COMPLIANCE WORLDWIDE INC.
TEST REPORT 249-23RFR1

In Accordance with the Requirements of

Federal Communications Commission CFR Title 47 Part 2.1091
Radio Frequency Exposure Evaluation

Issued to

Nova Biomedical
200 Prospect Street
Waltham, MA 02454

for the

Nova StatStrip Hospital Meter
Wireless Charging Station
Model: 65736

FCC ID: QYY-65513

Report Issued on November 30, 2023
Revision R1 Issued on June 10, 2024

Tested by:

Sean P. Defelice

Sean P. Defelice

Reviewed by:

Larry K. Stillings

Larry K. Stillings

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Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
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1. Scope

This test report certifies that the Nova Biomedical StatStrip Hospital Meter Wireless Charging Station, as tested, meets the meets the FCC Part 2.1091 requirements using the MPE limits from FCC Part 1.1310 exempting the device from a SAR Evaluation.

The scope of this test report is limited to the test sample provided by the client, only in as much as that sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required. Revision R1 includes the measured E-Field Data.

2. Product Details

2.1. Manufacturer:	Nova Biomedical
2.2. Model Number:	65736
2.3. Serial Numbers:	Pre-production
2.4. Description:	The wireless charging station recharges the StatStrip Hospital Meter battery using the WPC 1.2 specification technology.
2.5. Power Source:	12 VDC via Adapter Tech model AT-M024T-W120V, 24W
2.6. Hardware Revision:	N/A
2.7. Software Revision:	N/A
2.8. Modulation Type:	FSK
2.9. Operating Frequency:	110 to 145 kHz
2.10. EMC Modifications:	None

3. Product Configuration

3.1. Operational Characteristics & Software

Once powered is applied to the product the EUT is configured to transmit continuously.

3.2. EUT Hardware

Manufacturer	Model/Part # / Options	Serial Number	Volts	Freq (Hz)	Description/Function
Nova Biomedical	65736	Pre-production	12	DC	Wireless Charging Station

3.3. EUT Cables/Transducers

Cable Type	Length	Shield	From	To
Power	2M	No	EUT	Mains Power

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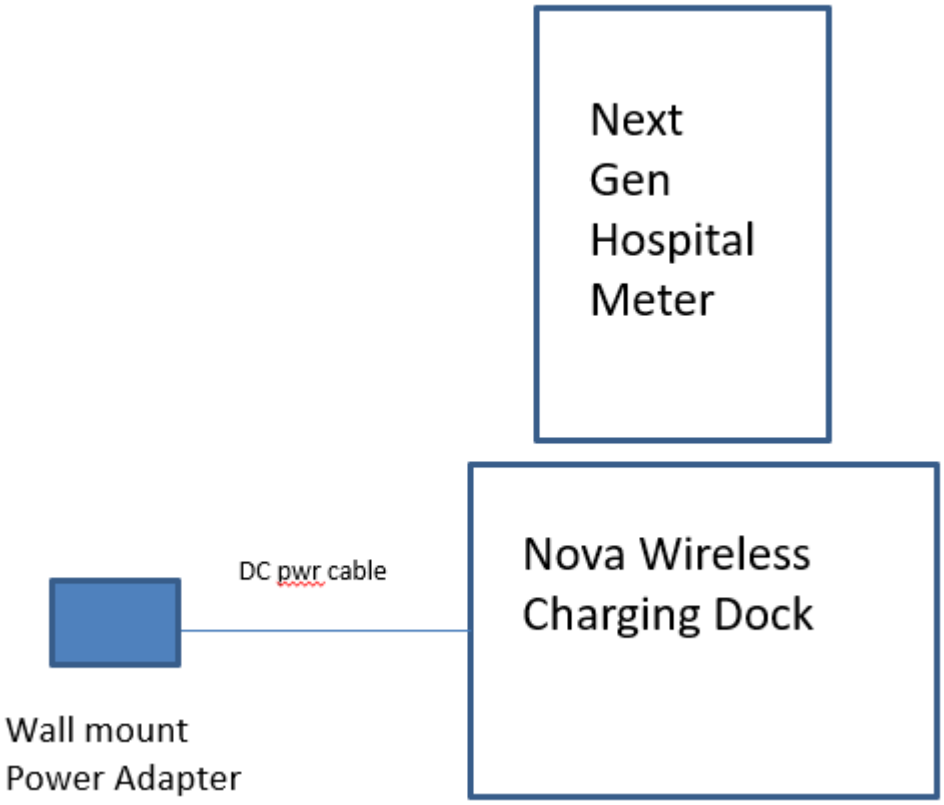
3. Product Configuration (continued)

3.4. Support Equipment

Manufacturer	Model/Part # / Options	Serial Number	Volts	Freq (Hz)	Description/Function
None					

3.5. Block Diagram



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4. Measurements Parameters

4.1. Measurement Equipment and Software Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due	Interval
H Field-Magnetic Exposure Level Tester 1 Hz - 400kHz	Narda	ELT-400	N-0648	1/17/2025	2 Years
100 cm^2 Probe	Narda	2300/90.10	M-1079	1/17/2025	2 Years
EM Radiation Meter with 100 kHz – 3 GHz Probe	Wandel & Golternman	EMR-200 w/ Type 8.3	BN/2244/21 060019	9/14/2024	2 Years
Digital Barometer	Control Company	4195	ID236	1/27/2025	3 Years

4.2. Measurement & Equipment Setup

Test Dates:	November 6th ,2023
Test Engineer:	Sean Defelice
Normal Site Temperature (15 - 35°C):	24.0
Relative Humidity (20 -75%RH):	33%

4.3 Measurement Procedure

The test measurements contained in this report are based on the requirements detailed in FCC KDB 447498 D01 General RF Exposure Guidance v06, October 23, 2015 and FCC KDB 680106 D01 Wireless Power Transfer v04, October 24, 2023 are referenced for the testing and requirements detailed in this report.

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5. Choice of Equipment for Test Suites

5.1. Choice of Model

This test report is based on the test samples supplied by the manufacturer and are reported by the manufacturer to be equivalent to the production units.

5.2. Presentation

The test sample was tested complete with all required ancillary equipment. Refer to Section 3 of this report for the product equipment configuration.

5.3. Choice of Operating Frequencies

The transmitter in the unit under test utilizes an operating frequency at approximately 110-145 kHz.

5.4. Modes of Operation

The transmitter was measured at multiple charge levels (0, 50 & 99%) along with standby, standby was determined to generate the highest levels of both radiated fields and MPE exposure.

5.5. Operation of Device

The transmitter operates when in the meter is installed in the charging station (e.g. direct contact).

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6. Measurement Data

Requirement: FCC KDB 680106, Clause 3.2 Equipment authorization procedures for devices operating at frequencies below 4 MHz.

The RF exposure limits, as set forth in § 1.1310, do not cover the frequency range below 100 kHz for Specific Absorption Rate (SAR) and below 300 kHz for Maximum Permitted Exposure (MPE). In addition, present limitations of RF exposure evaluation systems prevent an accurate evaluation of SAR below 4 MHz. For these reasons, a specific MPE-based RF Exposure compliance procedure for devices operating in the aforementioned low-frequency ranges has been set in place. This procedure is applicable to Equipment Authorization of all RF devices, thus including, but not limited to, Part 18 and WPT devices.

For § 2.1091-Mobile devices, the MPE limits between 100 kHz to 300 kHz are to be considered the same as those at 300 kHz in Table 1 of § 1.1310, that is, 614 V/m and 1.63 A/m, for the electric field and magnetic field, respectively.

E and H measurements should be made from all sides of the transmitter, along all the principal axes defined with respect to the orientation of the transmitting element (e.g., coil or antenna). When clearly demonstrated, symmetry considerations may be used to reduce the amount of testing. Furthermore, for "low-frequency" loop/coil emitting structures that lead to dominant H-field near-field emissions (i.e., with E/H ratio less than 1/10 of the 377-ohm free space wave impedance, typically frequencies less than 1 MHz), only H-field[1] measurements are sufficient for demonstrating MPE limit compliance.

[1] The terms "E-field" and "H-field" refer to "electric field strength" and "magnetic field strength," respectively.

TABLE 1 TO § 1.1310(E)(1)—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(i) Limits for Occupational/Controlled Exposure

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(0.1) 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 – 1,500			f / 300	< 6
1,500 – 100,000			5	< 6

(ii) Limits for General Population/Uncontrolled Exposure

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(0.1) 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 – 1,500			f / 1500	< 30
1,500 – 100,000			1.0	< 30

f = frequency in MHz. * = Plane-wave equivalent power density.

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6. Measurement Data (continued)

Requirement: FCC KDB 680106, Clause 3.3 Field Strength Measurements.

"Large size" probes may prevent the measurement of E- and/or H-fields near the surface of the radiating structure (e.g., a WPT source coil)
If the center of the probe sensing element is located more than 5 mm from the probe outer surface, the field strengths need to be estimated through modeling for those positions that are not reachable. The estimates may be done either via numerical calculation, or via analytic model: e.g., approximated formulas for circular coils, dipoles, etc., may be acceptable if it is shown that the model is applicable for the design parameters considered. A typical example is the use of a quasi-static approximation formula for a low-frequency magnetic field source.

Equipment: The Narda ELT-400 user's manual specifies a specific angle of orientation of the Y-Axis that the 100 cm^2 probe should be used to make measurements which is specifically 35.3 degrees.

The Narda model 2300/90.10, 100 cm^2 probe has a 6.25 cm radius.

Measurements were made at 6.25, 8, 10, 15 (sides & bottom) and 20 cm (top) distances to the EUT surfaces and demonstrate that the product is less than the MPE limit. The device was measured over the entire surface to determine the maximum values and then that position/location of the probe was used at the larger separation distances.

6.1 H-Field Measurements:

Distance cm	Front Measured A/m	Back Measured A/m	Left Measured A/m	Right Measured A/m	Top Measured A/m	Bottom Measured A/m	Limit A/m
6.25	0.5634	0.4385	0.1528	0.1345	0.1130	0.2459	1.63
8	0.3159	0.2722	0.1050	0.1074	0.0796	0.1568	1.63
10	0.2141	0.1846	0.0804	0.0812	0.0613	0.1042	1.63
15	0.0939	0.0859	0.0485	0.0493	-	0.0541	1.63
20	-	-	-	-	0.0374	-	1.63

Conclusion: Compliant - The device under test meets the exclusion requirement detailed in FCC OET 447498, Clause 4.3.1 (c), dated October 23, 2015 using the procedure in FCC KDB 680106 dated October 24, 2023.

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6. Measurement Data (continued)

Equipment: The Wandel & Goltermann Type 8.3 probe has a 4 cm radius.

Measurements were made at 4, 6, 8, 10, 15 (sides & bottom) and 20 cm (top) distances to the EUT surfaces and demonstrates that the product is less than the MPE limit.

6.2 E-Field Measurements

Distance cm	Front Measured V/m	Back Measured V/m	Left Measured V/m	Right Measured V/m	Top Measured V/m	Top Measured V/m	Limit V/m
4	1.38	0.56	0.87	0.82	0.58	0.62	614
6	0.78	0.43	0.48	0.46	0.31	0.43	614
8	0.42	0.36	0.35	0.34	0.34	0.37	614
10	0.39	0.43	0.34	0.31	0.24	0.24	614
15	0.23	0.32	0.32	0.29	-	0.15	614
20	-	-	-	-	0.21	-	614

The H-Field Measurements on the previous page were converted to an equivalent E-Field value by multiplying free-space (E = H * 377 Ω)

Distance cm	Front Calculated V/m	Back Calculated V/m	Left Calculated V/m	Right Calculated V/m	Top Calculated V/m	Bottom Calculated V/m	Limit V/m
6.25	212.40	165.31	57.61	50.71	42.60	92.70	614
8	119.09	102.62	39.59	40.49	30.01	59.11	614
10	80.72	69.59	30.31	30.61	23.11	39.28	614
15	35.40	32.38	18.28	18.59		20.40	614
20					14.10		614

The ratio of E-Field to H-Field shows that it is less than 0.10 and the E-Field measurements were not required.

Distance cm	Front Calculated Ratio	Back Calculated Ratio	Left Calculated Ratio	Right Calculated Ratio	Top Calculated Ratio	Top Calculated Ratio	Limit V/m
6	0.004	0.003	0.008	0.009	0.007	0.005	< 0.10
8	0.004	0.004	0.009	0.008	0.011	0.006	< 0.10
10	0.005	0.006	0.011	0.010	0.010	0.006	< 0.10
15	0.006	0.010	0.018	0.016		0.007	< 0.10
20					0.015		< 0.10

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6. Measurement Data (continued)

Requirement: Based on the E & H field measurements an estimation of closer distances may be determined using a linear regression. For each of the faces/sides a regression value was determined and applied to the measured values.

For the H-Field those estimated values are:

Distance cm	Front Calculated A/m	Back Calculated A/m	Left Calculated A/m	Right Calculated A/m	Top Calculated A/m	Bottom Calculated A/m	Limit A/m
0	1.0874	0.8194	0.2614	0.2145	0.1906	0.4585	1.63
2	0.9127	0.6924	0.2252	0.1878	0.1647	0.3876	1.63
4	0.7381	0.5655	0.1890	0.1612	0.1389	0.3168	1.63

For the E-Field those estimated values are:

Distance cm	Front Calculated V/m	Back Calculated V/m	Left Calculated V/m	Right Calculated V/m	Top Calculated V/m	Bottom Calculated V/m	Limit V/m
0	2.0400	0.6467	1.2233	1.1600	0.8067	0.8733	614
2	1.7100	0.6033	1.0467	0.9900	0.6933	0.7467	614

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7. Test Site Description

Compliance Worldwide is located at 357 Main Street in Sandown, New Hampshire. The test sites at Compliance Worldwide are used for conducted and radiated emissions testing in accordance with the Federal Communications Commission (FCC) and Industry Canada standards. Through our American Association for Laboratory Accreditation (A2LA) ISO Guide 17025 Accreditation our test sites are designated with the FCC (designation number **US1091**), Industry Canada (file number **IC 3023A-1)** and VCCI (Member number 3168) under registration number A-0274.

Compliance Worldwide is also designated as a Phase 1 CAB under APEC-MRA (US0132) for Australia/New Zealand AS/NZS CISPR 11, AS/NZS CISPR 14-1, AS/NZS CISPR 15, AS/NZS CISPR 32, Chinese-Taipei (Taiwan) BSMI CNS 15936 and Korea (RRA) KS C 9811, KS C 9814-1, KS C 9815, KS C 9832, KS C 9610-6-3 & KS C 9610-6-4.

The radiated emissions test site is a 3- and 10-meter enclosed open area test site (OATS). Personnel, support equipment and test equipment are located in the basement beneath the OATS ground plane.

The conducted emissions site is part of a 16' x 20' x 12' ferrite tile chamber and uses one of the walls for the vertical ground plane. A second conducted emissions site is also located in the basement of the OATS site with a 2.3 x 2.5-meter ground plane and a 2.4 x 2.4-meter vertical wall.

The radiated emissions test site for measurements above 1GHz is a 3 Meter open area test site (OATS) with a 3.6 by 3.6-meter anechoic absorber floor patch to achieve a quasi-free space measurement environment per ANSI C63.4/C63.10 and CISPR 16-1-4 standards.

The sites are designed to test products or systems 1.5 meters W x 1.5 meters L x 2.0 meters H, floor standing or tabletop.

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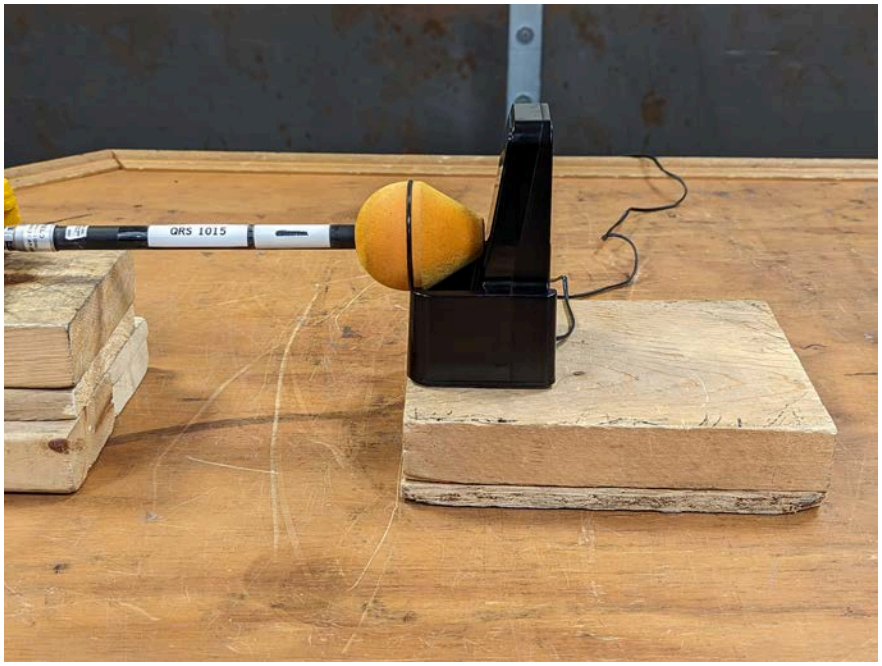
8. Test Setup Images

8.1. Front of EUT



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8. Test Setup Images

8.2. Rear of EUT

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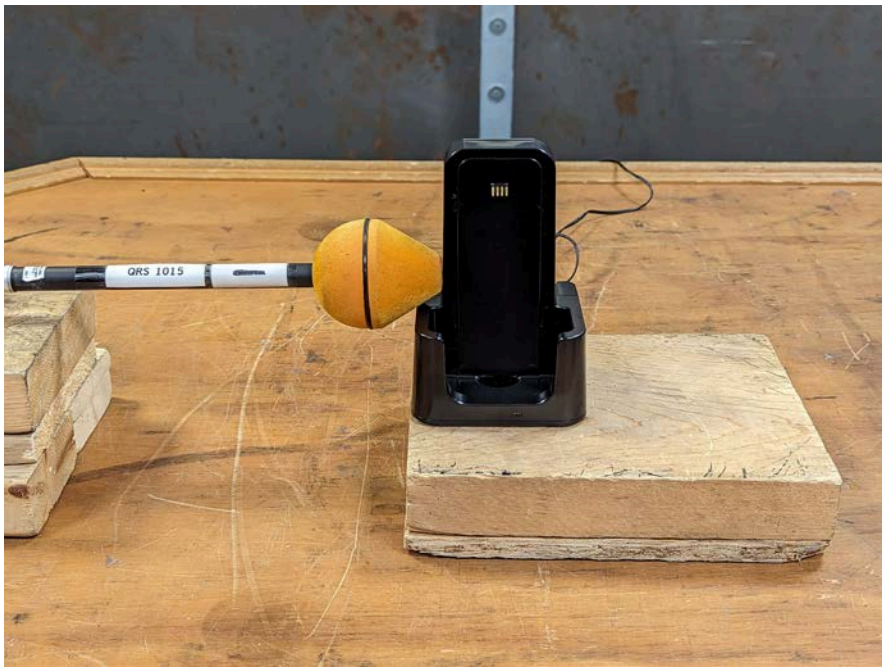
8. Test Setup Images

8.3. Left Side of EUT



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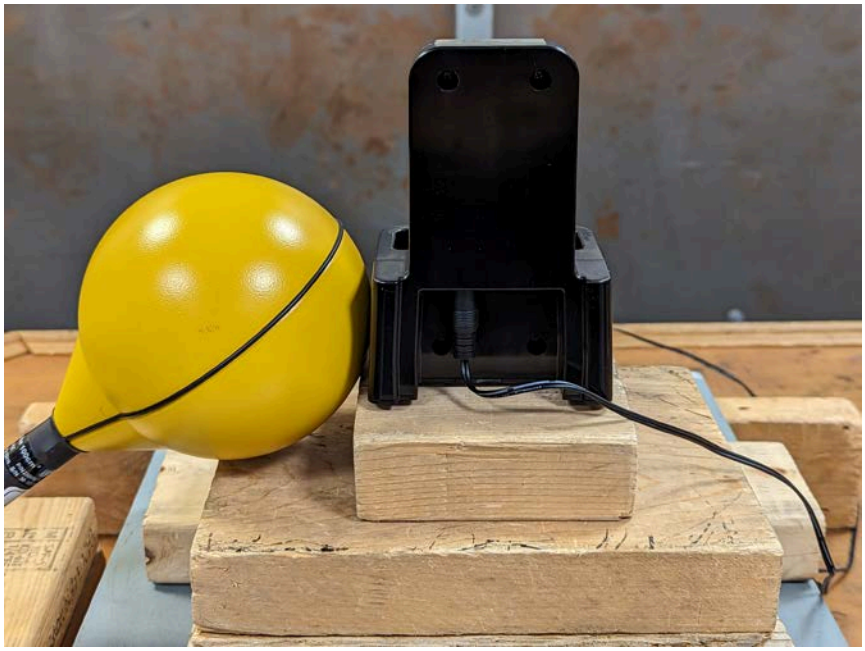
8. Test Setup Images

8.4. Right Side of EUT



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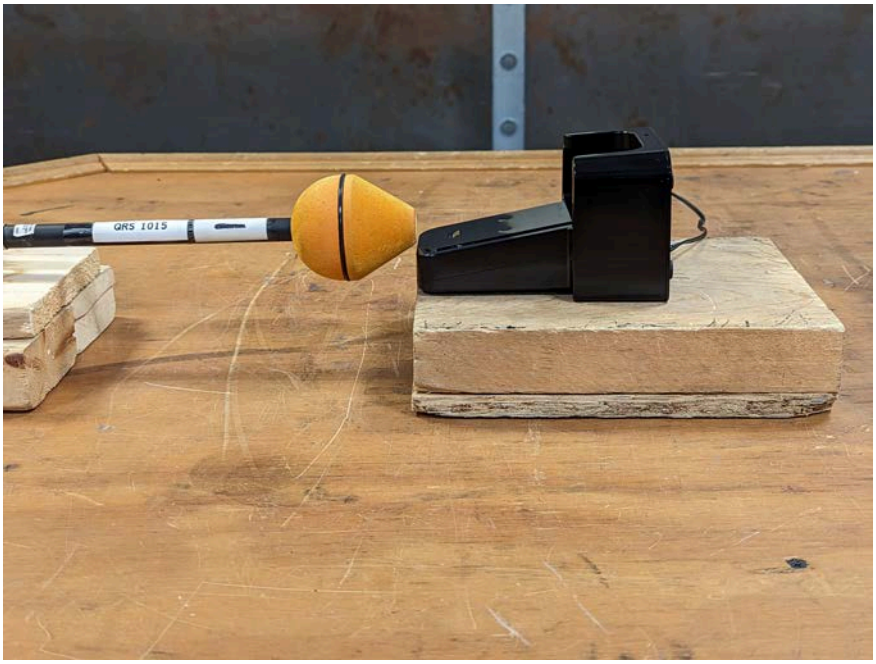
8. Test Setup Images

8.5. Top of EUT



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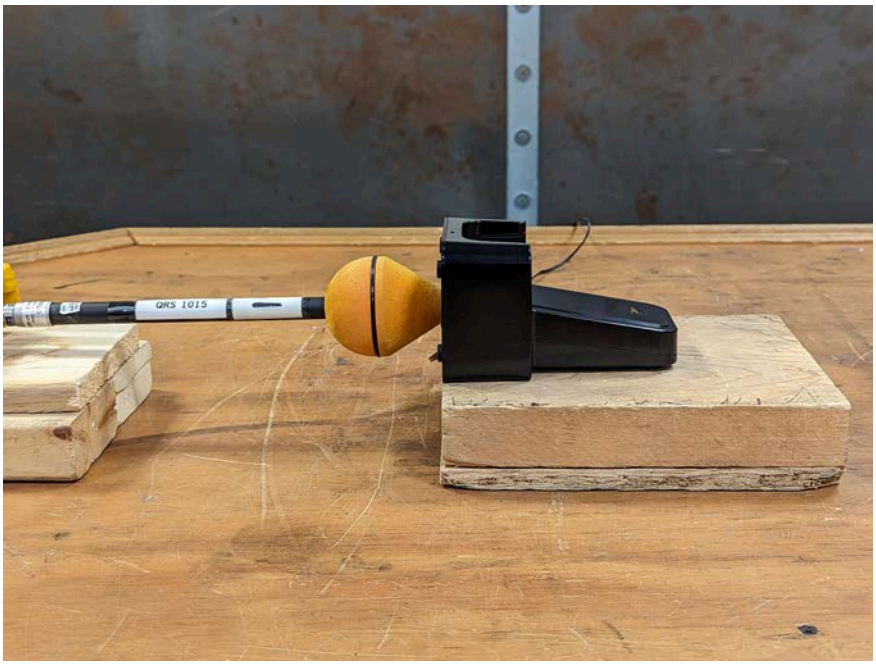
8. Test Setup Images

8.6. Bottom of EUT



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