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.
Address:	8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C. (NanKang Software Park)
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
Test Location:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)
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.

Prepared by : Gina Liu , **Date:** Aug. 20, 2018

Gina Liu / Specialist

Approved by : , **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

$Pd = (Pout*G) / (4*pi*r^2)$

where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 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 + ……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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