

Test Report

No. 1-2202-25-01-04_TR1-R02

June 25, 2026

Applicant Kistler Instrumente AG

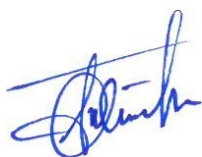
Product **Charge Amplifier**
Model **TMS Charge Amplifier Module**
FCC-ID: **2AWIT-5190A1**

Test Standard(s) 47 CFR 1.1307
47 CFR 2.1091
47 CFR 2.1093
KDB 447498
KDB 680106
Further applied standards are listed in chapter 7 - Test Standards.

Verdict ☒ **PASS**: All of the performed measurements acc. to the standard(s) are PASSED

The test results relate only to devices specified in this document

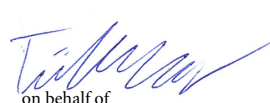
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1 Disclaimer

The test results of this test report relate exclusively to the test item specified in chapter "Test sample information". cetecom advanced does not assume responsibility for any conclusions and generalizations drawn from the test results regarding other specimens or samples of the type of the equipment represented by the test item.

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2 Related cetecom advanced documents

Document	Content	Reference
-/-		

3 Document history

3.1 Current release

Release No.:	R01
Date of release:	June 25, 2026
Applied changes:	Initial release

3.2 Previous releases

Release No.	Applied changes	Date of release
-R02	insert FCC-ID	2026-06-25

4 Test laboratory

4.1 Contact information

cetecom advanced GmbH
Untertuerkheimer Str. 6-10
66117 Saarbruecken
Germany

4.2 Involved test locations



Saarbruecken lab

Untertuerkheimer Str. 6-10
66117 Saarbruecken
Germany



Essen lab

Im Teelbruch 116
45219 Essen
Germany

4.3 Subcontracted laboratories

None.

4.4 Common report information

The period is used as a decimal separator and the comma as a thousand separator.

4.5 Abbreviations

BW	-	Bandwidth
DUT	-	Device under Test
EUT	-	Equipment under Test
HW	-	Hardware
Inv. No.	-	Inventory number
N/A	-	not applicable
S/N	-	Serial Number
SW	-	Software

5 Client information

5.1 Applicant

Name: Kistler Instrumente AG

Address: Else-Züblin-Strasse 17
8404 Winterthur
SWITZERLAND

Contact Person: Christian Gerber
Contact Person's Email: christian.gerber@kistler.com

5.2 Manufacturer

Name: Kistler Instrumente AG

Address: Else-Züblin-Strasse 17
8404 Winterthur
SWITZERLAND

5.3 Application Details

Date of receipt of order: 2026-01-07

Date of receipt of test item: 2026-05-11

Start of test: 2026-05-11

End of test: 2026-05-11

6 Test sample information

The data about the test samples is given/supplied by the customer and not under control by cetecom advanced GmbH.

6.1 Test Item (declared by applicant)

Kind of test item:	Charge Amplifier
Device type:	Fix device
Model name:	TMS Charge Amplifier Module
S/N serial number:	6697598
FCC-ID:	2AWIT-5190A1
Hardware status:	55263529 Rev.d
Software status:	FPGA 1.0.5
Frequency:	RFID 13.56 MHz
Antenna:	Integrated antenna
Accessories:	-/-
Test Sample Status	Identical prototype
Exposure Category:	General population / uncontrolled environment

7 Test Standards

Test Standard	Version	Test Standard Description
47 CFR 1.1307		Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.
47 CFR 2.1091		Radiofrequency radiation exposure evaluation: mobile devices.
47 CFR 2.1093		Radiofrequency radiation exposure evaluation: portable devices.
KDB 447498 D04	v01	Interim General RF Exposure Guidance:
FCC KDB 680106 D01	v04	Equipment authorization of WPT devices.

7.1 RF exposure limits according CFR47 (Subpart I - §1.1310)

Reference levels for general public and occupational use:

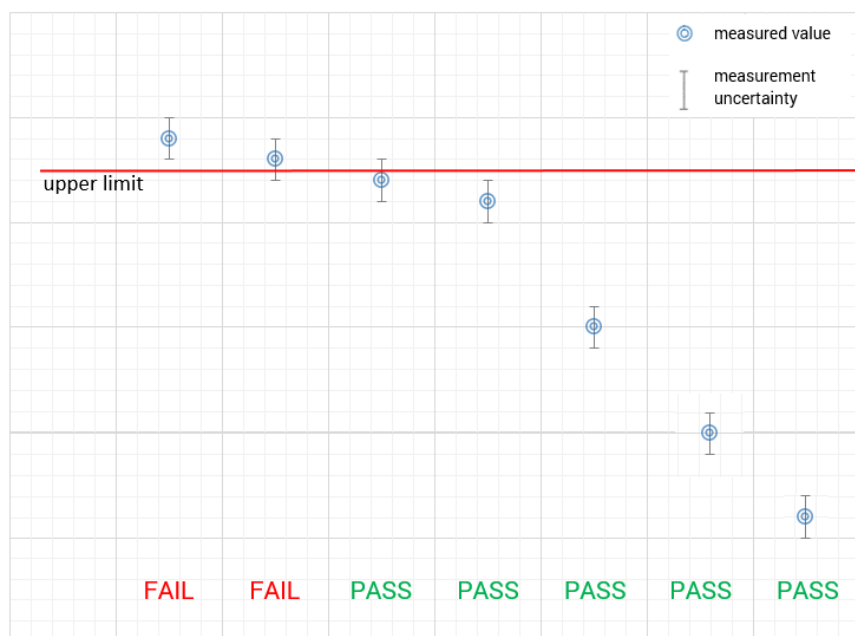
According to: CFR47, Subpart I - §1.1310 Radiofrequency radiation exposure limits				
Frequency Range (MHz)	Electric Field (V/m)	Magnetic Field (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
Occupational / Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/ f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100000	--	--	5	6
General Population / Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100000	--	--	1.0	30

8 Reporting statements of conformity – decision rule

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3.

The measurement uncertainty is mentioned in this test report, see chapter 9, but is not taken into account - neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 20% that the decision might be wrong."

measured value, measurement uncertainty, verdict



9 Summary of Measurement Results

☒	No deviations from the technical specifications ascertained
☐	Deviations from the technical specifications ascertained

No relevant emissions out of the cabinet of the DUT are detected at the declared safety distance of 20 cm from the antenna-surface.

10 Test Environment

Ambient temperature:	20 – 24 °C
Relative humidity content:	40 – 50 %
Air pressure:	not relevant for this kind of testing
Power supply:	230 V / 50 Hz

11 Test Setup

11.1 Measurement system

11.1.1 Broadband Electromagnetic field test system



A state of the art Broadband Electromagnetic Field Test system was used. The probes of the system are fitted with three sensors which measure the field strength of the X, Y and Z plane directions separately. The field strength is calculated by the instrument's processor by summing the squares of the three measured values.

The frequency range 5 Hz to 60 GHz is covered.

Depending on the used probe type Electric and Magnetic Field or Electric Field only is detectable.

- | | | |
|----------------------------|-------------------|-----------------------------|
| • EHP-50D | 5 Hz to 100 kHz | Electric and Magnetic Field |
| • EHP-50F | 5 Hz to 400 kHz | Electric and Magnetic Field |
| • HF 3061 | 300 kHz to 30 MHz | Magnetic Field |
| • EF 0691 | 100 kHz to 6 GHz | Electric Field |
| • EF 6092 | 100 MHz to 60 GHz | Electric Field |
| • ELT 400 3cm ² | 1 Hz to 400 kHz | Magnetic Field |

11.1.2 Test equipment

	Manufacturer	Device	Type	Serial number	Last Calibration	Calibration cycle (months)
☒	Narda	Electric and Magnetic Field Meter	NBM-550	F-0319	2025-05-23	24
☐	Narda	Electric and Magnetic Field Meter	NBM-520	D-1234	2025-06-13	24
☐	Narda	Electric and Magnetic Field Meter	ELT 400	N-0915	2025-05-22	24
☒	Narda	Electric Field Probe (100 kHz - 6 GHz)	EF 0691	G-0027	2025-05-23	24
☐	Narda	Electric Field Probe (100 MHz - 60 GHz)	EF 6092	A-0071	2025-06-13	24
☒	Narda	Magnetic Field Probe (300 kHz to 30 MHz)	HF 3061	D-0404	2025-05-23	24
☐	Narda	Electric and Magnetic Field Analyser (5 Hz – 100 kHz)	EHP-50D	230WX50108	2025-05-23	24
☐	Narda	Electric and Magnetic Field Analyser (5 Hz – 400 kHz)	EHP-50F	000WX60907	2025-02-03	24
☐	Narda	Magnetic Field Probe (1 Hz – 400 kHz)	B-Field 3cm ²	C-0393	2025-05-22	24

☒ Devices used during the test
 ☐ Devices not used during the test

11.1.3 Averaging

For time efficient testing an average of 8 seconds was used. With some spot checks was verified, that caused by the time structure of the measured responses, the results did not change with a 6-minute-averaging.

11.1.4 Uncertainties

11.1.4.1 Typical uncertainty of HF3061

Flatness of frequency response ^(a)	0/-1 dB (500 to 800 kHz)	
Calibration uncertainty not included	+0.1/ -0.5 dB (800 kHz to 30 MHz)	
Calibration uncertainty ^(b) @ 0.59 mW/cm ² (0.125 A/m)	1.3 dB	
Linearity Referred to 0.59 mW/cm ² (0.125 A/m)	±3 dB (0.017 to 0.033 A/m)	±3 dB (10 to 40 μW/cm ²)
	±1 dB (0.033 to 0.068 A/m)	±1 dB (40 to 175 μW/cm ²)
	±0.5 dB (0.068 to 3 A/m)	±0.5 dB (175 μW/cm ² to 340 mW/cm ²)
	±1 dB (3 to 16 A/m)	±1 dB (0.34 to 10 W/cm ²)
Isotropic response ^(c)	±1 dB	
Temperature response	+0.2/ -0.8 dB (±0.025 dB/K @ 10 to 50 °C)	

(a) Frequency response can be compensated for by the use of correction factors stored in the probe memory

(b) Accuracy of the fields generated to calibrate the probes

(c) Uncertainty due to varying polarization (verified by type approval test for meter with probe). Ellipse ratio included and calibrated for each probe

11.1.4.2 Typical uncertainty of EF0691

Flatness of frequency response ^(a)	±1.0 dB (1 MHz to 4 GHz) ±1.5 dB (0.3 MHz to 5 GHz) -2.5 dB typ. @ 0.15 MHz	
Calibration uncertainty ^(b) @ 0.2 mW/cm ² (27.5 V/m)	0.8 dB (≤ 300 MHz) 1.5 dB (300 MHz to 1.2 GHz) 1.3 dB (≥ 1.2 GHz)	
Linearity Referred to 0.2 mW/cm ² (27.5 V/m)	±0.5 dB (2.2 to 316 V/m)	±0.5 dB (0.0013 to 26.5 mW/cm ²)
Isotropic response ^(c)	±1 dB	
Temperature response	+0.2/ -1 dB (0 °C to 50 °C, related to 23 °C)	

(a) Frequency response can be compensated for by the use of correction factors stored in the probe memory

(b) Accuracy of the fields generated to calibrate the probes

(c) Uncertainty due to varying polarization (verified by type approval test for meter with probe). Ellipse ratio included and calibrated for each probe

11.1.5 Validation procedure

Before performing the tests the empty test chamber was checked for system immanent frequency responses. The following background signal level was detected. All levels are small enough to allow accurate proof of the limits to be considered.

Probe	Frequency Range	Magnetic Flux Density (B) in μT	Magnetical Field Strength in A/m	Electrical Field Strength in V/m	Remark
HF 3061	300 kHz – 30 MHz	0.0016	0.0013	--	
EF 0691	100 kHz – 6 GHz	--	--	0.15	

11.1.6 Definition of test position and distances

In absence of an equipment specific regulation with given test distances, all not further noted test positions were measured in "touched" mode, the probe radome touching the DUT at the defined test position.

Due to the mechanical concept of the used probe a distance between DUT surface and electrical centre of the probe antennas remains.

Maximum distance (cm)		
Probe type	Magnetic Field	Electrical Field
HF 3061	5.5	--
EF 0691	--	3.5

11.1.7 Anisotrophical probe behaviour management

As EMF measurements for safety and health aspects are often performed in the nearfield of a radiation source it is important to be aware of the not ideal isotropic performance of a typical probe and how to reproduce reliable results.

During measurements the following steps are performed to get always the highest possible field strength result and validate that the measured results are always the worst case scenario with the highest energy emitted by the source.

Step 1: Finding the position of the highest radiated field source with a basic probe orientation.

Step 2: Turning the probe to all possible orientations to find the orientation that delivers the maximum field strength.

11.2 Test results

For this measurement a modified EUT with directly connected power supply was used, giving the maximum persistent field and free access to all sides of the housing.

Test positions see photo documentation (Annex A).

Coupled 13.56 MHz						
test position	distance to probe centre (cm)	H (A/m)	Limit (A/m)	Probe	E (V/m)	Limit (V/m)
WC	touch*	0.106	0.161	HF3061	1.97	60.7
NOISE	≥ 20	0.0025	0.161		0.5	60.7
				EF0691		

Table 1: Test results E-/ H-f@13.56 MHz, peak values (max hold)

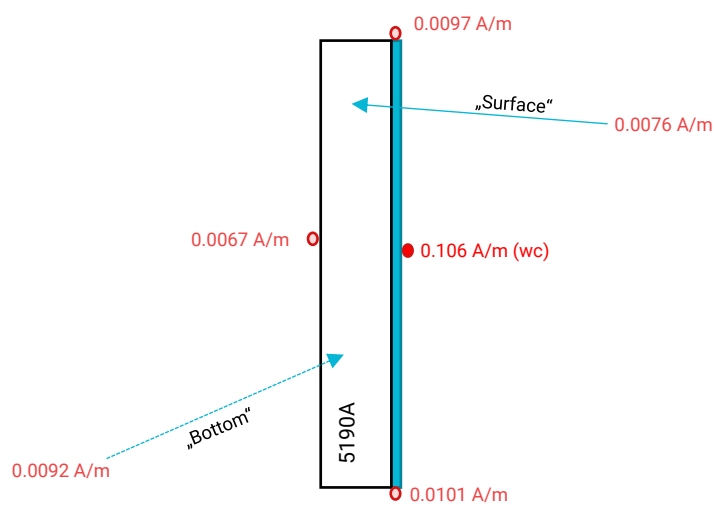
*) the internal distance between the outer housing and calibrated measurement position of the probes are as shown in the following table:

Probe:	Internal Distance:
HF 3061	5.5 cm
EF 0691	3.5 cm

Detailed H-field distribution:

Legend:

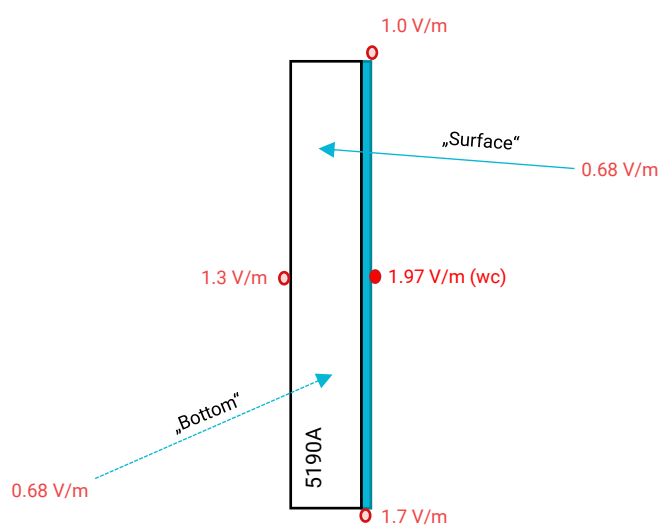
- -Test position (H-Field 300 kHz to 30 MHz)
Noise floor: 4cm distance 0.0045 A/m / 20cm distance 0.0025 A/m
- - Max. Position Coupling / RFID Antenna side (0.106 A/m)
- - Coupling side / RFID Antenna



Detailed E-field distribution:

Legend:

- -Test position (E-Field 100 to 6000 kHz)
Noise floor: 4cm distance < 0.6 V/m / 20cm distance < 0.5 V/m
- - Max. Position Coupling / RFID Antenna side (1.97 V/m)
- - Coupling side / RFID Antenna



11.3 Final verdict

No relevant emissions out of the cabinet of the DUT are detected at the declared safety distance of 20 cm from the antenna-surface.

11.4 EUT and test setup photos

Photo 1: EUT



Photo 2: EUT – Front view

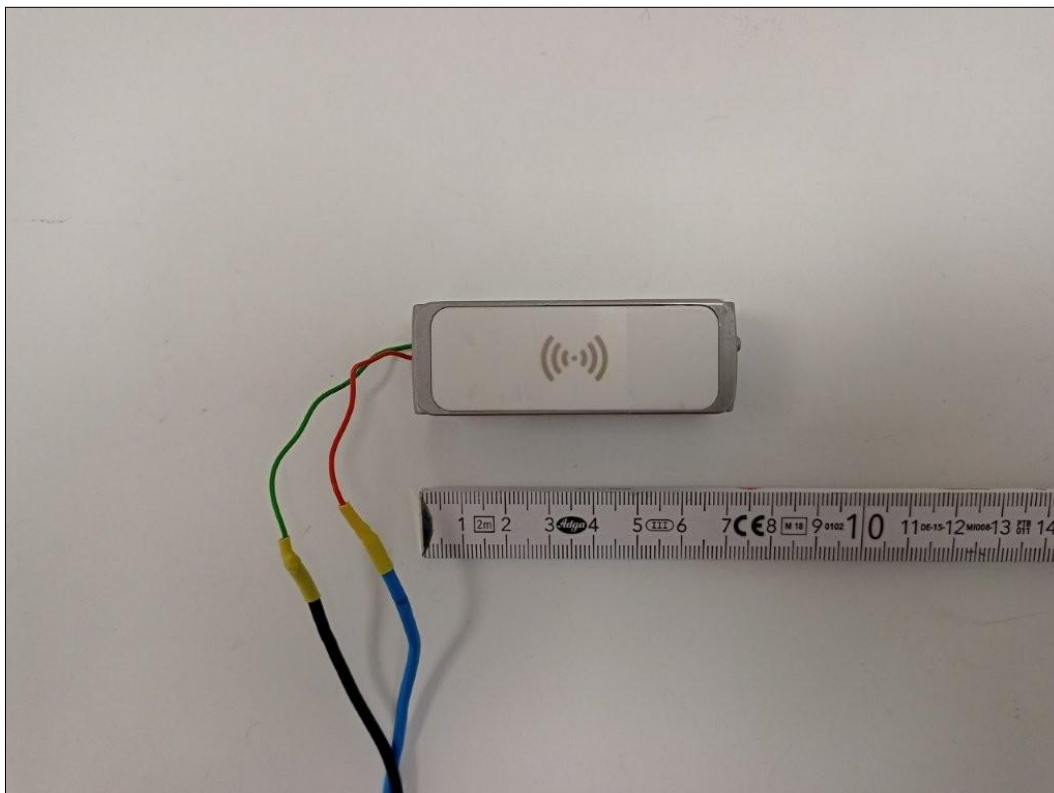


Photo 3: EUT – Backside view



Photo 4: EUT – Side view (Label)



Photo 5: EUT – Side view (Label)



Photo 6: Test position – Front with EF0691 probe (0mm distance)

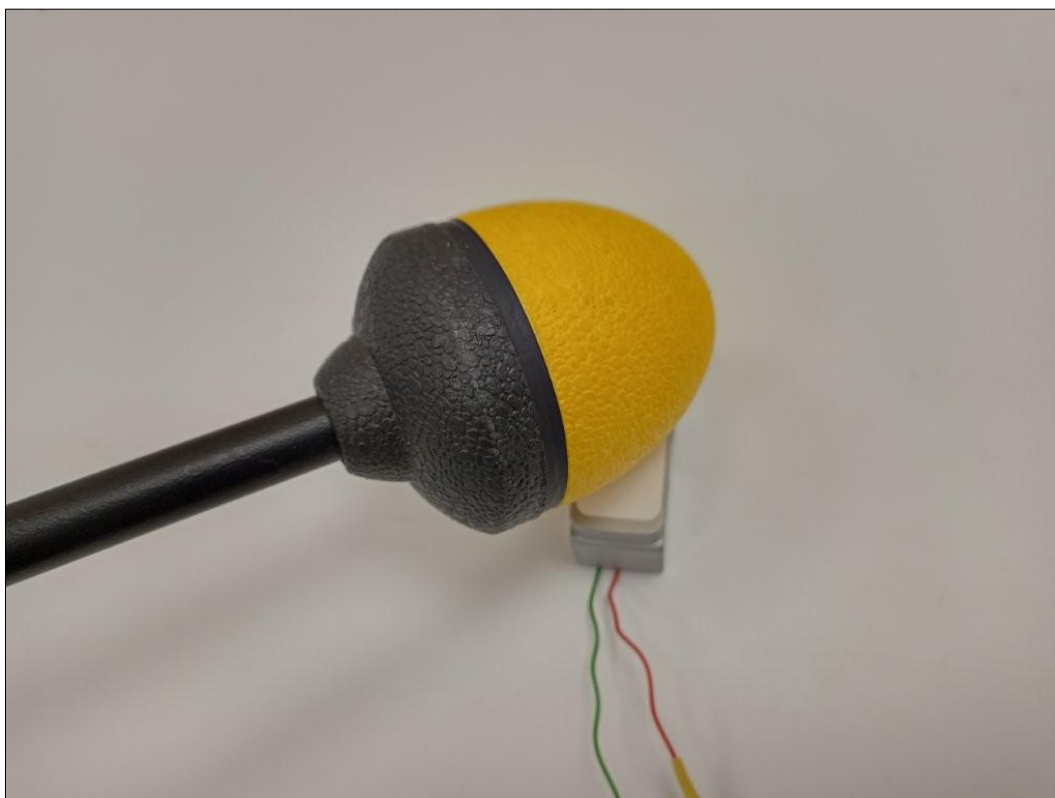


Photo 7: Test position – Side with EF0691 probe (0mm distance)

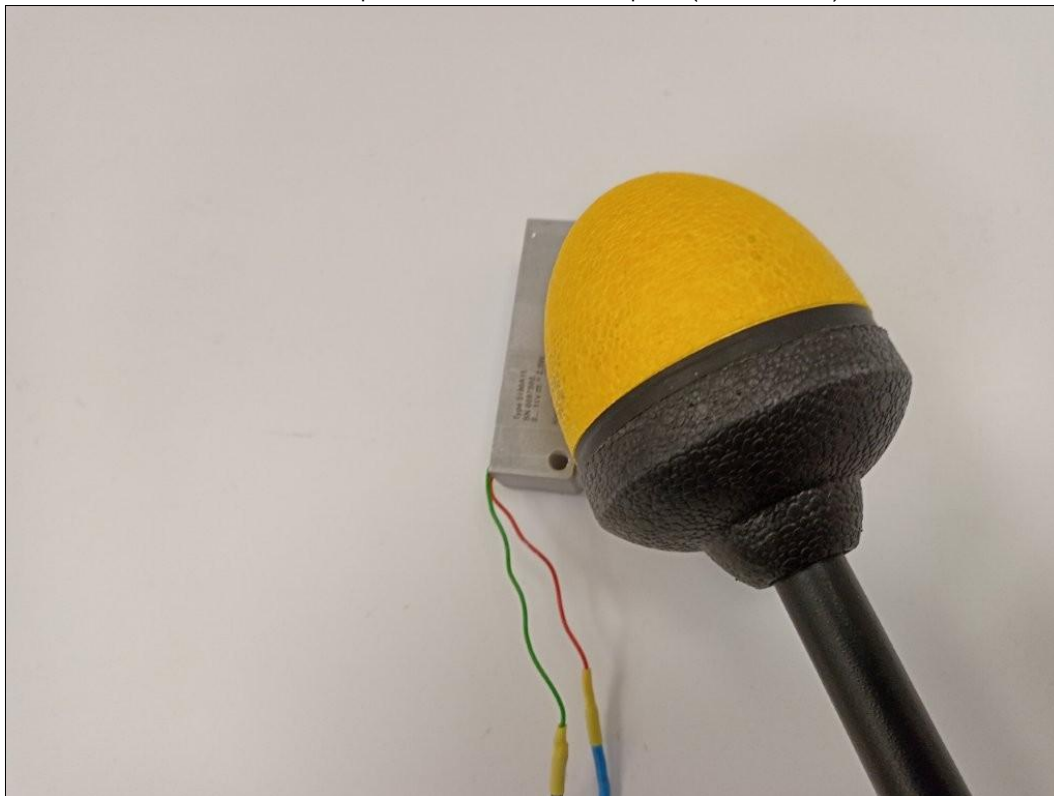
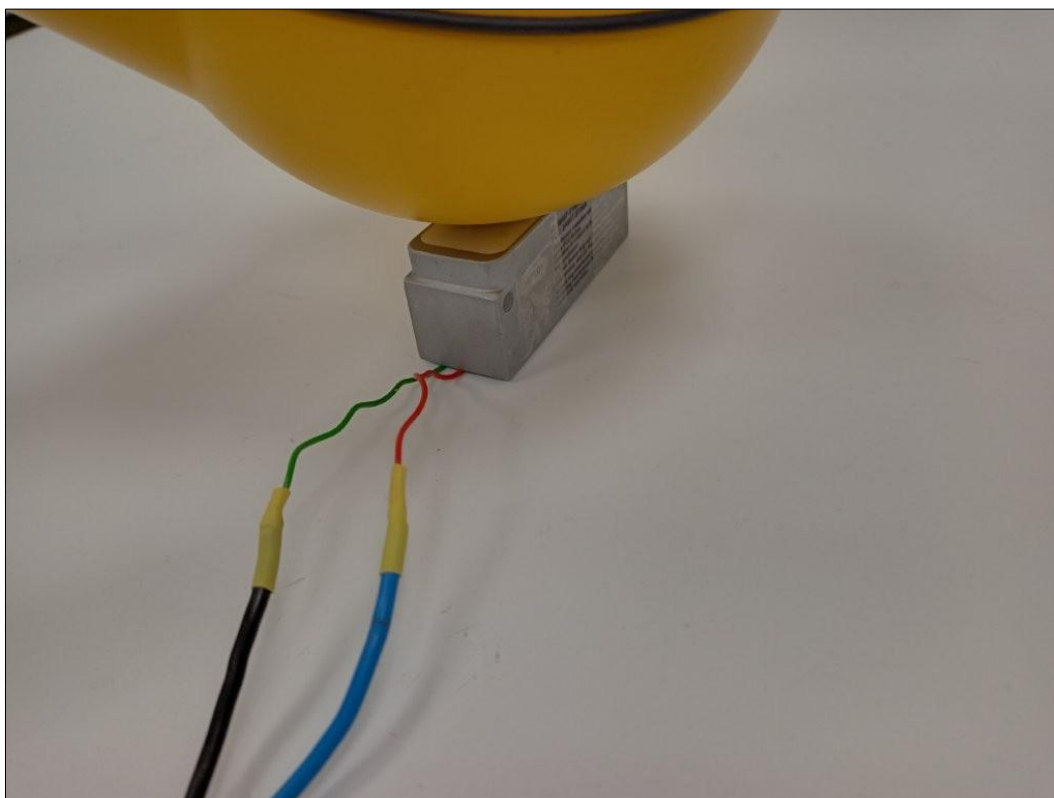


Photo 8: Test position – Front with HF3061 probe (0mm distance)



- END OF TEST REPORT -