

FCC ID: U4A-MODBLE9118K

Device is an RF module separated by less than 20cm from end users. 5mm separation is considered for worst case.

It has 2 radios as follows,

Radio 1: 125kHz RFID

Radio 2: 13.56MHz RFID

And it's collocated with a previously certified BLE module (FCC ID: TCZ-10103751G1)

All radios can transmit simultaneously.

**Radio 1: 125kHz RFID**

Fundamental field strength = 71.3dBuV/m at 3m = -23.93dBm EIRP = 0.00405mW

Per SAR exclusion per 447498 D01 General RF Exposure Guidance v06 Appendix C

At 0.1MHz, exclusion power threshold is shown as 948mW at <50mm

At 1MHz, exclusion power threshold is shown as 711mW at <50mm

Worst case 711mW is considered as the limit

$0.00405\text{mW} < 711\text{mW}$ , therefore exempt from SAR.

**Radio 2: 13.56MHz RFID**

Fundamental field strength = 64.4dBuV/m at 3m = -30.83dBm EIRP = 0.00083mW

Per SAR exclusion per 447498 D01 General RF Exposure Guidance v06 Appendix C

At 10MHz, exclusion power threshold is shown as 474mW at <50mm

At 50MHz, exclusion power threshold is shown as 308mW at <50mm

Worst case 308mW is considered as the limit

$0.00083\text{mW} < 308\text{mW}$ , therefore exempt from SAR.

**Pre-certified BLE module:** based on the information in FCC database for FCC ID: TCZ-10103751G1

Output power = 1.455mW

Per SAR exclusion per 447498 D01 General RF Exposure Guidance v06 Appendix A

At 2450MHz, exclusion power threshold is shown as 10mW at 5mm

$1.455\text{mW} < 10\text{mW}$ , therefore exempt from SAR.

**Simultaneous transmission:**

Sum of *Power / Exclusion Limit* ratios of all 3 radios

*Power / Exclusion Limit* ratio for Radio 1 =  $0.00405/711 = 0.0000057$

*Power / Exclusion Limit* ratio for Radio 2 =  $0.00083/308 = 0.0000027$

*Power / Exclusion Limit* ratio for Radio 3 =  $1.455/10 = 0.1455$

Sum =  $0.0000057 + 0.0000027 + 0.1455 = 0.1455084$

$0.1455084 < 1$

Therefore device complies with FCC's RF radiation exposure limits for general population without SAR evaluation.