

RF Exposure Report (FCC)

Report No.: FCC_RF_SL19090301-EMG-009A1_MPE

FCC ID: 2AP3N-2019EMDMVL

Test Model: EMD-MVL

Host Model: EMD-MVL-4G

Received Date: 01/15/2020

Test Date: 01/16/2020 - 01/17/2020

Issued Date: 01/28/2020

Applicant: Electronic Minds Group SpA

Address: Av. del Parque 5339, Office 112, Huechuraba - Santiago, Chile
CP: 8580751

Manufacturer: Electronic Minds Group SpA

Address: Av. del Parque 5339, Office 112, Huechuraba - Santiago, Chile
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Issued By: Bureau Veritas Consumer Products Services, Inc.

Lab Address: 775 Montague Expressway, Milpitas, CA 95035

Test Location (1): 775 Montague Expressway, Milpitas, CA 95035

**FCC Registration /
Designation Number:** 540430/4842D



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Release Control Record

Issue No.	Description	Date Issued
FCC_RF_SL19090301-EMG-009A1_MPE	Original Release	01/28/2020

1 Certificate of Conformity

Product: Remote Telemetry Unit

Brand: e-minds

Test Model: EMD-MVL

Sample Status: Engineering Sample

Applicant: Electronic Minds Group SpA

Test Date: 01/16/2020 - 01/17/2019

Standard: 47 CFR FCC Part 2.1093

The above equipment has been tested by **Bureau Veritas Consumer Products Services, Inc., Milpitas 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 : Gary Chou, **Date:** 01/27/2020
Gary Chou / Compliance Engineer

Approved by : Chen Ge, **Date:** 01/28/2020
Chen Ge / Engineer Reviewer

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

BT antenna gain 2.3 dBi

WLAN antenna gain is 3.9 dBi

GSM antenna gain is 6.1 dBi

2.5 Calculation Result of Maximum Conducted Power

Type	Frequency Band (MHz)	Max Power (dBm)	Max Power (mW)	Turn-Up Tolerance	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
Bluetooth	2480	7.78	6.00	± 1dB	2.3	20	0.00255	1
2.4GHz WiFi	2437	13.32	21.5	± 1dB	3.9	20	0.013	1
GSM	824.2	25.95	393.55	± 2dB	6.1	20	0.506	0.549

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. This device contains
WLAN Module: FCC ID: 2AATL-8112MET
Cellular Module: FCC ID: 2AP3N-2019EMDMVL
Bluetooth Module: FCC ID: SQGBT850

3 Conclusion

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

Co-location worse case (Bluetooth & WLAN & GSM)

Bluetooth = $(0.00255 / 1) * 100\% = 0.255 \%$

2.4GHz WiFi = $(0.013 / 1) * 100\% = 1.3 \%$

GSM = $(0.506 / 0.549) * 100\% = 92.167 \%$

Total MPE Percentage = $(0.255 + 1.3 + 92.167) = 93.7\% < 100\%$

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

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