

TEST REPORT

of the accredited test laboratory

TÜV Nr.:INE-AT/FG-17/164

Applicant: Tapkey GmbH
Wickenburggasse 26/2
1080 Wien

Tested Product: RFID reader module

FCC-ID: 2AL5V-TPKYAMV3

IC-ID: 22731-TPKYAMV3

Manufacturer: See Applicant

Output power / field strength: 49,6 dBµV/m @ 3m distance
power supply: 7-27V DC

Frequency range: 13,56 MHz
Channel separation: N/A

Standard: FCC: 47 CFR Part 15 (October 1, 2016 edition)
RSS-210 Issue 9, August 2016

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Certification Body,
Calibration Laboratory
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Test laboratory for EMC

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29.09.2017

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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-210 is given below.

SUBCLAUSE	PARAMETER TO BE MEASURED	PAGE
	Intentional Radiators	
	Test object data	3
15.225 (a) (b) (c) B.6	Field strength of emissions at 13,110 – 14,010 MHz	4
15.225 (d) B.6	Emissions outside 13,110 – 14,010 MHz (15.209)	5-7
15.225 (e) B.6	Frequency tolerance	8

TEST OBJECT DATA

General EUT Description

This RFID module device is intended to read data from NFC tags. It therefore uses 13,56 MHz at a very low transmitter signal level. A yet certified BLE Module is used also on board of this radio, FCC-ID: SQGBL652; IC:3147A-BL652

2.1033 (c) Technical description

2.1033 (4) Type of emission: continuous transmission

2.1033 (5) Frequency range: only one operating frequency 13,56 MHz.

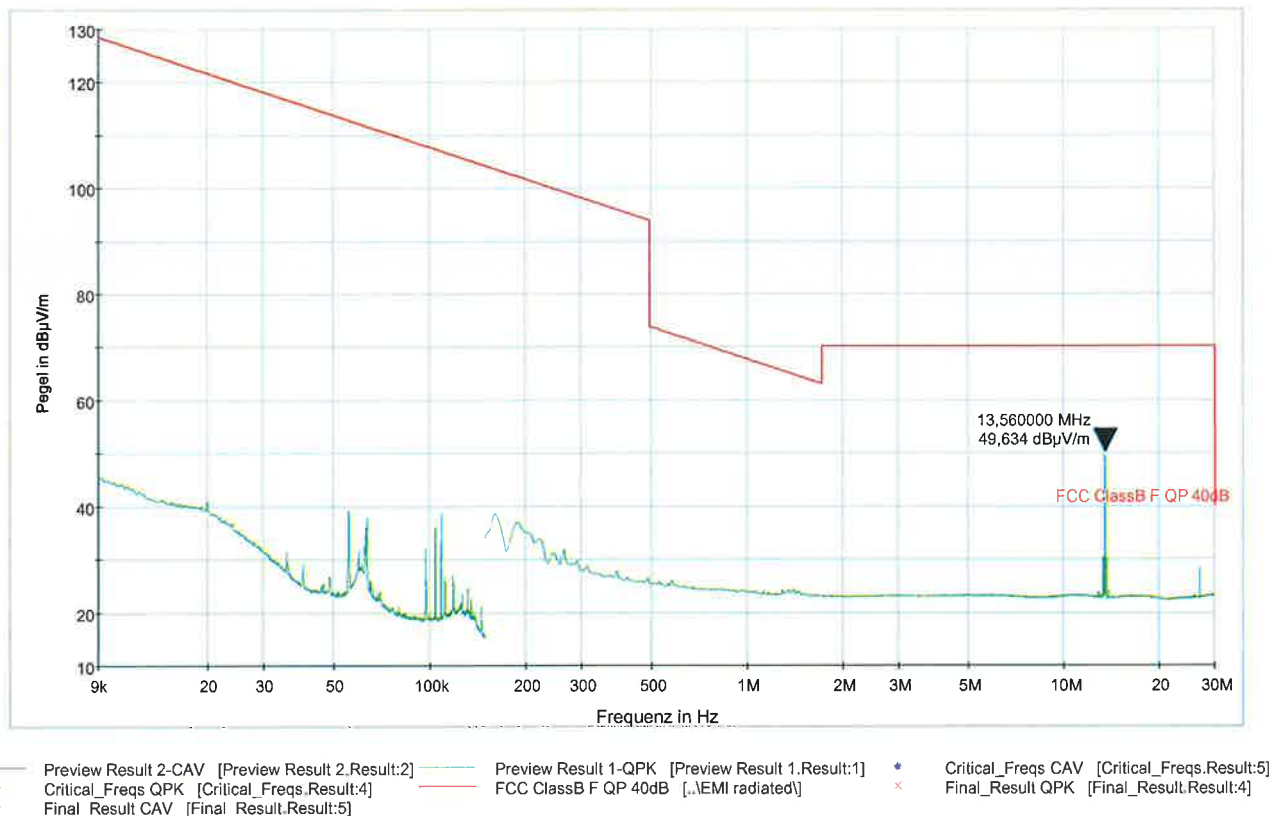
2.1033 (6) Power range and Controls: Fixed output power resulting in 49,6 dBµV/m field strength in 3m distance.

2.1033 (7) Maximum output power rating: 49,6 dBµV/m @ 3m distance.

2.1033 (8) DC Voltage and Current: 7-27 V DC powered
maximum current consumption: 10 mA

Field strength of emissions at 13,110 – 14,010 MHz

§ 15.225 (a) (b) (c) B.6



Field strength at 13,56 MHz: 49,6 dBµV/m = 302 µV/m at 3 m distance. Converted with 40dB per decade for the 30m Limit this would be a Level of 9,6 dBµV/m or 3,02 µV/m.

LIMIT SUBCLAUSE 15.225(a) (b) (c) (B.6)

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

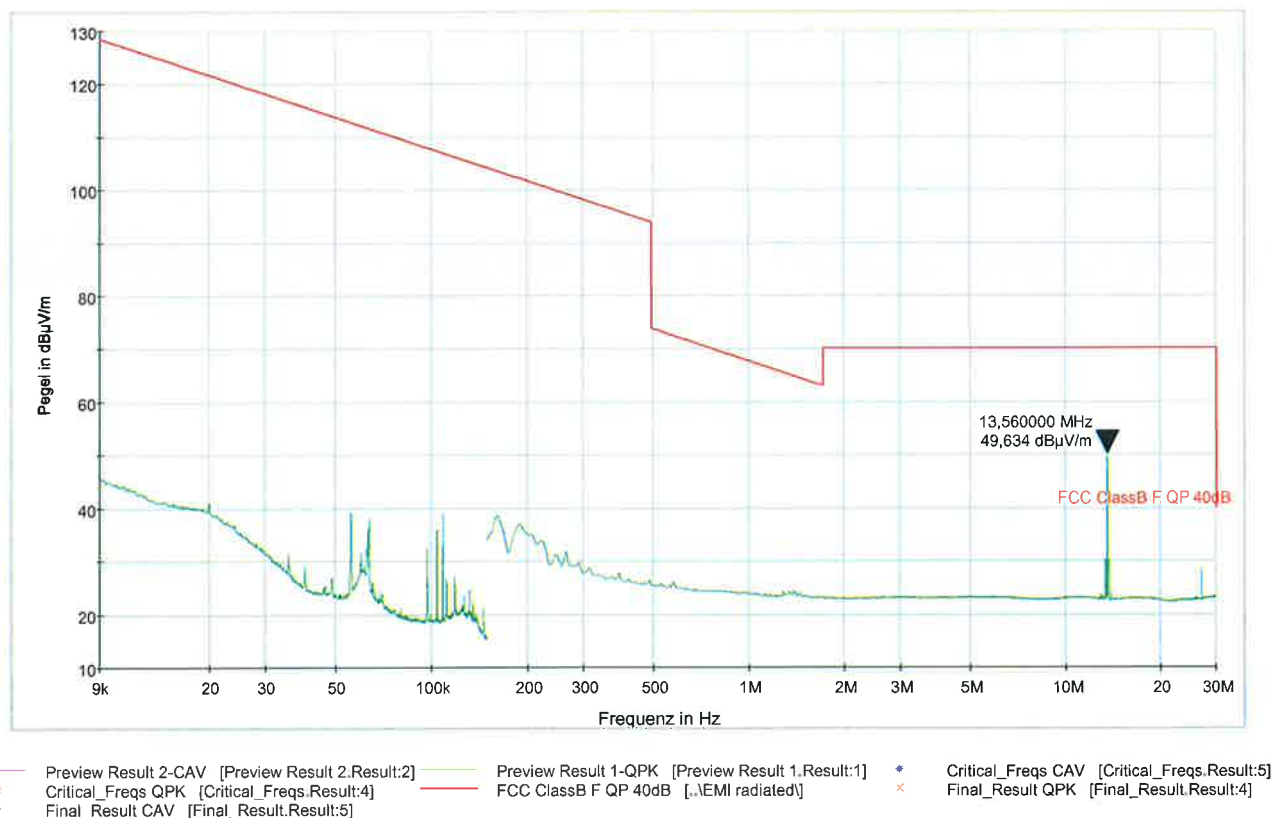
(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

Test Equipment used: EMV-100; EMV-101; EMV-103; EMV-105; NT-122; NT-151; EMV-200

Emissions outside 13,110 – 14,010 MHz

§ 15.225 (d) B.6

Module unfolded



LIMIT

SUBCLAUSE 15.225(d) (15.209) (B.6 / RSS-Gen)

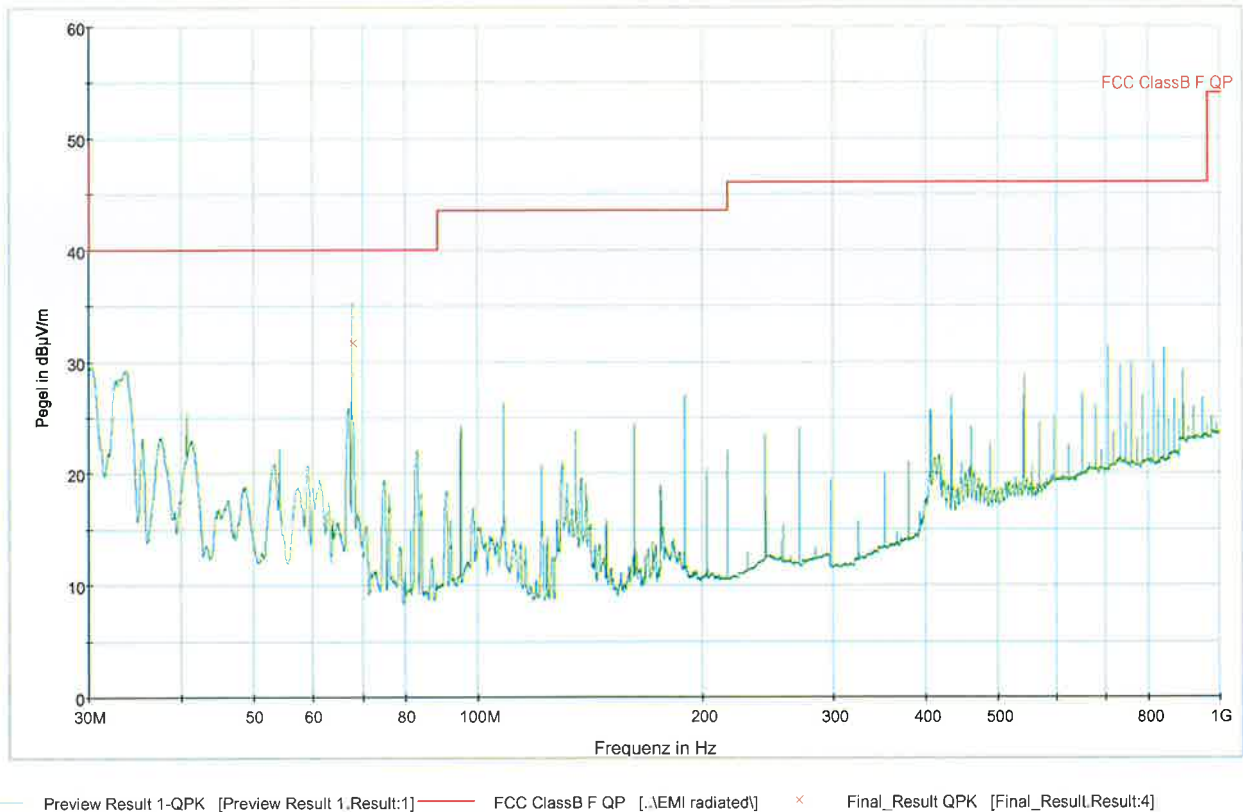
(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

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: EMV-100; EMV-101; EMV-103; EMV-105; NT-122; NT-151; EMV-200

Emissions outside 13,110 – 14,010 MHz

**§ 15.225 (d)
B.6**



Quasipeak Level at 67,80 MHz: 31,6 dBµV/m @ 3m.

LIMIT SUBCLAUSE 15.225(d) (15.209) (B.6 / RSS-Gen)

(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

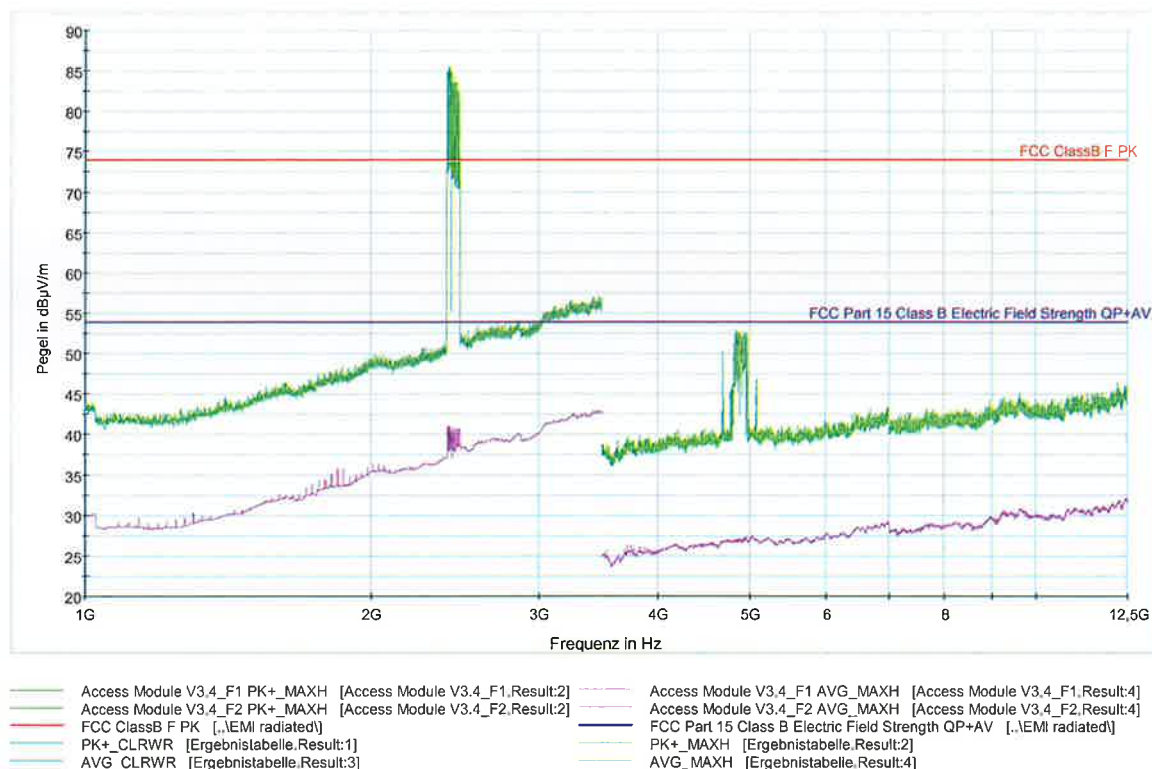
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100**	3
88–216	150**	3
216–960	200**	3
Above 960	500	3

Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-112; EMV-200

Emissions outside 13,110 – 14,010 MHz

§ 15.225 (d)
B.6

Green line: Peak measurement; Magenta line: Average measurement



As the highest internal frequency of the digital control device is 2480 MHz (certified Bluetooth Module), measurements were performed up to 12,5 GHz.

LIMIT SUBCLAUSE 15.225(d) (15.209) (B.6 / RSS-Gen)

(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

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: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-200

Frequency tolerance

**§ 15.225 (e)
B.6**

Frequency error vs. Supply voltage

DC-Voltage	Frequency Error Hz	Frequency Error %
4,25 V	-290	-0,00214
5 V	-290	-0,00214
5,75 V	-290	-0,00214

Frequency error vs. Temperature

Temperature °C	Frequency Error Hz	Frequency Error %
-20	-116	-0,00086
+20	-290	-0,00214
+50	-333	-0,00243

LIMIT SUBCLAUSE 15.225(e) (B.6)

(e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ 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. For battery operated equipment, the equipment tests shall be performed using a new battery.

Test Equipment used: EMV-100; EMV-101; EMV-103; NT-122; NT-151; EMV-205

Appendix 1

Test equipment used

<input type="checkbox"/>	Anechoic Chamber with 3m measurement distance	NT-100	<input type="checkbox"/>	Spectrum analyzer – 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"/>	Radiocommunication analyzer 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 Spectrum analyzer	NT-233
<input type="checkbox"/>	Horn Antenna 500 MHz - 6000 MHz	NT-133/1	<input type="checkbox"/>	SRM-3006 Spectrum analyzer	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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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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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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<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 Simulator 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 Simulator 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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Industry & Energy

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Appendix 2 Photodocumentation

Description: Mainboard view #1

Division:
Industry & Energy

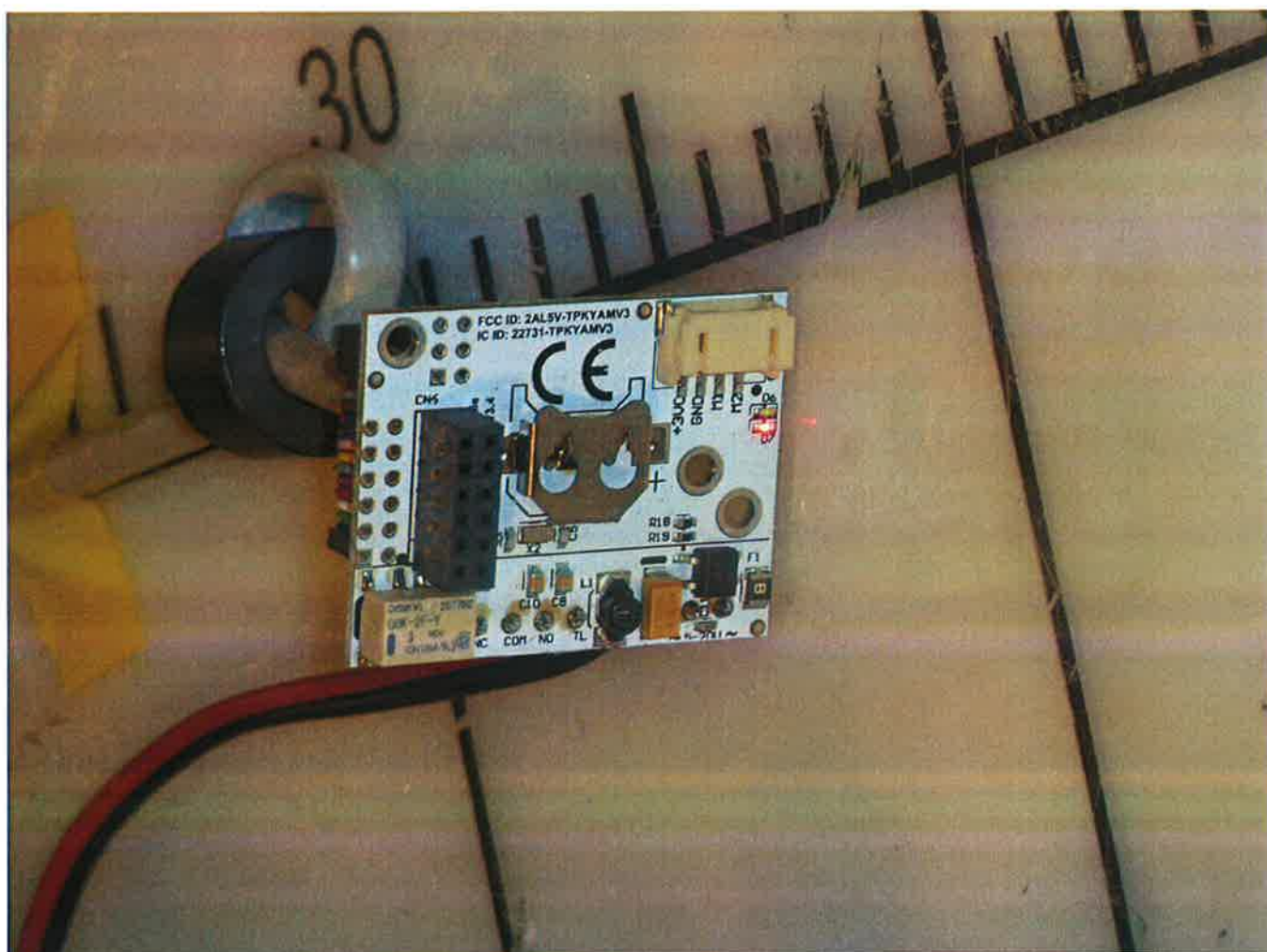
Department: FG

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Appendix 2 Photodocumentation

Description: Mainboard view #2 - including certified
BLE module


Division:
Industry & Energy

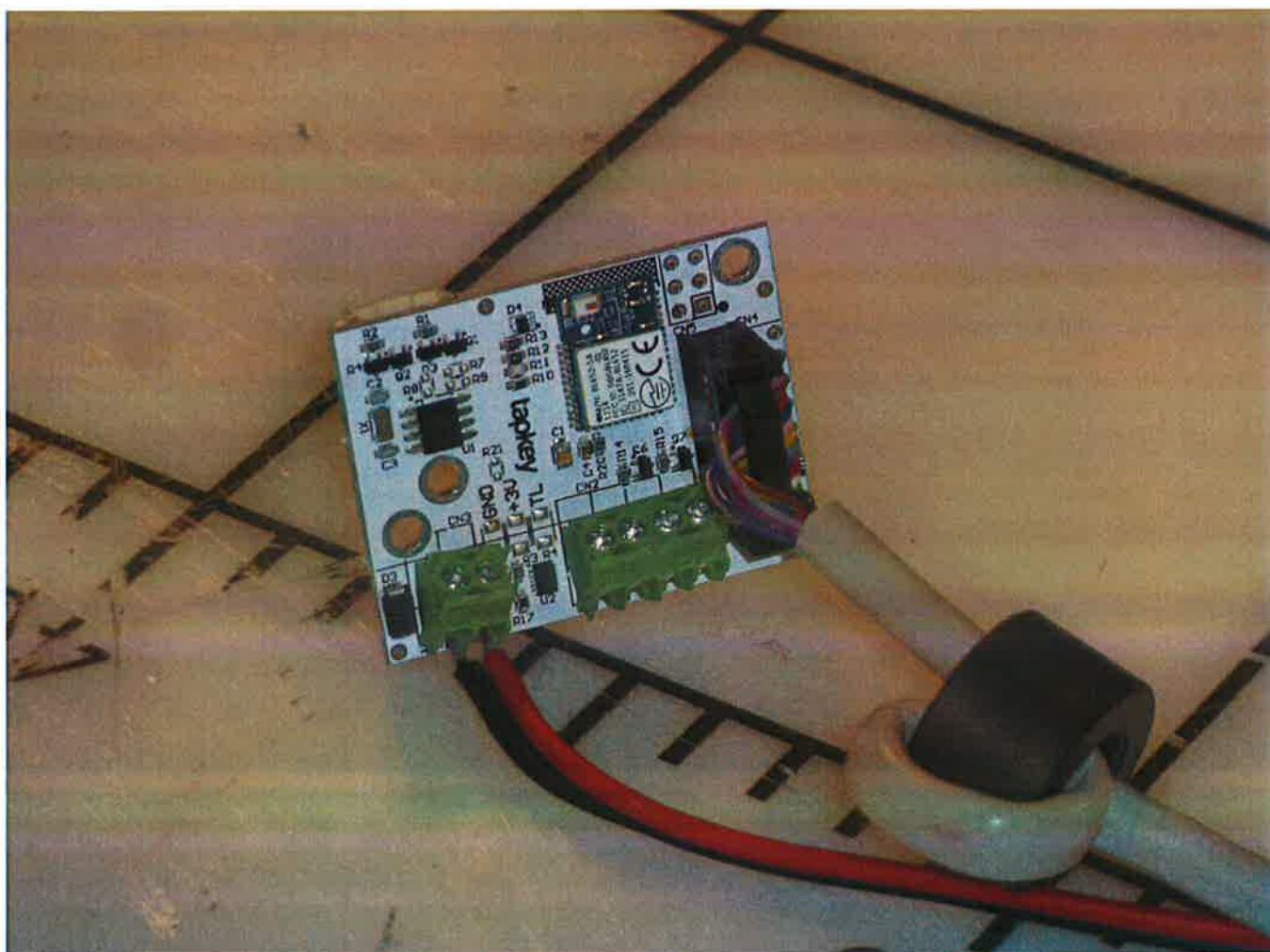
Department: FG

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Appendix 2 Photodocumentation

Description: RF-Board view #1

Division:
Industry & Energy

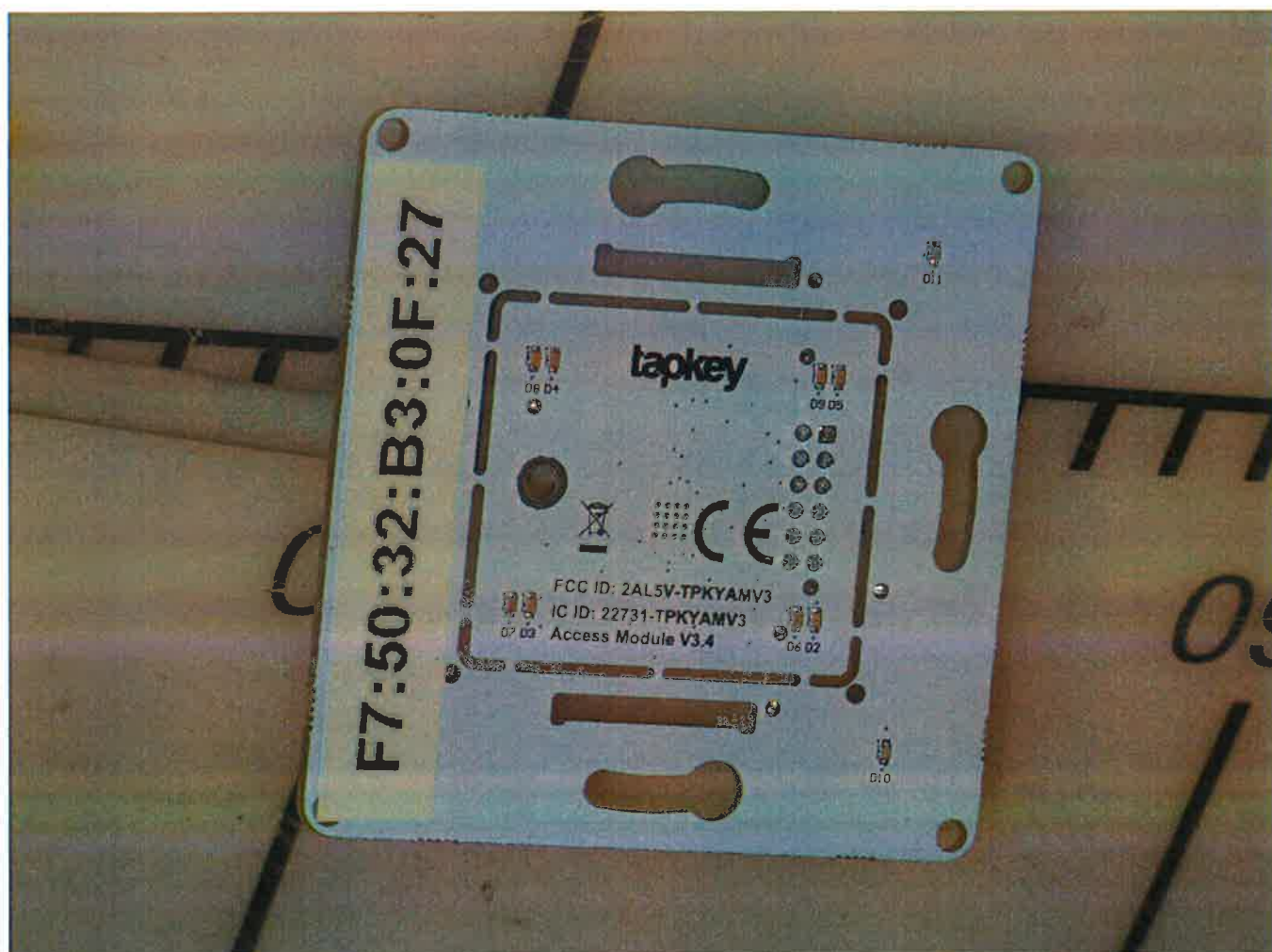
Department: FG

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Appendix 2 Photodocumentation

Description: RF-Board view #2


Division:
Industry & Energy

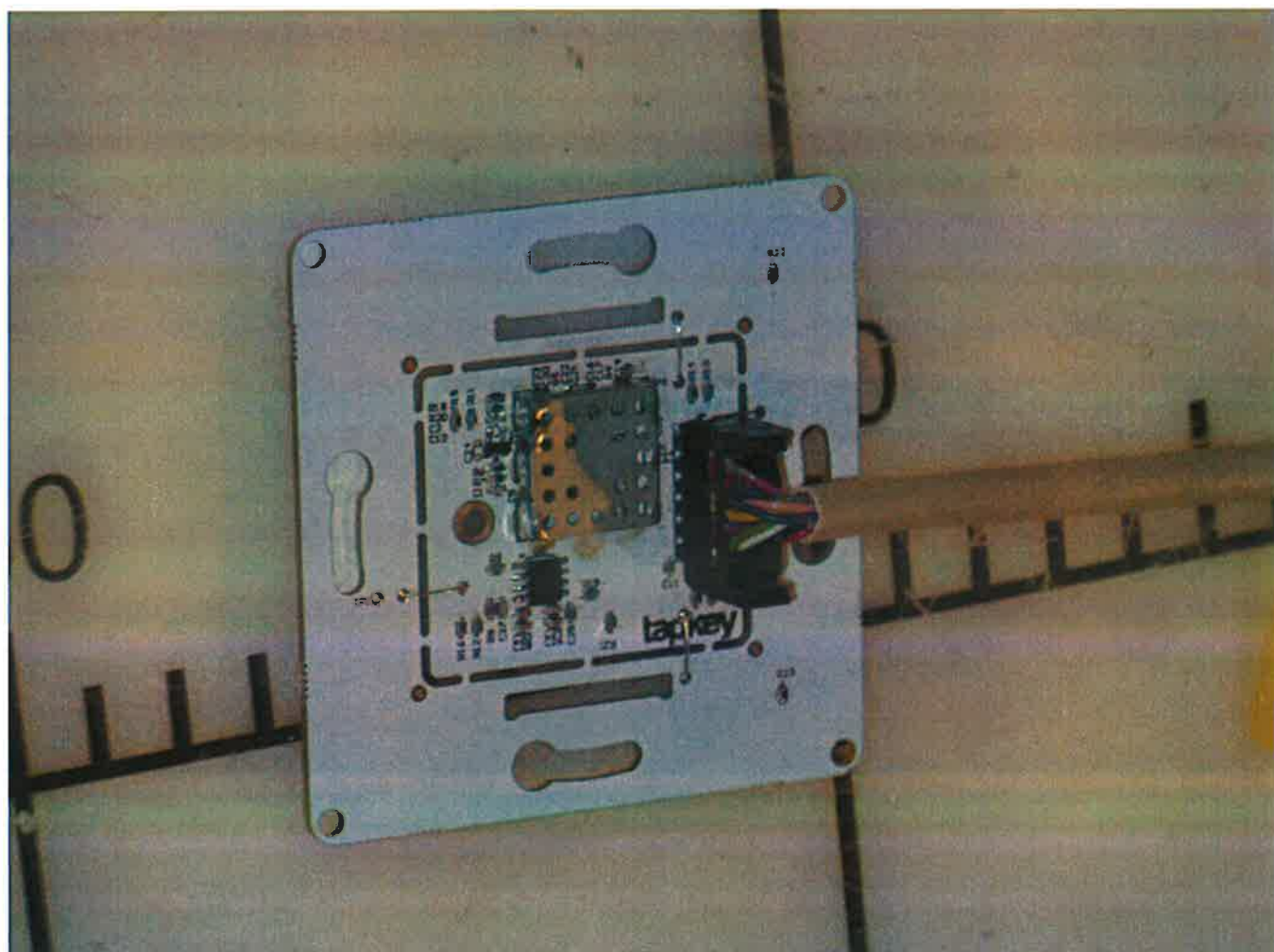
Department: FG

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Appendix 2 Photodocumentation

Description: RF-board without shielding

Division:
Industry & Energy

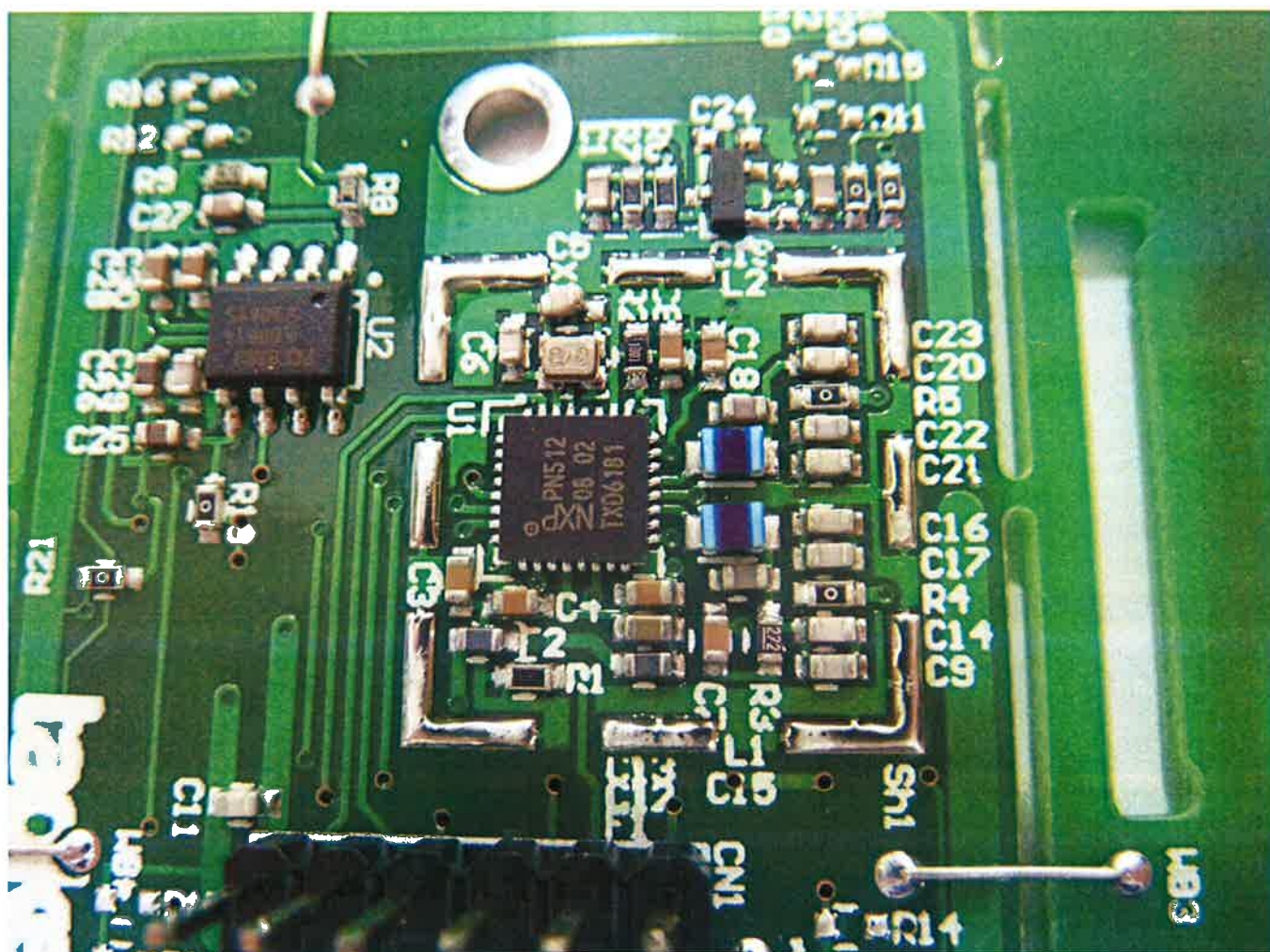
Department: FG

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Appendix 2 Photodocumentation

Description: Test setup


Division:
Industry & Energy

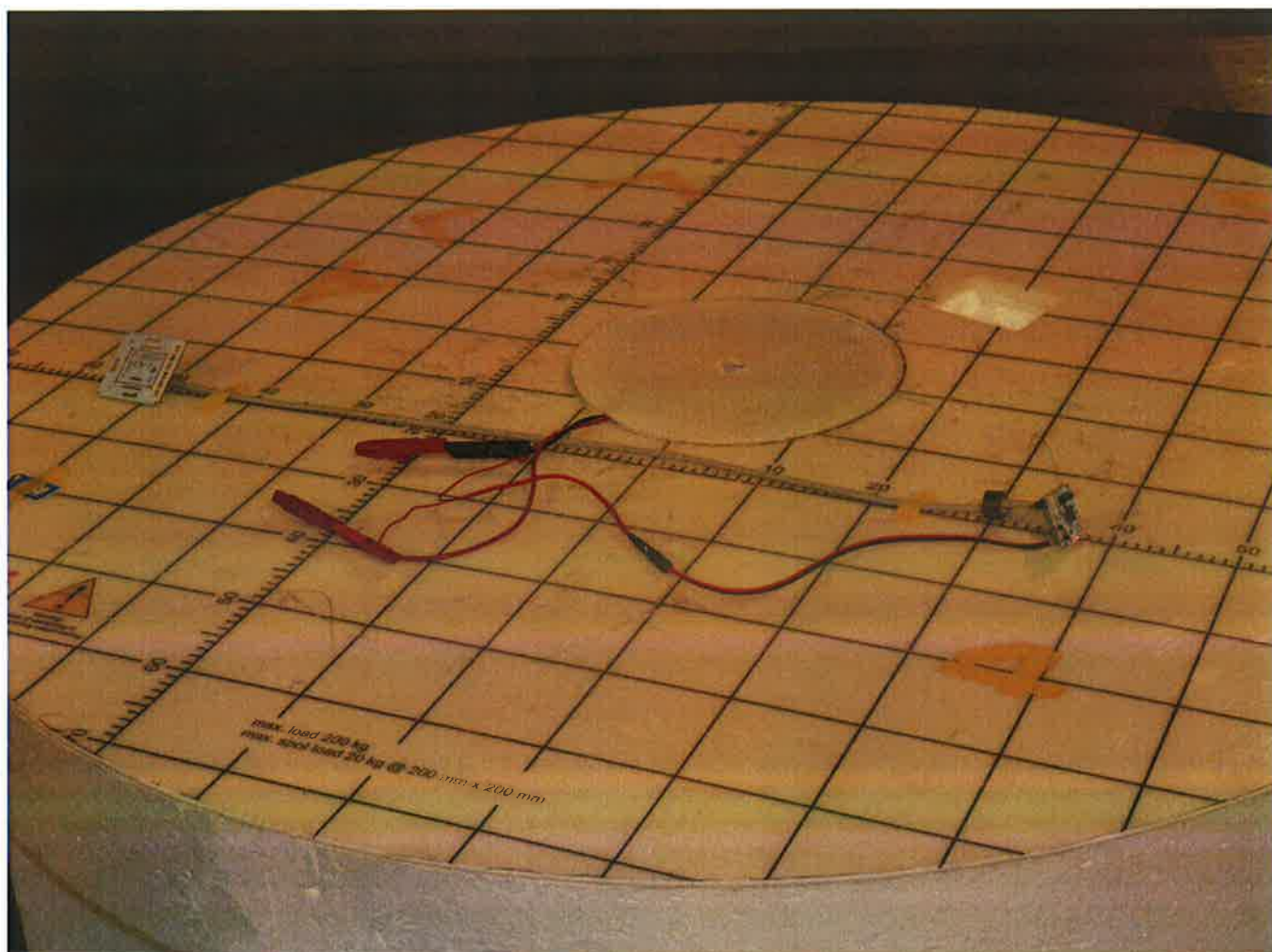
Department: FG

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Appendix 2 Photodocumentation

Description: Test setup below 1 GHz

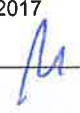
Division:
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Department: FG

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Appendix 2 Photodocumentation

Description: Test setup above 1 GHz

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