



FCC SAR Exemption per KDB 447498

Date: June 2, 2021

American Certification Body, Inc.
6731 Whittier Avenue
Suite C110
McLean, VA 22101

FCC ID : VGXMS01
Model : Wifi SOM Module
Applicant : JLT Mobile Computers

Maximum exposure limits from CFR 47, FCC Part 1.1310:

Table 1--Maximum Permissible Exposure (MPE) Limits

<i>Controlled Exposure</i> <i>(6-Minute Average)</i>				<i>Uncontrolled Exposure **</i> <i>(30-Minute Average)</i>		
<i>Frequency Range (MHz)</i>	<i>Electric Field Strength (V/m)</i>	<i>Magnetic Field Strength (A/m)</i>	<i>Power Density (mW/cm²)</i>	<i>Electric Field Strength (V/m)</i>	<i>Magnetic Field Strength (A/m)</i>	<i>Power Density (mW/cm²)</i>
0.3-3.0	614	1.63	(100)*			
3.0-30	1842/f	4.89/f	(900/f ²)*			
0.3-1.34				614	1.63	(100)*
1.34-30				824/f	2.19/f	(180/f ²)*
30-300	61.4	0.163	1.0	27.5	0.073	0.2
300-1500	--	--	f/300	--	--	f/1500
1,500-100,000	--	--	5	--	--	1.0
f = frequency, in MHz.						
* = Plane-wave equivalent power. (This means the equivalent far-field strength that would have the E- or H-field component calculated or measured. It does not apply well in the near field of an antenna.)						
-- = Not specified.						

**General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public always fall under this category when exposure is not employment-related, as in the case of residents in an area near a broadcast tower. Neighbors of amateurs and other non-household members would normally be subject to the general population/uncontrolled exposure limits. For purposes of applying these definitions, awareness of the potential for RF exposure in a controlled or similar environment can be provided through specific training. Warning signs and labels can also be used to establish such awareness as long as they provide information, in a prominent manner, on risk of potential exposure and instructions on methods to minimize such exposure risk (For example, a sign warning of RF exposure risk and indicating that individuals should not remain in the area for more than a certain period of time could be acceptable. Bulletin 65 provides more information on warning signs.).



$$S = \frac{EIRP}{4\pi R^2}$$

EIRP = equivalent (or effective) isotropically radiated power

Calculation based on the above formula:

Note: RF exposure is being calculated from the original worst case power results and our antennas
Tolerance of measurements uncertainty = 10% = EIRP * 1,1

R = 20 cm (according to user manual of distance between device and user)

EIRP=Pout(dBm)+Gant (dBi)

2.4GHz

Pout = Conducted Output Power (2.437Ghz, ch 6, chain B, 80211b 1Mbps)= 17.95 dBm = 61,7 mW

MIMO worst case from VGXMS01 DTS = 137,09mW (21,37 dBm)

MIMO>Pout (select MIMO for calculation)

Gant = 0 dBi at 2.4GhZ

EIRP=21,37dBm+0dBi=21,37dBm = 137,09mW

Tolerance = 10% = EIRP * 1,1

Power Density Calculation = (137,09) * 1,1 / (4 * Pi * 20^2) = **0.030 < 1 (mW/cm²) = Pass**

5GhZ

Pout = Conducted Output Power (5,58 Ghz, ch 116, Output power(chain A+B))= 20,18 dBm = 104,2 mW

MIMO worst case from VGXMS01 UNII = 140,93mW = 21,49dBm

MIMO>Pout (select MIMO for calculation)

Gant = 2.3 dBi Peak Gain

EIRP=21,49dBm+2,3dBi=23,79dBm = 239,33mW


Tolerance = 10% = EIRP * 1,1

Power Density Calculation = (239,33)*1,1 / (4 * Pi * 20^2) = **0.052 (mW/cm²) < 1 = Pass**

The calculation is below the threshold, therefore the product exempt from the SAR test requirements.

Thank you,

By:


(Signature)

Anders Grandin

Title:

R&D Manager

On behalf of:

JLT Mobile Computers



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