



166 South Carter, Genoa City, WI 53128

Company:	Wilson Sporting Goods Co.
Model Tested:	MSC1417_ASSY Rev B
Project Number:	12719
Report Number:	28749 rev1.1

Code of Federal Regulations Title 47 Part 15 – Radio Frequency Devices

Subpart C – Intentional Radiators – Section 15.209

Radiated emission limits; general requirements

THE FOLLOWING MEETS THE ABOVE TEST SPECIFICATION

(The Digital Device requirements (Part 15.107 & 15.109 Class B) will be addressed as an SDoC)

FCC ID: 2AHBQ-QBIDP1

(Body-worn use with antenna distance to user < 5 mm)

Formal Name:	QBID Player Tag
Kind of Equipment:	Portable / Sensor Beacon with: 125 kHz Low Power Transceiver (in this report), and Bluetooth Low Energy (BLE) Transceiver, (See DLS Test Report #28749)
Frequency Range(s):	125 kHz
Test Configuration:	Table top, stand-alone, rotated through 3 orthogonal axes to find worst-case orientation
Model Number(s):	MSC1417_ASSY Rev B
Model(s) Tested:	MSC1417_ASSY Rev B
Serial Number(s):	A2547_0290
Date of Tests:	August 23-28, 2024
Test Conducted For:	Wilson Sporting Goods Co. 9509 Foster Avenue Schiller Park, Illinois, 60176, USA

NOTICE: This test report contains test data, equipment lists and/or other information regarding only the sample provided by the client for testing. This test report shall not be used to claim product approval or endorsement by any governmental, regulatory, or accrediting agency. Please see the "Description of Test Sample" page listed inside of this report.

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Signature Page

Report By:

Craig Brandt
Test Engineer

Reviewed By:

Brian Mattson
General Manager

Approved By:

Brian Mattson
General Manager



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CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

DLS Electronic Systems, Inc.
1250 Peterson Drive
Wheeling, IL 60090
(and satellite locations as shown on the scope)

Fulfills the requirements of

ISO/IEC 17025:2017

and

**U.S. Federal Communication Commission (FCC) EMC and Telecommunications (EC&T)
Testing Designation Program**

and

**Recognition of Telecommunications Testing - Innovation, Science, and Economic Development
(ISED) Canada**

and

**FDA Accreditation Scheme for Conformity Assessment (ASCA) Pilot Program -Basic Safety
and Essential Performance of Medical Electrical Equipment, Medical Electrical Systems, and
Laboratory Medical Equipment**

In the field of

TESTING

This certificate is valid only when accompanied by a current scope of accreditation document.

The current scope of accreditation can be verified at www.anab.org

Jason Stine, Vice President
Expiry Date: 23 April 2026
Certificate Number: AT-1859



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

SATELLITE SITE

DLS Electronic Systems, Inc. (OATS Site)

166 South Carter
Genoa City, Wisconsin 53128

www.dlsemc.com



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1.0 Summary of Test Report

It was determined that the QBID Player Tag, model MSC1417_ASSY Rev B, complies with the requirements of Title 47 CFR Part 15, Subpart C, Section 15.209.

Subpart C Applicable Technical Requirements Tested:

Section	Description	Procedure	Note	Compliant?
15.31(e)	Supply Voltage Statement	N/A		Yes
15.203	Antenna Requirement Statement	N/A		Yes
15.209(a)	Transmitter Radiated Emissions	ANSI C63.10-2020 Sections 6.4 & 6.5	1	Yes
15.207	AC Line Conducted Emissions	N/A	2	Yes

Note 1: Radiated Emission measurement; tested in 3 orthogonal axes.

Note 2: It is not possible for the 125 kHz transmitter in the EUT to transmit while the device is on a wireless charging pad (the only means by which the device can be charged). Therefore, AC Line Conducted Emissions testing was not performed for the 125 kHz transmitter.

AC Line Conducted Emissions test results with the BLE transmitter transmitting can be found in DLS Test Report #28749.

AC Line Conducted Emissions test for the digital device circuitry (FCC 15.107 Class B) was addressed as an SDoC (DLS Test Report to be furnished upon request).



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2.0 Introduction

During August 23-28, 2024 the QBID Player Tag, model MSC1417_ASSY Rev B, as provided by Wilson Sporting Goods Co., was tested to the requirements of Title 47 CFR Part 15, Subpart C, Section 15.209. To meet these requirements, the procedures contained within this report were performed by personnel of D.L.S. Electronic Systems, Inc.

3.0 Test Facilities

D.L.S. Electronic Systems, Inc. is a full-service EMC/Safety Testing Laboratory accredited to ISO 17025. ANAB Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, ISED Canada, and VCCI.

Wisconsin Test Facility:

D.L.S. Electronic Systems, Inc.
166 S. Carter Street
Genoa City, Wisconsin 53128

Wheeling Test Facility:

D.L.S. Electronic Systems, Inc.
1250 Peterson Drive
Wheeling, IL 60090

FCC Registration #90531

4.0 Description of Test Sample

Description:

The QBID Player Tag is part of a data acquisition system used to evaluate and quantify a player's performance. It communicates with a QBID Ball Tag which senses features like ball velocity, ball spin rate, spiral efficiency, release time, and others. The QBID Player Tag also uses a low power, low frequency proximity transceiver to identify which player has the ball. This system allows players to evaluate their level of performance.

Type of Equipment:

Portable / Body-worn

DCD – 125 kHz Low Power Transceiver (in this report)

DTS – Bluetooth Low Energy (BLE 5.0) (See DLS Test Report #28749)



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4.0 Description of Test Sample – continued

Frequency Range:

125 kHz (single channel)

Physical Dimensions of Equipment Under Test:

Length: 2 in. x Width: 3 in. x Height: 1 in.

Power Source:

3.7 Volt DC provided by internal rechargeable battery
Battery is only rechargeable by wireless charging

Crystal Frequencies:

32 MHz, 32.768 kHz

Transmit Frequencies Used For Test Purpose:

125 kHz

Type of Modulation(s)

OOK (ASK)

Antenna Type:

Air Core Inductor
Gain: unknown

Production Firmware / Software:

Normal Operational Firmware: 1D00E052
(This identifies the build code and the version as well.)

Firmware / Software Used for Test Purpose:

Special FCC Test Firmware: 1DFCCE50
(This identifies the build code and the version as well.)



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5.0 Test Equipment

A list of the equipment used can be found in the table below. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.

D.L.S. Wisconsin – Radiated 9 kHz–30 MHz - Site 2 - AVERAGE - Test Equipment:

(Tested on 08-23-2024)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz-40 GHz	3-14-24	3-14-25
Loop Antenna	EMCO	6502	2038	9 kHz-30 MHz	1-23-23	1-23-25
Cable	Coleman Cable	991079	CBL-030	9 kHz-1 GHz	4-7-24	4-7-25
Test Software	Rohde & Schwarz	ESK1	V1.7.1	N/A	N/A	N/A

D.L.S. Wisconsin – Radiated 9 kHz–30 MHz - Site 2 - PEAK - Test Equipment:

(Tested on 06-10-2025)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz-26 GHz	3-27-25	3-27-27
Loop Antenna	Electro-Metrics	6502	1027	9 kHz-30 MHz	1-3-25	1-3-27
Cable	Coleman Cable	991079	CBL-030	9 kHz-1 GHz	4-8-25	4-8-26
Test Software	Rohde & Schwarz	ESK1	V1.7.1	N/A	N/A	N/A

D.L.S. Wisconsin – Radiated Emissions 30-1000 MHz – Site 2 – Test Equipment:

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESW-44	103075	2 Hz-44 GHz	3-29-23	3-29-25
Antenna	EMCO	3104C	0005-4892	20 MHz-300 MHz	1-5-23	1-5-26
Antenna	EMCO	3146	1604	200 MHz-1 GHz	3-13-24	3-13-26
Cable	Beldin	9914	CBL-005	9 kHz-1 GHz	7-2-24	7-2-25
Cable	Pasternack Enterprises	PE3087-48	CBL-109	9 kHz-1 GHz	4-7-24	4-7-25
Cable	Pasternack Enterprises	PE3087-48	CBL-111	9 kHz-1 GHz	4-7-24	4-7-25
Cable	Coleman Cable	991079	CBL-122	9 kHz-1 GHz	4-7-24	4-7-25
Preamplifier	Rohde & Schwarz	TS-PR10	032001/004	9 kHz-1 GHz	7-2-24	7-2-25
Test Software	ETS Lindgren	TILE 7	N/A	N/A	N/A	N/A



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6.0 Test Arrangements

Measurement Arrangement:

All measurements were performed at D.L.S. Electronic Systems, Inc. and set up according to ANSI C63.10-2020, unless otherwise noted. Descriptions of procedures and measurements can be found in Section A – Measurement Data. See Section B for measurement uncertainty. See separate exhibit for photos of the test set up.

Unless otherwise noted, the bandwidth of the measuring receiver / analyzer used during testing is shown below.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

7.0 Test Conditions

Temperature and Humidity:

66 °F at 55% RH

Supply Voltage:

3.7 Volt DC provided by internal rechargeable battery.
Battery can only be charged via wireless charging pad.
The device cannot transmit at 125 kHz while on a charging pad.

All Radiated Emissions were tested with a fully charged battery.

8.0 Modifications Made to EUT For Compliance

No modifications were made to the EUT for compliance of the 125 kHz transmitter.



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9.0 Additional Descriptions

Following FCC Part 15 and ANSI C63.10 requirements, the EUT was programmed to transmit continuously, modulated, with a 100% duty cycle.

For Radiated Emission measurements, the EUT was tested while transmitting from the internal air core inductor antenna. The device was set up on a non-conductive table for testing purposes and was rotated through three orthogonal axes to find worst-case emission levels. The worst-case levels are recorded in this test report.

See Section A for operation and setup specific to the FCC Rule part and ANSI C63.10 guidance reference for each test performed. See the separate Setup Photos exhibit for photos of the Radiated Emissions test setups.

10.0 FCC 15.31(e) Supply Voltage Requirement statement

FCC 15.31(e) - For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Compliance Statement: This device complies with the requirements of Part 15.31(e):

- ☒ This device is battery operated. All tests were performed using a new (or fully charged) battery.
- ☐ This device provides a constant regulated voltage to the RF circuitry regardless of supply voltage (see schematic diagrams).
- ☐ This device does not provide a constant regulated voltage to the RF circuitry regardless of supply voltage. Data has been supplied in this test report that supports compliance. Details:



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11.0 FCC 15.203 Antenna Requirement statement

SECTION 15.203 ANTENNA REQUIREMENT

FCC 15.203 - An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.... This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, 15.221, or 15.236.

Statement: This wireless device (Intentional Radiator) meets the requirements of FCC Part 15.203:

- ☒ The antenna is permanently attached
- ☐ The antenna has a unique coupling to the intentional radiator.
Description of coupling:
- ☐ This intentional radiator is professionally installed
- ☐ This intentional radiator, in accordance with Section 15.31(d), must be measured at the installation site.

12.0 Results

Measurements were performed in accordance with ANSI C63.10-2020. Graphical and tabular data can be found in Section A at the end of this report.

13.0 Conclusion

The QBID Player Tag, model MSC1417_ASSY Rev B, as provided by Wilson Sporting Goods Co., tested during August 23-28, 2024 **meets** the requirements of Title 47 CFR Part 15, Subpart C, Section 15.209.



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Section A – Measurement Data

A1.0 Radiated Emissions – 9 kHz to 1 GHz

Rule Part:

Sections 15.209(a)

Test Procedure:

ANSI C63.10-2020:

Section 6.4: Radiated emissions from unlicensed wireless devices below 30 MHz

Section 6.5: Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz

Limits:

Limit table in Section 15.209

The level of all unwanted emissions must be lower than the level of the fundamental emission.

Results:

Compliant

Notes:

This was a Radiated Emissions test. The EUT was tested while transmitting from the internal air coil inductor antenna. The device was set up on a non-conductive table for testing purposes.

The test software was set to transmit a modulated signal at 100% duty cycle. The EUT was rotated through three orthogonal axes to find the worst-case emission levels. The worst-case levels are recorded in this test report.

For radiated emissions below 30 MHz, the receive loop antenna was rotated through three orthogonal axes (as well as the EUT) to find the worst-case emission levels. The worst-case levels are recorded in this test report.

FCC Part 15.209 @ 3 meter distance

Electric Field Strength

EUT: QBID Player Tag
Manufacturer: Wilson Sporting Goods
Operating Condition: 66 deg F ; 55% R.H.
Test Site: DLS OATS Site 2
Operator: cbrandt; DLS Proj. #12719
Test Specification: (Fully charged) battery powered
Comment: Continuous transmit (100% duty cycle) at 125 kHz
Date: 08-23-2024

TEXT: "E-Field 3 meters"

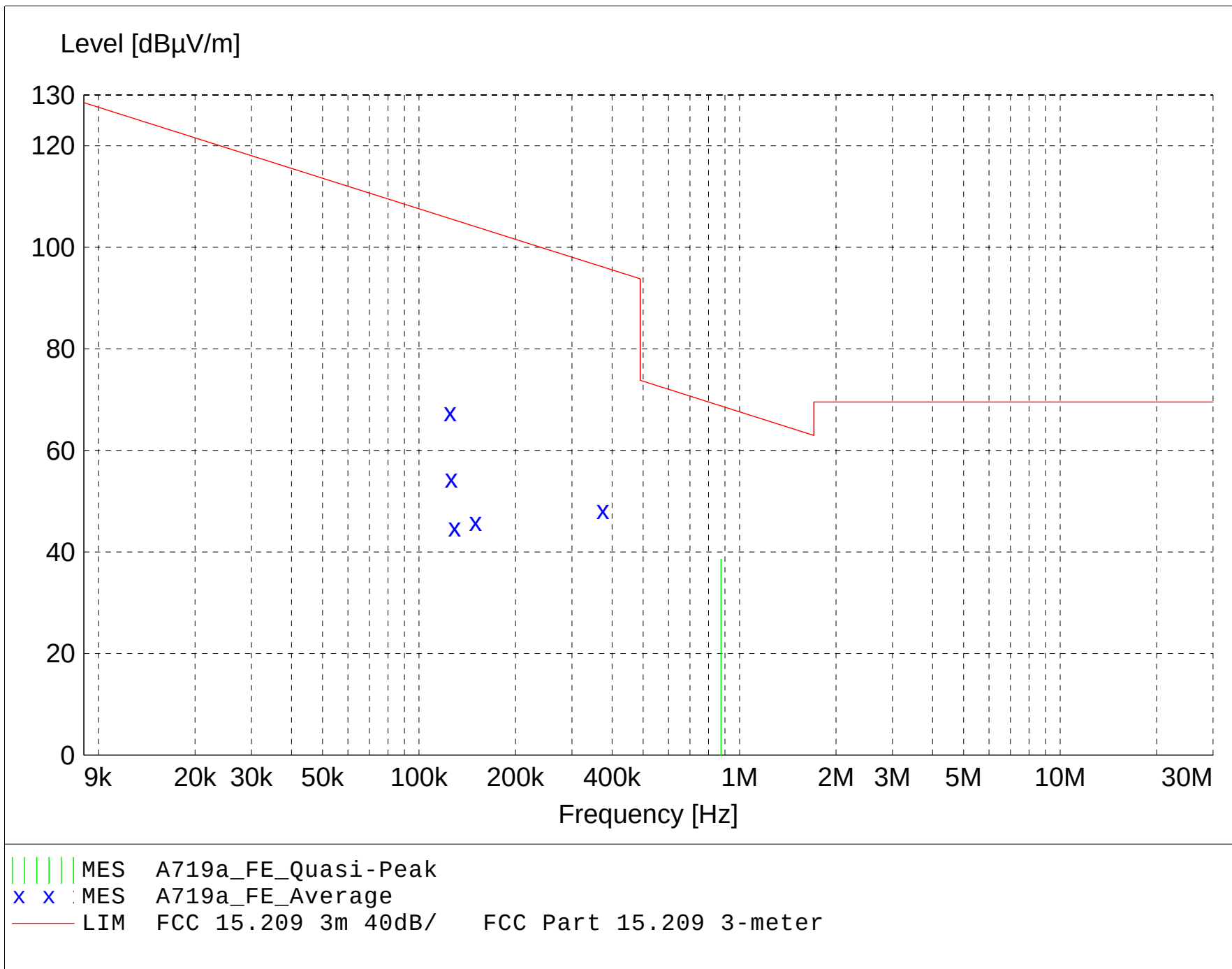
Short Description: E-Field

Test Set-up: EUT Measured at 3 Meters with Active Loop Antenna

Sample Equations:
$$\begin{array}{rclclcl} \text{Total Level(dB}\mu\text{V/m)} & = & \text{Level(dB}\mu\text{V)} & + & \text{System Loss(dB)} & + & \text{Antenna Factor(dB}\mu\text{V/m)} \\ 24.6 & & = & 35.51 & + & (-22.1) & + & 11.20 \end{array}$$

$$\begin{array}{rclcl} \text{Margin(dB)} & = & \text{Limit(dB}\mu\text{V/m)} & - & \text{Total Level(dB}\mu\text{V/m)} \\ 15.4 & = & 40 & - & 24.6 \end{array}$$

Graph Markers: + Frequency marker (Level of marker not related to final level)
 | Final maximized level using Quasi-Peak detector
 X Final maximized level using Average detector
 # Final maximized level using Peak detector



MEASUREMENT RESULT: "A719a_FE_Final"

8/23/2024 5:04PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
0.125000	57.24	10.10	0.2	67.5	105.7	38.2	1.00	180	AVERAGE	Fundamental
0.126100	44.21	10.10	0.2	54.5	105.6	51.1	1.00	180	AVERAGE	None
0.129100	34.51	10.10	0.2	44.8	105.4	60.6	1.00	180	AVERAGE	None
0.150000	35.72	10.08	0.1	46.0	104.1	58.1	1.00	150	AVERAGE	None
0.375008	38.24	9.91	0.1	48.2	96.1	47.9	1.00	0	AVERAGE	None
0.875000	28.32	10.23	0.0	38.6	68.8	30.2	1.00	180	QUASI-PEAK	None

FCC Part 15.209 @ 3 meter distance

Electric Field Strength

EUT: QBID Player Tag
Manufacturer: Wilson Sporting Goods
Operating Condition: 72 deg F ; 46% R.H.
Test Site: DLS OATS Site 2
Operator: cbrandt; DLS Proj. #12719
Test Specification: (Fully charged) battery powered
Comment: Continuous transmit (100% duty cycle) at 125 kHz
Date: 06-10-2025

TEXT: "E-Field 3 meters"

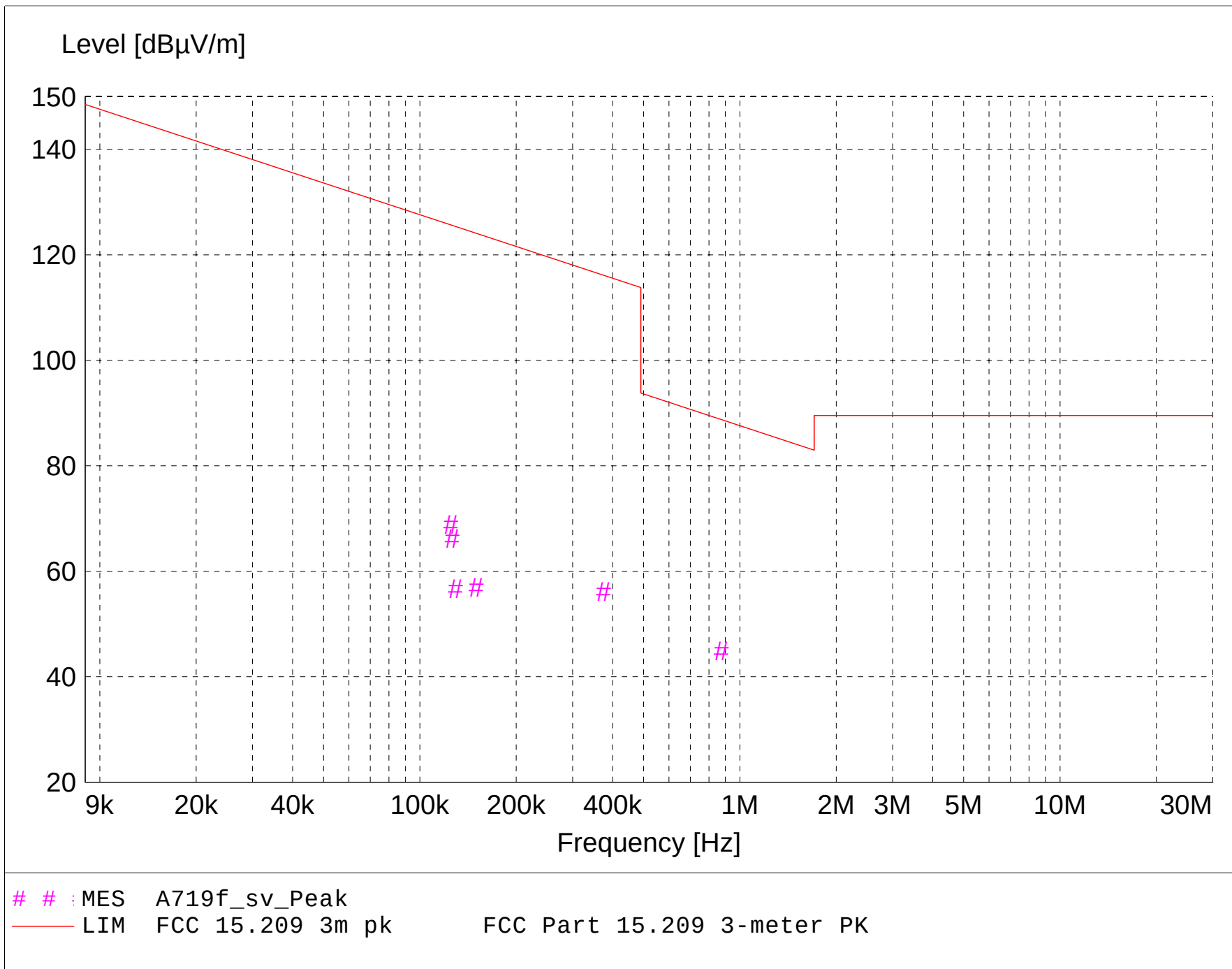
Short Description: E-Field

Test Set-up: EUT Measured at 3 Meters with Active Loop Antenna

Sample Equations:
$$\begin{array}{rclclcl} \text{Total Level(dB}\mu\text{V/m)} & = & \text{Level(dB}\mu\text{V)} & + & \text{System Loss(dB)} & + & \text{Antenna Factor(dB}\mu\text{V/m)} \\ 24.6 & & = & 35.51 & + & (-22.1) & + & 11.20 \end{array}$$

$$\begin{array}{rclcl} \text{Margin(dB)} & = & \text{Limit(dB}\mu\text{V/m)} & - & \text{Total Level(dB}\mu\text{V/m)} \\ 15.4 & = & 40 & - & 24.6 \end{array}$$

Graph Markers: + Frequency marker (Level of marker not related to final level)
 | Final maximized level using Quasi-Peak detector
 X Final maximized level using Average detector
 # Final maximized level using Peak detector



MEASUREMENT RESULT: "A719f_sv_Final"

6/10/2025 2:50PM

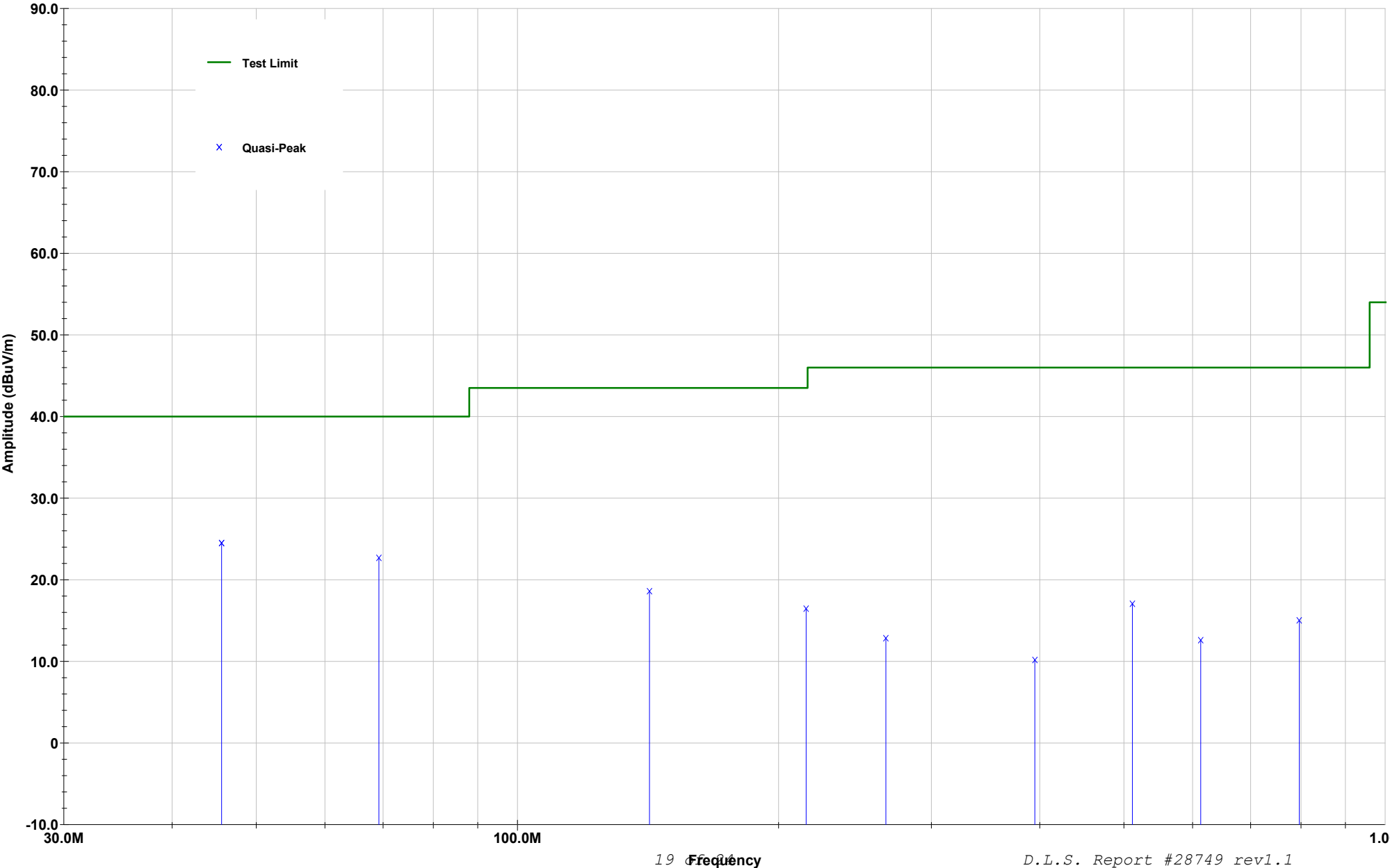
Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Detector		Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle				
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg				
0.125000	58.33	10.35	0.2	68.8	125.7	56.8	1.00	180	MAX	PEAK		Fundamental
0.126100	55.78	10.35	0.2	66.3	125.6	59.3	1.00	180	MAX	PEAK		None
0.129100	46.27	10.34	0.2	56.8	125.4	68.6	1.00	180	MAX	PEAK		None
0.150000	46.57	10.30	0.1	57.0	124.1	67.1	1.00	150	MAX	PEAK		None
0.375000	46.04	10.10	0.1	56.2	116.1	59.9	1.00	0	MAX	PEAK		None
0.875000	34.67	10.30	0.0	45.0	88.8	43.8	1.00	180	MAX	PEAK		None

DLS Electronic Systems, Inc.

Radiated Emissions - OATS

Vertical Quasi-Peak Graph

Limit/Distance - FCC Part 15.209 / 3-meter
Customer - Wilson Sporting Goods
EUT Info - QBID Player Tag; DLS Proj. #12719
Voltage/Site - Fully charged battery / Site 2
Engineer - cbrandt
Notes - Continuous transmit at 125 kHz



Markers Vertical

Limit/Distance: FCC Part 15.209 / 3-meter

DLS Electronic Systems, Inc.

Radiated Emissions - OATS

Horizontal Quasi-Peak Graph

Limit/Distance - FCC Part 15.209 / 3-meter

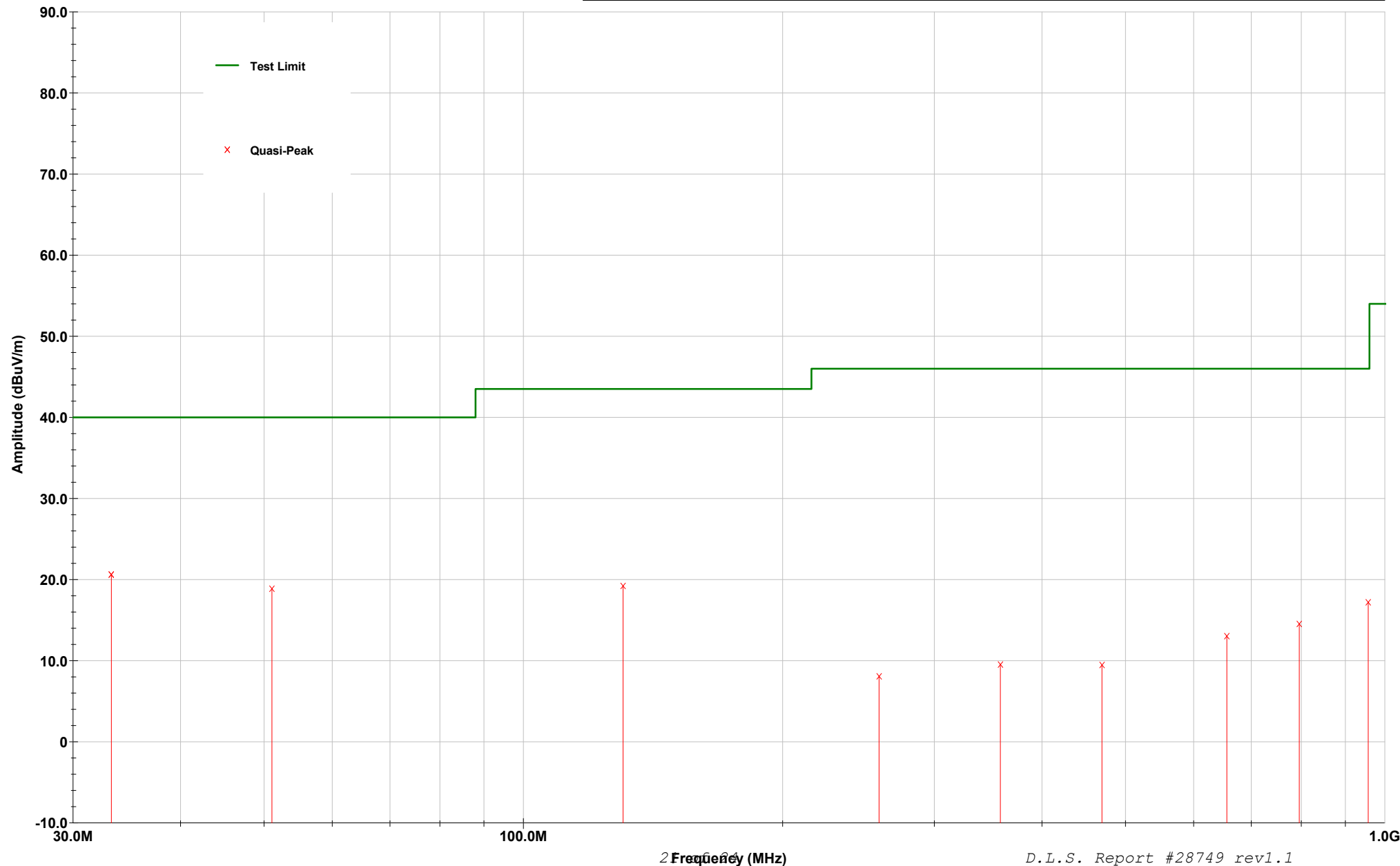
Customer - Wilson Sporting Goods

EUT Info - QBID Player Tag; DLS Proj. #12719

Voltage/Site - Fully charged battery / Site 2

Engineer - cbrandt

Notes - Continuous transmit at 125 kHz



Limit/Distance: FCC Part 15.209 / 3-meter

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Section B – Measurement Uncertainty

Compliance with the limits in this standard are based on the results of the compliance measurement. Our calculated measurement uncertainty including the measurement instrumentation, associated connections between the various instruments in the measurement chain, and other contributions, are provided in this section of the test report.

Radiated Emission 9 kHz to 30 MHz Uncertainty

		Uncertainty (+/- dB)	Uncertainty (+/- dB)
Contribution	Probability Distribution	10M	10M
		9 kHz - 150 kHz	150 kHz - 30 MHz
Combined Standard Uncertainty	Normal	1.60	1.60
Expanded Uncertainty	Normal (k=2)	3.19	3.19

Radiated Emission 30 MHz to 1000 MHz Uncertainty

		Uncertainty (+/- dB)	Uncertainty (+/- dB)	Uncertainty (+/- dB)
Contribution	Probability Distribution	3M	3M	3M
		30- 100MHz.	100- 700MHz	700- 1000MHz.
Combined Standard Uncertainty	Normal	1.70	1.62	1.66
Expanded Uncertainty	Normal (k=2)	3.40	3.23	3.33



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END OF REPORT

Revision #	Date	Comments	By
1.0	03-12-2025	Initial Release.	CB
1.1	06-11-2025	Added Peak detector emissions data. Added a note that the receive loop antenna was rotated through three orthogonal axes to find and record worst-case emission levels.	CB