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SAR EXCLUSION DOCUMENT

Document 75947856-08 Issue 01

Bluetooth 2402 – 2480MHz Transmitter:

Product standard: EN 50663:2017 Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10 MHz - 300 GHz)

Basic standard: EN 62479:2010 Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)

EN 62479 Section 4.1 Route B and 4.2 Low-power exclusion level P_{max}

EN 62479 Section 4.1 states: If the electrical power used by or radiated by the equipment is sufficiently low, the electromagnetic fields emitted will be incapable of producing exposures that exceed the basic restrictions.

Four routes A, B, C or D can be used to demonstrate compliance. The route selected is B;

B The input power level to electrical or electronic components that are capable of radiating electromagnetic energy in the relevant frequency range is so low that the available antenna power and/or the average total radiated power cannot exceed the low-power exclusion level defined below.

The applicable low power exclusion level P_{max} from EN 62479 Table A.1 is 20 mW corresponding to;

- ICNIRP (guideline in accordance with Council Recommendation 1999/519/EC),
- General Public (exposure tier)
- Head and trunk (region of body)

Low Power Exclusion Result - Body:

Frequency (MHz)	Power Output mW	Antenna Gain Ratio	Duty Cycle %	Maximum Power (EIRP) * (mW)	Separation Distance mm	P_{max} Exemption Limit ** (mW)	SAR Test Exclusion (Yes/No)
2402	10	1.51	100	15.1	0.5	20	Yes
2480	10	1.51	100	15.1	0.5	20	Yes

The applicable low power exclusion level P_{max} from EN 62479 Table A.1 is 40 mW corresponding to;

- ICNIRP (guideline in accordance with Council Recommendation 1999/519/EC),
- General Public (exposure tier)
- Limbs (region of body)

Approved by
Jon Kenny
Authorised Signatory

Date 11 May 2020



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Low Power Exclusion Result - Limbs:

Frequency (MHz)	Power Output mW	Antenna Gain Ratio	Duty Cycle %	Maximum Power (EIRP) * (mW)	Separation Distance mm	P _{max} Exemption Limit ** (mW)	SAR Test Exclusion (Yes/No)
2402	10	1.51	100	15.1	0.5	40	Yes
2480	10	1.51	100	15.1	0.5	40	Yes

* Maximum declared output power (EIRP) of the device including tolerance.

** Select power from EN 62479 Table A.1 for the applicable exposure.

The Low Power exclusion threshold has been evaluated using the method described above from information supplied by the manufacturer. Based on the evaluation above, the EUT is categorically excluded from SAR/RF exposure testing.



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Manufacturer's Declaration of Product information (extract):

Equipment Description

Technical Description: (Please provide a brief description of the intended use of the equipment)	Shot Scope V3 is a watch used by golfers to provide distance information from their position to their target. It also tracks how far each golf shot is hit and what golf club was used.
Manufacturer:	Shot Scope Technologies Ltd
Model:	Shot Scope V3
Part Number:	SS03

→ ¶

If more than one frequency band is supported, please confirm which combinations of bands are capable of Simultaneous Transmit.	BLE and RFID do not transmit simultaneously. ¶ ¶
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Frequency Band 1: Please detail (one entry for each band), e.g. GSM 900 / WCDMA FDD I etc.

Antenna Model:	Pulse W3008	
Antenna length:	Chip Antenna (Length not applicable)	cm
Bottom frequency:	2402	MHz
Middle frequency:	2440	MHz
Top frequency:	2480	MHz

Maximum power (input to the antenna including a tolerance):	0.01	W
Antenna gain (or maximum gain allowed):	1.8	dBi

Or ¶

Field Strength Measurement:	dB μ A/M
Measurement Distance:	cm

¶

Separation distance from antenna to the user/bystander:	0.5	cm
Transmitter Duty Cycle:	¶	%

¶

Note: the maximum radiated power output EIRP shown in the low power exclusion result is given by:

$$P_{EIRP} = P_o \times G_i \times \text{Duty Factor}$$

$$P_{EIRP} = 10 \text{ mW} \times 1.51 \times 1 = 15.1 \text{ mW}$$

Where:

$$G_i = 10^{(2 \text{ dBi}/10)} = 1.51$$

$$\text{Duty factor} = 100\% / 100 = 1$$

The client did not declare a duty factor, therefore a worst case of 100% was used in the calculation.