

Simultaneous Transmission SAR exclusion considerations

Report No.: 14040046HKG-002

Since the WLAN (WiFi) and Bluetooth transmitters of this device may operate simultaneously, simultaneous transmission analysis is required. Per KDB 447498, simultaneous transmission SAR test exclusion can be applied when the sum of 1-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit ($\leq 1.6\text{W/kg}$). When the standalone SAR test exclusion is applied, the standalone 1-g SAR must be estimated according to the following equation,

$$\text{Estimated SAR} = (\sqrt{F(\text{GHz})} / 7.5) \times (P \text{ max} / TD)$$

where

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

$P \text{ max}$ is the max. power of channel, including tune-up tolerance, mW

TD is the min. test separation distance, mm

For WLAN (WiFi) operation,

Maximum Conducted Power of this device = **8.652 mW**

Therefore, the Estimated SAR will be determined as follow,

$$\begin{aligned}\text{Estimated SAR} &= (\sqrt{F(\text{GHz})} / 7.5) \times (P \text{ max} / TD) \\ &= 0.362 \text{ W/kg}\end{aligned}$$

where $P \text{ max} = 8.652 \text{ mW}$, $TD = 5 \text{ mm}$ and $F(\text{GHz}) = 2.462 \text{ GHz}$

For Bluetooth 4.0 BLE operation,

Maximum Conducted Power of this device = **7.891 mW**

Therefore, the Estimated SAR will be determined as follow,

$$\begin{aligned}\text{Estimated SAR} &= (\sqrt{F(\text{GHz})} / 7.5) \times (P \text{ max} / TD) \\ &= 0.331 \text{ W/kg}\end{aligned}$$

where $P \text{ max} = 7.891 \text{ mW}$, $TD = 5 \text{ mm}$ and $F(\text{GHz}) = 2.480 \text{ GHz}$

Simultaneous Transmission Analysis

WLAN SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)	Simultaneous SAR Required
0.362	0.331	0.693	No

Conclusion

Since the above summed SAR result for all simultaneous transmission conditions were below the SAR limit (1.6 W/kg), SAR evaluation for simultaneous transmission configuration are not required.