

**CETECOM™****CETECOM ICT Services**
consulting - testing - certification >>>

TEST REPORT

Test report no.: 1-0682/15-02-06

Deutsche
Akkreditierungsstelle
D-PL-12076-01-00

Testing laboratory

CETECOM ICT Services GmbH

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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-12076-01-00

Applicant

Oticon A/S

Kongebakken 9

2765 Smørum / DENMARK

Phone: +45 39 17 71 00

Fax: -/-

Contact: Jørgen Peter Hanuscheck

e-mail: jpha@oticon.com

Phone: +45 39 13 85 38

Manufacturer

Oticon A/S

Kongebakken 9

2765 Smørum / DENMARK

Test standard/s

47 CFR Part 15

Title 47 of the Code of Federal Regulations; Chapter I; Part 15 - Radio frequency devices

RSS - 210 Issue 8

Spectrum Management and Telecommunications Radio Standards Specification - Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

RSS - 210 Issue 8

RSS-210, Amendment 1 — Licence-Exempt, Low-Power Radio Apparatus

Amendment 1

Operating in the Television Bands (February 2015)

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

Test Item

Kind of test item:

Hearing Aid, WL HI platform

Model name:

Aurora mini RITE

FCC ID:

U28AUMRIT

IC:

1350B-AUMRIT

Frequency:

3.84 MHz

Technology tested:

Magnetic coupling

Antenna:

Integrated ferrite coil antenna

Power supply:

1.1 V to 1.4 V DC (battery powered)

Temperature range:

0°C to +40°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 authorized:Stefan Bös
Lab Manager
Radio Communications & EMC**Test performed:**Christoph Schneider
Testing Manager
Radio Communications & EMC

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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.

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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:	2016-02-25
Date of receipt of test item:	2016-03-14
Start of test:	2016-03-14
End of test:	2016-03-18
Person(s) present during the test:	Mr. Søren D. Hansen and Mr. Jørgen Peter Hanuscheck

3 Test standard/s and references

Test standard	Date	Description
47 CFR Part 15	2016-03-18	Title 47 of the Code of Federal Regulations; Chapter I; Part 15 - Radio frequency devices
RSS - 210 Issue 8	December 2010	Spectrum Management and Telecommunications Radio Standards Specification - Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment
RSS - 210 Issue 8 Amendment 1	February 2015	RSS-210, Amendment 1 — Licence-Exempt, Low-Power Radio Apparatus Operating in the Television Bands (February 2015)
RSS - Gen Issue 4	01.11.2014	Spectrum Management and Telecommunications Radio Standards Specifications - General Requirements and Information for the Certification of Radio Apparatus

4 Test environment

Temperature	:	T_{nom} T_{max} T_{min}	+20 °C during room temperature tests +40 °C during high temperature tests 0 °C during low temperature tests
Relative humidity content	:		55 %
Barometric pressure	:		not relevant for this kind of testing
Power supply	:	V_{nom} V_{max} V_{min}	1.4 V DC (battery powered) 1.4 V 1.1 V

5 Test item

5.1 General description

Kind of test item	:	Hearing Aid, WL HI platform
Type identification	:	Aurora mini RITE (Radio module implemented in several HA families e.g. Oticon OPN)
HMN	:	-/-
PMN	:	Aurora mini RITE
HVIN	:	Aurora mini RITE
FVIN	:	-/-
S/N serial number	:	TX units: EUT No. 6: 43480486 EUT No. 7: 43483103 EUT No. 9: 43481085 RX units: EUT No. 8: 43483021
HW hardware status	:	Rev 2
SW software status	:	eSW 5.6.0
Frequency band	:	3.84 MHz
Type of radio transmission	:	modulated carrier
Use of frequency spectrum	:	
Type of modulation	:	F1D
Number of channels	:	1
Antenna	:	Integrated ferrite coil antenna
Power supply	:	1.1 V to 1.4 V DC (battery powered)
Temperature range	:	0°C to +40°C

5.2 Additional information

The content of the following annexes is defined in the QA. It may be that not all of the listed annexes are necessary for this report, thus some values in between may be missing.

Test setup- and EUT-photos are included in test report: 1-0682_15-02-01_AnnexA
1-0682_15-02-01_AnnexB
1-0682_15-02-01_AnnexD

6 Test laboratories sub-contracted

None

7 Description of the test setup

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 signaling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

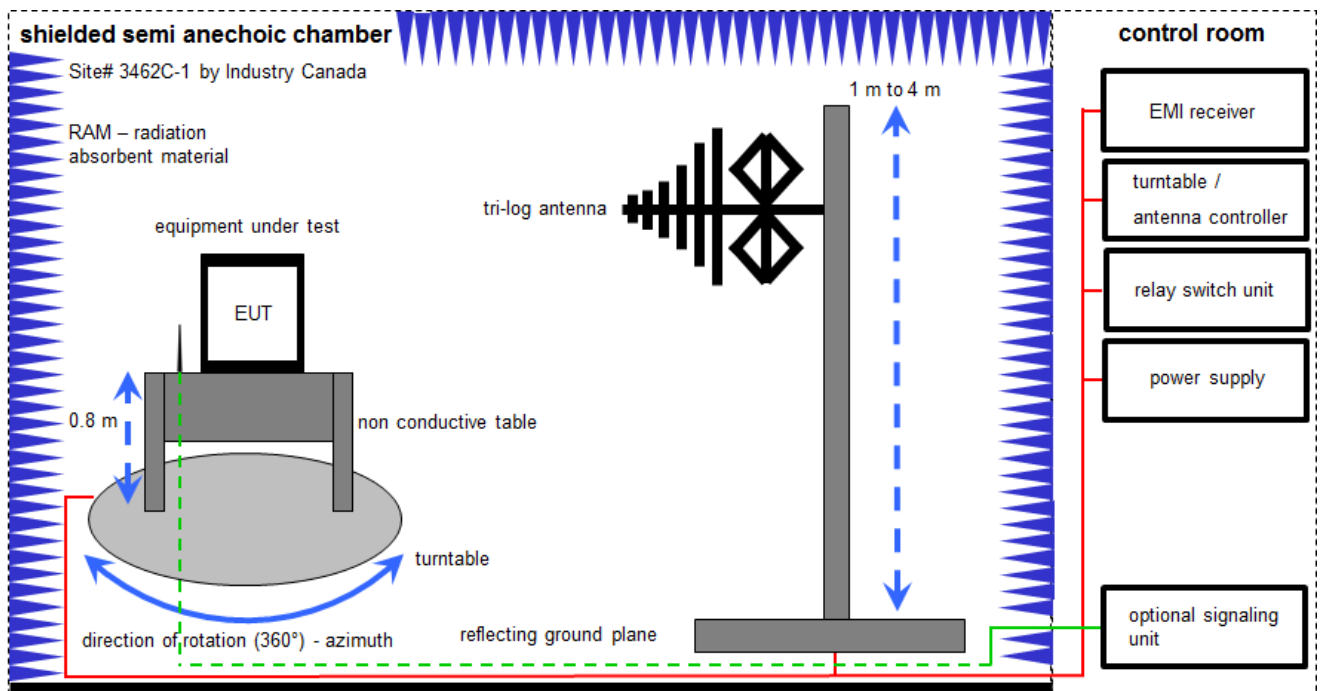
In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

Agenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
v/k!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

7.1 Shielded semi anechoic chamber

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 1 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. 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 analyzers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.



Measurement distance: tri-log antenna 10 meter

$$FS = UR + CL + AF$$

(FS-field strength; UR-voltage at the receiver; CL-loss of the cable; AF-antenna factor)

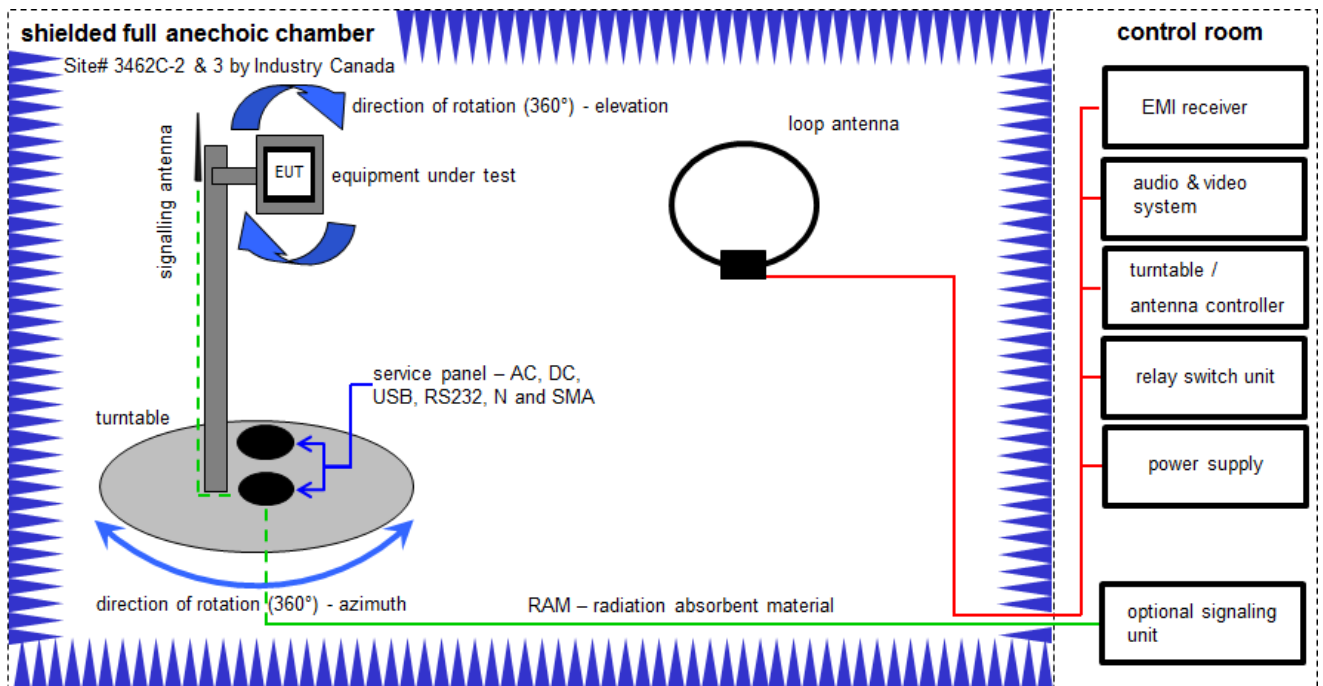
Example calculation:

$$FS [dB\mu V/m] = 12.35 [dB\mu V/m] + 1.90 [dB] + 16.80 [dB/m] = 31.05 [dB\mu V/m] \quad (35.69 \mu V/m)$$

Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	A	Switch-Unit	3488A	HP	2719A14505	300000368	ev	-/-	-/-
2	A	RF-Filter-section	85420E	HP	3427A00162	300002214	k	27.11.2006	-/-
3	A	Antenna Tower	Model 2175	ETS-Lindgren	64762	300003745	izw	-/-	-/-
4	A	Positioning Controller	Model 2090	ETS-Lindgren	64672	300003746	izw	-/-	-/-
5	A	Turntable Interface-Box	Model 105637	ETS-Lindgren	44583	300003747	izw	-/-	-/-
6	A	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	22.04.2014	22.04.2016
7	A	EMI Test Receiver	ESCI 3	R&S	100083	300003312	k	28.01.2016	27.01.2017

7.2 Shielded fully anechoic chamber



Measurement distance: loop antenna 3 meter / 1 meter

$$FS = UR + CA + AF$$

(FS-field strength; UR-voltage at the receiver; CA-loss of the signal path; AF-antenna factor)

Example calculation:

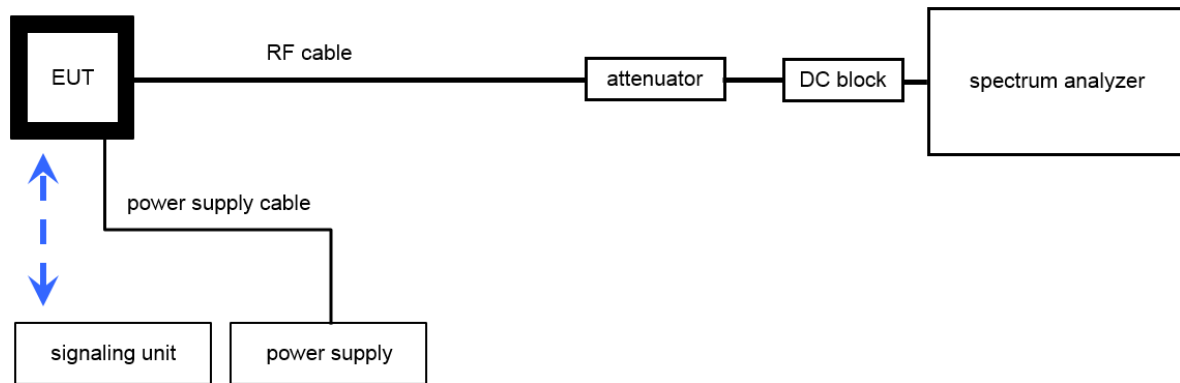
$$FS [dB\mu V/m] = 40.0 [dB\mu V/m] + (-35.8) [dB] + 32.9 [dB/m] = 37.1 [dB\mu V/m] (71.61 \mu V/m)$$

Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	A	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev	-/-	-/-
2	A	Switch / Control Unit	3488A	HP	*	300000199	ne	-/-	-/-
3	A	Active Loop Antenna 10 kHz to 30 MHz	6502	EMCO/2	8905-2342	300000256	k	24.06.2015	24.06.2017
4	A	EMI Test Receiver 9kHz-26,5GHz	ESR26	R&S	101376	300005063	k	04.09.2015	04.09.2016

7.3 Conducted measurements

Conducted measurements normal conditions



$$OP = AV + CA$$

(OP-output power; AV-analyzer value; CA-loss signal path)

Example calculation:

$$OP \text{ [dBm]} = 6.0 \text{ [dBm]} + 11.7 \text{ [dB]} = 17.7 \text{ [dBm]} \text{ (58.88 mW)}$$

Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	A	DC Power Supply, 60V, 10A	6038A	HP	2752A04866	300001161	Ve	21.01.2015	21.01.2018
2	A	EMI Test Receiver 9 kHz - 3 GHz incl. Preselector	ESPI3	R&S	101713	300004059	k	26.01.2016	26.01.2017
3	A	Loop Antenna	-/-	ZEG TS Steinfurt	101713	400001208	ev	-/-	-/-
4	A	RF Cable BNC	RG58	Huber & Suhner	101713	400001209	ev	-/-	-/-

8 Sequence of testing

8.1 Sequence of testing radiated spurious 9 kHz to 30 MHz

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- If the EUT is a tabletop system, a 2-axis positioner with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed directly on the turn table.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- Measurement distance is 3 m (see ANSI C 63.4) – see test details.
- EUT is set into operation.

Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 1.5 m.
- At each turntable position the analyzer sweeps with positive-peak detector to find the maximum of all emissions.

Final measurement

- Identified emissions during the premeasurement are maximized by the software by rotating the turntable from 0° to 360°. In case of the 2-axis positioner is used the elevation axis is also rotated from 0° to 360°.
- The final measurement is done in the position (turntable and elevation) causing the highest emissions with quasi-peak (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. A plot with the graph of the premeasurement and the limit is stored.

8.2 Sequence of testing radiated spurious 30 MHz to 1 GHz

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- Measurement distance is 10 m or 3 m (see ANSI C 63.4) – see test details.
- EUT is set into operation.

Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 m to 3 m.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4.
- Based on antenna and turntable positions at which the peak values are measured the software maximize the peaks by changing turntable position $\pm 45^\circ$ and antenna height between 1 and 4 m.
- The final measurement is done with quasi-peak detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is stored.

9 Measurement uncertainty

Measurement uncertainty	
Test case	Uncertainty
Occupied bandwidth	± used RBW
Field strength of the fundamental	± 3 dB
Field strength of the harmonics and spurious	± 3 dB
Receiver spurious emissions and cabinet radiations	± 3 dB
Conducted limits	± 2.6 dB

10 Summary of measurement results

<input checked="" type="checkbox"/>	No deviations from the technical specifications were ascertained
<input type="checkbox"/>	There were deviations from the technical specifications ascertained
<input type="checkbox"/>	This test report is only a partial test report. The content and verdict of the performed test cases are listed below.

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	CFR Part 15 RSS 210 Issue 8 RSS Gen Issue 4	See table!	2016-04-26	-/-

Test Specification Clause	Test Case	Temperature Conditions	Power Source Voltages	C	NC	NA	NP	Results
§ 15.35 (c) / RSS-GEN Issue 4 Section 4.5	Timing of the transmitter (Duty cycle correction factor)	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.223 / RSS-210 Issue 8	Bandwidth of the modulated carrier	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.223 / RSS-210 Issue 8	Fieldstrength of fundamental	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.209 (a) / RSS-210 Issue 8	Fieldstrength of harmonics and spurious	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.109 / RSS-210 Issue 8	Receiver spurious emissions	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.107 / § 15.207	Conducted limits	Nominal	Nominal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-/-

Note: NA = Not applicable; NP = Not performed; C = Complaint; NC = Not complaint

11 Additional comments

Reference documents: Oticon Wireless Hearing Aids and Accessories EMC and RF Test Setup, May 2014, JNP, Oticon A/S.

Note: The EUT with the maximum field strength was used to perform the radiated spurious emissions tests!

Manufacturer declaration:

The provided test sample for radiated measurements had a transmitter duty cycle of 50% for ease of test, while the transmitter duty cycle in normal use is approximately 2.0%.

Special test descriptions: We perform the radiated pre-scans in different spherical positions and consolidate the results in one result plot. The test procedure includes scans in the theta axes every 120° and in phi axes @ 0° and 90° for both polarizations vertical & horizontal or magnetic emissions.

Configuration descriptions: None

12 Measurement results

12.1 Timing of the transmitter

Measurement:

Measurement parameter	
Detector:	-/-
Sweep time:	-/-
Resolution bandwidth:	-/-
Video bandwidth:	-/-
Span:	-/-
Trace-Mode:	-/-

Limits:

FCC	IC
CFR 47 SUBCLAUSE §15.35(c)	RSS-GEN Issue4 Section 4.5
Timing of the transmitter	
(c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.	

Duty cycle of the samples with test mode: 50 %

In normal use the duty cycle is approximately 2.0 % (declared by the manufacturer).

12.2 Bandwidth of the modulated carrier

Measurement parameter	
Detector:	Peak
Resolution bandwidth:	1 kHz
Video bandwidth:	3 kHz
Trace-Mode:	Max Hold
Analyser function:	99 / 75 % power function
Used test equipment:	See chapter 7.3 - A

Limits:

FCC	IC
CFR Part SUBCLAUSE § 15.223	RSS-210 Issue 8
Bandwidth of the modulated carrier	

Result:

EUT No. 6: 43480486

	Occupied Bandwidth (kHz)
6 dB (75%)	160.75
20 dB (99%)	336.38

EUT No. 7: 43483103

	Occupied Bandwidth (kHz)
6 dB (75%)	160.63
20 dB (99%)	331.75

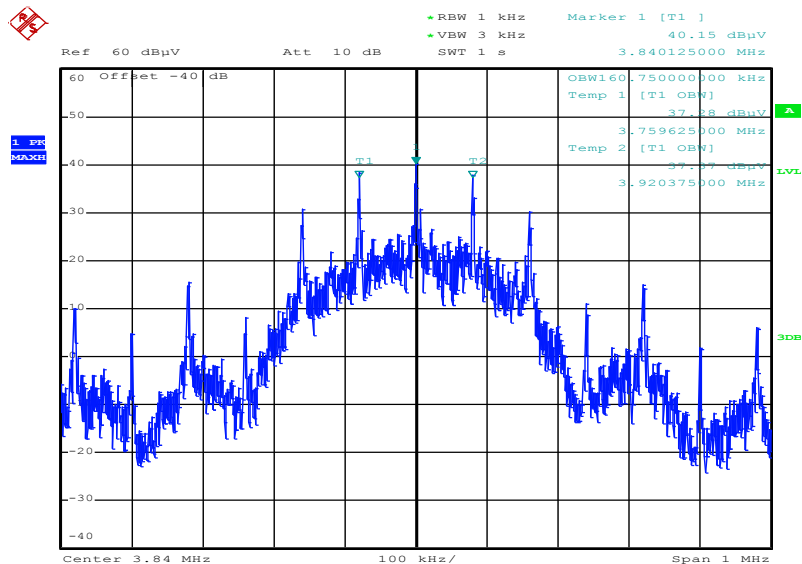
EUT No. 9: 43481085

	Occupied Bandwidth (kHz)
6 dB (75%)	160.50
20 dB (99%)	330.75

Plots of the measurements:

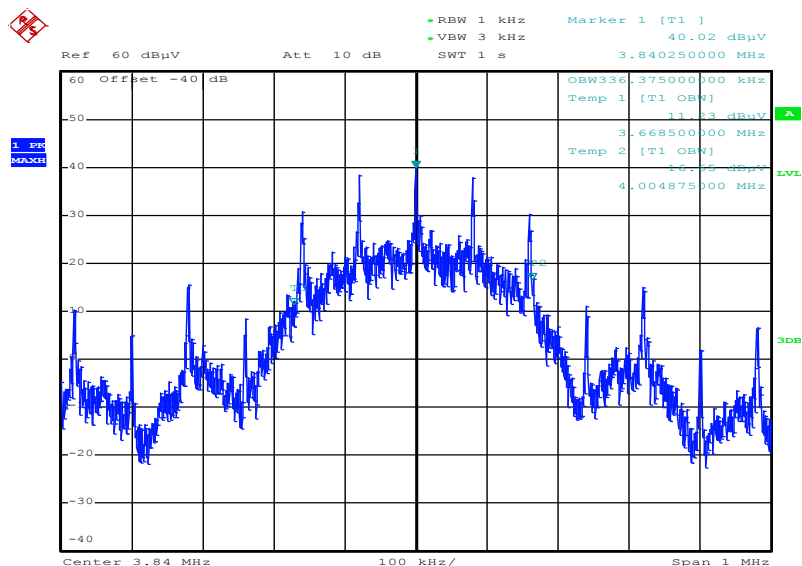
EUT No. 6: 43480486

Plot 1: 6dB (75%) – bandwidth



Date: 17.MAR.2016 15:19:49

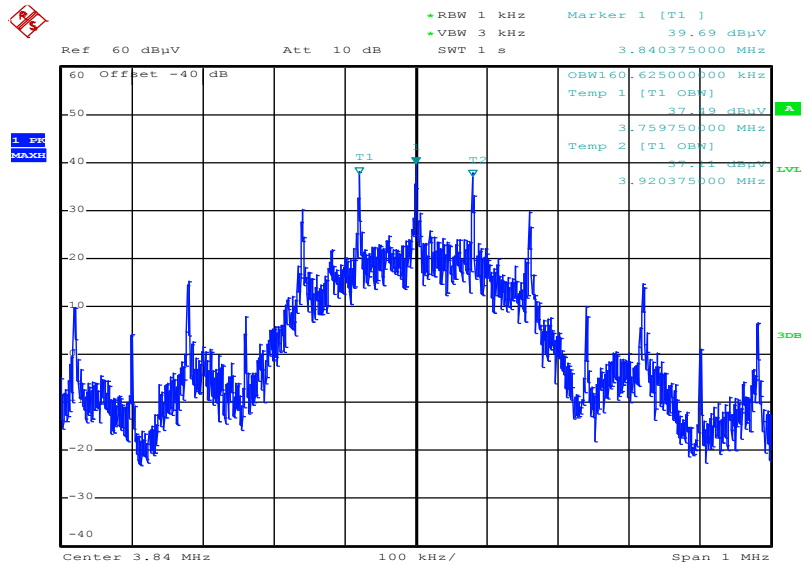
Plot 2: 20dB (99%) – bandwidth



Date: 17.MAR.2016 15:19:17

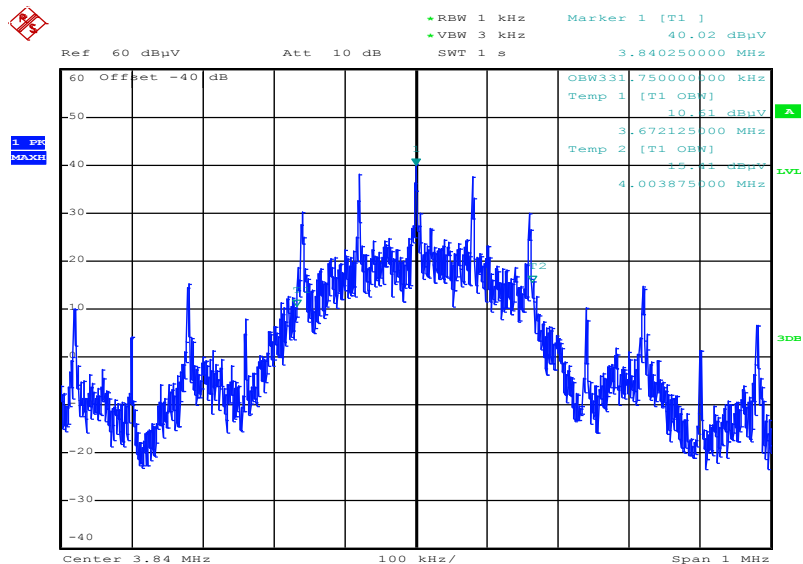
EUT No. 7: 43483103

Plot 1: 6dB (75%) – bandwidth



Date: 17.MAR.2016 15:13:32

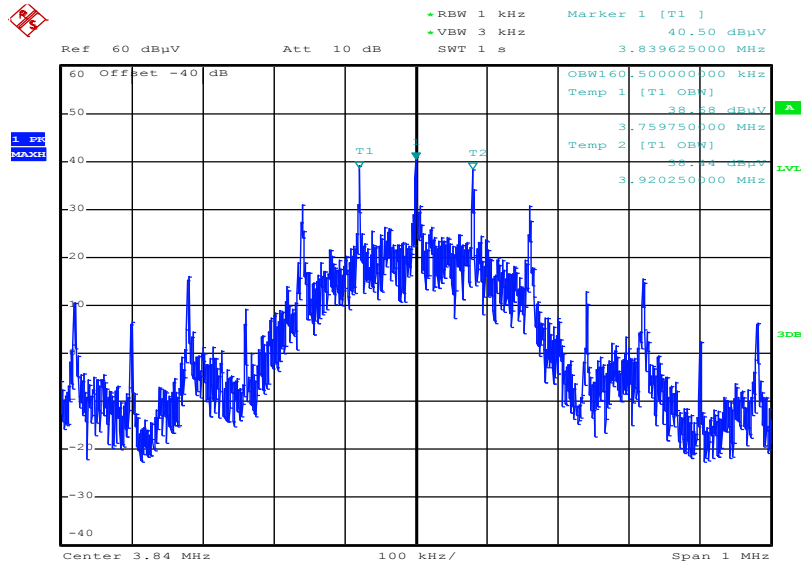
Plot 2: 20dB (99%) – bandwidth



Date: 17.MAR.2016 15:14:06

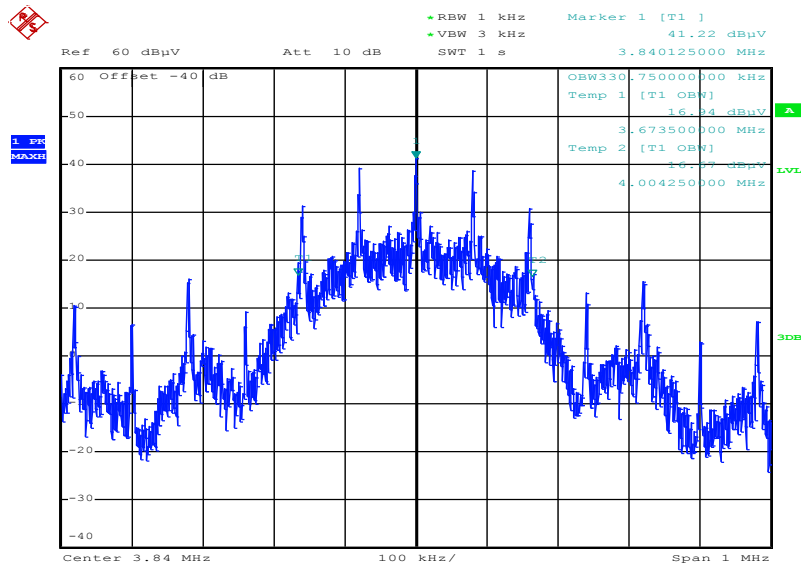
EUT No. 9: 43481085

Plot 1: 6dB (75%) – bandwidth



Date: 17.MAR.2016 15:21:21

Plot 2: 20dB (99%) – bandwidth



Date: 17.MAR.2016 15:22:03

12.3 Field strength of the fundamental

Measurement:

Measurement parameter	
Detector:	Quasi Peak (CISPR)
Resolution bandwidth:	10kHz
Video bandwidth:	> 3x RBW
Trace-Mode:	Max Hold
Used test equipment:	See chapter 7.2 - A

Limits:

FCC		IC
CFR Part SUBCLAUSE § 15.223		RSS-210 Issue 8
Fundamental Frequency (MHz)	Field strength of Fundamental (µV/m)	Measurement distance (m)
1.705 – 10.0	[15] or [6dB-BW(kHz) / F(MHz)] Whichever is higher	30

Recalculation:

According to ANSI C63.10		
Frequency	Formula	Correction value
3.84 MHz	$FS_{limit} = FS_{max} - 40 \log\left(\frac{d_{nearfield}}{d_{measure}}\right) - 20 \log\left(\frac{d_{limit}}{d_{nearfield}}\right)$ <p> FS_{limit} is the calculation of field strength at the limit distance, expressed in dBµV/m FS_{max} is the measured field strength, expressed in dBµV/m $d_{nearfield}$ is the $\lambda/2\pi$ distance $d_{measure}$ is the distance of the measurement point from EUT d_{limit} is the reference limit distance </p>	-51.4

Results:

TEST CONDITIONS		MAXIMUM POWER (dBµV/m)	
Frequency		3.84 MHz	
EUT No. 6: 43480486		at 1 m distance	at 30 m distance
T_{nom}	V_{nom}	45.06	-6.34
EUT No. 7: 43483103*		at 1 m distance	at 30 m distance
T_{nom}	V_{nom}	45.11	-6.29
EUT No. 9: 43481085		at 1 m distance	at 30 m distance
T_{nom}	V_{nom}	45.08	-6.32
Measurement uncertainty		±3dB	

*Note: This sample was used for the spurious measurements.

12.4 Fieldstrength of the harmonics and spurious

Measurement:

Measurement parameter	
Detector:	Average / Quasi Peak
Sweep time:	Auto
Resolution bandwidth:	3 kHz - 120 kHz
Video bandwidth:	Comparable to RBW
Trace-Mode:	Max hold
Used test equipment:	See chapter 7.1 – A / 7.2 – A

Limits:

FCC		IC
Field strength of the harmonics and spurious.		
Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30 (29.5 dB $\mu\text{V/m}$)	30
30 – 88	100 (40 dB $\mu\text{V/m}$)	3
88 – 216	150 (43.5 dB $\mu\text{V/m}$)	3
216 – 960	200 (46 dB $\mu\text{V/m}$)	3

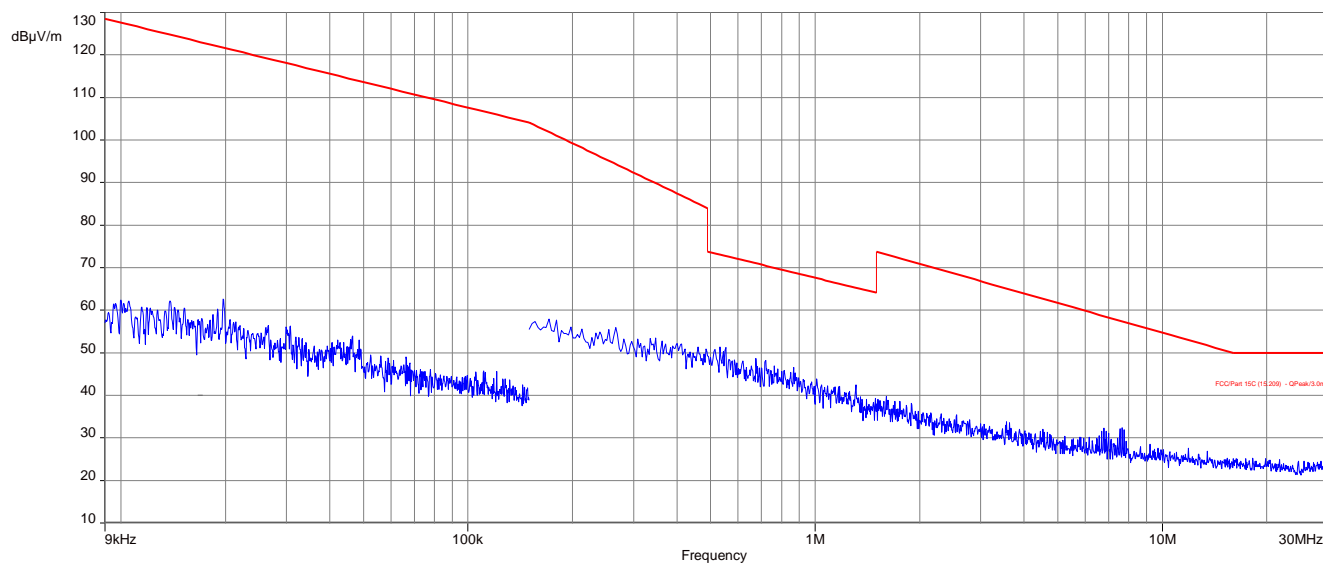
Result:

EMISSION LIMITATIONS				
f [MHz]	Detector	Limit max. allowed [dB $\mu\text{V/m}$]	Amplitude of emission [dB $\mu\text{V/m}$]	Results
All emissions were more than 6 dB below the limit.				

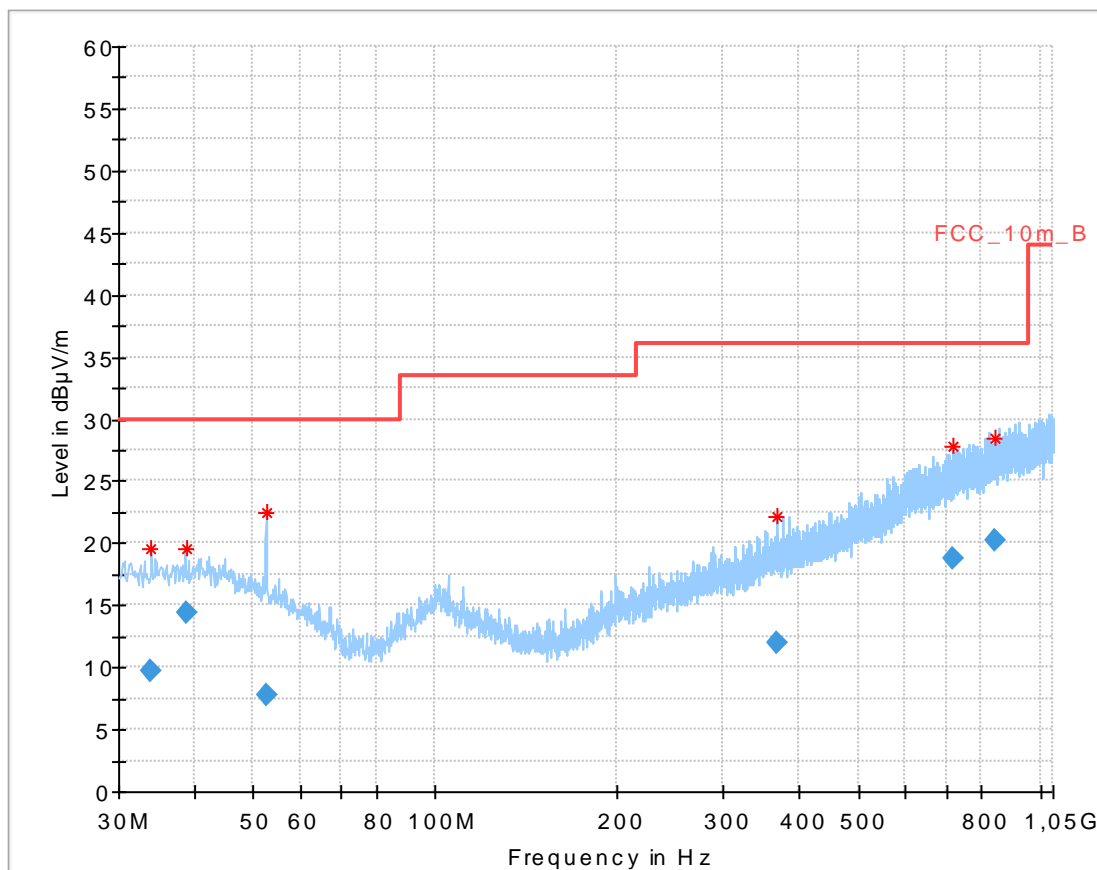
Note: The limit was recalculated with 20 dB / decade (Part 15.31) for all radiated spurious emissions 30 MHz to 1 GHz from 3 meter limit to a 10 meter distance. (40dB/decade for emissions < 30MHz)

Plots of the measurements: EUT No. 7: 43483103

Plot 1: 9 kHz – 30 MHz



Plot 2: 30 MHz – 1000 MHz



Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.921750	9.66	30.00	20.34	1000.0	120.000	174.0	V	8.0	13.7
38.742750	14.41	30.00	15.59	1000.0	120.000	103.0	V	275.0	14.0
52.781100	7.77	30.00	22.23	1000.0	120.000	101.0	H	297.0	12.2
366.367200	11.90	36.00	24.10	1000.0	120.000	200.0	H	207.0	16.3
716.000100	18.84	36.00	17.16	1000.0	120.000	200.0	V	7.0	21.9
839.097750	20.29	36.00	15.71	1000.0	120.000	200.0	V	2.0	23.3

12.5 Receiver spurious emissions

Measurement:

Measurement parameter	
Detector:	Average / Quasi Peak
Sweep time:	Auto
Resolution bandwidth:	120 kHz
Video bandwidth:	Comparable to RBW
Trace-Mode:	Max hold
Used test equipment:	See chapter 7.1 – A

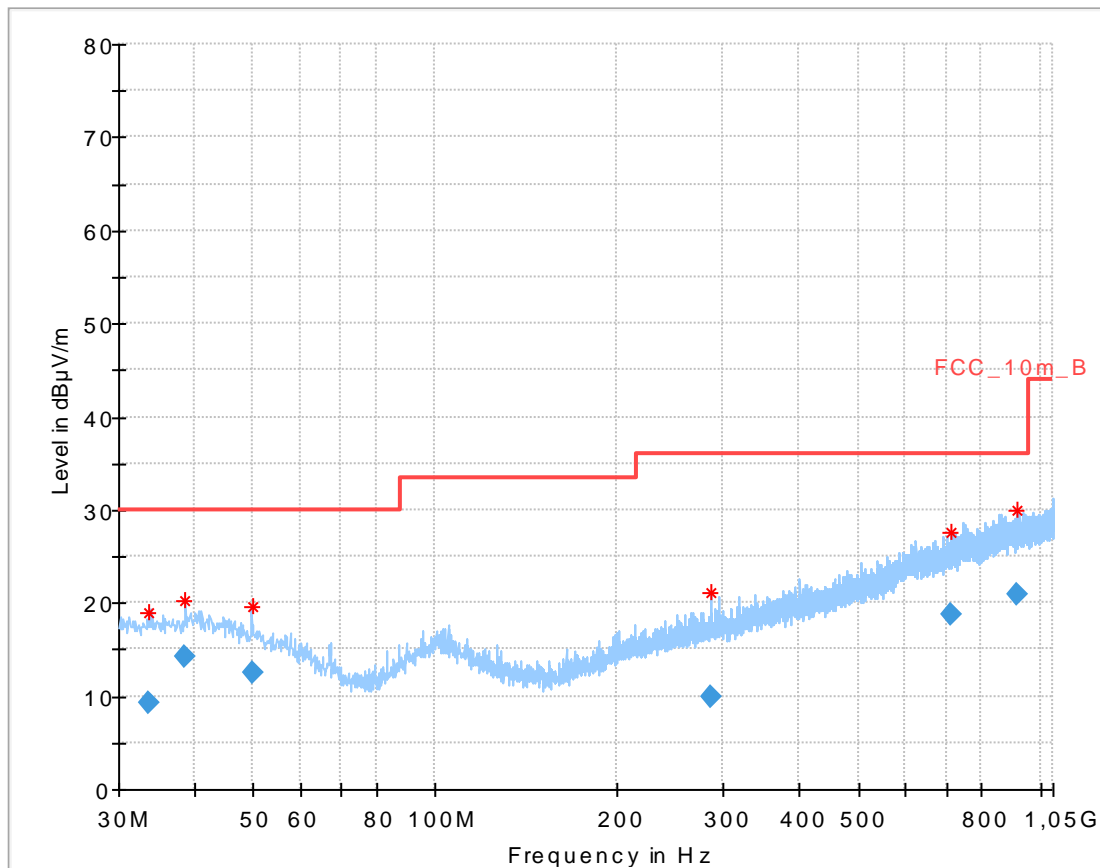
Limits:

FCC		IC	
SUBCLAUSE § 15.109		RSS-210 Issue 8	
Field strength of the harmonics and spurious.			
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)	
30 – 88	100 (40 dBµv/m)	3	
88 – 216	150 (43.5 dBµV/m)	3	
216 – 960	200 (46 dBµV/m)	3	

Result:

EMISSION LIMITATIONS				
f [MHz]	Detector	Limit max. allowed [dB $\mu\text{V/m}$]	Amplitude of emission [dB $\mu\text{V/m}$]	Results
All emissions were more than 10 dB below the limit.				

Plots of the measurements: EUT No. 8: 43483021, RX MODE

Plot 1: 30 MHz – 1000 MHz, vertical & horizontal polarization, RX MODE

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.658950	9.36	30.00	20.64	1000.0	120.000	100.0	H	297.0	13.7
38.697900	14.22	30.00	15.78	1000.0	120.000	170.0	V	86.0	14.0
50.006100	12.57	30.00	17.43	1000.0	120.000	170.0	V	86.0	12.6
285.595050	9.92	36.00	26.08	1000.0	120.000	98.0	H	173.0	14.1
711.894450	18.84	36.00	17.16	1000.0	120.000	170.0	H	201.0	21.8
912.411450	20.90	36.00	15.10	1000.0	120.000	98.0	H	34.0	24.1

Annex A Document history

Version	Applied changes	Date of release
	Initial release	2016-04-26

Annex B 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
PMN	-	Product marketing name
HMN	-	Host marketing name
HVIN	-	Hardware version identification number
FVIN	-	Firmware version identification number

Annex C Accreditation Certificate

Front side of certificate

Back side of certificate



Deutsche Akkreditierungsstelle GmbH

Befehlener 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 / GPRS, Over the Air (OTA) Performance)
 Elektromagnetische Verträglichkeit (EMV) einschließlich Automotive
 Produktsicherheit
 SAR und Hearing Aid Compatibility (HAC)
 Umweltsimulation
 Smart Card Terminals
 Bluetooth
 Wi-Fi-Services

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Beschluss vom 07.03.2014 mit der
 Akkreditierungsnummer 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

Frankfurt am Main, 07.03.2014

Zurücksenden an den Besteller

In Auftrag: D-PL-12076-01-00, Wolfgang
 Hölzl, Leiter

Deutsche Akkreditierungsstelle GmbH

Standort Berlin
 Spittelmarkt 10
 10117 Berlin

Standort Frankfurt am Main
 Gartenstraße 6
 60594 Frankfurt am Main

Standort Braunschweig
 Bundesallee 100
 38115 Braunschweig

Die auszugsweise Veröffentlichung der Akkreditierungsurkunde bedarf der vorherigen schriftlichen
 Zustimmung der Deutschen Akkreditierungsstelle GmbH (DAKkS). Ausgenommen davon ist die separate
 Weiterverbreitung des Deckblattes durch die uneingeschränkte Konformitätsbewertungsstelle in
 uneingeschränkter Form.

Es darf nicht der Anschein erweckt werden, dass sich die Akkreditierung auch auf Bereiche erstreckt,
 die über den durch die DAKkS bestätigten Akkreditierungsbereich hinausgehen.

Die Akkreditierung erfolgte gemäß des Gesetzes über die Akkreditierungsstelle (AkkStelleG) vom
 31. Juli 2009 (BGBl. I S. 2625) sowie der Verordnung (EG) Nr. 765/2008 des Europäischen Parlaments
 und des Rates vom 9. Juli 2008 über die Vorschriften für die Akkreditierung und Marktüberwachung
 im Zusammenhang mit der Vermarktung von Produkten (Abl. L 218 vom 9. Juli 2008, S. 30).
 Die DAKkS ist Unterzeichnerin der Multilateralen Abkommen zur gegenseitigen Anerkennung der
 Kompetenzen zwischen der Europäischen (EA), der Internationalen Accreditation Forum (IAF) und
 der International Laboratory Accreditation Cooperation (ILAC). Die Unterzeichner dieser Abkommen
 erkennen ihre Akkreditierungen gegenseitig an.

Der aktuelle Stand der Mitgliedschaft kann folgenden Webseiten entnommen werden:

EA: www.european-accreditation.orgILAC: www.ilac.orgIAF: www.iaf.org