
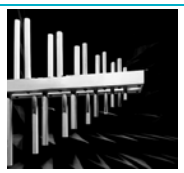
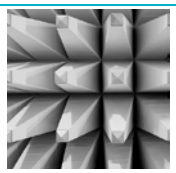

CTC advanced
member of RWTÜV group

Bundesnetzagentur

BNetzA-CAB-02/21-102

TEST REPORT

Test report no.: 1-6665/18-01-19-A

DAkkS Deutsche Akkreditierungsstelle D-PL-12076-01-03

Testing laboratory

CTC advanced GmbH
Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075
Internet: http://www.ctcadvanced.com
e-mail: mail@ctcadvanced.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-12076-01-03

Applicant

Unitron Hearing, a division of National Hearing Services Inc.
20 Beasley Drive
N2E 1Y6 Kitchener, Ontario / CANADA
Phone: +1 519 895 0100
Contact: Samson Berhane
e-mail: Samson.Berhane@sonova.com
Phone: 519 895 0100 ext 2046

Manufacturer

Unitron Hearing, a division of National Hearing Services Inc.
20 Beasley Drive
N2E 1Y6 Kitchener, Ontario / CANADA

Test standard/s

FCC - Title 47 CFR Part 15	FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 15 - Radio frequency devices
RSS - 210 Issue 9	Spectrum Management and Telecommunications Radio Standards Specification - Licence-Exempt Radio Apparatus: Category I Equipment
RSS - Gen Issue 5	Spectrum Management and Telecommunications Radio Standards Specification - General Requirements for Compliance of Radio Apparatus

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

Test Item

Kind of test item:	**Air Conduction Hearing Aid**
Model name:	**T Max UP Pro, Vista T UP 675; T Max SP Pro, Vista T SP 13**
FCC ID:	VMY-UWTM1
IC:	2756A-UWTM1
Frequency:	10.6 MHz
Technology tested:	Proprietary
Antenna:	Integrated ferrite coil antenna (inductive)
Power supply:	1.30 V DC by Zinc-Air battery
Temperature range:	-20°C to +50°C

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.

Test report authorized:

cn=Andreas Luckenbill, o=CTC advanced GmbH, ou=LUC-180217, email=andreas.luckenbill@ctcadvanced.com, c=DE
2018.09.19 14:12:56 +02'00'

Andreas Luckenbill
Lab Manager
Radio Communications & EMC

Test performed:

p.o.

cn=Tobias Wittenmeier, o=CTC advanced GmbH, ou=WIT-170519, email=tobias.wittenmeier@ctcadvanced.com, c=DE
2018.09.19 14:17:19 +02'00'

Sumit Kumar
Testing Manager
Radio Communications & EMC

1 Table of contents

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. CTC advanced 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.

This test report replaces the test report with the number 1-6665/18-01-19 and dated 2018-08-09.

2.2 Application details

Date of receipt of order:	2018-07-06
Date of receipt of test item:	2018-07-17
Start of test:	2018-07-18
End of test:	2018-07-27
Person(s) present during the test:	-/-

2.3 Test laboratories sub-contracted

None

3 Test standard/s and references

Test standard	Date	Description
FCC - Title 47 CFR Part 15		FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 15 - Radio frequency devices
RSS - 210 Issue 9	August 2016	Spectrum Management and Telecommunications Radio Standards Specification - Licence-Exempt Radio Apparatus: Category I Equipment
RSS - Gen Issue 5	April 2018	Spectrum Management and Telecommunications Radio Standards Specification - General Requirements for Compliance of Radio Apparatus

Guidance	Version	Description
ANSI C63.4-2014	-/-	American national standard for methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
ANSI C63.10-2013	-/-	American national standard of procedures for compliance testing of unlicensed wireless devices

4 Test environment

Temperature	:	T_{nom} T_{max} T_{min}	+22 °C during room temperature tests +50 °C during high temperature tests -20 °C during low temperature tests
Relative humidity content	:		55 %
Barometric pressure	:		1021 hpa
Power supply	:	V_{nom} V_{max} V_{min}	1.30 V DC by Zinc-Air battery No tests under extreme conditions required No tests under extreme conditions required

5 Test item

5.1 General description

Kind of test item	:	Air Conduction Hearing Aid
Type identification	:	Tested model types: T Max UP Pro, T Max SP Pro other available variants with same hardware configuration: **T Max UP:** (T Max UP Pro, T Max UP 800, T Max UP 700, T Max UP 600, T Max UP 500, T Max UP FLEX:TRIAL) **Vista T UP:** (Vista T 910 UP 675, Vista T 810 UP 675, Vista T 710 UP 675, Vista T 610 UP 675, Vista T 510 UP 675, Vista T UP 675 trial) **T Max SP:** (T Max SP Pro, T Max SP 800, T Max SP 700, T Max SP 600, T Max SP 500, T Max SP FLEX:TRIAL) **Vista T SP:** (Vista T 910 SP 13, Vista T 810 SP 13, Vista T 710 SP 13, Vista T 610 SP 13, Vista T 510 SP 13, Vista T SP 13 trial)
HMN	:	-/-
PMN HVIN FVIN	:	
S/N serial number	:	T Max SP Pro – 1818K002H – TX Sample, 1828K0003 – RX Sample T Max UP Pro – 1818K0035 – TX Sample, 1821X1KKH – RX Sample
HW hardware status	:	T Max UP - 050-6070-xx, 050-6071-xx, 050-6072-xx, 050-6073-xx, 050-6074-xx, 050-6075-xx T Max SP - 050-6060-xx, 050-6061-xx, 050-6062-xx, 050-6063-xx, 050-6064-xx, 050-6065-xx
SW software status	:	TrueFit 3.7.0 and above
Frequency band	:	10.6 MHz
Type of radio transmission Use of frequency spectrum	: :	Base band modulation
Type of modulation	:	8 DPSK (DQPSK)
Number of channels	:	1
Antenna	:	Integrated ferrite coil antenna (inductive)
Power supply	:	1.30 V DC by Zinc-Air battery
Temperature range	:	-20°C to +50°C

HVIN	PMN	FVIN
T Max SP	T Max SP Pro	067-6444
	T Max SP 800	067-6443
	T Max SP 700	067-6442
	T Max SP 600	067-6441
	T Max SP 500	067-6440
T Max UP	T Max UP Pro	067-6449
	T Max UP 800	067-6448
	T Max UP 700	067-6447
	T Max UP 600	067-6446
	T Max UP 500	067-6445

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: 1-6665/18-01-01_AnnexA
1-6665/18-01-01_AnnexB
1-6665/18-01-01_AnnexD

6 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).

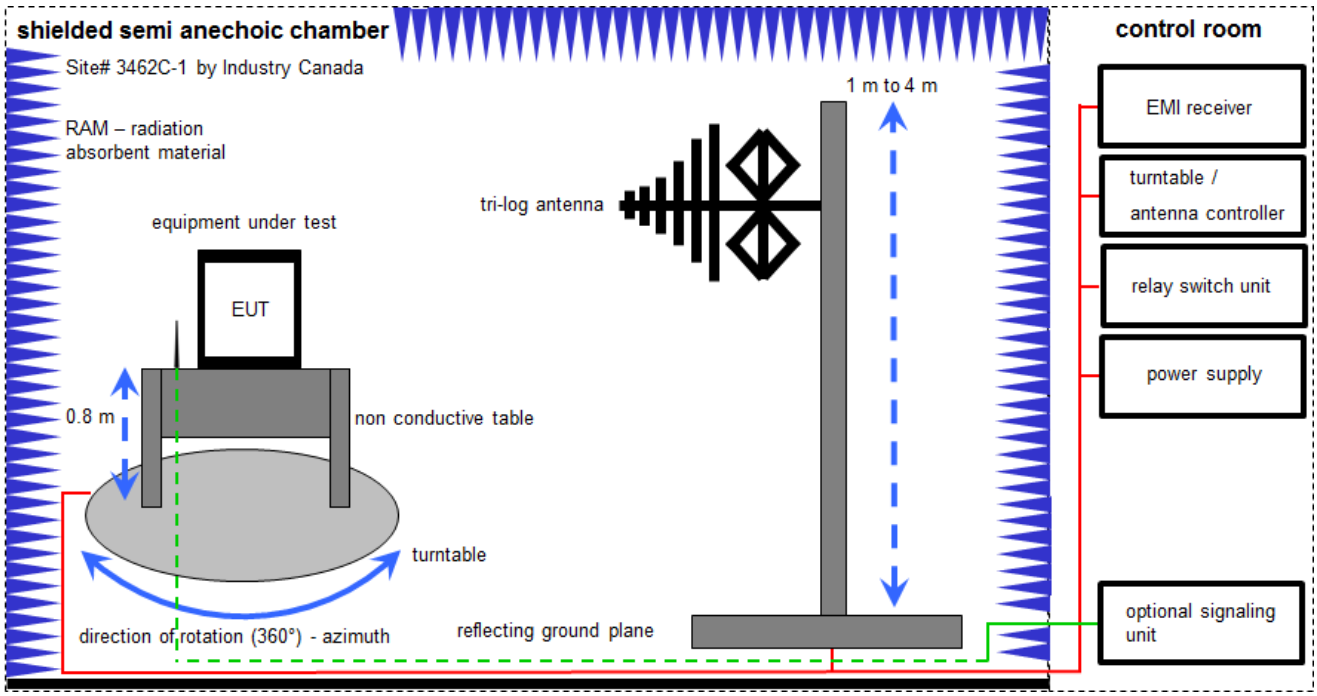
In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

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
vlkl!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

6.1 Shielded semi anechoic chamber

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 30 MHz 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 conform to 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

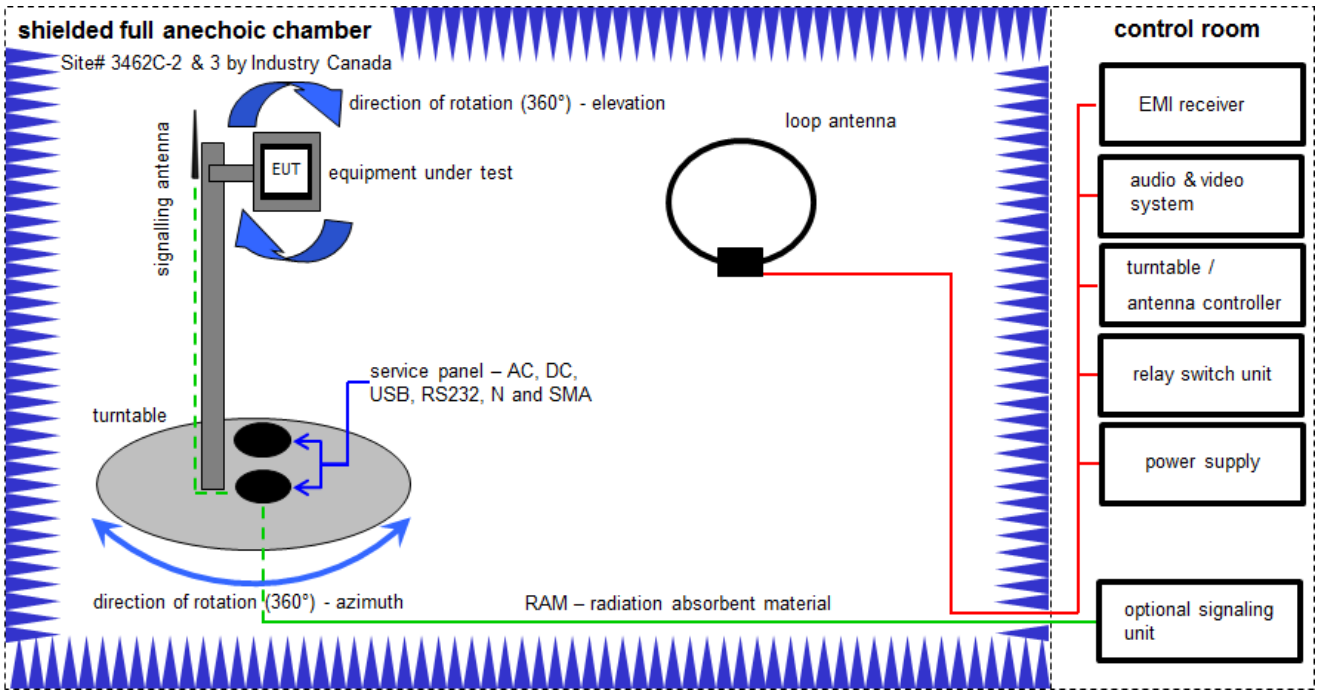
FS = UR + CL + AF
(FS-field strength; UR-voltage at the receiver; CL-loss of the cable; AF-antenna factor)

Example calculation:
FS [dBµV/m] = 12.35 [dBµV/m] + 1.90 [dB] + 16.80 [dB/m] = 31.05 [dBµV/m] (35.69 µV/m)

Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A	Switch-Unit	3488A	HP	2719A14505	300000368	ev	-/-	-/-
2	A	Meßkabine 1	HF-Absorberhalle	MWB AG 300023		300000551	ne	-/-	-/-
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 Mess - Elektronik	371	300003854	vlKl!	24.11.2017	23.11.2020
7	A	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	20.12.2017	19.12.2018

6.2 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)

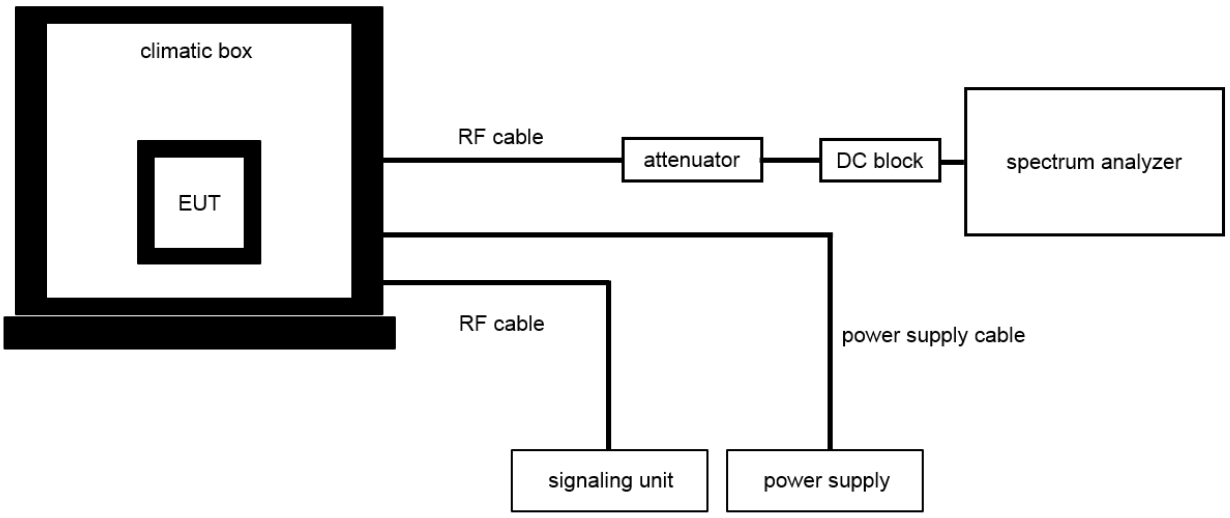
Example calculation:
FS [dBµV/m] = 40.0 [dBµV/m] + (-35.8) [dB] + 32.9 [dB/m] = 37.1 [dBµV/m] (71.61 µV/m)

Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A	Active Loop Antenna 9 kHz to 30 MHz	6502	EMCO	2210	300001015	k	07.07.2017	06.07.2019
2	A	4U RF Switch Platform	L4491A	Agilent Technologies	MY50000032	300004510	ne	-/-	-/-
3	A	Computer	Intel Core i3 3220/3,3 GHz, Prozessor		2V2403033A5421	300004591	ne	-/-	-/-
4	A	NEXIO EMV-Software	BAT EMC V3.16.0.49	EMCO		300004682	ne	-/-	-/-
5	A	Anechoic chamber		TDK		300003726	ne	-/-	-/-
6	A	EMI Test Receiver 9kHz-26,5GHz	ESR26	R&S	101376	300005063	k	14.12.2017	13.12.2018

6.3 Conducted measurements normal conditions

Conducted measurements normal & extreme conditions



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

Example calculation:
OP [dBm] = 6.0 [dBm] + 11.7 [dB] = 17.7 [dBm] (58.88 mW)

Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A	Signal- and Spectrum Analyzer	FSW26	R&S	101455	300004528	k	20.12.2017	19.12.2018
2	A	Loop Antenna		ZEG TS Steinfurt		400001208	ev	-/-	-/-
3	A	RF Cable BNC	RG58	Huber & Suhner		400001209	ev	-/-	-/-

7 Sequence of testing

7.1 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, it is placed on a table with 0.8 m height.
- 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 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 pre-measurement are maximized by the software by rotating the turntable from 0° to 360°.
- Loop antenna is rotated about its vertical axis for maximum response at each azimuth about the EUT. (For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT)
- 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.

*)Note: The sequence will be repeated three times with different EUT orientations.

7.2 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 ± 45° 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.

8 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

9 Summary of measurement results

☒	No deviations from the technical specifications were ascertained
☐	There were deviations from the technical specifications ascertained
☐	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 9 RSS Gen Issue 4	See table!	2018-09-19	-/-

Test specification clause	Test case	Temperature conditions	Power source conditions	C	NC	NA	NP	Remark
RSS Gen Issue 5 (6.6)	Occupied bandwidth	Nominal	Nominal	☒	☐	☐	☐	-/-
§ 15.209	Field strength of the fundamental	Nominal	Nominal	☒	☐	☐	☐	-/-
§ 15.209 RSS Gen Issue 5 (6.13)	Field strength of the harmonics and spurious	Nominal	Nominal	☒	☐	☐	☐	-/-
§ 15.109	Receiver spurious emissions and cabinet radiations	Nominal	Nominal	☒	☐	☐	☐	-/-
§15.107 §15.207	Conducted limits	Nominal	Nominal	☐	☐	☒	☐	Battery powered only!

Note: NA = Not applicable; NP = Not performed; C = Compliant; NC = Not compliant

10 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

11 Measurement results

11.1 Occupied bandwidth

Measurement:

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal.

Measurement parameters	
Detector:	Peak
Resolution bandwidth:	1 % – 5 % of the occupied bandwidth
Video bandwidth:	≥ 3x RBW
Trace mode:	Max hold
Analyzer function:	99 % power function
Used test setup:	See sub clause 6.3 – A
Measurement uncertainty:	See sub clause 8

Limit:

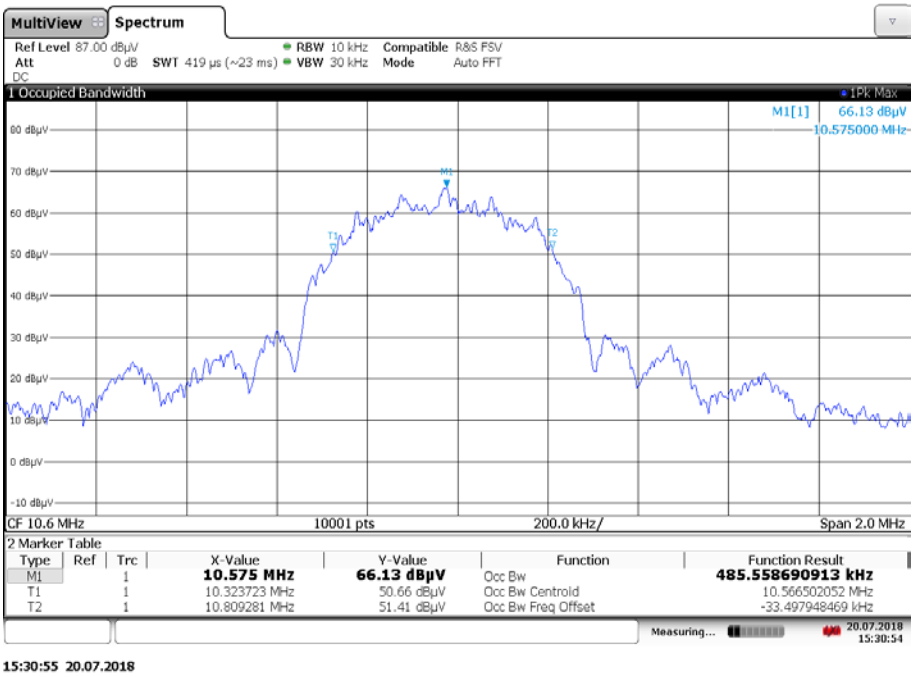
IC
for RSP-100 test report coversheet only

Result:

99% emission bandwidth	
T Max SP Pro	485.55 kHz
T Max UP Pro	486.41 kHz

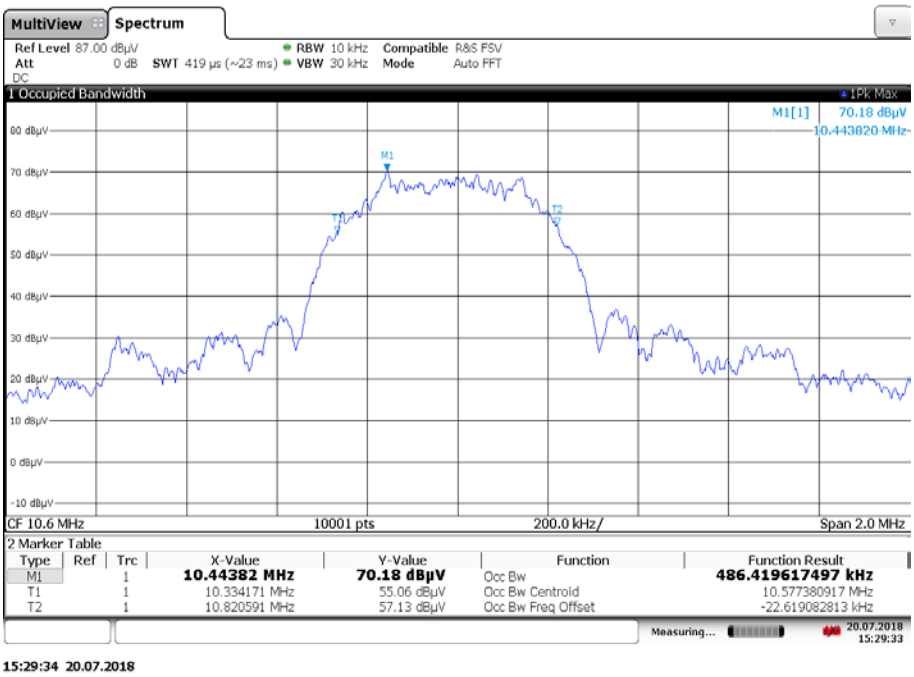
Plot: T Max SP Pro

Plot 1: 99 % emission bandwidth



Plot: T Max UP Pro

Plot 1: 99 % emission bandwidth



11.2 Field strength of the fundamental

Measurement:

The maximum detected field strength for the carrier signal.

Measurement parameters	
Detector:	Quasi peak / peak (worst case)
Resolution bandwidth:	9 kHz
Video bandwidth:	≥ 3x RBW
Trace mode:	Max hold
Used test setup	See sub clause 6.2 – A
Measurement uncertainty:	See sub clause 8

Limit:

FCC & IC		
Frequency (MHz)	Field strength (dBµV/m)	Measurement distance (m)
1.705 – 30.0	30	30

Recalculation:

According to ANSI C63.10		
Frequency	Formula	Correction value
10.6 MHz	$FS_{limit} = FS_{max} - 40\log\left(\frac{d_{nearfield}}{d_{measure}}\right) - 20\log\left(\frac{d_{limit}}{d_{nearfield}}\right)$ 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 $d_{near\ field}$ is the λ/2π distance $d_{measure}$ is the distance of the measurement point from EUT d_{limit} is the reference limit distance	-42.62

Result:

Field strength of the fundamental			
Frequency	10.6 MHz		
Distance	@ 1 m		@ 30 m
Measured / calculated value (peak measurement)	T Max UP Pro	40.75 dBµV/m	-1.87 dBµV/m
	T Max SP Pro	37.85 dBµV/m	-4.77 dBµV/m

11.3 Field strength of the harmonics and spurious

Measurement:

The maximum detected field strength for the harmonics and spurious.

Measurement parameters	
Detector:	Quasi peak / average or peak (worst case – pre-scan)
Resolution bandwidth:	F < 150 kHz: 200 Hz 150 kHz < F < 30 MHz: 9 kHz 30 MHz < F < 1 GHz: 120 kHz
Video bandwidth:	F < 150 kHz: 1 kHz 150 kHz < F < 30 MHz: 100 kHz 30 MHz < F < 1 GHz: 300 kHz
Trace mode:	Max hold
Used test setup:	9 kHz to 30 MHz: see sub clause 6.2 – A 30 MHz to 1 GHz: see sub clause 6.1 – A
Measurement uncertainty:	See sub clause 8

Limit:

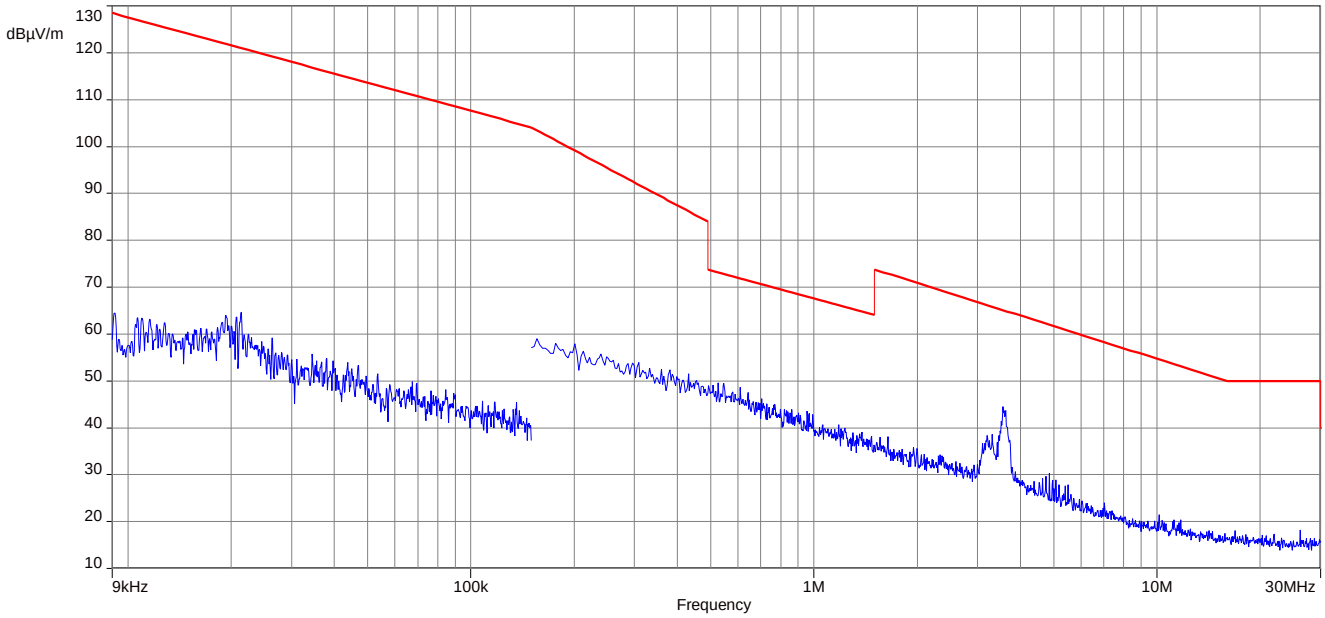
FCC & IC		
Frequency (MHz)	Field strength (dBµV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30 (29.5 dBµV/m)	30
30 – 88	100 (40 dBµV/m)	3
88 – 216	150 (43.5 dBµV/m)	3
216 – 960	200 (46 dBµV/m)	3

Result:

Detected emissions			
Frequency (MHz)	Detector	Resolution bandwidth (kHz)	Detected value
All detected peak emissions below 30 MHz are more than 10 dB below the average limit.			
For emissions above 30 MHz, please look at the table below the 1 GHz plot.			

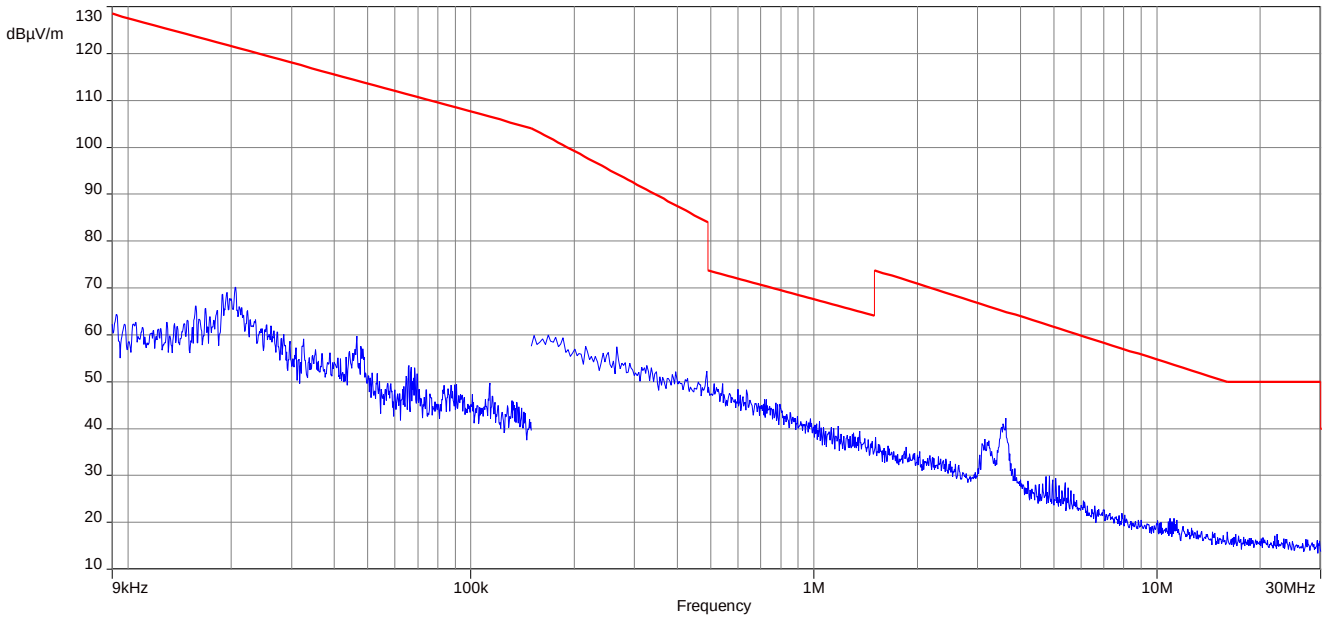
Plot: T Max SP Pro

Plot 1: 9 kHz – 30 MHz, magnetic spurious emissions



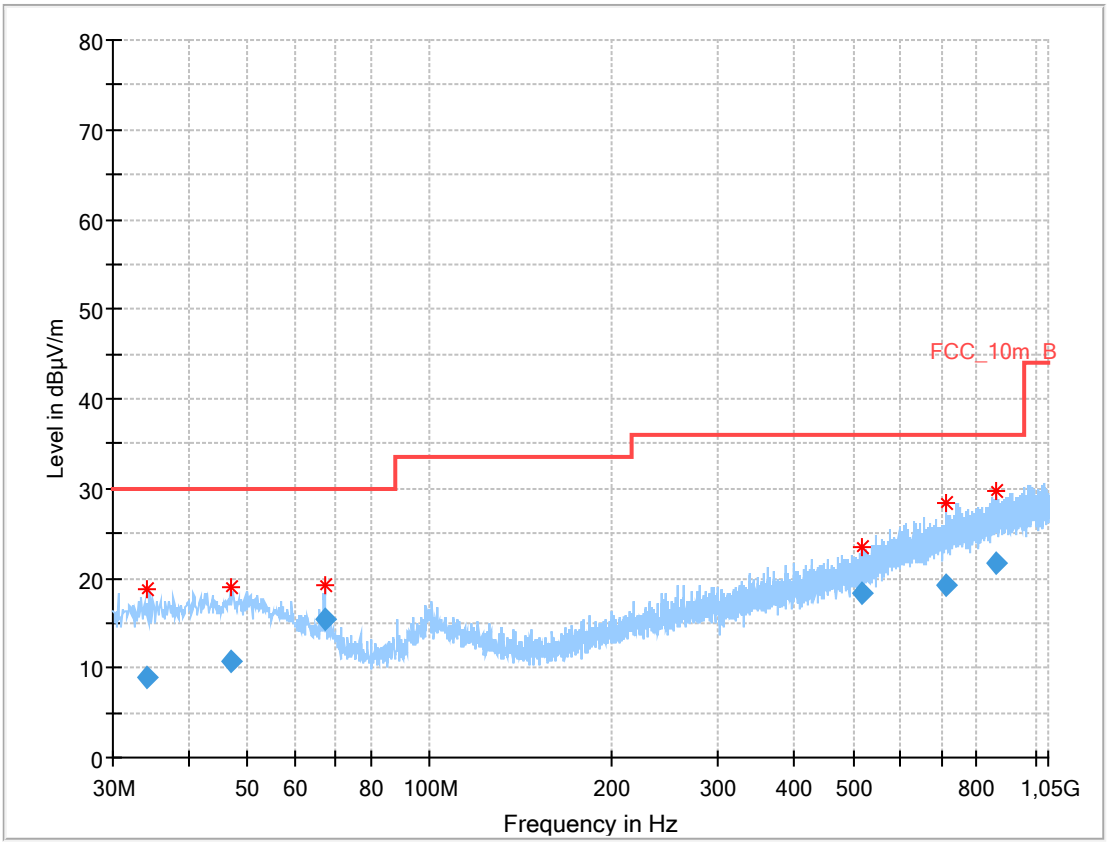
Plot: T Max UP Pro

Plot 2: 9 kHz – 30 MHz, magnetic spurious emissions



Plot: **T Max SP Pro:**

Plot 3: 30 MHz – 1 GHz, vertical and horizontal polarization

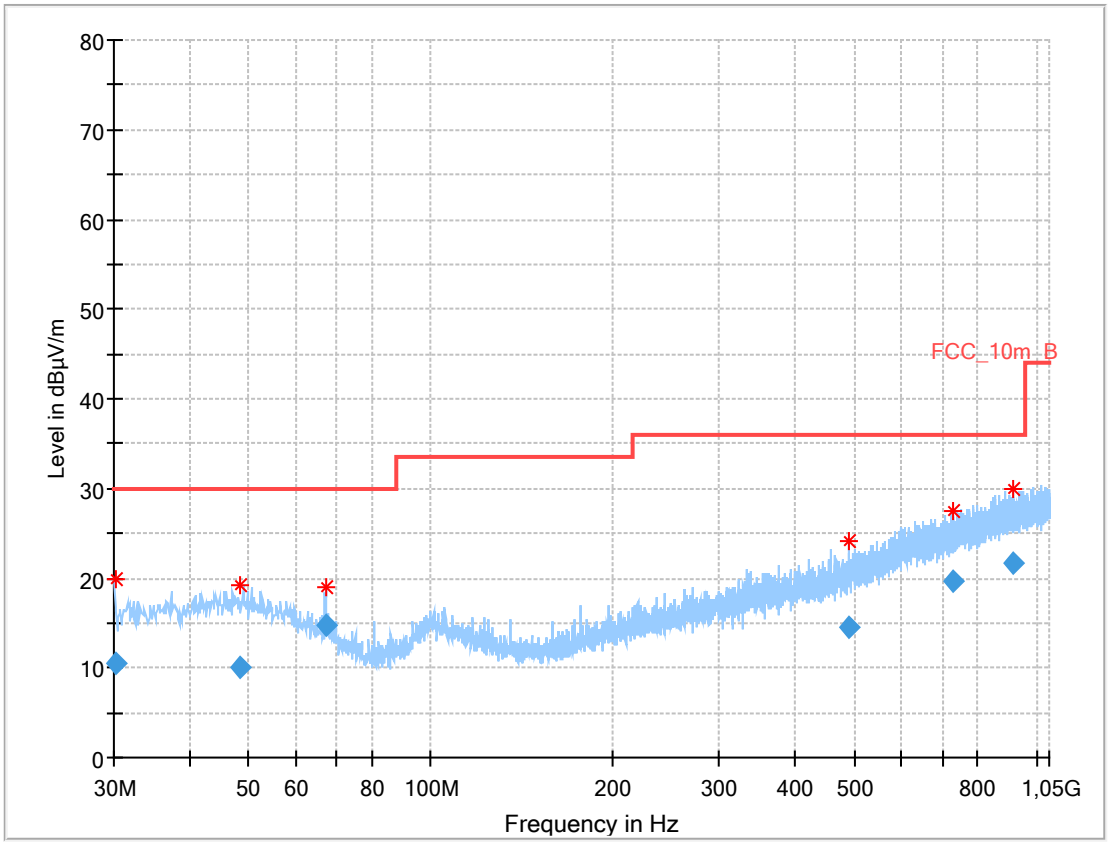


Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.143	8.88	30.0	21.12	1000	120	101.0	V	180.0	12.8
47.144	10.70	30.0	19.30	1000	120	101.0	V	0.0	14.0
67.205	15.52	30.0	14.48	1000	120	170.0	V	0.0	10.6
515.372	18.25	36.0	17.75	1000	120	98.0	V	270.0	18.9
710.542	19.32	36.0	16.68	1000	120	170.0	H	90.0	22.0
863.598	21.58	36.0	14.42	1000	120	101.0	V	0.0	24.1

Plot: **T Max UP Pro:**

Plot 4: 30 MHz – 1 GHz, vertical and horizontal polarization



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.127	10.57	30.0	19.43	1000	120	101.0	V	270.0	12.2
48.639	10.01	30.0	19.99	1000	120	170.0	H	0.0	14.0
67.047	14.74	30.0	15.26	1000	120	100.0	V	270.0	10.6
489.831	14.63	36.0	21.37	1000	120	98.0	V	90.0	18.5
726.226	19.63	36.0	16.37	1000	120	170.0	H	270.0	22.4
913.307	21.78	36.0	14.22	1000	120	98.0	H	180.0	24.6

11.4 Receiver spurious emissions and cabinet radiations

Measurement:

The maximum detected field strength for the spurious.

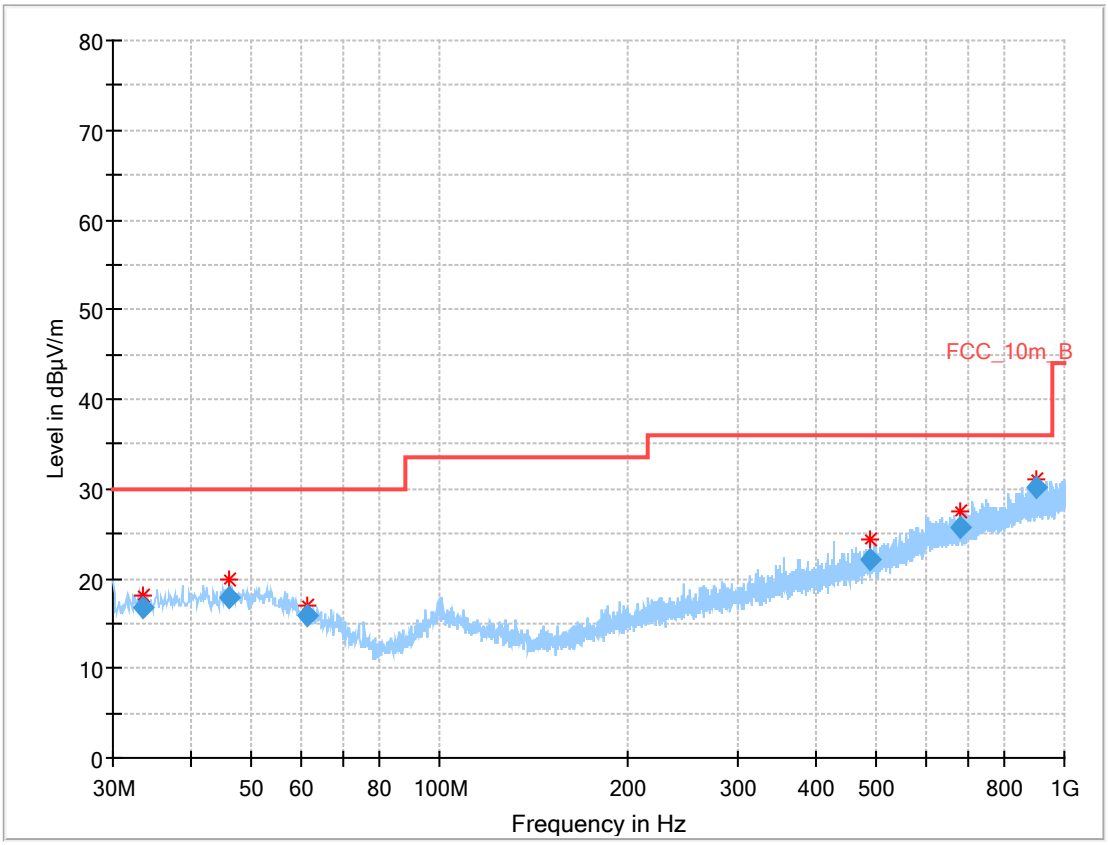
Measurement parameters	
Detector:	Quasi peak / average or peak (worst case – pre-scan)
Resolution bandwidth:	30 MHz < F < 1 GHz: 120 kHz
Video bandwidth:	30 MHz < F < 1 GHz: 300 kHz
Trace mode:	Max hold
Used test setup	30 MHz to 1 GHz: see sub clause 6.1 - A
Measurement uncertainty:	See sub clause 8

Limit:

FCC & IC		
Frequency (MHz)	Field strength (dBµV/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

Plots:

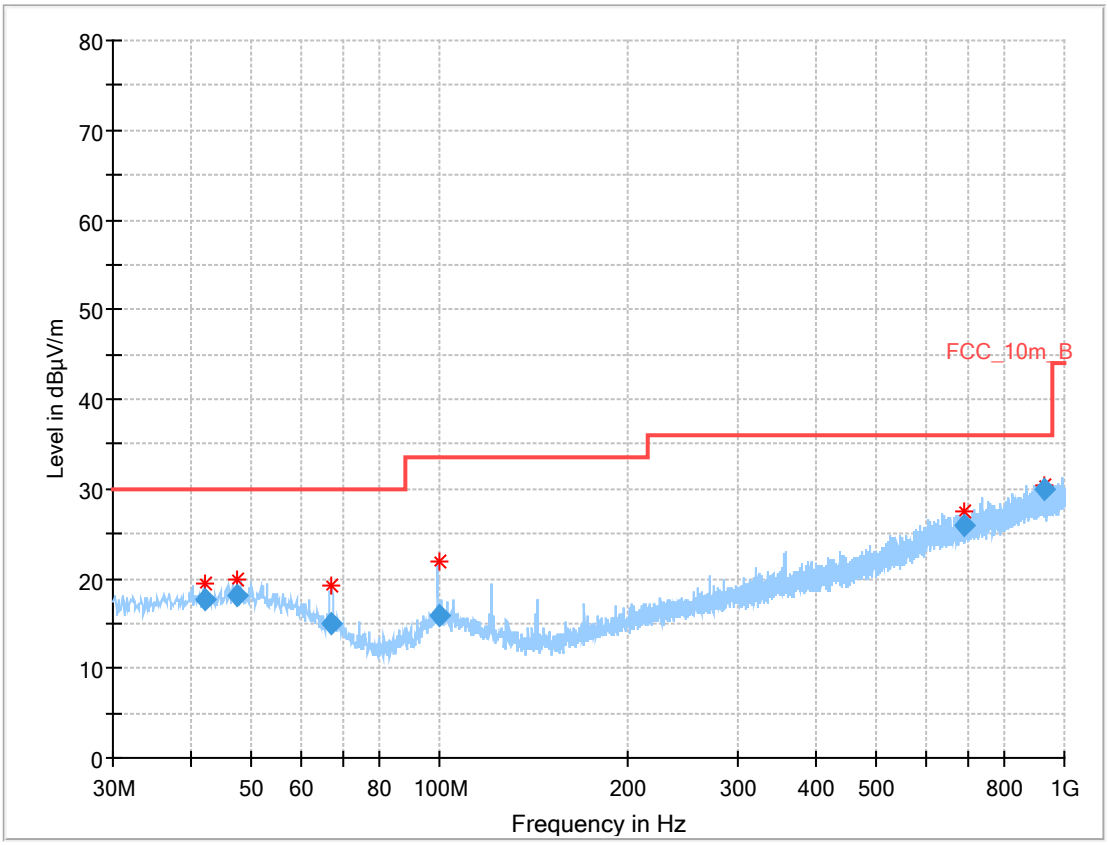
Plot 1: 30 MHz – 1 GHz, vertical and horizontal polarization, T Max SP Pro



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.578	16.71	30.0	13.29	1000	120	101.0	H	351.0	12.7
46.053	17.87	30.0	12.13	1000	120	170.0	V	148.0	14.0
61.490	15.84	30.0	14.16	1000	120	101.0	V	-10.0	11.8
489.191	22.19	36.0	13.81	1000	120	98.0	H	90.0	18.5
679.725	25.72	36.0	10.28	1000	120	101.0	V	141.0	21.6
903.388	30.10	36.0	5.90	1000	120	170.0	H	197.0	24.6

Plot 2: 30 MHz – 1 GHz, vertical and horizontal polarization, T Max UP Pro



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
42.051	17.68	30.0	12.32	1000	120	170.0	H	336.0	13.7
47.473	18.05	30.0	11.95	1000	120	170.0	V	277.0	14.0
67.227	14.87	30.0	15.13	1000	120	101.0	V	115.0	10.6
99.753	15.83	33.5	17.67	1000	120	98.0	H	316.0	12.3
690.016	25.91	36.0	10.09	1000	120	170.0	H	4.0	21.7
929.298	29.87	36.0	6.13	1000	120	170.0	V	70.0	24.7

12 Observations

No observations except those reported with the single test cases have been made.

Annex A Glossary

EUT	Equipment under test
DUT	Device under test
UUT	Unit under test
GUE	GNSS User Equipment
ETSI	European Telecommunications Standards Institute
EN	European Standard
FCC	Federal Communications Commission
FCC ID	Company Identifier at FCC
IC	Industry Canada
PMN	Product marketing name
HMN	Host marketing name
HVIN	Hardware version identification number
FVIN	Firmware version identification number
EMC	Electromagnetic Compatibility
HW	Hardware
SW	Software
Inv. No.	Inventory number
S/N or SN	Serial number
C	Compliant
NC	Not compliant
NA	Not applicable
NP	Not performed
PP	Positive peak
QP	Quasi peak
AVG	Average
OC	Operating channel
OCW	Operating channel bandwidth
OBW	Occupied bandwidth
OOB	Out of band
DFS	Dynamic frequency selection
CAC	Channel availability check
OP	Occupancy period
NOP	Non occupancy period
DC	Duty cycle
PER	Packet error rate
CW	Clean wave
MC	Modulated carrier
WLAN	Wireless local area network
RLAN	Radio local area network
DSSS	Dynamic sequence spread spectrum
OFDM	Orthogonal frequency division multiplexing
FHSS	Frequency hopping spread spectrum
GNSS	Global Navigation Satellite System
C/N_0	Carrier to noise-density ratio, expressed in dB-Hz

Annex B Document history

Version	Applied changes	Date of release
-/-	Initial release	2018-08-09
A	Updated HVIN / PMN / FVIN	2018-09-199

Annex C Accreditation Certificate

first page	last page
	

Note: The current certificate annex is published on the website (link see below) of the Accreditation Body DAkkS or may be received by CTC advanced GmbH on request

https://www.dakks.de/as/ast/d/D-PL-12076-01-03e.pdf

########## END OF TEST REPORT ##########