

## RF EXPOSURE EVALUATION

### EUT Specification

<b>EUT</b>	Wi-Fi SMART BRIDGE
<b>Model Name</b>	SYNC/WIFI, UNSSB001/WIFIBLE/ONESYNC-WT, UNSSB001/WIFIBLE/ONESYNC-XXX
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> 2.402GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz <input type="checkbox"/> Others(2427-2457MHz)
<b>Device category</b>	<input checked="" type="checkbox"/> Portable (<20cm separation) <input type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others ____
<b>Antenna diversity</b>	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	94.72dBuv/m, -0.5376dBm(0.8836mW)
<b>Antenna gain</b>	-3.45dBi
<b>Evaluation applied</b>	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation

### Standard Requirement

#### Portable Device

According to §1.1307b(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See KDB 447498 D01 General RF Exposure Guidance v06, section 4.3.1.

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

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR,<sup>16</sup> where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  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.

## Measurement Result

Channel Frequency (MHz)	Max Output power (dBuV/m)	Max Output power (dBm)	Max Output power (mW)	Calculation Value (Note 1)	Threshold Value
2402	94.72	-0.5376	0.8836	0.2739	3.0

$$E = \text{EIRP} - 20 \log D + 104.8$$

where:

E = electric field strength in dB $\mu$ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

$$\text{EIRP} = E - 104.8 + 20 \log D = 94.72 - 104.8 + 20 \log 3 = -0.5376 \text{ dBm}$$

Note 1: Calculation Value = [(max. power of channel, mW)/(min. test separation distance, mm)]  $\cdot$  [ $\sqrt{f}$ (GHz)].

For example:  $0.8836 / 5 \cdot \sqrt{2.402} = 0.2739 \leq 3.0$

### For WIFI function:

Channel	Channel Frequency (MHz)	Max Output power (dBm)	Max Output power (mW)	Power density at 20cm (mW/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
2.4G WIFI 802.11n(HT40)					
High	2422	23.29	213.30	0.067047	1

### When WIFI and 2.4G work together:

Ratio 2.4G	Ratio WIFI	BT+2.4G WIFI Ratio Total	Ratio Limits
0.0913	0.0067047	0.0980047	1

According to KDB447498 D01 V06, threshold at which no SAR required is  $\leq 3.0$  for 1-g SAR, separation distance is 5mm, and no SAR measurement is required.

The SAR measurement is not necessary.