

TEST REPORT

APPLICANT

Proasia Design Co., Ltd.

MODEL NAME

LED Pressure Transmitter

FCC ID

2BX72-20PAH

REPORT NUMBER

HA260728-PRD-001-R01-01

TEST REPORT

Date of Issue
October 5, 2026

Test Site
HCT America, Inc.
840 Yosemite Way, Milpitas, CA 95035, USA

Applicant	Proasia Design Co., Ltd.
Applicant Address	No. 105, Xingde Rd., Sanchong Dist., New Taipei City, 24158 Taiwan (R.O.C.).
FCC ID	2BX72-20PAH
Model Name	LED Pressure Transmitter
EUT Type	Battery-powered transmitter that screws into the high-pressure port of a scuba diving regulator.
Modulation Type	38 kHz (ASK)
FCC Classification	DCD Part 15 Low Power Transmitter Below 1705 kHz
FCC Rule Part(s)	Part 15.209
Test Procedure	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures required. The results of testing in this report apply only to the product which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all people taking them.

HCT America, Inc. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

Authorized & Released By:



Dan Coronio
Technical Manager

Tested By:



Joe Vang
RF Engineer

REVISION HISTORY

The revision history for this document is shown in table.

TEST REPORT NO.	REVISION	DATE	DESCRIPTION
HA260728-PRD-001-R01	0	September 24, 2026	Initial Issue
HA260728-PRD-001-R01-01	1	October 5, 2026	Updated radiated emission data with distance extrapolation

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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	LED Pressure Transmitter
Product Name	LED Pressure Transmitter
Serial Number	Radiated: TX000053
Power Supply	3 V d.c. (Lithium battery)
RF Specification	38 kHz Radio Bluetooth 5.0 LE (1M / 2M)
Transmitter Chain	1

RF SPECIFICATION SUBJECT TO THE REPORT

RF Specification	38 kHz Radio
Frequency Range	38 kHz
Max. RF Output Power	75.18 dBuV/m @3m
Modulation Type	ASK burst
Number of Channels	1 channel
Antenna Specification	Loop antenna
Firmware Version ¹⁾	1.0.0
Hardware Version ¹⁾	Rev D
Date(s) of Tests	September 2, 2026, ~ October 5, 2026
Test Environment	Temperature: 18.9°C ~ 25°C Humidity: 35% ~ 50% R.H.

Note:

1. Firmware and Hardware Version are as received by the client.

2. METHODOLOGY

The measurement procedure described in ANSI C63.10 (Version: 2020) 'the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices'.

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, EUT must comply with the requirements of Section 15.209 under the FCC Rules Part 15 Subpart C.

GENERAL TEST PROCEDURES

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find the highest emission. Also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. To find out the maximum emission, the relative positions of this hand-held transmitter (EUT) were rotated through three orthogonal axes according to the requirements in Section 8 of ANSI C63.10. (Version: 2020)

DESCRIPTION OF TEST MODES

The EUT has been tested per test setup instruction provided by the manufacturer under continuous Tx operating condition. Testing was performed at the continuous Tx mode using the receiver provided by the manufacturer.

3. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognize national standards. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version: 2017).

4. FACILITIES AND ACCREDITATIONS

FACILITIES

HCT America, Inc. holds A2LA accreditation (certificate no. 4201.01) covering all testing included in the scope of this report. All tests were conducted at the facilities listed below.

	Address	ISED CABID	ISED Company Number	FCC Registration	FCC Designation Number
☒	840 Yosemite Way, Milpitas, CA 95035 USA	US0198	25729	898494	US01202
☐	1177 Comstock Road, Hollister, CA 95023 USA	US0198	25729	898494	US01202



EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

- (1) The antenna of this E.U.T is permanently attached and there is no provision for connection to an external antenna.
- (2) The E.U.T Complies with the requirement of §15.203

6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2020.

All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty ($\pm$ dB)
Occupied Bandwidth	± 120.66 kHz
Radiated Emissions (below 1 GHz)	± 5.29 dB

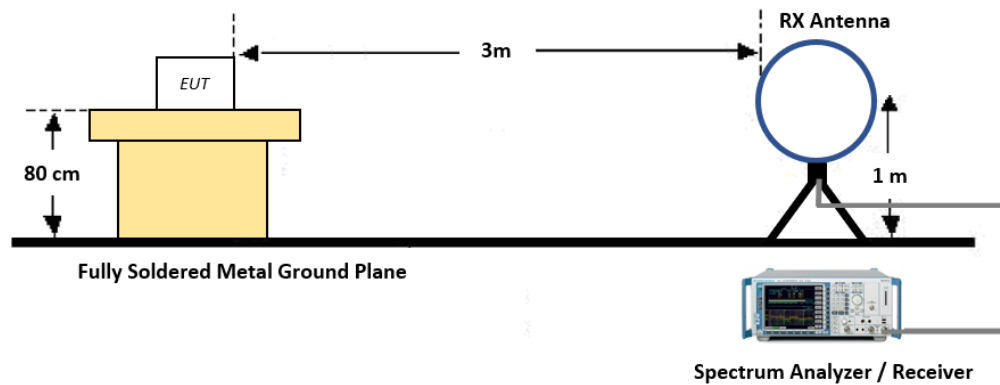
7. DESCRIPTION OF TESTS

7.1. 20 dB BANDWIDTH

Limit

20 dB bandwidth: According to §15.215(c), the bandwidth at 20 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while EUT is operating in transmission mode at the appropriate frequencies.

Test Configuration



Test Procedure (20 dB Bandwidth)

The Spectrum Analyzer setting:

- RBW = 1 kHz
- VBW $\geq 3 \times$ RBW
- Detector = Peak
- Trace mode = max hold
- Sweep = auto couple
- Allow the trace to stabilize

7.2. RADIATED EMISSION

RADIATION EMISSION LIMIT

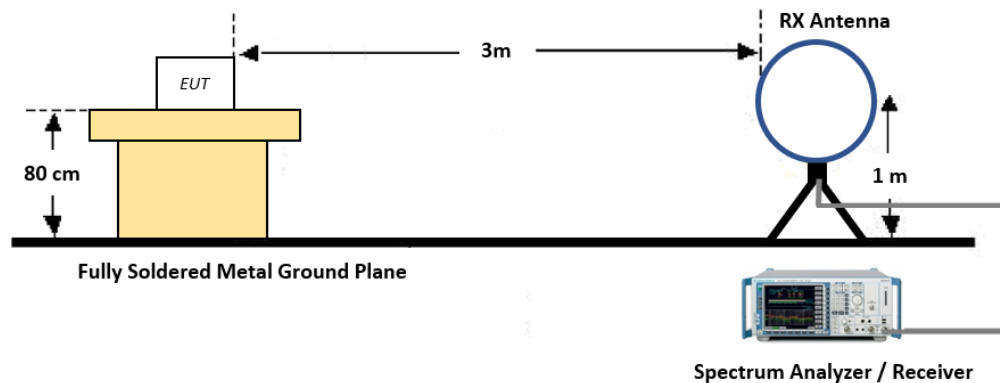
FCC: 47 CFR § 15.209		
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

RESTRICTED BANDS OF OPERATION

FCC: 47 CFR § 15.205(a)				
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
0.090 – 0.110	12.29 - 12.293	149.9 - 150.05	1660.0 - 1710.0	8025 - 8500
0.495 - 0.505	12.51975 - 12.52025	156.52475 - 156.52525	1718.8 - 1722.2	9000 - 9200
2.1735 - 2.1905	12.57675 - 12.57725	156.7 - 156.9	2200.0 - 2300.0	9300 - 9500
4.125 - 4.128	13.36 - 13.41	162.0125 - 167.17	2310.0 - 2390.0	10600 - 12700
4.17725 - 4.17775	16.42 - 16.423	167.72 - 173.2	2483.5 - 2500.0	13250 - 13400
4.20725 - 4.20775	16.69475 - 16.69525	240.0 - 285.0	2690.0 - 2900.0	14470 - 14500
6.215 - 6.218	16.80425 - 16.80475	322.0 - 335.4	3260.0 - 3267.0	15350 - 16200
6.26775 - 6.26825	25.5 - 25.67	399.9 - 410.0	3332.0 - 3339.0	17700 - 21400
6.31175 - 6.31225	37.5 - 38.25	608.0 - 614.0	3345.8 - 3358.0	22010 - 23120
8.291 - 8.294	73 - 74.6	960.0 - 1240.0	3600.0 - 4400.0	23600 - 24000
8.362 - 8.366	74.8 - 75.2	1300.0 - 1427.0	4500.0 - 5150.0	31200 - 31800
8.37625 - 8.38675	108 - 121.94	1435.0 - 1626.5	5350.0 - 5460.0	36430 - 36500
8.41425 - 8.41475	123 - 138	1645.5 - 1646.5	7250.0 - 7750.0	Above 38600

Test Configuration

Below 30 MHz



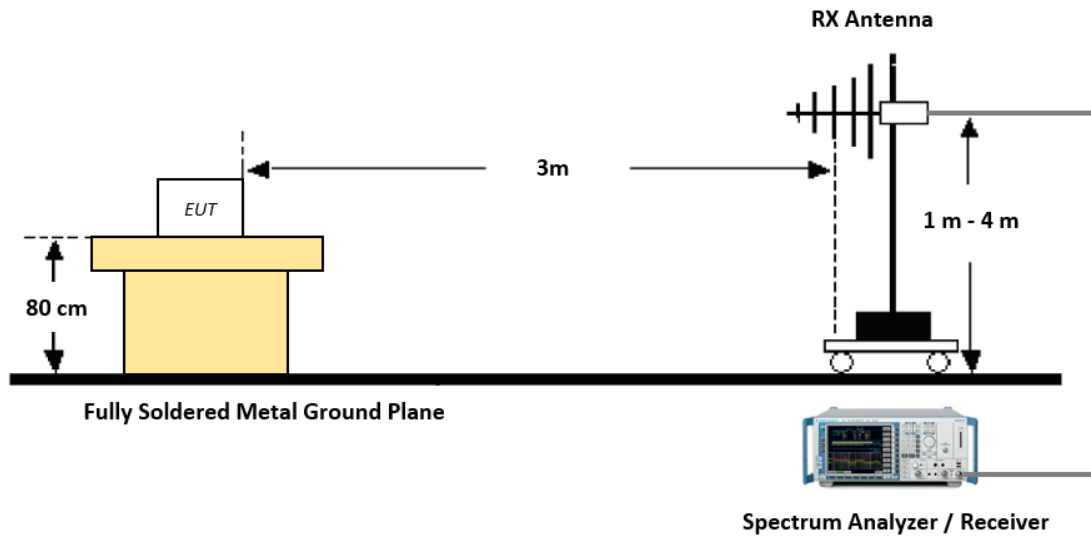
Test Procedure of Radiated spurious emissions (Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated to 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor (0.009 MHz – 0.490 MHz) = $40 \cdot \log(3 \text{ m}/300 \text{ m}) = -80 \text{ dB}$
Measurement Distance: 3 m
7. Distance Correction Factor (0.490 MHz – 30 MHz) = $40 \cdot \log(3 \text{ m}/30 \text{ m}) = -40 \text{ dB}$
Measurement Distance: 3 m
8. Spectrum Setting
 - Frequency Range = 9 kHz ~ 30 MHz
 - Detector = Peak
 - Trace = Max hold
 - RBW = 9 kHz
 - VBW $\geq 3 \cdot \text{RBW}$

9. Total = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L) + Distance Factor (D.F)

Adequate comparison measurements were confirmed against an open field site since the test was performed at alternative site (3m SAC) other than the open area test site. Sufficient test was made to demonstrate that the alternative site produces results that correlate with the one of tests made at the open field site based on KDB 414788.

30 MHz - 1 GHz



Test Procedure of Radiated spurious emissions (Below 1GHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8m above ground plane.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. The turntable shall be rotated to 360 degrees to determine the position of maximum emission level.
5. Spectrum Setting

(1) Measurement Type (Peak):

- Measured Frequency Range: 30 MHz – 1 GHz
- Detector = Peak
- Trace = Max hold
- RBW = 100 kHz
- VBW $\geq 3 \times$ RBW

(2) Measurement Type(Quasi-peak):

- Measured Frequency Range: 30 MHz – 1 GHz
- Detector = Quasi-Peak
- RBW = 120 kHz

In general, the method (1) is mainly used

6. Total = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L)

7.3. AC POWER LINE CONDUCTED EMISSIONS

LIMIT

47 CFR § 15.207

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

*Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

TEST SETUP

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT is situated on a wooden table 80 cm above the reference ground plane.
2. EUT is connected via LISN to test power supply.
3. The measurement results are obtained as described below:
4. Detectors: Quasi Peak and Average Detector.

According to FCC KDB 174176 D01 Line Conducted FAQ v01r01:

Devices Operating Above 30 MHz

For a device with a permanent or detachable antenna operating above 30 MHz, measurements must be performed with the antenna connected as specified in clause 6.2 of ANSI C63.10-2020 and must accommodate changes of ANSI C63.10-2020+Cor 1-2023.

Devices Operating Below 30 MHz

For a device with a permanent or detachable antenna operating at or below 30 MHz, the FCC will accept measurements performed with a suitable dummy load in lieu of the antenna under the following conditions:

- (1) Perform the AC powerline conducted tests with the antenna connected to determine compliance with Section 15.207 limits outside the transmitter's fundamental emission band;
- (2) Retest with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network which simulates the antenna in the fundamental frequency band. All measurements must be performed as specified in clause 6.2 of ANSI C63.10-2020 and must accommodate changes of ANSI C63.10-2020+Cor 1-2023.

Sample Calculation

Quasi-peak (Final Result) = Reading Value + Correction Factor

8. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
Occupied Bandwidth	§15.215	N/A	Radiated	PASS
Radiated Spurious Emissions and Fundamental Emission	§15.209	cf. Section 7.2		PASS
AC Power line Conducted Emissions	§15.207	cf. Section 7.3	Conducted	N/A

Note(s):

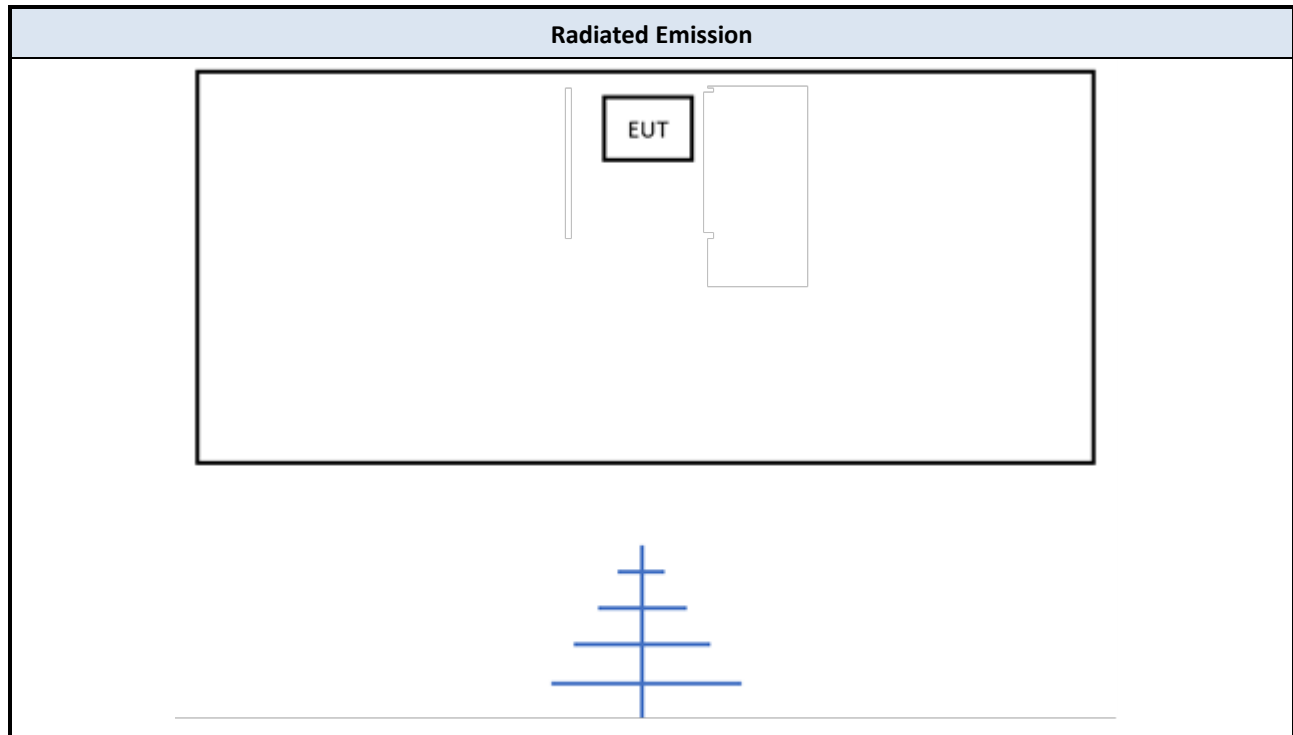
1. AC Power Line Conducted Emissions testing is not applicable because the EUT is battery powered.

WORST CASE CONFIGURATION

RADIATED TEST

All X, Y, and Z positions for horizontal / vertical antenna polarization were investigated to find the worst-case position. Y position was selected for the final evaluation.

TEST CONFIGURATION



LIST OF SUPPORT EQUIPMENT

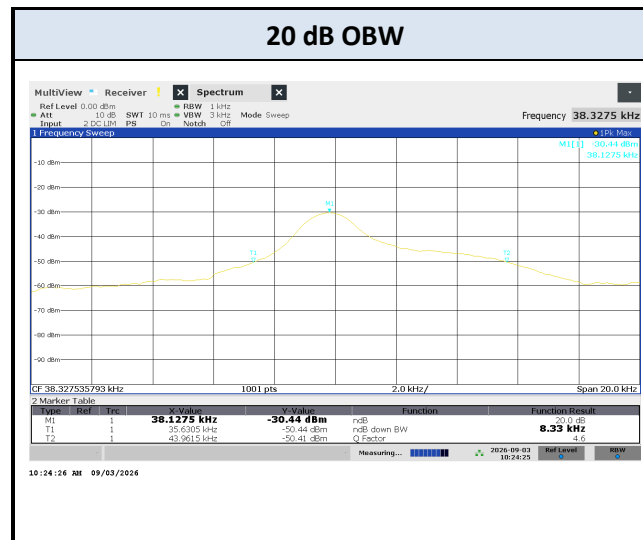
Equipment Type	Model No.	Serial No.	Manufacturer	Qty	Note
Scuba Tank	-	CTC/DOT-3AL3000P624691LUXFER02a92-S80	DACOR	1	Attached is pressure value
1 st Stage Diving Regulator	-	BX11258	Beuchat	1	Attached is 30" MP hose
2 nd Stage Diving Regulator	-	91-03	Oceanic	1	Attached is 78" HP braided hose

9. TEST RESULT

9.1 20 dB BANDWIDTH

Frequency (kHz)	Modulation	20 dB Bandwidth (kHz)	Limit
		Result	
38.1275	ASK burst	8.33	N/A

TEST PLOTS



9.2 RADIATED SPURIOUS EMISSIONS AND FUNDAMENTAL EMISSION

Test Mode ASK burst
Operating Frequency 38 kHz

Radiated Fundamental Emission

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. ⁽¹⁾ (dB)	Distance Extrapolation Factor (dB)	Corr. Result 300m (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
0.038	180°	55.38	19.80	80	-4.82	36.01	-40.83	QP
0.038	90°	51.08	19.80	80	-9.12	36.01	-45.13	QP
0.038	Bent Over	50.36	19.80	80	-9.84	36.01	-45.85	QP

Notes:

- Correction Factor: Antenna Factor + Cable loss
 - The measured field strength was extrapolated from 3 m to the applicable specified distance and compared with the unchanged FCC §15.209 limit.
 - Measurement distance = 3 m
 - Distance extrapolation factor = $40 \log(\text{specified distance} / \text{test distance})$
 - Measured field strength at 3 m = $55.38 + 19.80 = 75.18 \text{ dB}\mu\text{V/m}$
 - Extrapolated field strength at 300 m = $75.18 - 80 = -4.82 \text{ dB}\mu\text{V/m}$
 - FCC §15.209 limit at 38 kHz = $2400 / 38 = 63.16 \text{ }\mu\text{V/m} = 36.01 \text{ dB}\mu\text{V/m}$
- FCC: 47 CFR 15.209 limit calculation:
- Field Strength ($\mu\text{V/m}$) = $2400 / F(\text{kHz})$
 - Field Strength = $2400 / 38 = 63.16 \text{ }\mu\text{V/m}$
 - Limit = $20 \log_{10}(63.16) = 36.01 \text{ dB}\mu\text{V/m}$ at 300 m

Radiated Spurious Emission

Frequency Range: 9 kHz – 30MHz

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. ⁽¹⁾ (dB)	Distance Extrapolation Factor (dB)	Corr. Result at 300m (dBuV/m)	15.209 Limit at 300m (dBuV/m)	Margin (dB)	Measurement Type
0.076	180°	35.15	19.86	80	-24.99	29.99	-54.98	AVG
0.076	90°	29.87	19.86	80	-30.27	29.99	-60.26	AVG
0.076	Bent over	29.25	19.86	80	-30.89	29.99	-60.88	AVG
0.114	180°	25.99	19.81	80	-34.2	26.45	-60.65	AVG
0.114	90°	20.1	19.81	80	-40.09	26.45	-66.54	AVG
0.114	Bent over	20.35	19.81	80	-39.84	26.45	-66.29	AVG
0.150	180°	28.31	19.79	80	-31.9	24.08	-55.98	AVG
0.150	90°	22.82	19.79	80	-37.39	24.08	-61.47	AVG
0.150	Bent over	21.89	19.79	80	-38.32	24.08	-62.4	AVG
0.190	180°	25.29	19.77	80	-34.94	22.05	-56.99	AVG
0.190	90°	19.86	19.77	80	-40.37	22.05	-62.42	AVG
0.190	Bent over	19.3	19.77	80	-40.93	22.05	-62.98	AVG
0.225	180°	16.86	19.76	80	-43.38	20.57	-63.95	AVG
0.225	90°	13.35	19.76	80	-46.89	20.57	-67.46	AVG
0.225	Bent over	13.41	19.76	80	-46.83	20.57	-67.4	AVG
0.264	180°	17.88	19.75	80	-42.37	19.16	-61.53	AVG
0.264	90°	13.34	19.75	80	-46.91	19.16	-66.07	AVG
0.264	Bent over	12.88	19.75	80	-47.37	19.16	-66.53	AVG

Notes:

1. Correction Factor: Antenna Factor + Cable loss
 2. The measured field strength was extrapolated from 3 m to 300 m and compared with the unchanged FCC §15.209 limit.

- The measurement distance is 3 meters.
- Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB)
- Reading (dBuV) + Corr (dB) – Distance Extrapolation Factor (dB) = Total (dBuV/m)

Example calculation at 0.076 MHz:

- Measured field strength at 3 m = $35.15 + 19.86 = 55.01$ dBμV/m
- Distance extrapolation factor = $40 \log_{10}(300/3) = 80.00$ dB
- Extrapolated result at 300 m = $55.01 - 80.00 = -24.99$ dBμV/m
- FCC: 47 CFR 15.209 limit calculation:
 - FCC limit = $2400/76 = 31.58$ μV/m
 - FCC limit = $20 \log_{10}(31.58) = 29.99$ dBμV/m at 300 m
 - Margin = $-24.99 - 29.99 = -54.98$ dB

Frequency Range: Below 1 GHz

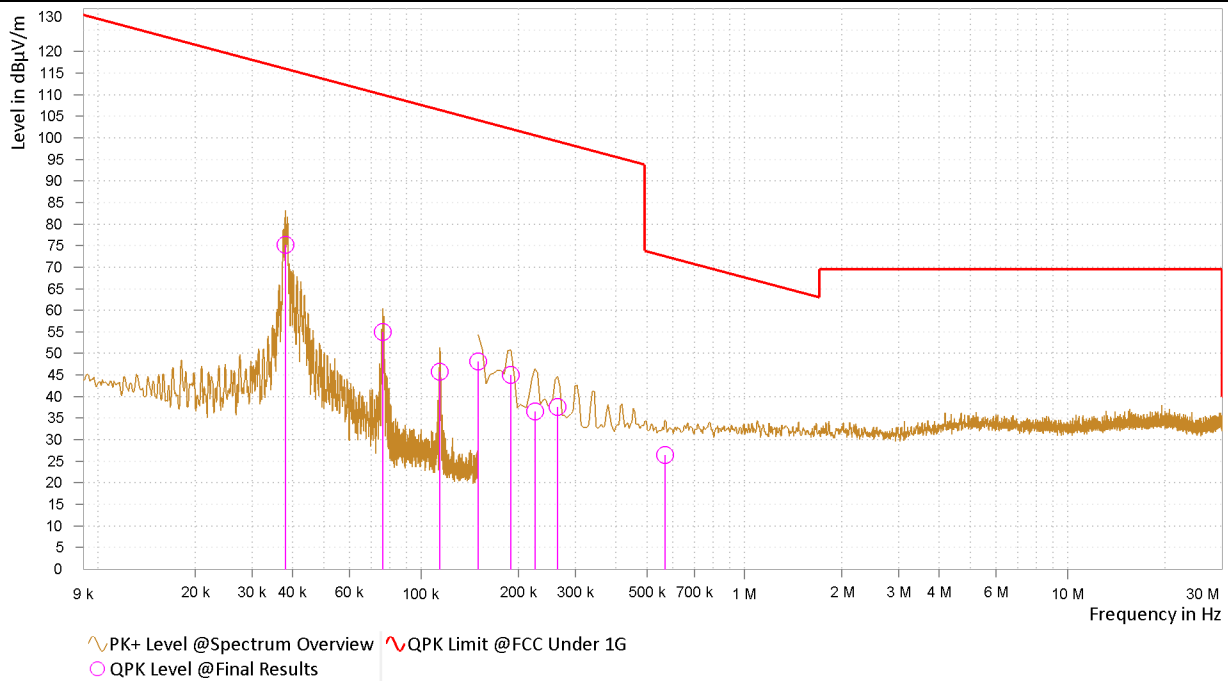
Frequency (MHz)	Polarization	Reading (dBuV)	Corr. ⁽¹⁾ (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
30.091	V	50.51	27.44	23.07	40	16.93	QP
30.684	H	50.02	27.04	22.98	40	17.02	QP
32.139	V	48.01	26.08	21.93	40	18.07	QP
35.552	H	43.04	23.69	19.35	40	20.65	QP
393.81	V	41.42	22.82	18.6	46	27.4	QP
597.333	H	48.3	26.29	22.01	46	23.99	QP

Notes:

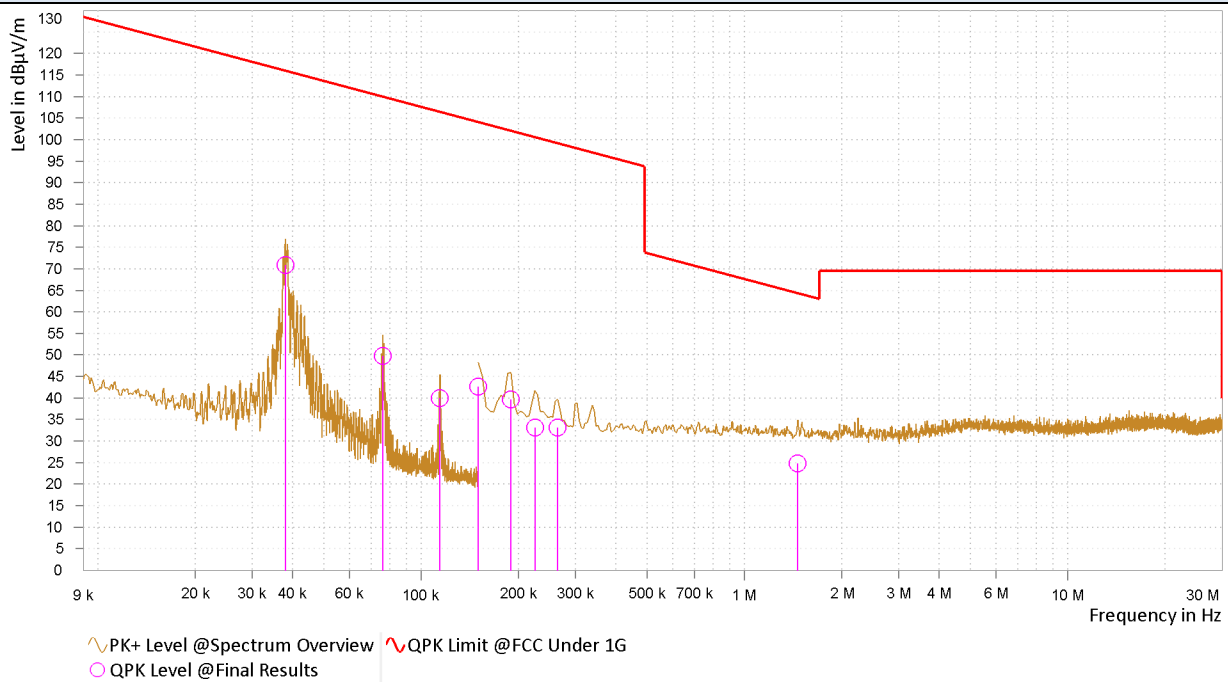
1. Correction Factor: Antenna Factor + Cable loss

TEST PLOTS

Radiated Spurious Emission 9 kHz – 30 MHz (Antenna Position: 180°)

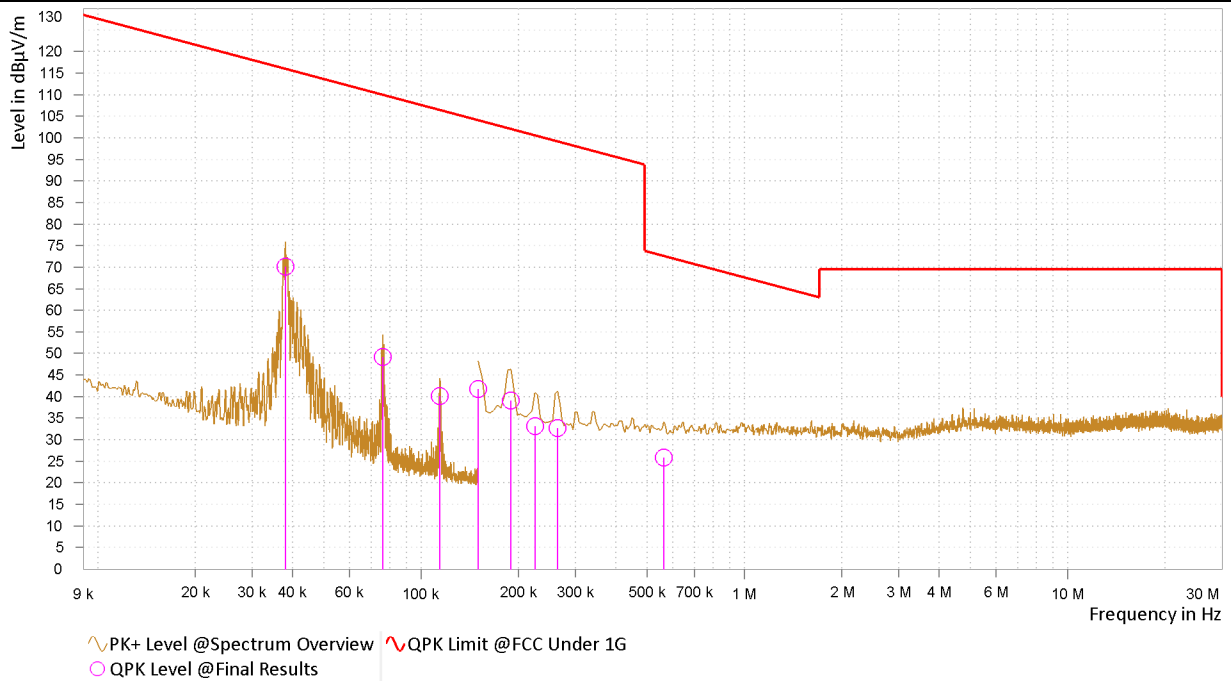


Radiated Spurious Emission 9 kHz – 30 MHz (Antenna Position: 90°)

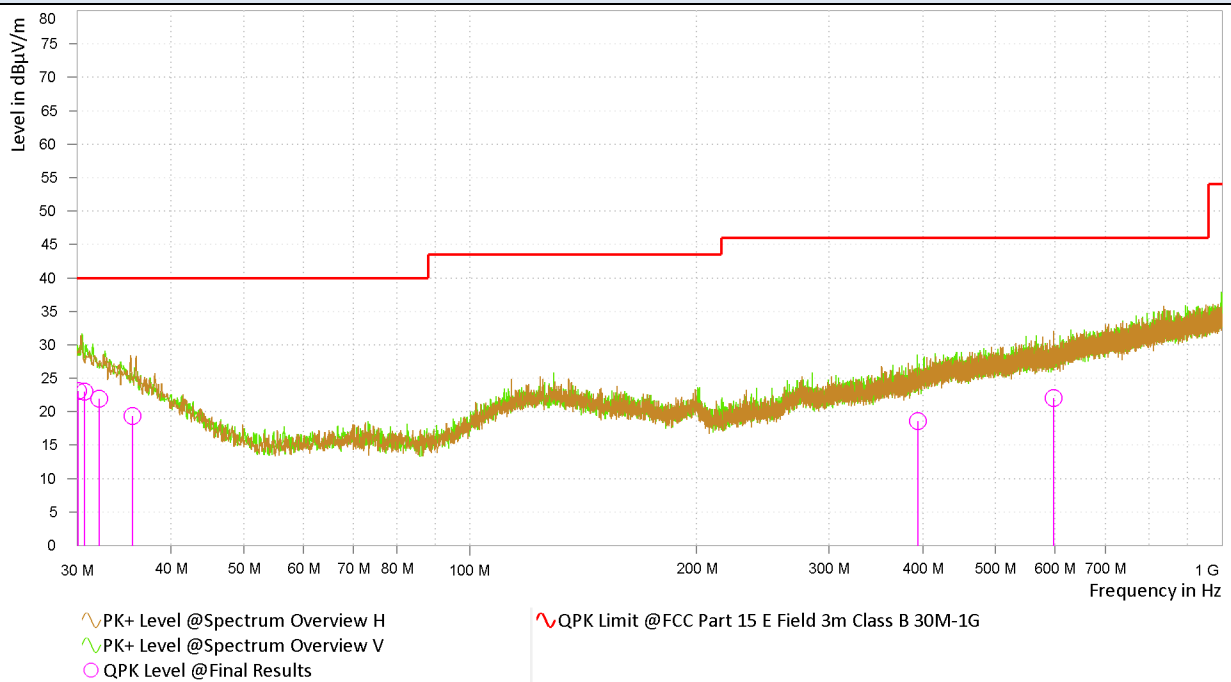


TEST PLOTS

Radiated Spurious Emission 9 kHz – 30 MHz (Antenna Position: Bent over)



Radiated Spurious Emission 30 MHz – 1 GHz



10. LIST OF TEST EQUIPMENT

No.	Instrument	Model No.	Calibration Due (mm/dd/yy)	Manufacture	Serial No.
☒	Signal Analyzer (1 Hz ~ 44.0 GHz)	ESW44	08/05/2027	Rohde & Schwarz	103176
☒	Loop Antenna (0.009 ~ 30 MHz)	HLA 6121	03/03/2027	TESEQ	43964
☒	BI-LOG Antenna (30 MHz ~ 6 GHz)	JB6	02/27/2027	Sunol	A060916
☒	Test Software	R&S*ELEKTRA	-	Rohde & Schwarz	-

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date

APPENDIX A. TEST SETUP PHOTOS

The setup photos are provided as a separate document

APPENDIX B. PHOTOGRAPHS OF EUT

B.1. EXTERNAL PHOTOS

The external photos are provided as a separate document

B.2. INTERNAL PHOTOS

The internal photos are provided as a separate document

END OF TEST REPORT