

**COMPLIANCE WORLDWIDE INC.  
TEST REPORT 192-24RFR2**

**In Accordance with the Requirements of  
Federal Communications Commission CFR Title 47 Part 2.1093:2024  
Radio Frequency Exposure Evaluation: Portable Devices  
Innovation, Science and Economic Development Canada  
RSS-102, Issue 6  
Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus**

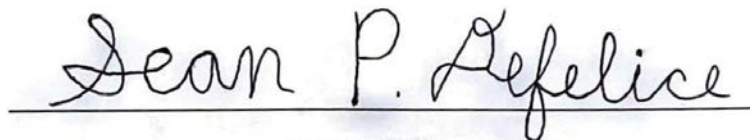
**Issued to  
STATSports Group Ltd  
Drumalane Mill, The Quays  
Newry, Co Down BT35 8QS, United Kingdom**

**for the  
ApexNXT  
Model: V1.x**

**FCC ID: 2APHS-APX400  
IC: 25854-APX400**

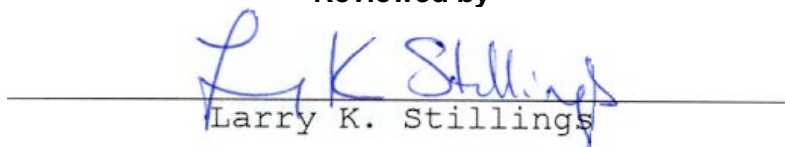
**Report Issued on January 3, 2025  
Revised Report Issued on August 15, 2025**

**Tested by**



Sean P. Defelice

**Reviewed by**



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## 1. Scope

This test report certifies that the STATSports Group ApexNXT, as tested, meets the FCC Part 2.1093 requirements and the ISED RSS-102, Issue 6 Section 6.1 requirements exempting the device from a SAR Evaluation and ISED RSS-102, Issue 6, Section 8 for total exposure.

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. Measurement Uncertainty will not be applied to any of the measurement / testing results in this test report to determine pass/fail criteria per the Decision Rule as defined in ISO/IEC Guide 17025-2017 Clause 3.7. Revision R1 updates the report to include an exclusion for the UWB radio and for simultaneous operation of the BLE and UWB radios. Revision R2 corrects the formula/calculation of Pth in section 6.4

## 2. Product Details

<b>2.1. Manufacturer:</b>	Statsports Group Ltd.
<b>2.2. Model Numbers:</b>	ApexNXT V1.x
<b>2.3. Serial Numbers:</b>	AC0B791900F5
<b>2.4. Description:</b>	Wearable tracking sensor device.
<b>2.5. Power Source:</b>	Lithium Battery
<b>2.6. Hardware Revision:</b>	N/A
<b>2.7. Software Revision:</b>	N/A
<b>2.8. Modulation Types:</b>	Gaussian frequency shift keying. Pulse modulation, frequency hopping.
<b>2.9. Operating Frequencies:</b>	2402 to 2480 MHz (BLE), 4.5 or 6.5 GHz (UWB)
<b>2.10. EMC Modifications:</b>	None

## 3. Product Configuration

### 3.1. EUT Hardware

Device	Manufacturer	Manufacturer p/n	Serial No.
Pod	STATSports	ApexNXT V1.x	AC0B791900F5
Microcontroller	NXP	MIMXRT1064DVL6B	TBD
BLE Coprocessor	Nordic Semiconductors	nRF52840	TBD
UWB Transceiver	Qorvo / Decawave	DW1000	TBD
GNSS Module	u-Blox	NEO-M9N	TBD
Lithium Polymer Battery	YOK Energy	YE652143E-600mAh	N/A

### 3.2. Support Equipment

Manufacturer	Model /Part # / Options	Serial Number	Input Voltage	Freq (Hz)	Description/Function
Lenovo	ThinkPad T440P	PB-031DX9	120	60	For controlling the board

### 3. Product Configuration (continued)

#### 3.3. Cables

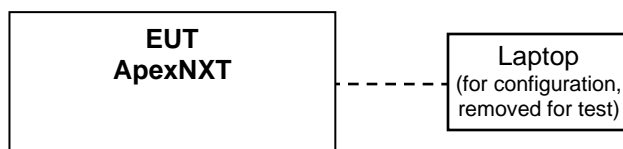
Cable Type	Length	Shield	From	To
None				

#### 3.4. Operational Characteristics & Software

Connect the ApexNXT to the laptop to configure operation for the BLE frequencies 2402, 2426 MHz or 2480 MHz or for the UWB for operation on Channel 3 or 5 at either 16M or 64M PRF.

Remove the laptop connection and perform the test.

#### 3.5. Block Diagram



### 4. Measurements Parameters

#### 4.1. Measurement Equipment and Software Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due	Interval
Spectrum Analyzer, 2 Hz to 26.5 GHz <sup>1</sup>	Rohde & Schwarz	FSW26	102057	7/19/2026	2 Years
Dbl Ridged Guide Antenna 1- 18 GHz	ETS-Lindgren	3117	00143292	5/11/2025	3 Years
Dbl Ridged Guide Antenna 1 - 18 GHz	ETS-Lindgren	3117	00227631	4/21/2025	3 Years
Preamplifier, 1 GHz to 26.5 GHz	Hewlett Packard	8449B	3008A01323	3/5/2025	1 Year
Preamplifier 2 to 12 GHz	JCA	JCA48-4111B1	7087S	9/28/2025	2 Years
Barometric Pressure/Humidity & Temp Datalogger	Extech Instruments	SD700	Q590483	4/4/2025	1 Year

<sup>1</sup> FSW26 Firmware revision: V4.71 SP1, Date installed: 11/16/2020 Previous V4.61, installed 08/11/2020.

## 4. Measurements Parameters (continued)

### 4.2. Software Used to Perform Test

Manufacturer	Software Description	Title or Model #	Rev.	Report Sections
Compliance Worldwide	Test Report Generation Software	Test Report Generator	1.0	Used to process conducted emissions data

### 4.3 Measurement & Equipment Setup

Test Dates:	6/13/2024, 6/14/2024, 8/13/2024, 8/14/2024
Test Engineer:	Sean Defelice
Site Temperature (°C):	21.2
Relative Humidity (%RH):	35
Frequency Range:	9 kHz to 1 GHz
Measurement Distance:	3 Meters and 1 Meter
EMI Receiver IF Bandwidth:	200 Hz (30 kHz – 150 kHz) 9 kHz (150 kHz – 30 MHz) 120 kHz (30 MHz – 1 GHz)
EMI Receiver Avg Bandwidth:	$\geq 3 * \text{RBW or IF(BW)}$
Detector Functions:	Peak, Quasi-Peak and Average

### 4.4 Test Procedure

Test measurements were made in accordance FCC Part 15.247: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5850 MHz, and 24.0 - 24.25 GHz and FCC Part 15.519 Subpart F: Ultra-Wideband operation.

The measurement procedures in this report are in accordance with ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. FCC OET Publication Number KDB 558074 D01 v05r02, Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS), Frequency Hopping Spread Spectrum Systems, and Hybrid System Devices Operating Under §15.247, dated April 2, 2019 ISSED RSS-247 Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices, Issue 3 and ISSED RSS-220, Issue 1 Devices Using Ultra-Wideband (UWB) Technology, were referenced for the test procedures used to generate the data in this report. All references to these publications refer to these versions and dates detailed in this paragraph.

In addition, FCC KDB 447498 D01 General RF Exposure Guidance v06, October 23, 2015 are referenced for the testing and requirements detailed in this report.

In addition, ISSED RSS-102, Issue 6, (December 15, 2023) are referenced for the testing and requirements detailed in this report.

## 5. Choice of Equipment for Test Suits

### 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

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

### 5.3 Choice of Operating Frequencies

The EUT, as tested, operates on 40 channels, from channels 0 to 39 in the 2.4 GHz band. Frequencies of 2402, 2426 and 2480 MHz were chosen for testing.

### 5.4 Mode of Operation

Modulation type : GFSK  
Payload pattern : PRB29  
Payload Length : 37 bytes

For band edge measurements (section 7.6), the DTS bandwidth measurements were taken into consideration for the worse case examples.

### 5.5 EUT Position for Emissions Measurements

During all radiated emissions measurement testing, the product was mounted on a polystyrene form to facilitate rotating the device through three orthogonal axes, as required by ANSI C63.10, section 5.10.1, for a handheld or body worn device.

## 6. Measurement Data (continued)

### 6.1. Maximum Conducted Output Power (FCC 15.247 (b)(3), ISED RSS-247 5.4 d)

**Requirement:** The maximum peak conducted output power of the intentional radiator shall not exceed the following: For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt (+30 dBm).

**Procedure:** This test was performed in accordance with the procedure detailed in FCC OET publication number KDB 558074, Section 9.1.1.

**Test Notes:** A spectrum analyzer resolution bandwidth of 1 MHz and a video bandwidth of 3 MHz were used to meet the requirements of FCC OET publication number 558074, Section 9.1.1 and the measured product DTS bandwidth. The field strength measured at 3 Meters was converted to dBm by subtracting 95.2. The maximum antenna gain of 2.00 dBi was additionally subtracted to determine the conducted output power.

**Results:** The device under test meets the required maximum peak conducted output power level of 1 Watt (30 dBm).

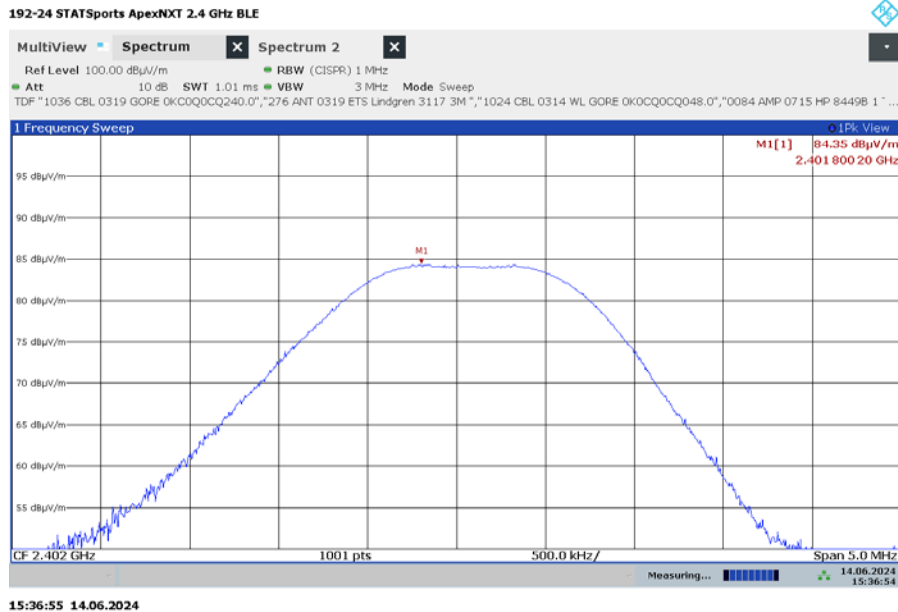
BLE Channel	Frequency	Maximum Peak Radiated Power	Antenna Gain (Peak)	Maximum Peak Conducted Output Power	Peak Limit	Margin	Result
	(MHz)	(dBμV/m)	dBi	(dBm)	(dBm)	(dB)	
37	2402	84.35	2.00	-12.85	30.00	-42.85	Compliant
38	2426	85.62	2.00	-11.58	30.00	-41.58	Compliant
39	2480	88.33	2.00	-8.87	30.00	-38.87	Compliant

Max Peak Radiated Output Power	Max Peak Radiated Output Power (EIRP)	EIRP to ERP Conversion	ERP
dBμV/m	dBm	dB	dBm
84.35	-10.85	-2.15	-13.00
85.62	-9.58	-2.15	-11.73
88.33	-6.87	-2.15	-9.02

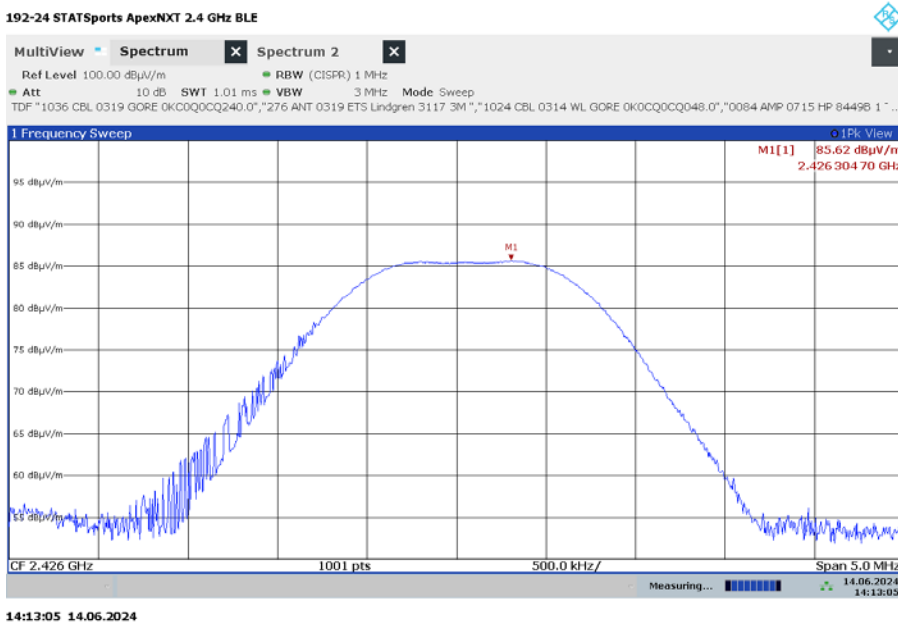
## 6. Measurement Data (continued)

### 6.1. Maximum Conducted Output Power (FCC 15.247 (b)(3), ISED RSS-247 5.4 d)

#### 6.1.1. Low Channel – 37, 2402 MHz



#### 6.1.2. Middle Channel – 38, 2426 MHz

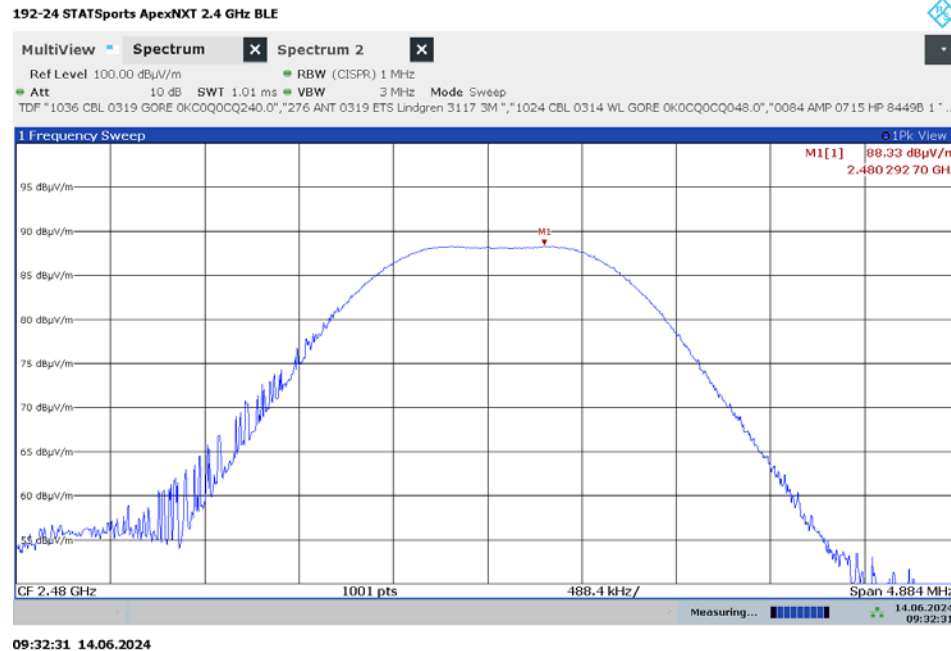




## 6. Measurement Data (continued)

### 6.1. Maximum Conducted Output Power (FCC 15.247 (b)(3), ISED RSS-247 5.4 d)

#### 6.1.3. High Channel – 39, 2480 MHz



## 6. Measurement Data (continued)

### 6.2. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g))

#### 6.2.1 Plot of Peak Power at 3 Meters – Channel 3, 16M PRF, Z-Axis

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.495	93.35	95.20	-1.85	H	223	97	Compliant

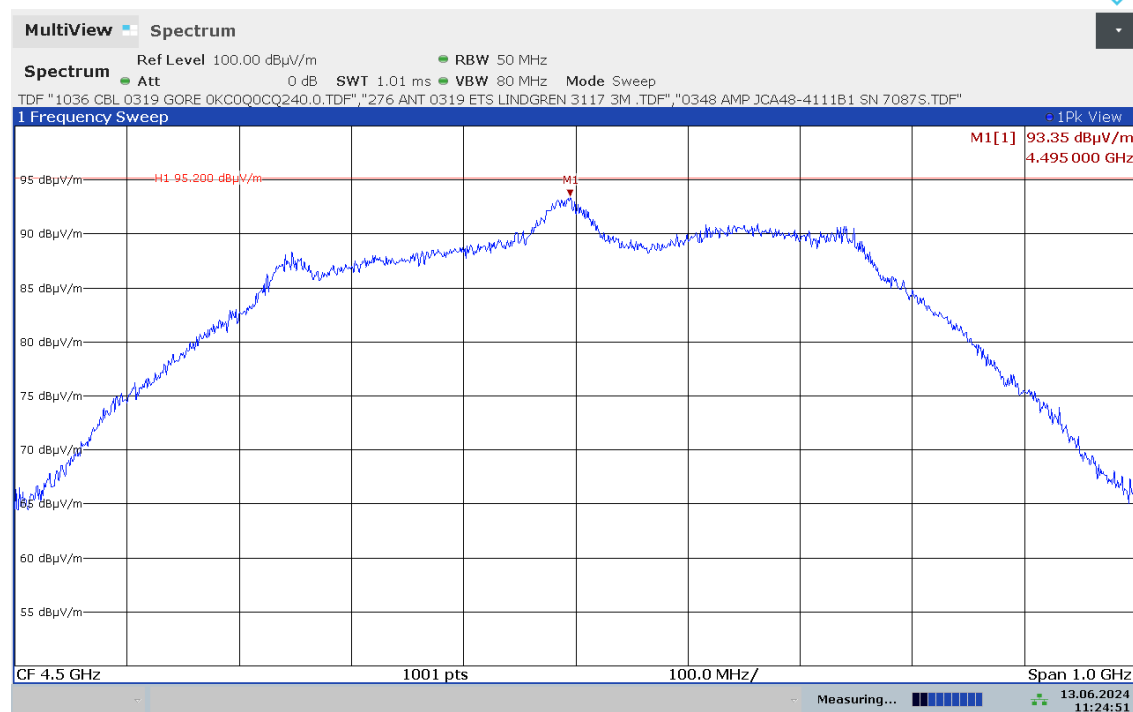
Notes: <sup>1</sup> Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013,  $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$ ;  $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.495	-1.85	0.00	-1.85	H	223	97	Compliant

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## 6. Measurement Data (continued)

### 6.2. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g) continued)

#### 6.2.2 Plot of Peak Power at 3 Meters – Channel 3, 64M PRF, Z-Axis

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.496	88.63	95.20	-6.57	H	223	97	Compliant

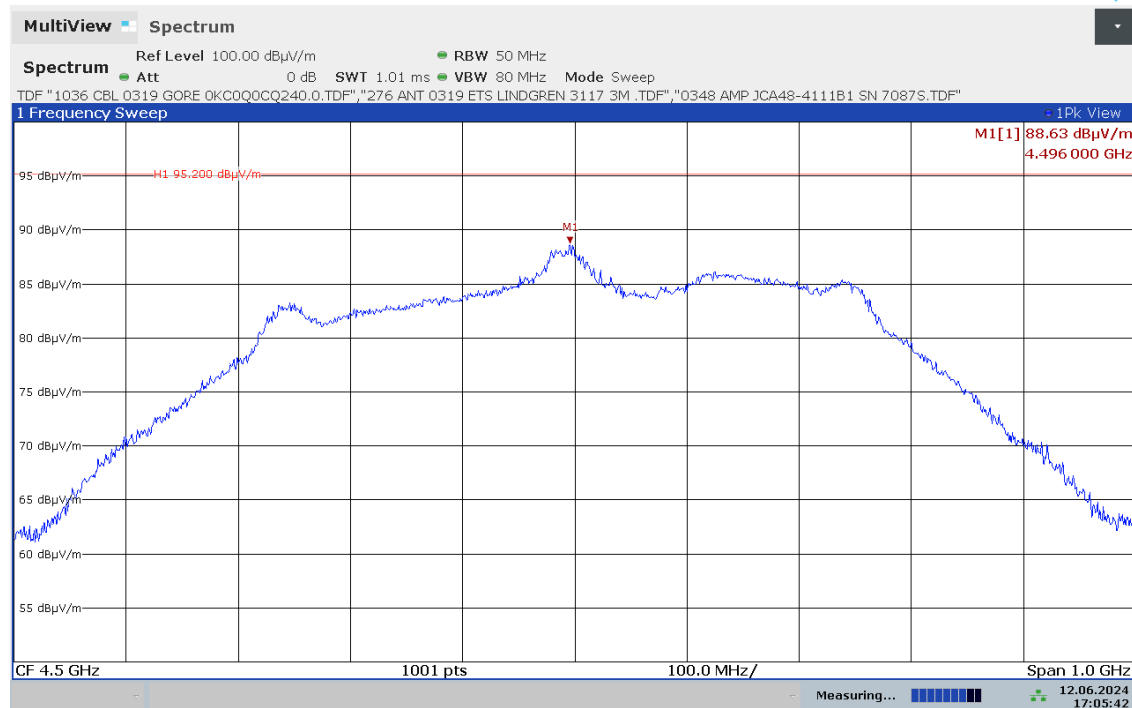
Notes: <sup>1</sup> Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013,  $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$ ;  $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.496	-6.57	0.00	-6.57	H	223	97	Compliant

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## 6. Measurement Data (continued)

### 6.2. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g), RSS-220 5.3.1(g))

#### 6.2.3 Plot of Peak Power at 3 Meters – Channel 5, 16M PRF, Z-Axis

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.486	93.81	95.20	-1.39	H	175	75	Compliant

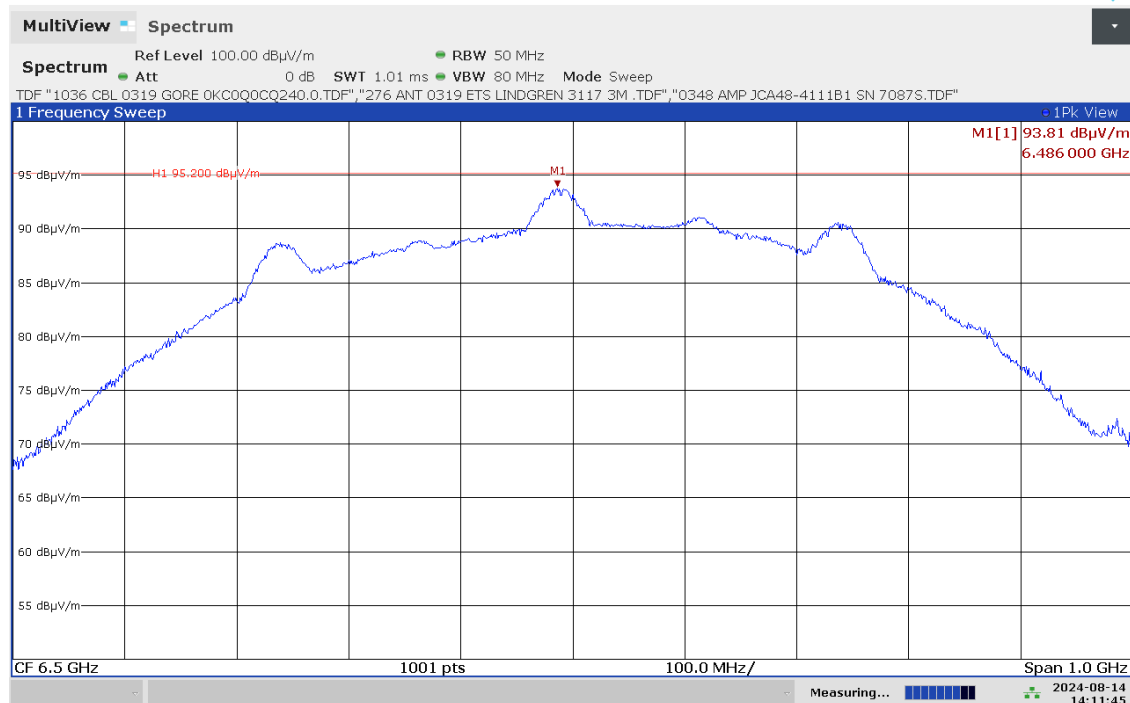
Notes: <sup>1</sup> Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013,  $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$ ;  $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.486	-1.39	0.00	-1.39	H	175	75	Compliant

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## 6. Measurement Data (continued)

### 6.2. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g), RSS-220 5.3.1 (g) continued)

#### 6.2.4 Plot of Peak Power at 3 Meters – Channel 5, 64M PRF, Z-Axis

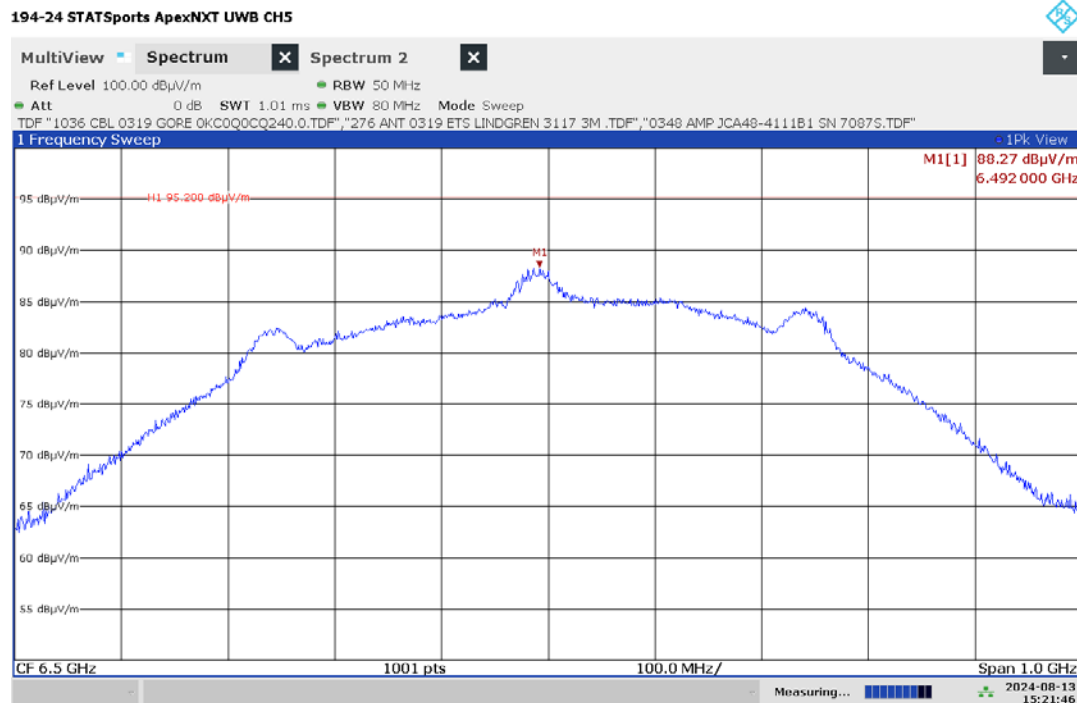
Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.492	88.27	95.20	-6.93	H	175	75	Compliant

Notes: <sup>1</sup> Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013,  $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$ ;  $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBm)	(dBm)	(dB)	H/V	cm	Deg	
6.492	-6.93	0.00	-6.93	H	175	75	Compliant



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## 6. Measurement Data (continued)

### 6.3. 99% Emission Bandwidth (RSS-GEN 6.7)

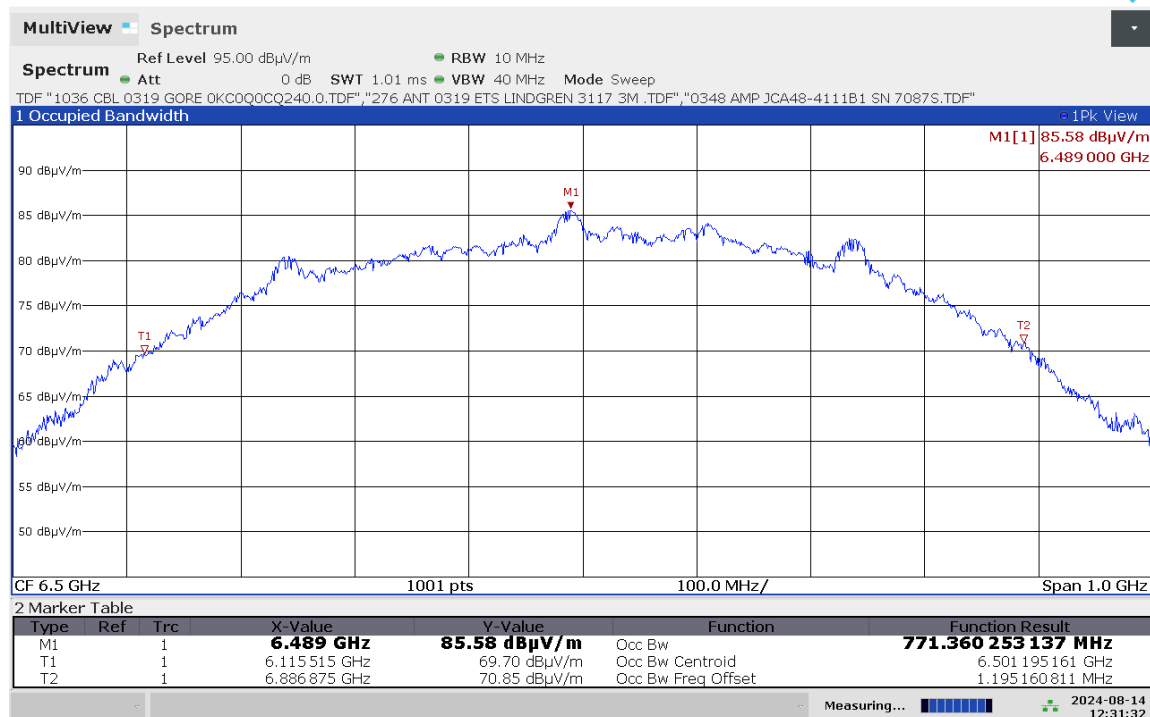
Requirement: The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs RSS-Gen, Section 6.7.

Test Note: The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.

#### 6.3.1 Plot of 99% Emission Bandwidth, Channel 5, 16M PRF

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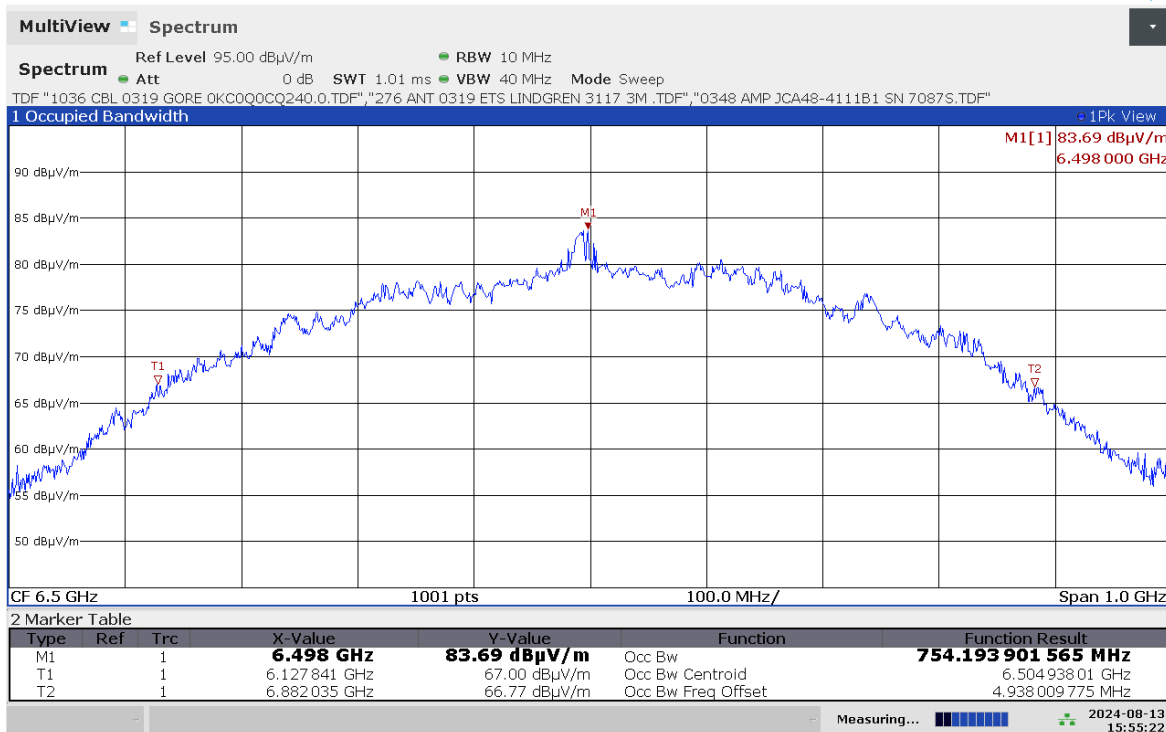
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## 6. Measurement Data (continued)

### 6.3. 99% Emission Bandwidth (RSS-GEN 6.7 continued)

#### 6.3.2 Plot of 99% Emission Bandwidth, Channel 5, 64M PRF

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## 6. Measurement Data (continued)

### 6.4. Public Exposure to Radio Frequency Energy Levels (FCC Part 2.1093:2024)

#### 6.4.1. 2.1093 Requirements

Requirement: For purposes of this section, the definitions in § 1.1307(b)(2) of this chapter shall apply. A portable device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that the RF source's radiating structure(s) is/are within 20 centimeters of the body of the user.

The following formula shall only be used in conjunction with portable devices not exempt by § 1.1307(b)(3)(i)(C) at distances from 0.5 centimeters to 20 centimeters and frequencies from 0.3 GHz to 6 GHz.

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left( \frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

$d$  = the separation distance (cm);

Frequency (GHz)	SQRT (f)	ERP <sub>20cm</sub> * SQRT(f)	60 / (ERP <sub>20cm</sub> * SQRT(f))	x = -log10	(0.5/20cm) <sup>x</sup>	Pth (mW)	STATSports	
							ApexNXT BLE	
							(mW)	dBm
2.402	1.550	4742.506	0.0127	1.898	0.001	2.79	0.050	-13.00
2.426	1.558	4766.140	0.0126	1.900	0.001	2.77	0.067	-11.73
2.480	1.575	4818.893	0.0125	1.905	0.001	2.72	0.125	-9.02

Conclusion: Compliant - The device under test meets the Pth (mW) exclusion requirement of 47 CFR 2.1093 (c)(1).



## 6. Measurement Data (continued)

### 6.4. Public Exposure to Radio Frequency Energy Levels (FCC Part 2.1093:2024)

#### 6.4.1. 2.1093 Requirements continued

Requirement: Portable devices are subject to radio frequency radiation exposure requirements. For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

Evaluation of compliance with the exposure limits in § 1.1310 of this chapter, and preparation of an EA if the limits are exceeded, is necessary for portable devices having single RF sources with more than an available maximum time-averaged power of 1 mW.

Channel	Frequency	Peak Field Strength	Distance	Antenna Gain <sup>1</sup>	Measured Output Power	Output Power Limit	Result
	(GHz)	(dBμV/m)	(m)	(dBi)	(mW)	(mW)	
3	4.495	93.35	3.0	0.000	0.649	1	Compliant
3	4.496	88.63	3.0	0.000	0.219	1	Compliant
5	6.486	93.81	3.0	0.000	0.721	1	Compliant
5	6.492	88.27	3.0	0.000	0.201	1	Compliant

**Note:** Antenna gain is included as part of the radiated measurement.

**Maximum Output power is at 6.486 GHz 0.721 mW**

**Note:** The UWB radio can only transmit on one channel / PRF at a time.

**Result:** Compliant, the device has a peak power of less than 1 mW, the maximum timed average power is significantly less.

## 6. Measurement Data (continued)

### 6.4. Public Exposure to Radio Frequency Energy Levels (FCC Part 2.1093:2024)

#### 6.4.1. 2.1093 Requirements continued

Requirement: For multiple mobile or portable RF sources within a device operating in the same time averaging period, routine environmental evaluation is required if the formula in § 1.1307(b)(3)(ii)(B) of this chapter is applied to determine the exemption ratio and the result is greater than 1.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

$a$  = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for  $P_{th}$ , including existing exempt transmitters and those being added.

$b$  = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

$c$  = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

$P_i$  = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source  $i$  at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$  = the exemption threshold power ( $P_{th}$ ) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source  $i$ .

$ERP_j$  = the ERP of fixed, mobile, or portable RF source  $j$ .

$ERP_{th,j}$  = exemption threshold ERP for fixed, mobile, or portable RF source  $j$ , at a distance of at least  $\lambda/2\pi$  according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

$Evaluated_k$  = the maximum reported SAR or PE of fixed, mobile, or portable RF source  $k$  either in the device or at the transmitter site from an existing evaluation at the location of exposure.

$Exposure Limit_k$  = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source  $k$ , as applicable from § 1.1310 of this chapter.

$$\text{Exemption Ratio} = (0.125/2.72) + (0.721/1) = 0.046 + 0.721 = 0.767$$

**Result, Compliant the EUT has an exemption ratio of less than 1.**

## 6. Measurement Data (continued)

### 6.5. Radio Frequency (RF) Exposure of Radiocommunication Apparatus (RSS-102, Issue 6)

#### 6.5.1. RSS-102 Issue 6 Requirements

Requirement: Devices operating at or below the applicable output power levels (adjusted for tune-up tolerance) specified in Table 11, based on the separation distance, are exempt from SAR evaluation. The separation distance, defined as the distance between the user and/or bystander and the antenna and/or radiating element of the device or the outer surface of the device, shall be less than or equal to 20 cm for these exemption limits to apply.

When the operating frequency of the device is between two frequencies located in Table 11, linear interpolation shall be applied for the applicable separation distance. If the separation distance of the device is between two distances located in Table 11, linear interpolation may be applied for the applicable frequency.

Table Frequency (MHz)	Table Limit ≤ 5mm (mW)
1900.00	6.00
2450.00	3.00
3500.00	2.00

Frequency	Separation Distance	Maximum Power	RSS-102 Limit	Result
MHz	mm	mW	mW	
2402	≤5	0.05	3.26	Compliant
2426	≤5	0.07	3.13	Compliant
2480	≤5	0.13	2.97	Compliant

<sup>1</sup> Taken from the peak power of this report and converted to mW

Worst case ratio against the limit is at 2480 MHz = 0.13 / 2.97 mW

**Result:** Compliant, the device meets the exemption limits from Table 11 of RSS-102, Issue 6 at less than or equal to 5mm separation.

## 6. Measurement Data (continued)

### 6.5. Radio Frequency (RF) Exposure of Radiocommunication Apparatus (RSS-102, Issue 6)

#### 6.5.1. RSS-102 Issue 6 Requirements (continued)

Requirement: Section 6.5: A transmitter producing emissions in the 6 GHz - 30 GHz frequency range (i.e. where the occupied bandwidth (99% emission bandwidth) is fully contained within this range) is exempt from routine IPD evaluation if the output power (adjusted for tune-up tolerance) is less than or equal to 1 mW (0 dBm).

Channel	Frequency	Maximum Peak Power	RSS-102 Limit	Result
	MHz	mW	mW	
5	6496	0.721	1.00	Compliant
5	6497	0.201	1.00	Compliant

**Note:** The UWB radio can only transmit on one channel / PRF at a time.

**Result:** Compliant, the device meets the exemption limit using the devices peak power which is less than 1 mW. The RMS time averaged power is significantly less.

## 6. Measurement Data (continued)

### 6.5. Radio Frequency (RF) Exposure of Radiocommunication Apparatus (RSS-102, Issue 6)

#### 6.5.1. RSS-102 Issue 6 Requirements (continued)

Requirement: SAR values from exempted transmitters shall be included in the total exposure assessment. A SAR value of 0.4 W/kg for 1 g, 1 W/kg for 10 g, or an estimated SAR value based on the ratio of the power level and the power exemption limit may be used to determine the standalone SAR value for test configurations that do not require a SAR evaluation based on test reductions or on the exemption limits outlined in section 6.3. The estimated SAR value,  $SAR_{estimated}$ , is calculated using equation (2):

$$SAR_{estimated} = \frac{P_{max}}{P_{max,exemption}} \times 0.25 \times SAR_{limit} \text{ W/kg}$$

**Worst Case Ratio of  $SAR_{estimated}$  = 0.13/2.97 \* 0.25 \* 0.4 W/kg = 0.013 W/kg**

The ER for a transmitter producing emissions in the 6 GHz to 30 GHz frequency range and is exempted in accordance with section 6.5 (i.e. where the occupied bandwidth (99% emission bandwidth) and is fully contained within this range) shall be accounted for by using equation:

$$ER_{exempted1mW,z} = 0.1 \left( \frac{\max[P_{cond,z}, P_{EIRP,z}]}{1 \text{ mW}} \right)$$

Z is the number of simultaneously operating transmitters for which the 1 mW exemption as outlined in section 6.5 applies (refer to section 8.2.2.4)

Thermal-based ER for transmitters above 10 MHz can be calculated using SAR-, APD-, and IPD-based measurements/simulation results as outlined in sections 8.2.2.1, 8.2.2.2 and 8.2.2.3, respectively. The exposure from exempted transmitters shall be included in the determination of the thermal-based ER above 10 MHz.

**Worst Case Ratio  $ER_{exempted1mW} = 0.1 * 0.721/1.000 = 0.0721$**

## 6. Measurement Data (continued)

### 6.5. Radio Frequency (RF) Exposure of Radiocommunication Apparatus (RSS-102, Issue 6)

#### 6.5.1. RSS-102 Issue 6 Requirements (continued)

Requirement: Total Exposure: The various  $ER_{therm} \leq 10 \text{ MHz}$  and  $ER_{therm} > 10 \text{ MHz}$  from each of the different transmitters and different exposure metrics can be combined to determine the TER for all transmitters ( $TER_{therm}$ ) using equation

$$TER_{therm} = SAR_{estimated} + ER_{exempted1mw}$$

Compliance with the SAR-PD-based RF exposure limits is achieved if  $TER_{therm} \leq 1$ .

$$\text{Total Exposure Ratio } TER_{therm} = 0.013 + 0.0721 = 0.0851 < 1.0$$

**Result:** Compliant, the Total Exposure Ratio is less than 1.0 for the BLE and UWB Radios operating simultaneously.