

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.

Address: 10F., No 230, Liancheng Rd., Zhonghe Dist., New Taipei City 23553, Taiwan

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



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	3
1 Certificate of Conformity.....	4
2 RF Exposure.....	5
2.1 Limits For Maximum Permissible Exposure (MPE).....	5
2.2 MPE Calculation Formula	5
2.3 Classification	5
2.4 Calculation Result Of Maximum Conducted Power	6

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.

Prepared by :

Annie Chang

, Date:

Jul. 22, 2016

Annie Chang / Senior Specialist

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(dBuV/m) = -41.69dBm

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

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.

--- END ---