

CETECOM™

CETECOM ICT Services
consulting - testing - certification ➤➤➤

TEST REPORT

Test report no.: 1-7779/14-01-02-C



DAkkS
Deutsche
Akkreditierungsstelle
D-PL-12076-01-01

Testing laboratory

CETECOM ICT Services GmbH

Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany

Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075
Internet: <http://www.cetecom.com>
e-mail: ict@cetecom.com

Accredited Testing Laboratory:

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)

The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01

Area of Testing:
Radio Communications & EMC (RCE)

Applicant

Ellegi srl

Via Petrarca 55

22070 Rovello Porro CO / ITALY

Phone: -/-
Fax: -/-
Contact: Carlo Rivolta
e-mail: carlo.rivolta@lisalab.com
Phone: +39 02 94 43 50 51

Manufacturer

Ellegi srl

Via Petrarca 55

22070 Rovello Porro CO / ITALY

47 CFR Part 90

Subpart F- Radiolocation Service

RSS-210

Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

For further applied test standards please refer to section 3 of this test report.

Test standard/s

Test Item

Kind of test item: **Ground Based Synthetic Aperture Radar**

Model name: **LISAMOBILE**

FCC ID: **2AB7MLISAMOBILE**

IC: **11895A-LISAMOBILE**

Frequency: **17.1 – 17.3 GHz**

Antenna: **two external horn antennas for TX and RX**

Power supply: **24.0 V DC by external power supply**

Temperature range: **-30°C to +50°C**

This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorised:

Meheza Walla
Testing Manager

Test performed:

Karsten Geraldyn
Senior Testing Manager

1 Table of contents

1	Table of contents	2
2	General information	3
2.1	Notes and disclaimer	3
2.2	Application details	3
3	Test standard/s	3
4	Test environment	4
5	Test item	4
5.1	Additional information	4
6	Test laboratories sub-contracted	4
7	Summary of measurement results	5
8	RF measurements	6
8.1	Description of test setup	6
8.1.1	Radiated measurements	6
8.1.2	Conducted measurements	7
8.2	Additional comments	7
9	Measurement results	8
9.1	Conducted / radiated peak output power (EIRP)	8
9.2	MPE calculation	11
9.3	Occupied bandwidth	12
9.4	Spurious emissions (emission mask)	15
9.5	Spurious emissions (conducted)	18
9.6	Spurious emissions (radiated)	28
9.7	Frequency stability	33
10	Test equipment and ancillaries used for tests	34
11	Document history	36
12	Further information	36
13	Accreditation Certificate	37

2 General information

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM ICT Services GmbH.

The testing service provided by CETECOM ICT Services GmbH has been rendered under the current "General Terms and Conditions for CETECOM ICT Services GmbH".

CETECOM ICT Services GmbH will not be liable for any loss or damage resulting from false, inaccurate, inappropriate or incomplete product information provided by the customer.

Under no circumstances does the CETECOM ICT Services GmbH test report include any endorsement or warranty regarding the functionality, quality or performance of any other product or service provided.

Under no circumstances does the CETECOM ICT Services GmbH test report include or imply any product or service warranties from CETECOM ICT Services GmbH, including, without limitation, any implied warranties of merchantability, fitness for purpose, or non-infringement, all of which are expressly disclaimed by CETECOM ICT Services GmbH.

All rights and remedies regarding vendor's products and services for which CETECOM ICT Services GmbH has prepared this test report shall be provided by the party offering such products or services and not by CETECOM ICT Services GmbH.

In no case this test report can be considered as a Letter of Approval.

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

2.2 Application details

Date of receipt of order:	2014-03-21
Date of receipt of test item:	2014-04-22
Start of test:	2014-04-23
End of test:	2014-04-25
Person(s) present during the test:	Mr. Davide Leva

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 90	2013-10	Subpart F- Radiolocation Service
RSS-210	2010-12	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

4 Test environment

Temperature:	T_{nom}	+22 °C during room temperature tests
	T_{max}	+50 °C during high temperature tests
	T_{min}	-30 °C during low temperature tests
Relative humidity content:		45 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	24.0 V DC by external power supply
	V_{max}	-/- V
	V_{min}	-/- V

5 Test item

Kind of test item	:	Ground Based Synthetic Aperture Radar
Type identification	:	LISAMOBILE
Model number	:	LMK09
S/N serial number	:	0014
Frequency band	:	17.1 – 17.3 GHz
Type of radio transmission	:	FMCW
Use of frequency spectrum	:	
Type of modulation	:	FMCW
Number of channels	:	1
Emission Designator	:	200M0F0N
Antenna	:	two external horn antennas for TX and RX
Power supply	:	24.0 V DC by external power supply
Temperature range	:	-30°C to +50 °C

5.1 Additional information

None

6 Test laboratories sub-contracted

None

7 Summary of measurement results

No deviations from the technical specifications were ascertained

There were deviations from the technical specifications ascertained

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	47 CFR Part 2 47 CFR Part 90 – F RSS-210	Passed	2014-06-26	-/-

Test Specification Clause	Test Case	Temperature / Voltage	Pass	Fail	NA	NP	Results (max.)
FCC 47 CFR § 2.1046 § 90.205 (r) RSS-210 A.2.10	Measurements required: RF power output / Power limits (conducted/radiated)	nominal / nominal	☒	☐	☐	☐	10.2 dBm / 23.6 dBm
FCC 47 CFR § 2.1049	Measurements required: Occupied bandwidth	nominal / nominal	☒	☐	☐	☐	180.5 MHz
§ 1.1310	MPE Calculation	nominal / nominal	☒	☐	☐	☐	0.056 mW / cm ²
FCC 47 CFR § 2.1051 § 90.210	Measurements required: Spurious emissions at antenna terminals / Emission mask	nominal / nominal	☒	☐	☐	☐	complies
FCC 47 CFR § 2.1051 § 90.210	Measurements required: Spurious emissions at antenna terminals / Spurious emissions (conducted)	nominal / nominal	☒	☐	☐	☐	complies
FCC 47 CFR § 2.1053 § 90.210	Measurements required: Field strength of spurious radiation / Spurious emissions (radiated)	nominal / nominal	☒	☐	☐	☐	complies
FCC 47 CFR § 2.1055 § 90.213	Measurements required: Frequency stability	extreme / nominal nominal / extreme	☒	☐	☐	☐	+1650 Hz (9.6x10 ⁻⁸)

Note: NA = Not Applicable; NP = Not Performed

8 RF measurements

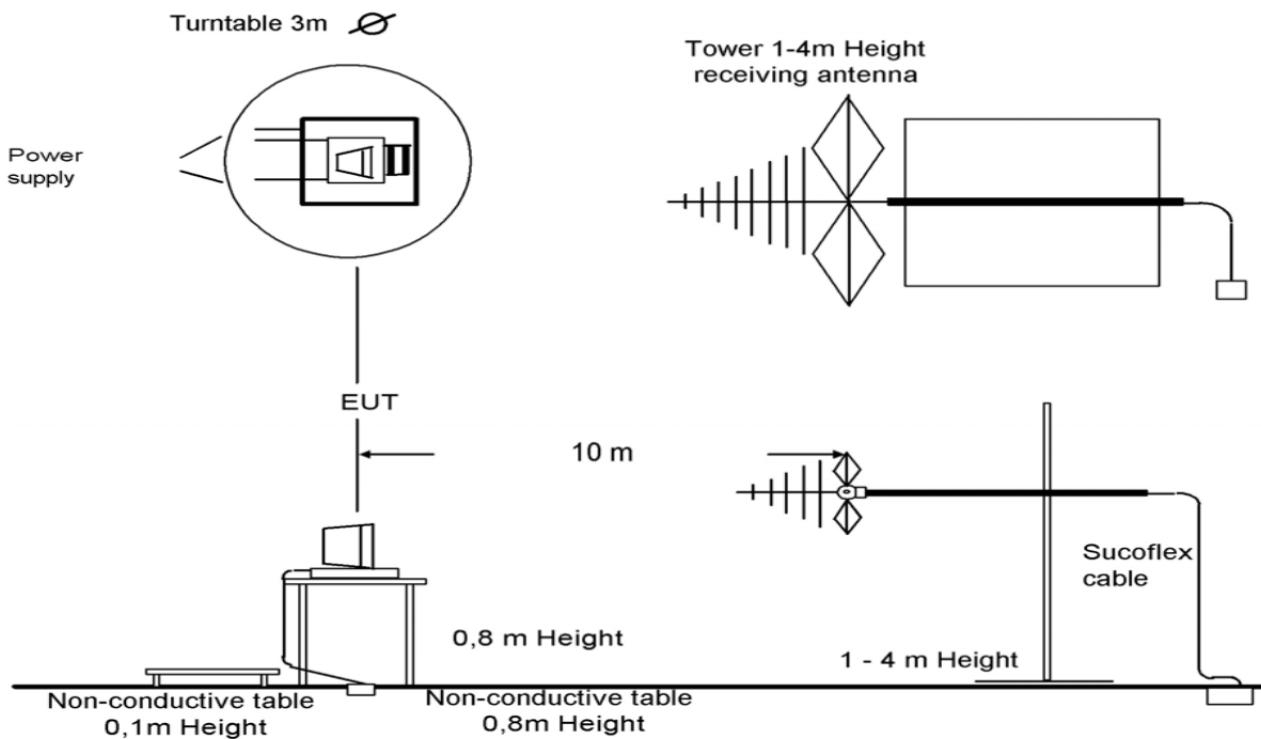
8.1 Description of test setup

8.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2009 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.4-2009 clause 4.2.

Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



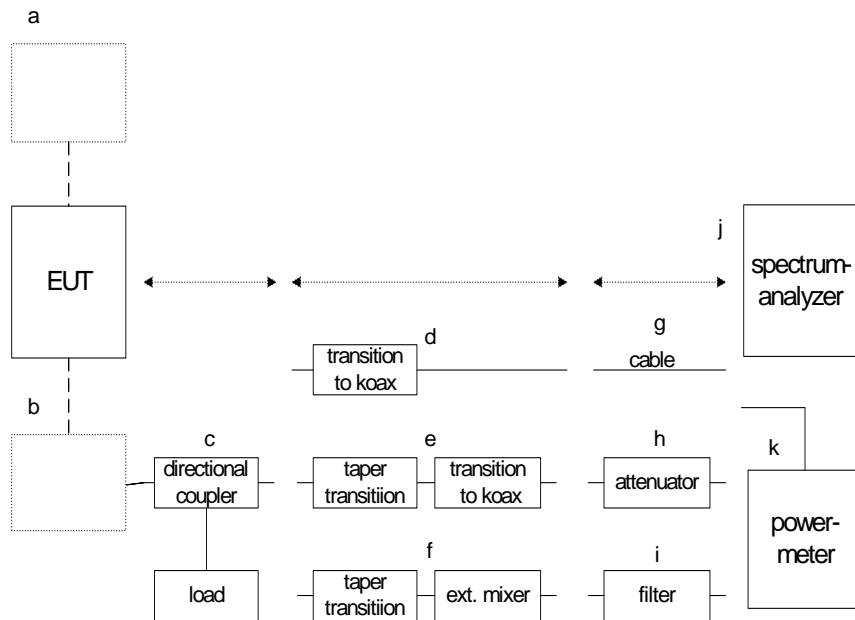
Picture 1: Diagram radiated measurements

9 kHz - 30 MHz:	active loop antenna
30 MHz – 1 GHz:	tri-log antenna
> 1 GHz:	horn antenna

The EUT is powered by an external power supply with nominal voltage.

8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is fed to the spectrum analyser. The specific loss is first checked within a calibration. The measurement readings on the spectrum analyser are corrected by the specific test set-up loss. The attenuator, cables and the spectrum analyser are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

8.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

9 Measurement results

9.1 Conducted / radiated peak output power (EIRP)

Conducted measurements:

The EUT was set for low, mid, high frequency and normal operation (chirp) and highest RF output power. The spectrum analyser was connected to the EUT's antenna terminal.

Measurement parameters	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1 MHz
Video bandwidth:	1 MHz
Span:	20 MHz / 250 MHz
Trace-Mode:	Max. hold

Limits:

FCC
47 CFR § 2.1046 / § 90.205 (r)
Measurements required: RF output power / Power limits
<i>All other frequency bands.</i>
Requested transmitter power will be considered and authorized on a case by case basis.

IC
RSS-210, A.2.10
300 mW / 24.8 dBm EIRP

Result:

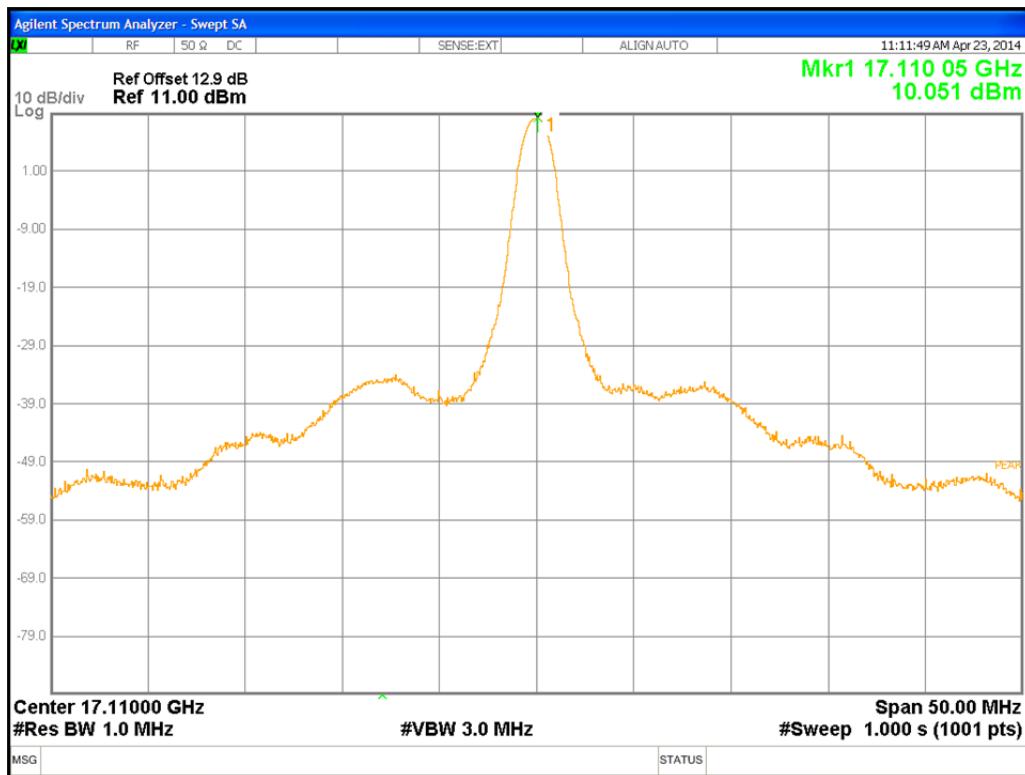
Frequency	Conducted peak output power	Radiated peak output power (EIRP)
17.1 GHz (low)	10.1 dBm	23.5 dBm
17.2 GHz (mid)	10.1 dBm	23.5 dBm
17.3 GHz (high)	9.9 dBm	23.3 dBm
17.1 - 17.3 GHz (chirp)	10.2 dBm	23.6 dBm

Note: Radiated peak output power (EIRP) values are calculated, based on the conducted peak output power values plus an antenna gain of 13.4 dBi.

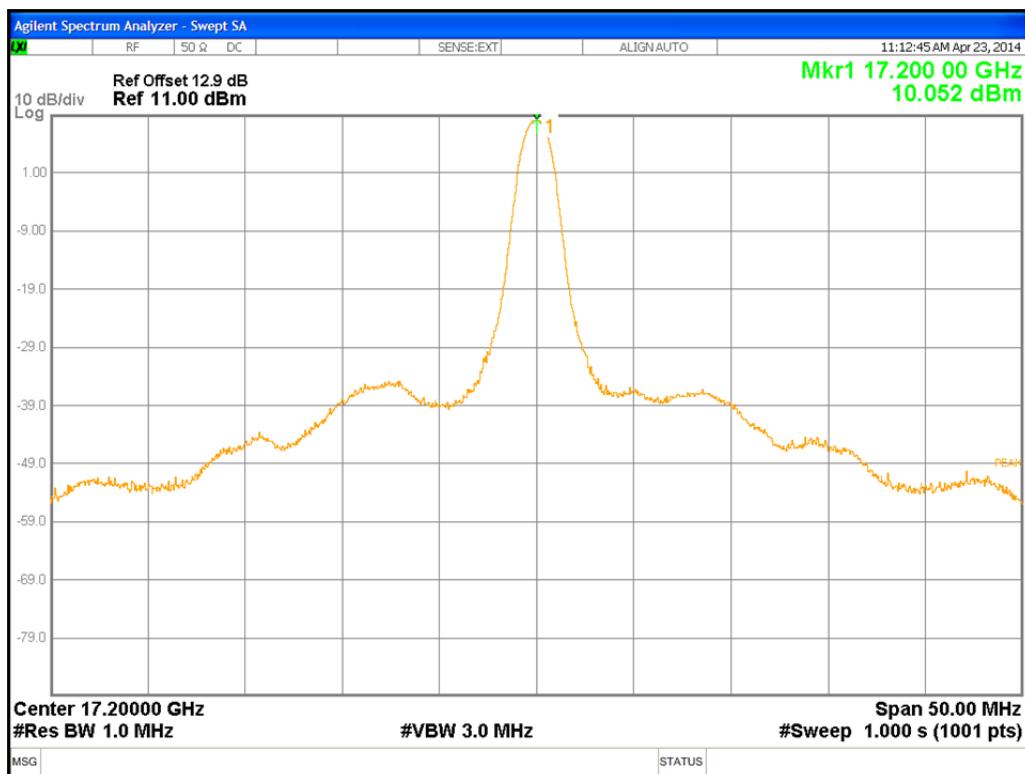
Result: The measurement is passed.

Plots of the measurement:

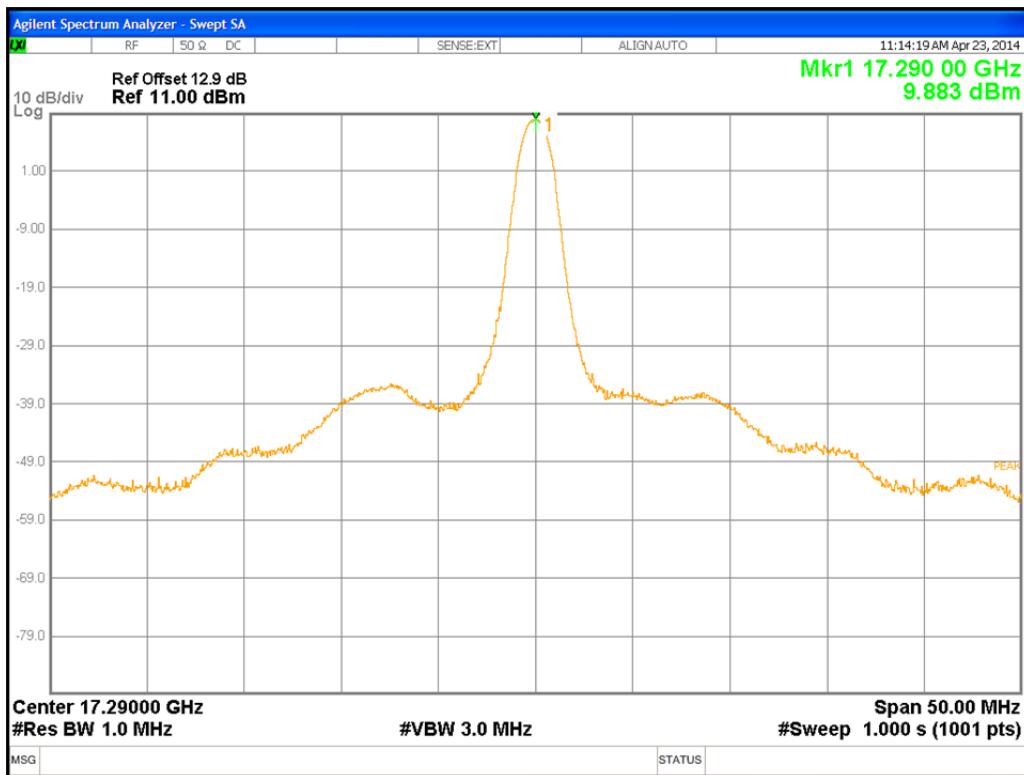
Plot 1: low frequency



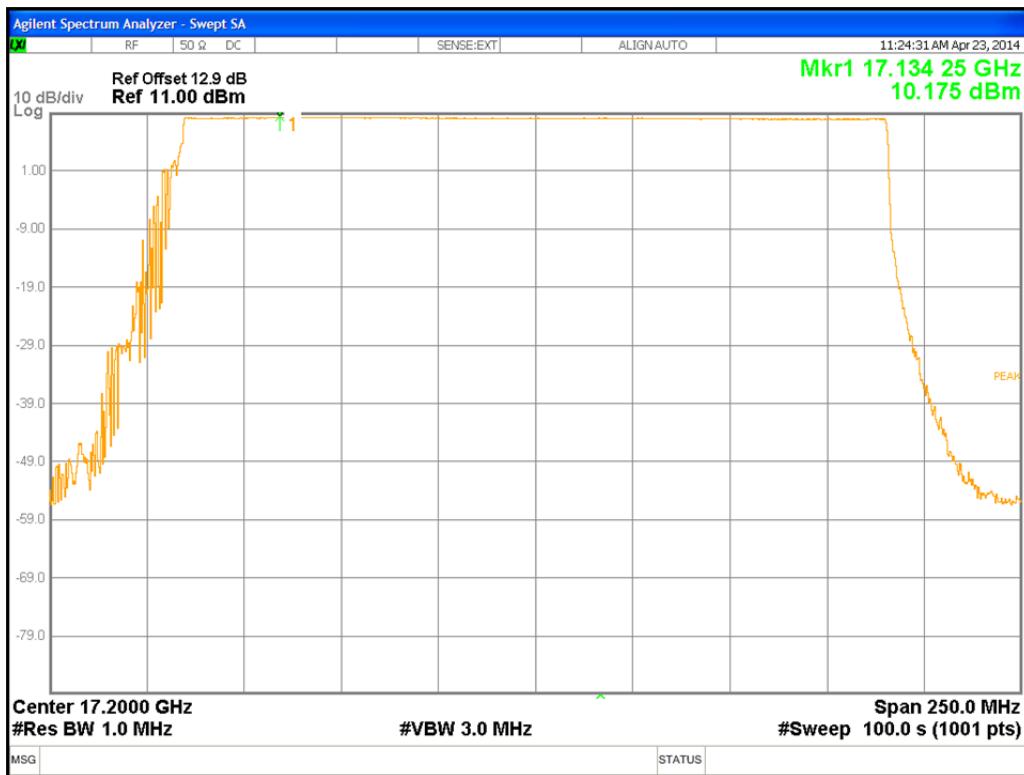
Plot 2: mid frequency



Plot 3: high frequency



Plot 4: chirp



9.2 MPE calculation

$$S = PG/4\pi R^2$$

where S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units e.g. mW)

G = power gain of the antenna in the direction of interest relative to the isotropic radiator

R = distance to the centre of radiation of the antenna (appropriate units e.g. cm)

Or

$$S = EIRP/4\pi R^2$$

where EIRP = equivalent isotropically radiated power

Calculation:

The manufacturer declared a maximal EIRP of 24.5 dBm

EIRP: 24.5 dBm (282 mW)

Calculated power density S:

$$S = 282 \text{ mW} / (4\pi * 20 \text{ cm} * 20 \text{ cm}) = 0.056 \text{ mW / cm}^2$$

Limit:

1 mW / cm² is the reference level for general public exposure according to:
FCC OET Bulletin 65, Edition 97-01 Table 1
IC Safety Code 6

Result: The measurement is passed.

9.3 Occupied bandwidth

Conducted measurements:

The EUT was set for low, mid, high frequency and normal operation (chirp) and highest RF output power. The spectrum analyser was connected to the EUT's antenna terminal.

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1 MHz
Video bandwidth:	1 MHz
Span:	10 MHz / 250 MHz
Trace-Mode:	Max. hold

Limits:

FCC
47 CFR § 2.1049 (1)
Measurements required: Occupied bandwidth
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.

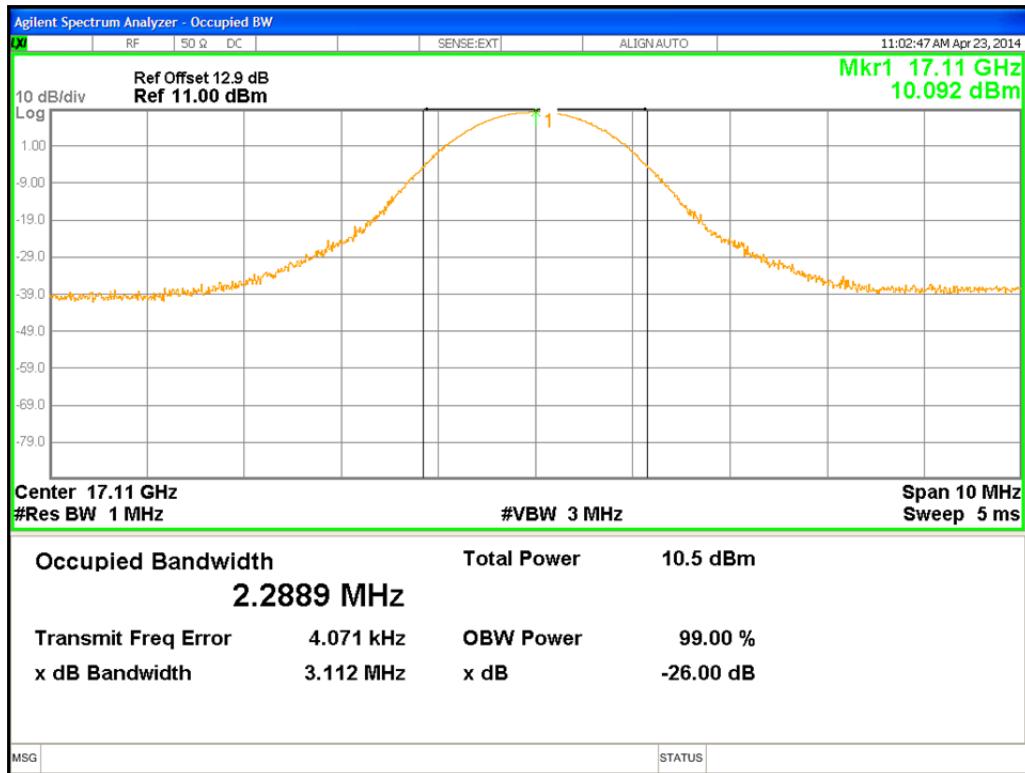
Result:

Frequency	Bandwidth
17.1 GHz (low)	2.3 MHz
17.2 GHz (mid)	2.3 MHz
17.3 GHz (high)	2.3 MHz
17.1 - 17.3 GHz (chirp)	180.5 MHz

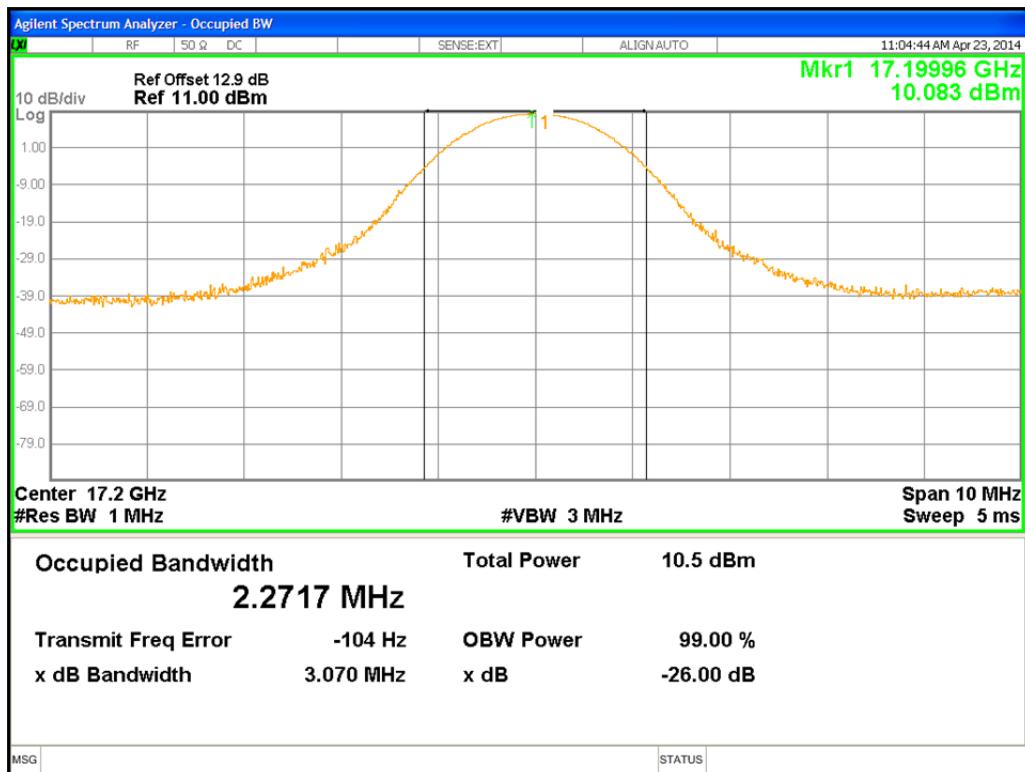
Result: The measurement is passed.

Plots of the measurements

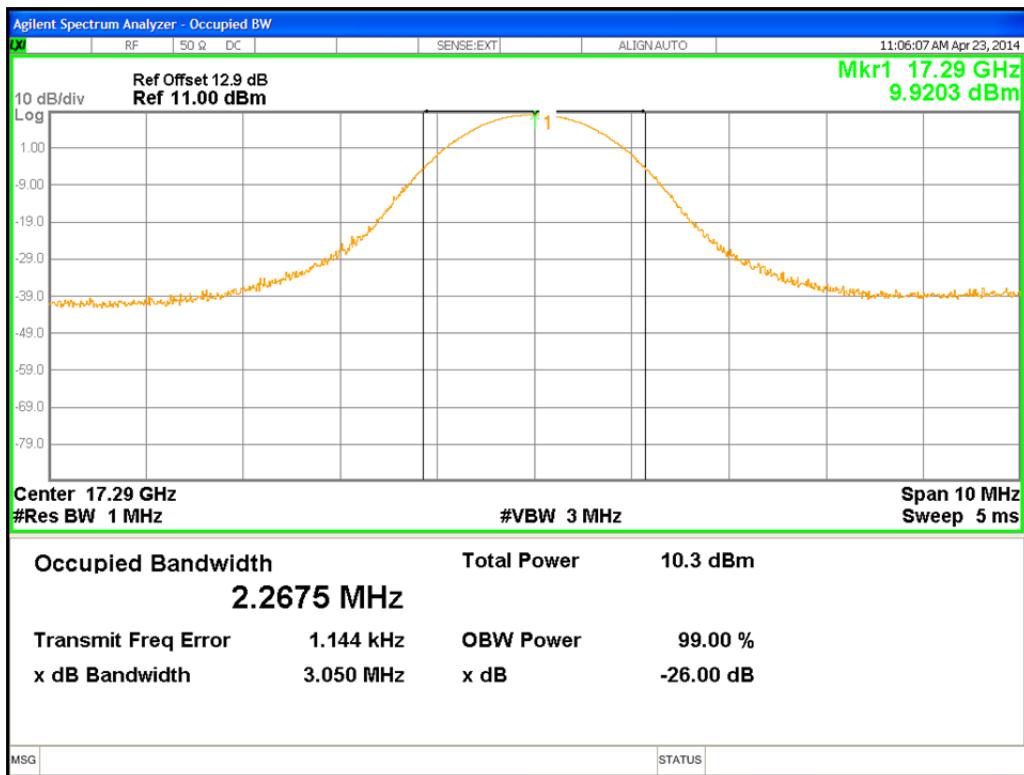
Plot 5: low frequency



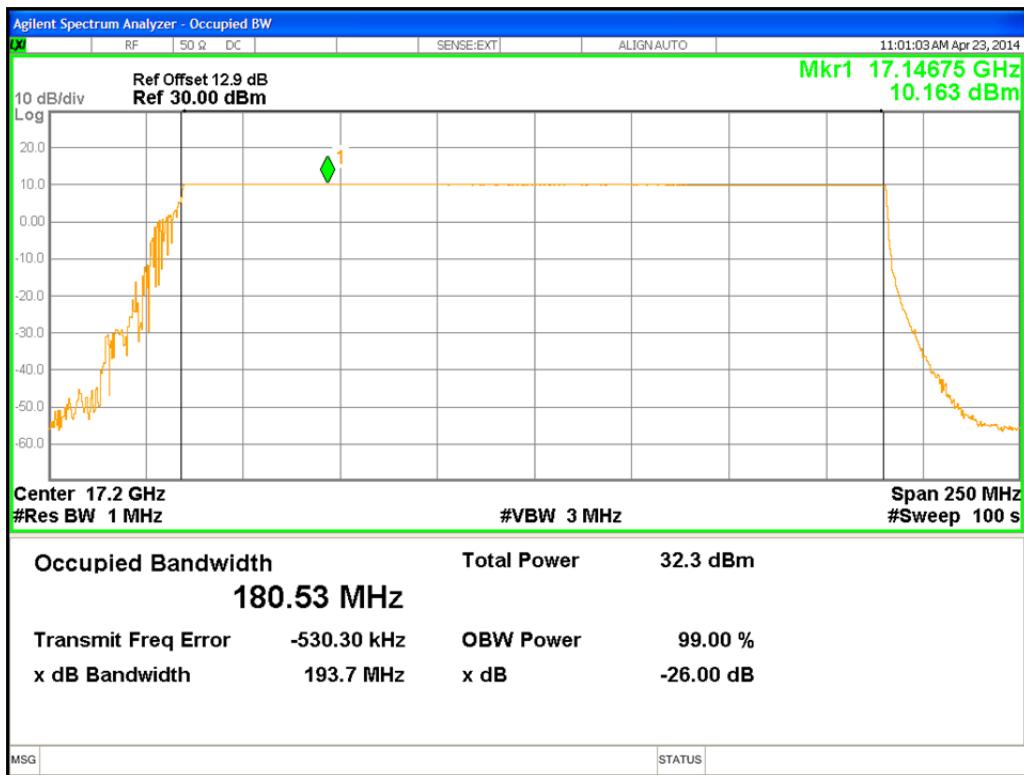
Plot 6: mid frequency



Plot 7: high frequency



Plot 8: chirp



9.4 Spurious emissions (emission mask)

Conducted measurements:

The EUT was set for low, mid, high frequency and highest RF output power. The spectrum analyser was connected to the EUT's antenna terminal.

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Span:	1 GHz
Trace-Mode:	Max. hold

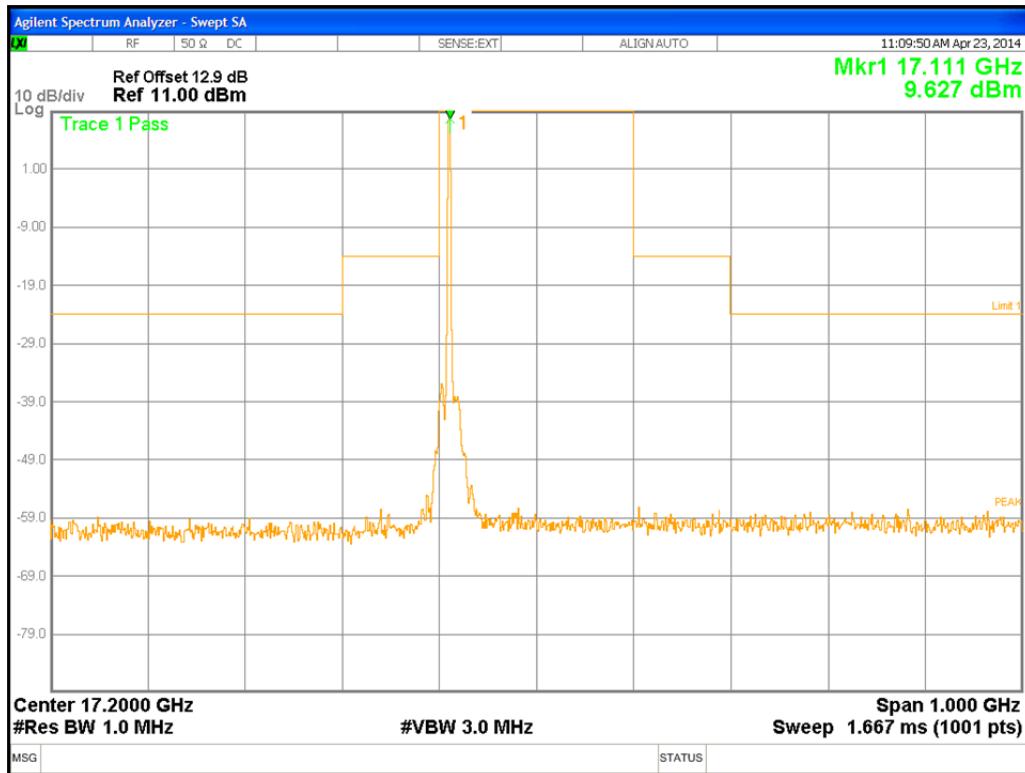
Limits:

FCC
47 CFR §2.1051 / § 90.210 (b) (n)
Measurements required: Spurious emissions at antenna terminals / Emission mask
(b) <i>Emission Mask B.</i> For transmitters that are equipped with an audio lowpass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows: (1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB. (2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB. (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log (P)$ dB. (n) <i>Other frequency bands.</i> Transmitters designed for operation under this part on frequencies other than listed in this section must meet the emission mask requirements of Emission Mask B.

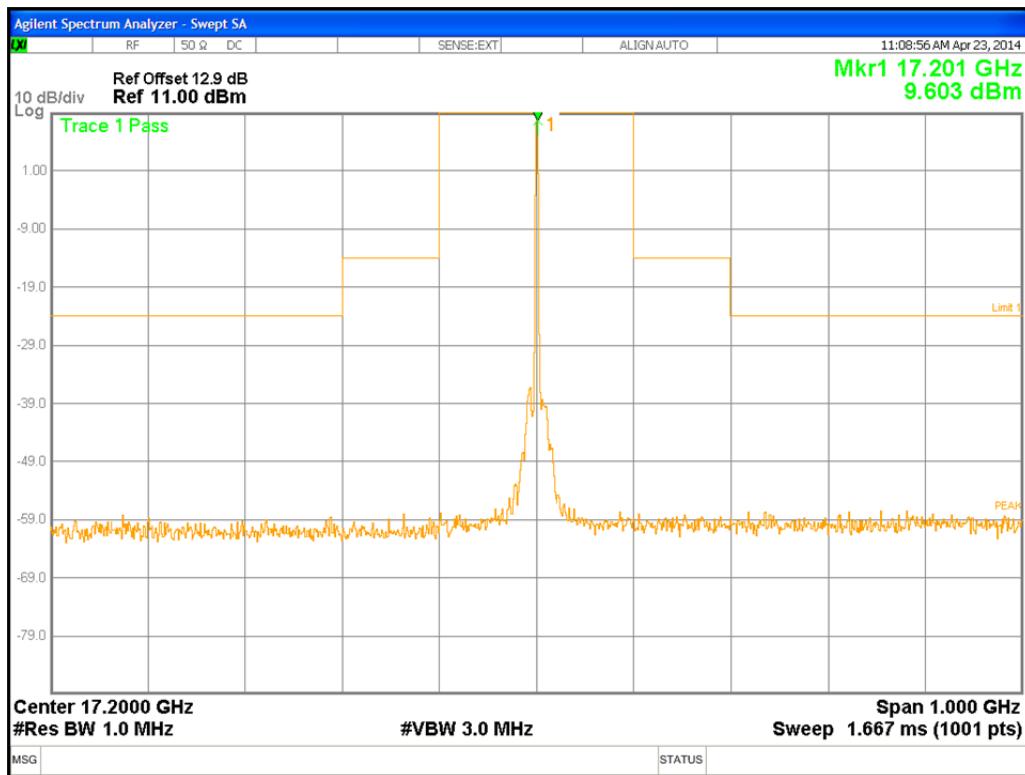
Result: The measurement is passed.

Plots of the measurements

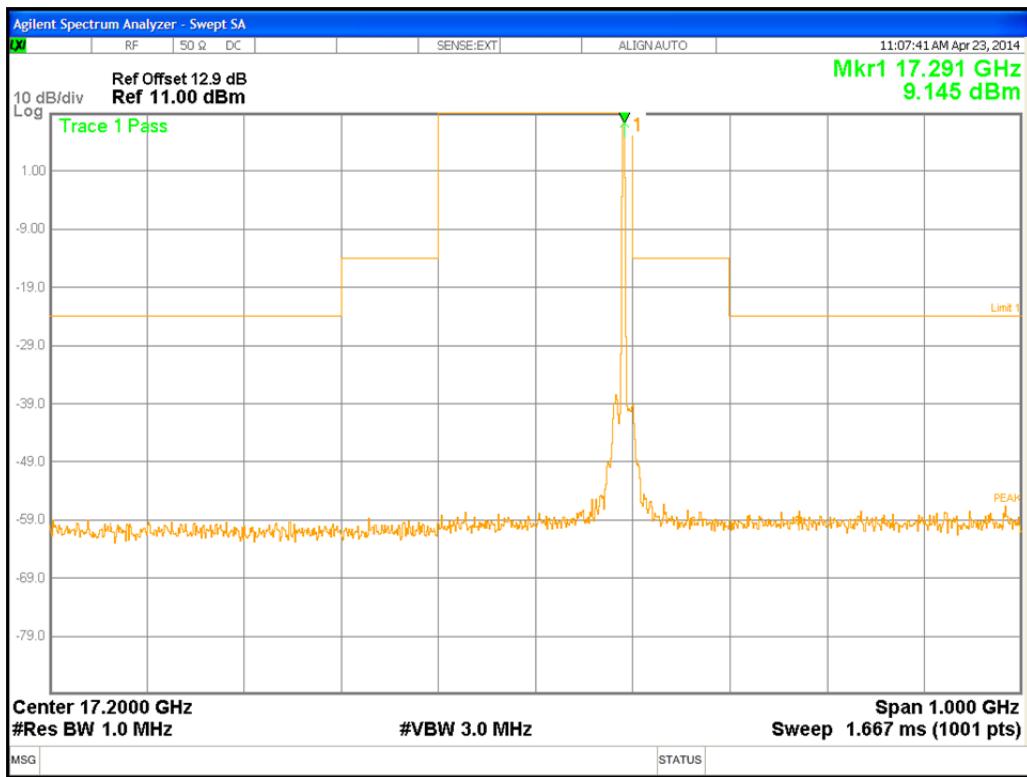
Plot 9: low frequency



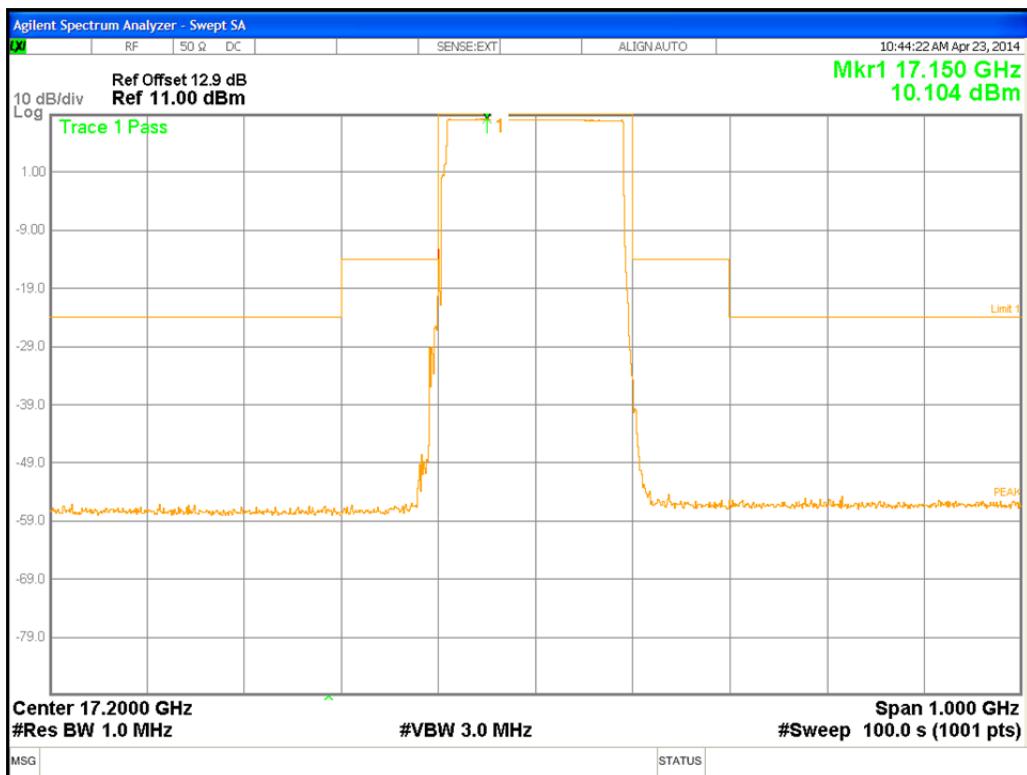
Plot 10: mid frequency



Plot 11: high frequency



Plot 12: high frequency



9.5 Spurious emissions (conducted)

Conducted measurements:

The EUT was set for low, mid, high frequency and highest RF output power. The spectrum analyser was connected to the EUT's antenna terminal.

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	$f < 1 \text{ GHz}$: 100 kHz $f \geq 1 \text{ GHz}$: 1 MHz
Video bandwidth:	$f < 1 \text{ GHz}$: 100 kHz $f \geq 1 \text{ GHz}$: 1 MHz
Span:	-/-
Trace-Mode:	Max. hold

Limits:

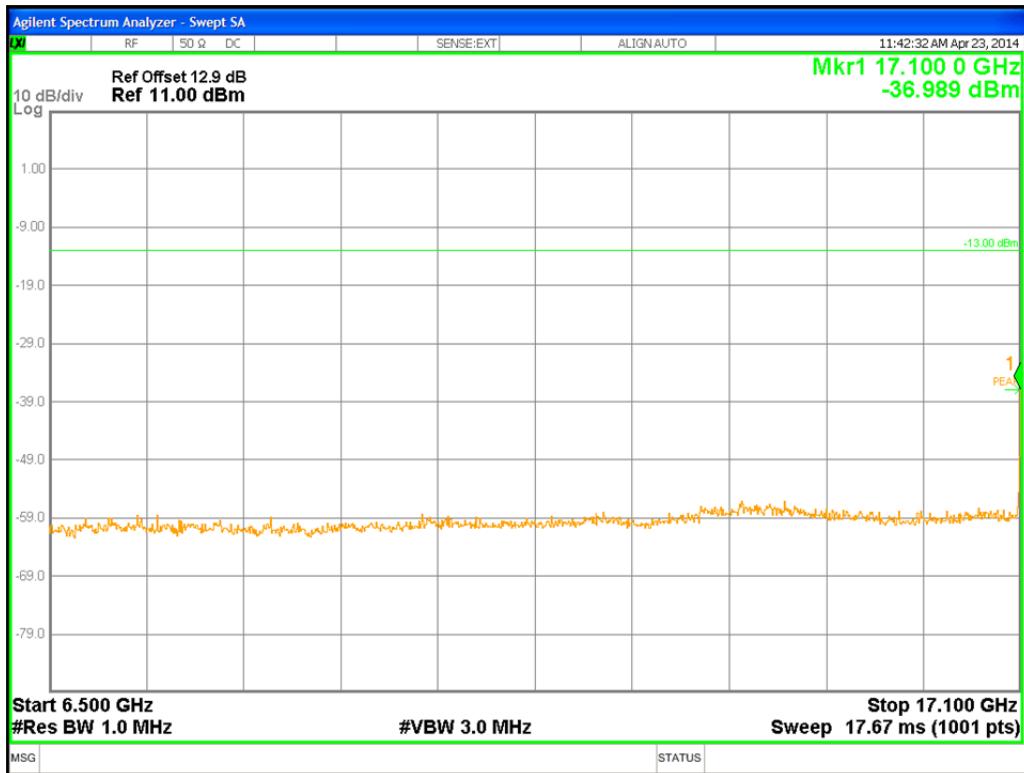
FCC
47 CFR §2.1051 / § 90.210 (b) (n)
Measurements required: Spurious emissions at antenna terminals / Emission mask
(b) <i>Emission Mask B.</i>
...
(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log(P)$ dB.
(n) <i>Other frequency bands.</i> Transmitters designed for operation under this part on frequencies other than listed in this section must meet the emission mask requirements of Emission Mask B.

SPURIOUS EMISSIONS LEVEL (dBm)								
low frequency			mid frequency			high frequency		
Frequency	Detector	Level	Frequency	Detector	Level	Frequency	Detector	Level
34.22	pos-peak	-57.1	34.4	pos-peak	-39.5	34.58	pos-peak	-39.2
All detected spurious are more than 26 dB below the limit.								
Measurement uncertainty ± 3 dB								

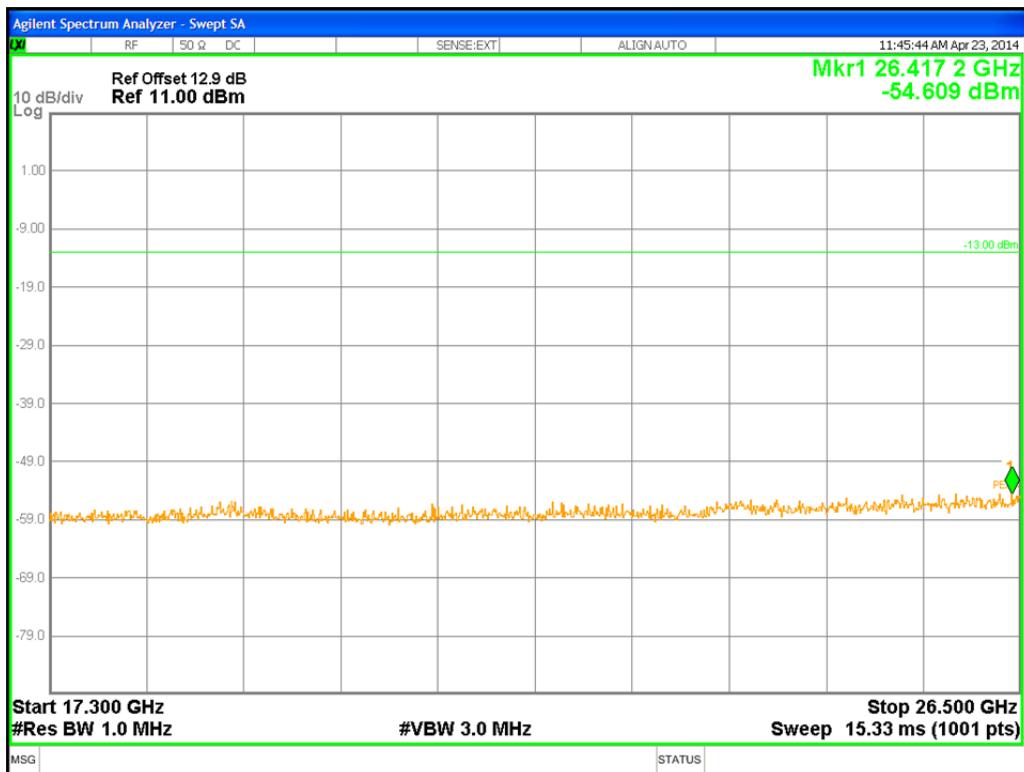
Result: The measurement is passed.

Plots of the measurements

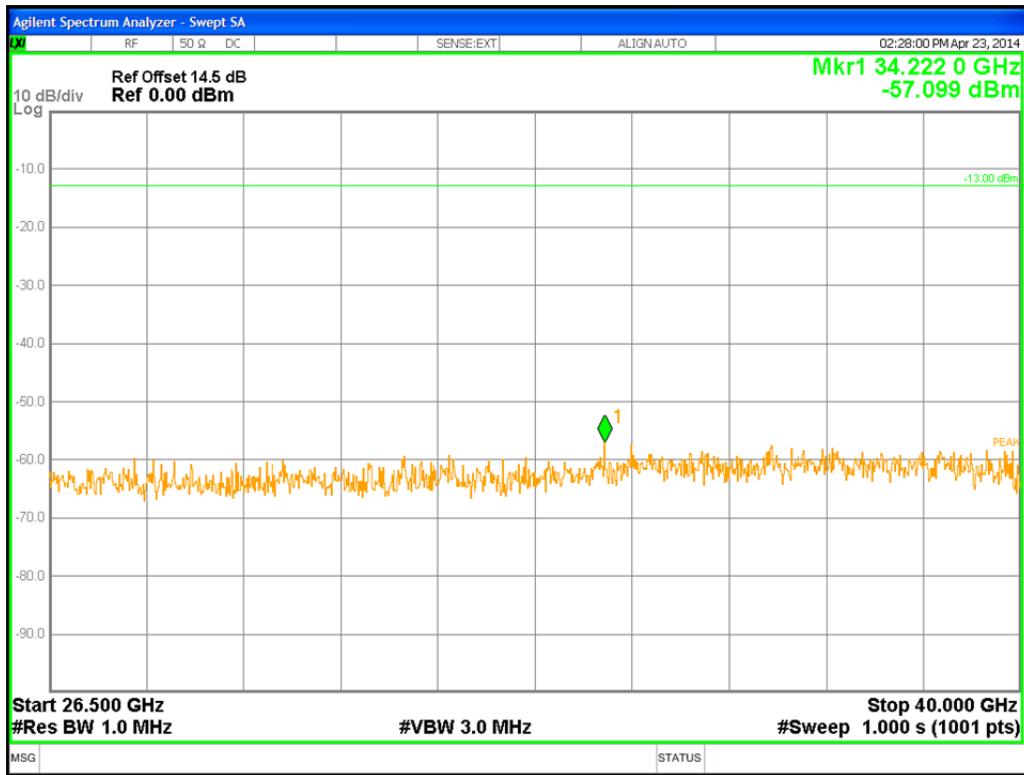
Plot 13: low frequency



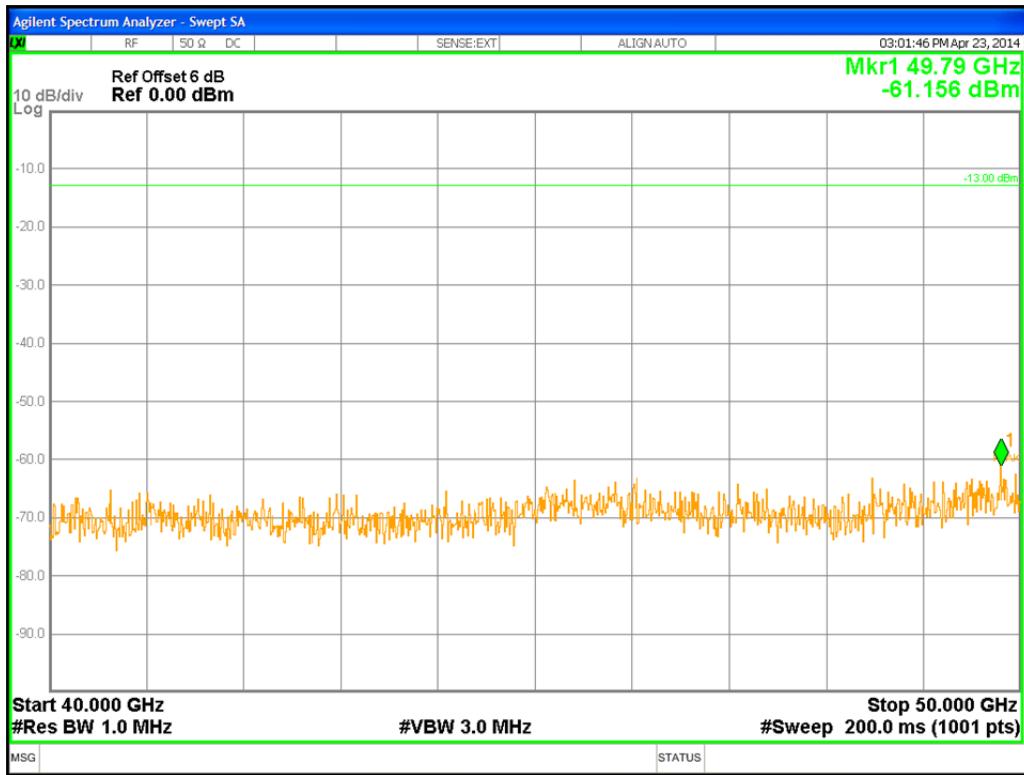
Plot 14: low frequency



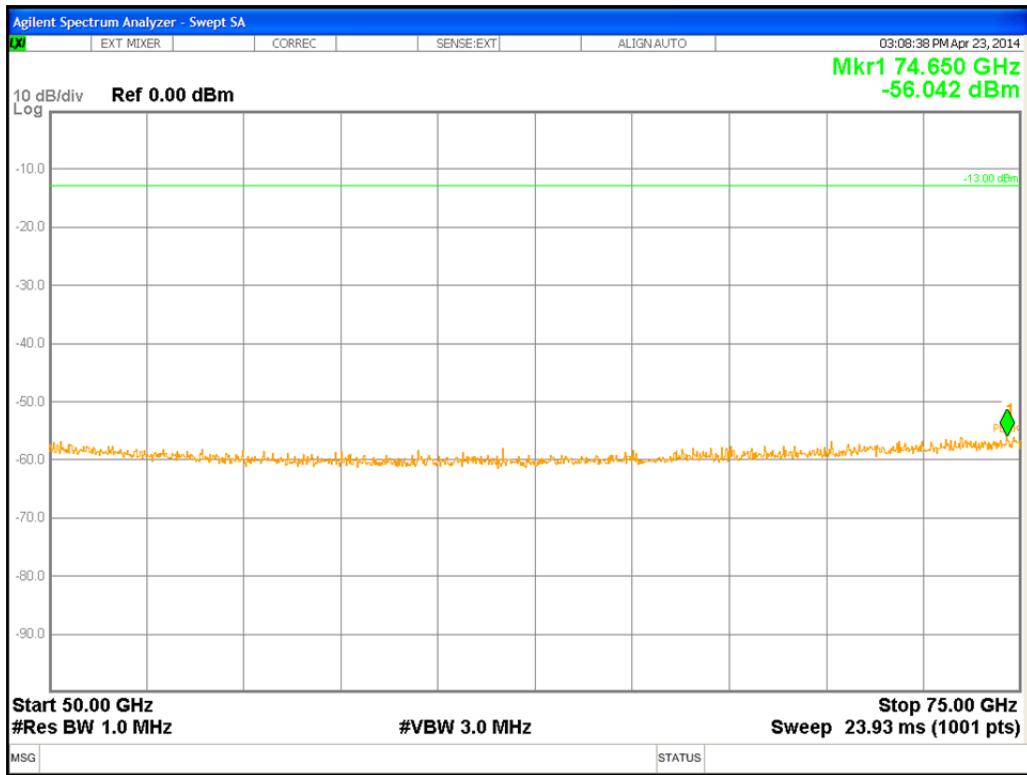
Plot 15: low frequency



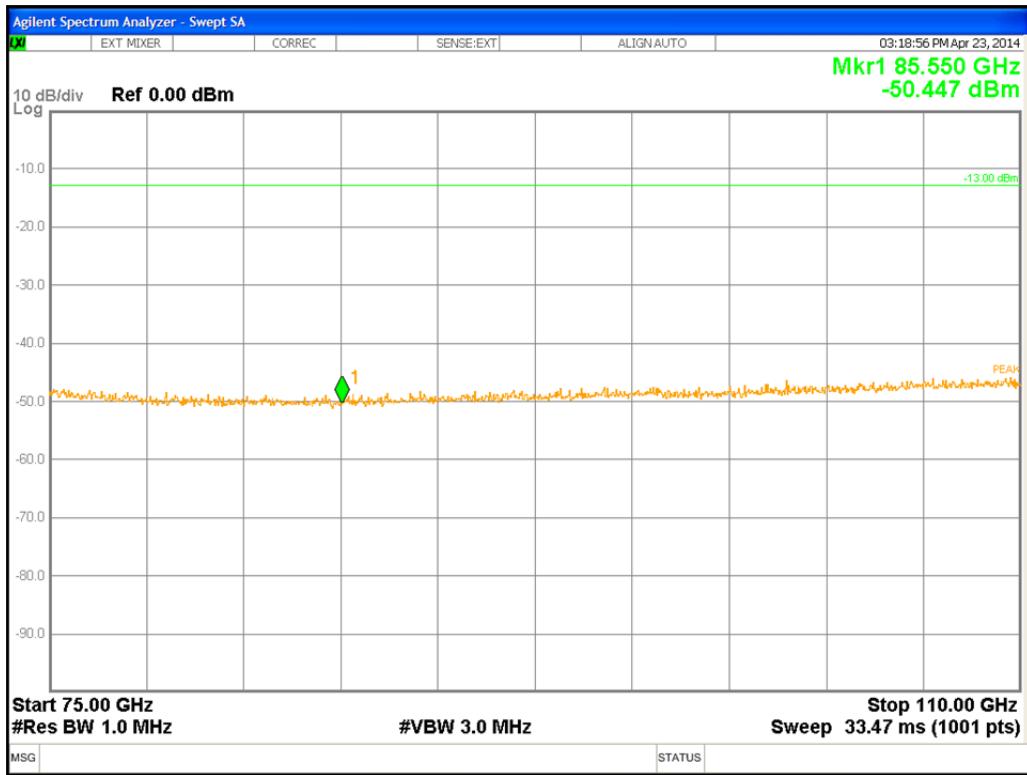
Plot 16: low frequency



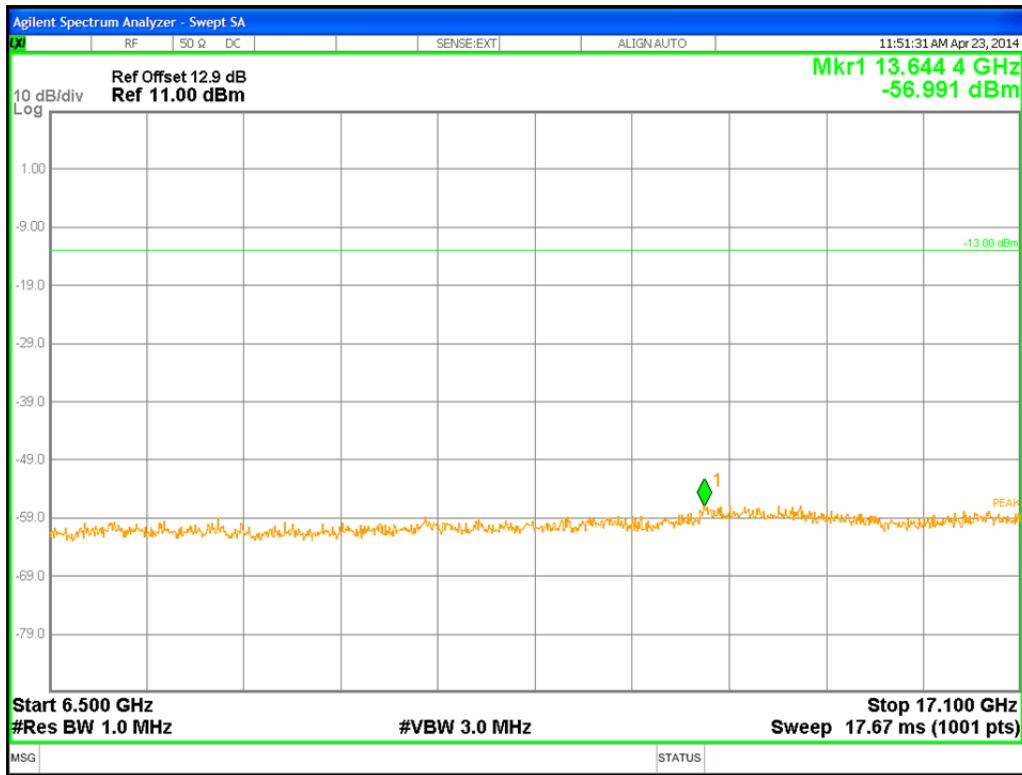
Plot 17: low frequency



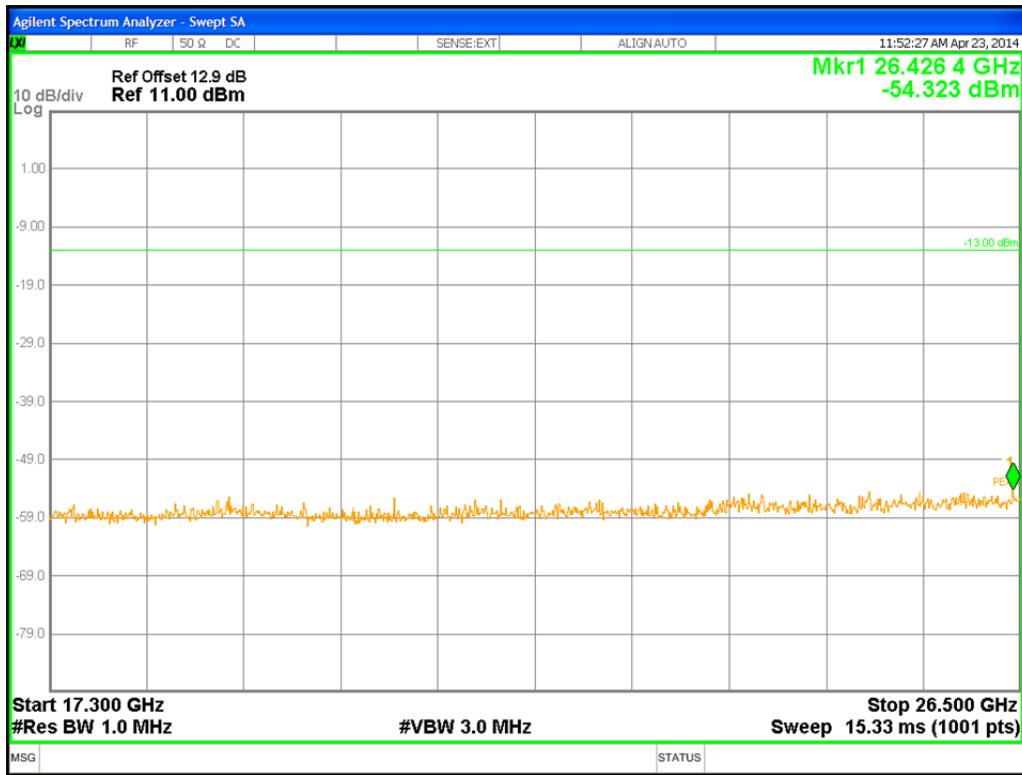
Plot 18: low frequency



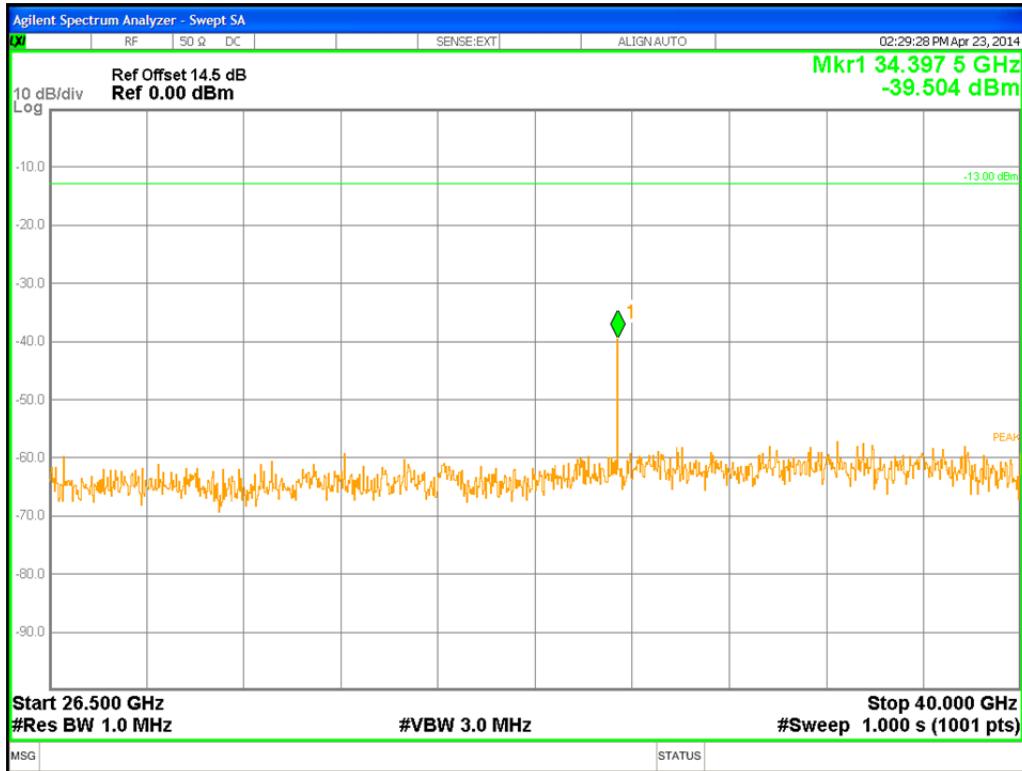
Plot 19: mid frequency



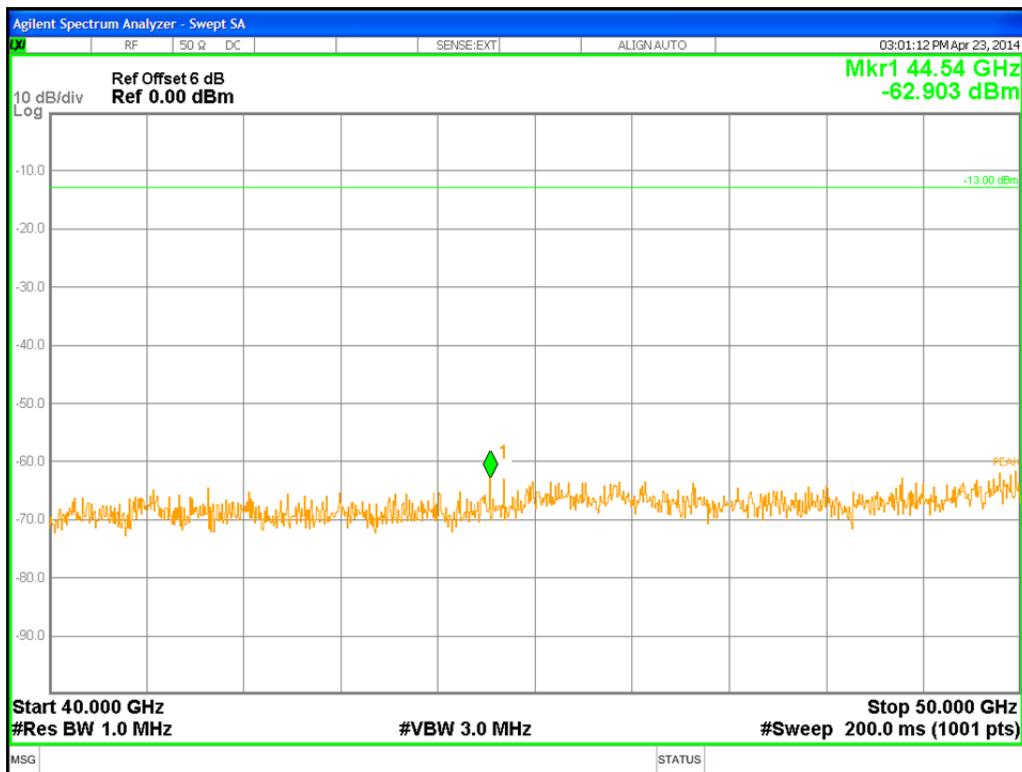
Plot 20: mid frequency



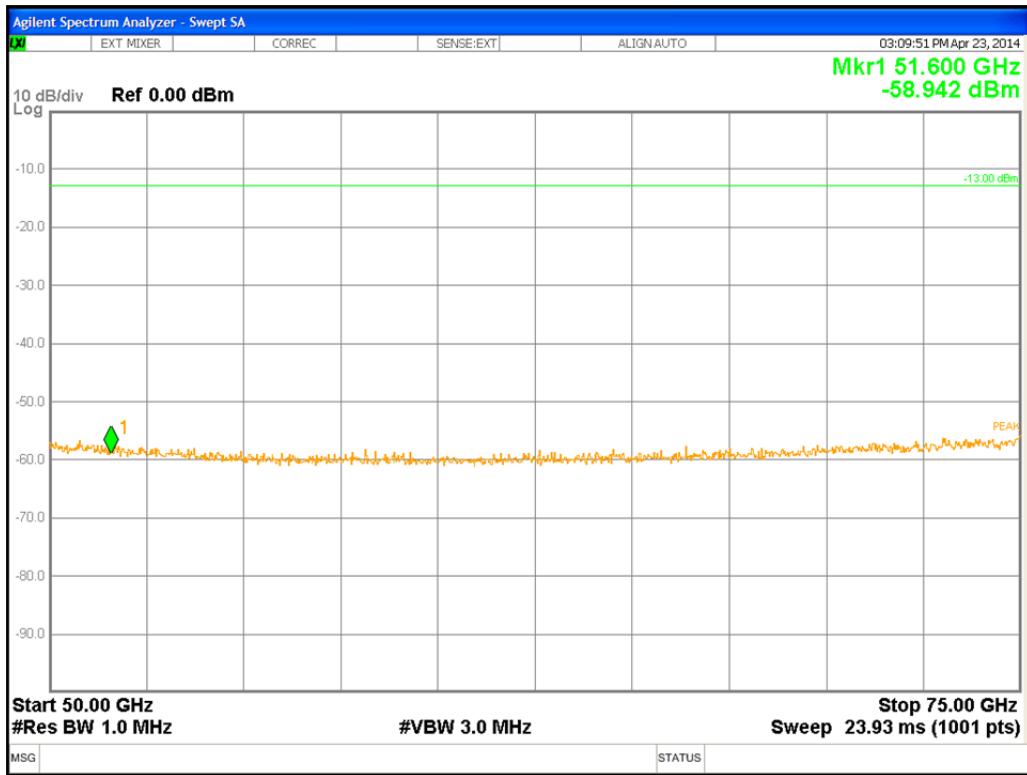
Plot 21: mid frequency



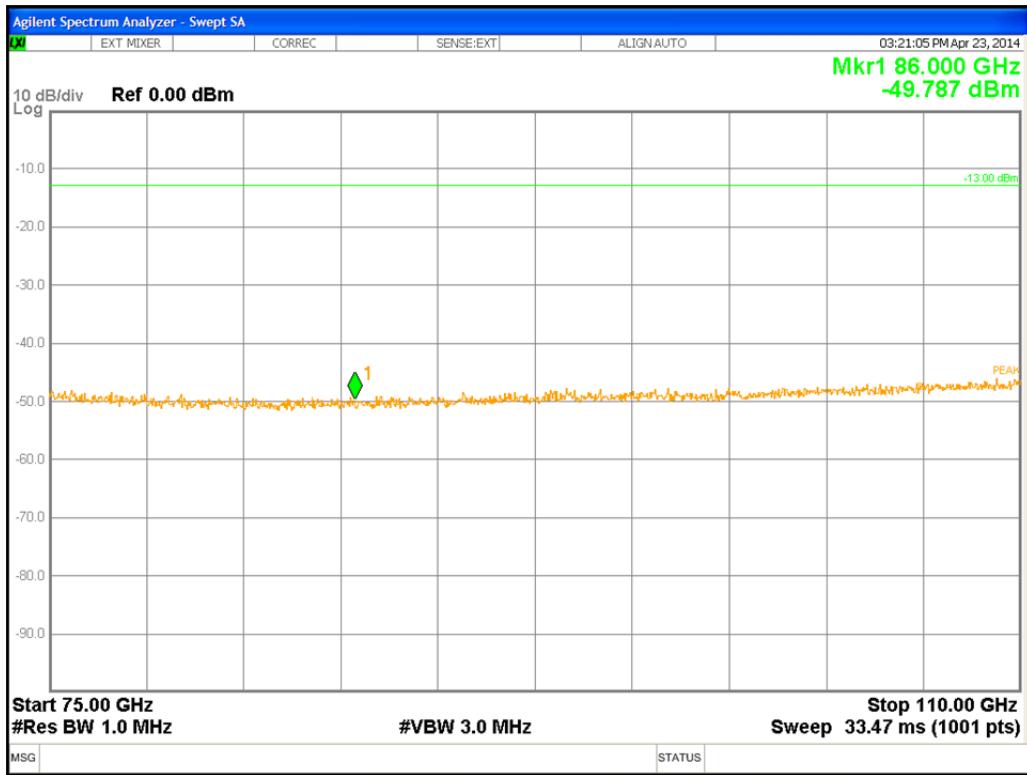
Plot 22: mid frequency



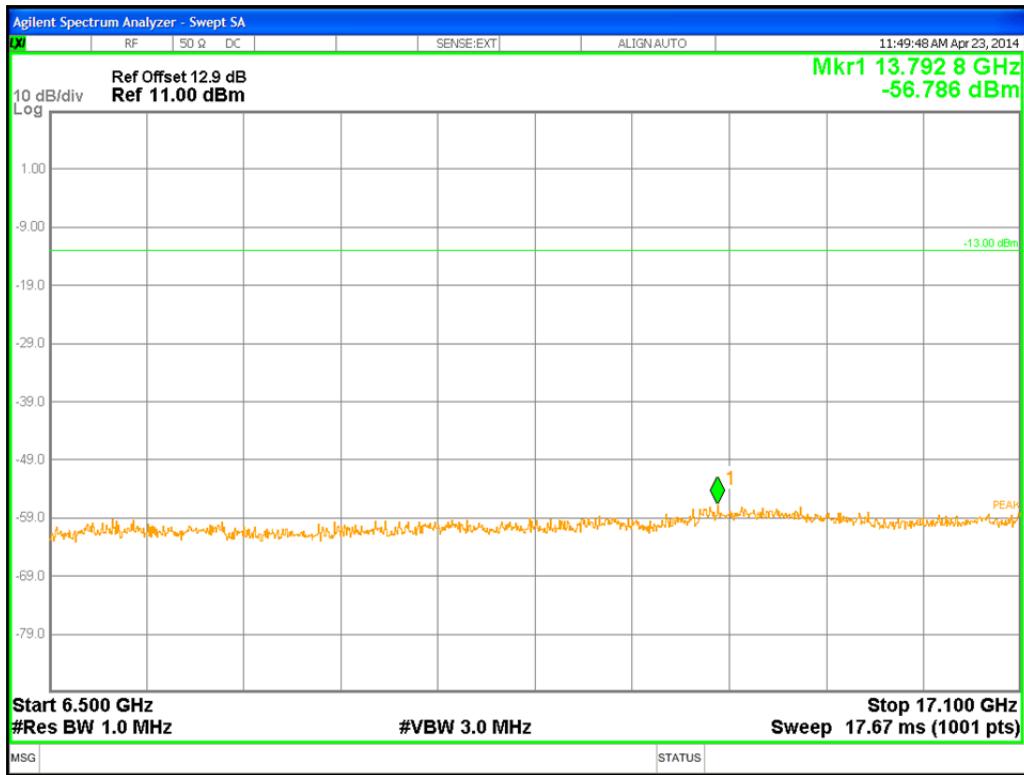
Plot 23: mid frequency



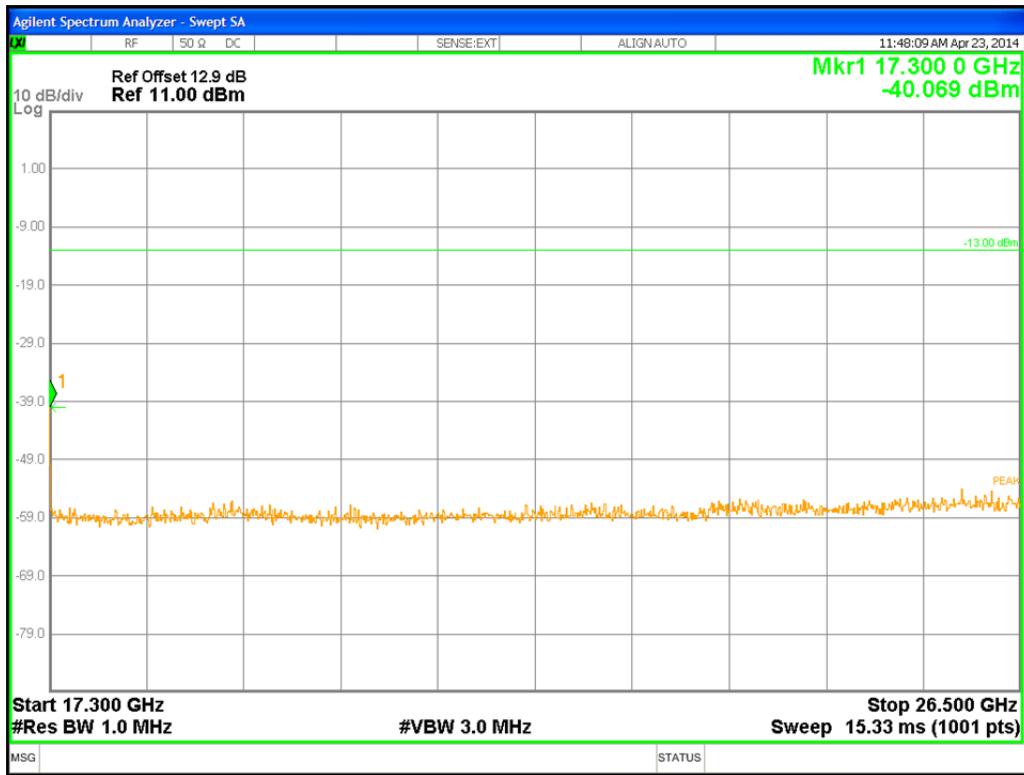
Plot 24: mid frequency



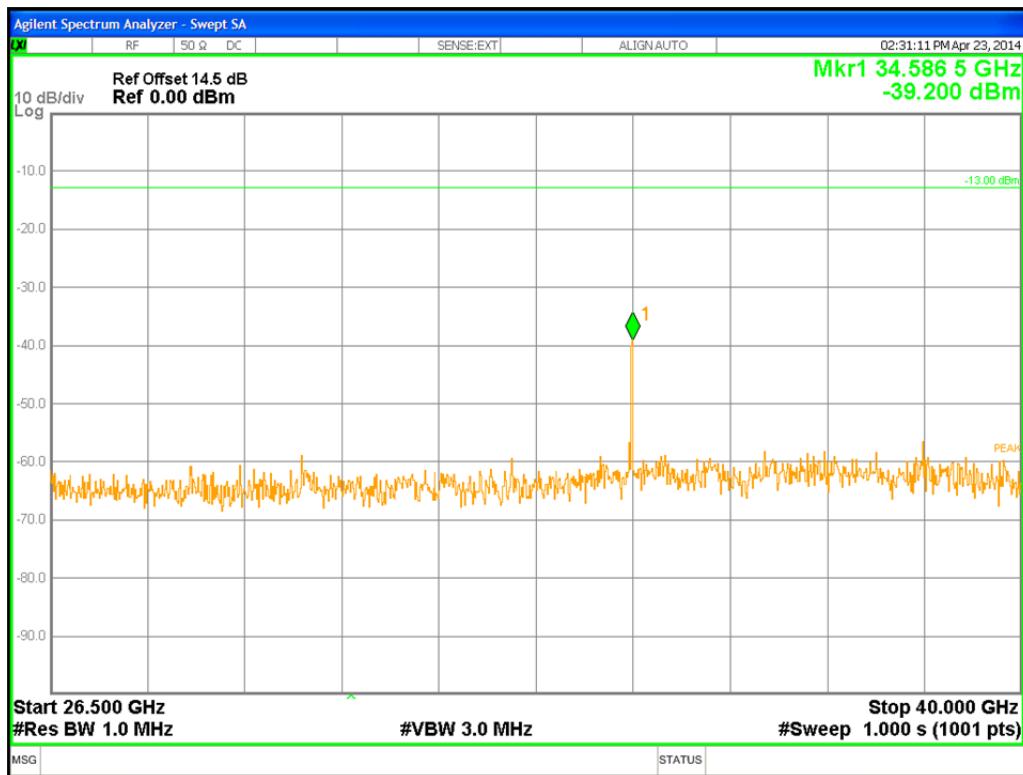
Plot 25: high frequency



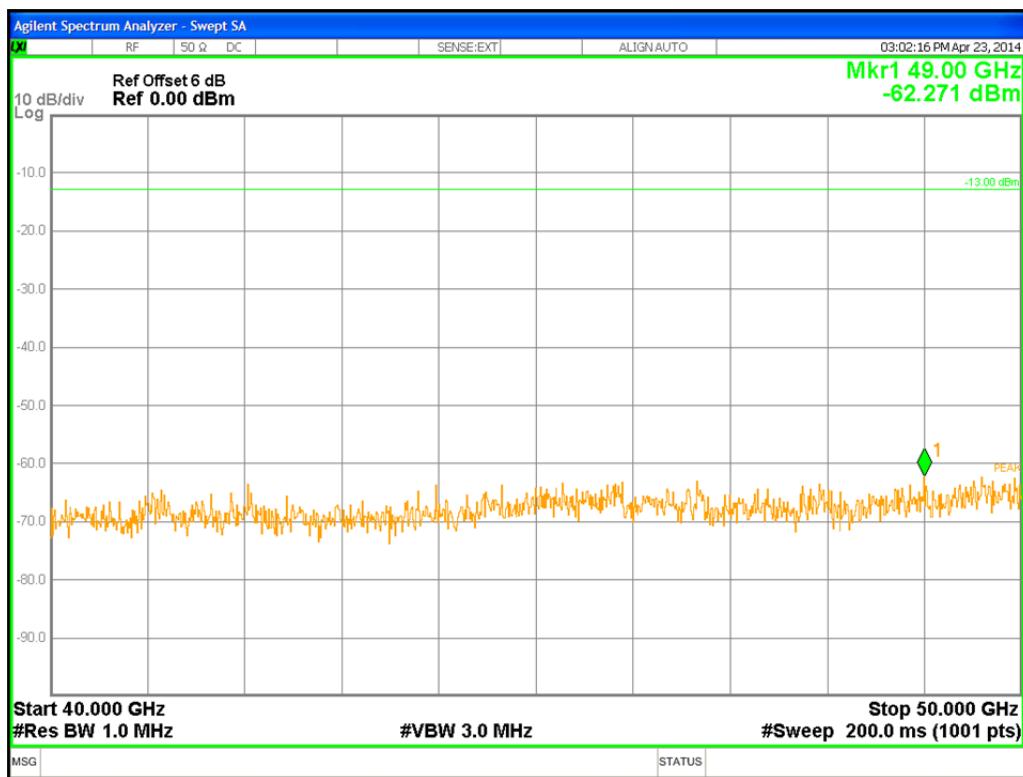
Plot 26: high frequency



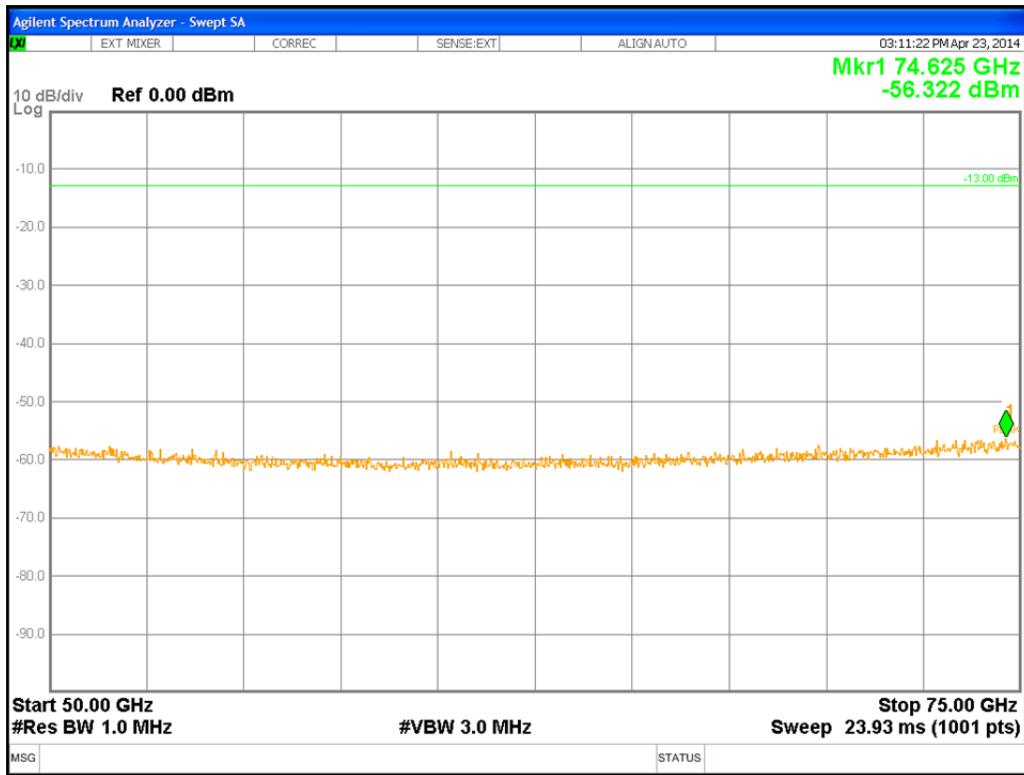
Plot 27: high frequency



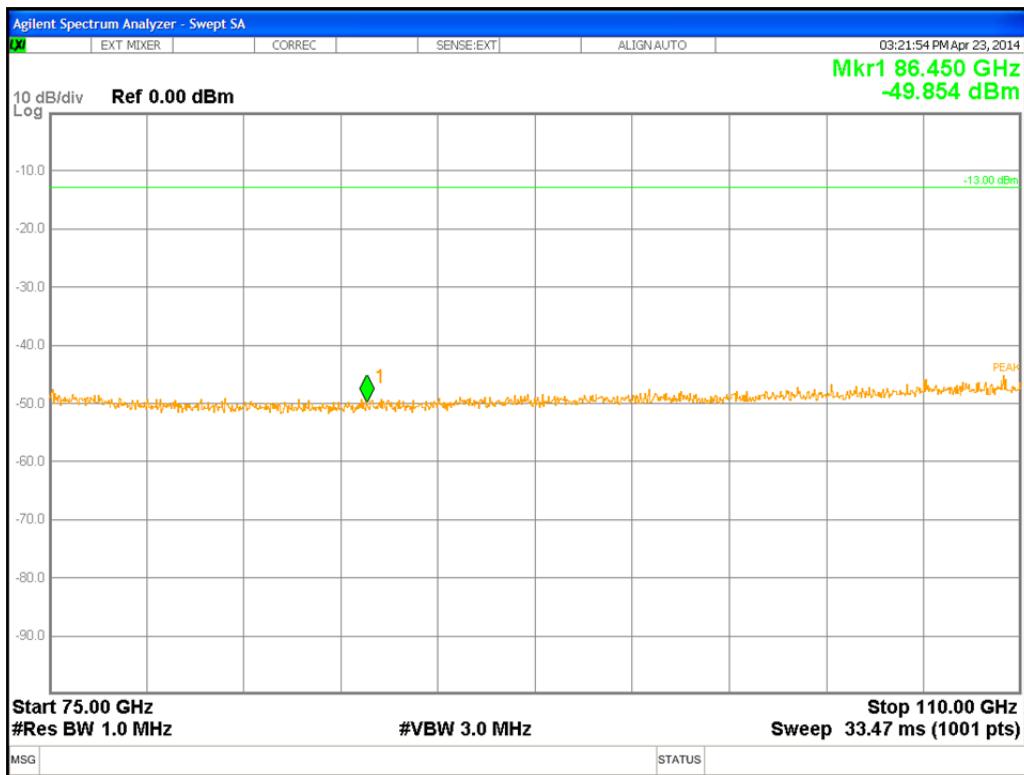
Plot 28: high frequency



Plot 29: high frequency



Plot 30: high frequency



9.6 Spurious emissions (radiated)

Radiated measurements:

The EUT was set for mid frequency and highest RF output power.

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	$f < 1 \text{ GHz}$: 100 kHz $f \geq 1 \text{ GHz}$: 1 MHz
Video bandwidth:	$f < 1 \text{ GHz}$: 100 kHz $f \geq 1 \text{ GHz}$: 1 MHz
Span:	-/-
Trace-Mode:	Max. hold

Limits:

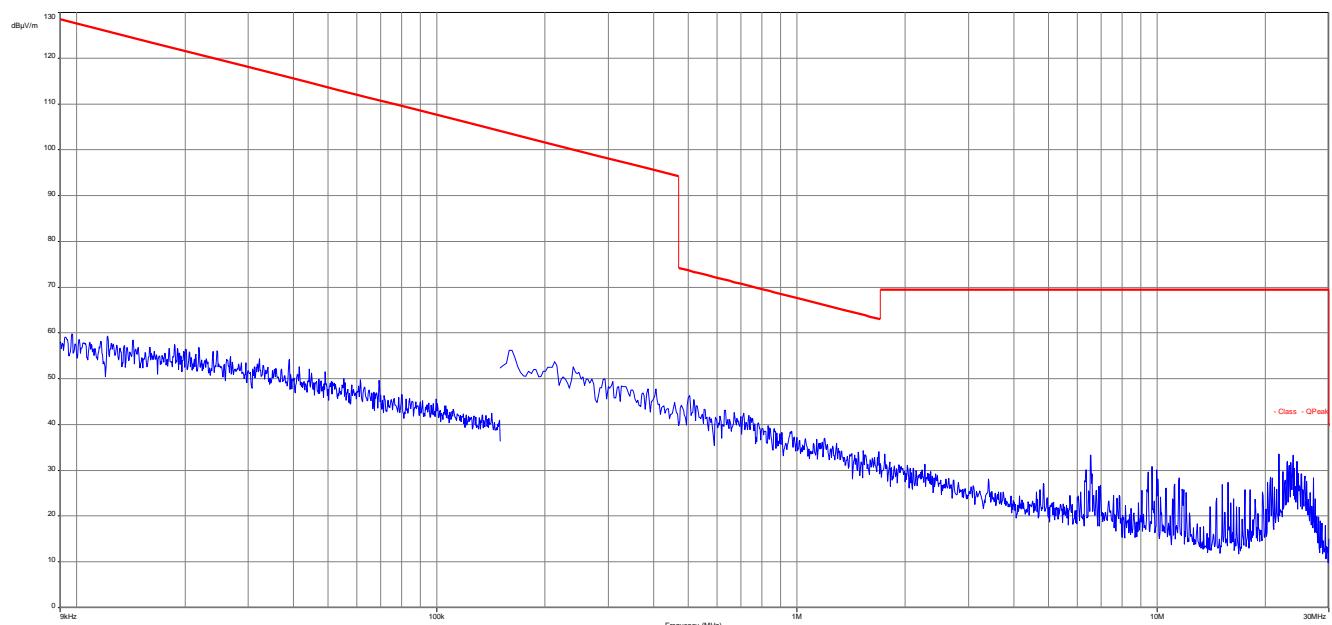
FCC
47 CFR §2.1051 / § 90.210 (b) (n)
Measurements required: Spurious emissions at antenna terminals / Emission mask
(b) <i>Emission Mask B.</i>
... (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log(P)$ dB.
(n) <i>Other frequency bands.</i> Transmitters designed for operation under this part on frequencies other than listed in this section must meet the emission mask requirements of Emission Mask B.

SPURIOUS EMISSIONS LEVEL (dBm)									
low frequency			mid frequency			high frequency			
Frequency	Detector	Level	Frequency	Detector	Level	Frequency	Detector	Level	
			158.3M	pos-peak	-43.6				
			17.2GHz	wanted signal	-26.0				
			35.4GHz	pos-peak	-57.3				
All detected spurious are more than 10 dB below the limit.									
Measurement uncertainty ± 3 dB									

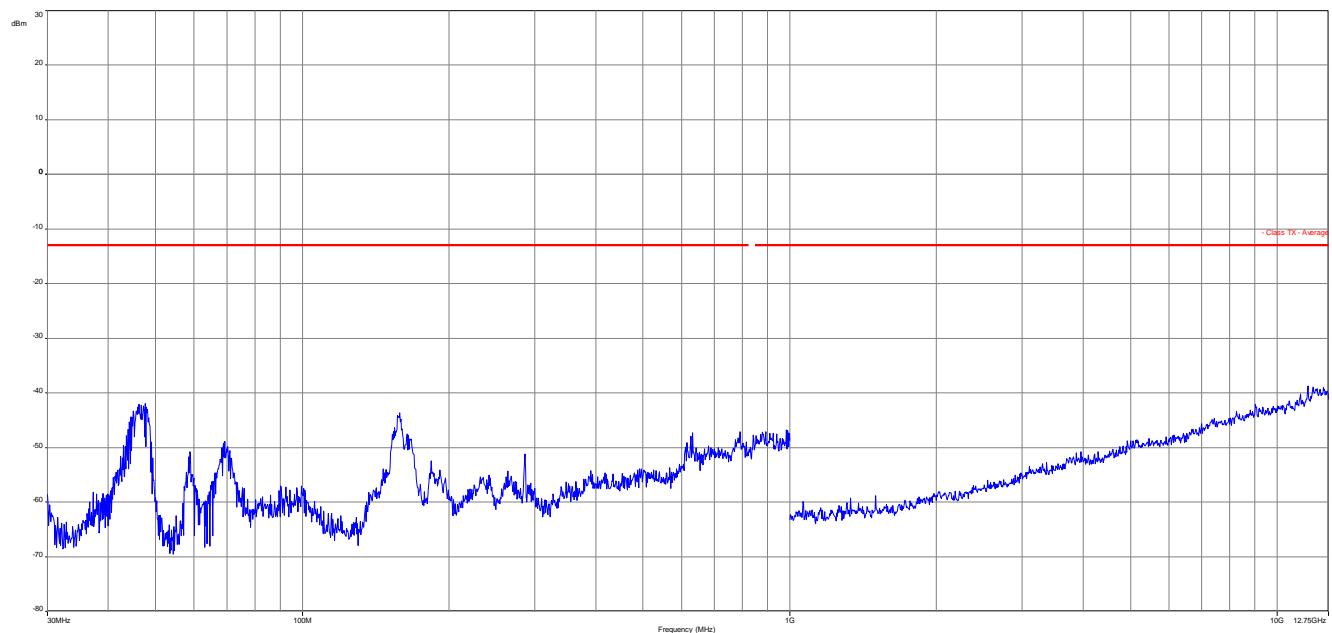
Result: The measurement is passed.

Plots of the measurements

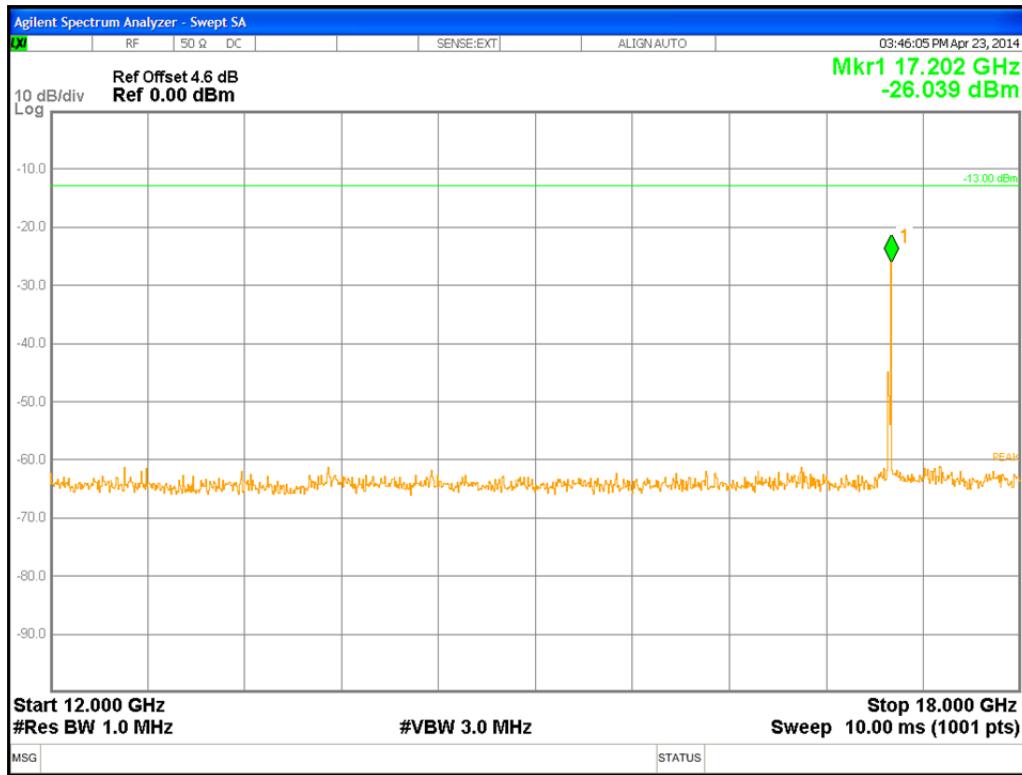
Plot 31



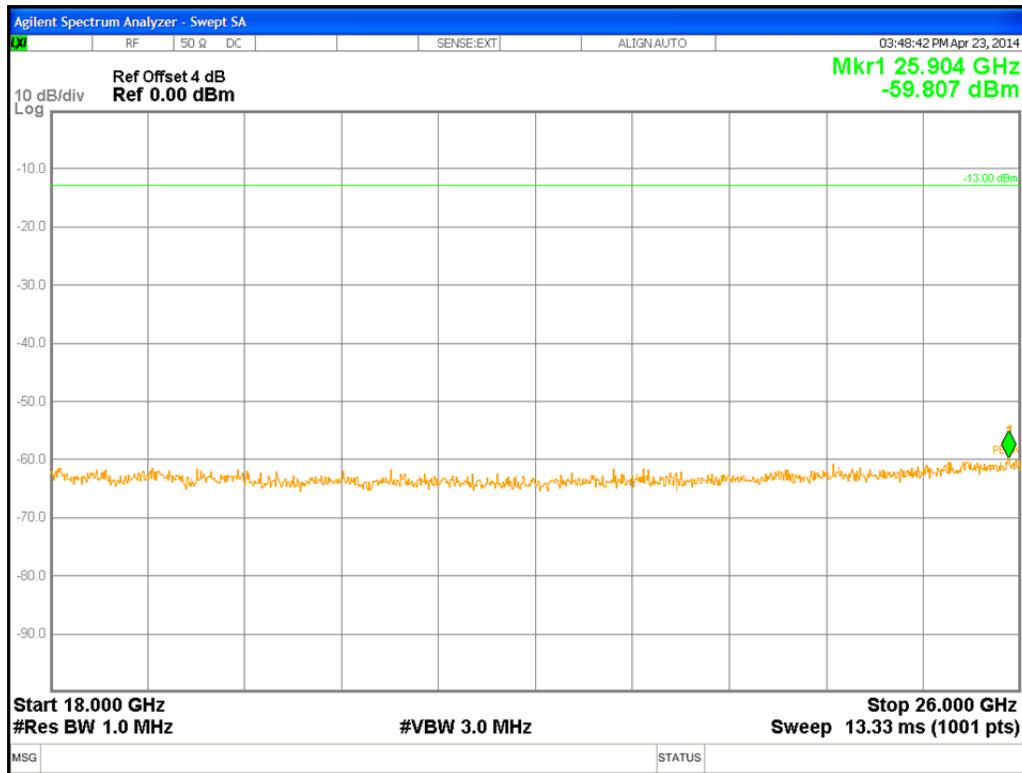
Plot 32



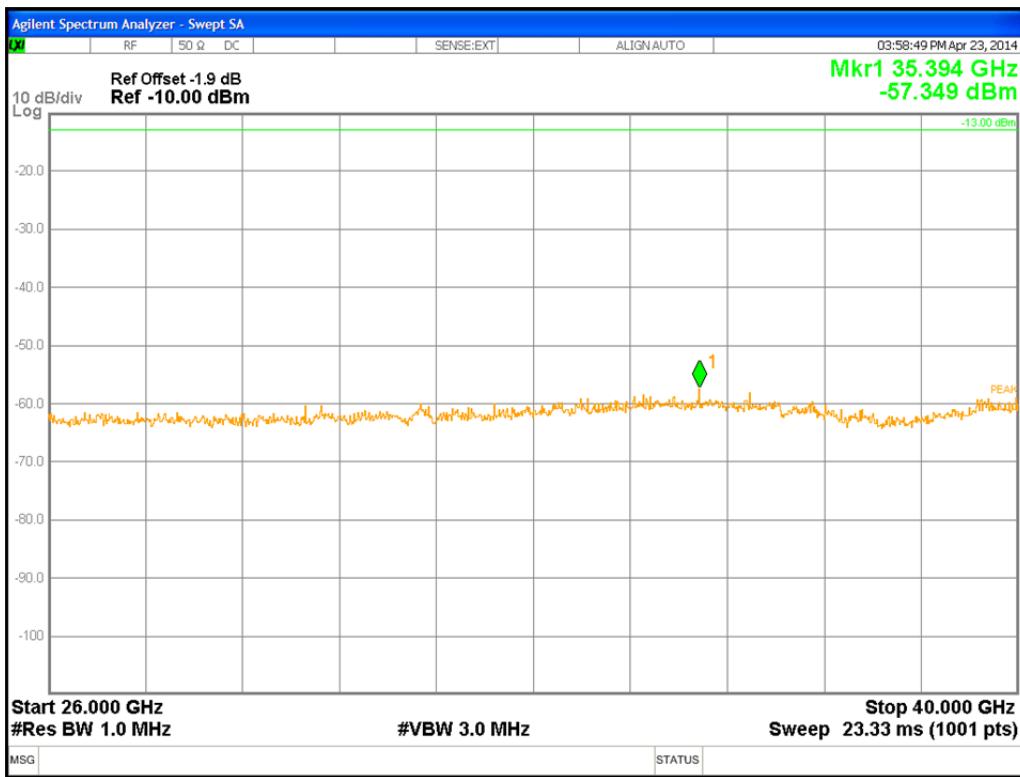
Plot 33: Plot shows wanted signal



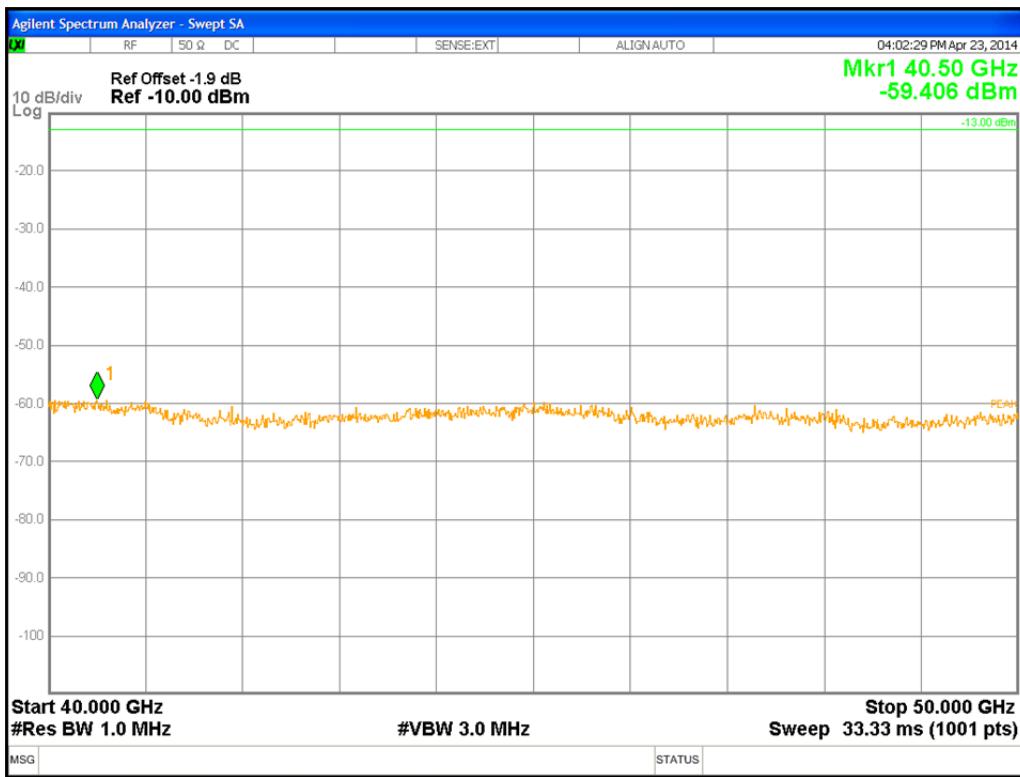
Plot 34



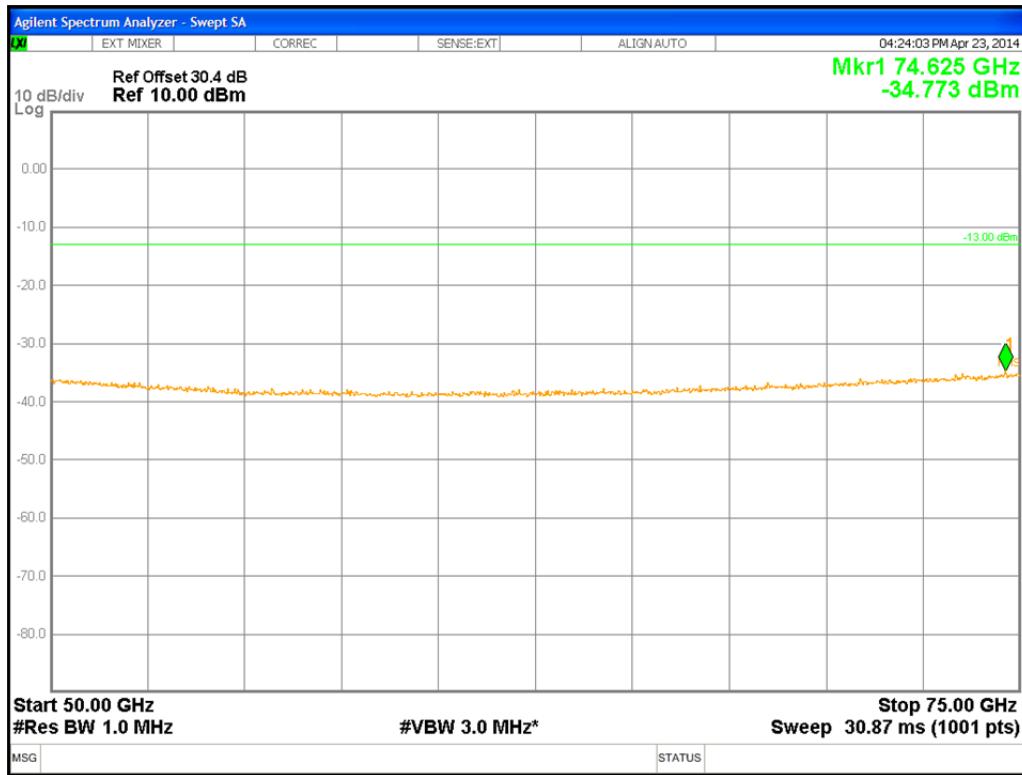
Plot 35



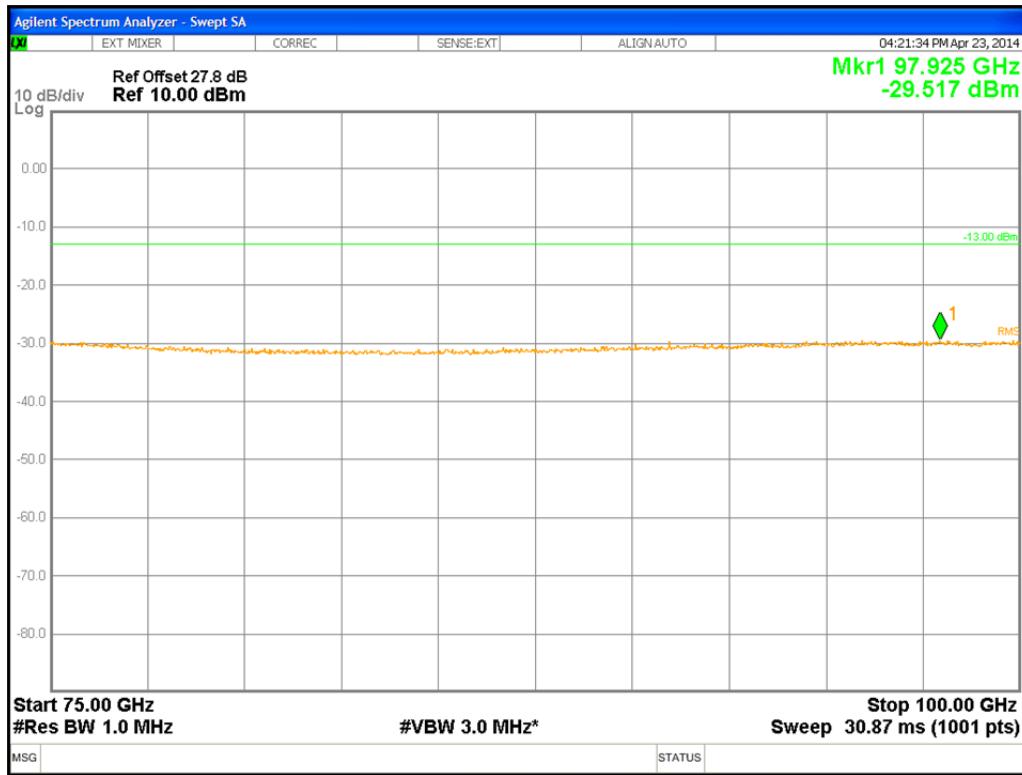
Plot 36



Plot 37



Plot 38



9.7 Frequency stability

Measurement:

Frequency stability was measured with a frequency counter. To improve the quality of measurement the frequency counter was connected to an external GPS based 10 MHz reference signal.

Limits:

FCC
47 CFR § 2.1055 / § 90.213
There are no limits specified Note 10: ... frequency stability is to be specified in the station authorization.

Results: nominal frequency at 17.2 GHz

Temperature	Frequency (GHz)	Deviation (Hz)
-30 °C	17.200001650	+1650
-20 °C	17.200001420	+1420
-10 °C	17.200001290	+1290
0 °C	17.200001230	+1230
10 °C	17.200001125	+1125
20 °C (V nom)	17.200001145	+1145
30 °C	17.200001100	+1100
40 °C	17.200001105	+1105
50 °C	17.200001140	+1140
Voltage		
85 %	17.200001150	+1150
115 %	17.200001145	+1145

Result: The measurement is passed.

10 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analysers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	12.01.2012	12.01.2015
2	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vIKI!	08.05.2013	08.05.2015
3	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
4	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	*	300000199	ne		
5	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	30.01.2014	30.01.2016
6	9	Isolating Transformer	MPL IEC625 Bus Regeltrenntravo	Erfi	91350	300001155	ne		
7	90	Active Loop Antenna 10 kHz to 30 MHz	6502	Kontron Psychotech	8905-2342	300000256	k	13.06.2013	13.06.2015
8	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
9	n. a.	Band Reject filter	WRCG185 5/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
10	n. a.	Band Reject filter	WRCG240 0/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
11	n. a.	Highpass Filter	WHKX7.0/1 8G-8SS	Wainwright	18	300003789	ne		
12	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vIKI!	14.10.2011	14.10.2014
13	n. a.	MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	13.03.2014	13.03.2015
14	n. a.	4U RF Switch Platform	L4491A	Agilent Technologies	MY50000037	300004509	ne		
15	CR 79	Std. Gain Horn Antenna 26.5-40.0 GHz	V637	Narda	7911	300001751	ne		
16	A025	Std. Gain Horn Antenna 49.9-75.8 GHz	2524-20	Flann	*	300001983	ne		
17	A028	Std. Gain Horn Antenna 73.8-112 GHz	2724-20	Flann	*	300001991	ne		
18	A026	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda	8402	300000787	k	22.07.2013	22.07.2015
19	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda	8205	300002442	k	19.07.2013	19.07.2015
20	n. a.	DC power supply, 60Vdc,	6032A	HP Meßtechnik	2920A04590	300001041	Ve	12.01.2012	12.01.2015

		50A, 1200 W						
21	n. a.	PXA Spectrum Analyzer 3Hz to 50GHz	N9030A PXA Signal Analyzer	Agilent Technologies	US51350267	300004338	k	09.01.2014 09.01.2015
22	n. a.	Std. Gain Horn Antenna 33.0-50.1 GHz	2324-20	Flann	57	400000683	ne	
23		Waveguide Harmonic Mixer to 110 GHz	11970 (U, W, V, Q, A, K)	HP Meßtechnik		300000781	k	20.04.2013 20.04.2016

Agenda: Kind of Calibration

k calibration / calibrated
 ne not required (k, ev, izw, zw not required)
 ev periodic self verification
 Ve long-term stability recognized
 vkl! Attention: extended calibration interval
 NK! Attention: not calibrated

EK limited calibration
 zw cyclical maintenance (external cyclical maintenance)
 izw internal cyclical maintenance
 g blocked for accredited testing
 *) next calibration ordered / currently in progress

11 Document history

Version	Applied changes	Date of release
	Initial release - DRAFT	2014-05-17
	FCC and IC ID added	2014-05-23
-A	Model name changed to all capital letters	2014-06-05
-B	MPE Calculation updated	2014-06-10
-C	MPE Calculation updated	2014-06-26

12 Further information

Glossary

AVG	-	Average
DUT	-	Device under test
EMC	-	Electromagnetic Compatibility
EN	-	European Standard
EUT	-	Equipment under test
ETSI	-	European Telecommunications Standard Institute
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	Not applicable
PP	-	Positive peak
QP	-	Quasi peak
S/N	-	Serial number
SW	-	Software

13 Accreditation Certificate

Front side of certificate

Back side of certificate



Deutsche Akkreditierungsstelle GmbH

Befähigte gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV
Unterzeichnerin der Multilateralen Abkommen
von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung

Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

CETECOM ICT Services GmbH
Untertürkheimer Straße 6-10, 66117 Saarbrücken

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen
durchzuführen:

Drahtgebundene Kommunikation einschließlich xDSL
VoIP und DECT
Akustik
Funk einschließlich WLAN
Short Range Devices (SRD)
RFID
WiMax und Richtfunk
Mobilfunk (GSM / DCS, Over the Air (OTA) Performance)
Elektromagnetische Verträglichkeit (EMV) einschließlich Automotive
Produktsicherheit
SAR and Hearing Aid Compatibility [HAC]
Umweltmodulation
Smart Card Terminals
Bluetooth
Wi-Fi Services

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Beiblatt vom 07.03.2014 mit der
Akkreditierungsnr. D-PL-12076-01 und ist gültig 17.01.2018. Sie besteht aus diesem Deckblatt, der
Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 77 Seiten.

Registrierungsnummer der Urkunde: D-PL-12076-01-00

Deutsche Akkreditierungsstelle GmbH

Standort Berlin
Spittelmarkt 10
10117 Berlin

Standort Frankfurt am Main
Gartenstraße 6
60591 Frankfurt am Main

Standort Braunschweig
Bündnerstrasse 100
38115 Braunschweig

Die auszugsweise Veröffentlichung der Akkreditierungsurkunde kommt vorherigen schriftlichen
Zusammensetzung der Deutsche Akkreditierungsstelle GmbH (DAkkS). Ausgenommen davon ist die separate
Weiterverbreitung des Dokumentes durch die umstieg gewordene Konformitätsbewertungsstelle in
Weiterverbreitung der Ausstellerin erweckt werden, dass sich die Akkreditierung auch auf Bereiche erstreckt,
die über den durch die DAkkS bestätigten Akkreditierungsbereich hinausgehen.

Es darf nicht der Ausstellerin erweckt werden, dass sich die Akkreditierung auch auf Bereiche erstreckt,
die über den durch die DAkkS bestätigten Akkreditierungsbereich hinausgehen.
Die Akkreditierung erfolgte gemäß dem Gesetz über die Akkreditierungsanstalt (AkkStelleG) vom
31.12.2009 (BGBL I S. 270) sowie die Verordnung (EG) Nr. 727/2009 zur Durchführung des Akkreditierungs-
und des Prüfs von 1.1.2010 über die Voraussetzungen für die Akkreditierung und Marktüberwachung
im Zusammenhang mit der Herstellung von Produkten (MaL 238 vom 9. Juli 2009, S. 39).
Die DAkkS ist Unterzeichnerin der Multilateralen Abkommen zur gegenseitigen Anerkennung der
European co-operation for Accreditation (EA), des International Accreditation Forum (IAF) und
der International Laboratory Accreditation Cooperation (ILAC). Die Unterzeichner dieser Abkommen
erkennen ihres Akkreditierungen gegenseitig an.

Der aktuelle Stand der Mitgliedschaft kann folgenden Webseiten entnommen werden:
EA: www.european-accredited.eu
ILAC: www.ilac.org
IAF: www.iaf.nu

Frankfurt am Main, 07.03.2014
in Auftrag D-PL-12076-01 Ralf Egger
Akkreditierungsleiter
Deutsche Akkreditierungsstelle

Note:

The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

<http://www.cetecom.com/eu/de/cetecom-group/europa/deutschland-saarbruecken/akkreditierungen.html>