EMC Test Report

According to

Title 47 CFR Part 15 Subpart B

ISED ICES-Gen Issue 1; Amendment 1 (February 2021)

ISED ICES-003 Issue 7

ANSI C63.4:2014+A1:2017

DUT Name:	Haltian EH Locator
Model No. :	SLF
Customer:	Haltian Oy
Address:	Yrttipellontie 1 D, 90230 Oulu, Finland
Summary:	IN COMPLIANCE
Date of Reception:	16.2.2023
Date(s) of Test(s):	29.3.2023 – 18.4.2023

Tested by (Test Engineer)

Pekka Pulkkinen

Approved by (Technical Manager)

Jukka Rauma

Contents

Document Version History	Date of issue	Comments	Approved by
v0.1	21.6.2023	Initial version	
v1.0	22.6.3023	Approved version. Test setup pictures updated.	Jukka Rauma
v2.0	8.8.2023	Model in test sample table corrected to SLF	Jukka Rauma

1. General Information

Test Engineer(s): Pekka Pulkkinen

Location:

Test Firm Name	Eurofins Electric & Electronics Finland Oy (EEEF)
Test Site	Yrttipellontie, Peltola
Address of Test Site	Yrttipellonte 6, 90230 Oulu, Finland
FCC Designation number	FI0008
FCC site registration number	771880
ISED number	29576
CAB Identifier	T290

Customer: Haltian Oy
Juha Pikkarainen
tel: +358505501675, email: juha.pikkarainen@haltian.com
Yrttipellontie 1 D, 90230 Oulu, Finland

Climate Conditions: Temperature: 15 - 35 °C
Air pressure: 860 - 1060 hPa
Humidity: 30-60 rH%
These limits were not exceeded during testing.

2. Test Samples

General description:

Anchor device for asset tracking system using harvested energy from indoor lightning.

Test samples:

Sample number	Serial number	Manufacturer	DUT Type	Model	HW version	SW version	Comments
3670ER010	SF16820268	Haltian Oy	EH Locator	SLF	SLF_04S	thingsee_positioning_anchor_wp51_2023.02.16.3	"WP TESTNET"

Accessories / Monitoring devices:

Sample number	Serial number	Manufacturer	DUT Type	Model	HW version	SW version	Comments
3670ER006	NA	Sunny Computer Technology Europe, s.r.o.	Switching adapter	SYS1561-1105	NA	NA	Power source
3670ER007	NA	Goobay	USB-A to USB-C cable, 3m	59132	NA	NA	Cable for the power source

3. Configuration and Operation Modes

Operation Mode	Description
OM1	EUT ON. Bluetooth LE in RX mode. Power supply: 5Vdc, AC/DC adapter.

4. Test sample description

Model	SLF	
Additional model(s)	None	
Brand name	Haltian EH Locator	
FCC ID	2AEU3HAEHLO	
IC	20236-HAEHLO	
Class	Class B	
Radio module	Type	Bluetooth Low Energy (LE)
	Model	nRF52832
	Manufacturer	Nordic Semiconductor
	FCC-ID	2AEU3HAEHLO
	IC	20236-HAEHLO
Antenna	Type	PET foil patch antenna
Manufacturer	Haltian Oy	

Ports	**Port**			**Cable**		
	Name and description		Shielded	Specified max length [m]	Attached during test	
	USB-C for powering		☐	3.0	☒	
			☐		☐	
			☐		☐	
			☐		☐	
			☐		☐	
Supplementary information to the ports	-					
Rated power supply	Voltage and Frequency			Reference poles		
				L1	N	PE
	☐	AC 230 V ☐ 50 Hz ☐ 60 Hz		☐	☐	☐
	☐	AC 240 V ☐ 50 Hz ☐ 60 Hz		☐	☐	☐
	☐	AC 110 V ☐ 50 Hz ☐ 60 Hz		☐	☐	☐
	☐	AC 100 V ☐ 50 Hz ☐ 60 Hz		☐	☐	☐
	☐	Other:		☐	☐	☐
	☒	DC: 5.0				
Rated Power	-					
Clock frequencies	32 MHz, 32,768 kHz					
Other parameters	-					
Dimensions in cm (W x H x D)	9.0 x 1.2 x 14.2					
Weight	126 g					

Mounting position	☐	Table top equipment
	☒	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☐	Hand-held equipment
	☐	Other:

5. Test description

5.1. FCC subpart 15B and ICES-003, radiated emission test procedure

Radiated tests were performed in a semi-anechoic chamber that has met NSA requirements (4 dB tolerance) according to

- CISPR 16-1-4 Ed. 4.0 2019-01 Validation of a SAC (6.8) using the Reference Site Method (RSM) (6.6);
- ANSI C63.4a -2017 Validation of radiated emission test sites (30MHz – 1 GHz) (Annex D)

sVSWR requirements (1 -18 GHz) are met according to

- CISPR 16-1-4 Ed. 4.0 2019-01 SVSWR site validation – standard test procedure (7, 7.6)

2 different measurement antenna was used, located at a distance of 3 m.

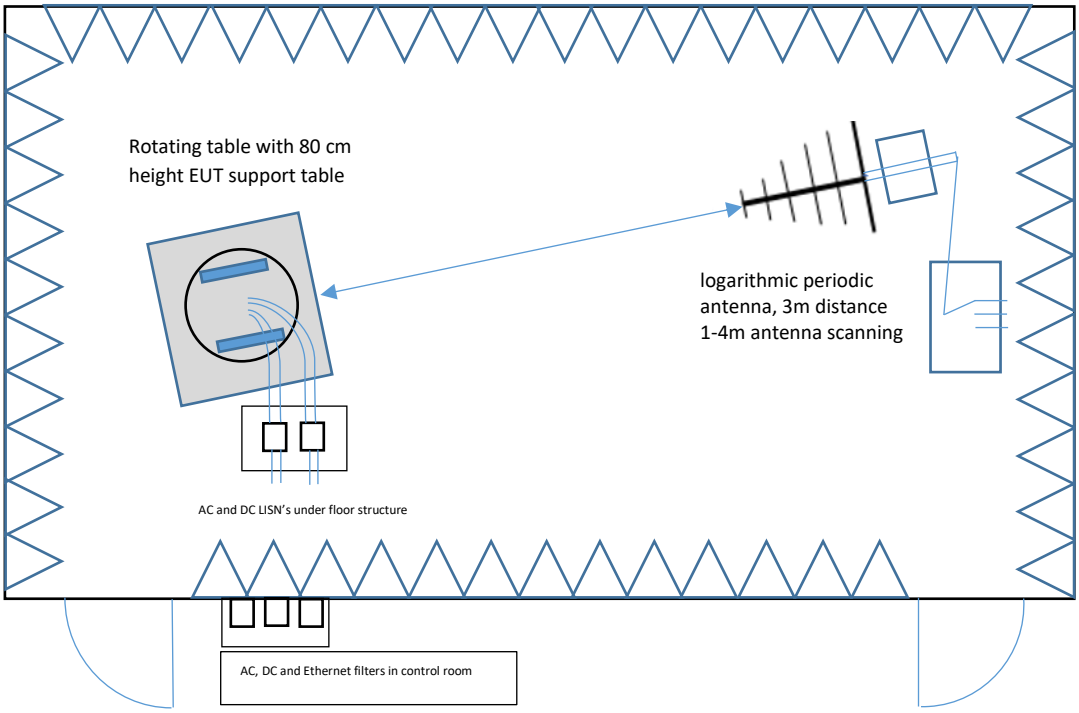
- linear polarized logarithmic periodic antenna for frequency range 30-1000 MHz
- and double-ridged horn antenna for the frequency range 1-18 GHz

The equipment under test was set up on a non-conductive support, 80 cm above the ground plane. EUT power supply LISN's for AC and DC were located under the ground reference plane. The field strength was calculated by adding correction factor to the measured level from the EMI receiver. This correction factor includes antenna factor, cable loss and pre-amplifier gain**.**

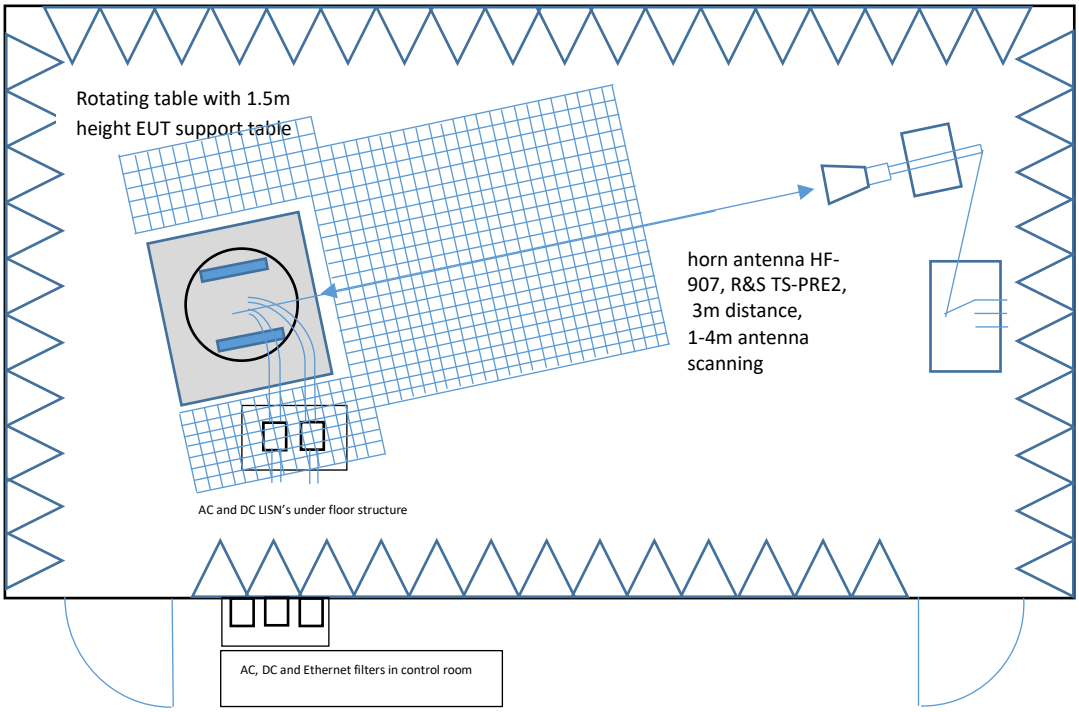
Measurement procedure

- EUT was set in a manner that is most representative of the equipment as typically used (i.e., as specified in the EUT instruction manual)
    - In making any tests involving handheld, body-worn, or ceiling-mounted equipment, it is essential to recognize that the measured levels may be dependent on the orientation (attitude) of the three orthogonal axes of the EUT. Thus, exploratory tests as specified in 8.3.1 shall be carried out for various axes orientations to determine the orientation (attitude) having maximum or near-maximum emission level.
- in exploratory measurements for full frequency range
    - turntable was rotated with 45° steps (from 0° to 315°)
    - measurement was done in both vertical and horizontal antenna polarization with antenna height of 1m
    - measurement was done with peak detector to find the frequencies of maximum emissions and at least six highest peaks related to the limits were chosen
- these peak values were further maximized by scanning the turntable position 0 to 360 degrees and the antenna height 1 to 4m
- for maximized values, final measurement was done with
    - quasi-peak detector for 30MHz to 1GHz frequency range
    - with Average detector for 1GHz to 18GHz frequency range

Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 18 GHz:



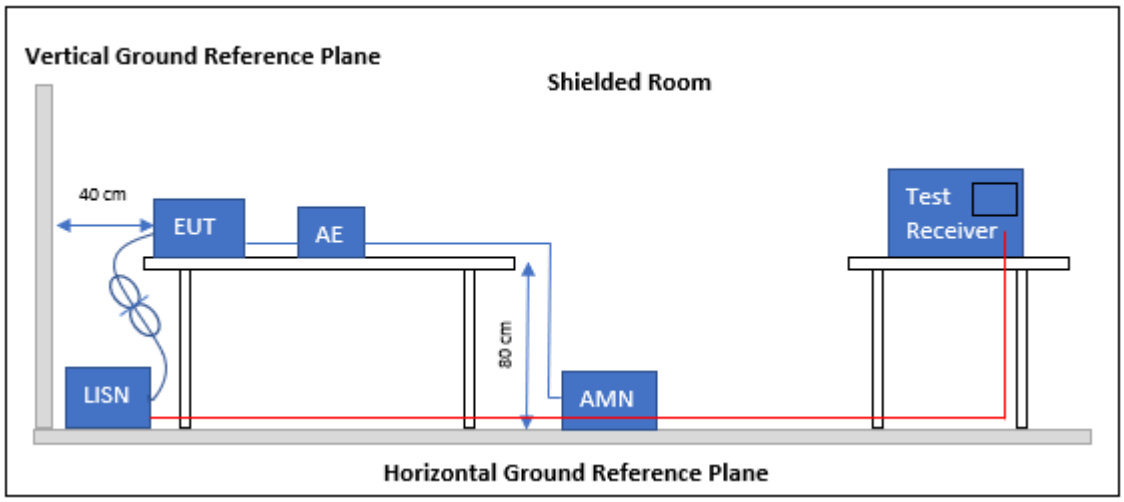
5.2. FCC subpart 15B and ICES-003, conducted emission test procedure

The equipment under test was set up on a non-conductive support, 80 cm above the ground plane and 40 cm distance of vertical ground plane. Test setup is described in pictures below.

Measurement procedure

- EUT was operated in a range of typical modes of operation, with typical cable positions, and with a typical system equipment configuration and arrangement
- in exploratory measurements for full frequency range
    - measurement was done with peak and average detector to find the frequencies of maximum emissions for each current-carrying conductor of each power cord associated with the EUT and at least six highest peaks related to the limits were chosen per conductor
    - the one configuration and arrangement and mode of operation that produces the highest emissions related to the limit across all the measured conductors was recorded.
- for this configuration and its maximized values, final measurement for each current-carrying conductor was done with quasi-peak detector and average detector

Conducted emission test setup



6. Uncertainties

6.1. Emission measurement uncertainties

Description	Expanded Uncertainty (k=2)
AC conducted emission	2,24
Radiated emission ≤ 1 GHz	4,62
Radiated emission > 1 GHz	5,72

7. Summary

Table is modified according to applicable tests

Title 47 CFR 15B, ISED ICES-003 Issue 7			
Reference	Requirement – Test case	Verdict	Remark
FCC 15.109 ICES-003, 3.2.2	Radiated emission. Electromagnetic field measure (30 MHz – 1000 MHz)	PASS	
FCC 15.109 ICES-003, 3.2.2	Radiated emission. Electromagnetic field measure (1 GHz – 12,75 GHz)	PASS	
FCC 15.109 ICES-003, 3.2.2	Radiated emission. Electromagnetic field measure (12,75 GHz – 18 GHz)	N/R	(1)
FCC 15.107 ICES-003, 3.2.1	Continuous conducted emission (150 kHz – 30 MHz)	PASS	
The DUT has been tested and passes the FCC Part 15 Subpart B without any mofications.		Yes	

Supplementary information and remarks:
(1) Range: f>12.75 GHz. Test is required only if the 5th harmonics of the EUT's maximum internal work frequency is higher than 12.75GHz.

Possible test case verdicts
PASS = Test object meet the requirements
FAIL = Test object does not meet the requirements
N/T = Required by standard but not tested
N/R = Not required by standard for the test object

8. Radiated Emissions

Reference: FCC 15.109, ICES-003, 3.2.2
Test method: ANSI C63.4:2014+A1:2017 Section 8

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B, Secs. 15.109 & ICES-003 Issue 7, section 3.2.2.

FCC part 15, subpart B

Limits, Class B	Quasi-peak Limit for 3m	
Frequency of emission MHz)	(microvolt/meter)	(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

ICES-003, Issue 7

Limits, Class B	Quasi-peak Limit for 3m	
Frequency of emission MHz)	(microvolt/meter)	(dBuV/m)
30-88	100	40
88-216	150	43.5
216-230	200	46
230-960	223	47
Above 960	500	54

FCC part 15, subpart B and ICES-003, Issue 7

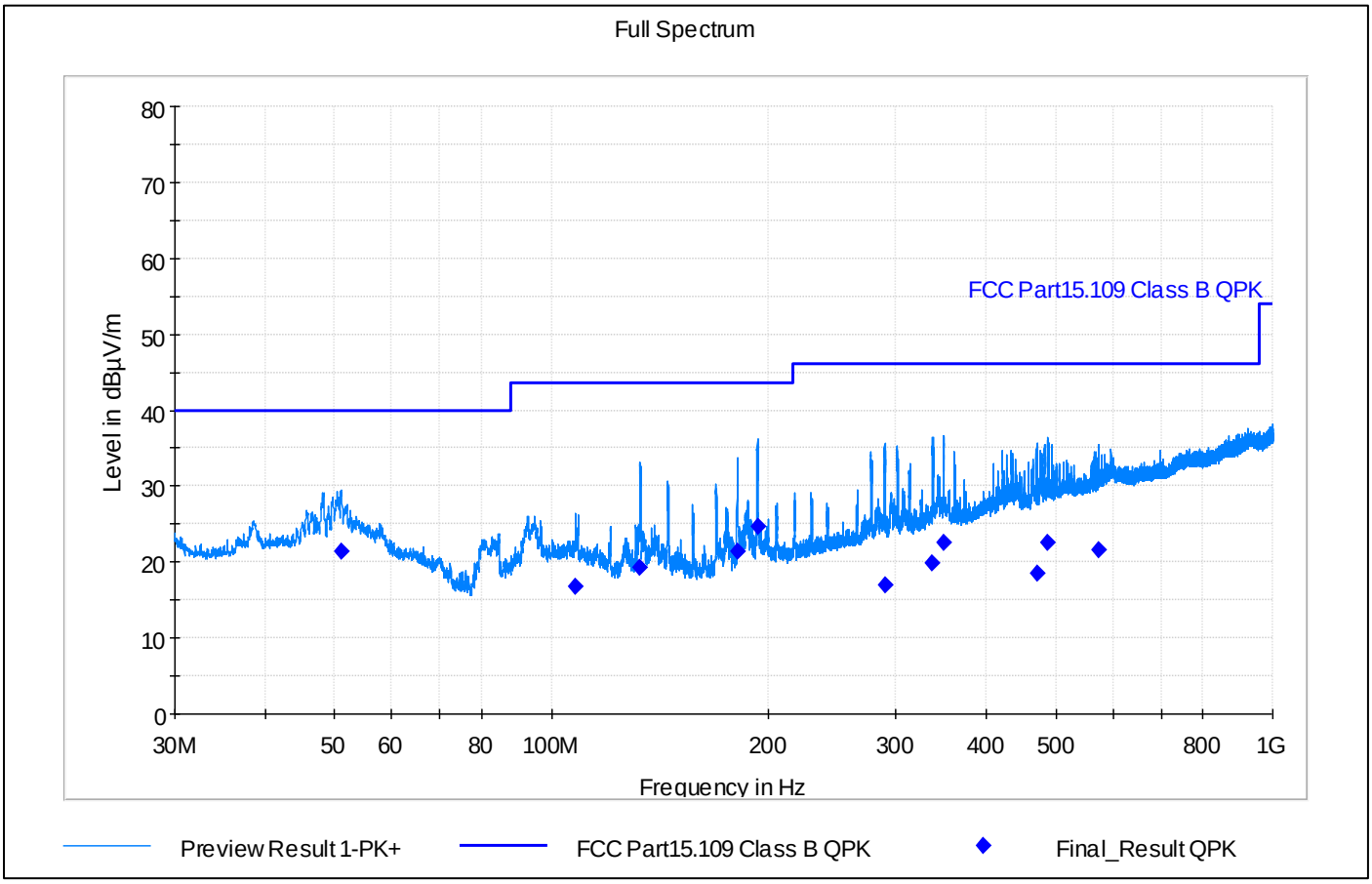
Frequency of emission MHz)	Average Limit for 3m		Peak Limit for 3m
	(microvolt/meter)	(dBuV/m)	(dBuV/m)
Above 1000	500	54	74
Frequencies above 1 GHz, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test, as per §15.35(b			

Tested sample(s): 3670ER010
Operation mode(s) tested: OM1
Test results: PASS
Note:

Test data:

Operation mode(s)	Configuration	Test Verdict
OM1	Bluetooth RX, Frequency Range: 30 MHz – 1GHz	PASS
OM1	Bluetooth RX, Frequency Range: 1 – 12.75 GHz	PASS

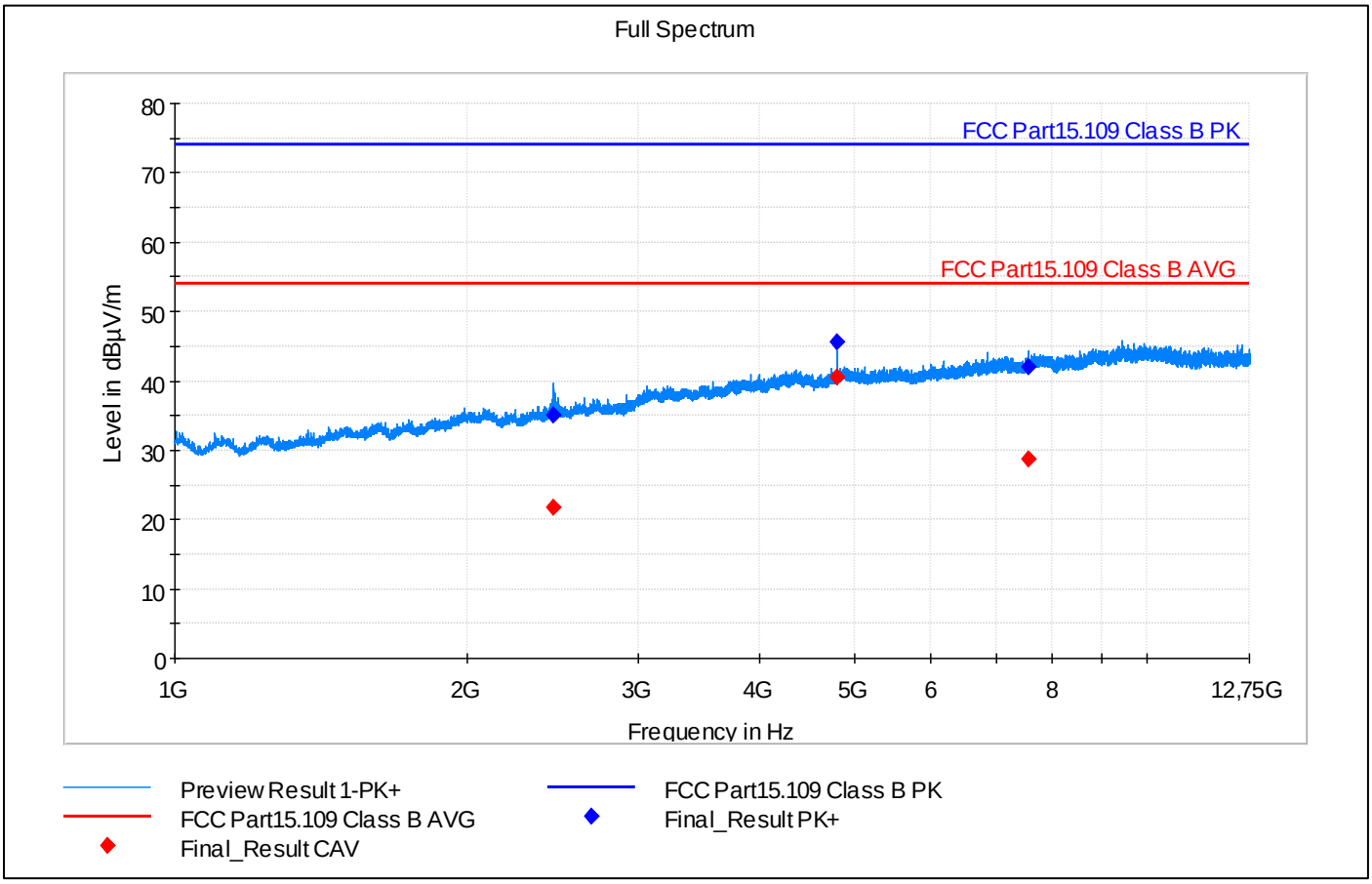
FCC part 15, subpart B Graph and final result table for 30 MHz – 1 GHz, OM1:



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
50.970000	21.31	40.00	18.69	15000.0	120.000	112.0	V	19.0	0.0	21.0	PASS
108.000000	16.85	43.50	26.65	15000.0	120.000	162.0	V	38.0	0.0	19.4	PASS
132.660000	19.31	43.50	24.19	15000.0	120.000	106.0	V	313.0	0.0	16.4	PASS
181.200000	21.43	43.50	22.07	15000.0	120.000	101.0	V	280.0	0.0	17.8	PASS
192.870000	24.71	43.50	18.79	15000.0	120.000	105.0	V	313.0	0.0	19.4	PASS
289.500000	17.05	46.00	28.95	15000.0	120.000	129.0	H	83.0	0.0	22.1	PASS
337.680000	19.89	46.00	26.11	15000.0	120.000	112.0	H	157.0	0.0	23.8	PASS
349.590000	22.63	46.00	23.37	15000.0	120.000	101.0	H	183.0	90.0	24.4	PASS
470.550000	18.59	46.00	27.41	15000.0	120.000	133.0	H	213.0	0.0	26.3	PASS
488.310000	22.57	46.00	23.43	15000.0	120.000	150.0	H	137.0	0.0	26.9	PASS
573.120000	21.63	46.00	24.37	15000.0	120.000	133.0	H	257.0	0.0	28.6	PASS

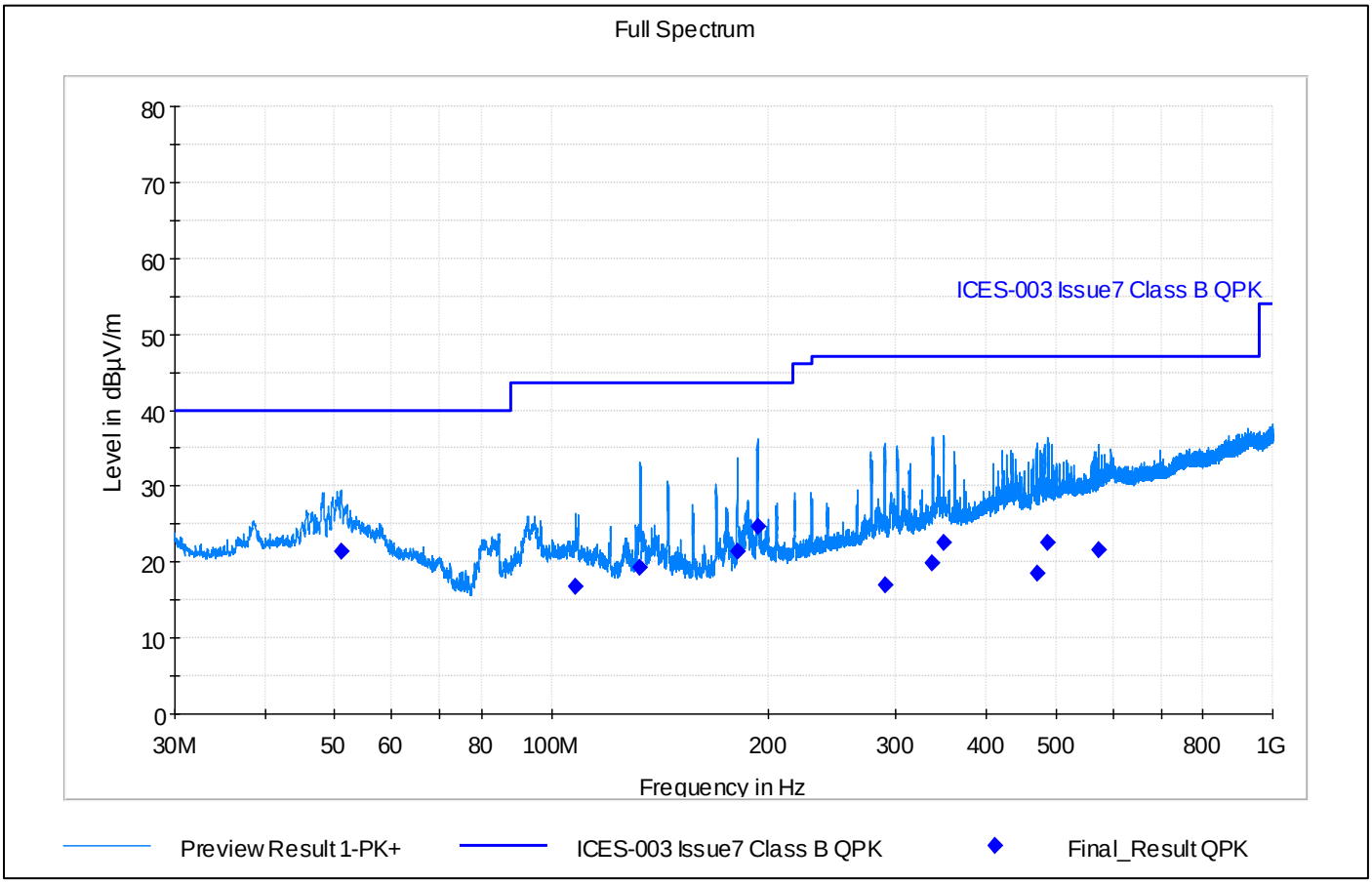
FCC part 15 subpart B, Graph and final result table for 1 GHz – 12,75 GHz, OM1:



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
2454.750000	---	21.72	54.00	32.28	500.0	1000.000	209.0	H	198.0	-0.2	PASS
2454.750000	34.94	---	74.00	39.06	500.0	1000.000	209.0	H	198.0	-0.2	PASS
4802.000000	---	40.54	54.00	13.46	500.0	1000.000	100.0	V	67.0	8.2	PASS
4802.000000	45.70	---	74.00	28.30	500.0	1000.000	100.0	V	67.0	8.2	PASS
7558.000000	---	28.68	54.00	25.32	500.0	1000.000	232.0	V	292.0	13.5	PASS
7558.000000	41.93	---	74.00	32.07	500.0	1000.000	232.0	V	292.0	13.5	PASS

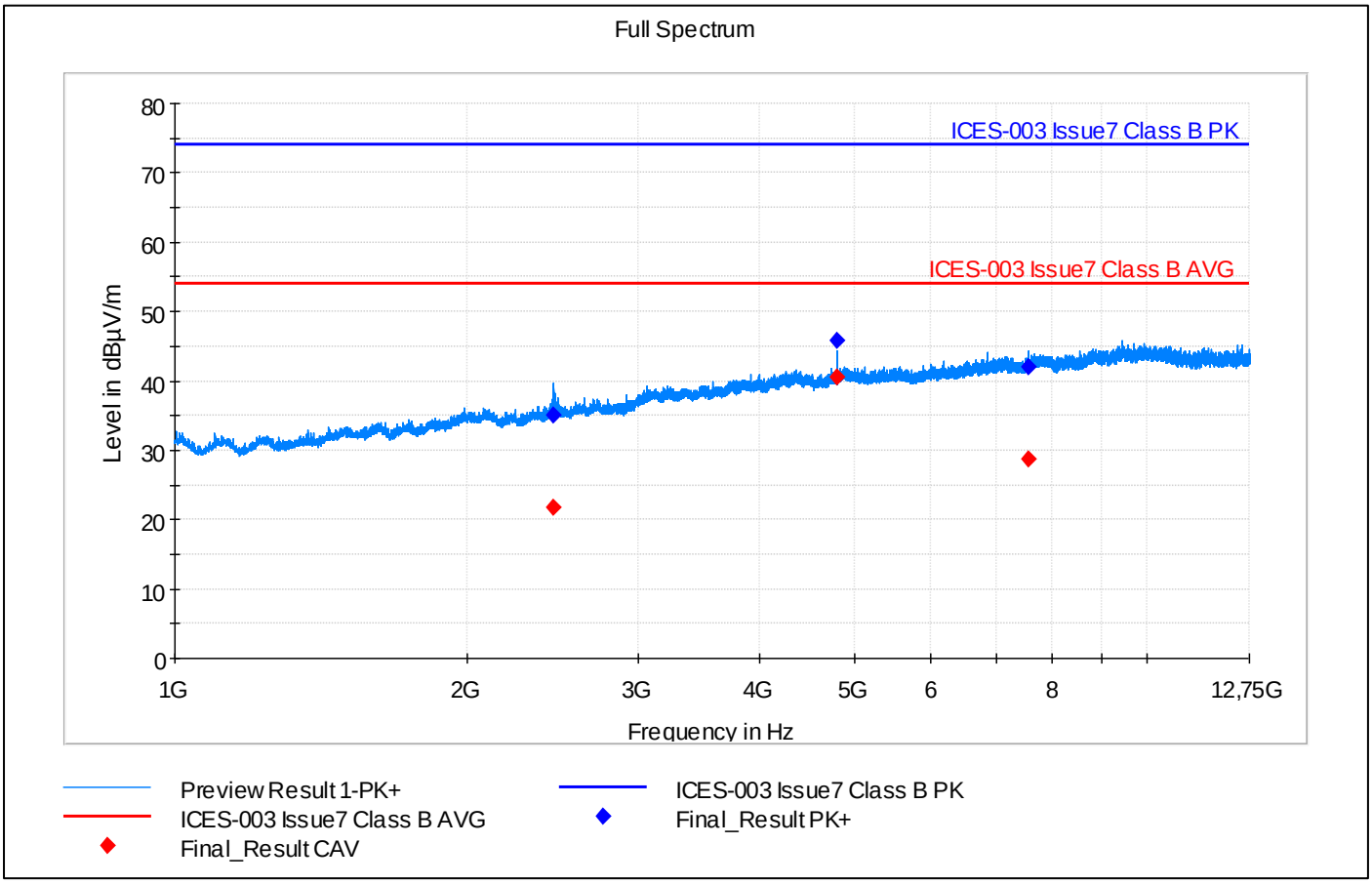
ICES-003, Graph and final result table for 30 MHz – 1 GHz, OM1:



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
50.970000	21.31	40.00	18.69	15000.0	120.000	112.0	V	19.0	0.0	21.0	PASS
108.000000	16.85	43.50	26.65	15000.0	120.000	162.0	V	38.0	0.0	19.4	PASS
132.660000	19.31	43.50	24.19	15000.0	120.000	106.0	V	313.0	0.0	16.4	PASS
181.200000	21.43	43.50	22.07	15000.0	120.000	101.0	V	280.0	0.0	17.8	PASS
192.870000	24.71	43.50	18.79	15000.0	120.000	105.0	V	313.0	0.0	19.4	PASS
289.500000	17.05	46.00	28.95	15000.0	120.000	129.0	H	83.0	0.0	22.1	PASS
337.680000	19.89	46.00	26.11	15000.0	120.000	112.0	H	157.0	0.0	23.8	PASS
349.590000	22.63	46.00	23.37	15000.0	120.000	101.0	H	183.0	90.0	24.4	PASS
470.550000	18.59	46.00	27.41	15000.0	120.000	133.0	H	213.0	0.0	26.3	PASS
488.310000	22.57	46.00	23.43	15000.0	120.000	150.0	H	137.0	0.0	26.9	PASS
573.120000	21.63	46.00	24.37	15000.0	120.000	133.0	H	257.0	0.0	28.6	PASS

ICES-003, Graph and final result table for 1 GHz – 12,75 GHz, OM1:



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
2454.750000	34.94	---	74.00	39.06	500.0	1000.000	209.0	H	198.0	-0.2	PASS
2454.750000	---	21.72	54.00	32.28	500.0	1000.000	209.0	H	198.0	-0.2	PASS
4802.000000	45.70	---	74.00	28.30	500.0	1000.000	100.0	V	67.0	8.2	PASS
4802.000000	---	40.54	54.00	13.46	500.0	1000.000	100.0	V	67.0	8.2	PASS
7558.000000	41.93	---	74.00	32.07	500.0	1000.000	232.0	V	292.0	13.5	PASS
7558.000000	---	28.68	54.00	25.32	500.0	1000.000	232.0	V	292.0	13.5	PASS

9. Conducted Emissions, AC mains power port

Reference: FCC 15.107, ICES-003, 3.2.1
Test method: ANSI C63.4:2014+A1:2017 Section 12

The applied limit for continuous conducted emission in power leads, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B, Secs. 15.107 & ICES-003 Issue 7

FCC part 15, subpart B and ICES-003, Issue 7

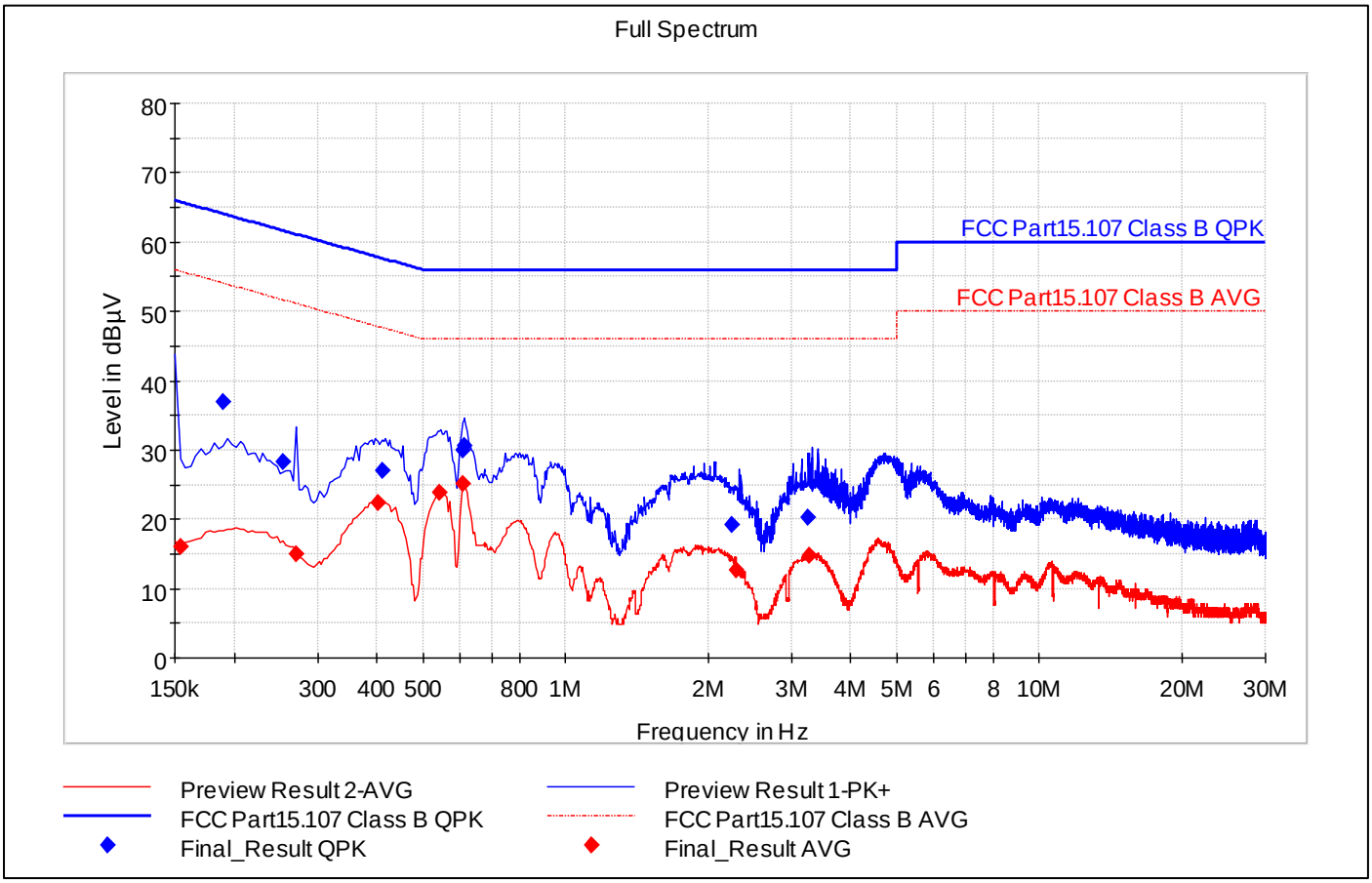
Limits:	Class B (dBuV)	
Frequency	Quasi peak limit	Average limit
0.15 – 0.50 MHz	66 to 56	56 to 46
0.50 – 5 MHz	56	46
5 – 30 MHz	60	50

Tested sample(s): 3670ER010
Operation mode(s) tested: OM1
Test results: PASS
Note:

Test data:

Operation mode(s)	Configuration	Test Verdict
OM1	Neutral wire noise.	PASS
OM1	Phase wire noise.	PASS

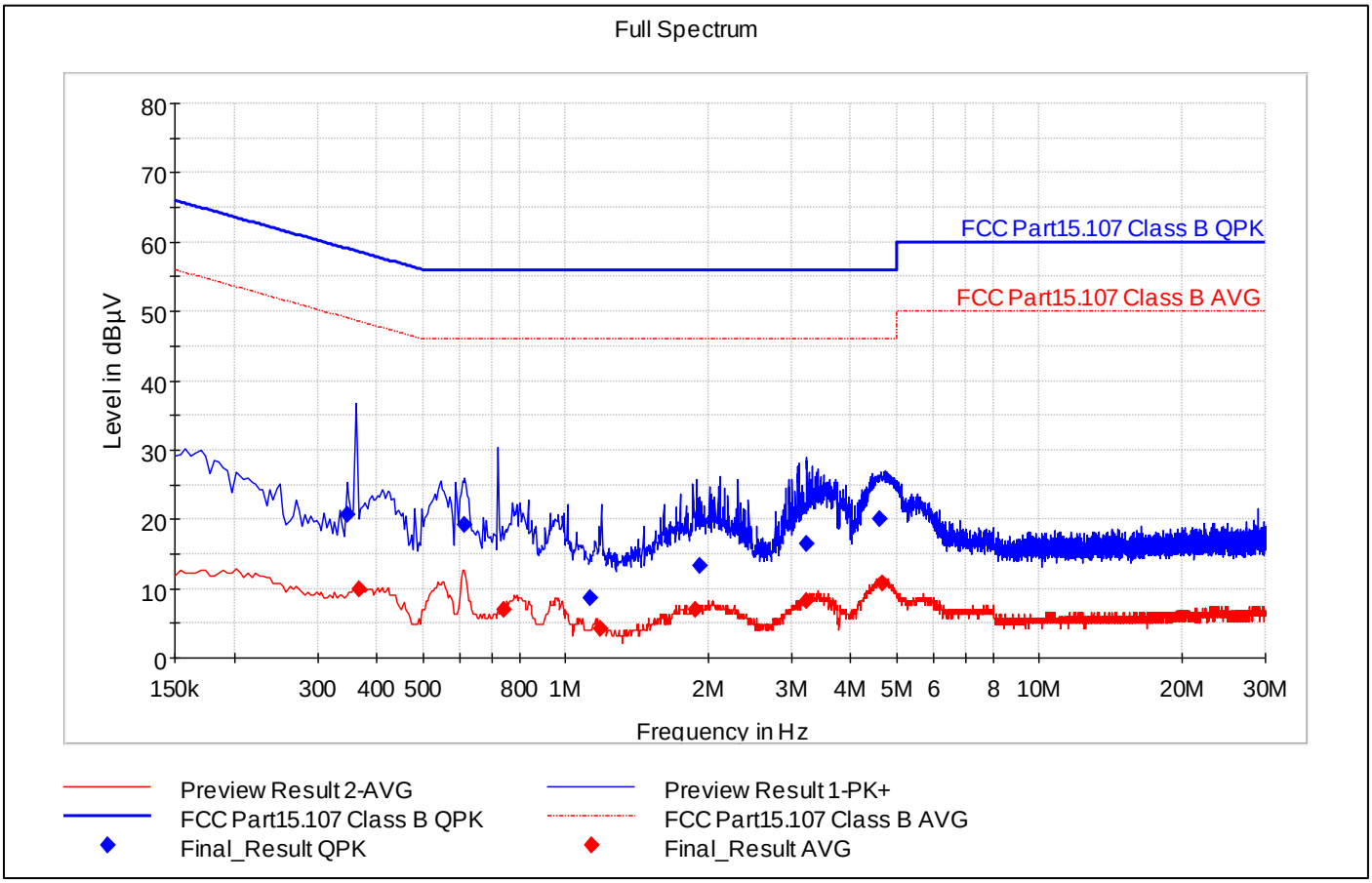
FCC part 15, subpart B, Graph and final result for frequency range 150kHz-30MHz, Phase



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Comment
0.154000	---	16.13	55.78	39.66	15000.0	9.000	L1	ON	9.5	Pass
0.190000	36.97	---	64.04	27.07	15000.0	9.000	L1	ON	9.5	Pass
0.254000	28.37	---	61.63	33.25	15000.0	9.000	L1	ON	9.6	Pass
0.270000	---	15.02	51.12	36.10	15000.0	9.000	L1	ON	9.6	Pass
0.402000	---	22.44	47.81	25.37	15000.0	9.000	L1	ON	9.6	Pass
0.410000	27.10	---	57.65	30.55	15000.0	9.000	L1	ON	9.6	Pass
0.542000	---	23.82	46.00	22.18	15000.0	9.000	L1	ON	9.6	Pass
0.606000	30.04	---	56.00	25.96	15000.0	9.000	L1	ON	9.6	Pass
0.606000	---	25.03	46.00	20.97	15000.0	9.000	L1	ON	9.6	Pass
0.610000	30.51	---	56.00	25.49	15000.0	9.000	L1	ON	9.6	Pass
2.252000	19.22	---	56.00	36.78	15000.0	9.000	L1	ON	9.7	Pass
2.300000	---	12.72	46.00	33.28	15000.0	9.000	L1	ON	9.7	Pass
3.256000	20.23	---	56.00	35.77	15000.0	9.000	L1	ON	9.7	Pass
3.268000	---	14.77	46.00	31.23	15000.0	9.000	L1	ON	9.7	Pass

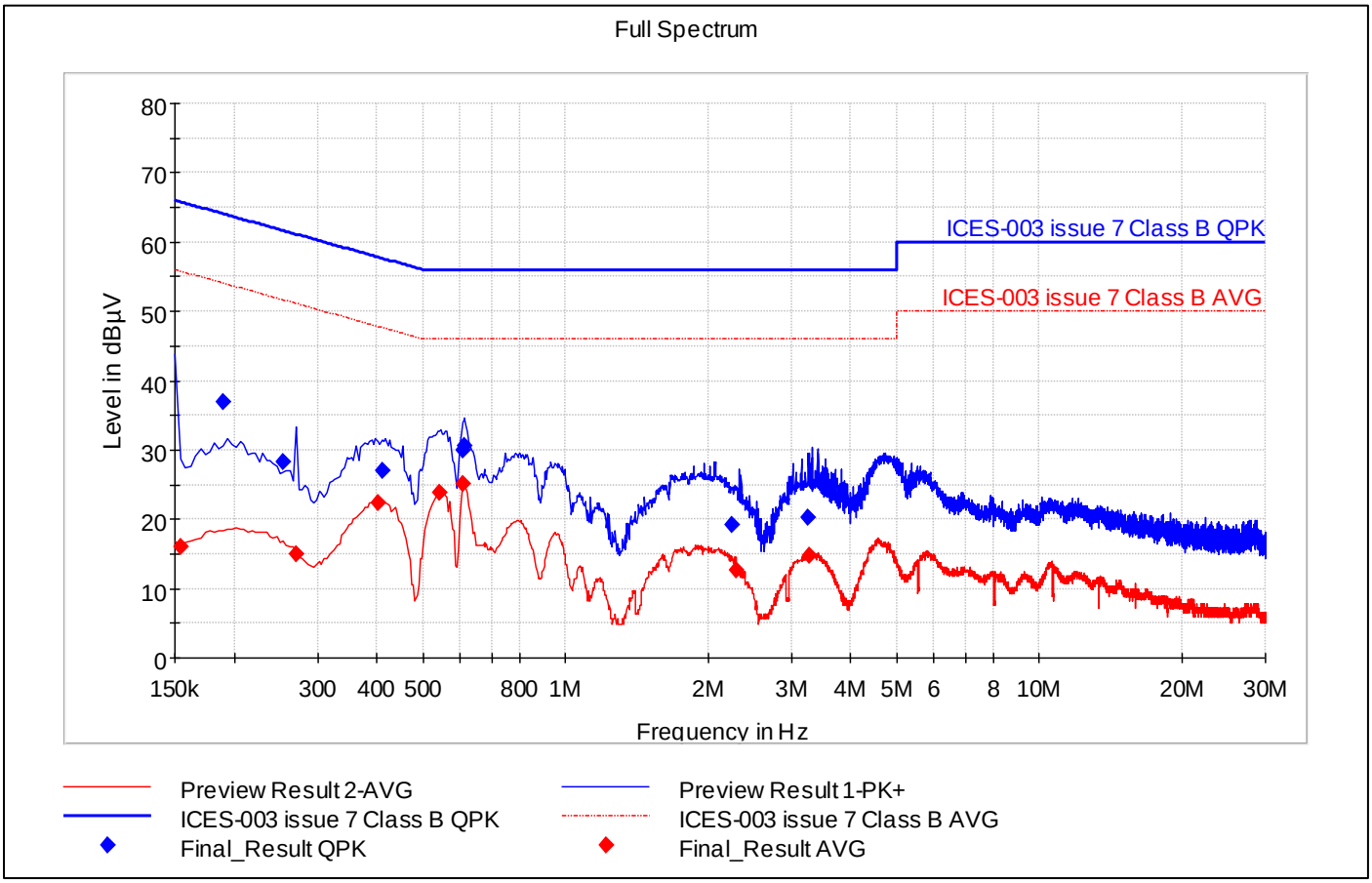
FCC part 15, subpart B, Graph and final result for frequency range 150kHz-30MHz, Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Comment
0.346000	20.76	---	59.06	38.30	15000.0	9.000	N	ON	9.5	Pass
0.366000	---	10.00	48.59	38.59	15000.0	9.000	N	ON	9.6	Pass
0.614000	19.18	---	56.00	36.82	15000.0	9.000	N	ON	9.6	Pass
0.742000	---	7.00	46.00	39.00	15000.0	9.000	N	ON	9.6	Pass
1.126000	8.68	---	56.00	47.32	15000.0	9.000	N	ON	9.6	Pass
1.186000	---	4.22	46.00	41.78	15000.0	9.000	N	ON	9.6	Pass
1.886000	---	6.87	46.00	39.13	15000.0	9.000	N	ON	9.7	Pass
1.914000	13.35	---	56.00	42.65	15000.0	9.000	N	ON	9.7	Pass
3.232000	16.37	---	56.00	39.63	15000.0	9.000	N	ON	9.7	Pass
3.232000	---	8.16	46.00	37.84	15000.0	9.000	N	ON	9.7	Pass
4.588000	20.09	---	56.00	35.91	15000.0	9.000	N	ON	9.7	Pass
4.668000	---	10.76	46.00	35.24	15000.0	9.000	N	ON	9.7	Pass

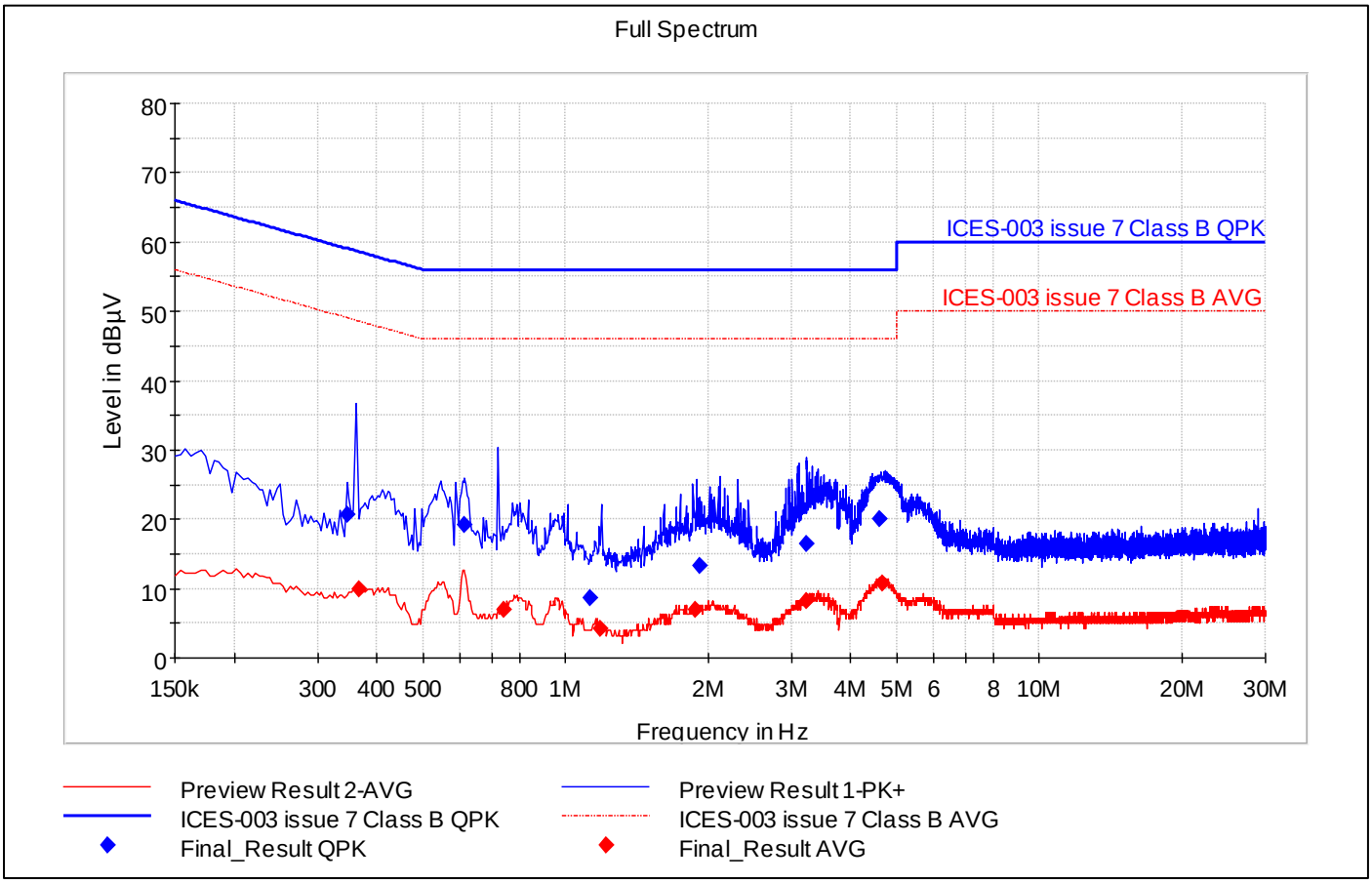
ICES-003, Graph and final result for frequency range 150kHz-30MHz, Phase



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Comment
0.154000	---	16.13	55.78	39.66	15000.0	9.000	L1	ON	9.5	Pass
0.190000	36.97	---	64.04	27.07	15000.0	9.000	L1	ON	9.5	Pass
0.254000	28.37	---	61.63	33.25	15000.0	9.000	L1	ON	9.6	Pass
0.270000	---	15.02	51.12	36.10	15000.0	9.000	L1	ON	9.6	Pass
0.402000	---	22.44	47.81	25.37	15000.0	9.000	L1	ON	9.6	Pass
0.410000	27.10	---	57.65	30.55	15000.0	9.000	L1	ON	9.6	Pass
0.542000	---	23.82	46.00	22.18	15000.0	9.000	L1	ON	9.6	Pass
0.606000	30.04	---	56.00	25.96	15000.0	9.000	L1	ON	9.6	Pass
0.606000	---	25.03	46.00	20.97	15000.0	9.000	L1	ON	9.6	Pass
0.610000	30.51	---	56.00	25.49	15000.0	9.000	L1	ON	9.6	Pass
2.252000	19.22	---	56.00	36.78	15000.0	9.000	L1	ON	9.7	Pass
2.300000	---	12.72	46.00	33.28	15000.0	9.000	L1	ON	9.7	Pass
3.256000	20.23	---	56.00	35.77	15000.0	9.000	L1	ON	9.7	Pass
3.268000	---	14.77	46.00	31.23	15000.0	9.000	L1	ON	9.7	Pass

ICES-003, Graph and final result for frequency range 150kHz-30MHz, Neutral



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Comment
0.346000	20.76	---	59.06	38.30	15000.0	9.000	N	ON	9.5	Pass
0.366000	---	10.00	48.59	38.59	15000.0	9.000	N	ON	9.6	Pass
0.614000	19.18	---	56.00	36.82	15000.0	9.000	N	ON	9.6	Pass
0.742000	---	7.00	46.00	39.00	15000.0	9.000	N	ON	9.6	Pass
1.126000	8.68	---	56.00	47.32	15000.0	9.000	N	ON	9.6	Pass
1.186000	---	4.22	46.00	41.78	15000.0	9.000	N	ON	9.6	Pass
1.886000	---	6.87	46.00	39.13	15000.0	9.000	N	ON	9.7	Pass
1.914000	13.35	---	56.00	42.65	15000.0	9.000	N	ON	9.7	Pass
3.232000	16.37	---	56.00	39.63	15000.0	9.000	N	ON	9.7	Pass
3.232000	---	8.16	46.00	37.84	15000.0	9.000	N	ON	9.7	Pass
4.588000	20.09	---	56.00	35.91	15000.0	9.000	N	ON	9.7	Pass
4.668000	---	10.76	46.00	35.24	15000.0	9.000	N	ON	9.7	Pass

10.Test Equipment List

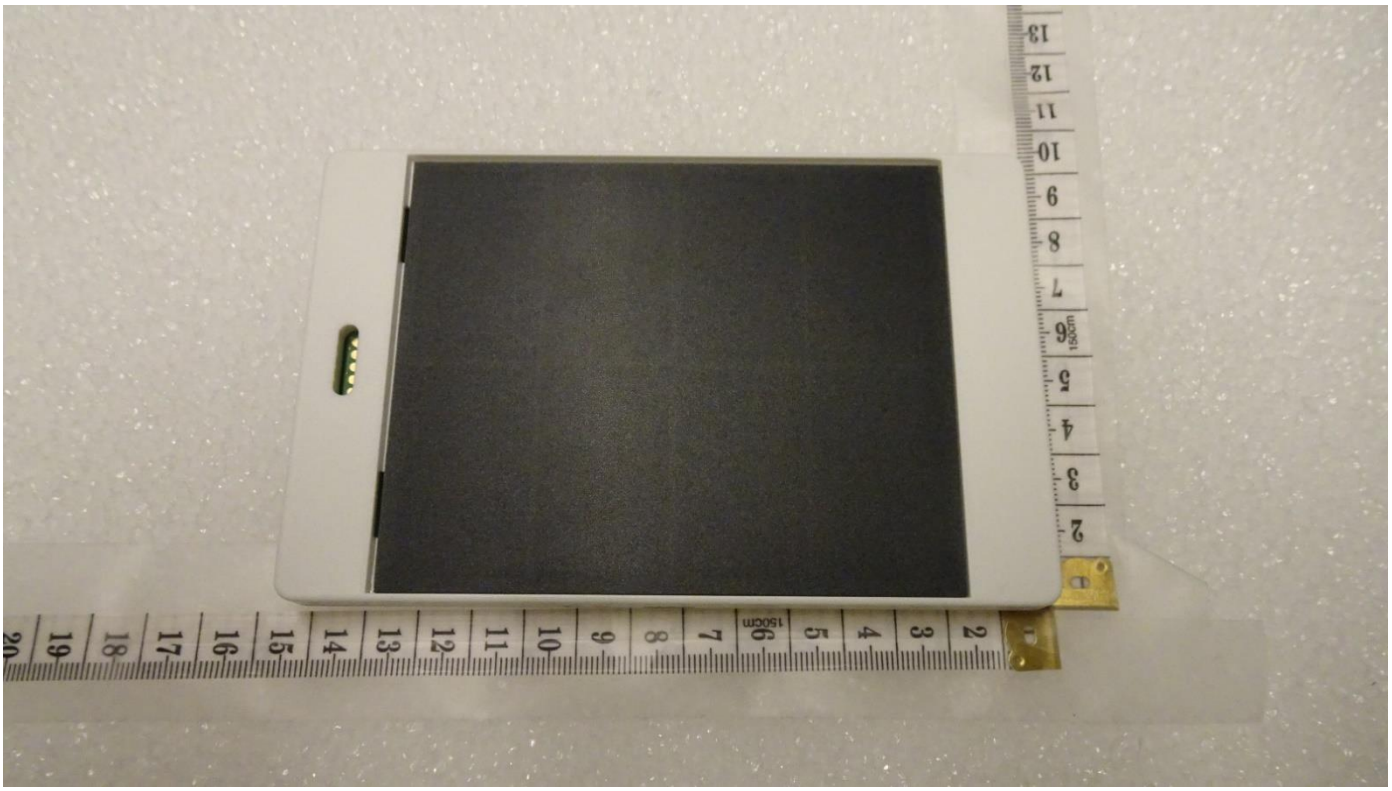
Radiated emission

New ID	Manufacturer	Equipment type	Description	Serial	Calibration information	Next calibration
G4C217	Rohde & Schwarz	HF907	Double-Ridged Waveguide Horn Antenna 800MHz-18GHz	100164	4.11.2020	4.11.2023
G4C264	Rohde & Schwarz	CMW500	Wideband radio communication tester	126426	18.11.2022	18.11.2023
G4C265	Rohde & Schwarz	ESW26	EMI test receiver	101324	25.8.2022	25.8.2023
G4C273	Frankonia	ALX-4000E	Broadband Antenna, 25MHz-4GHz with 6dB (50-A-MFN-06) att.	00816+1531	11.11.2020	11.11.2023
G4C503	Rohde & Schwarz	ESIB26	EMI Test Receiver 20Hz...26.5GHz	100263	9.7.2021	9.7.2023
G4C560	Bruel & Kjaer	Nexus 2690	Conditioning Amplifier	2340586	24.5.2018	N/A
G4C292	Rohde & Schwarz	TS-LNA 1840	RF Preamplifier 18 to 40 GHz	100841	9.6.2022	9.6.2024
G4C469	Rohde & Schwarz	TS_PRE2	RF Preamplifier	101541	9.6.2022	9.6.2024
G4C294	Rohde & Schwarz	TC-HORN40	Horn Antenna -> 40GHz	101057	4.11.2022	4.11.2025

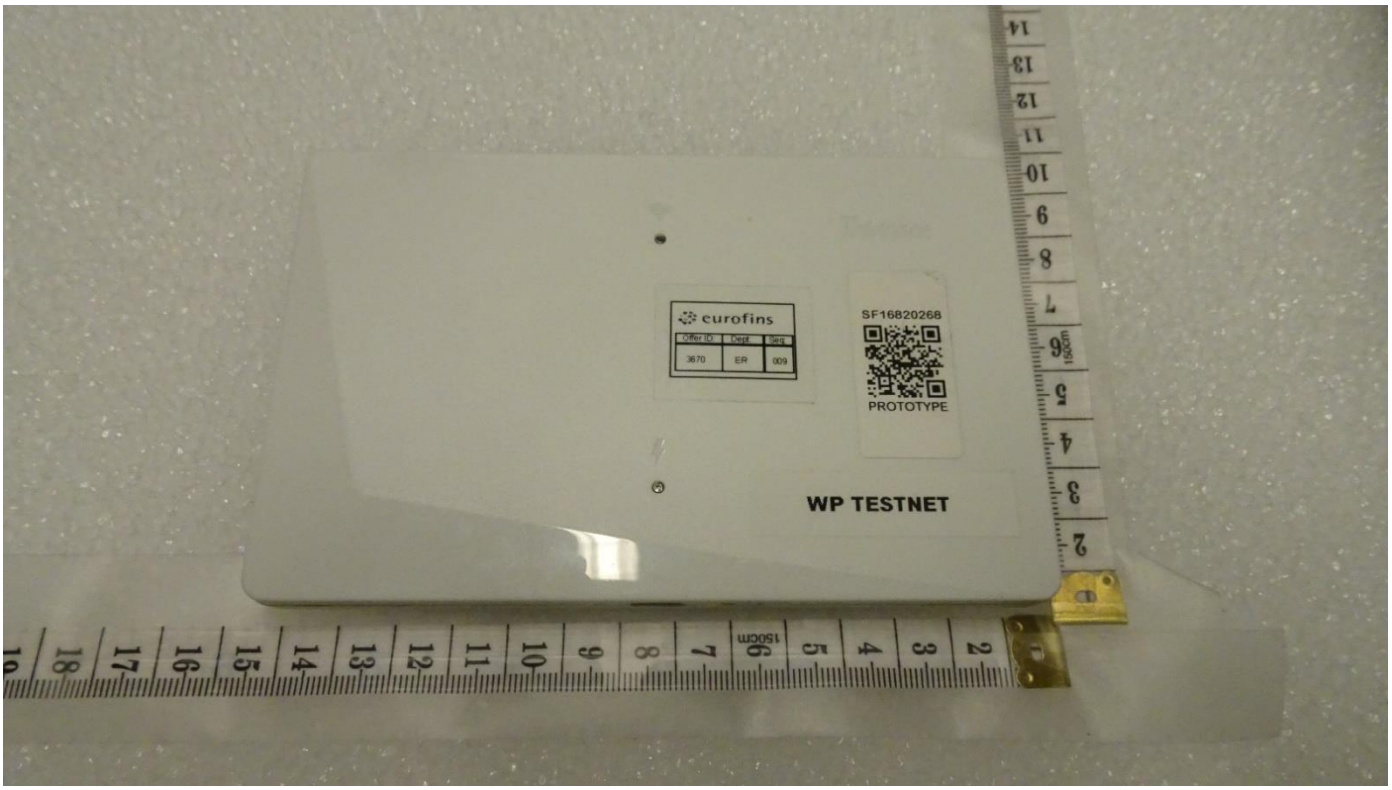
Conducted emission

New ID	Manufacturer	Equipment type	Description	Serial	Calibration information	Next calibration
G4C265	Rohde & Schwarz	ESW26	EMI test receiver	101324	25.8.2022	25.8.2023
G4C515	Rohde & Schwarz	ENV216	Two-line V-Network LISN	101472	11.8.2022	11.8.2023

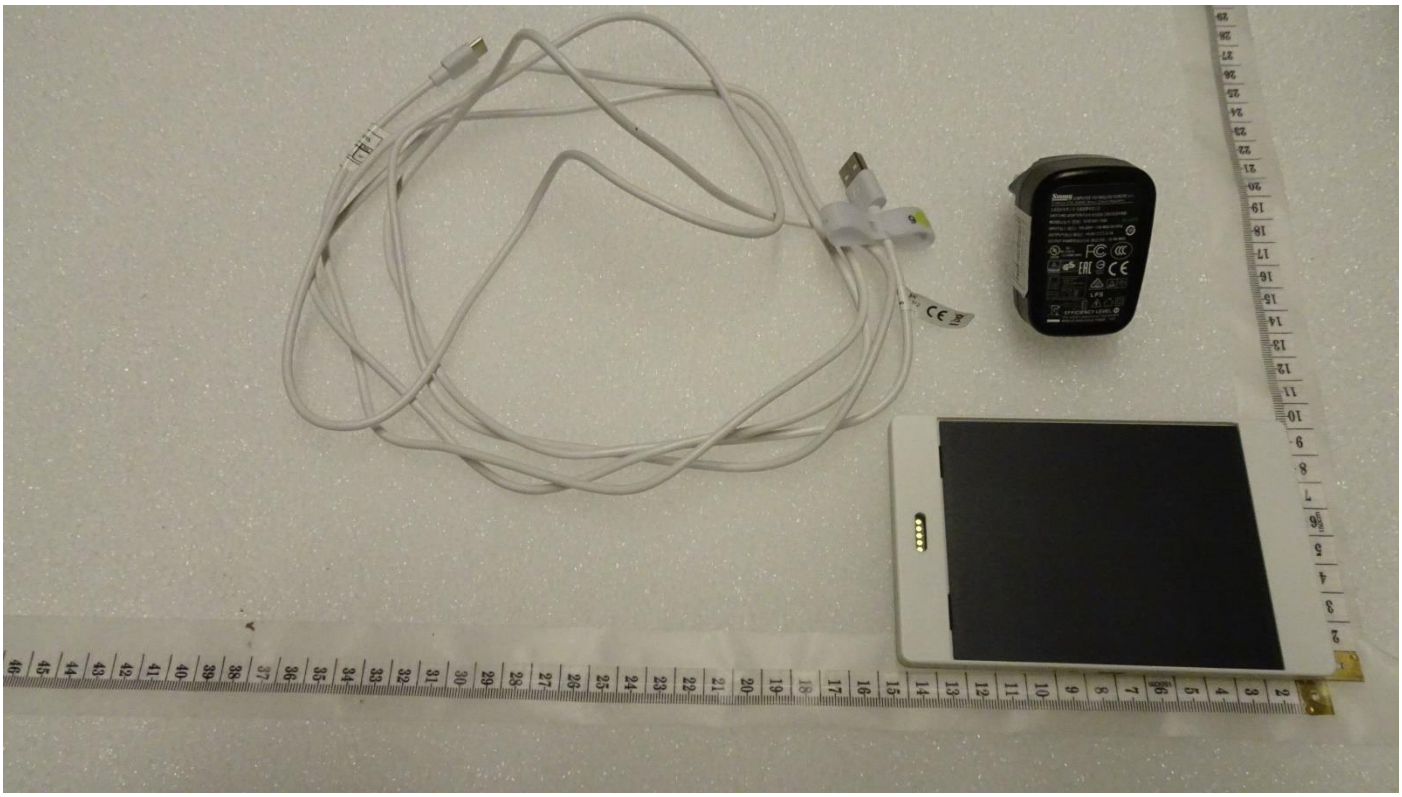
Appendix A: DUT Photographs



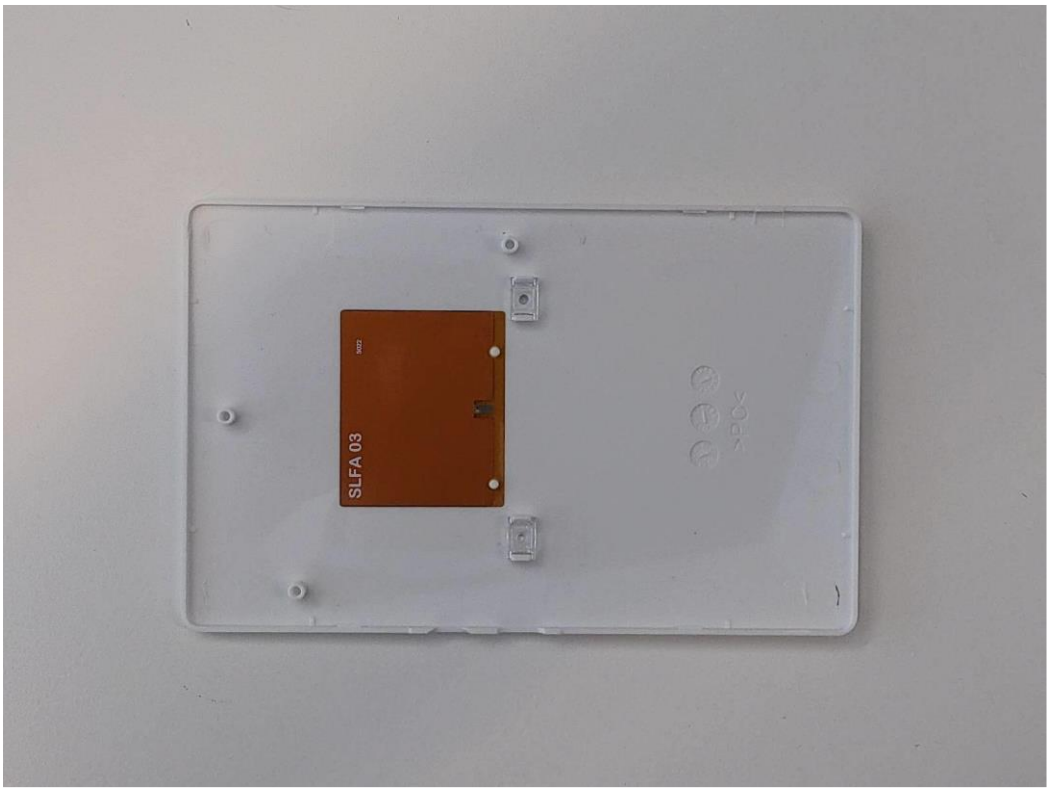
Picture 1 External pictures, front



Picture 2 External pictures, back



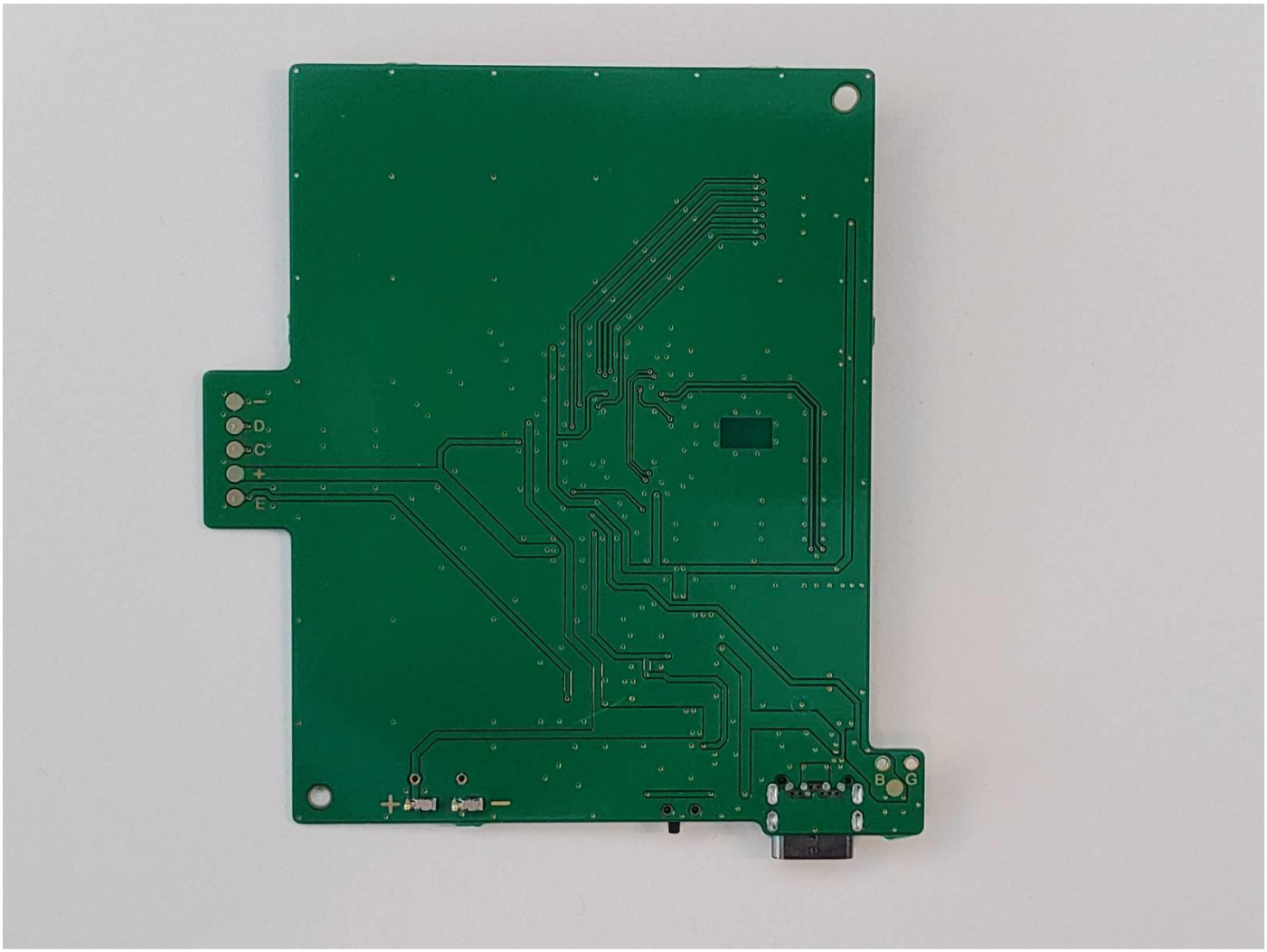
Picture 3 External pictures, all



Picture 4, EUT a cover inside with antenna

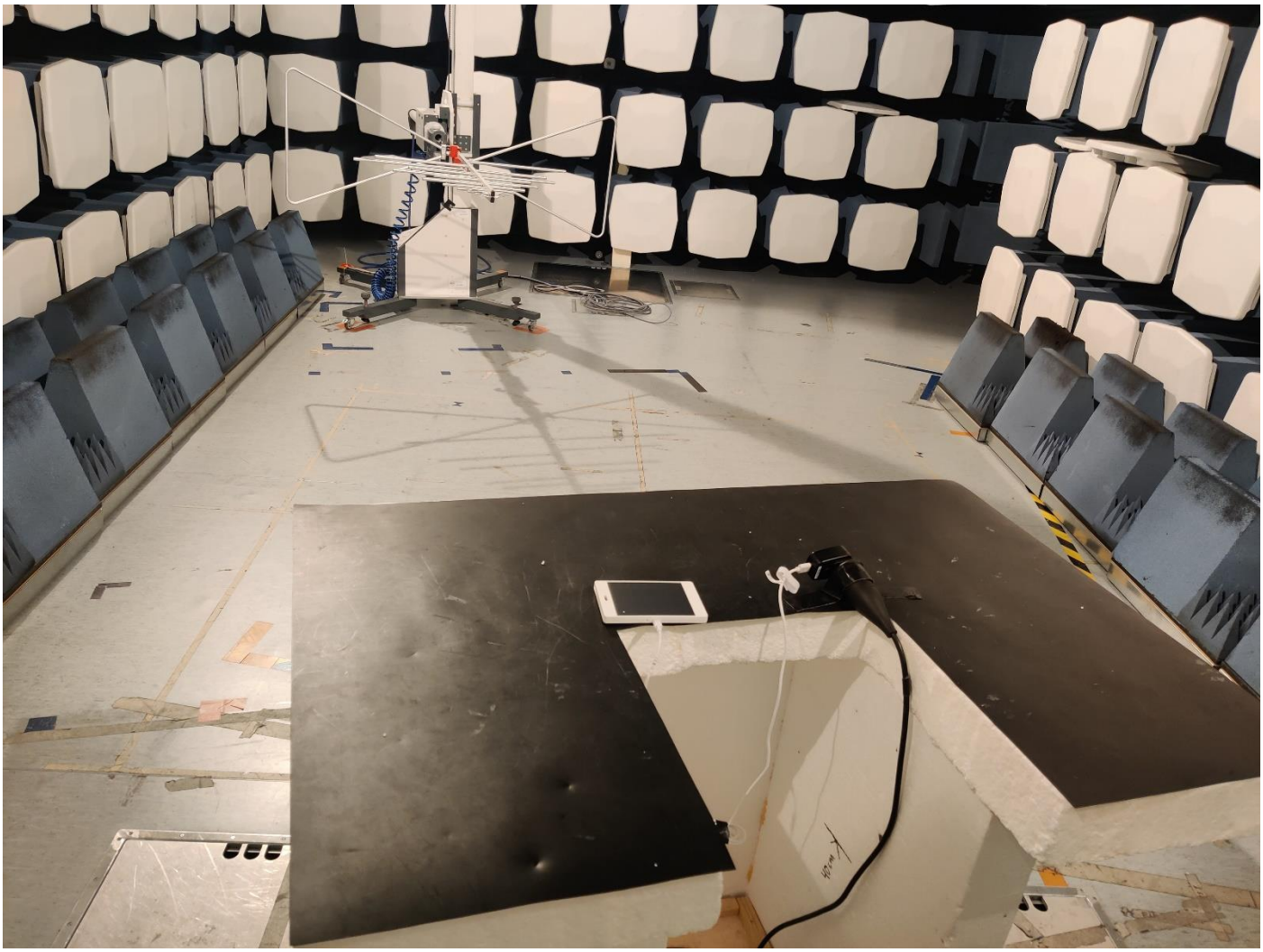
Picture 5, EUT PCB and battery inside B cover

Picture 6, EUT PCB top

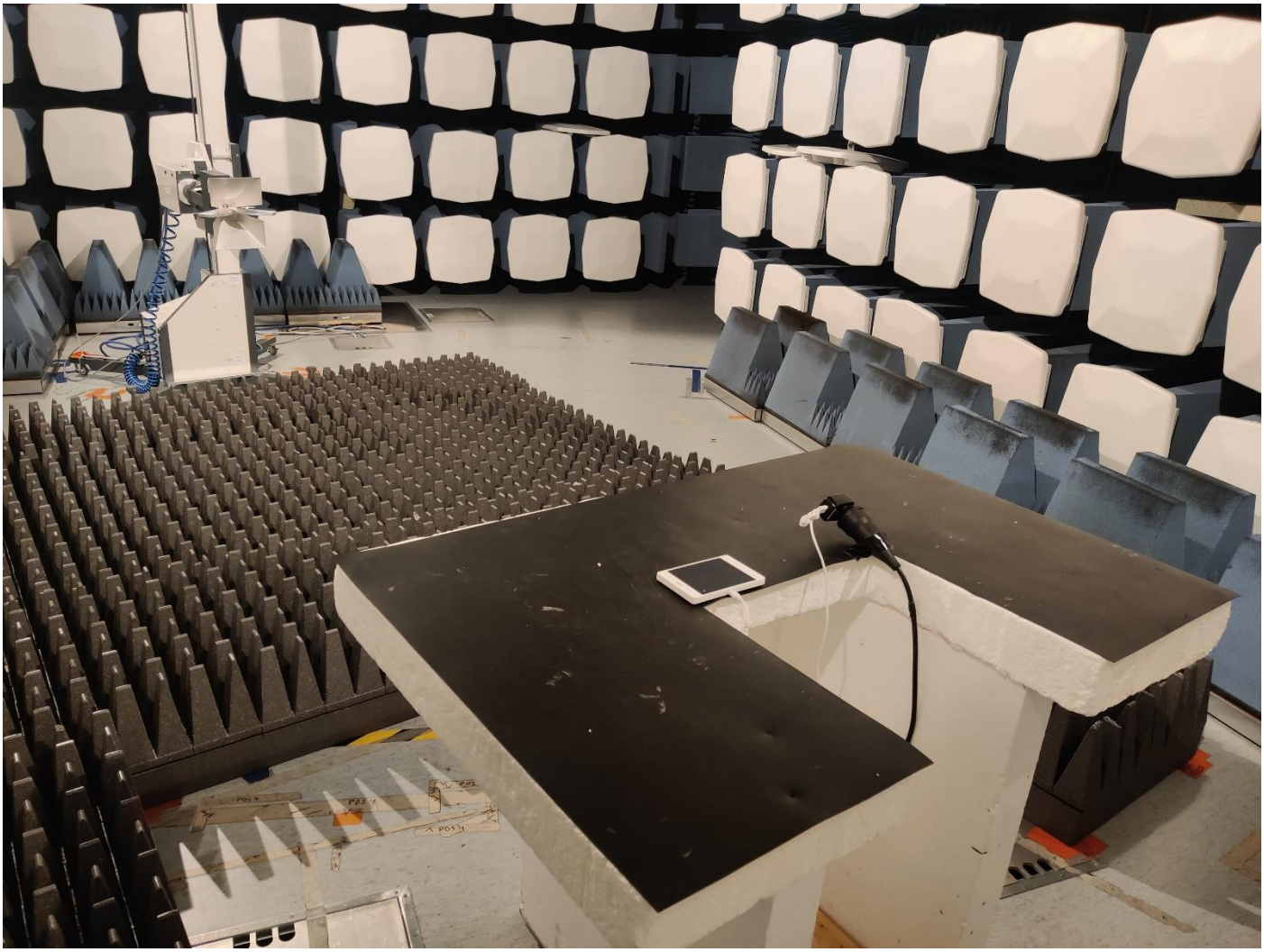


Picture 7, PCB bottom

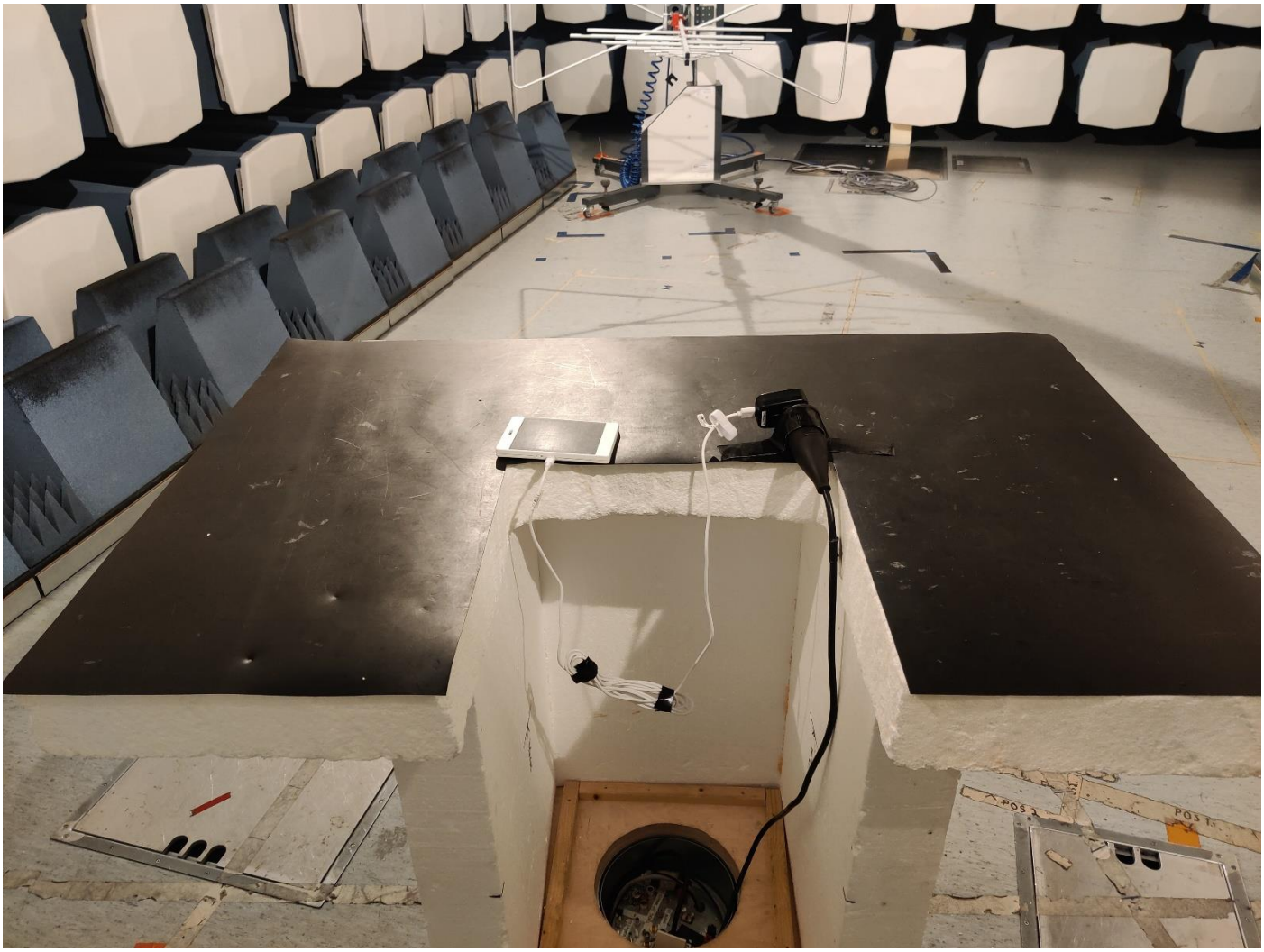
Appendix B: Test Setup Photographs



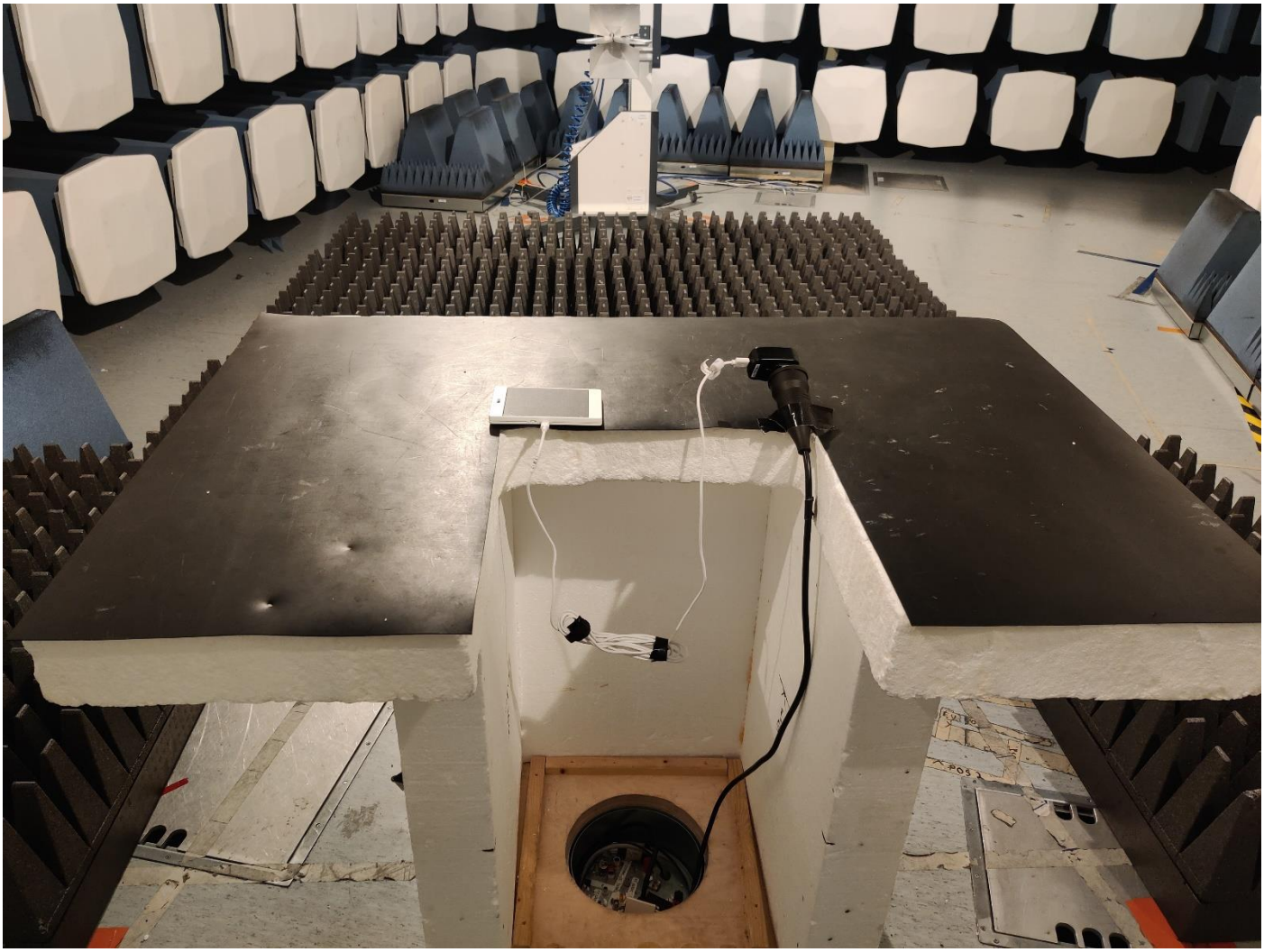
Picture 8 Radiated emission common setup, 30 – 1000 MHz



Picture 9 Radiated emission common setup, 1 – 12,75 GHz



Picture 10 Radiated emission 30 – 1000 MHz, EUT setup, back view



Picture 11 Radiated emission 1 – 12,75 GHz, EUT setup, back view

Picture 12 Conducted emission pictures