

FCC RF EXPOSURE REPORT

FCC ID: SI5VRE3000

Project No. : 1807T004
Equipment : Verizon 5G Home Wi-Fi Extender
Test Model : VRE3000
Series Model : N/A
Applicant : U-MEDIA Communications, Inc.
Address : 9F, No.1, Jin-shan 7th St. Hsinchu Taiwan

According : FCC Part 2, Subpart J (§2.1093)
KDB 447498 D01 General RF Exposure Guidance v06
IEEE Std C95.1-2005

Authorized Signatory

:



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MPE CALCULATION METHOD:

**Table 4: RF Field Strength Limits for Devices Used by the General Public
(Uncontrolled Environment)**

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ $f^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ $f^{0.25}$	0.1540/ $f^{0.25}$	8.944/ $f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 $f^{0.3417}$	0.008335 $f^{0.3417}$	0.02619 $f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ $f^{1.2}$
150000-300000	0.158 $f^{0.5}$	4.21 x 10 ⁻⁴ $f^{0.5}$	6.67 x 10 ⁻⁵ f	616000/ $f^{1.2}$

Note: f is frequency in MHz.
 *Based on nerve stimulation (NS).
 ** Based on specific absorption rate (SAR).

Table for Filed Antenna:

For WLAN

Group 1:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Ax	PCB	iPEX	2.9
JC7	Galtronics	02102140-06808Ax	PCB	iPEX	2.9

Group 2:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Bx	PCB	iPEX	1.1
JC7	Galtronics	02102140-06808Bx	PCB	iPEX	1.1

For RLAN

Group 1:

UNII-1:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC1	Galtronics	02102142-06808Ax	PCB	iPEX	3.4
JC3	Galtronics	02102142-06808Ax	PCB	iPEX	3.4
JC4	Galtronics	02102142-06808Ax	PCB	iPEX	3.4
JC5	Galtronics	02102142-06808Ax	PCB	iPEX	3.4

UNII-3:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Ax	PCB	iPEX	3.8
JC7	Galtronics	02102140-06808Ax	PCB	iPEX	3.8

Group 2:

UNII-1:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC1	Galtronics	02102142-06808Cx	PCB	iPEX	3.1
JC3	Galtronics	02102142-06808Cx	PCB	iPEX	3.1
JC4	Galtronics	02102142-06808Cx	PCB	iPEX	3.1
JC5	Galtronics	02102142-06808Cx	PCB	iPEX	3.1

UNII-3:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Bx	PCB	iPEX	3.0
JC7	Galtronics	02102140-06808Bx	PCB	iPEX	3.0

NOTE:

- (1) This EUT supports 4T4R for RLAN 5 GHz UNII-1, but 2T2R for WLAN 2.4 GHz & RLAN 5 GHz UNII-3 (WLAN 2.4 GHz & RLAN 5 GHz UNII-3 use the same two antennas).

Test Result

For WLAN 2.4 GHz:

Frequency (MHz)	Average Power (dBm)	Average Power (W)	Antenna Gain (dBi)	Distance (cm)	Power Density (W/m ²)	Power Density Limit(W/m ²)
2412-2462	27.08	0.5108	5.91	20	0.3960	1

For RLAN 5 GHz:

Frequency (MHz)	Average Power (dBm)	Average Power (W)	Antenna Gain (dBi)	Distance (cm)	Power Density (W/m ²)	Power Density Limit(W/m ²)
5180-5240	21.88	0.1541	9.42	20	0.2684	1
5745-5825	22.12	0.1628	6.81	20	0.1555	1

NOTE:

1. WLAN 2.4GHz:
Directional Gain = $10\log [(10^{G1/20} + 10^{G2/20} + \dots + 10^{Gn/20})^2 / N_{ANT}] = 5.91 \text{ dBi}$
2. For RLAN 5GHz UNII-1:
Directional Gain = $10\log [(10^{G1/20} + 10^{G2/20} + \dots + 10^{Gn/20})^2 / N_{ANT}] = 9.42 \text{ dBi}$
3. For RLAN 5GHz UNII-3:
Directional Gain = $10\log [(10^{G1/20} + 10^{G2/20} + \dots + 10^{Gn/20})^2 / N_{ANT}] = 6.81 \text{ dBi}$

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 2.4 GHz + RLAN 5 GHz UNII-1 + RLAN 5GHz UNII-3

$= 0.3960 / 1 + 0.2684 / 1 + 0.1555/1 = 0.8199$

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