

RF Exposure Report

Report No.: SA160630D15

FCC ID: ARS-SMMTN28C01

Model No.: SM-MTN28-C01

Received Date: Jun. 30, 2016

Test Date: Jul. 19 ~ 21, 2016

Issued Date: Jul. 22, 2016

Applicant: TOP VICTORY ELECTRONICS (TAIWAN) CO., LTD.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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Release Control Record

Issue No.	Description	Date Issued
SA160630D15	Original release.	Jul. 22, 2016

1 Certificate of Conformity

Product: NFC Controller Module with Integrated Antenna

Brand: TPV

Model No.: SM-MTN28-C01

Sample Status: Engineering sample

Applicant: TOP VICTORY ELECTRONICS (TAIWAN) CO., LTD.

Test Date: Jul. 19 ~ 21, 2016

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 EMC characteristics under the conditions specified in this report.

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Approved by : Rex Lai , **Date:** Jul. 22, 2016
Rex Lai / Assistant Manager

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				
1.34-30	824/f	2.19/f	(180/f)*	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/cm²

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 Calculation Result Of Maximum Conducted Power

Function	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN (Platform) FCC ID:VOB-P2180	2412-2462	17.80	2.86	20	0.02315955	1
WLAN (Platform) FCC ID:VOB-P2180	5180-5240	17.32	5.57	20	0.03870171	1
NFC (EUT)	13.56	-41.69	---	20	0.00000001	0.978

NOTE:

Max Power of NFC Module: $53.54(\text{dBuV/m}) = -41.69\text{dBm}$

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz + NFC

$= 0.02315955/1 + 0.03870171/1 + 0.00000001/0.978 = 0.06186127$

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

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