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MEASUREMENT REPORT
FCC Part 15C Wireless Power Transfer

Applicant Name:
BH EVS CO., LTD.
5, Magokjungang 8-ro 5-gil,
Gangseo-gu, Seoul,
07794 Republic of Korea

Date of Testing:
02/24/2025 - 04/11/2025
Test Report Issue Date:
6/26/2025
Test Site/Location:
ELEMENT Lab. Columbia, MD, USA
Test Report Serial No.:
1M2503170029-06.2A6WX

FCC ID:	**2A6WXWCNIS31SS**
APPLICANT:	**BH EVS CO., LTD.**

Application Type:	Certification
Model:	WCNIS31S
EUT Type:	Wireless Charger
Frequency Range:	180kHz, 128kHz, 360kHz
FCC Rule Part:	Part 15 Subpart C
FCC Classification:	Part 15 Low Power Transmitter Below 1705kHz (DCD)
Test Procedure(s):	ANSI C63.10-2020

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2020. Test results reported herein relate only to the item(s) tested.

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 persons taking them.

RJ Ortanez
Executive Vice President

ACCREDITED
CERT #2041.01

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2 Element Test Location

These measurement tests were conducted at the Element laboratory facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at Element Engineering lab located in Columbia, MD 21046, U.S.A.

- Element Washington DC LLC is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.

- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).

- Element Washington DC LLC facility is a registered (2451B) test laboratory with the site description on file with ISED.

- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreements (MRAs).

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **BH EVS Wireless Charger FCC ID: 2A6WXWCNIS31SS**. The test data contained in this report pertains only to the emissions generated by the IC of the EUT that receive or transmit AC power signal through magnetic induction (MI) or magnetic resonance (MR) wirelessly.

2.2 Device Capabilities

This device contains the following capabilities:

NFC, WPT

2.3 Test Configuration

The EUT can be configured to receive or transmit an AC power signal through magnetic induction (MI) or magnetic resonance (MR). The operating frequencies are 128kHz and 360kHzkHz and can produce a maximum power of 15W.

During wireless charging testing, one of the devices is configured to be AC power transmitter, and a dummy load in the form of a cellular device is introduced and configured to induce the maximum transmission. The EUT can operate in three conditions. Condition 1 operates at 128kHz and Condition 2 and 3 operate at 360kHz. Condition 2 and Condition 3 are differentiated by the form factor of the dummy load.

The EUT was tested in accordance with the guidance of ANSI C63.10-2020. See Sections 3.2 radiated emissions test setups.

2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

3.0 DESCRIPTION OF TEST

3.1 Evaluation Procedure

The measurement procedure described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2020) was used in the measurement of the EUT.

Deviation from measurement procedure…….....None

3.2 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33 depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

3.3 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

4.0 ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:
"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."

• The antenna of the EUT are **permanently attached.**

• This unit was tested with its standard battery.

Conclusion:
The EUT complies with the requirement of §15.203.

5.0 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 uncertainty shown below 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.

Contribution	Expanded Uncertainty (±dB)
Radiated Disturbance (<1GHz)	4.98

6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	NMLC-2	Line Conducted Emissions Cable (NM)	2/25/2025	Annual	2/25/2026	NMLC-2
-	AP2-001	EMC Cable and Switch System	2/25/2025	Annual	2/25/2026	AP2-001
-	AP2-002	EMC Cable and Switch System	2/25/2025	Annual	2/25/2026	AP2-002
Keysight Technologies	N9038A	MXE EMI Receiver	9/16/2024	Annual	9/16/2025	MY51210133
Keysight Technologies	N9030B	PXA Signal Analyzer, Multi-touch	9/19/2024	Annual	9/19/2025	MY57141001
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	11/25/2024	Annual	11/25/2025	100348
Rohde & Schwarz	HFH2-Z2E	9kHz - 30MHz Loop Antenna	6/4/2024	Biennial	6/4/2026	100854

Table 6-1. Annual Test Equipment Calibration Schedule

7.0 TEST DATA

7.1 Summary

Company Name: BH EVS CO., LTD.

FCC ID: 2A6WXWCNIS31SS

FCC Classification: Part 15 Low Power Transmitter Below 1705kHz (DCD)

Frequency Range: 80kHz, 128kHz, 360kHz

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	NA	Conducted	Pass	Section 7.2
15.209	Out-of-Band Emissions	Emissions must meet the radiated limits detailed in 15.209	Radiated	PASS	Section 7.3

Table 7-1. Summary of Test Results

Note:

This unit was tested while transferring maximum power wirelessly to a similar unit.

7.2 Occupied Bandwidth Measurement

RSS-Gen (6.6)

Test Overview and Limit

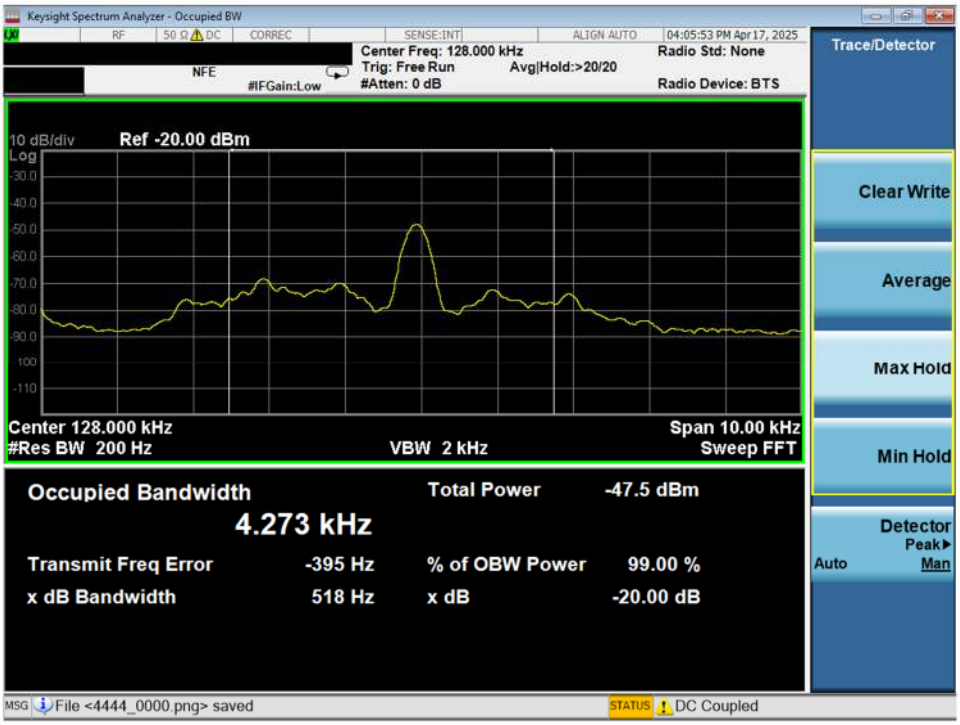
The occupied bandwidth is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequency.

Test Settings

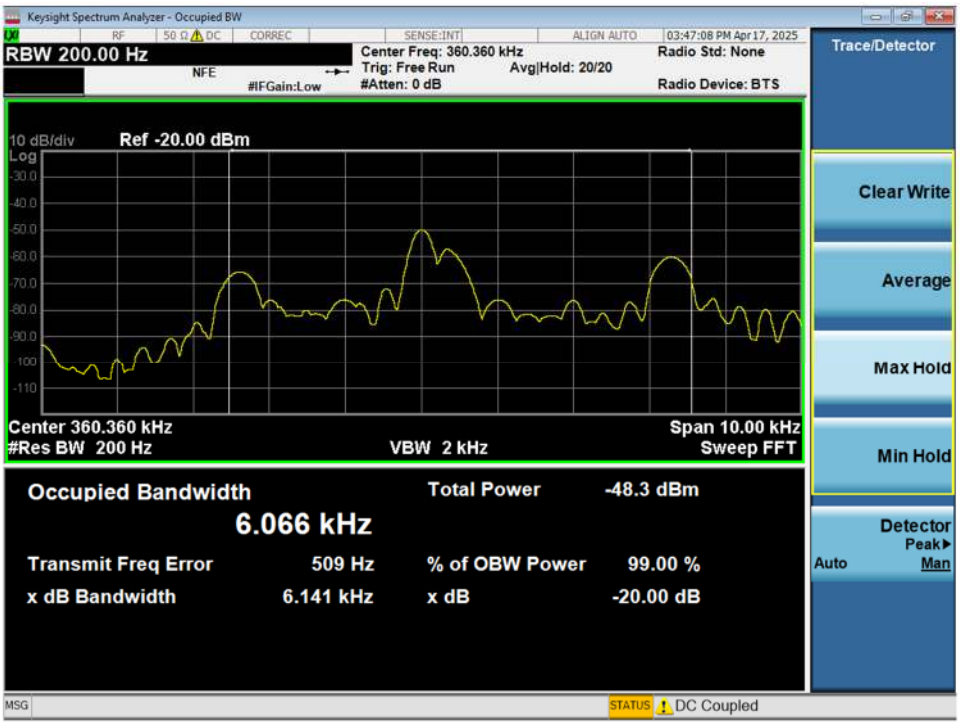
1. Spectrum analyzer frequency is set to the nominal EUT channel center frequency.
2. RBW = 1 – 5% OBW
3. VBW ≥ 3 x RBW
4. Reference level set to keep signal from exceeding maximum input mixer level for linear operation.
5. Detector = Peak
6. Trace mode = max hold
7. Sweep = auto couple
8. The trace was allowed to stabilize
9. Using the 99% power bandwidth function of the instrument and report the measured bandwidth.

Mode	Frequency	Occupied Bandwidth
Condition 1	128.00kHz	4.273kHz
Condition 2	360.36kHz	6.066kHz
Condition 3	360.36kHz	6.069kHz
Condition 4	80kHz	119.82kHz

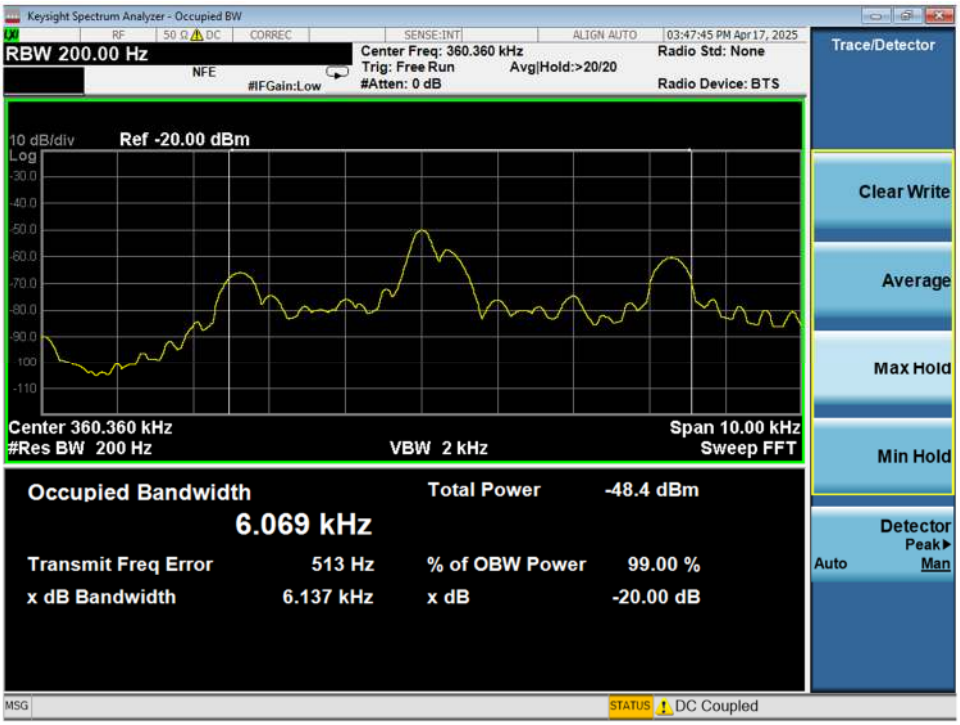
Table 7-2. Occupied Bandwidth Measurement



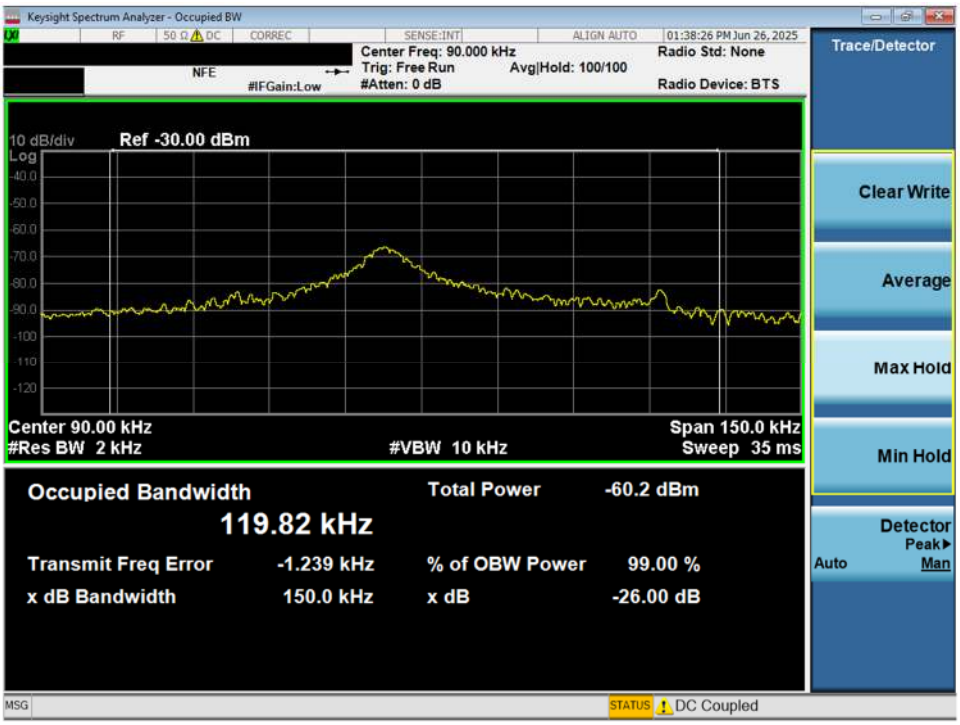
Plot 7-1. Occupied Bandwidth Measurement – Condition 1



Plot 7-2. Occupied Bandwidth Measurement – Condition 2



Plot 7-3. Occupied Bandwidth Measurement – Condition 3



Plot 7-4. Occupied Bandwidth Measurement – Condition 4

7.3 Radiated Spurious Emission Measurements, Out-of-Band

Test Overview and Limit

The EUT was tested from 9kHz up to the 30MHz. All measurements up to 30MHz were recorded with a spectrum analyzer employing a quasi-peak detector.

All out-of-band emissions must not exceed the limits shown in Table 7-3 per Part 15.209.

Frequency	Field Strength [μV/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 7-3. Radiated Limits – Out of band

Test Procedures Used

ANSI C63.10-2020 – Section 6.5.4

Test Settings

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 9kHz for emissions below 30MHz
3. VBW ≥ 3 x RBW
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

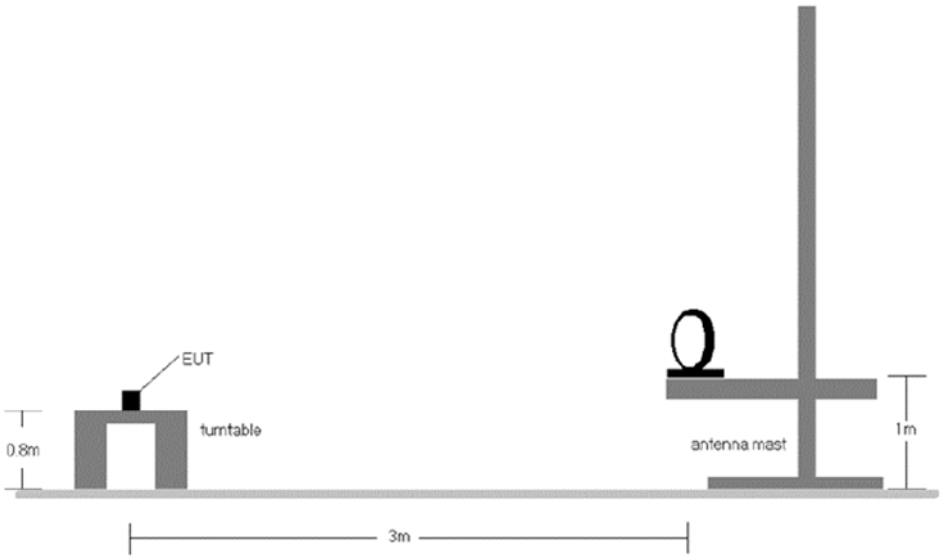


Figure 7-1. Radiated Test Setup

Test Notes:

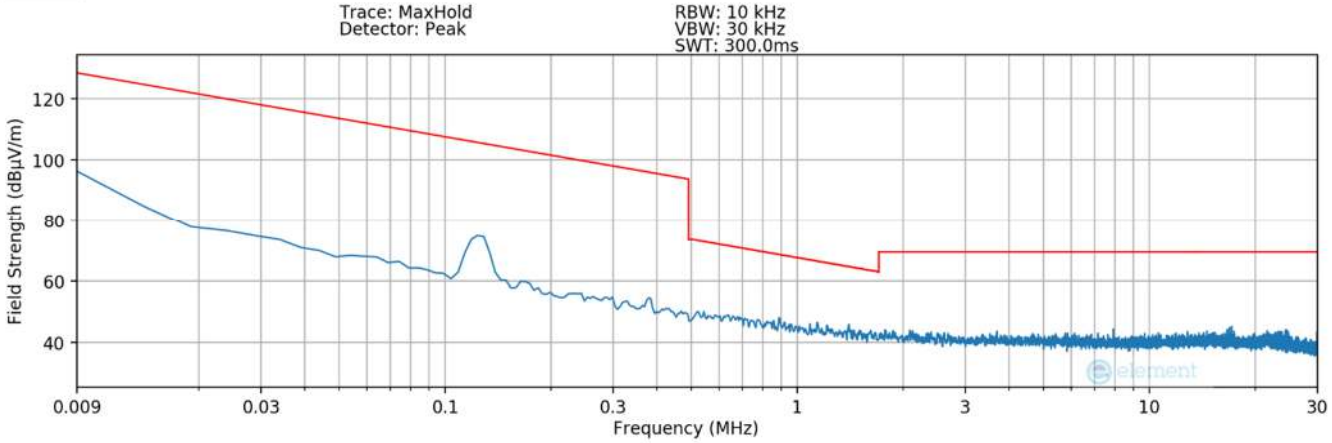
1. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector for emissions below 30MHz.
2. A loop antenna was used to investigate emissions below 30MHz.
3. Below 30MHz the loop antenna was positioned in 3 orthogonal planes (X front, Y side, Z top) to determine the orientation resulting in the worst case emissions.
4. The spectrum is investigated from 9kHz up to 30MHz per §15.33. The worst-case emissions are reported.
5. No spurious emissions levels were found to be greater than the level of the fundamental.
6. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Sample Calculation

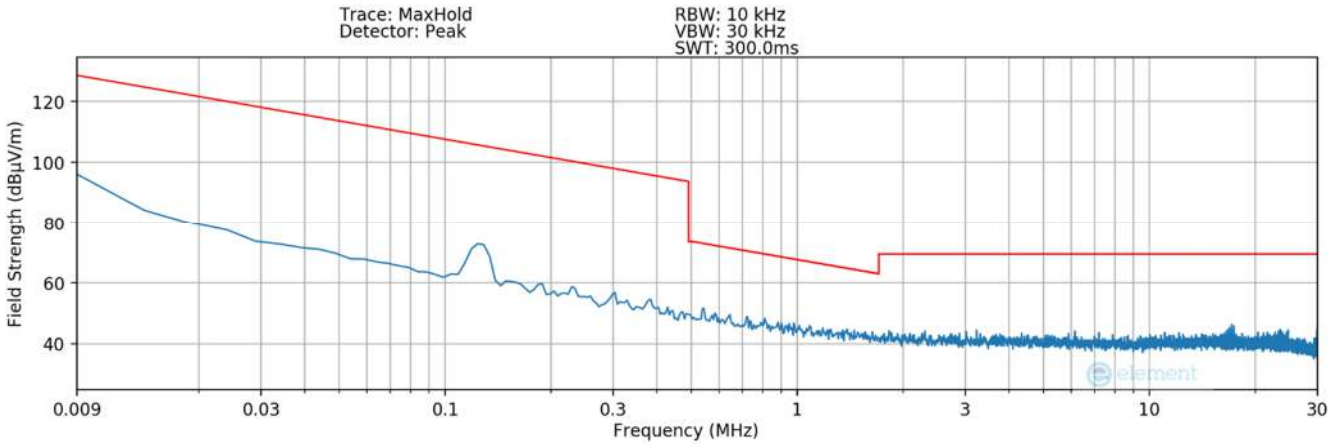
- Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$ – Distance Correction Factor$_{[dB]}$
- AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

Radiated Spurious Emission Measurements, Out-of-Band

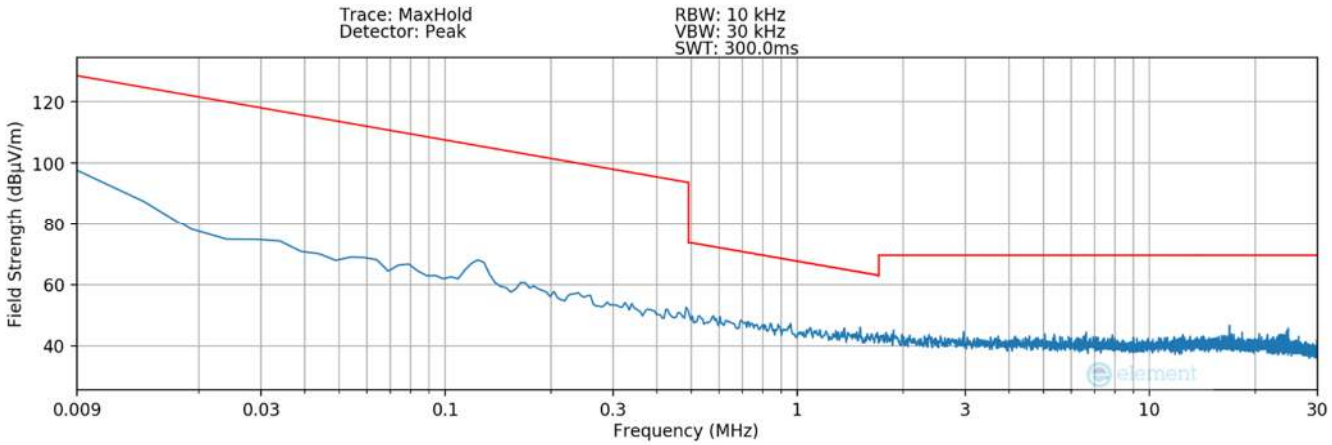
§15.209



Plot 7-5. Radiated Spurious Plot 9kHz – 30MHz (Pol. X – Condition1)



Plot 7-6Radiated Spurious Plot 9kHz – 30MHz (Pol. Y – Condition1)



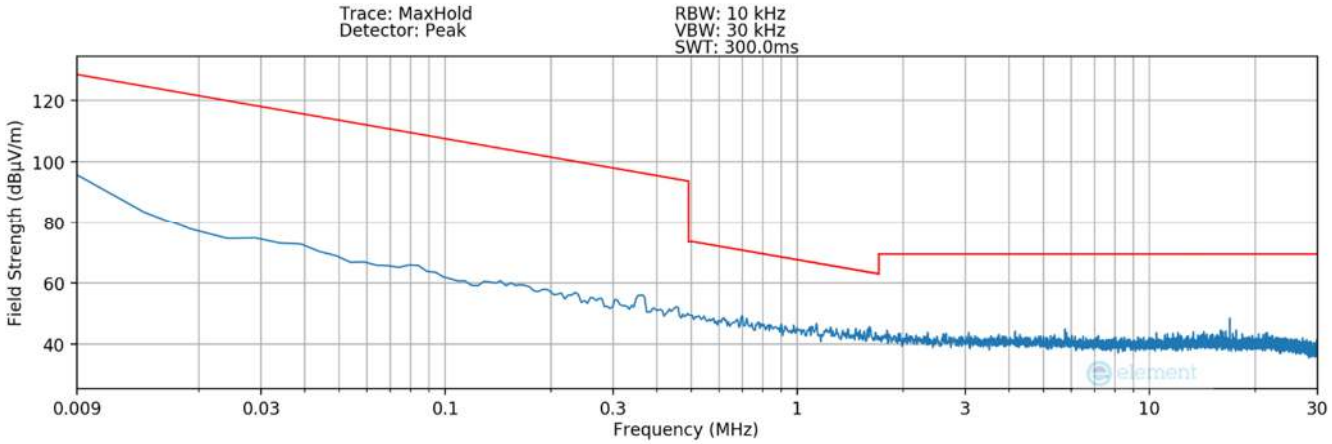
Plot 7-7. Radiated Spurious Plot 9kHz – 30MHz (Pol. Z– Condition1)

Tx Frequency 128.00kHz

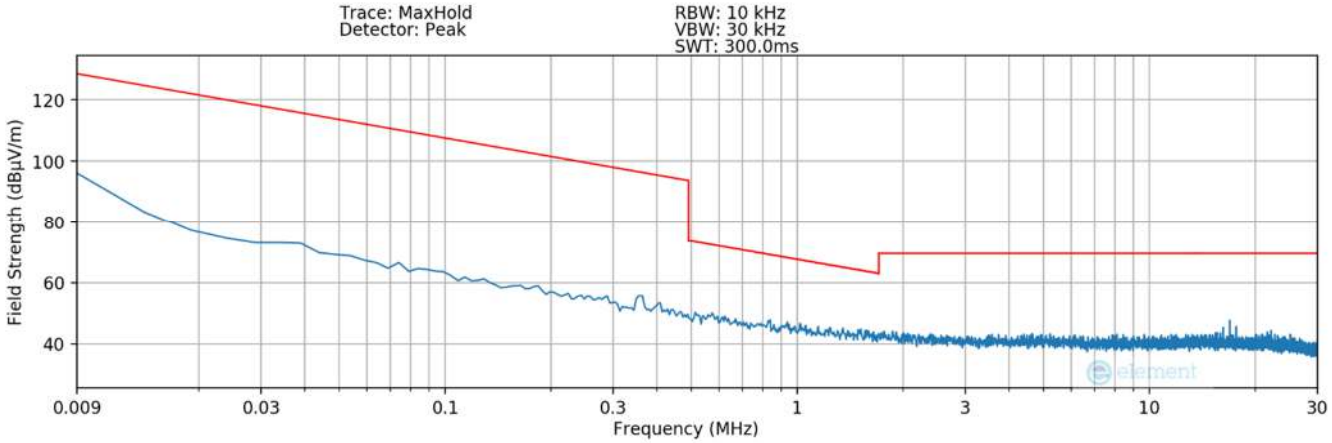
Measurement Distance: 3 Meters

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
0.128	X	100	244	-50.28	13.86	70.58	105.50	-34.92
0.256	X	100	-	-70.61	13.87	50.26	99.40	-49.14
0.384	X	100	-	-70.35	13.88	50.53	95.90	-45.37
0.512	X	100	-	-77.10	14.09	43.99	73.40	-29.41
0.640	X	100	-	-76.18	14.09	44.91	71.50	-26.59
0.768	X	100	-	-80.51	14.10	40.59	69.90	-29.31

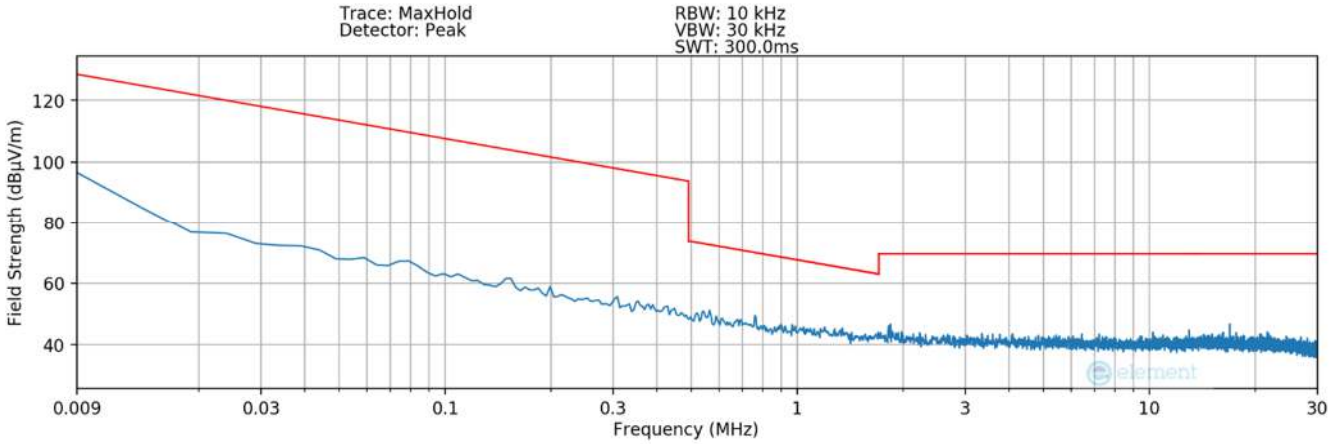
Table 7-4. Radiated Measurements (Condition1)



Plot 7-8. Radiated Spurious Plot 9kHz – 30MHz (Pol. X – Condition2)



Plot 7-9Radiated Spurious Plot 9kHz – 30MHz (Pol. Y – Condition2)



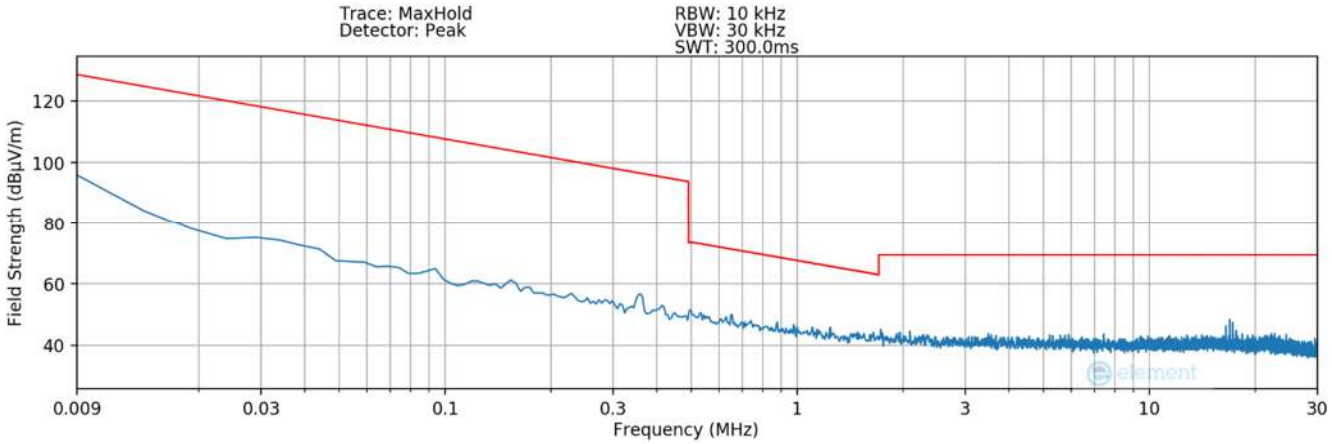
Plot 7-10. Radiated Spurious Plot 9kHz – 30MHz (Pol. Z– Condition2)

Tx Frequency 360kHz

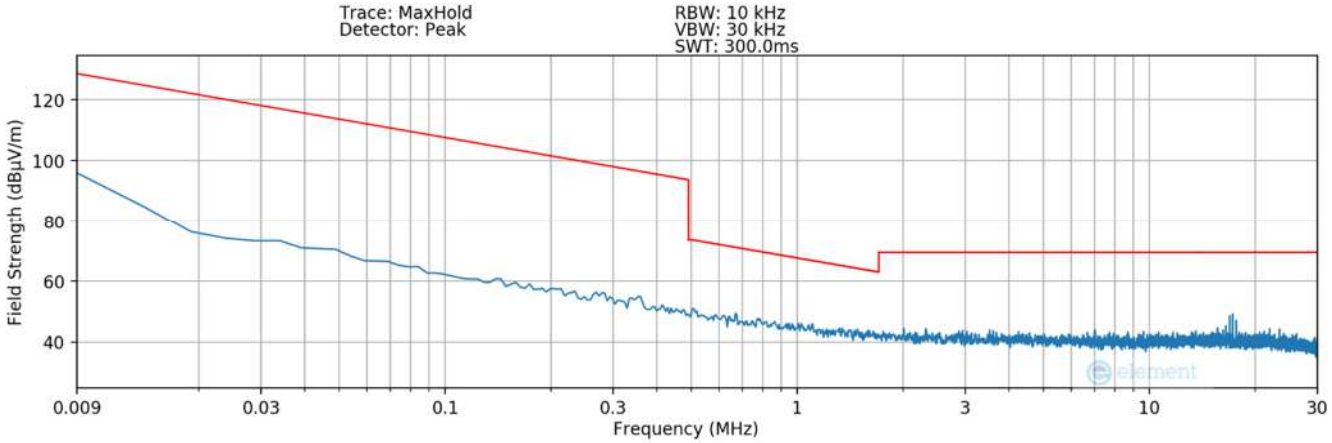
Measurement Distance: 3 Meters

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
0.360	X	100	228	-63.78	13.88	57.10	96.50	-39.40
0.720	X	100	-	-80.22	14.10	40.88	70.50	-29.62
1.080	X	100	-	-80.42	14.42	41.00	66.90	-25.90
1.440	X	100	-	-86.66	14.46	34.80	64.40	-29.60
1.800	X	100	-	-87.93	14.49	33.56	69.50	-35.94
2.160	X	100	-	-89.85	14.53	31.68	69.50	-37.82

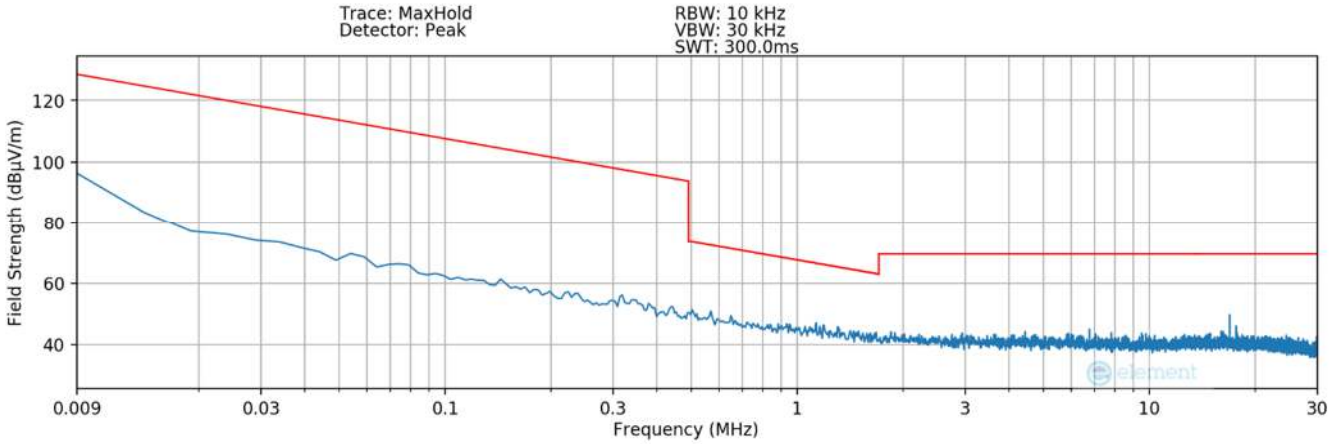
Table 7-5. Radiated Measurements (Condition2)



Plot 7-11. Radiated Spurious Plot 9kHz – 30MHz (Pol. X – Condition3)



Plot 7-12Radiated Spurious Plot 9kHz – 30MHz (Pol. Y – Condition3)



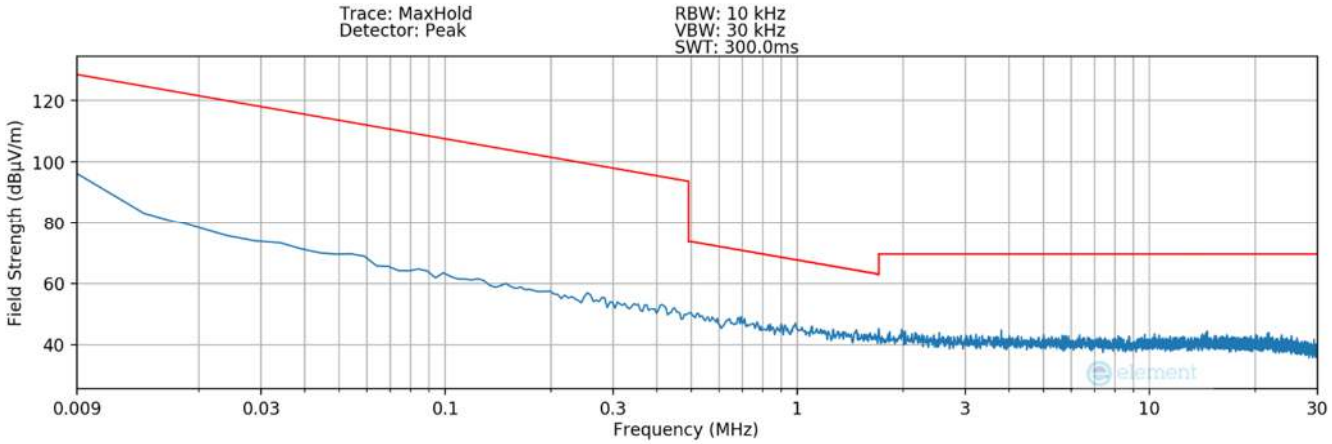
Plot 7-13. Radiated Spurious Plot 9kHz – 30MHz (Pol. Z– Condition3)

Tx Frequency 360kHz

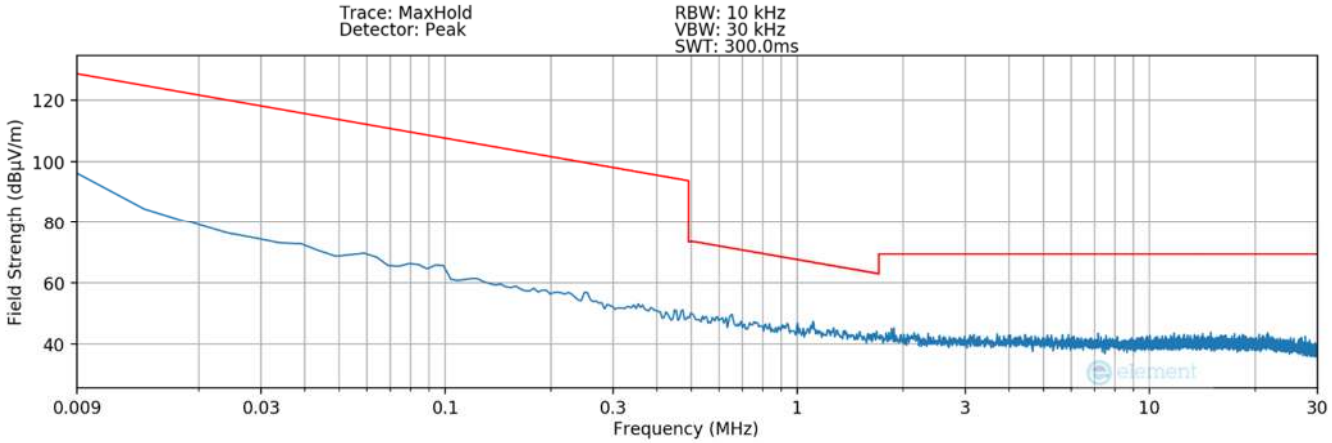
Measurement Distance: 3 Meters

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
0.360	X	100	217	-65.75	13.88	55.13	96.50	-41.37
0.720	X	100	-	-80.19	14.10	40.91	70.50	-29.59
1.080	X	100	-	-80.69	14.42	40.73	66.90	-26.17
1.440	X	100	-	-86.95	14.46	34.51	64.40	-29.89
1.800	X	100	-	-88.26	14.49	33.23	69.50	-36.27
2.160	X	100	-	-89.77	14.53	31.76	69.50	-37.74

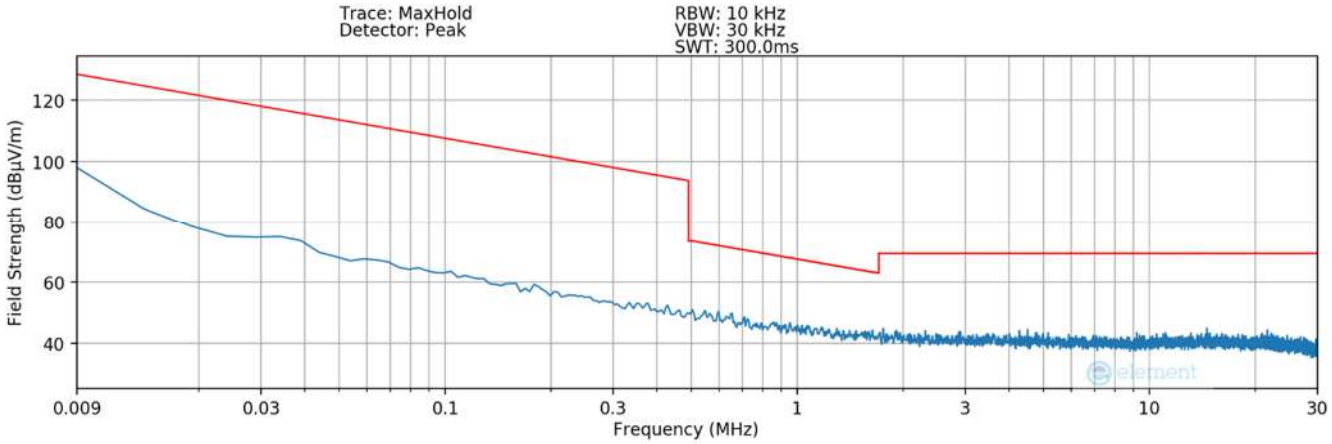
Table 7-6. Radiated Measurements (Condition3)



Plot 7-14. Radiated Spurious Plot 9kHz – 30MHz (Pol. X – Condition4)



Plot 7-15Radiated Spurious Plot 9kHz – 30MHz (Pol. Y – Condition4)



Plot 7-16. Radiated Spurious Plot 9kHz – 30MHz (Pol. Z– Condition4)

Tx Frequency 80kHz

Measurement Distance: 3 Meters

Frequency [MHz]	Ant. Pol. [X/Y/Z]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
0.08	X	100	-	-56.90	20.21	70.31	109.54	-39.23
0.16	X	100	-	-60.14	20.06	66.92	103.52	-36.60
0.24	X	100	-	-61.99	20.06	65.07	100.00	-34.93
0.32	X	100	-	-65.66	20.01	61.35	97.50	-36.15
0.40	X	100	-	-66.23	19.92	60.69	95.56	-34.87
0.48	X	100	-	-77.33	20.09	49.76	93.98	-44.22

Table 7-7. Radiated Measurements (Condition4)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **BH EVS Wireless Charger FCC ID: 2A6WXWCNIS31SS** has been verified to comply with the requirements specified in Part 15 (§15.207 and §15.209) of the FCC Rules.