FCC RF EXPOSURE REPORT

FCC ID: SI5VRE3000

Project No.	:	1807T004A
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

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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	$3.142f^{0.3417}$	$0.008335f^{0.3417}$	$0.02619f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158f^{0.5}$	$4.21 \times 10^{-4}f^{0.5}$	$6.67 \times 10^{-5}f$	$616000/f^{1.2}$

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-2A:

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-2C:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Ax	PCB	iPEX	3.5
JC7	Galtronics	02102140-06808Ax	PCB	iPEX	3.5

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-2A:

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-2C:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Bx	PCB	iPEX	2.8
JC7	Galtronics	02102140-06808Bx	PCB	iPEX	2.8

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-1and UNII-2A, but 2T2R for WLAN 2.4 GHz & RLAN 5 GHz UNII-2C and UNII-3 (WLAN 2.4 GHz & RLAN 5 GHz UNII-2C and 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 (CDD mode)	23.18	0.2080	3.4	20	0.0905	1
5180-5240 (beamforming mode)	21.88	0.1541	9.42	20	0.2684	1
5260-5320 (CDD mode)	17.82	0.0606	3.4	20	0.0263	1
5260-5320 (beamforming mode)	13.09	0.0204	9.42	20	0.0355	1
5500-5700	21.67	0.1469	3.5	20	0.0654	1
5745-5825	22.12	0.1628	3.8	20	0.0778	1

NOTE:

1. WLAN 2.4GHz:
   Directional Gain = 10log $[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{Gn/20})^2/N_{ANT}]$ = 5.91 dBi
2. For RLAN 5GHz UNII-1 and UNII-2A:
   IEEE 802.11a mode (CDD mode):
   For $N_{ANT} = 4 < 5$,
   Direction gain = $G_{ANT} + 0 = 3.4 + 0 = 3.4$ dBi.
   IEEE 802.11n/ac mode (beamforming mode):
   Directional Gain = G_{ANT} + 10log (N_{ANT}/N_{SS}) = 3.4 dBi + 10log (4/1) = 9.42 dBi.
3. For RLAN 5GHz UNII-2C (CDD mode):
   For $N_{ANT} = 2 < 5$,
   Direction gain = $G_{ANT} + 0 = 3.5 + 0 = 3.5$ dBi.
4. For RLAN 5GHz UNII-3 (CDD mode):
   For $N_{ANT} = 2 < 5$,
   Direction gain = $G_{ANT} + 0 = 3.8 + 0 = 3.8$ dBi.

Conclusion:

The formula of calculated the MPE is:
CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1
CPD = Calculation power density
LPD = Limit of power density
WLAN 2.4 GHz + RLAN 5 GHz (UNII-1 & UNII-2A) + RLAN 5GHz (UNII-2C & UNII-3)
= 0.3960 / 1 + 0.2684 / 1 + 0.0778 / 1 = 0.7422
Therefore the maximum calculations of above situations are less than the “1” limit.