

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

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Manufacturer: Electronic Minds Group SpA

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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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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 Antenna Gain	5
2.5 Calculation Result of Maximum Conducted Power	6
3 Conclusion	6



Release Control Record

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

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/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 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)

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

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

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

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

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

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