

RF exposure Estimation for COM-DEX

1. Introduction

Product:	COM-DEX Remote MIC
Model no.:	COM-DEX Remote MIC
Brand Name:	Widex
FCC ID:	TTY-CDRM
Options and accessories:	NIL
Rating:	DC 3.7V by Li-ion Battery
RF Transmission Frequency:	2402-2480MHz
No. of Operated Channel:	79 for FHSS 40 for BLE
Modulation:	GFSK, $\pi/4$ -DQPSK, 8DPSK for FHSS GFSK for BLE
Antenna Type:	Integral Antenna
Antenna Gain:	-0.15dBi
Description of the EUT:	The Equipment Under Test (EUT) is a Remote MIC with buletooth function which operated at 2.4GHz

2. Limit and Guidelines on Exposure to Electromagnetic Fields

According to §15.247(e)(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

- 1) According to KDB 447498 D01 Mobile Portable RF Exposure v05r02, no SAR required if power is lower than the following threshold:

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 calculation²⁵
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 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 5) in section 4.1 is applied to determine SAR test exclusion.

3. Calculation method

FCC ID: TTY-CMDEX

For Bluetooth Module

$$\left[\frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0$$

Conducted Power + tune up tolerance = 2.20mW

Distance = 5 mm

$f = 2.441$ GHz

$[2.20/5] \cdot \text{SQRT}(2.441) = 0.69$

$0.69 \leq 3.0$

Therefore, excluded from SAR testing.

For BLE Module

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$

Conducted Power + tune up tolerance = 1.54mW

Distance = 5 mm

f = 2.440 GHz

$[1.54/5] \cdot \text{SQRT}(2.440) = 0.48$

$0.48 \leq 3.0$

Therefore, excluded from SAR testing.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

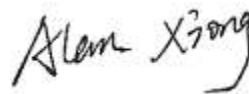
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