

TEST REPORT

of the accredited test laboratory

TÜV Nr.: INE-AT/FG-17/131

Applicant: BlueLocar GmbH
Autokaderstr. 29/BT 2
A-1210 Vienna

Tested Product: Frequency hopping device "ray"

FCC-ID: 2AJPPRAY01

IC-ID: 21949-RAY01

Manufacturer: See applicant

Output power / 407 mW eirp **power supply:** 6 VDC
field strength:

Frequency range: 915,000 – **Channel separation:** 38kHz
916,976 MHz

Standard: FCC: 47 CFR Part 15 (October 1, 2016 edition)
RSS-247 Issue 2, March 16, 2017

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Certification Body,
Calibration Laboratory,
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Test laboratory for EMC

Supervisor of EMC-laboratory:

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30.10.2017

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Ing. Michael Emminger

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The results of this test report only refer to the provided equipment.

LIST OF MEASUREMENTS

The complete list of measurements called for in 47 CFR 15 and RSS-247 is given below.

SUBCLAUSE	PARAMETER TO BE MEASURED	PAGE
	Intentional Radiators	
	Test object data	3
15.247(a)(1) 5.1 (c)	Number of channels and channel spacing	4
15.247(a)(1) 5.1 (a) (c)	20 dB Bandwidth	5-7
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TEST OBJECT DATA

General EUT Description

This frequency hopping device is using the 902-928 MHz frequency band.

2.1033 (c) Technical description

2.1033 (4) Type of emission: 12K4F1D – Channel spacing 38 kHz.

2.1033 (5) Frequency range: 915,000 to 916,976 MHz (channel center frequencies).

2.1033 (6) Power range and Controls: The maximum peak output power is 407 mW and there is no power regulation.

2.1033 (7) Maximum output power rating: 407 mW eirp.

2.1033 (8) DC Voltage and Current: 6V DC
maximum current consumption: 400 mA

RSS-135 This standard does not apply to:

- 1.1.(a) a receiver that scans radio frequencies for the purpose of enabling its associated transmitter to avoid transmitting in an occupied frequency but which does not have the capability of decoding the message (e.g. converting it to audio voice) contained in the radio signal

Tests were performed August 21st 2017.

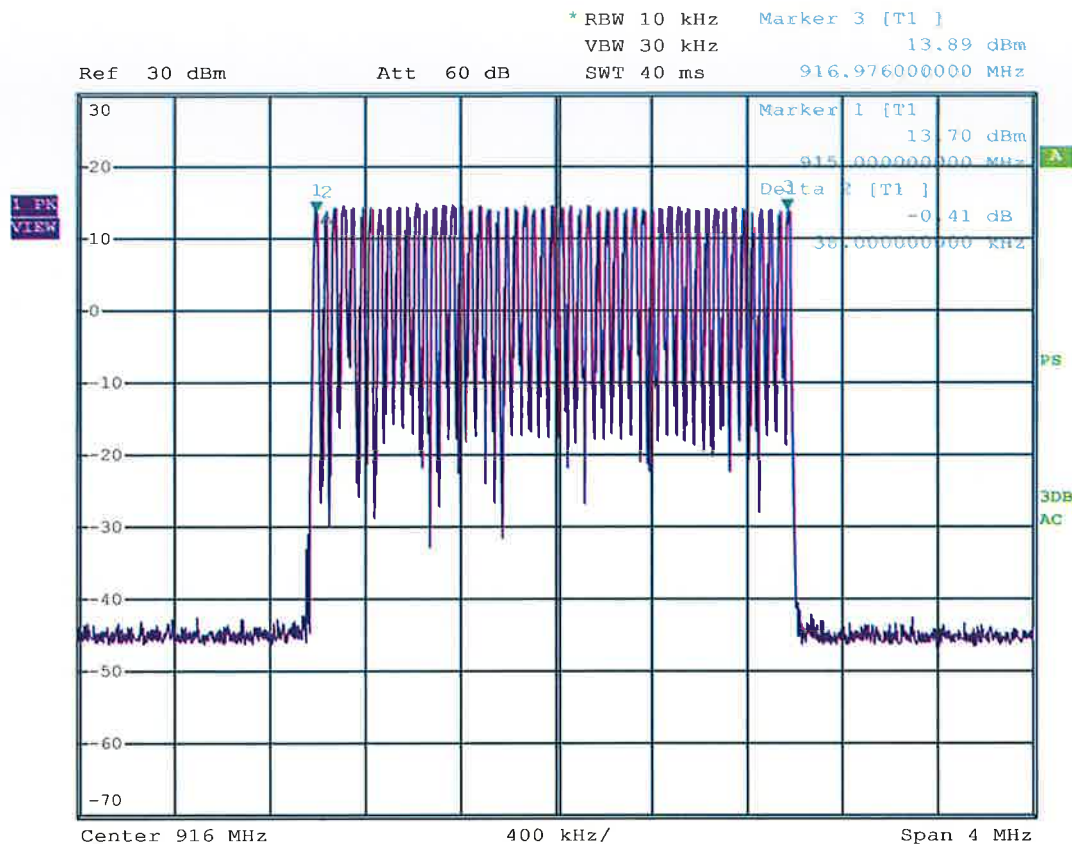
Number of channels and channel spacing

§ 15.247 (a) (1)
5.1 (c)

Mode: Bluetooth

Conducted Measurement

Rated output power: 407 mW



Date: 21.AUG.2017 12:00:31

There are 53 Channels used, starting at 915,000 till 2480 each spaced by 38 kHz channel spacing.

LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(c)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Frequency hopping systems in the 902-928 MHz band shall use at least 50 channels if the 20 dB Bandwidth is less than 250 kHz.

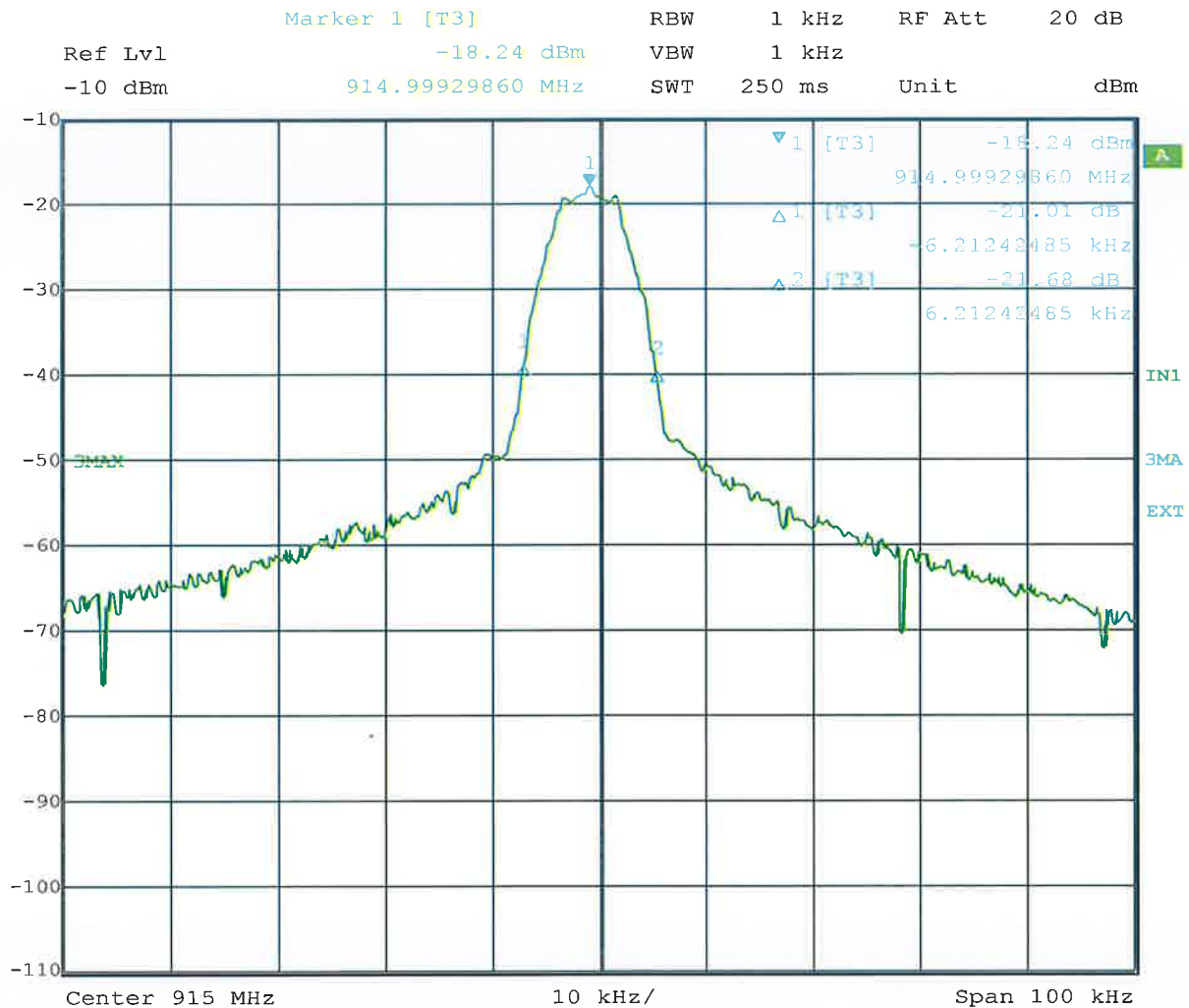
Test Equipment used: NT-203/1

20dB Bandwidth

§ 15.247 (a) (1)
5.1 (a) (c)

Radiated Measurement

Rated output power: 407 mW 915,000 MHz



Date: 21.AUG.2017 10:28:44

20dB Bandwidth: 12,42 kHz

LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(a) (c)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Frequency hopping systems in the 902-928 MHz band shall use at least 50 channels if the 20 dB Bandwidth is less than 250 kHz.

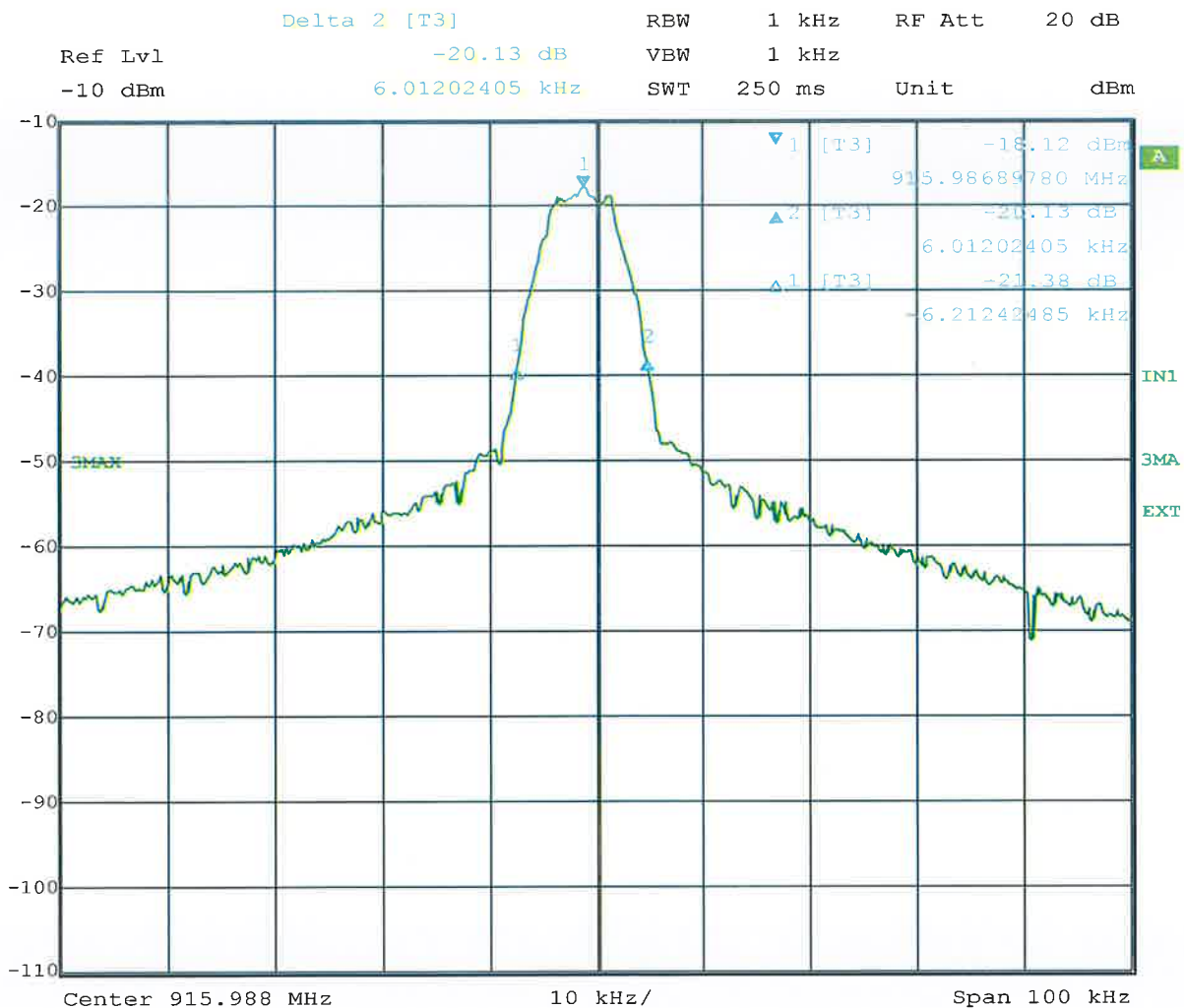
Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-207; NT-216

20dB Bandwidth

§ 15.247 (a) (1)
5.1 (a) (c)

Radiated Measurement

Rated output power: 407 mW 915,988 MHz



Date: 21.AUG.2017 10:33:25

20dB Bandwidth: 12,22 kHz

LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(a) (c)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Frequency hopping systems in the 902-928 MHz band shall use at least 50 channels if the 20 dB Bandwidth is less than 250 kHz.

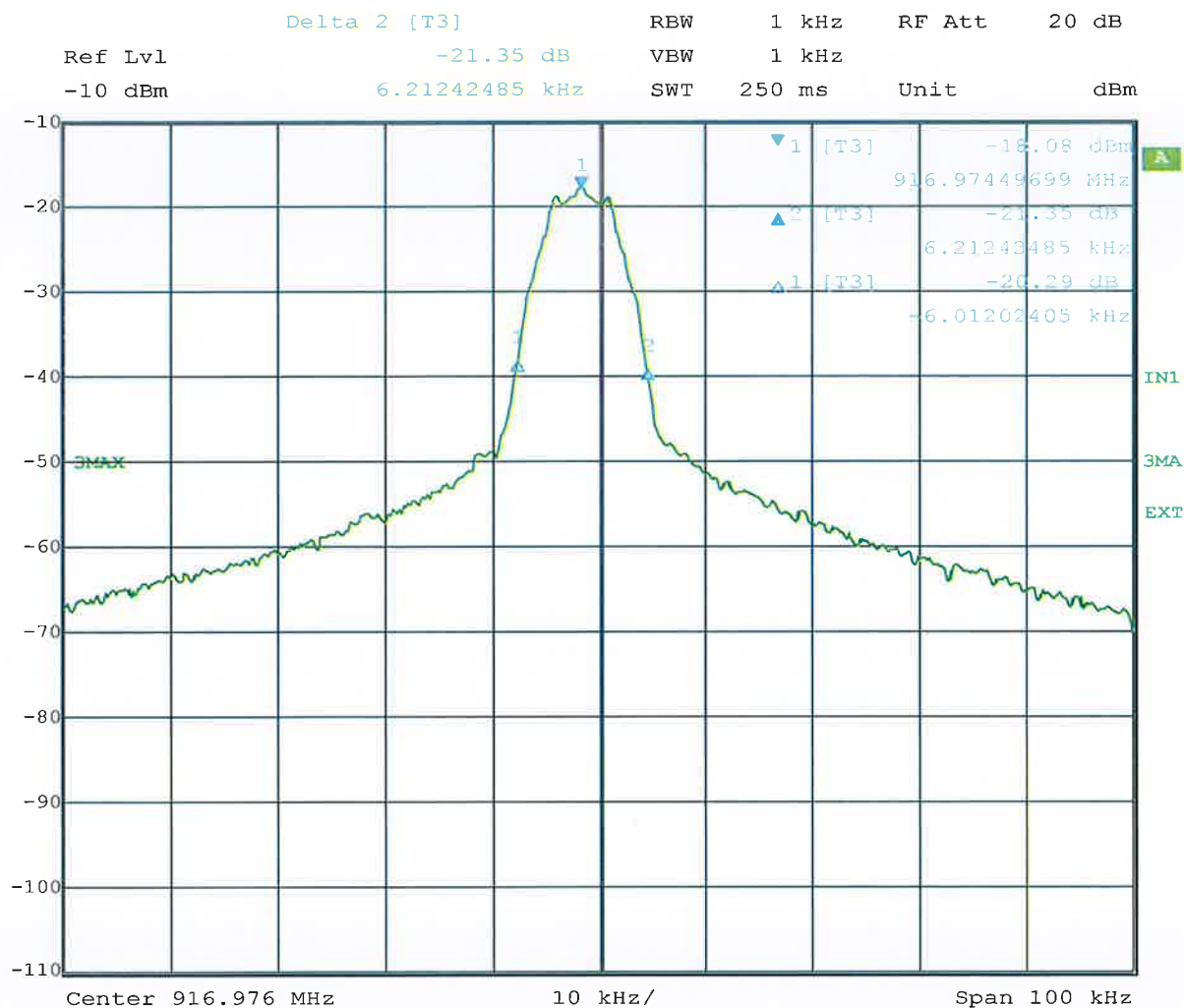
Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-207; NT-216

20dB Bandwidth

§ 15.247 (a) (1)
5.1 (a) (c)

Radiated Measurement

Rated output power: 407 mW 916,976 MHz



Date: 21.AUG.2017 10:40:45

20dB Bandwidth: 12,22 kHz

LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(a) (c)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Frequency hopping systems in the 902-928 MHz band shall use at least 50 channels if the 20 dB Bandwidth is less than 250 kHz.

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-207; NT-216

Maximum Peak RF Power Output (EIRP)

**§ 15.247(b)(2)
5.4(a)**

Radiated Measurement

Rated output power: 407 mW

Test conditions		Transmitter power (mW)		
		915,000 MHz	915,988 MHz	916,976 MHz
T _{nom} (28)°C	V _{nom} (6) V	339	339	407
Maximum deviation from rated output power under normal test conditions (dB)				
Measurement uncertainty		± 3 dB		

LIMIT

SUBCLAUSE 15.247(b)(2) – 5.4(a)

Under normal test conditons	1W conducted (4W eirp)
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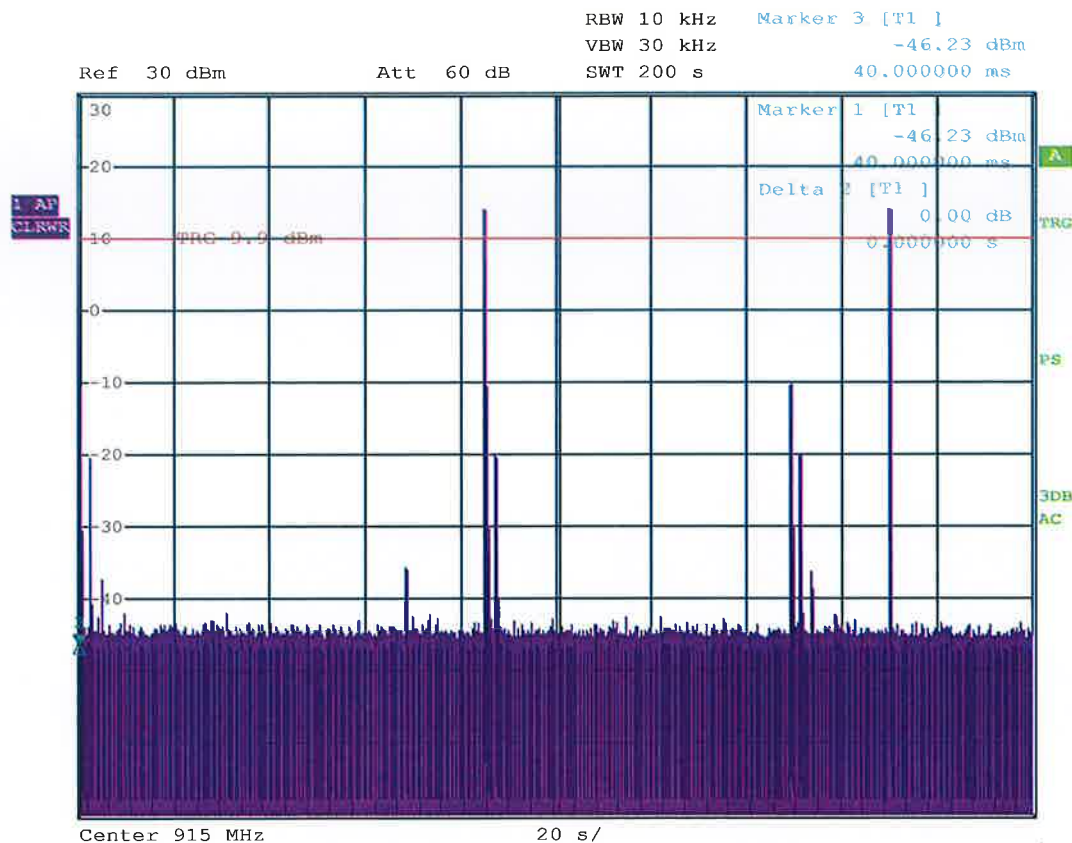
Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-207; NT-216

Average Time of Occupancy

**§ 15.247(a)(1)(i)
5.1(c)**

Radiated Measurement

Rated output power: 407 mW 915,000 MHz



Date: 21.AUG.2017 12:07:47

According to the protocol description the channel occupancy time in one transmit sequence is equal to 0,4 seconds. No more than 1 transmit sequence in any 20 seconds period was observed.

LIMIT SUBCLAUSE 15.247(a)(1)(i) – 5.1(c)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 20 seconds if at least 50 hopping channels are employed.

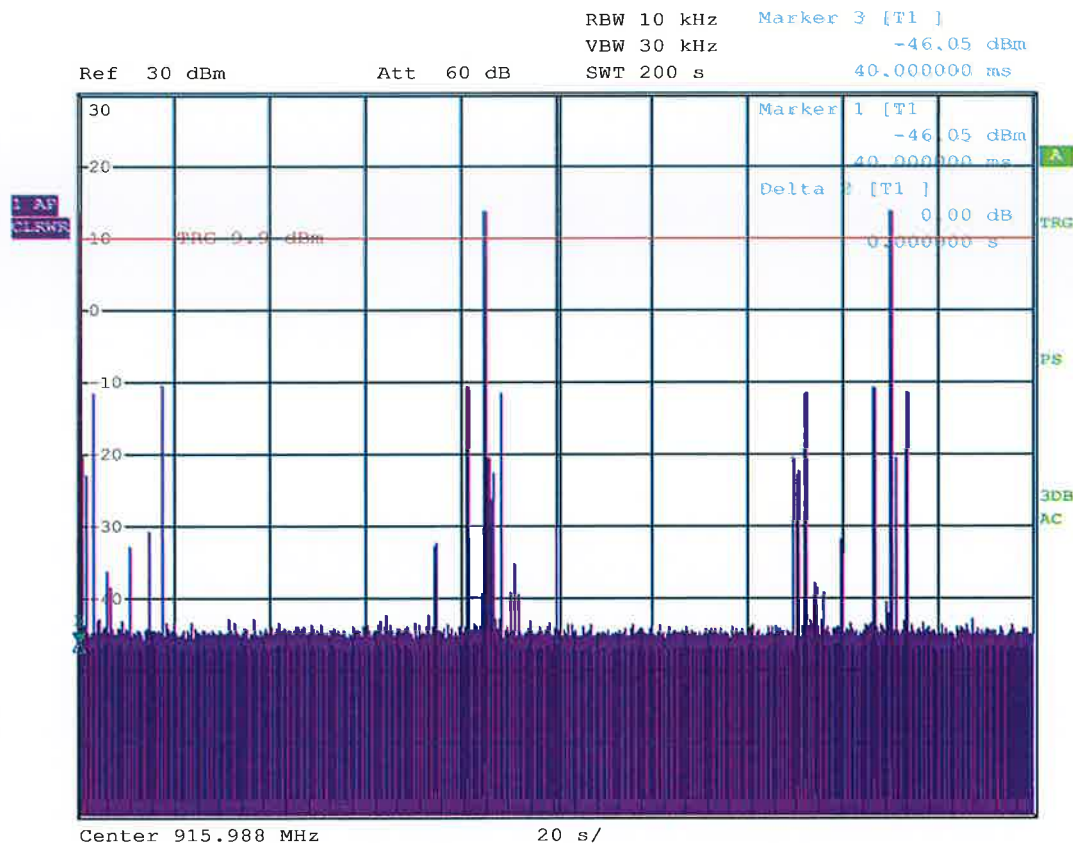
Test Equipment used: NT-203/1

Average Time of Occupancy

**§ 15.247(a)(1)(i)
5.1(c)**

Radiated Measurement

Rated output power: 407 mW 915,988 MHz



Date: 21.AUG.2017 12:16:14

According to the protocol description the channel occupancy time in one transmit sequence is equal to 0,4 seconds. No more than 1 transmit sequence in any 20 seconds period was observed.

LIMIT SUBCLAUSE 15.247(a)(1)(i) – 5.1(c)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 20 seconds if at least 50 hopping channels are employed.

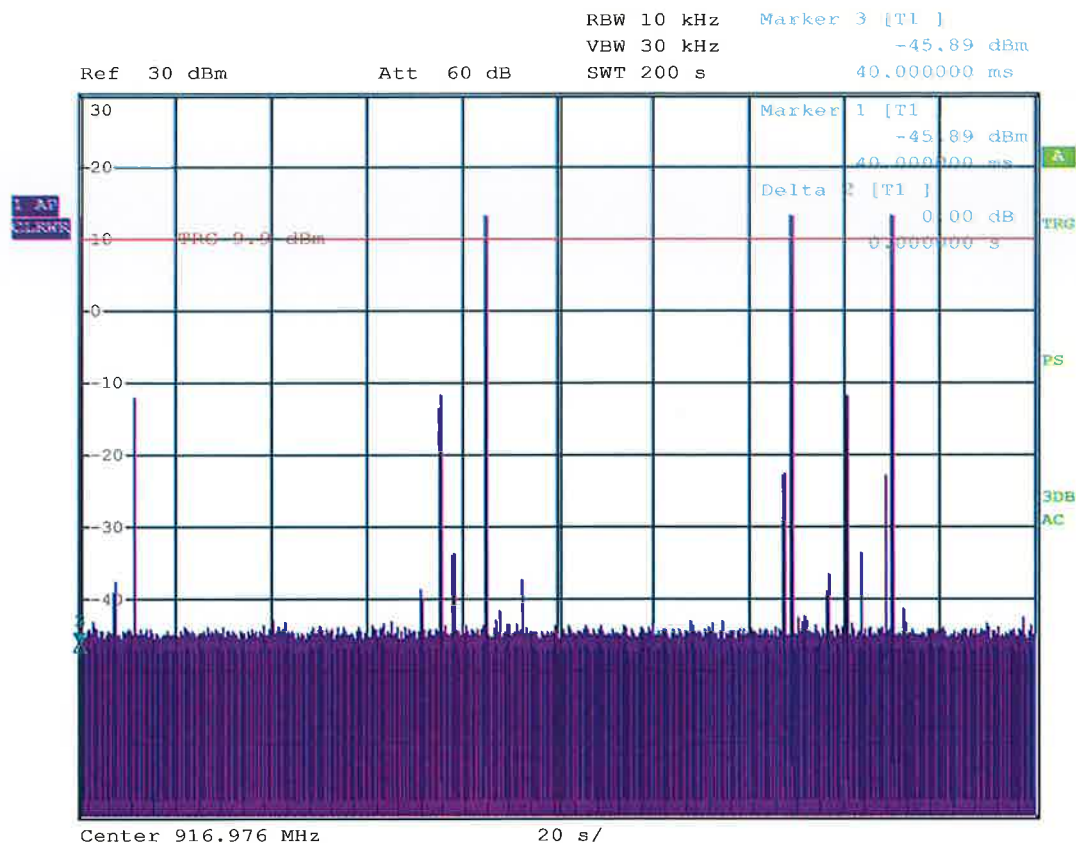
Test Equipment used: NT-203/1

Average Time of Occupancy

**§ 15.247(a)(1)(i)
5.1(c)**

Radiated Measurement

Rated output power: 407 mW 916,976MHz



Date: 21.AUG.2017 12:25:03

According to the protocol description the channel occupancy time in one transmit sequence is equal to 0,4 seconds. No more than 1 transmit sequence in any 20 seconds period was observed.

LIMIT SUBCLAUSE 15.247(a)(1)(i) – 5.1(c)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 20 seconds if at least 50 hopping channels are employed.

Test Equipment used: NT-203/1

Out-of-band Emission

**§ 15.247(d)
5.5**

The 15.209 (RSS-Gen) Limit was checked during radiated emissions testing, see following pages

LIMIT

SUBCLAUSE 15.247(d) – 5.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.	At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
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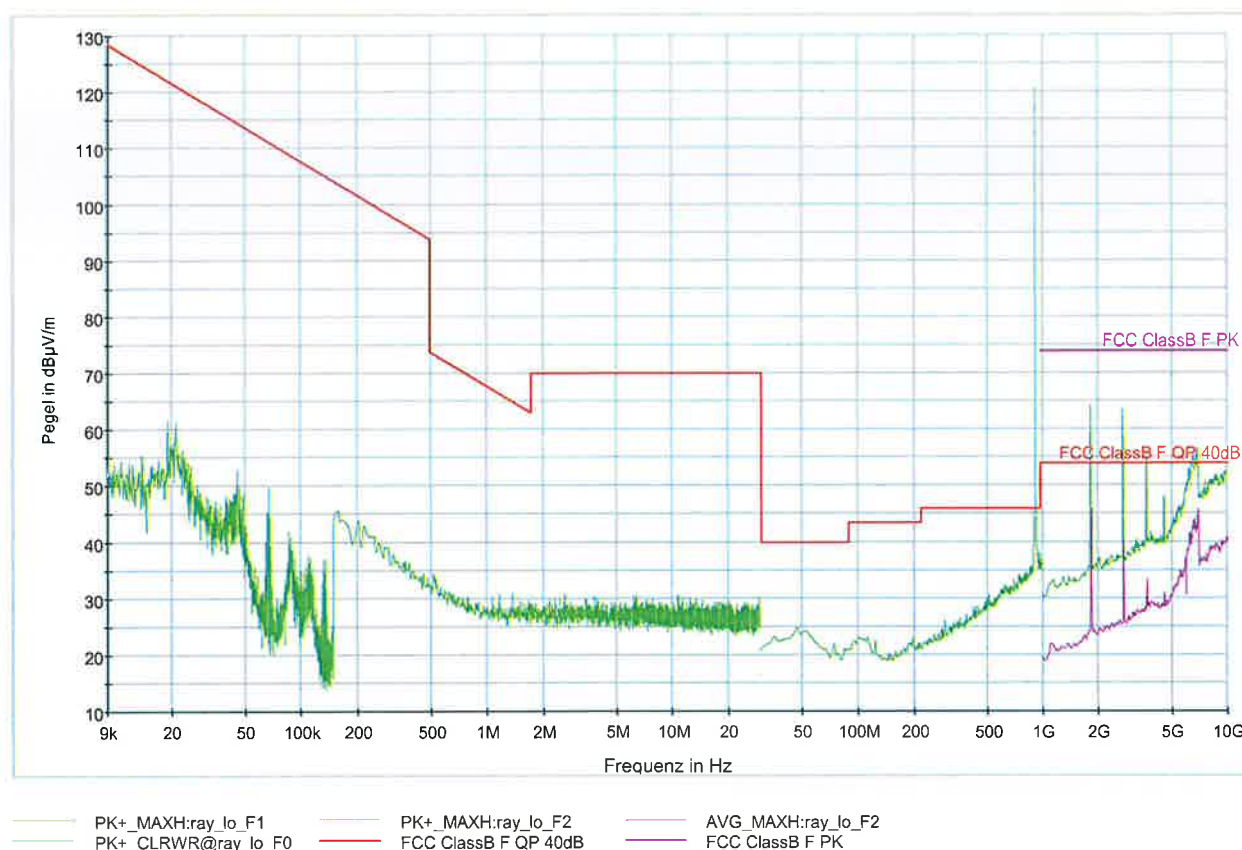
Test Equipment used: N/A

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement radiated with Peak-Detector (green line) and Average detector (magenta line):

Radiated measurement - 915,000 MHz



Worst case emission: 53,8 dBµV/m @ 1830,000 MHz

Remark: An averaging factor of -10,2 dB was taken into account at the harmonics. According to the protocol description the worst case transmit time in any 100ms period would be 35,83ms (device transmitting a SYNC packet in the second pretime-slot followed by the first payload packet).

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

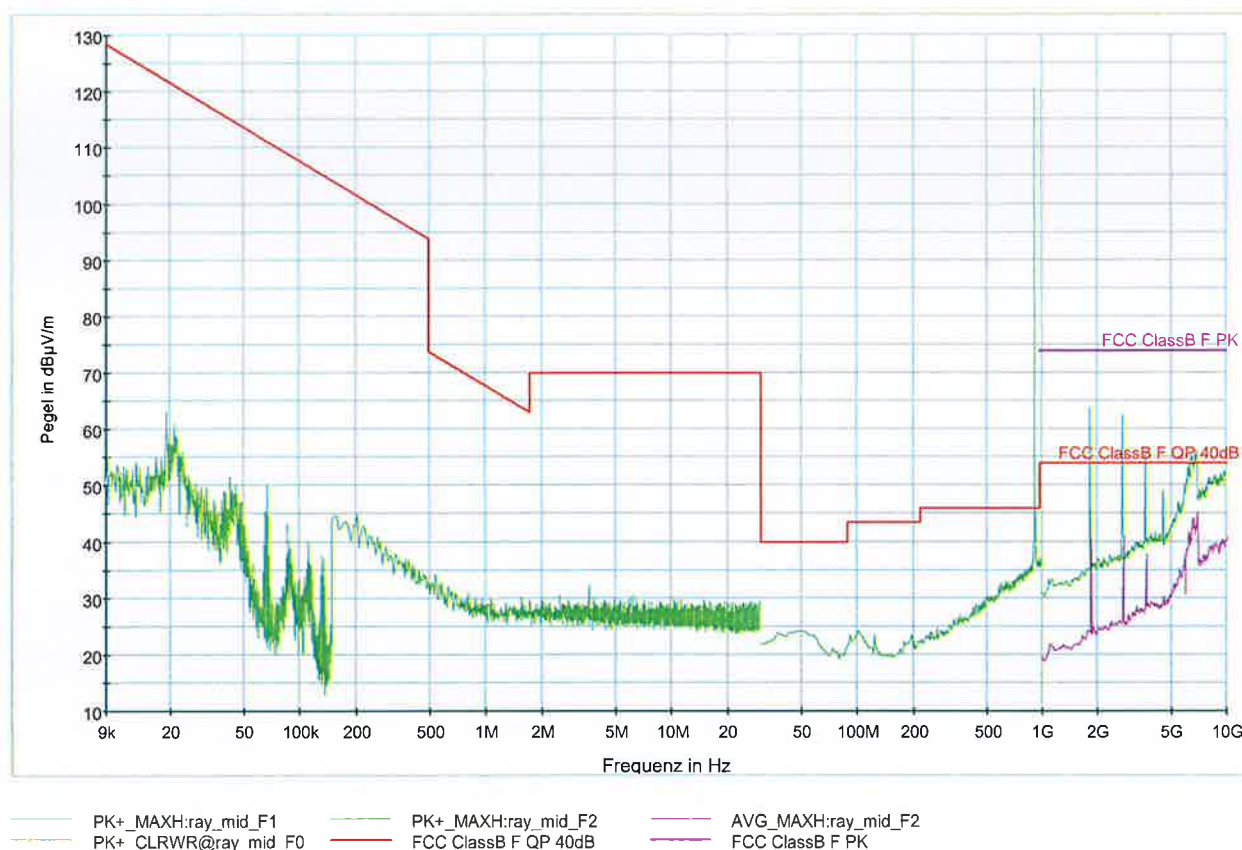
Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-122; NT-126; NT-131/1; NT-207; NT-216; NT-337; NT-414

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement radiated with Peak-Detector (green line) and Average detector (magenta line):

Radiated measurement - 915,988 MHz



Worst case emission: 53,6 dBµV/m @ 1831,976 MHz

Remark: An averaging factor of -10,2 dB was taken into account at the harmonics. According to the protocol description the worst case transmit time in any 100ms period would be 35,83ms (device transmitting a SYNC packet in the second pretime-slot followed by the first payload packet).

LIMIT **SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

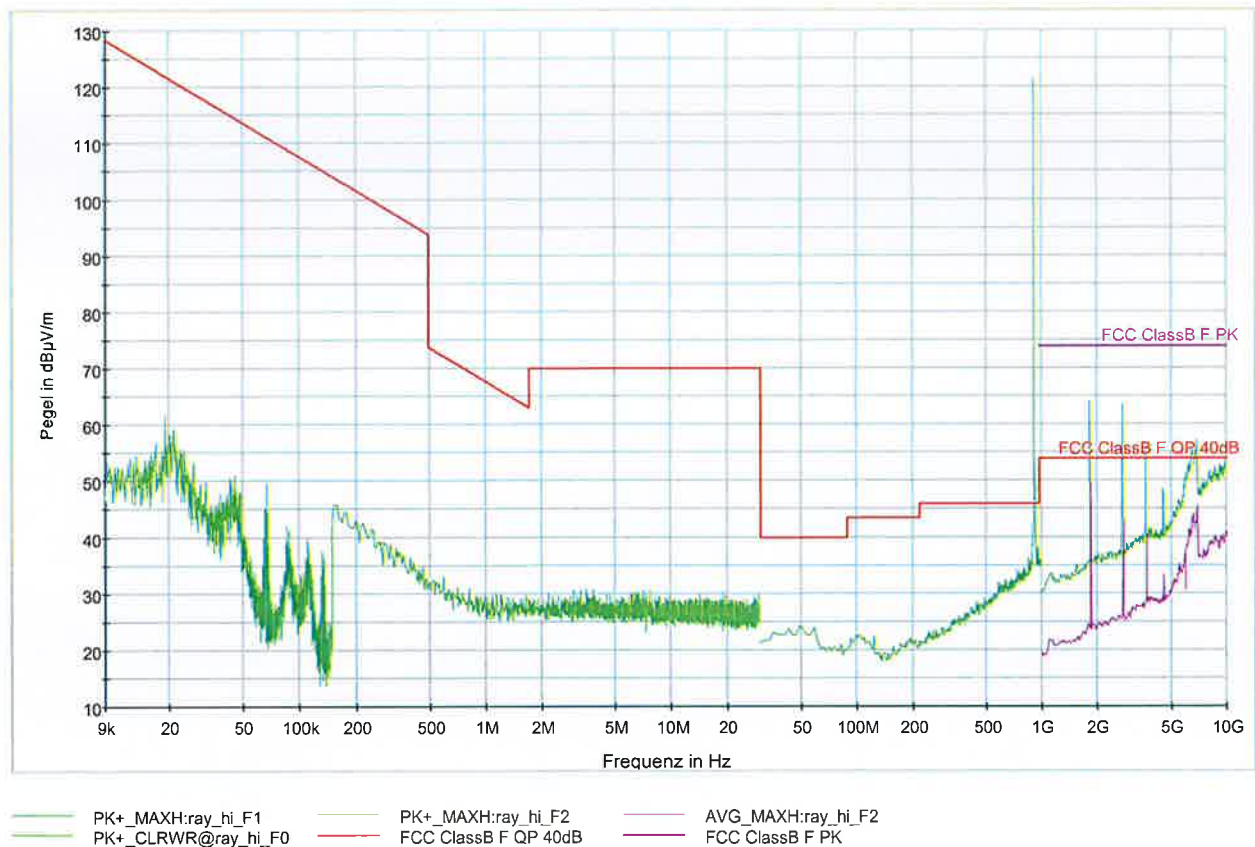
Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-122; NT-126; NT-131/1; NT-207; NT-216; NT-337; NT-414

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement radiated with Peak-Detector (green line) and Average detector (magenta line):

Radiated measurement - 916,976 MHz



Worst case emission: 53,8 dBµV/m @ 1833,952 MHz

Remark: An averaging factor of -10,2 dB was taken into account at the harmonics. According to the protocol description the worst case transmit time in any 100ms period would be 35,83ms (device transmitting a SYNC packet in the second pretime-slot followed by the first payload packet).

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-122; NT-126; NT-131/1; NT-207; NT-216; NT-337; NT-414

Conducted Limits

**§ 15.207
RSS-Gen 8.8**

As no external power connector is available, no measurement of conducted limits was performed.

LIMIT SUBCLAUSE 15.207(a) – RSS-Gen 8.8

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

Test Equipment used: N/A

Maximum permissible Exposure

§ 15.247(i)

This kind of radio equipment is categorically excluded from routine environmental evaluation.

Appendix 1

Test equipment used

<input type="checkbox"/> Anechoic Chamber with 3m measurement distance	NT-100	<input type="checkbox"/> Spectrumanalyzer – FSP7 9 kHz – 7 GHz	NT-200
<input type="checkbox"/> Stripline according to ISO 11452-5	NT-108	<input type="checkbox"/> ESCI - Test receiver 9 kHz - 7 GHz	NT-203/1
<input type="checkbox"/> MA4000 - Antenna mast 1 - 4 m height	NT-110/1	<input type="checkbox"/> ESI26 – Test receiver 20 Hz – 26,5 GHz	NT-207
<input type="checkbox"/> DS - Turntable 0 - 400 ° Azimuth	NT-111/1	<input type="checkbox"/> Digital Radio Tester CTS55	NT-208
<input type="checkbox"/> CO3000 Controller Mast+Turntable	NT-112/1	<input type="checkbox"/> Noise-gen., ITU-R 559-2 20 Hz – 20 kHz	NT-209
<input type="checkbox"/> HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz	NT-121	<input type="checkbox"/> CMTA - Radiocommunication analyzer ; 0,1 - 1000 MHz	NT-210
<input type="checkbox"/> HFH-Z2 - Loop Antenna 9 kHz - 30 MHz	NT-122	<input type="checkbox"/> 3271 - Spectrum analyzer 100 Hz - 26,5 GHz	NT-211
<input type="checkbox"/> HFH-Z6 - Rod Antenna 9 kHz - 30 MHz	NT-123	<input type="checkbox"/> Digital Radio Tester Aeroflex 3920	NT-212/1
<input type="checkbox"/> 3121C - Dipole Antenna 28 - 1000 MHz	NT-124	<input type="checkbox"/> Mixer M28HW 26,5 GHz - 40 GHz	NT-214
<input type="checkbox"/> 3115 - Horn Antenna 1 - 18 GHz (immunity)	NT-125	<input type="checkbox"/> RubiSource T&M Timing reference	NT-216
<input type="checkbox"/> 3116 - Horn Antenna 18 - 40 GHz	NT-126	<input type="checkbox"/> Radiocommunicationanalyzer SWR 1180 MD	NT-217
<input type="checkbox"/> SAS-200/543 - Bicon. Antenna 20 MHz - 300 MHz	NT-127	<input type="checkbox"/> Mixer M19HWD 40 GHz – 60 GHz	NT-218
<input type="checkbox"/> AT-1080 - Log. Per. Antenna 80 - 1000 MHz	NT-128	<input type="checkbox"/> Mixer M12HWD 60 GHz – 90 GHz	NT-219
<input type="checkbox"/> HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-129	<input type="checkbox"/> DSO9104 Digital scope	NT-220/1
<input type="checkbox"/> HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-130	<input type="checkbox"/> TPS 2014 Digital scope	NT-222
<input type="checkbox"/> 3146 - Log. Per. Antenna 200 – 1000 MHz	NT-131	<input type="checkbox"/> Artificial Ear according to IEC 60318	NT-224
<input type="checkbox"/> VULB 9163 Trilog Antenna 30 – 3000 MHz	NT-131/1	<input type="checkbox"/> 1 kHz Sound calibrator	NT-225
<input type="checkbox"/> Loop Antenna H-Field	NT-132	<input type="checkbox"/> B10 - Harmonics and flicker analyzer	NT-232
<input type="checkbox"/> Horn Antenna 500 MHz - 2900 MHz	NT-133	<input type="checkbox"/> SRM-3000 Spectrumanalyzer	NT-233
<input type="checkbox"/> Horn Antenna 500 MHz - 6000 MHz	NT-133/1	<input type="checkbox"/> SRM-3006 Spectrumanalyzer	NT-233/1a
<input type="checkbox"/> Log. per. Antenna 800 MHz - 2500 MHz	NT-134	<input type="checkbox"/> E-field probe SRM 75 MHz – 3 GHz	NT-234
<input type="checkbox"/> Log. per. Antenna 800 MHz - 2500 MHz	NT-135	<input type="checkbox"/> Field Meter NBM-500 incl. E- and H-Field probes	NT-240a-d
<input type="checkbox"/> BiConiLog Antenna 26 MHz – 2000 MHz	NT-137	<input type="checkbox"/> Hall-Teslameter ETM-1	NT-241
<input type="checkbox"/> Conical Dipol Antenna PCD8250	NT-138	<input type="checkbox"/> EFA-3 H-field- / E-field probe	NT-243
<input type="checkbox"/> HF 906 - Horn Antenna 1 - 18 GHz (emission)	NT-139	<input type="checkbox"/> EHP-50F H-field- / E-field probe	NT-243/1
<input type="checkbox"/> HZ-1 Antenna tripod	NT-150	<input type="checkbox"/> Field Meter EMR-200 100 kHz – 3 GHz	NT-244
<input type="checkbox"/> BN 1500 Antenna tripod	NT-151	<input type="checkbox"/> E-field probe 100 kHz – 3 GHz	NT-245
<input type="checkbox"/> Ant. tripod for EN61000-4-3 Model TP1000A	NT-156	<input type="checkbox"/> H-field probe 300 kHz – 30 MHz	NT-246
<input type="checkbox"/> Power quality analyzer Fluke 1760 (complete set)	NT-160 - NT-173		

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Industry & Energy

Department: FG

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Appendix 1 (continued)

Test equipment used

<input type="checkbox"/> E-field probe 3 MHz – 18 GHz	NT-247	<input type="checkbox"/> Oscillatory Wave Simulator incl. Coupling networks	NT-328a+b+c
<input type="checkbox"/> H-field probe 27 MHz – 1 GHz	NT-248	<input type="checkbox"/> BTA-250 - RF-Amplifier 9 kHz - 220 MHz / 250 W	NT-330
<input type="checkbox"/> ELT-400 1 Hz – 400 kHz	NT-249	<input type="checkbox"/> T82-50 RF-Amplifier 2 GHz – 8 GHz	NT-331
<input type="checkbox"/> MDS 21 - Absorbing clamp 30 - 1000 MHz	NT-250	<input type="checkbox"/> 500W1000M7 - RF-Amplifier 80 - 1000 MHz / 500 W	NT-332
<input type="checkbox"/> FCC-203I EM Injection clamp	NT-251	<input type="checkbox"/> AS0102-65R - RF-Amplifier 1 GHz - 2 GHz	NT-333
<input type="checkbox"/> FCC-203I-DCN Ferrite decoupling network	NT-252	<input type="checkbox"/> APA01 – RF-Amplifier 0,5 GHz – 2,5 GHz	NT-334
<input type="checkbox"/> PR50 Current Probe	NT-253	<input type="checkbox"/> Preamplifier 1 GHz - 4 GHz	NT-335
<input type="checkbox"/> i310s Current Probe	NT-254/1	<input type="checkbox"/> Preamplifier for GPS MKU 152 A	NT-336
<input type="checkbox"/> Fluke 87 V True RMS Multimeter	NT-260	<input type="checkbox"/> Preamplifier 100 MHz – 23 GHz	NT-337
<input type="checkbox"/> Model 2000 Digital Multimeter	NT-261	<input type="checkbox"/> DC Block 10 MHz – 18 GHz Model 8048	NT-338
<input type="checkbox"/> Fluke 87 V Digital Multimeter	NT-262/1	<input type="checkbox"/> 2-97201 Electronic load	NT-341
<input type="checkbox"/> ESH2-Z5-U1 Artificial mains network 4x25A	NT-300	<input type="checkbox"/> TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-344
<input type="checkbox"/> ESH3-Z5-U1 Artificial mains network 2x10A	NT-301	<input type="checkbox"/> TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-345
<input type="checkbox"/> ESH3-Z6-U1 Artificial mains network 1x100A	NT-302	<input type="checkbox"/> VDS 200 Mobil-impuls-generator	NT-350
<input type="checkbox"/> ESH3-Z6-U1 Artificial mains network 1x100A	NT-302a	<input type="checkbox"/> LD 200 Mobil-impuls-generator	NT-351
<input type="checkbox"/> PHE 4500/B Power amplifier	NT-304	<input type="checkbox"/> MPG 200 Mobil-Impuls-Generators	NT-352
<input type="checkbox"/> EZ10 T-Artificial Network	NT-305	<input type="checkbox"/> EFT 200 Mobil-impuls-generator	NT-353
<input type="checkbox"/> SMG - Signal generator 0,1 - 1000 MHz	NT-310	<input type="checkbox"/> AN 200 S1 Artificial Network	NT-354
<input type="checkbox"/> SMA100A - Signal generator 9 kHz - 6 GHz	NT-310/1	<input type="checkbox"/> FP-EFT 32M 3 ph. Coupling filter (Burst)	NT-400/1
<input type="checkbox"/> RefRad Reference generator	NT-312	<input type="checkbox"/> PHE 4500 - Mains impedance network	NT-401
<input type="checkbox"/> SMP 02 Signal generator 10 MHz - 20 GHz	NT-313	<input type="checkbox"/> IP 6.2 Coupling filter for data lines (Surge)	NT-403
<input type="checkbox"/> 40 MHz Arbitrary Generator TGA1241	NT-315	<input type="checkbox"/> TK 9421 High Power Volt. Probe 150 kHz - 30 MHz	NT-409
<input type="checkbox"/> Artificial mains network NSLK 8127-PLC	NT-316	<input type="checkbox"/> ESH2-Z3 - Probe 9 kHz - 30 MHz	NT-410
<input type="checkbox"/> PEFT - Burst generator up to 4 kV	NT-320	<input type="checkbox"/> IP 4 - Capacitive clamp (Burst)	NT-411
<input type="checkbox"/> ESD 30 System up to 25 kV	NT-321	<input type="checkbox"/> Highpass-Filter 100 MHz – 3 GHz	NT-412
<input type="checkbox"/> PSURGE 4.1 Surge generator	NT-324	<input type="checkbox"/> Highpass-Filter 600 MHz – 4 GHz	NT-413
<input type="checkbox"/> IMU4000 Immunity test system	NT-325/1	<input type="checkbox"/> Highpass-Filter 1250 MHz – 4 GHz	NT-414
<input type="checkbox"/> VCS 500-M6 Surge-Generator	NT-326	<input type="checkbox"/> Highpass-Filter 1800 MHz – 16 GHz	NT-415

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Industry & Energy

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Appendix 1 (continued)

Test equipment used

<input type="checkbox"/> Highpass-Filter 3500 MHz – 18 GHz	NT-416	<input type="checkbox"/> FCC-801-S25 Coupling decoupling network	NT-462
<input type="checkbox"/> RF-Attenuator 10 dB DC – 18 GHz / 50 W	NT-417	<input type="checkbox"/> FCC-801-T4 Coupling decoupling network	NT-463
<input type="checkbox"/> RF-Attenuator 6 dB DC – 18 GHz / 50 W	NT-418	<input type="checkbox"/> FCC-801-C1 Coupling decoupling network	NT-464
<input type="checkbox"/> RF-Attenuator 3 dB DC – 18 GHz / 50 W	NT-419	<input type="checkbox"/> SW 9605 - Current probe 150 kHz – 30 MHz	NT-465/1
<input type="checkbox"/> RF-Attenuator 20 dB DC - 1000 MHz / 25 W	NT-421	<input type="checkbox"/> 95242-1 – Current probe 1 MHz – 400 MHz	NT-468
<input type="checkbox"/> RF-Attenuator 30 dB DC - 1000 MHz / 1 W	NT-423	<input type="checkbox"/> 94106-1L-1 – Current probe 100 kHz – 450 MHz	NT-471
<input type="checkbox"/> RF-Attenuator 30 dB	NT-424	<input type="checkbox"/> GA 1240 Power amplifier according to EN 61000-4-16	NT-480
<input type="checkbox"/> RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-425	<input type="checkbox"/> Coupling networks according to EN 61000-4-16	NT-481 - NT-483
<input type="checkbox"/> RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-426	<input type="checkbox"/> Van der Hoofden Test Head	NT-484
<input type="checkbox"/> RF-Attenuator 6 dB	NT-428	<input type="checkbox"/> PC P4 3 GHz Test computer	NT-500
<input type="checkbox"/> RF-Attenuator 0 dB - 81 dB	NT-429	<input type="checkbox"/> PC P4 1700 MHz Notebook	NT-505
<input type="checkbox"/> WRU 27 - Band blocking 27 MHz	NT-430	<input type="checkbox"/> Monitoring camera with Monitor	NT-511
<input type="checkbox"/> WHJ450C9 AA - High pass 450 MHz	NT-431	<input type="checkbox"/> ES-K1 Version 1.71 SP2 Test software	NT-520
<input type="checkbox"/> WHJ250C9 AA - High pass 250 MHz	NT-432	<input type="checkbox"/> EMC32 Version 10.28.00 Test software	NT-520/1
<input type="checkbox"/> RF-Load 150 W	NT-433	<input type="checkbox"/> SRM-TS Version 1.3 software for SRM-3000	NT-522
<input type="checkbox"/> Impedance transducer 1:4 ; 1:9 ; 1:16	NT-435	<input type="checkbox"/> SRM-TS Version 1.3.1 software for SRM-3006	NT-522/1
<input type="checkbox"/> RF-Attenuator DC – 18 GHz 6 dB	NT-436	<input type="checkbox"/> Spitzenberger und Spies Test software V4.1	NT-525
<input type="checkbox"/> RF-Attenuator DC – 18 GHz 6 dB	NT-437	<input type="checkbox"/> Noise power test apparatus according to EN 55014	NT-530
<input type="checkbox"/> RF-Attenuator DC – 18 GHz 10 dB	NT-438	<input type="checkbox"/> Vertical coupling plane (ESD)	NT-531
<input type="checkbox"/> RF-Attenuator DC – 18 GHz 20 dB	NT-439	<input type="checkbox"/> Test cable #4 for EN 61000-4-6	NT-553
<input type="checkbox"/> I+P 7780 Directional coupler 100 - 2000 MHz	NT-440	<input type="checkbox"/> Test cable #3 for conducted emission	NT-554
<input type="checkbox"/> ESH3-Z2 - Pulse limiter 9 kHz - 30 MHz	NT-441	<input type="checkbox"/> Test cable #5+#6 ESD-cable (2x470k)	NT-555 + NT-556
<input type="checkbox"/> Power Divider 6 dB/1 W/50 Ohm	NT-443	<input type="checkbox"/> Test cable #8 Sucoflex 104EA	NT-559
<input type="checkbox"/> Directional coupler 0,1 MHz – 70 MHz	NT-444	<input type="checkbox"/> Test cable #9 (for outdoor measurements)	NT-580
<input type="checkbox"/> Directional coupler 0,1 MHz – 70 MHz	NT-445	<input type="checkbox"/> Test cable #10 (for outdoor measurements)	NT-581
<input type="checkbox"/> Tube imitations according to EN 55015	NT-450	<input type="checkbox"/> Test cable #13 Sucoflex 104PE	NT-584
<input type="checkbox"/> FCC-801-M3-16A Coupling decoupling network	NT-458	<input type="checkbox"/> Test cable #21 for SRM-3000	NT-592
<input type="checkbox"/> FCC-801-M2-50A Coupling decoupling network	NT-459	<input type="checkbox"/> Shield chamber	NT-600
<input type="checkbox"/> FCC-801-M5-25 Coupling decoupling network	NT-460	<input type="checkbox"/> Climatic chamber	M-1200
<input type="checkbox"/> FCC-801-AF10 Coupling decoupling network	NT-461		


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Appendix 1 (continued)

Test equipment used

<input type="checkbox"/>	Anechoic Chamber 3 m / 5 m measuring distance	EMV-100	<input type="checkbox"/>	Log.per Antenna 0,7 – 9 GHz STLP9149	EMV-305
<input type="checkbox"/>	Turntabel 6 m diameter	EMV-101	<input type="checkbox"/>	HF- Amplifier 9 kHz-250 MHz BBA150 (low noise)	EMV-306
<input type="checkbox"/>	Antenna mast 1 – 4 m	EMV-102	<input type="checkbox"/>	Load Dump Generator LD 200N	EMV-350
<input type="checkbox"/>	Mast and Turntable controller FC-06	EMV-103	<input type="checkbox"/>	Ultra Compact Symulator UCS 200N100	EMV-351
<input type="checkbox"/>	EMC Video/Audiosystem	EMV-104	<input type="checkbox"/>	Automotive Power fail module PFM 200N100.1	EMV-352
<input type="checkbox"/>	EMC Software EMC32 Version 10.28.00	EMV-105	<input type="checkbox"/>	Voltage Drop Symulator VDS 200Q100	EMV-353
<input type="checkbox"/>	Hornantenna 1 – 18 GHz HF 907	EMV-110	<input type="checkbox"/>	Arb. Generator AutoWave	EMV-354
<input type="checkbox"/>	Antennapre.amp. 1 – 18 GHz ERZ-LNA0200-1800-30-2	EMV-111	<input type="checkbox"/>	Ultra Compact Symulator UCS 500N7	EMV-355
<input type="checkbox"/>	Trilog Antenna 30-3000 MHz VULB9163	EMV-112	<input type="checkbox"/>	Coupling decoupling network CNI 503B7 / 32 A	EMV-356
<input type="checkbox"/>	Monopol 9 kHz – 30 MHz VAMP 9243	EMV-113	<input type="checkbox"/>	Coupling decoupling network CNI 503B7 / 63 A	EMV-357
<input type="checkbox"/>	Antennapre.amp 18 – 40 GHz BBV 9721	EMV-114	<input type="checkbox"/>	Telecom Surge Generator TSurge 7	EMV-358
<input type="checkbox"/>	DC Artificial Network PVDC 8300	EMV-150	<input type="checkbox"/>	Coupling decoupling network CNI 508N2	EMV-359
<input type="checkbox"/>	AC Artificial Network NNLK 8121 RC	EMV-151	<input type="checkbox"/>	Coupling decoupling network CNV 504N2.2	EMV-360
<input type="checkbox"/>	EMI Receiver ESR26	EMV-200	<input type="checkbox"/>	Immunity generator NSG4060/NSG4060-1	EMV-361
<input type="checkbox"/>	Signalgenerator 9 kHz – 40 GHz N5173B	EMV-201	<input type="checkbox"/>	Coupling network CDND M316-2	EMV-362
<input type="checkbox"/>	GPS Frequency normal B-88	EMV-202	<input type="checkbox"/>	Coupling network CT419-5	EMV-363
<input type="checkbox"/>	DC Power supply N5745A	EMV-203	<input type="checkbox"/>	ESD Generator NSG 437	EMV-364
<input type="checkbox"/>	Spektrum Analyzator FSV40	EMV-205	<input type="checkbox"/>	Pulse Limiter VTSD 9561-F BNC	EMV-405
<input type="checkbox"/>	Thd Multimeter Model 2015	EMV-206	<input type="checkbox"/>	Transient emission BSM200N40+BS200N100	EMV-450+451
<input type="checkbox"/>	Poweramplifier PAS15000	EMV-207/abc	<input type="checkbox"/>	Cap. Coupling Clamp HFK	EMV-455
<input type="checkbox"/>	Inrush Current Source	EMV-208/abc	<input type="checkbox"/>	Mag. Field System MS100N+MC26100+MC2630	EMV-456-458
<input type="checkbox"/>	Arb.-generator Sycore	EMV-209	<input type="checkbox"/>	Coupling network CDN M2-100A	EMV-459
<input type="checkbox"/>	Harmonics/Flicker analyzer ARS 16/3	EMV-210	<input type="checkbox"/>	Coupling network CDN M3-32A	EMV-460
<input type="checkbox"/>	HF- Amplifier 9 kHz-250 MHz BBA150	EMV-300	<input type="checkbox"/>	Coupling network CDN M5-100A	EMV-461
<input type="checkbox"/>	HF- Amplifier 80 -1000 MHz BBA150	EMV-301	<input type="checkbox"/>	Current Clamp CIP 9136A	EMV-462
<input type="checkbox"/>	HF- Amplifier 0,8 - 6 GHz BBA150	EMV-302	<input type="checkbox"/>	DC Artificial Network HV-AN 150	EMV-464+465
<input type="checkbox"/>	High Power Ant. 20-200 MHz VHBD 9134	EMV-303	<input type="checkbox"/>	Coupling Clamp EM 101	EMV-466
<input type="checkbox"/>	Log.per Antenna 80-2700 MHz STLP 9128 E special	EMV-304	<input type="checkbox"/>	Decoupling Clamp FTC 101	EMV-467
			<input type="checkbox"/>	Power attenuator 10 dB / 250 Watt	EMV-469/2

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Appendix 2 Photodocumentation

Description: Front view


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Appendix 2 Photodocumentation


Description: Backside view

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Appendix 2 Photodocumentation

Description: case opened view #1

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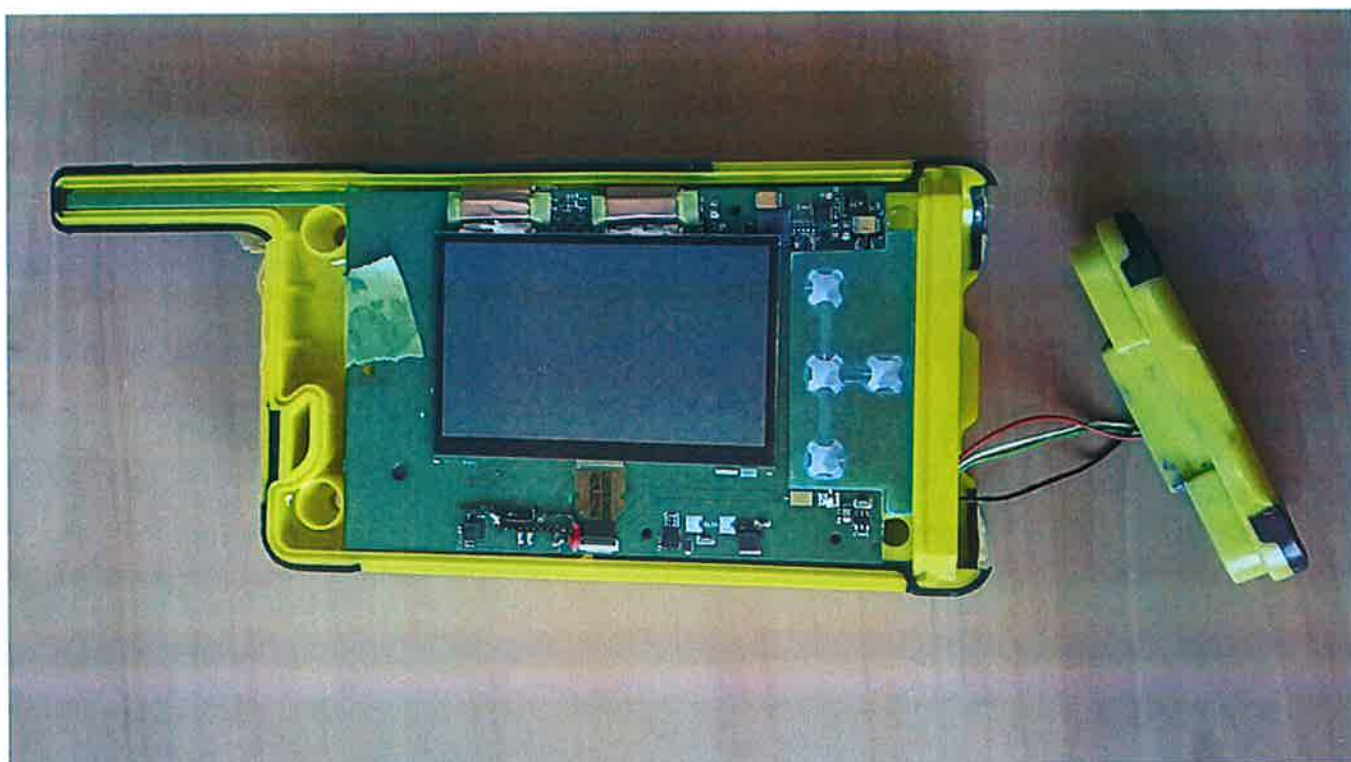
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Appendix 2 Photodocumentation

Description: Case opened view #2


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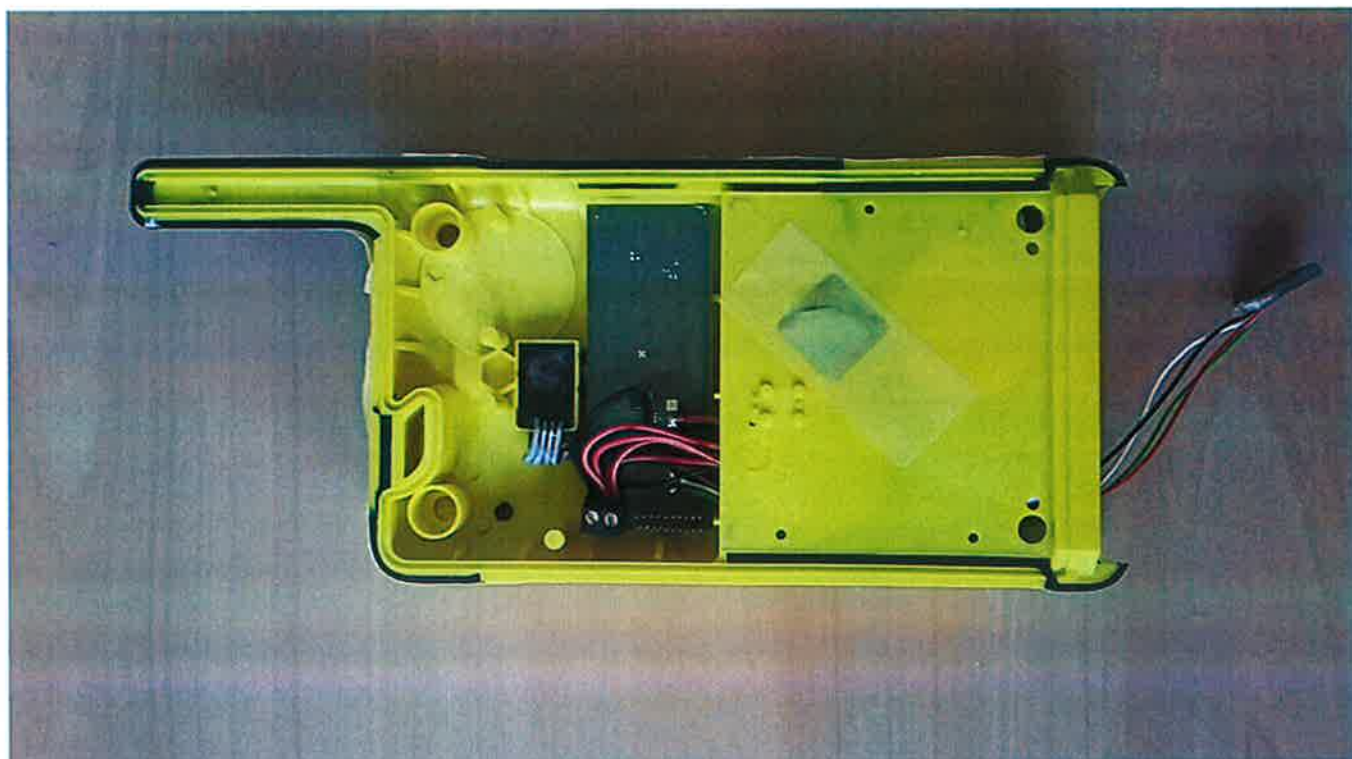
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Appendix 2

Photodocumentation

Description: PCBs with Shielding detached

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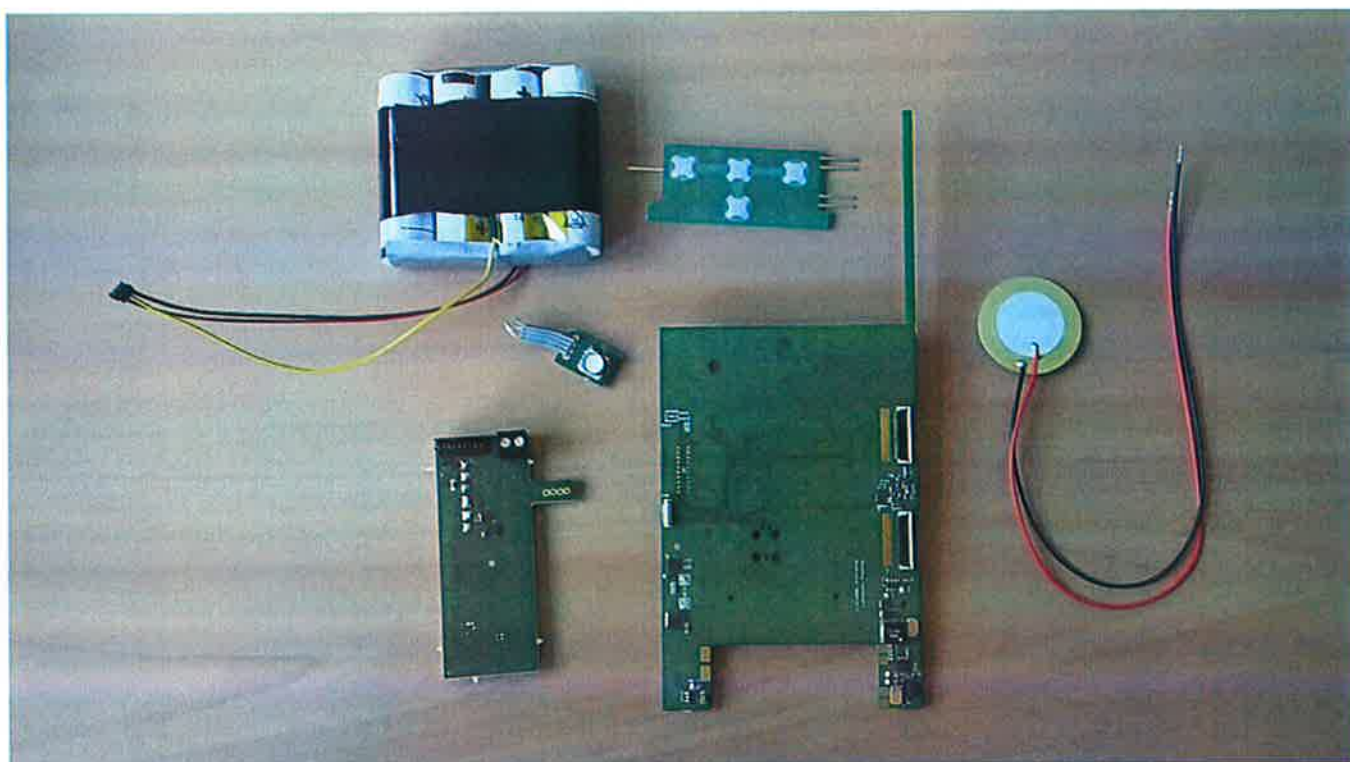
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Appendix 2 Photodocumentation

Description: Test setup below 30 MHz

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Appendix 2 Photodocumentation

Description: Test setup above 1 GHz

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