



## Test Report

### Prepared for SmartSense by Digi

This report presents Maximum Permissible Exposure for  
**SCMB100**

Prepared by



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Approved by



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## • Test Request Information

<b>Test Requested By:</b>	SmartSense by Digi 186 Lincoln St, Suite 8 Boston, MA 02111
<b>Test item Description:</b>	SCMB100
<b>Part Number:</b>	SCMB100
<b>DUT Sample Number:</b>	N/A
<b>Hardware Version of DUT:</b>	N/P
<b>Software Version of DUT:</b>	N/P
<b>Category of DUT:</b>	Mobile Exposure; General Population / Uncontrolled Exposure
<b>FCC ID(s):</b>	2ATZ3-SCMB100 SZ9TM-ZP05X (Co-located Zigbee transceiver) XMR201906EG21G (Co-located Cellular transceiver)
<b>Type of Test:</b>	FCC Exposure Exemption Calculation
<b>References:</b>	KDB 447498 v06 FCC CFR Title 47, Chapter I, Subchapter A, Subpart I, Part 2.1091
<b>Deviations from standard:</b>	None
<b>Date of Evaluation:</b>	02/03/2022

## • Test Laboratory Information

<b>Location of Test Lab:</b>	Bureau Veritas Consumer Product Services, Inc. 775 Montague Expressway Milpitas, CA 95035 Phone: +1-925-963-4420
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<b>Laboratory Accreditations:</b>	BUREAU VERITAS CONSUMER PRODUCTS SERVICES, INC is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.
<b>ISO/IEC 17025:2017:</b>	2742.01
<b>FCC Test Site Number:</b>	US1109 (540430)
<b>IC Test Site Number:</b>	US0160 (4842D)

## 1. RF Exposure

### 1.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
<b>Limits For General Population / Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	...	...	f/1500	30
1500-100,000	...	...	1.0	30

f = Frequency in MHz; \*Plane-wave equivalent power density

### 1.2 MPE Calculation Formula

$$S = \frac{P_{out}G}{4\pi R^2}$$

Where:

**S** = power density in mW/cm<sup>2</sup>

**P<sub>out</sub>** = output power to antenna in mW

**G** = gain of antenna in linear scale

**R** = distance between observation point and centre of the radiator in cm

### 1.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. Therefore this device is classified as Mobile Device.

### 1.4 Antenna information

FCC ID	Antenna Type	Antenna Gain (dBi)
2ATZ3-SCMB100	Internal PCB Antenna <sup>1</sup>	3.7
SZ9TM-ZP05X	External Monopole Antenna <sup>1</sup>	2.5
XMR201906EG21G	N/A	4.45 <sup>2</sup>

Note:

1. Antenna that led to the highest gain from the individual module filings.
2. Highest allowable antenna gain from the individual filing for the worst case frequency band.

### 1.5 Calculation Result of Single RF Source(s)

FCC ID	Frequency (MHz)	Max Power (dBm)	Max Power (mW)	Turn-Up Tolerance	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2ATZ3-SCMB100 <sup>1</sup>	2402	17.68	58.613	N/P	3.7	20	0.0273	1
SZ9TM-ZP05X <sup>1</sup>	2405	17.20	52.481	N/P	2.5	20	0.0186	1
XMR201906EG21G <sup>2</sup>	779.50	25.00	316.228	N/A	4.45	20	0.1753	0.5197

Note:

- Reference information from 2ATZ3-SCMB100 RF Exposure document.
- Reference information from XMR201906EG21G RF Exposure document indicates LTE Band 13 to be the worst case with respect to power density and power density / limit ratio.

### 1.6 Calculation Result of Simultaneous RF Sources

The formula of calculated the MPE is:

$$(CPD1 / LPD1) + (CPD2 / LPD2) + \dots \text{etc.} < 1$$

CPD = Calculated power density

LPD = Limit of power density

FCC ID	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Ratio
2ATZ3-SCMB100	0.0273	1	0.0273
SZ9TM-ZP05X	0.0186	1	0.0186
XMR201906EG21G	0.1753	0.5197	0.3373
Total Simultaneous Transmission Summation			<b>0.3832</b>

### 1.7 Conclusion

The worst-case summation of MPE ratios for simultaneous transmission are less than 1, therefore the SCMB100 manufactured by SmartSense by Digi is excluded from Maximum Permissible Exposure testing.

## Document Revisions

Version	Date	Modifier	Changes
1.0	02/04/2022	Ryan McGann	<ul style="list-style-type: none"><li>Initial release</li></ul>
2.0	2/11/2022	Ryan McGann	<ul style="list-style-type: none"><li>Updated model name and Manufacturer.</li></ul>

End of Report