




RF Exposure Evaluation

FCC ID: Q3N-3610A
IC: 5121A-3610A
APPLICANT: CIPHERLAB CO., LTD.
Application Type: Certification
Product: BT Transponder
Model No.: 3610 A
Trademark: 
FCC Rule Part(s): Part 2.1091 (Mobile)
IC Standard: RSS 102 (issue5)
Test Date: December 2, 2020 ~ December 15, 2020

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The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.


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Revision History

Report No.	Version	Description	Issue Date	Note
2012TWD701-U3	1.0	Original Report	2021-01-20	

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name	BT Transponder
FCC ID	Q3N-3610A
IC ID	5121A-3610A
Model No.	3610 A
Trademark	
Bluetooth Specification	Bluetooth V2.1+EDR
Frequency Range	2402~2480MHz
Type of Modulation	FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK)
Data Rate	1Mbps (GFSK), 2Mbps ($\pi/4$ DQPSK), 3Mbps (8DPSK)

1.2. Antenna Description

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	N/A	N/A	Chip	0.0dBi

2. RF Exposure Evaluation

2.1. FCC Limits

According to FCC KDB 447498 Section 4.3 - General SAR test exclusion guidance

For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR,

where

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz
2. Power and distance are rounded to the nearest mW and mm before calculation
3. The result is rounded to one decimal place for comparison
4. The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below

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 according to 4.1 f) is applied to determine SAR test exclusion.

2.2. IC Limits

Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power. For controlled use devices where the 8 W/kg for 1 gram of tissue applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 5. For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 2.5. If the operating frequency of the device is between two frequencies located in Table 1, linear interpolation shall be applied for the applicable separation distance. For test separation distance less than 5 mm, the exemption limits for a separation distance of 5 mm can be applied to determine if a routine evaluation is required.

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤ 5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW
Frequency (MHz)	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥ 50 mm
≤ 300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance.

2.3. Test Result of RF Exposure Evaluation

For FCC :

Mode	Frequency Band (MHz)	Output Power (dBm)	Output Power (mW)	Exclusion Threshold @5mm	SAR Test Exclusion Limit	
					mW	Exclusion Threshold
BT	2402~2480	5.139	3.3	1.03	7	3.0

For IC :

Mode	Frequency Band (MHz)	Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	EIRP (mW)	IC Extremity SAR Test Exclusion Threshold (mW)
BT	2402~2480	5.139	3.3	0	3.3	4

So, this device can complies the SAR test exclusion.

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