



Test Report

Prepared for SmartSense by Digi

This report presents Maximum Permissible Exposure for
SCMB100

Prepared by



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• Test Request Information

Test Requested By: SmartSense by Digi
186 Lincoln St, Suite 8
Boston, MA 02111

Test item Description: SCMB100

Part Number: SCMB100

DUT Sample Number: N/A

Hardware Version of DUT: N/P

Software Version of DUT: N/P

Category of DUT: Mobile Exposure; General Population / Uncontrolled Exposure

FCC ID(s): 2ATZ3-SCMB100
SZ9TM-ZP05X (Co-located Zigbee transceiver)
XMR201906EG21G (Co-located Cellular transceiver)

Type of Test: FCC Exposure Exemption Calculation

References: KDB 447498 v06
FCC CFR Title 47, Chapter I, Subchapter A, Subpart I, Part 2.1091

Deviations from standard: None

Date of Evaluation: 02/03/2022

• Test Laboratory Information

Location of Test Lab: Bureau Veritas Consumer Product Services, Inc.
775 Montague Expressway
Milpitas, CA 95035
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Laboratory Accreditations: 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.

ISO/IEC 17025:2017: 2742.01

FCC Test Site Number: US1109 (540430)

IC Test Site Number: 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 ²)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	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/cm²

P_{out} = 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 ¹	3.7
SZ9TM-ZP05X	External Monopole Antenna ¹	2.5
XMR201906EG21G	N/A	4.45 ²

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 ²)	Limit (mW/cm ²)
2ATZ3-SCMB100 ¹	2402	17.68	58.613	N/P	3.7	20	0.0273	1
SZ9TM-ZP05X ¹	2405	17.20	52.481	N/P	2.5	20	0.0186	1
XMR201906EG21G ²	779.50	25.00	316.228	N/A	4.45	20	0.1753	0.5197

Note:

1. Reference information from 2ATZ3-SCMB100 RF Exposure document.
2. 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 ²)	Limit (mW/cm ²)	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			0.3832

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">Initial release
2.0	2/11/2022	Ryan McGann	<ul style="list-style-type: none">Updated model name and Manufacturer.

End of Report