

TEST REPORT

of the accredited test laboratory

TÜV Nr.:INE-AT/FG-21/135

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Technik

TÜV®

Applicant: Harman Professional, Inc.
8500 Balboa Blvd.
Northridge, CA91329,USA

Tested Product: Wireless microphone pocket transmitter

Product Name: PT 40 MINI PRO US25D

FCC-ID: V3TPT4025D

IC: 6132A-PT4025D

Manufacturer: VTech Communications Ltd.
Xia Ling Bei Management Zone, Liaobu, Dongguan,
Guangdong Province
523411 China

Output power / field strength: 8,2 mW **power supply:** 1,5V DC
Channel separation: 350 kHz

Frequency range: 540,4 MHz

Standard: EN 300 422-1 V1.4.2; EN 300 422-1 V2.1.2;
47 CFR Part 74 (Sept. 2021 Edition);
47 CFR Part 15 (Sept. 2021 Edition);
47 CFR Part 1 (Sept. 2021 Edition);
RSS-210 Issue 10;
ANSI C63.26-2015; ANSI C63.10-2013;

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Certification Body,
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02.11.2021

Ing. Wilhelm Seier

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

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1. Applicant

Company: Harman Professional, Inc.

Department: ---

Address: 8500 Balboa Blvd.
Northridge, CA91329,USA

Contact person: Mr. Gabor Mikovics

EUT received on: 24.09.2021

Tests were performed on: 24.09. till 15.10.2021

2. Description of EUT

EUT:	Wireless microphone handheld transmitter 'PT 40 MINI PRO US25D'
Product name:	'PT 40 MINI PRO US25D'
Serial Number:	Prototype
Manufacturer:	VTech Communications Ltd. Xia Ling Bei Management Zone, Liaobu, Dongguan, Guangdong Province 523411 China
Description:	Harman Professional, Inc. provided the following configuration for the measurements: Prototype
Operating mode:	The measurements were carried out at the following running states: Transmitting
Technical data EUT:	Rated voltage: 1,5VDC Rated current: 500mA Rated frequency: DC Mains voltage during the tests: 1,5VDC via internal battery
Climatic conditions in the emc laboratory:	Relative humidity: 24% Temperature: 23°C

3. Standards / Final result

Name	Title	Deviation	Result
EN 300422-1 V2.1.2	Wireless Microphones; Audio PMSE up to 3 GHz; Part 1: Class A Receivers; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU	none	OK
EN 300422-1 V1.4.2	Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement	*)	OK
47 CFR Part 15 (Sept. 2021 Edition)	RADIO FREQUENCY DEVICES	none	OK
47 CFR Part 74 (Sept. 2021 Edition)	EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCAST AND OTHER PROGRAM DISTRIBUTIONAL SERVICES; Subpart H—Low Power Auxiliary Stations	none	OK
47 CFR Part 1 (Sept. 2021 Edition);	GENERAL	none	OK
RSS-210 Issue 10	Licence-Exempt Radio Apparatus: Category I Equipment; Annex G—Low-Power Radio Apparatus Operating in the Television Bands	none	OK
ANSI C36.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	none	OK
ANSI C36.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	none	OK
<p>Result: Opinions and interpretation of testing laboratory OK: EUT passed NOK: EUT failed</p>			

*) Only Spurious Emissions and Necessary bandwidth were measured

4. TEST RESULT

4.1. Frequency stability

**ETSI EN 300 422-1 V2.1.2
 SUBCLAUSE 8.1**

ETSI requirements

Rated output power: 8,2 mW

Operating condition		Frequency Error kHz		Frequency Error ppm	
			540,4 MHz		540,4 MHz
T _{nom} (23)°C	V _{nom} (1,5)V		-1,25		-2,32
	V _{min} (1,3)V		1,21		2,24
T _{min} (-10)°C	V _{nom} (1,5)V		1,43		2,65
	V _{min} (1,3)V		2,67		4,95
T _{max} (45)°C	V _{min} (1,3)V		2,87		5,32
	V _{nom} (1,5)V				
Measurement uncertainty				± 0,1 ppm	

LIMIT

ETSI EN 300 422-1 V2.1.2 SUBCLAUSE 8.1.3

The frequency error shall not exceed 20 parts per million for frequencies below 1 GHz, 15 parts per million between 1 GHz and 2 GHz and 10 ppm above 2 GHz.

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-207; EMV-205; M-1200

Frequency stability

47 CFR § 74.861 (e) (3)
47 CFR § 74.861 (e) (4)
47 CFR § 15.236 (f) (3)
RSS-210 G3

FCC/ISED requirements

Rated output power: 8,2 mW

Operating condition	Frequency Error kHz			Frequency Error ppm		
Operating voltage at 20°C ambient temperature		540,4 MHz			540,4 MHz	
1,7 V		-1,25			-2,32	
1,3 V		-1,44			-2,67	
Measurement uncertainty				± 0,1 ppm		
Operating condition	Frequency Error kHz			Frequency Error ppm		
ambient temperature at 1,5V operating voltage		540,4 MHz			540,4 MHz	
-30°C		1,98			3,67	
-20°C		2,32			4,30	
-10°C		0,21			0,39	
0°C		0,69			1,28	
10°C		-1,67			-3,10	
20°C		-1,67			-3,10	
30°C		1,98			3,67	
40°C		2,64			4,90	
50°C		2,93			5,43	
Measurement uncertainty				± 0,1 ppm		

LIMIT 47 CFR § 74.861 (e) (4) / Table G.1

The frequency tolerance of the transmitter shall be 0,005 percent (50ppm).

LIMIT 47 CFR § 74.861 (e) (3)

Any form of modulation may be used. A maximum deviation of ± 75 kHz is permitted when frequency modulation is employed

LIMIT 47 CFR § 15.236 (f) (3)

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.005\%$ of the operating frequency over a temperature variation of -20 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.

LIMIT RSS-210 G5

The devices may employ any type of modulation. The type of modulation used shall be reported.

Equipment employing amplitude modulation (AM) or frequency modulation (FM) shall have a modulation index that does not exceed 100% or a frequency deviation that does not exceed ± 75 kHz, respectively.

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-207; EMV-205; M-1200

4.2 Rated output power

**ETSI EN 300 422-1 V2.1.2
 SUBCLAUSE 8.2.3
 47 CFR § 74.861 (e) (1) (ii)
 47 CFR § 15.236 (d) (1)
 RSS-210 G.1**

Radiated Measurement

Rated output power: 8,2 mW

Test conditions		Transmitter power (mW) (erp)	
			540,4 MHz
T_{nom} (23)°C	V_{nom} (1,5)V		5,0
Maximum deviation from rated output power under normal test conditions (%)			0
Measurement uncertainty		± 0,75 dB	

Test conditions		Transmitter power (mW) (eirp)	
			540,4 MHz
T_{nom} (23)°C	V_{nom} (1,5)V		8,2
Measurement uncertainty		± 0,75 dB	

LIMIT ETSI EN 300 422-1 V2.1.2 SUBCLAUSE 8.2.3

The measured value shall be within +20 % and -50 % of the manufacturers declared rated output power.

LIMIT 47 CFR § 74.861 (e) (1) (ii)

The he power may not exceed the following values: 250 mW conducted power

LIMIT 47 CFR § 15.236 (d) (1)

In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP

LIMIT RSS-210 G.1

The transmit power shall be measured in average value as a conducted emission over any period of continuous transmission.

The frequency bands, transmit e.i.r.p., authorized bandwidth and frequency stability limits for devices are provided in table G1.

requecy bands (MHz)	Transmit e.i.r.p. (mW)	Authorized bandwidth (kHz)	Frequency stability (± ppm)
54-72 76-88 174-216	50	200	50
470-608	250	200	50
614-616 653-663	20	200	50

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

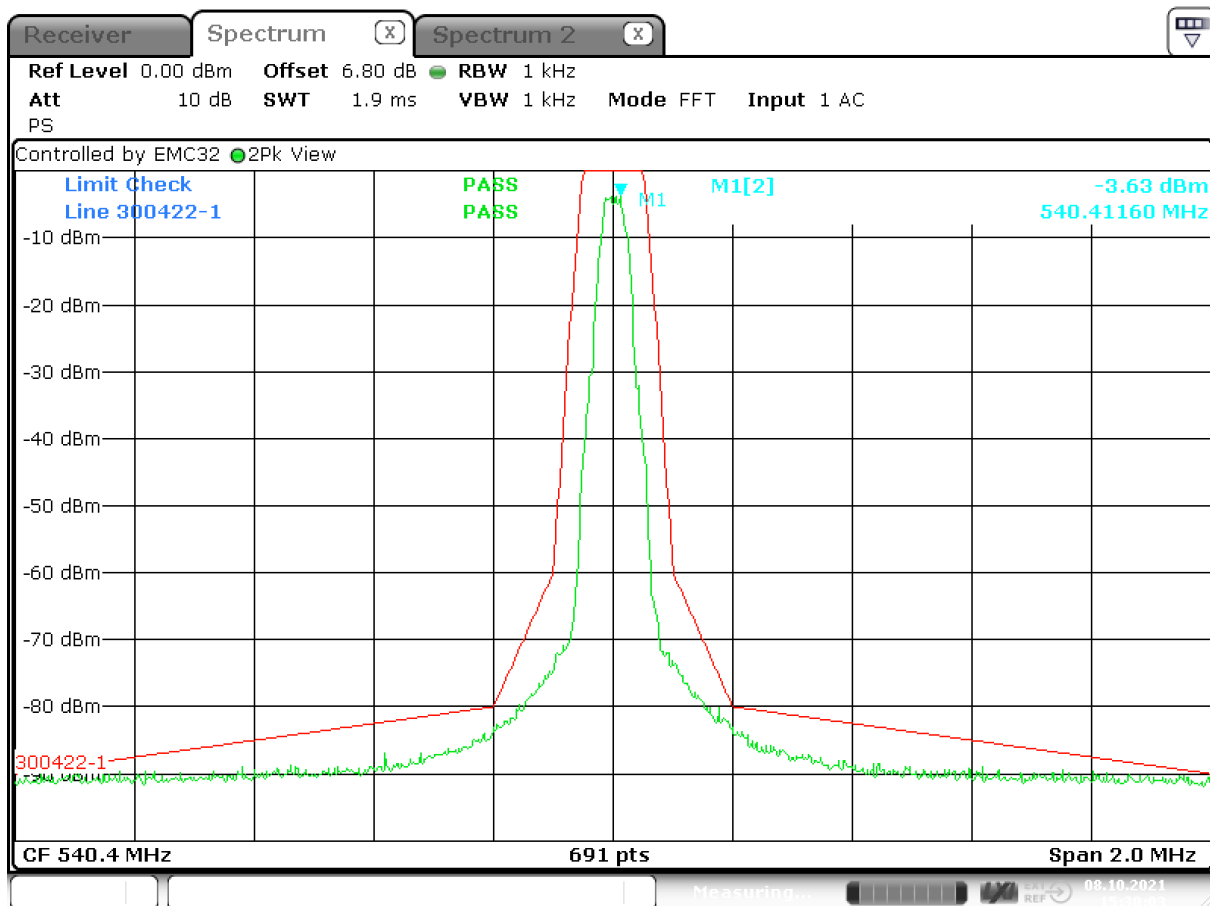
4.3 NECESSARY BANDWIDTH

ETSI EN 300 422-1 V2.1.2
ETSI EN 300 422-1 V1.4.2
SUBCLAUSE 8.3
47 CFR § 15.236 (g)
47 CFR § 15.236 (f) (2)
47 CFR § 74.861 (e) (5)
47 CFR § 74.861 (e) (7)
RSS-210 G.2
RSS-210 G.4

The operating Bandwidth was measured at an acoustic input level 12 dB higher than the limiting threshold, determined with 500 Hz signal.

Rated output power: 8,2 mW

Measurement with weighted noise source signal @ 540,4 MHz centered.



Date: 8.OCT.2021 15:30:03

LIMIT

ETSI EN 300 422-1 V2.1.2 SUBCLAUSE 8.3.2.2
ETSI EN 300 422-1 V1.4.2 SUBCLAUSE 8.3.2.2

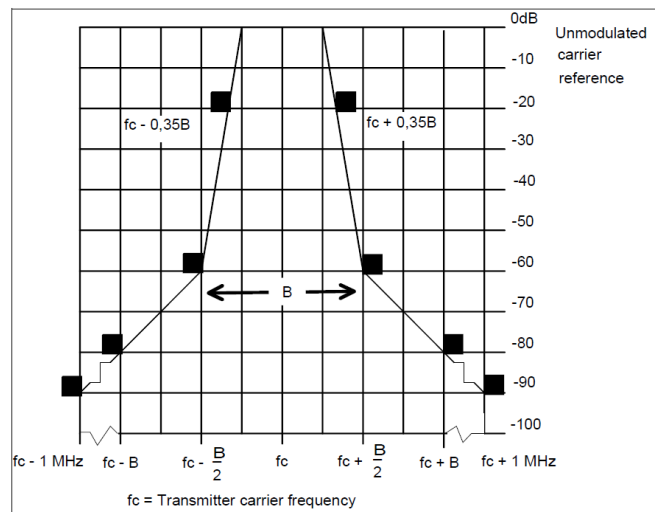


Figure 3 shows the spectrum mask for all analogue systems in the band. The -90 dBc point shall be ± 1 MHz from f_c measured with an average detector. To comply, a measured value shall fall below the mask limit as shown in figure 3.

LIMIT **47 CFR § 15.236 (f) (2)**

One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200 kHz.

LIMIT **47 CFR § 15.236 (g)**

Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in § 8.3 of ETSI EN 300 422-1 V1.4.2

LIMIT **47 CFR § 74.861 (e) (5)**

The operating bandwidth shall not exceed 200 kHz.

LIMIT **47 CFR § 74.861 (e) (7)**

Analog emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in section 8.3.1.2 of the European Telecommunications Institute Standard ETSI EN 300 422-1 v1.4.2

LIMIT **RSS-210 G.2**

The occupied bandwidth for wireless microphones shall not exceed the authorized bandwidth specified in G1: 200 kHz.

LIMIT **RSS-210 G.4**

The transmitter unwanted emissions shall meet and be measured according to the requirements in sections 8.3 and 8.4 of ETSI EN 300 422-1.

TEST EQUIPMENT USED: EMV-205

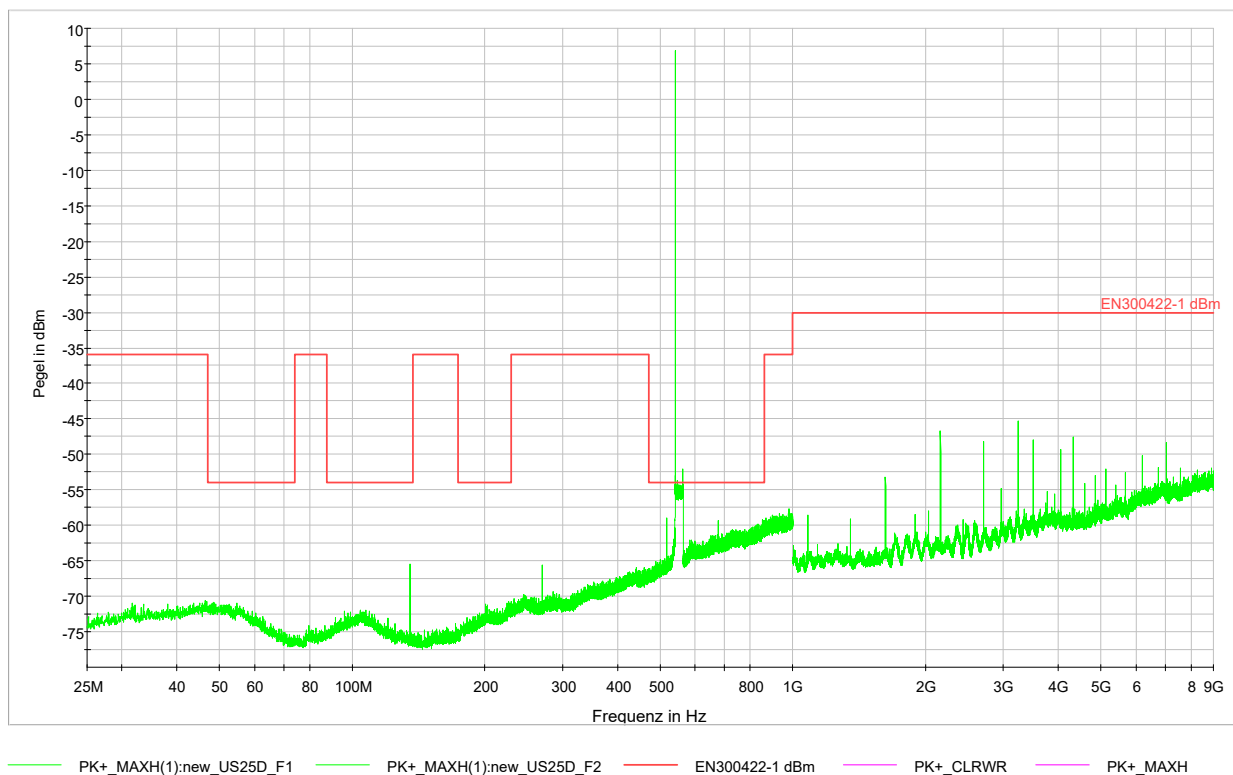
4.4 TRANSMITTER SPURIOUS EMISSIONS radiated

ETSI EN 300 422-1 V2.1.2
ETSI EN 300 422-1 V1.4.2
47 CFR § 15.236 (g)
47 CFR § 74.861 (e) (7)
RSS-210 G.4

Operating mode: transmitter operating at 540,4 MHz

Rated output power: 8,2 mW

Modulation: unmodulated carrier



TRANSMITTER SPURIOUS EMISSIONS radiated

**ETSI EN 300 422-1 V2.1.2
SUBCLAUSE 8.4**

Operating mode: transmitter standby

Because the transmitter is operating after switching on, there is no standby mode available and no measurement was performed.

4.5 Transmitter intermodulation distortion

ETSI EN 300 422-1 V2.1.2
SUBCLAUSE 8.5

Radiated measurement

Unwanted Signal	TX-IMD (dBc)		
		540,4 MHz	
fw + 5 MHz		48	
fw – 5 MHz		49	
Measurement uncertainty	± 3dB		

LIMIT

ETSI EN 300 422-1 V2.1.2 SUBCLAUSE 8.5.3

The maximum resulting IMD product shall be at least 40 dB below the output power of the DUT.

Measuring equipment used:

NT-100; NT-111/1; NT-112/1; NT-113/1; NT-131/1; NT-210; NT-310; NT-310/1; EMV-205

4.6 RF Exposure

47 CRF § 1.1307

Regarding the rule changes per FCC 19-126 Order

Title 47 §1.1307(b)(3)(i)(B):

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

SAR-based exemption calculation

Single RF source, calculated for d = 0.5 cm (worst case, actual antenna might be further away)

Frequency [MHz]	Transmitter Power (ERP) [mW]	P _{th} [mW]	Margin [mW]
540,4	5,0	17,02	+12,02

Appendix 1

Test equipment used

<input type="checkbox"/>	Anechoic Chamber with 3m measurement distance	NT-100	<input type="checkbox"/>	Power quality analyzer Fluke 1760 (complete set)	NT-160 - NT-173
<input type="checkbox"/>	Stripline according to ISO 11452-5	NT-108	<input type="checkbox"/>	Spectrum analyzer – FSP7 9 kHz – 7 GHz	NT-200
<input type="checkbox"/>	MA4000 - Antenna mast 1 - 4 m height	NT-110/1	<input type="checkbox"/>	ESCI - Test receiver 9 kHz - 7 GHz	NT-203/1
<input type="checkbox"/>	DS - Turntable 0 - 400 ° Azimuth	NT-111/1	<input type="checkbox"/>	ESR – Test receiver 20 Hz – 26,5 GHz	NT-207/1
<input type="checkbox"/>	CO3000 Controller Mast+Turntable	NT-112/1	<input type="checkbox"/>	Digital Radio Tester CMW500	NT-208/1
<input type="checkbox"/>	HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz	NT-121	<input type="checkbox"/>	Noise-gen., ITU-R 559-2 20 Hz – 20 kHz	NT-209
<input type="checkbox"/>	FMZB1513 - Loop Antenna 9 kHz - 30 MHz	NT-122/1	<input type="checkbox"/>	CMTA - Radiocommunication analyzer ; 0,1 - 1000 MHz	NT-210
<input type="checkbox"/>	HFH-Z6 - Rod Antenna 9 kHz - 30 MHz	NT-123	<input type="checkbox"/>	3271 - Spectrum analyzer 100 Hz - 26,5 GHz	NT-211
<input type="checkbox"/>	3121C - Dipole Antenna 28 - 1000 MHz	NT-124	<input type="checkbox"/>	Digital Radio Tester Aeroflex 3920	NT-212/1
<input type="checkbox"/>	3115 - Horn Antenna 1 - 18 GHz (immunity)	NT-125	<input type="checkbox"/>	Mixer M28HW 26,5 GHz - 40 GHz	NT-214
<input type="checkbox"/>	3116 - Horn Antenna 18 - 40 GHz	NT-126	<input type="checkbox"/>	RubiSource T&M Timing reference	NT-216
<input type="checkbox"/>	SAS-200/543 - Bicon. Antenna 20 MHz - 300 MHz	NT-127	<input type="checkbox"/>	Radiocommunication analyzer SWR 1180 MD	NT-217
<input type="checkbox"/>	AT-1080 - Log. Per. Antenna 80 - 1000 MHz	NT-128	<input type="checkbox"/>	Mixer M19HWD 40 GHz – 60 GHz	NT-218
<input type="checkbox"/>	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-129	<input type="checkbox"/>	Mixer M12HWD 60 GHz – 90 GHz	NT-219
<input type="checkbox"/>	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-130	<input type="checkbox"/>	DSO9104 Digital scope	NT-220/1
<input type="checkbox"/>	3146 - Log. Per. Antenna 200 – 1000 MHz	NT-131	<input type="checkbox"/>	TPS 2014 Digital scope	NT-222
<input type="checkbox"/>	VULB 9163 Trilog Antenna 30 – 3000 MHz	NT-131/1	<input type="checkbox"/>	Artificial Ear according to IEC 60318	NT-224
<input type="checkbox"/>	Loop Antenna H-Field	NT-132	<input type="checkbox"/>	1 kHz Sound calibrator	NT-225
<input type="checkbox"/>	Horn Antenna 500 MHz - 2900 MHz	NT-133	<input type="checkbox"/>	SRM-3006 Spectrum analyzer	NT-233/1a
<input type="checkbox"/>	Horn Antenna 500 MHz - 6000 MHz	NT-133/1	<input type="checkbox"/>	E-field probe SRM 75 MHz – 3 GHz	NT-234
<input type="checkbox"/>	Log. per. Antenna 800 MHz - 2500 MHz	NT-134	<input type="checkbox"/>	Field Meter NBM-500 incl. E- and H-Field probes	NT-240a-e
<input type="checkbox"/>	Log. per. Antenna 800 MHz - 2500 MHz	NT-135	<input type="checkbox"/>	Magnetometer HP-01	NT-241/1
<input type="checkbox"/>	BiConiLog Antenna 26 MHz – 2000 MHz	NT-137	<input type="checkbox"/>	EFA-3 H-field- / E-field probe	NT-243
<input type="checkbox"/>	Conical Dipol Antenna PCD8250	NT-138	<input type="checkbox"/>	EHP-50F H-field- / E-field probe	NT-243/1
<input type="checkbox"/>	HF 906 - Horn Antenna 1 - 18 GHz (emission)	NT-139	<input type="checkbox"/>	Field Meter EMR-200 100 kHz – 3 GHz	NT-244
<input type="checkbox"/>	HZ-1 Antenna tripod	NT-150	<input type="checkbox"/>	E-field probe 100 kHz – 3 GHz	NT-245
<input type="checkbox"/>	BN 1500 Antenna tripod	NT-151	<input type="checkbox"/>	H-field probe 300 kHz – 30 MHz	NT-246
<input type="checkbox"/>	Ant. tripod for EN61000-4-3 Model TP1000A	NT-156			

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

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Appendix 1 (continued) Test equipment used

<input type="checkbox"/>	RF-Attenuator 10 dB DC – 18 GHz / 50 W	NT-417/1	<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"/>	WHKX12-2700-3000-18000 3 GHz Highpass filter	NT-472
<input type="checkbox"/>	RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-425	<input type="checkbox"/>	WHKX10-3870-4500-18000 4,5 GHz Highpass filter	NT-473
<input type="checkbox"/>	RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-426	<input type="checkbox"/>	GA 1240 Power amplifier according to EN 61000-4-16	NT-480
<input type="checkbox"/>	RF-Attenuator 6 dB	NT-428	<input type="checkbox"/>	Coupling networks according to EN 61000-4-16	NT-481 - NT-483
<input type="checkbox"/>	RF-Attenuator 0 dB - 81 dB	NT-429	<input type="checkbox"/>	Van der Hoofden Test Head	NT-484
<input type="checkbox"/>	WRU 27 - Band blocking 27 MHz	NT-430	<input type="checkbox"/>	WRCJV12-5820-5850-5950-5980 5,9 GHz Band Reject Filter	NT-490
<input type="checkbox"/>	WHJ450C9 AA - High pass 450 MHz	NT-431	<input type="checkbox"/>	WHKX10-5670-6300-18000 6 GHz Highpass filter	NT-491
<input type="checkbox"/>	WHJ250C9 AA - High pass 250 MHz	NT-432	<input type="checkbox"/>	WHK12-935-1000-7000 1 GHz Highpass filter	NT-492
<input type="checkbox"/>	RF-Load 150 W	NT-433	<input type="checkbox"/>	EMC Video/Audiosystem	NT-511/1
<input type="checkbox"/>	Impedance transducer 1:4 ; 1:9 ; 1:16	NT-435	<input type="checkbox"/>	ES-K1 Version 1.71 SP2 Test software	NT-520
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 6 dB	NT-436	<input type="checkbox"/>	EMC32 Version 10.60.20 Test software	NT-520/1
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 6 dB	NT-437	<input type="checkbox"/>	SRM-TS Version 1.3 software for SRM-3000	NT-522
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 10 dB	NT-438	<input type="checkbox"/>	SRM-TS Version 1.3.1 software for SRM-3006	NT-522/1
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 20 dB	NT-439	<input type="checkbox"/>	Spitzenberger und Spies Test software V4.1	NT-525
<input type="checkbox"/>	I+P 7780 Directional coupler 100 - 2000 MHz	NT-440	<input type="checkbox"/>	Vertical coupling plane (ESD)	NT-531
<input type="checkbox"/>	ESH3-Z2 - Pulse limiter 9 kHz - 30 MHz	NT-441	<input type="checkbox"/>	Test cable #4 for EN 61000-4-6	NT-553
<input type="checkbox"/>	Power Divider 6 dB/1 W/50 Ohm	NT-443	<input type="checkbox"/>	Test cable #3 for conducted emission	NT-554
<input type="checkbox"/>	Directional coupler 0,1 MHz – 70 MHz	NT-444	<input type="checkbox"/>	Test cable #5+#6 ESD-cable (2x470k)	NT-555 + NT-556
<input type="checkbox"/>	Directional coupler 0,1 MHz – 70 MHz	NT-445	<input type="checkbox"/>	Test cable #8 Sucoflex 104EA	NT-559
<input type="checkbox"/>	Tube imitations according to EN 55015	NT-450	<input type="checkbox"/>	Test cable #9 (for outdoor measurements)	NT-580
<input type="checkbox"/>	FCC-801-M3-16A Coupling decoupling network	NT-458	<input type="checkbox"/>	Test cable #10 (for outdoor measurements)	NT-581
<input type="checkbox"/>	FCC-801-M2-50A Coupling decoupling network	NT-459	<input type="checkbox"/>	Test cable #13 Sucoflex 104PE	NT-584
<input type="checkbox"/>	FCC-801-M5-25 Coupling decoupling network	NT-460	<input type="checkbox"/>	Test cable #21 for SRM-3000	NT-592
<input type="checkbox"/>	FCC-801-AF10 Coupling decoupling network	NT-461	<input type="checkbox"/>	Shield chamber	NT-600
<input type="checkbox"/>	FCC-801-S25 Coupling decoupling network	NT-462	<input type="checkbox"/>	Climatic chamber	M-1200

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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"/>	HF- Amplifier 9 kHz-225 MHz BBL200	EMV-300/1	Division: Industry & Energy
<input type="checkbox"/>	Turntabel 6 m diameter	EMV-101	<input type="checkbox"/>	HF- Amplifier 80 -1000 MHz BBA150	EMV-301	Department: FG
<input type="checkbox"/>	Antenna mast + controller	EMV-102+ EMV-103	<input type="checkbox"/>	HF- Amplifier 0,8 - 6 GHz BBA150	EMV-302	Test report number: INE-AT/FG-21/135
<input type="checkbox"/>	EMC Video/Audiosystem	EMV-104	<input type="checkbox"/>	High Power Ant. 20-200 MHz HPBA-2510	EMV-303/1	Page: 4 of 5
<input type="checkbox"/>	EMC Software EMC32 Version 10.60.20	EMV-105	<input type="checkbox"/>	High Power Ant. 20-200 MHz S12018-21	EMV-303/2	Date: 02.11.2021
<input type="checkbox"/>	Hornantenna 1 – 18 GHz HF 907	EMV-110	<input type="checkbox"/>	Log.per Antenna 80-2700 MHz STLP 9128 E special	EMV-304	
<input type="checkbox"/>	Antennapre.amp. 1 – 18 GHz ERZ-LNA0200-1800-30-2	EMV-111	<input type="checkbox"/>	Log.per Antenna 0,7 – 9 GHz STLP9149	EMV-305	
<input type="checkbox"/>	Trilog Antenna 30-3000 MHz VULB9163	EMV-112	<input type="checkbox"/>	HF- Amplifier 9 kHz-250 MHz BBA150 (low noise)	EMV-306	
<input type="checkbox"/>	Monopol 9 kHz – 30 MHz VAMP 9243	EMV-113	<input type="checkbox"/>	ISO11451-2 TLS 10 kHz – 30 MHz	EMV-307	
<input type="checkbox"/>	Antennapre.amp 18 – 40 GHz BBV 9721	EMV-114	<input type="checkbox"/>	Load Dump Generator LD 200N	EMV-350	
<input type="checkbox"/>	Hornantenna 200 – 2000 MHz AH-220	EMV-115	<input type="checkbox"/>	Ultra Compact Symulator UCS 200N100	EMV-351	
<input type="checkbox"/>	DC Artificial Network PVDC 8300	EMV-150	<input type="checkbox"/>	Automotive Power fail module PFM 200N100.1	EMV-352	
<input type="checkbox"/>	AC Artificial Network NNLK 8121 RC	EMV-151	<input type="checkbox"/>	Voltage Drop Symulator VDS 200Q100	EMV-353	
<input type="checkbox"/>	EMI Receiver ESW44	EMV-200/1	<input type="checkbox"/>	Arb. Generator AutoWave	EMV-354	
<input type="checkbox"/>	Signalgenerator 9 kHz – 40 GHz N5173B	EMV-201	<input type="checkbox"/>	Ultra Compact Symulator UCS 500N7	EMV-355	
<input type="checkbox"/>	GPS Frequency normal B-88	EMV-202	<input type="checkbox"/>	Coupling decoupling network CNI 503B7 / 32 A	EMV-356	
<input type="checkbox"/>	DC Power supply N5745A	EMV-203	<input type="checkbox"/>	Coupling decoupling network CNI 503B7 / 63 A	EMV-357	
<input type="checkbox"/>	Spektrum Analyzator FSV40	EMV-205	<input type="checkbox"/>	Telecom Surge Generator TSurge 7	EMV-358	
<input type="checkbox"/>	Thd Multimeter Model 2015	EMV-206	<input type="checkbox"/>	Coupling decoupling network CNI 508N2	EMV-359	
<input type="checkbox"/>	Poweramplifier PAS15000	EMV- 207/abc	<input type="checkbox"/>	Coupling decoupling network CNV 504N2.2	EMV-360	
<input type="checkbox"/>	Inrush Current Source	EMV- 208/abc	<input type="checkbox"/>	Immunity generator NSG4060/NSG4060-1	EMV-361	
<input type="checkbox"/>	Arb.-generator Sycore	EMV-209	<input type="checkbox"/>	Coupling network CDND M316-2	EMV-362	
<input type="checkbox"/>	Harmonics/Flicker analyzer ARS 16/3	EMV-210	<input type="checkbox"/>	Coupling network CT419-5	EMV-363	
<input type="checkbox"/>	Power Supply Regatron AC	EMV-214	<input type="checkbox"/>	ESD Generator NSG 437	EMV-364	
<input type="checkbox"/>	Power Supply Regatron DC	EMV-215	<input type="checkbox"/>	Pulse Limiter VTSD 9561-F BNC	EMV-405	
<input type="checkbox"/>	Harmonics/Flicker analyser Zimmer	EMV-216	<input type="checkbox"/>	Transient emission BSM200N40+BS200N100	EMV- 450+451	
<input type="checkbox"/>	Flicker Impedanz Newtons4th 753	EMV-218	<input type="checkbox"/>	Cap. Coupling Clamp HFK	EMV-455	
<input type="checkbox"/>	Comemso	EMV-219	<input type="checkbox"/>	Mag. Field System MS100N+MC26100+MC2630	EMV- 456-458	

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Test equipment used

<input type="checkbox"/>	Coupling network CDN M2-100A	EMV-459
<input type="checkbox"/>	Coupling network CDN M3-32A	EMV-460
<input type="checkbox"/>	Coupling network CDN M5-100A	EMV-461
<input type="checkbox"/>	Current Clamp CIP 9136A	EMV-462
<input type="checkbox"/>	DC Artificial Network HV-AN 150	EMV-464+465
<input type="checkbox"/>	Coupling Clamp EM 101	EMV-466
<input type="checkbox"/>	Decoupling Clamp FTC 101	EMV-467
<input type="checkbox"/>	Power attenuator 10 dB / 250 Watt	EMV-469/2
<input type="checkbox"/>	HV AMN NNHV 8123 800A	EMV-472
<input type="checkbox"/>	HV AMN NNHV 8123 800A	EMV-473

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Appendix 2 Photodocumentation

Description: Open view #1

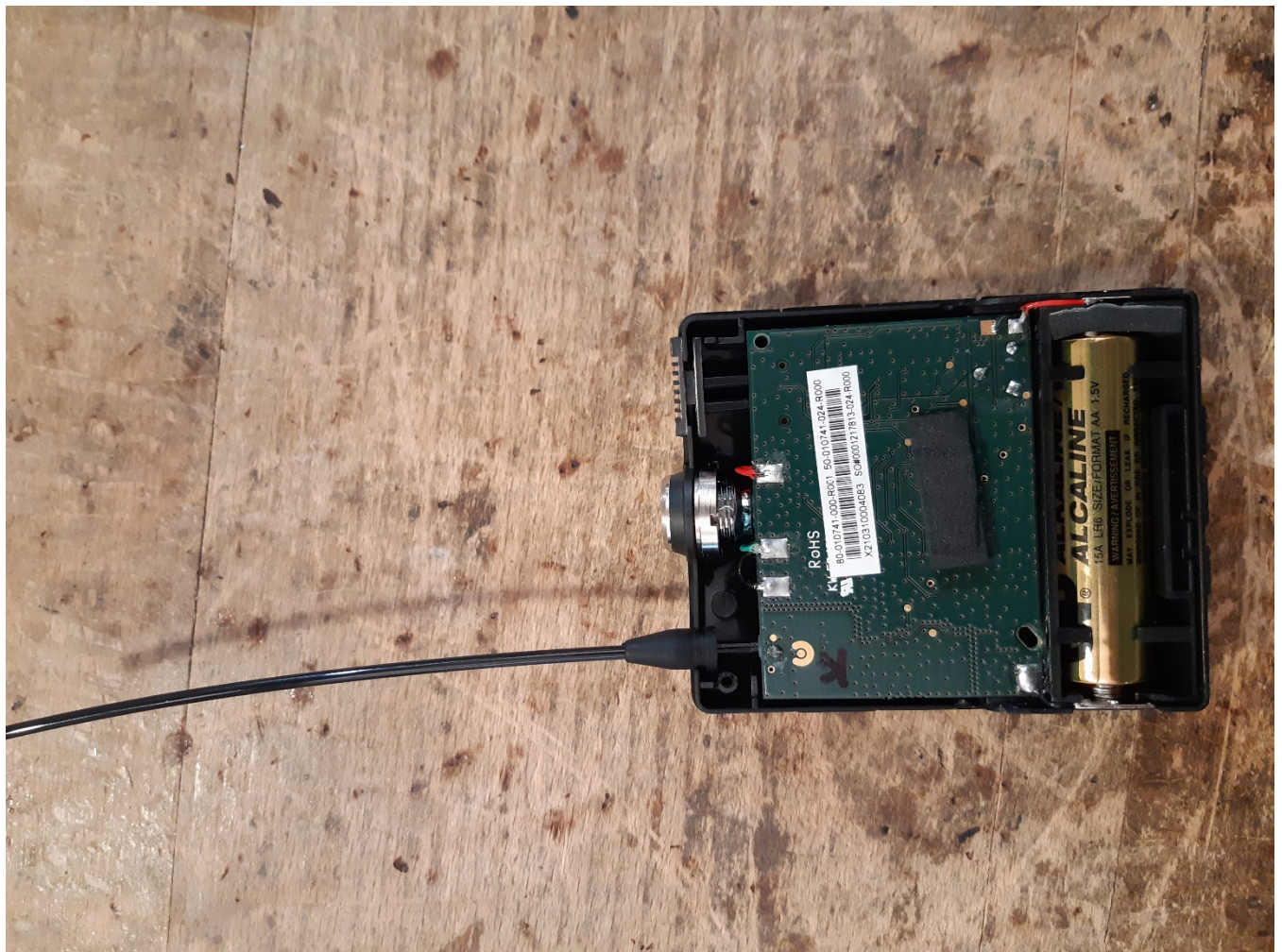
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Appendix 2 Photodocumentation

Description: Open view #2

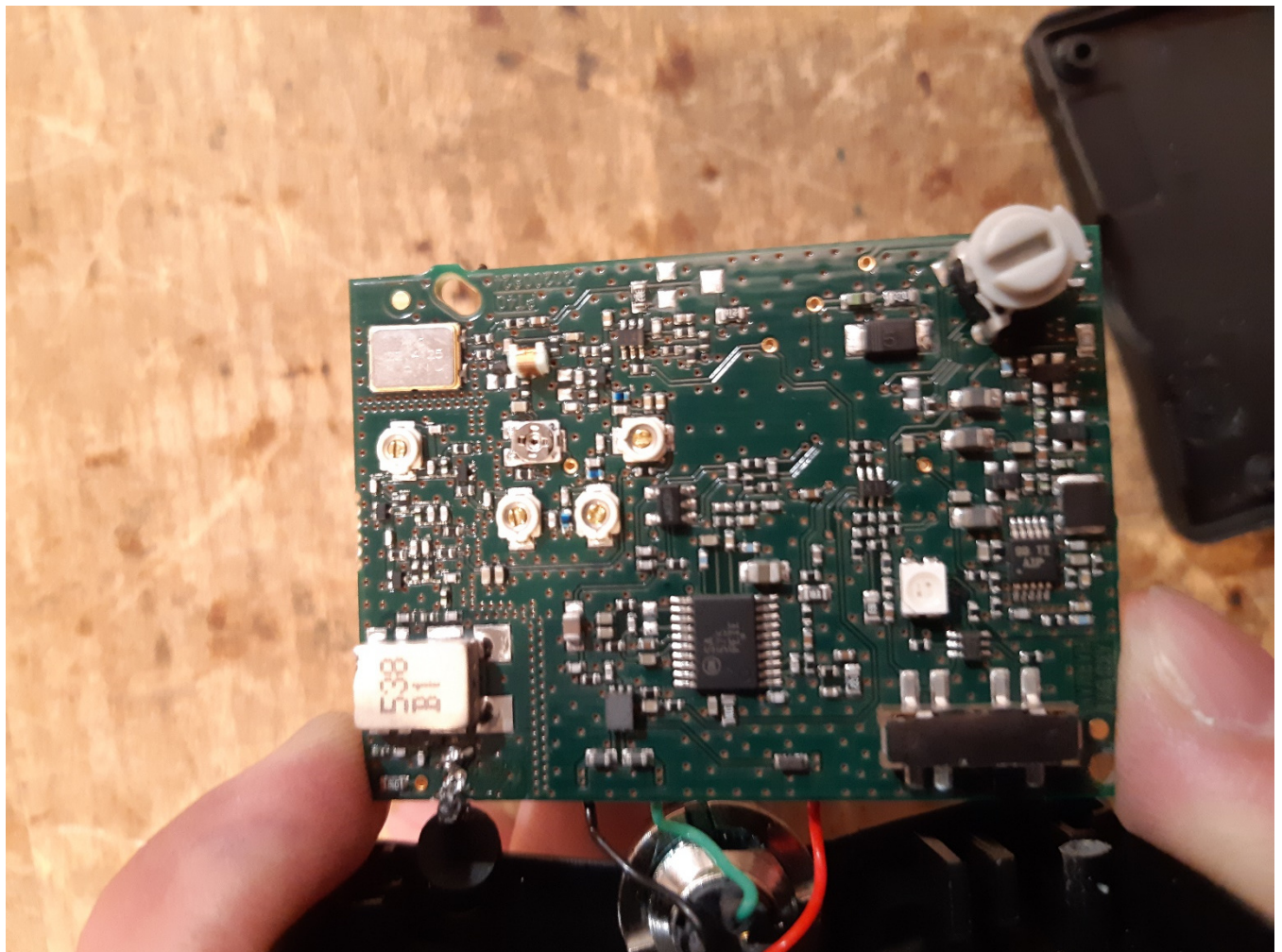
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Appendix 2 Photodocumentation

Description: test setup #1

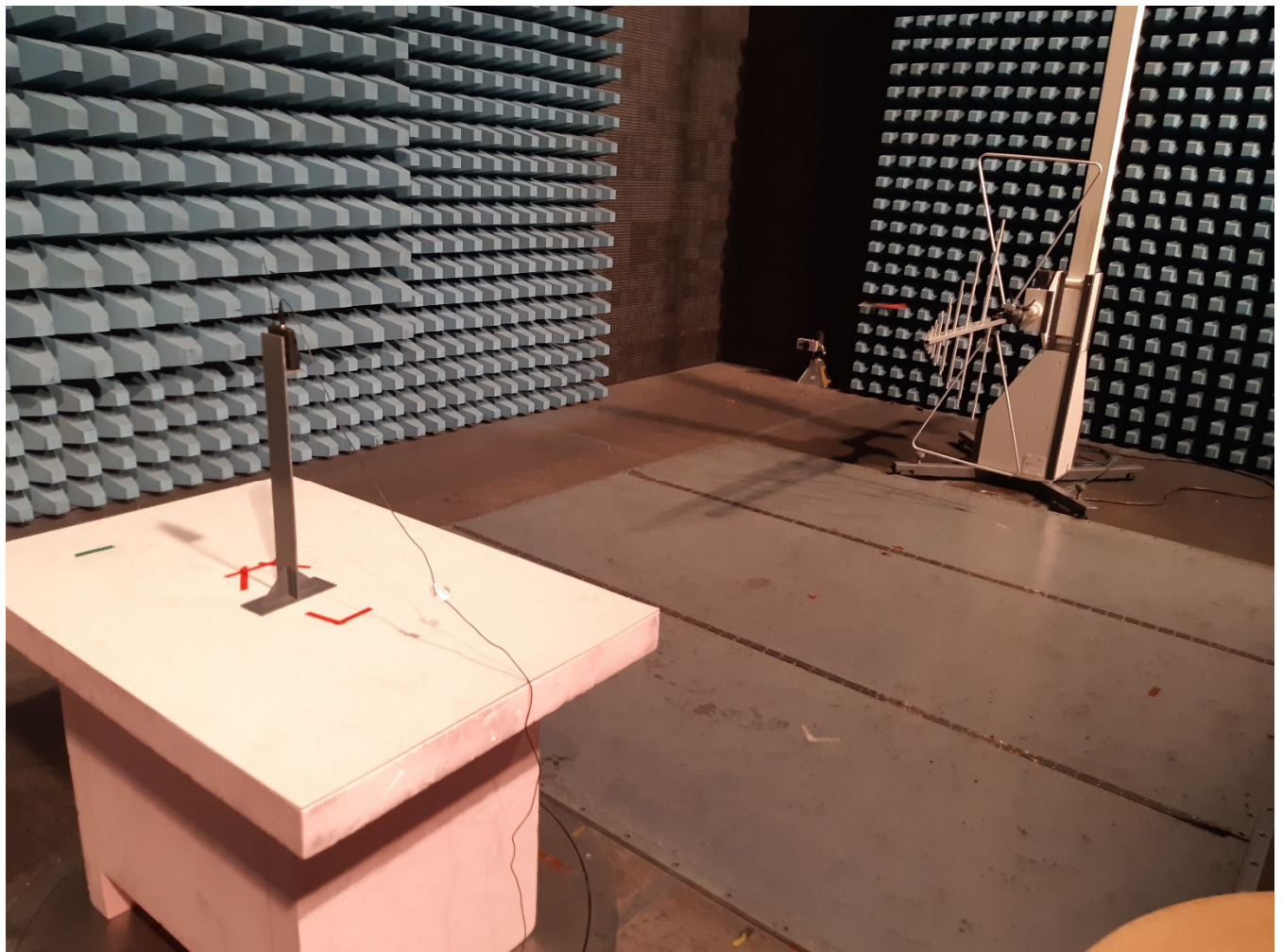
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Appendix 2 Photodocumentation

Description: test setup #2

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