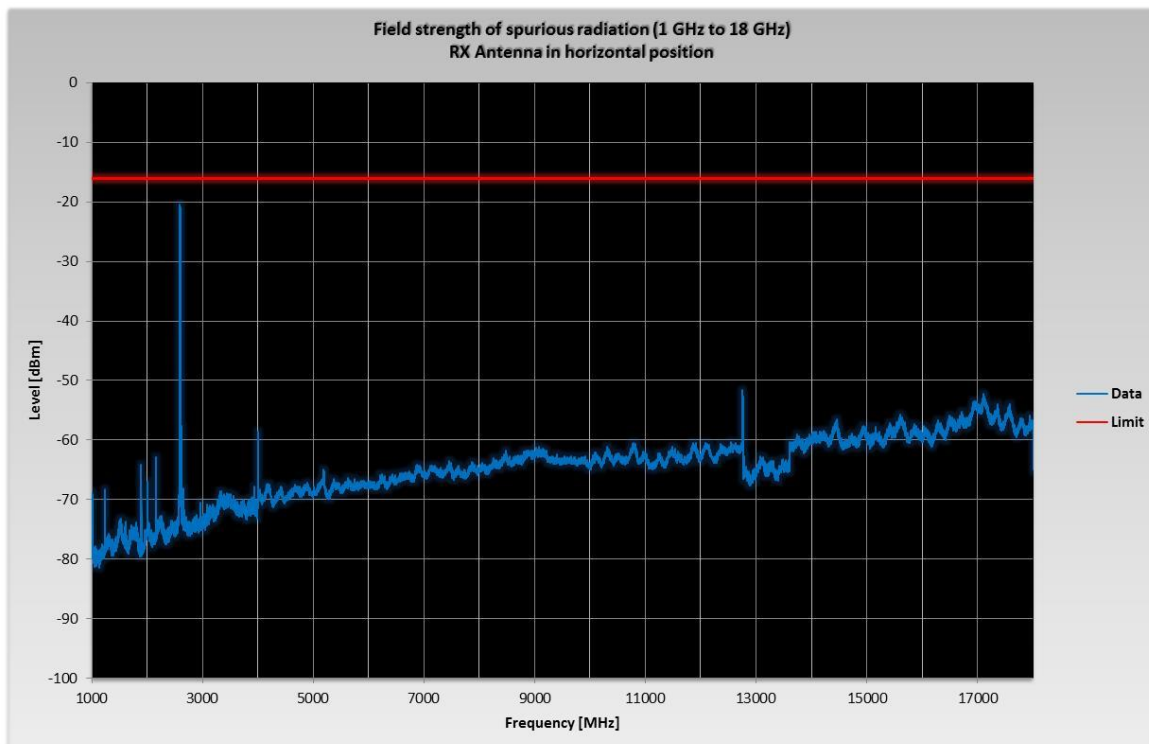


FCC ID: 2AEEH-CMCOB41AC2X6

Modulation: 64QAM - CH: M - CH BW: 20 MHz - Antenna port: 1 & 2 - Frequency range: 30 MHz to 1000 MHz

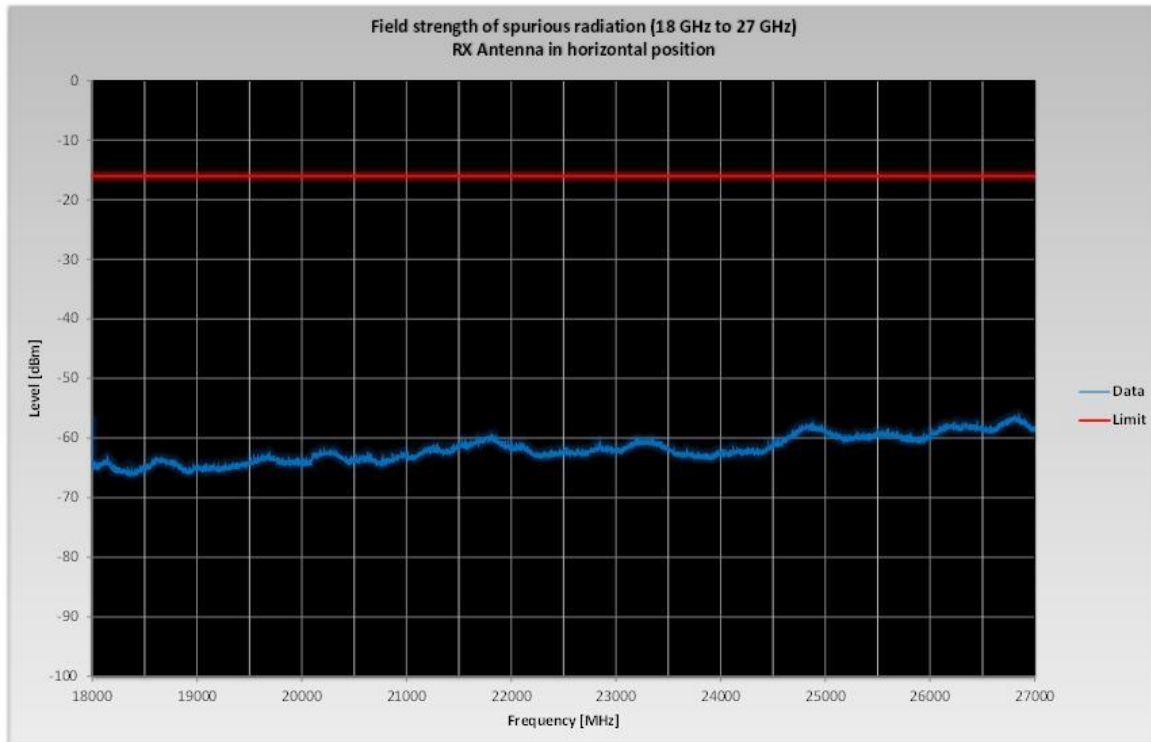


Modulation: 64QAM - CH: M - CH BW: 20 MHz - Antenna port: 1 & 2 - Frequency range: 1 GHz to 18 GHz



FCC ID: 2AEEH-CMCOB41AC2X6

Modulation: 64QAM - CH: M - CH BW: 20 MHz - Antenna port: 1 & 2 - Frequency range: 18 GHz to 27 GHz



5.8 Frequency stability

For test instruments and accessories used see section 6 Part FS.

5.8.1 Description of the test location

Test location: Room 008/U1/135

5.8.2 Photo documentation of the test set-up



5.8.3 Applicable standard

According to FCC Part 2, Section 2.1055:

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.

(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

5.8.4 Description of measurement – Measurement guidance KDB 971168 D01 (9)

After 60 minutes of temperature stabilization the frequency stability is measured conducted using a spectrum analyser with the function “LTE - Modulation Analysis”. The EUT is set in TX continuous mode with the maximal output power and the test model is E-TM3.1 on middle channel (2593.0 MHz) while measuring. The EUT is measured at antenna port 1. Within 3 minutes after the temperature stabilization, a measurement result was taken every 30 seconds (declared by manufacturer). The resulting values are listed in the following tables.

5.8.5 Spectrum analyser settings

The settings are automatically changed by analyser software and is dependent to the used channel bandwidth.

5.8.6 Limit

The limit of the frequency stability is ± 0.1 ppm. For the middle frequency the calculated limit is: ± 259.30 Hz.

5.8.7 Test result table

Variable temperature and constant voltage			
Temperature (°C)	Voltage (VAC)	Time (minutes)	Frequency error (Hz)
+50	110.0	0.0	-0.9
		0.5	-1.5
		1.0	5.5
		1.5	-2.5
		2.0	-2.2
		2.5	-1.6
		3.0	-20.2
+40		0.0	0.2
		0.5	-4.7
		1.0	-5.0
		1.5	0.2
		2.0	0.4
		2.5	-3.0
		3.0	-2.8
+30		0.0	-4.3
		0.5	-0.6
		1.0	-5.0
		1.5	-4.9
		2.0	-9.6
		2.5	-1.9
		3.0	-3.2
+20		0.0	-0.6
		0.5	-1.3
		1.0	-1.1
		1.5	-0.5
		2.0	-1.5
		2.5	-3.4
		3.0	-3.1
+10		0.0	-3.2
		0.5	-3.4
		1.0	-2.3
		1.5	-4.0
		2.0	-2.1
		2.5	-1.4
		3.0	-4.3

Variable temperature and constant voltage			
Temperature (°C)	Voltage (VAC)	Time (minutes)	Frequency error (Hz)
0	110.0	0.0	-1.9
		0.5	3.0
		1.0	0.2
		1.5	-6.9
		2.0	-7.4
		2.5	-8.7
		3.0	-1.9
-10		0.0	-7.0
		0.5	-1.8
		1.0	3.8
		1.5	-2.8
		2.0	-3.4
		2.5	-2.6
		3.0	-3.7
-20		0.0	-5.6
		0.5	-3.4
		1.0	-10.3
		1.5	-5.6
		2.0	-6.4
		2.5	12.1
		3.0	-7.2
-30		0.0	-4.1
		0.5	-3.6
		1.0	-6.6
		1.5	-4.0
		2.0	-1.7
		2.5	-2.8
		3.0	-0.4
-40		0.0	0.7
		0.5	0.7
		1.0	-1.2
		1.5	0.4
		2.0	-17.7
		2.5	-0.8
		3.0	0.5

Constant temperature and nominal Voltage			
Temperature (°C)	Voltage (VAC)	Time (minutes)	Frequency error (Hz)
+25	110.0	0.0	-1.2
		0.5	-2.3
		1.0	-3.2
		1.5	-1.3
		2.0	-2.2
		2.5	1.1
		3.0	-1.7

Constant temperature and variable voltage			
Temperature (°C)	Voltage (VAC)	Time (minutes)	Frequency error (Hz)
+25	93.5	0.0	-3.2
		0.5	-1.4
		1.0	-2.3
		1.5	-1.7
		2.0	-9.5
		2.5	3.9
		3.0	4.5
	96.8	0.0	1.6
		0.5	-1.5
		1.0	-2.1
		1.5	-1.3
		2.0	1.7
		2.5	2.1
		3.0	1.3
	100.1	0.0	-1.1
		0.5	-1.1
		1.0	-0.8
		1.5	-1.4
		2.0	-1.4
		2.5	-5.7
		3.0	-6.4
	103.4	0.0	1.8
		0.5	-3.1
		1.0	-3.4
		1.5	-3.2
		2.0	-2.5
		2.5	-1.6
		3.0	-2.6
	106.7	0.0	-4.3
		0.5	1.2
		1.0	-1.0
		1.5	-1.7
		2.0	-3.2
		2.5	-8.6
		3.0	-4.3

Constant temperature and variable voltage			
Temperature (°C)	Voltage (VAC)	Time (minutes)	Frequency error (Hz)
+25	113.3	0.0	-1.6
		0.5	-7.3
		1.0	-3.1
		1.5	-3.4
		2.0	-1.4
		2.5	-1.0
		3.0	2.1
	116.6	0.0	-2.0
		0.5	-1.1
		1.0	-2.0
		1.5	-1.9
		2.0	-1.5
		2.5	-2.2
		3.0	-5.6
	119.9	0.0	-5.1
		0.5	-6.1
		1.0	4.0
		1.5	1.3
		2.0	-1.2
		2.5	-4.2
		3.0	-1.4
	123.2	0.0	-1.6
		0.5	-2.7
		1.0	-1.2
		1.5	1.1
		2.0	-2.7
		2.5	-1.7
		3.0	-1.1
	126.5	0.0	-1.7
		0.5	-1.0
		1.0	-2.1
		1.5	-2.1
		2.0	4.2
		2.5	-1.8
		3.0	-2.8

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Next Verif.
CPC 3	8040 C	99-02/05-15-001	27/01/2016	27/01/2015		
	N9030A	99-02/11-15-001	25/11/2015	25/11/2014		
	PCR1000	99-02/50-15-001				
	WA 35-10-33	99-02/50-15-004				
FS	8040 C	99-02/05-15-001	27/01/2016	27/01/2015		
	34970A	99-02/07-15-002	27/03/2016	27/03/2015		
	N9030A	99-02/11-15-001	25/11/2015	25/11/2014		
	TW-60/24	99-02/45-15-001				
	PCR1000	99-02/50-15-001				
	WA 35-10-33	99-02/50-15-004				
MB	8040 C	99-02/05-15-001	27/01/2016	27/01/2015		
	N9030A	99-02/11-15-001	25/11/2015	25/11/2014		
	PCR1000	99-02/50-15-001				
	WA 35-10-33	99-02/50-15-004				
SEC1	8040 C	99-02/05-15-001	27/01/2016	27/01/2015		
	N9030A	99-02/11-15-001	25/11/2015	25/11/2014		
	PCR1000	99-02/50-15-001				
	WA 35-10-33	99-02/50-15-004				
SEC2	8040 C	99-02/05-15-001	27/01/2016	27/01/2015		
	N9030A	99-02/11-15-001	25/11/2015	25/11/2014		
	PCR1000	99-02/50-15-001				
	WA 35-10-33	99-02/50-15-004				
SEC3	8040 C	99-02/05-15-001	27/01/2016	27/01/2015		
	N9030A	99-02/11-15-001	25/11/2015	25/11/2014		
	PCR1000	99-02/50-15-001				
	WA 35-10-33	99-02/50-15-004				
SER 1	FMZB 1516	01-02/24-01-018			19/01/2016	19/01/2015
	ESR 7	02-02/03-13-001	03/06/2015	03/06/2014		
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				
	KK-SD_7/8-2X21N-33,0M	02-02/50-15-028				
SER 2	ESR 7	02-02/03-13-001	03/06/2015	03/06/2014		
	VULB 9168	02-02/24-05-005	17/04/2016	17/04/2015	17/10/2015	17/04/2015
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				
	KK-SD_7/8-2X21N-33,0M	02-02/50-15-028				

FCC ID: 2AEEH-CMCOB41AC2X6

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Next Verif.
SER 3	FSP 40	02-02/11-11-001	02/10/2015	02/10/2014		
	JS4-18004000-30-5A	02-02/17-05-017				
	AFS5-12001800-18-10P-6	02-02/17-06-002				
	AFS4-01000400-10-10P-4	02-02/17-13-002				
	AMF-4F-04001200-15-10P	02-02/17-13-003				
	BBHA 9120 E 251	02-02/24-05-006	27/04/2016	27/04/2015	27/10/2015	27/04/2015
	BBHA 9170	02-02/24-05-014	23/06/2006	23/06/2005		
	WBH2-18NHG	02-02/24-08-002	27/04/2016	27/04/2015	27/10/2015	27/04/2015
	Sucoflex N-2000-SMA	02-02/50-05-075				
	KMS102-0.2 m	02-02/50-11-020				
	SF104/11N/11N/1500MM	02-02/50-13-015				
	SF104/11SMA/11N/1500MM	02-02/50-13-016				
	SF104/11SMA/11N/1500MM	02-02/50-13-017				