



# SAR Exemption Evaluation Report

Product Name : EZ-BT WICED XR Module with Mesh

Model No. : CYBT-483039-02

FCC ID : WAP3039

Applicant : Cypress Semiconductor

Address : 198 Champion Ct, San Jose, California 95134  
United States

Date of Receipt : Mar. 29, 2018

Issued Date : May. 24, 2018

Report No. : 1832171R-RF-US-P20V02

Report Version : V 1.1

The test results relate only to the samples tested.

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

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# Test Report Certification

Issued Date : May. 24, 2018

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Applicant : Cypress Semiconductor  
Address : 198 Champion Ct, San Jose, California 95134  
United States  
Manufacturer : Cypress Semiconductor  
Address : 198 Champion Ct, San Jose, California 95134  
United States  
Model No. : CYBT-483039-02  
FCC ID : WAP3039  
EUT Voltage : DC 2.0~3.6V  
Applicable Standard : KDB 447498 D01v06  
Test Result : Complied  
Performed Location : DEKRA Testing & Certification (Suzhou) Co., Ltd.  
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou,  
215006, Jiangsu, China  
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098  
FCC Designation Number: CN1199

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(Engineering Manager: Harry Zhao)

## 1. RF Exposure Evaluation

### 1.1.Limits

According to **KDB 447498 D01 General RF Exposure Guidance v06**

#### 4.3.1 Standalone SAR test exclusion considerations

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:

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

$\leq 3.0$  for 1-g SAR and  $\leq 7.5$  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 calculation
- 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  $\leq 50$  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 according to 5) in section 4.1 is applied to determine SAR test exclusion.

2) At 100 MHz to 6 GHz and for test separation distances  $> 50$  mm, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B:

- a)  $\left[ \text{Power allowed at numeric threshold for 50 mm in step 1} \right] + \left( \text{test separation distance} - 50 \text{ mm} \right) \cdot \left( \frac{f(\text{MHz})}{150} \right)$  mW, at 100 MHz to 1500 MHz
- b)  $\left[ \text{Power allowed at numeric threshold for 50 mm in step 1} \right] + \left( \text{test separation distance} - 50 \text{ mm} \right) \cdot 10$  mW at  $> 1500$  MHz and  $\leq 6$  GHz

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

- a) The power threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by  $\left[ 1 + \log\left(\frac{100}{f(\text{MHz})}\right) \right]$  for test separation distances  $> 50$  mm and  $< 200$  mm
- b) The power threshold determined by the equation in a) for 50 mm and 100 MHz is multiplied by  $\frac{1}{2}$  for test separation distances  $\leq 50$  mm
- c) SAR measurement procedures are not established below 100 MHz. When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any test results to be acceptable. Note: when the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

### 1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

### 1.3. Test Result of RF Exposure Evaluation

Product	:	EZ-BT WICED XR Module with Mesh
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

● **Antenna Gain:**

Model No.	N/A					
Antenna manufacturer	N/A					
Antenna Delivery	<input checked="" type="checkbox"/>	1*TX+1*RX	<input type="checkbox"/>	2*TX+2*RX	<input type="checkbox"/>	3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/>	SISO				
	<input type="checkbox"/>	MIMO	<input type="checkbox"/>	Basic		
			<input type="checkbox"/>	CDD		
			<input type="checkbox"/>	Sectorized		
			<input type="checkbox"/>	Beam-forming		
Antenna Type	<input type="checkbox"/>	External	<input type="checkbox"/>	Dipole		
			<input type="checkbox"/>	Sectorized		
	<input checked="" type="checkbox"/>	Internal	<input type="checkbox"/>	PIFA		
			<input type="checkbox"/>	PCB		
			<input checked="" type="checkbox"/>	Ceramic Chip Antenna		
			<input type="checkbox"/>	Monopole Antenna		
	Antenna Technology	Ant Gain (dBi)				
<input checked="" type="checkbox"/>	SISO	2.3				

Based on The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm and the formula below:

$$\text{Estimated SAR} = \sqrt{f(\text{GHz})} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

Maximum conducted tune-up power is 17.7dBm for BT3.0, 17.3dBm for BLE:

Band	Exposure Condition	Pmax	Pmax	Distance	f(GHz)	calculation result	Stand-alone Test exclusion threshold	SAR Test
		(dBm)	(mw)	(mm)				
BT3.0	Body	17.7	58.88	34	2.480	2.73	3.00	No
BLE	Body	17.3	53.70	34	2.440	2.47	3.00	No

Conclusion: 2.4GHz SAR was not required.

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