TÜV SÜD, Octagon House,
Concorde Way, Segensworth North, Fareham,
Hampshire, United Kingdom, PO15 5RL
Tel: +44 (0) 1489 558100
Website: www.tuvsud.com/en



# SAR EXCLUSION DOCUMENT

**Document 75952587- 26 Issue 01**

FCC Standalone SAR Test Exclusion Considerations (KDB 447498 D01) Section 4.3.1 a)

100 MHz – 6 GHz – Separation Distance ≤50 mm

The 1g SAR Test exclusion thresholds for 100 MHz to 6 GHz test separation distances ≤ 50 mm are determined by:

[(max power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] [√f (GHz)] ≤ 3.0 for 1g SAR and ≤ 7.5 for 10g extremity SAR.

- f (GHz) is the RF channel transmit frequency in GHz.
- Power and distance are rounded to the nearest mW and mm before calculation.
- The result is rounded to one decimal place for comparison
- When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied.

SAR Exclusion Result: Bluetooth

| Frequency (GHz) | Power Output mW | Duty Cycle % | Maximum Power (Tune up Value) * (mW) | Test Separation Distance (mm) | SAR Test Exclusion Threshold | Limit** | SAR Test Exclusion (Yes/No) |
|---|---|---|---|---|---|---|---|
| 2.402 | 6 | 100 | 6 | 50 | 0.2 | 3.0 | Yes |
| 2.480 | 6 | 100 | 6 | 50 | 0.2 | 3.0 | Yes |

SAR Exclusion Result: Proprietary Tracking Beacon

| Frequency (GHz) | Power Output mW | Duty Cycle % | Maximum Power (Tune up Value) * (mW) | Test Separation Distance (mm) | SAR Test Exclusion Threshold | Limit** | SAR Test Exclusion (Yes/No) |
|---|---|---|---|---|---|---|---|
| 2.402 | 1 | 100 | 1 | 50 | 0.0 | 3.0 | Yes |
| 2.480 | 1 | 100 | 1 | 50 | 0.0 | 3.0 | Yes |

* Maximum power including tolerance of the time averaged declared conducted output power of the device.
** Select ≤ 3.0 for 1g SAR and ≤ 7.5 for 10g extremity SAR.

The SAR exclusion threshold has been evaluated using the formula described above from information supplied by the manufacturer below. Based on the calculation above, the EUT is categorically excluded from SAR testing.

**Approved by** .....

**J Kenny**
Authorised Signatory

**Date** 16 December 2021

Manufacturer's Declaration of Product Information:

## Equipment Description

| | |
|---|---|
| Technical Description:<br>*(Please provide a brief description of the intended use of the equipment)* | Protective Hard Hat with integrated eye protection and augmented reality |
| Manufacturer: | XYZ Reality Ltd |
| Model: | Atom Hard Hat |
| Part Number: | XYZ-12-01 |

| | |
|---|---|
| If more than one frequency band is supported, please confirm which combinations of bands are capable of Simultaneous Transmit. | BTLE / WLAN 2.4 GHz / Proprietary ISM 2.4 GHz |

### Frequency Band 1: Please detail (one entry for each band), e.g GSM 900 / WCDMA FDD I etc .

| | | |
|---|---|---|
| Antenna Model: | Molex Dipole 146153 series | |
| Antenna length: | 3.5 | cm |
| Bottom frequency: | 2402 | MHz |
| Middle frequency: | 2440 | MHz |
| Top frequency: | 2480 | MHz |

| | | |
|---|---|---|
| Maximum power (input to the antenna including a tolerance): | 5.5 dBm ± 2 dB | dBm |
| Antenna gain (or maximum gain allowed): | 2.8 | dBi |

Or

| | | |
|---|---|---|
| Field Strength Measurement: | | dBuA/M |
| Measurement Distance: | | cm |

| | | |
|---|---|---|
| Separation distance from antenna to the user/bystander | 5 | cm |
| Transmitter Duty Cycle: | 100 | % |

### Frequency Band 2: Please detail (one entry for each band), e.g GSM 900 / WCDMA FDD I etc

| | | |
|---|---|---|
| Antenna Model: | Molex Dipole 146153 series | |
| Antenna length: | 3.5 | cm |
| Bottom frequency: | 2412 | MHz |
| Middle frequency: | 2437 | MHz |
| Top frequency: | 2472 | MHz |

| | | |
|---|---|---|
| Maximum power (input to the antenna including a tolerance): | 20 dBm ± 1 dB | dBm |
| Antenna gain (or maximum gain allowed): | 2.8 | dBi |

Or

| | | |
|---|---|---|
| Field Strength Measurement: | | dBuA/M |
| Measurement Distance: | | cm |

| | | |
|---|---|---|
| Separation distance from antenna to the user/bystander | 5 | cm |
| Transmitter Duty Cycle: | 100 | % |

Frequency Band 3: Please detail (one entry for each band). e.g GSM 900 / WCDMA FDD I etc .

| | | |
|---|---|---|
| Antenna Model: | Molex Dipole 146153 series | |
| Antenna length: | 3.5 | cm |
| Bottom frequency: | 2402 | MHz |
| Middle frequency: | 2440 | MHz |
| Top frequency: | 2480 | MHz |

| | | |
|---|---|---|
| Maximum power (input to the antenna including a tolerance): | 0 | dBm |
| Antenna gain (or maximum gain allowed): | 2.8 | dBi |

Or

| | | |
|---|---|---|
| Field Strength Measurement: | | dBµA/M |
| Measurement Distance: | | cm |

| | | |
|---|---|---|
| Separation distance from antenna to the user/bystander | 5 | cm |
| Transmitter Duty Cycle: | 100 | % |