



166 South Carter, Genoa City, WI 53128

Company:	Wilson Sporting Goods Co.
Model:	PCB Trace Antenna (used with Player Tag, model MSC1417_ASSY Rev B)
Project Number:	12719
Report Number:	29164 rev1.1

ANTENNA UNDER TEST (AUT) REPORT

AUT DESCRIPTION

ANTENNA GAIN

RADIATION PLOTS (for max gain plane)

FCC Title 47 CFR Part 1.1307(b)(3)(i)(B)

FCC Title 47 CFR Part 2.1093(c)(1)

RSS-102 Issue 6 December 2023

For use in showing compliance with the above referenced standards for:

SAR Exemption Thresholds – Portable Device – General Population

AUT is a Trace Antenna used with:

FCC ID: 2AHBQ-QBIDP1 & IC ID: 21110-QBIDP1

(Body-worn use with antenna distance to user < 0.5 cm)

Formal Name:	QBID Player Tag
Kind of Equipment:	Portable / Sensor Beacon with: Bluetooth Low Energy (BLE) Transceiver, and 125 kHz Low Power Transceiver
Frequency Range(s):	125 kHz (does not use AUT), and 2402-2480 MHz (uses AUT)
Test Method:	Calculate AUT gain and show radiation patterns used for RF Exposure evaluation purposes
Model Number:	AUT is part of model MSC1417_ASSY Rev B
Dates of tests:	August 27-28, 2024, April 10, 2025, and June 16, 2025
Conducted For:	Wilson Sporting Goods Co. 9509 Foster Avenue Schiller Park, Illinois, 60176, USA

NOTICE: This report contains test data, and/or other information regarding only the sample provided by the client for testing and evaluation. 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 Device" 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 Antenna Information

Antenna Type:	Proprietary PCB Trace antenna
Antenna Gain:	-5.96 dBi
Frequency Range:	2.402 – 2.480 GHz

2.0 Test Procedure

Antenna Gain: ANSI C63.26-2015, Sections 5.2.3.3 and 5.5.3.

Measurement of RF conducted peak power with spectrum analyzer RBW greater than OBW of signal to be measured.

Measurement of radiated emissions using substitution method.

The EUT was tested while transmitting from its on-board trace antenna (the AUT). The device was set up at a distance of 3 meters on a 1.5-meter height non-conductive table for testing purposes.

The EUT test software was set to transmit a modulated signal at 94.6% duty cycle. The EUT was rotated through three orthogonal axes, and the receive antenna was oriented in both vertical and horizontal polarizations and scanned from 1 to 4 meters in height, to find the worst-case emission levels at each of the measurement frequencies. The worst-case levels were recorded.

The EUT/AUT was then replaced by a calibrated substitution antenna, attenuator, cable, and RF signal generator with the antenna located in the position the EUT/AUT had been in. The signal received from the substitution antenna, at each of the measurement frequencies, was also maximized. The output of the signal generator was adjusted so that the field strength level received from the substitution antenna was equal to the maximum field strength received from the EUT/AUT. The Effective Isotropic Radiated Power (EIRP) of the EUT was then calculated based on the known output power of the signal generator, the gain of the substitution antenna, and the loss factors of the attenuator and cable.

Finally, the antenna gain of the AUT was calculated from the measured RF conducted output power delivered to the AUT and the measured EIRP from the AUT.

Radiation Polar Plots:

With the EUT and the receive antenna placed in the orientation of maximum field strength, measurements of the field strength were taken in 2-degree increments with the turntable rotated from 0 degrees to 360 degrees. The 0-degree position was set to equal the table rotation where the maximum field strength was measured. This orientation and position of the EUT can be seen in the Test Setup Photos section of this report.



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2.0 Test Procedure – continued

Radiation Polar Plots:

With the EUT and the receive antenna placed in the orientation of maximum field strength, measurements of the field strength were taken in 2-degree increments with the turntable rotated from 0 degrees to 360 degrees. The 0-degree position was set to equal the table rotation where the maximum field strength was measured. This orientation and position of the EUT can be seen in the Test Setup Photos section of this report.



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Wilson Sporting Goods Co.

PCB Trace Antenna (used with Player

Tag, model MSC1417_ASSY Rev B)

12719

29164 rev1.1

3.0 Antenna Gain Test Results

3.1 RF Conducted Measurements

Test Date: 08-28-2024

Company: Wilson Sporting Goods Co.

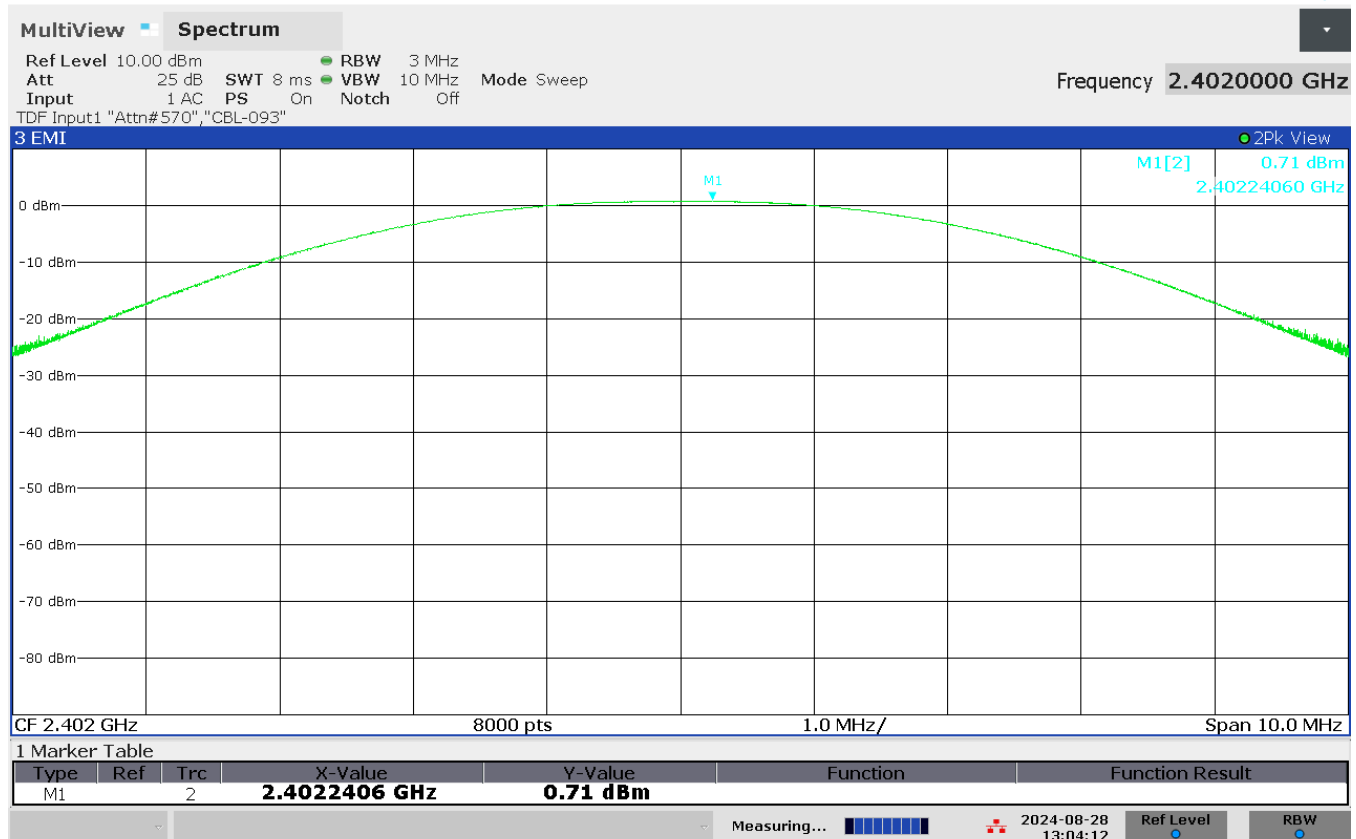
EUT: QBID Player Tag

Test: Peak Output Power – RF Conducted

Operator: cbrandt

Comment: Low Channel: 2402 MHz

Peak Output Power = 0.71 dBm = **1.18 mW**



01:04:12 PM 08/28/2024



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Company:

Model:

Project Number:

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Wilson Sporting Goods Co.

PCB Trace Antenna (used with Player

Tag, model MSC1417_ASSY Rev B)

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Test Date: 08-28-2024

Company: Wilson Sporting Goods Co.

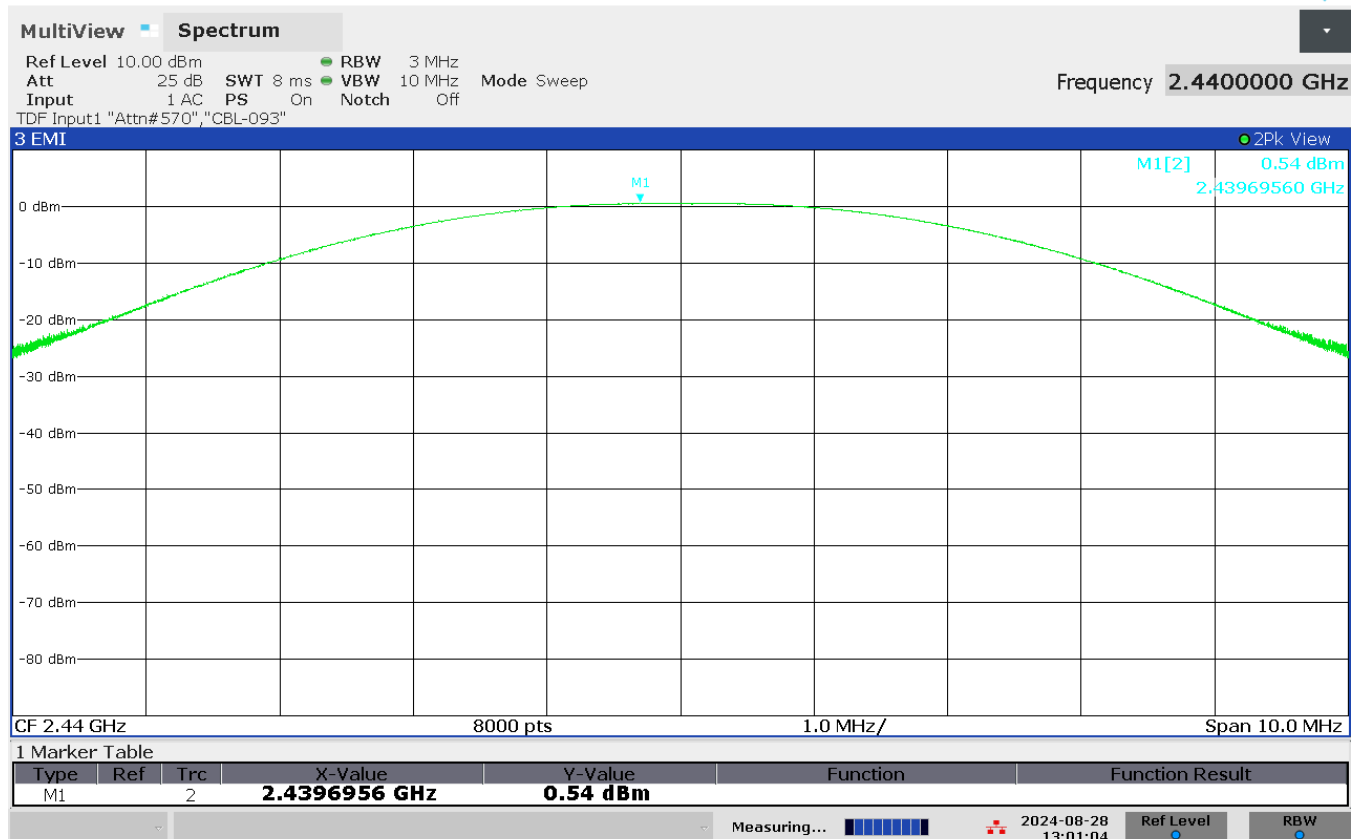
EUT: QBID Player Tag

Test: Peak Output Power – RF Conducted

Operator: cbrandt

Comment: Mid Channel: 2440 MHz

Peak Output Power = 0.54 dBm = **1.13 mW**



01:01:05 PM 08/28/2024



166 South Carter, Genoa City, WI 53128

Company:

Model:

Project Number:

Report Number:

Wilson Sporting Goods Co.

PCB Trace Antenna (used with Player

Tag, model MSC1417_ASSY Rev B)

12719

29164 rev1.1

Test Date: 08-28-2024

Company: Wilson Sporting Goods Co.

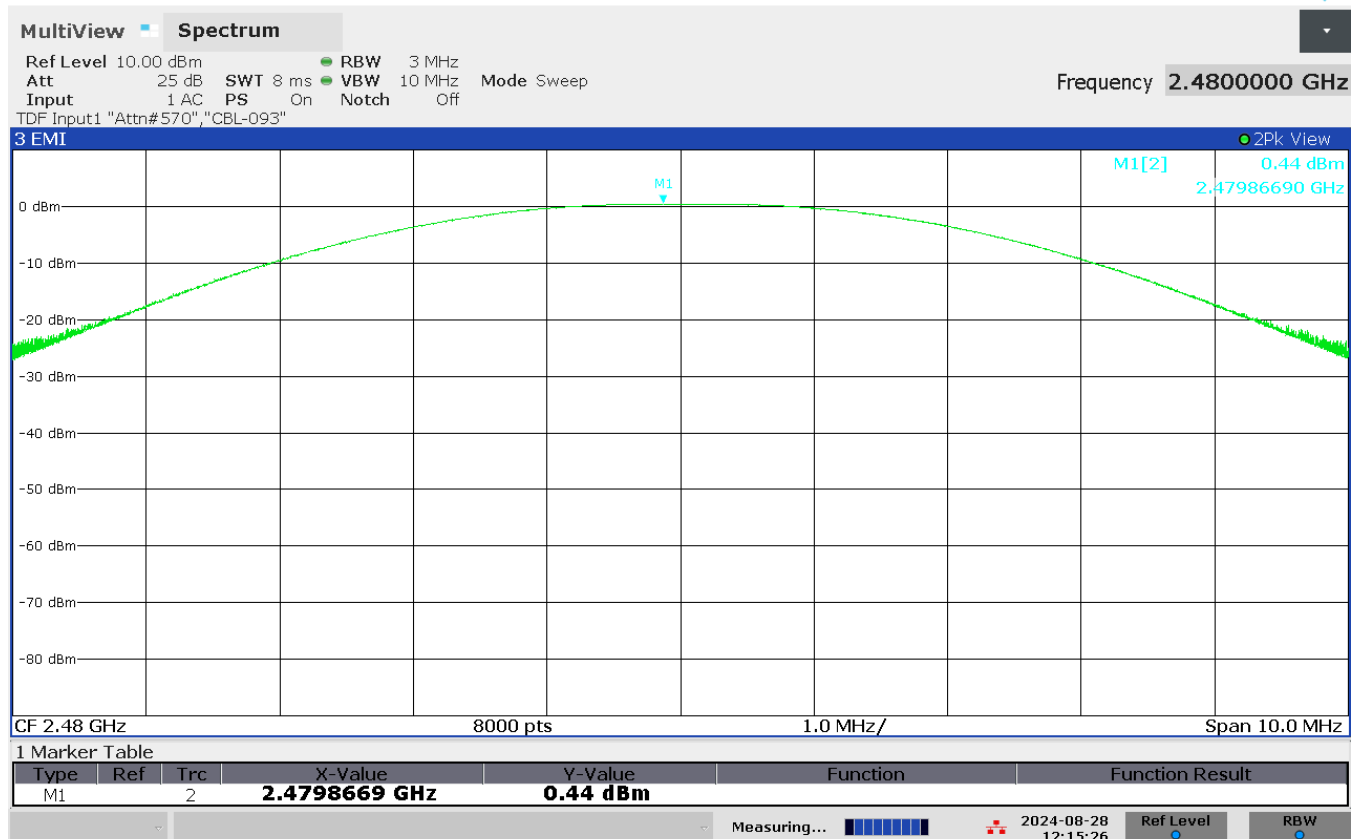
EUT: QBID Player Tag

Test: Peak Output Power – RF Conducted

Operator: cbrandt

Comment: High Channel: 2480 MHz

Peak Output Power = 0.44 dBm = **1.11 mW**



12:15:27 PM 08/28/2024



166 South Carter, Genoa City, WI 53128

Company: Wilson Sporting Goods Co.
 Model: PCB Trace Antenna (used with Player Tag, model MSC1417_ASSY Rev B)
 Project Number: 12719
 Report Number: 29164 rev1.1

3.2 Antenna Gain Measurements

Company: Wilson Sporting Goods

Operator: cbrandt

Date of test: 04/10/2025

Temperature: 68 deg. F

Humidity: 24% R.H.

DLS Proj. #12719

DLS Site W1

NOTE: RBW = 3 MHz; VBW = 10 MHz

Antenna Gain Measurements - EIRP - Substitution Method

Model: QBID Player Tag - ON CHARGING PAD							
Channel: BLE 2402 MHz, 2440 MHz, 2480 MHz; Power Setting 0							
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. Antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	RF Conducted (dBm)	Antenna Gain (dBi)
2402 Horizontal	81.52	-20.51	3.02	9.66	-13.87	0.71	-14.58
2402 Vertical	77.60	-24.28	3.02	9.66	-17.64	0.71	-18.35
2440 Horizontal	80.49	-21.13	3.06	9.38	-14.81	0.54	-15.35
2440 Vertical	78.60	-23.04	3.06	9.38	-16.72	0.54	-17.26
2480 Horizontal	80.75	-21.67	3.12	9.27	-15.52	0.44	-15.96
2480 Vertical	79.31	-22.53	3.12	9.27	-16.38	0.44	-16.82

EIRP = Signal generator output - cable loss + antenna gain



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Company: Wilson Sporting Goods

Operator: cbrandt

Date of test: 04/10/2025

Temperature: 68 deg. F

Humidity: 24% R.H.

DLS Proj. #12719

DLS Site W1

NOTE: RBW = 3 MHz; VBW = 10 MHz

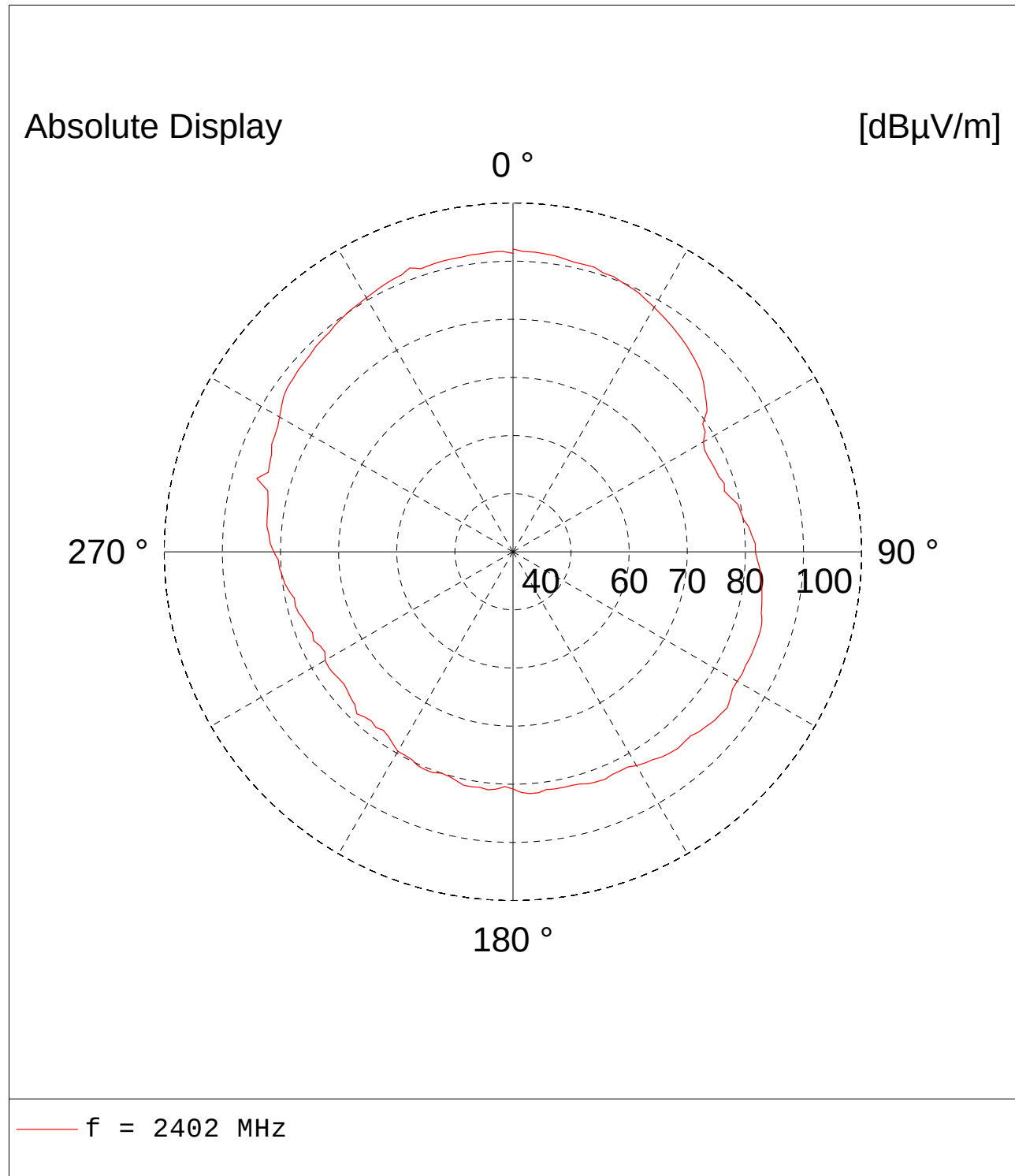
Antenna Gain Measurements - EIRP - Substitution Method

Model: QBID Player Tag - STAND-ALONE							
Channel: BLE 2402 MHz, 2440 MHz, 2480 MHz; Power Setting 0							
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. Antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	RF Conducted (dBm)	Antenna Gain (dBi)
2402 Horizontal	89.79	-12.28	3.02	9.66	-5.64	0.71	-6.35
2402 Vertical	88.92	-13.06	3.02	9.66	-6.42	0.71	-7.13
2440 Horizontal	90.52	-11.74	3.06	9.38	-5.42	0.54	-5.96
2440 Vertical	89.89	-12.17	3.06	9.38	-5.85	0.54	-6.39
2480 Horizontal	89.77	-12.28	3.12	9.27	-6.13	0.44	-6.57
2480 Vertical	89.26	-12.71	3.12	9.27	-6.56	0.44	-7.00

EIRP = Signal generator output - cable loss + antenna gain

Radiation Pattern for max gain plane; 2402 MHz

EUT: QBID Player Tag
Manufacturer: Wilson Sporting Goods
Operating Condition: 72 deg. F, 49% RH
Test Site: Site 3; test distance 3 meters
Operator: cbrandt; DLS Proj. #12719
Test Specification: Horizontal Receive (maximized); EUT in position of Max Gain
Comment: Continuous Tx (94.6%); Peak Detector; Max-Hold; Pwr setting 0
Date: 06-16-2025



MEASUREMENT RESULT: "719Lb_1_2402.00"

6/16/2025 12:02PM

Frequency deg	Level dBμV/m
------------------	-----------------

0.00	92.08
2.00	91.69
4.00	91.69
6.00	91.56
8.00	91.43
10.00	91.17
12.00	90.91
14.00	90.91
16.00	90.91
18.00	90.41
20.00	90.41
22.00	90.03
24.00	89.77
26.00	89.50
28.00	88.97
30.00	88.59
32.00	88.09
34.00	87.70
36.00	87.31
38.00	86.79
40.00	86.39
42.00	85.87
44.00	85.33
46.00	84.79
48.00	84.01
50.00	83.05
52.00	82.16
54.00	81.26
56.00	79.37
58.00	78.97
60.00	77.83
62.00	77.31
64.00	77.31
66.00	77.44
68.00	77.57
70.00	77.70
72.00	78.21
74.00	77.83
76.00	78.59
78.00	79.50
80.00	79.77
82.00	80.03
84.00	80.79
86.00	81.17
88.00	81.69
90.00	81.69
92.00	82.08
94.00	82.58
96.00	82.84
98.00	83.22
100.00	83.49
102.00	83.75
104.00	84.01
106.00	84.54
108.00	84.67
110.00	84.67
112.00	84.67
114.00	84.67
116.00	84.54
118.00	84.67
120.00	84.54
122.00	84.54
124.00	85.07

MEASUREMENT RESULT: "719Lb_1_2402.00"

(continued)

Frequency deg	Level dBμV/m
------------------	-----------------

126.00	85.59
128.00	85.33
130.00	85.20
132.00	84.80
134.00	84.54
136.00	84.01
138.00	84.01
140.00	84.14
142.00	83.88
144.00	83.62
146.00	83.09
148.00	82.84
150.00	82.46
152.00	81.95
154.00	81.95
156.00	81.95
158.00	82.20
160.00	82.08
162.00	81.95
164.00	81.56
166.00	81.43
168.00	81.43
170.00	81.43
172.00	81.30
174.00	81.69
176.00	81.69
178.00	81.43
180.00	80.79
182.00	80.41
184.00	80.91
186.00	81.17
188.00	80.91
190.00	81.04
192.00	81.04
194.00	80.54
196.00	80.16
198.00	80.03
200.00	80.41
202.00	80.41
204.00	80.29
206.00	79.77
208.00	79.63
210.00	79.63
212.00	78.97
214.00	78.34
216.00	77.96
218.00	78.34
220.00	77.96
222.00	78.21
224.00	78.72
226.00	77.83
228.00	77.57
230.00	77.18
232.00	76.92
234.00	77.05
236.00	77.31
238.00	77.44
240.00	77.31
242.00	76.66
244.00	76.92
246.00	77.57
248.00	77.18
250.00	77.57

MEASUREMENT RESULT: "719Lb_1_2402.00"

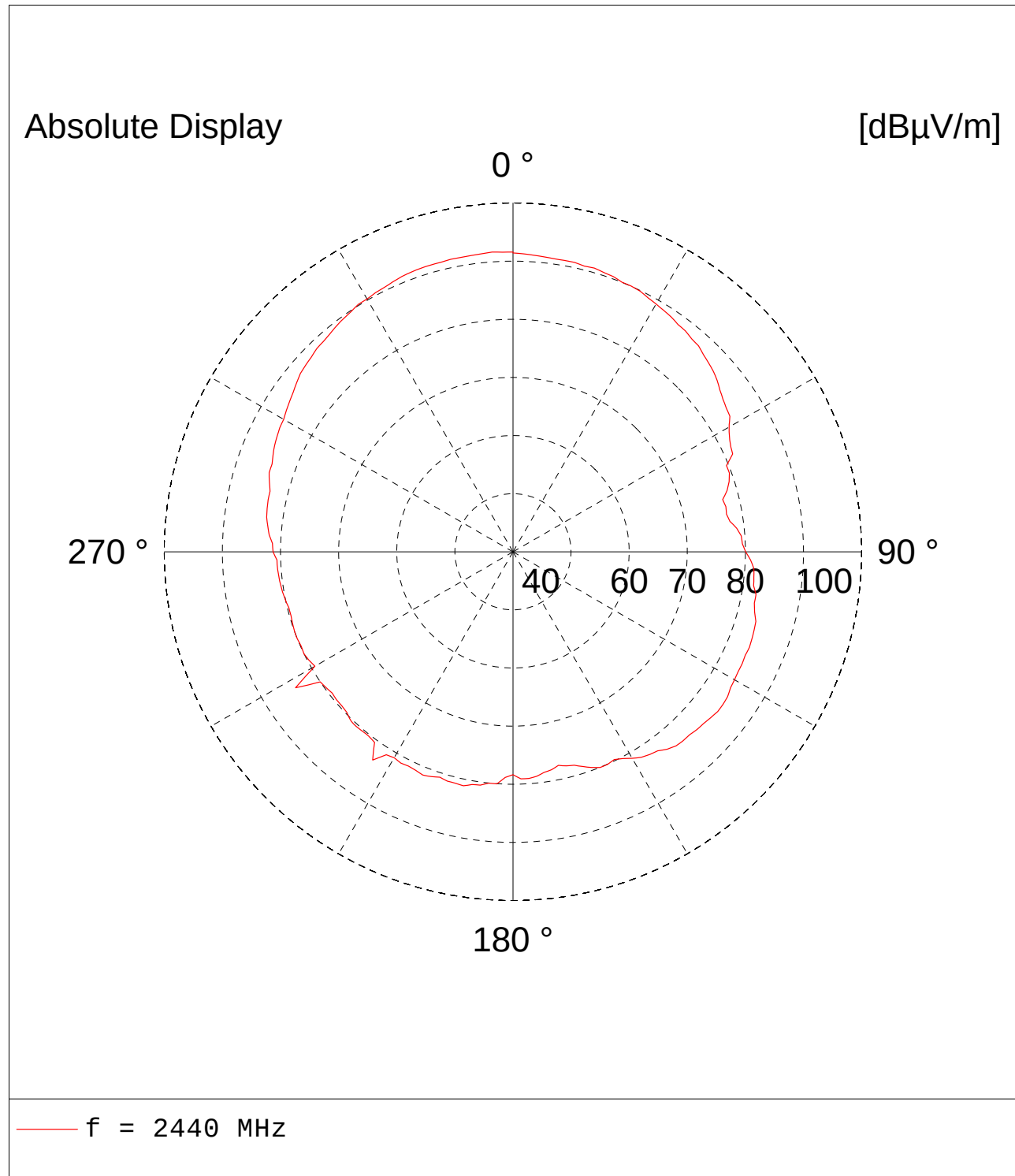
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Frequency deg	Level dBμV/m
------------------	-----------------

252.00	77.83
254.00	78.34
256.00	78.59
258.00	78.46
260.00	79.10
262.00	79.63
264.00	79.90
266.00	80.29
268.00	80.41
270.00	81.17
272.00	81.82
274.00	82.08
276.00	82.58
278.00	82.71
280.00	82.84
282.00	83.09
284.00	83.49
286.00	85.85
288.00	84.28
290.00	84.54
292.00	84.80
294.00	85.46
296.00	85.59
298.00	85.85
300.00	86.37
302.00	87.01
304.00	87.64
306.00	88.01
308.00	88.13
310.00	88.38
312.00	88.50
314.00	88.62
316.00	88.98
318.00	89.11
320.00	89.23
322.00	89.60
324.00	89.85
326.00	90.10
328.00	90.22
330.00	90.47
332.00	90.72
334.00	90.97
336.00	91.21
338.00	91.34
340.00	91.95
342.00	91.21
344.00	91.34
346.00	91.46
348.00	91.46
350.00	91.46
352.00	91.58
354.00	91.58
356.00	91.71
358.00	91.71
360.00	91.34

Radiation Pattern for max gain plane; 2440 MHz

EUT: QBID Player Tag
Manufacturer: Wilson Sporting Goods
Operating Condition: 72 deg. F, 49% RH
Test Site: Site 3; test distance 3 meters
Operator: cbrandt; DLS Proj. #12719
Test Specification: Horizontal Receive (maximized); EUT in position of Max Gain
Comment: Continuous Tx (94.6%); Peak Detector; Max-Hold; Pwr setting 0
Date: 06-16-2025



MEASUREMENT RESULT: "719Mb_1_2440.00"

6/16/2025 12:19PM

Frequency deg	Level dBμV/m
------------------	-----------------

0.00	91.41
2.00	91.28
4.00	91.15
6.00	91.02
8.00	90.90
10.00	90.90
12.00	90.90
14.00	90.65
16.00	90.77
18.00	90.52
20.00	90.40
22.00	90.02
24.00	90.02
26.00	89.89
28.00	89.49
30.00	89.22
32.00	88.95
34.00	88.70
36.00	88.32
38.00	88.20
40.00	87.82
42.00	87.69
44.00	87.17
46.00	86.78
48.00	86.38
50.00	85.85
52.00	85.18
54.00	84.65
56.00	84.26
58.00	83.99
60.00	82.91
62.00	82.15
64.00	81.63
66.00	81.37
68.00	79.62
70.00	79.62
72.00	79.09
74.00	78.32
76.00	77.17
78.00	77.43
80.00	77.30
82.00	77.69
84.00	78.70
86.00	79.35
88.00	79.49
90.00	80.02
92.00	80.90
94.00	81.54
96.00	81.67
98.00	81.80
100.00	82.44
102.00	82.44
104.00	82.82
106.00	83.47
108.00	83.60
110.00	83.74
112.00	83.87
114.00	83.74
116.00	83.87
118.00	83.87
120.00	84.00
122.00	84.13
124.00	84.53

MEASUREMENT RESULT: "719Mb_1_2440.00"

(continued)

Frequency deg	Level dBμV/m
------------------	-----------------

126.00	84.66
128.00	84.66
130.00	84.39
132.00	84.13
134.00	84.00
136.00	83.74
138.00	83.74
140.00	83.60
142.00	83.08
144.00	82.32
146.00	82.06
148.00	81.67
150.00	81.02
152.00	80.27
154.00	79.75
156.00	80.02
158.00	80.02
160.00	79.49
162.00	78.83
164.00	78.20
166.00	77.95
168.00	77.56
170.00	78.07
172.00	78.32
174.00	78.83
176.00	79.09
178.00	79.09
180.00	78.32
182.00	78.83
184.00	80.02
186.00	80.02
188.00	80.52
190.00	80.65
192.00	81.15
194.00	81.02
196.00	81.02
198.00	80.77
200.00	81.15
202.00	81.41
204.00	81.15
206.00	81.02
208.00	81.15
210.00	80.90
212.00	81.15
214.00	83.21
216.00	80.52
218.00	80.27
220.00	80.27
222.00	80.40
224.00	80.27
226.00	79.75
228.00	79.62
230.00	79.62
232.00	79.49
234.00	79.75
236.00	80.02
238.00	84.13
240.00	79.35
242.00	79.75
244.00	80.02
246.00	79.89
248.00	80.02
250.00	80.02

MEASUREMENT RESULT: "719Mb_1_2440.00"

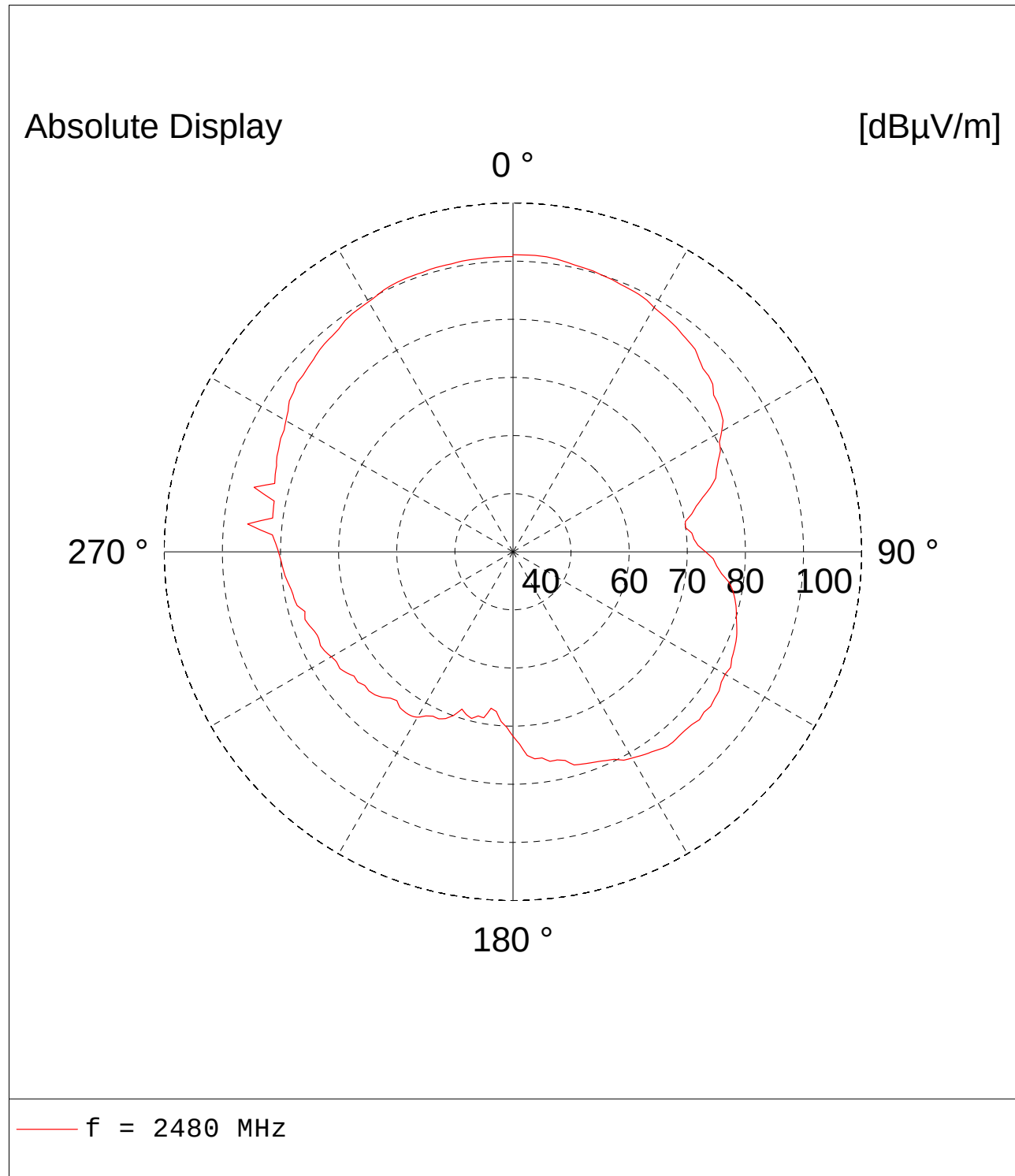
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Frequency deg	Level dBμV/m
------------------	-----------------

252.00	79.89
254.00	79.75
256.00	79.75
258.00	80.02
260.00	80.27
262.00	80.40
264.00	80.52
266.00	80.65
268.00	80.65
270.00	81.28
272.00	81.41
274.00	82.06
276.00	82.44
278.00	82.82
280.00	82.95
282.00	83.08
284.00	83.08
286.00	83.60
288.00	84.13
290.00	84.13
292.00	84.53
294.00	84.92
296.00	85.18
298.00	85.45
300.00	85.58
302.00	85.97
304.00	86.35
306.00	86.74
308.00	87.24
310.00	87.75
312.00	88.00
314.00	88.24
316.00	88.61
318.00	88.73
320.00	88.97
322.00	89.34
324.00	89.59
326.00	89.83
328.00	90.21
330.00	90.21
332.00	90.46
334.00	90.58
336.00	90.83
338.00	91.08
340.00	91.20
342.00	91.32
344.00	91.32
346.00	91.32
348.00	91.45
350.00	91.45
352.00	91.45
354.00	91.57
356.00	91.69
358.00	91.57
360.00	91.57

Radiation Pattern for max gain plane; 2480 MHz

EUT: QBID Player Tag
Manufacturer: Wilson Sporting Goods
Operating Condition: 72 deg. F, 49% RH
Test Site: Site 3; test distance 3 meters
Operator: cbrandt; DLS Proj. #12719
Test Specification: Horizontal Receive (maximized); EUT in position of Max Gain
Comment: Continuous Tx (94.6%); Peak Detector; Max-Hold; Pwr setting 0
Date: 06-16-2025



MEASUREMENT RESULT: "719Hc_1_2480.00"

6/16/2025 12:42PM

Frequency deg	Level dBμV/m
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0.00	91.10
2.00	91.10
4.00	91.10
6.00	91.10
8.00	90.97
10.00	90.72
12.00	90.47
14.00	90.35
16.00	90.22
18.00	89.97
20.00	89.84
22.00	89.57
24.00	89.44
26.00	89.30
28.00	89.04
30.00	88.53
32.00	88.27
34.00	88.02
36.00	87.77
38.00	87.38
40.00	87.12
42.00	86.86
44.00	86.07
46.00	85.40
48.00	85.26
50.00	84.86
52.00	83.81
54.00	83.53
56.00	83.12
58.00	82.60
60.00	81.45
62.00	80.22
64.00	79.70
66.00	78.65
68.00	77.77
70.00	77.12
72.00	75.67
74.00	73.94
76.00	72.48
78.00	71.45
80.00	70.10
82.00	69.97
84.00	70.93
86.00	71.19
88.00	71.84
90.00	73.12
92.00	74.47
94.00	75.13
96.00	76.07
98.00	77.51
100.00	78.40
102.00	79.04
104.00	79.57
106.00	79.97
108.00	80.47
110.00	80.97
112.00	81.36
114.00	81.62
116.00	81.88
118.00	82.39
120.00	82.14
122.00	82.27
124.00	82.77

MEASUREMENT RESULT: "719Hc_1_2480.00"

(continued)

Frequency deg	Level dBμV/m
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126.00	82.90
128.00	83.16
130.00	82.90
132.00	83.16
134.00	82.77
136.00	82.65
138.00	82.65
140.00	82.77
142.00	82.65
144.00	82.14
146.00	81.75
148.00	81.36
150.00	80.97
152.00	80.60
154.00	79.70
156.00	79.30
158.00	78.90
160.00	78.65
162.00	78.40
164.00	78.15
166.00	76.99
168.00	76.60
170.00	76.60
172.00	75.80
174.00	75.80
176.00	75.13
178.00	73.12
180.00	71.71
182.00	70.24
184.00	69.27
186.00	67.60
188.00	67.17
190.00	68.99
192.00	68.85
194.00	69.55
196.00	69.13
198.00	68.44
200.00	69.97
202.00	70.93
204.00	71.45
206.00	71.45
208.00	71.97
210.00	72.86
212.00	73.26
214.00	73.26
216.00	73.12
218.00	72.48
220.00	72.86
222.00	73.67
224.00	74.21
226.00	74.47
228.00	74.34
230.00	74.86
232.00	74.73
234.00	75.40
236.00	75.94
238.00	75.80
240.00	76.07
242.00	76.60
244.00	76.86
246.00	76.60
248.00	76.73
250.00	77.25

MEASUREMENT RESULT: "719Hc_1_2480.00"

(continued)

Frequency deg	Level dBμV/m
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252.00	77.64
254.00	77.25
256.00	78.27
258.00	78.53
260.00	78.65
262.00	79.04
264.00	79.44
266.00	79.70
268.00	79.97
270.00	80.35
272.00	80.85
274.00	81.49
276.00	85.92
278.00	81.75
280.00	81.88
282.00	82.01
284.00	85.92
286.00	82.65
288.00	83.03
290.00	83.29
292.00	83.82
294.00	84.08
296.00	84.48
298.00	84.61
300.00	85.13
302.00	85.66
304.00	86.43
306.00	86.69
308.00	87.19
310.00	87.19
312.00	87.45
314.00	87.70
316.00	88.07
318.00	88.31
320.00	88.43
322.00	88.68
324.00	89.17
326.00	89.42
328.00	89.54
330.00	89.66
332.00	89.91
334.00	90.28
336.00	90.41
338.00	90.53
340.00	90.53
342.00	90.53
344.00	90.66
346.00	90.66
348.00	90.66
350.00	90.78
352.00	90.78
354.00	90.78
356.00	90.78
358.00	90.78
360.00	90.78



166 South Carter, Genoa City, WI 53128

Company: Wilson Sporting Goods Co.
Model: PCB Trace Antenna (used with Player Tag, model MSC1417_ASSY Rev B)
Project Number: 12719
Report Number: 29164 rev1.1

Section A – Test Equipment

D.L.S. Wisconsin – Gain – RF Conducted – 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
Cable	Micro-Coax	UFC142A	CBL-093	30 MHz-40 GHz	7-12-24	7-12-25
20 dB Attenuator	Aeroflex/Weinschel	75A-20-12	1071	30 MHz-40 GHz	7-12-24	7-12-25

D.L.S. Wisconsin – Gain – Radiated – Site W1 – Test Equipment:

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
Cable	Micro-Coax	UFB311A	CBL-100	1 GHz-18 GHz	5-16-24	5-16-25
Horn Antenna	EMCO	3115	1071	30 MHz-40 GHz	7-12-24	7-12-25
Test Software	Rohde & Schwarz	ESK1	V1.7.1	N/A	N/A	N/A
Signal Generator	Rohde & Schwarz	SMR40	100092	1 GHz-40 GHz	3-6-25	3-26-27
Cable	Mini-Circuits	APC-15FT-NMNM	0805A	1 GHz-18 GHz	5-16-24	5-16-25
Horn Antenna	Com-Power	AH-118	071127	1 GHz-18 GHz	9-7-23	9-7-25

D.L.S. Wisconsin – Radiation Polar Plots – Site 3 – Test Equipment:

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz-40 GHz	3-26-25	3-26-26
Cable	Micro-Coax	UFB311A-1	CBL-096	1 GHz-18 GHz	5-9-25	5-9-26
Horn Antenna	EMCO	3115	6204	1 GHz-18 GHz	2-22-24	2-22-26

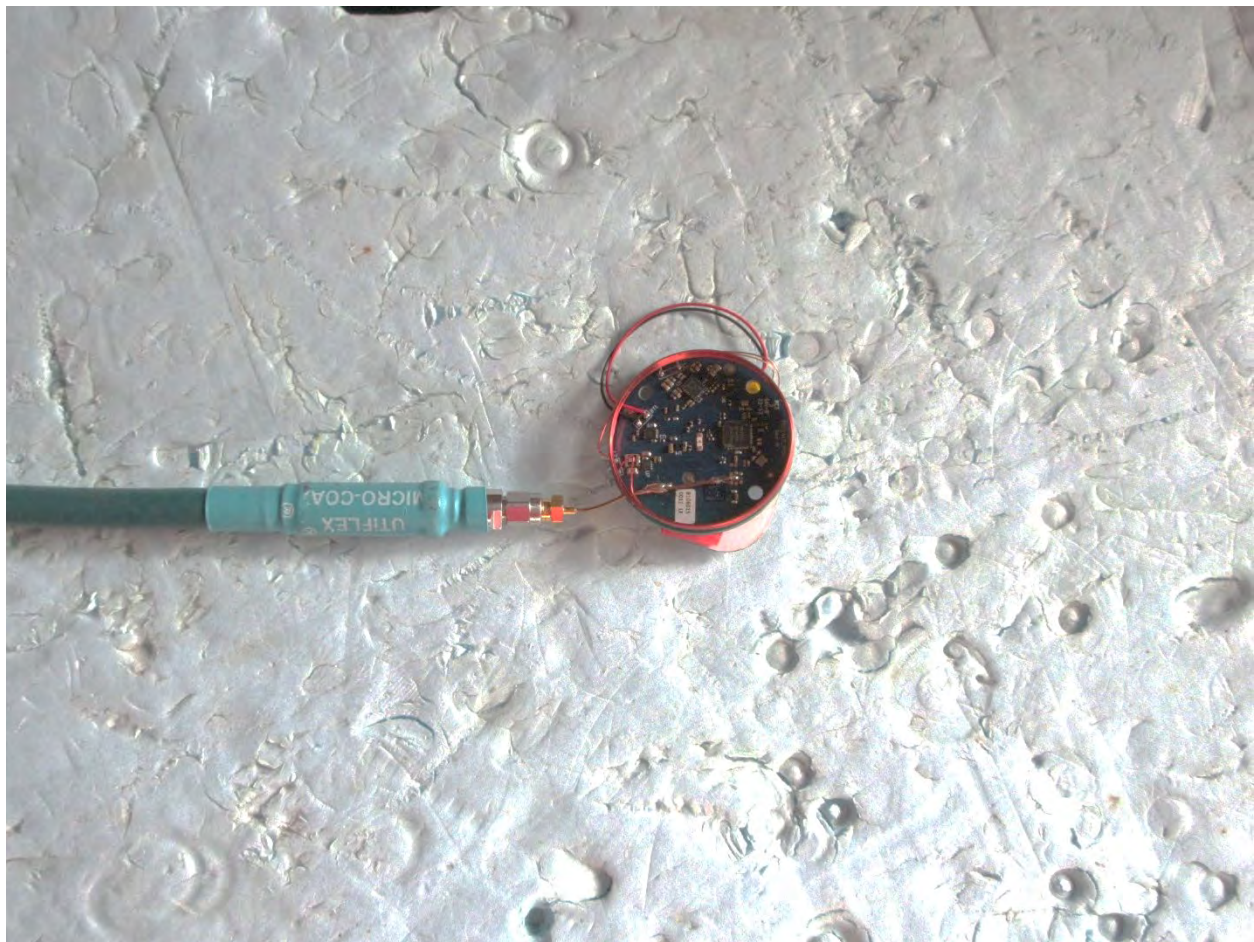


166 South Carter, Genoa City, WI 53128

Company:	Wilson Sporting Goods Co.
Model:	PCB Trace Antenna (used with Player Tag, model MSC1417_ASSY Rev B)
Project Number:	12719
Report Number:	29164 rev1.1

Section B – Test Setup Photos

Company:	Wilson Sporting Goods Co.
Model:	MSC1417_ASSY Rev B
Name:	QBID Player Tag
Date:	08-28-2024
Photo Description:	<u>RF Conducted</u>





166 South Carter, Genoa City, WI 53128

Company:

Wilson Sporting Goods Co.

Model:

PCB Trace Antenna (used with Player
Tag, model MSC1417_ASSY Rev B)

Project Number:

12719

Report Number:

29164 rev1.1

Section B – continued

Company:

Wilson Sporting Goods Co.

Model:

MSC1417_ASSY Rev B

Name:

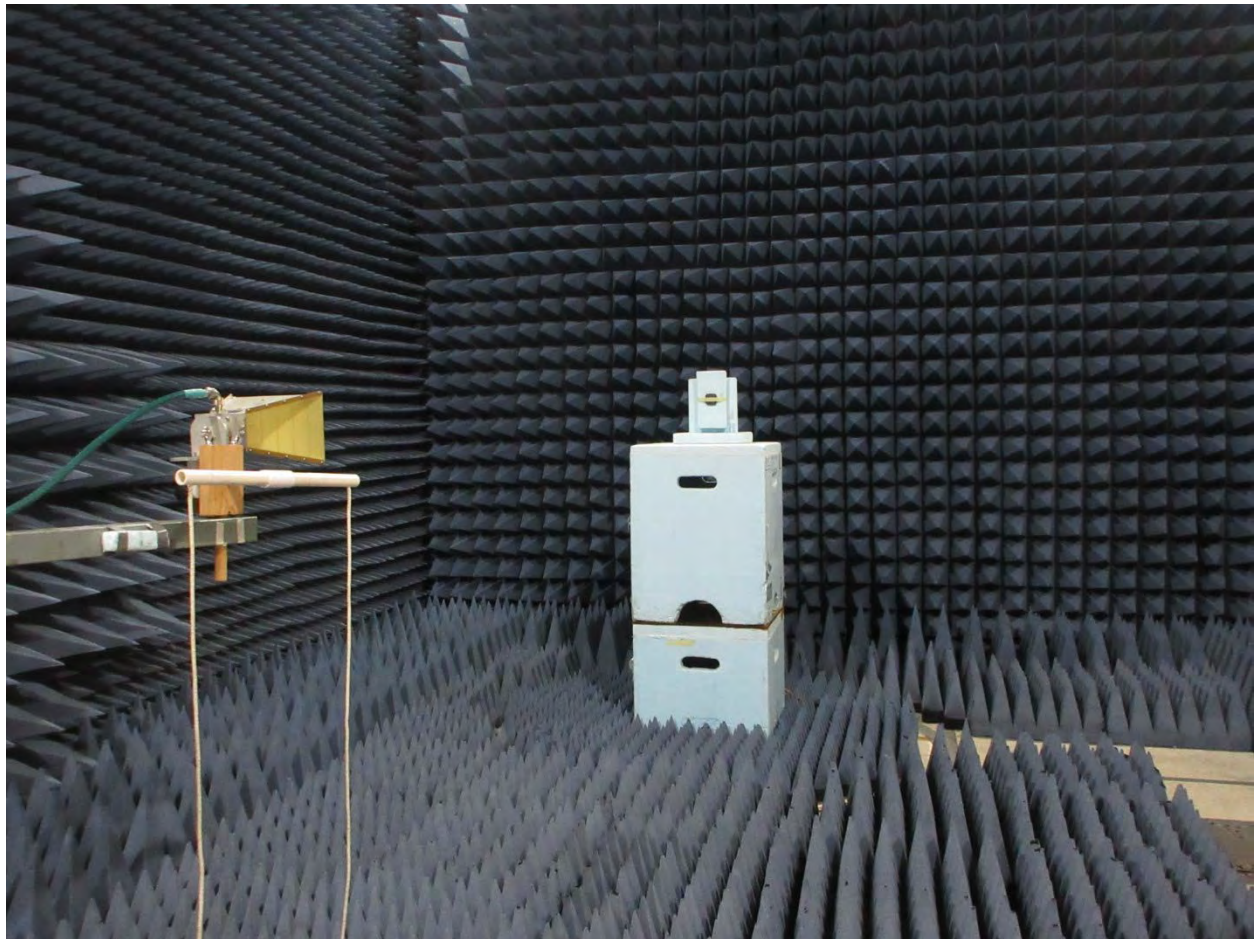
QBID Player Tag

Date:

08-27-2024

Photo Description:

Radiated Emissions



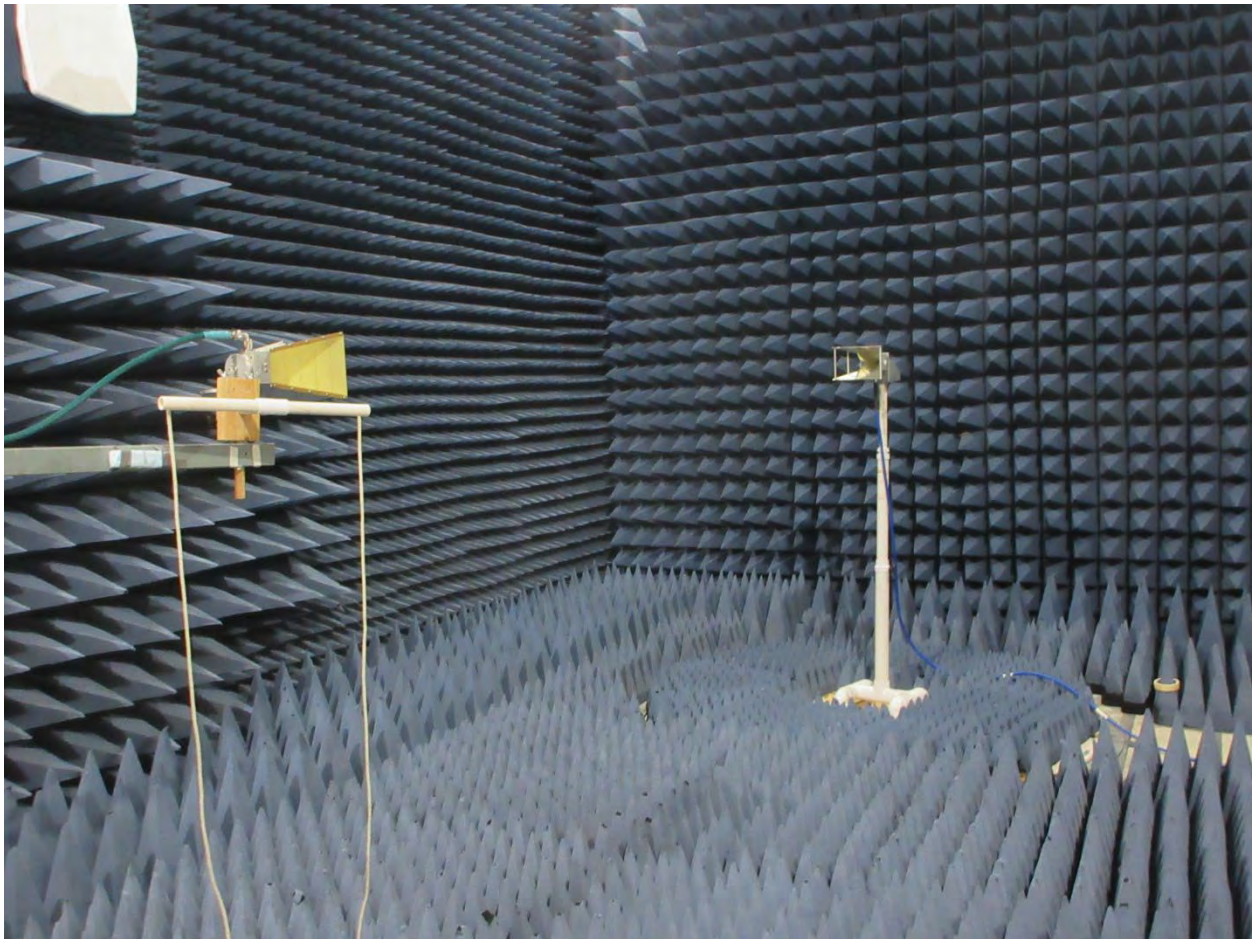


166 South Carter, Genoa City, WI 53128

Company:	Wilson Sporting Goods Co.
Model:	PCB Trace Antenna (used with Player Tag, model MSC1417_ASSY Rev B)
Project Number:	12719
Report Number:	29164 rev1.1

Section B – continued

Company:	Wilson Sporting Goods Co.
Model:	MSC1417_ASSY Rev B
Name:	QBID Player Tag
Date:	04-10-2025
Photo Description:	<u>Substitution Antenna Setup</u>





166 South Carter, Genoa City, WI 53128

Company: Wilson Sporting Goods Co.
Model: PCB Trace Antenna (used with Player Tag, model MSC1417_ASSY Rev B)
Project Number: 12719
Report Number: 29164 rev1.1

Section B – continued

Company: Wilson Sporting Goods Co.
Model: MSC1417_ASSY Rev B
Name: QBID Player Tag
Date: 06-16-2025
Photo Description: **Radiation Polar Plot Setup (0-degree table position)**
(Table and EUT in position of maximum received field strength)





166 South Carter, Genoa City, WI 53128

Company: Wilson Sporting Goods Co.
Model: PCB Trace Antenna (used with Player
Tag, model MSC1417_ASSY Rev B)
Project Number: 12719
Report Number: 29164 rev1.1

Section C – Measurement Uncertainty

Radiated & RF Conducted Emission 30 MHz to 25 GHz Uncertainty

Parameter	Expanded Uncertainty (K=2)
Occupied Channel Bandwidth	+/- 1.14%
RF Output Power, Conducted	+/- 1.80 dB
Unwanted Emissions, Conducted	+/- 2.62 dB
All Emissions, Radiated	+/- 4.95 dB
Duty Cycle	+/- 0.05%



166 South Carter, Genoa City, WI 53128

Company: Wilson Sporting Goods Co.
Model: PCB Trace Antenna (used with Player
Tag, model MSC1417_ASSY Rev B)
Project Number: 12719
Report Number: 29164 rev1.1

END OF REPORT

Revision #	Date	Comments	By
1.0	06-19-2025	Initial Release	CB
1.1	09-18-2025	Fixed power conversion error on page 7	CB