

RF Exposure Evaluation Report

Product : Xquad
Trade mark : goTele
Model/Type reference : Xquad03, Xquad04, Xquad05,
Xquad06, Xquad07, Xquad08,
Xquad09
Serial Number : N/A
Report Number : EED32M00310402
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Date of Issue : Dec. 04, 2020
Test Standards : 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF
Exposure Guidance v06
Test result : PASS

Prepared for:

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2 Version

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4 General Information

4.1 Client Information

Applicant:	Beijing Tele Industry Information Technology Co., Ltd.
Address of Applicant:	Room A201, 2/F, GuoDong LOFT, Huilongguan, Changping District, Beijing, China
Manufacturer:	Xiaolang Communications Technology (Shenzhen) Co., Ltd.
Address of Manufacturer:	Room 406, City Shanhai V Valley, No.1 Yongxiang Road, Longgang District, Shenzhen, China
Factory:	Xiaolang Communications Technology (Shenzhen) Co., Ltd.
Address of Factory:	Room 406, City Shanhai V Valley, No.1 Yongxiang Road, Longgang District, Shenzhen, China

4.2 General Description of EUT

Product Name:	Xquad
Model No.(EUT):	Xquad03
Add Model No.:	Xquad04, Xquad05, Xquad06, Xquad07, Xquad08, Xquad09
Trade mark:	goTele
Software Version:	V1.0
Hardware Version:	V2.6
EUT Supports Radios application:	Bluetooth LE, Lora
Operation Frequency:	Bluetooth LE: 2402MHz~2480MHz Lora: 902.6MHz ~927.5 MHz
Modulation Technique:	DSSS
Modulation Type:	Bluetooth LE:GFSK Lora: FSK
Number of Channel:	Bluetooth LE: 40 Lora: 9
Sample Type:	Portable production
Test Power Grade:	default
Test Software of EUT:	default
Antenna Type and:	Bluetooth LE: PCB antenna Lora: Monopole Antenna
Antenna Gain:	Bluetooth LE: 0 dBi Lora: -2.5dBi
Power Supply:	Li-ion battery: DC3.7V, 1700mAh
Sample Received Date:	Oct.10, 2020
Sample tested Date:	Oct. 25, 2020 to Dec. 03, 2020
Test Voltage:	DC 3.7V

4.3 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.4 Deviation from Standards

None.

4.5 Abnormalities from Standard Conditions

None.

4.6 Other Information Requested by the Customer

None.

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{(\text{min. test separation distance, mm})} \right] \cdot$$

$$[\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

The result is rounded to one decimal place for comparison

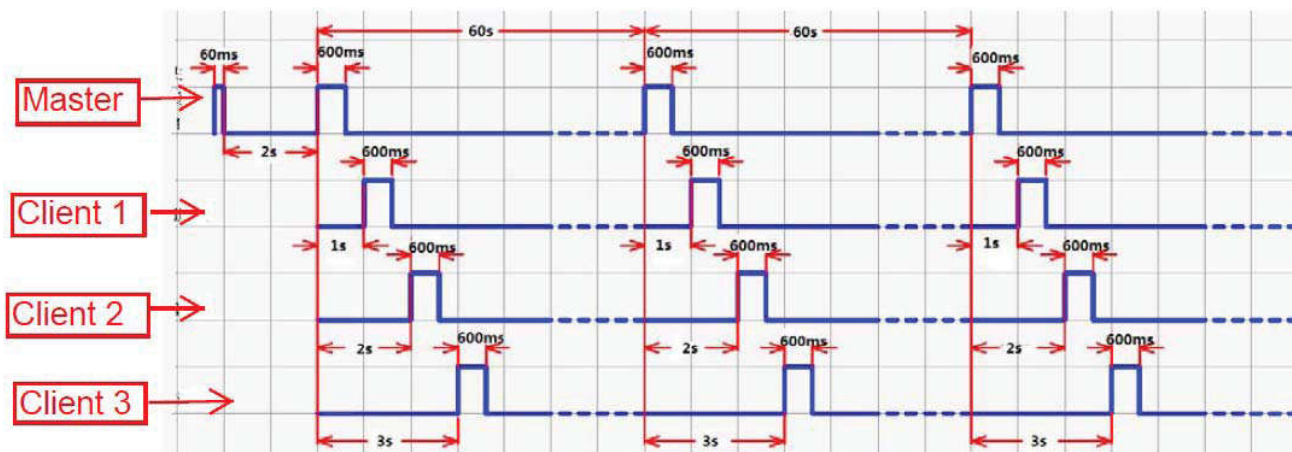
The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

5.1.2 EUT RF Exposure

Measurement Result

LoRa Mode:

LoRa duty cycle:



For Master Condition:

Frequency (MHz)	Maximum Tune-up peak power (mW)	Duty cycle (%)	Time-base Average power (mW)	Threshold (1-g SAR) (mW)	SAR Test Exclusion
927.5	1000	1.06	10.6	15.58	Yes

Note 1: The worst case duty cycle is $(60 \text{ ms} + 600 \text{ ms}) / (60 \text{ ms} + 2000 \text{ ms} + 60000 \text{ ms}) = 0.0106$

For Client Condition:

Frequency (MHz)	Maximum Tune-up peak power (mW)	Duty cycle (%)	Time-base Average power (mW)	Threshold (1-g SAR) (mW)	SAR Test Exclusion
927.5	1000	1.0	10.0	15.58	Yes

Note 1: The duty cycle is $600 \text{ ms} / 60000 \text{ ms} = 0.01$

For BLE mode:

Frequency (MHz)	Max Tune-up Conducted Power (dBm)	Max Tune-up Conducted Power (mW)	Calculated Distance (mm)	Calculated value	Threshold (1-g SAR)	SAR Test Exclusion
2480	-2.0	0.63	5	0.2	3.0	Yes

Simultaneous transmitting consideration:

When standalone SAR exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission

SAR exclusion:

For BLE mode:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})/x}] = 0.63\text{mW}/5 \cdot (\sqrt{2.48\text{GHz}/7.5}) = 0.026 \text{ W/kg} < 1.6 \text{ W/kg}$

Where $x=7.5$ for 1-g SAR.

For LoRa mode:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})/x}] = 10.6\text{mW}/5 \cdot (\sqrt{0.9275\text{GHz}/7.5}) = 0.272 \text{ W/kg} < 1.6 \text{ W/kg}$

Where $x=7.5$ for 1-g SAR.

The ratio = $\text{RF Expouser}_{\text{BLE}}/\text{limit} + \text{RF Expouser}_{\text{LoRa}}/\text{limit} = 0.026/1.6 + 0.272/1.6 = 0.19 < 1.0$,

Simultaneous exposure is not required.

Result: No SAR test is required

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32M00310401 for EUT external and internal photos.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***