

Variant RF Exposure Report

Report No.: SA171114D13A R1

FCC ID: P27-TPM10

Test Model: TPM10

Received Date: May 23, 2018

Date of Evaluation: Jun. 14, 2018

Issued Date: Aug. 20, 2018

Applicant: Sercomm Corp.

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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
SA171114D13A	Original Release	Jun. 22, 2018
SA171114D13A R1	Revise EPR/EIRP power	Aug. 20, 2018

1 Certificate of Conformity

Product: Cat-M1 Module

Brand: Sercomm

Test Model: TPM10

Sample Status: Identical Prototype

Applicant: Sercomm Corp.

Date of Evaluation: Jun. 14, 2018

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

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Approved by : Dylan Chiou , **Date:** Aug. 20, 2018
Dylan Chiou / Project Engineer

2 RF Exposure

2.1 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

2.2 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

2.3 Classification

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

2.4 Antenna Gain

Antenna Type	LTE Band 2	Monopole Antenna with 1.96 dBi
	LTE Band 4	Monopole Antenna with 3.41 dBi
	LTE Band 12	Monopole Antenna with 0.18 dBi

2.5 Calculation Result of Maximum Conducted Power

Band	Frequency Band (MHz)	EIRP Power (dBm)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE 2	1850-1910	21.43	20	0.028	1.00
LTE 4	1710-1755	23.41	20	0.044	1.00
LTE 12	699-716	19.38	20	0.017	0.47

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

LTE Band 2= $0.028 / 1.00 = 0.028$

LTE Band 4= $0.044 / 1.00 = 0.044$

LTE Band 12= $0.017 / 0.47 = 0.036$

Therefore the maximum calculations of above situations are less than the "1" limit.

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