

Maximum Permissible Exposure Evaluation

FCC ID: 2AREL-WE1200

1. Client Information

Applicant	:	Shenzhen DajieKejiYouxianGongsi
Address	:	Longhuaxinqu Minzhijiedao Huangjia shangyeguang chang B711 Shenzhen Guangdong 518000, CN
Manufacturer	:	Shenzhen DajieKejiYouxianGongsi
Address	:	Longhuaxinqu Minzhijiedao Huangjia shangyeguang chang B711 Shenzhen Guangdong 518000, CN

2. General Description of EUT

EUT Name	:	Wi-Fi Range Extender
Models No.	:	WE1200, WE1201, WE1202, WE1203, WE1204, WE1205, WE1206, WE1207, WE1208, WE1209
Model Difference	:	All these model product are identical the same, for commercial use with different model number.
S/N	:	WE1200191200001, WE1200191200002
Brand Name	:	Victure
Product Description	:	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz U-NII-1: 5180MHz~5240MHz, U-NII-3: 5745MHz~5825MHz
Power Rating	:	Input: AC 100-240V, 50-60Hz
Software Version	:	1.0.10(450)
Hardware Version	:	V2.0
Connecting I/O Port(S)	:	Please refer to the User's Manual
Remark	:	the MPE report used the EUT-2(S/N number: WE1200191200002).

TB-RF-073-3.0

MPE Calculations

1. Antenna Gain:

Antenna	Brand	Model Name	Type	2.4G Antenna Gain(dBi)
ANT. 0	N/A	SLEingA200510030	Dipole	3
ANT. 1	N/A	SLEingA200510030	Dipole	3
Note: For MIMO mode: Directional Gain=ANT. Gain+10*LOG(N _{ANT}) =6.01 dBi 2.4G working with 802.11g/n(HT20/HT40) has MIMO mode.				

Antenna	Brand	Model Name	Type	Antenna Gain (dBi)	Directional Gain (dBi)
ANT. A	N/A	SLEingA200510030	Dipole	U-NII-1: 3	U-NII-1: 6.01 U-NII-3: 6.01
				U-NII-3: 3	
ANT. B	N/A	SLEingA200510030	Dipole	U-NII-1: 3	
				U-NII-3: 3	
Note: For MIMO mode: Directional Gain=ANT. Gain+10*LOG(N _{ANT}).					

2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna

4. Simultaneous transmission MPE Considerations

According to KDB447498 :All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1.Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 .

This means that:

$$\sum \text{ of MPE ratios } \leq 1.0$$

5. Standalone MPE Evaluation:

[2.4GHz WLAN]

Mode	Channel	Frequency	Peak Conducted Output Power (dBm)		Tolerance ± (dB)	Turn-up Power Tolerance (dB)	
			Ant.0	Ant.1		Ant.0	Ant.1
IEEE 802.11b	1	2412	15.67	16.30	1.0	16±1	16±1
	6	2437	17.64	16.57	1.0	17±1	17±1
	11	2462	17.08	17.86	1.0	17±1	17±1
IEEE 802.11g	1	2412	10.94	11.54	1.0	11±1	11±1
	6	2437	12.90	10.11	1.0	12±1	10±1
	11	2462	12.49	10.16	1.0	12±1	10±1
IEEE 802.11n HT20	1	2412	11.43	11.06	1.0	11±1	11±1
	6	2437	13.76	11.10	1.0	13±1	11±1
	11	2462	12.84	11.51	1.0	12±1	11±1
IEEE 802.11n HT40	3	2422	9.96	9.95	1.0	10±1	10±1
	6	2437	11.57	9.33	1.0	11±1	10±1
	9	2452	11.38	9.06	1.0	11±1	10±1

[5GHz WLAN U-NII-1]

Mode	Channel	Frequency	Peak Conducted Output Power (dBm)		Tolerance ± (dB)	Turn-up Power Tolerance (dB)	
			Ant.0	Ant.1		Ant.0	Ant.1
IEEE 802.11a	36	5180	18.74	17.48	1.0	19±1	18±1
	40	5200	18.60	17.21	1.0	19±1	18±1
	48	5240	18.86	17.55	1.0	19±1	18±1
IEEE 802.11n HT20	36	5180	18.98	17.83	1.0	19±1	18±1
	40	5200	18.53	17.11	1.0	19±1	18±1
	48	5240	18.96	17.70	1.0	19±1	18±1
IEEE 802.11ac VHT20	36	5180	18.69	17.40	1.0	19±1	18±1
	40	5200	18.74	17.16	1.0	19±1	18±1
	48	5240	19.55	18.25	1.0	19±1	18±1
IEEE 802.11n HT40	38	5190	19.20	17.65	1.0	19±1	18±1
	46	5230	19.61	18.16	1.0	19±1	18±1
IEEE 802.11ac VHT40	38	5190	18.46	17.15	1.0	19±1	18±1
	46	5230	19.37	17.84	1.0	19±1	18±1
IEEE 802.11ac VHT80	42	5210	19.07	17.69	1.0	19±1	18±1

[5GHz WLAN U-NII-3]

Mode	Channel	Frequency	Peak Conducted Output Power (dBm)		Tolerance $\pm$ (dB)	Turn-up Power Tolerance (dB)	
			Ant.0	Ant.1		Ant.0	Ant.1
IEEE 802.11a	149	5745	19.09	18.87	1.0	19 $\pm$ 1	18 $\pm$ 1
	157	5785	18.71	18.59	1.0	19 $\pm$ 1	18 $\pm$ 1
	165	5825	18.12	18.26	1.0	19 $\pm$ 1	18 $\pm$ 1
IEEE 802.11n HT20	149	5745	19.08	18.51	1.0	19 $\pm$ 1	18 $\pm$ 1
	157	5785	18.22	18.86	1.0	19 $\pm$ 1	18 $\pm$ 1
	165	5825	18.11	17.90	1.0	19 $\pm$ 1	18 $\pm$ 1
IEEE 802.11ac VHT20	149	5745	18.93	19.44	1.0	19 $\pm$ 1	19 $\pm$ 1
	157	5785	18.20	18.58	1.0	19 $\pm$ 1	18 $\pm$ 1
	165	5825	17.84	17.94	1.0	18 $\pm$ 1	18 $\pm$ 1
IEEE 802.11n HT40	151	5755	19.34	17.10	1.0	19 $\pm$ 1	18 $\pm$ 1
	159	5795	18.33	19.06	1.0	19 $\pm$ 1	19 $\pm$ 1
IEEE 802.11ac VHT40	151	5755	19.32	17.14	1.0	19 $\pm$ 1	18 $\pm$ 1
	159	5795	18.66	18.75	1.0	19 $\pm$ 1	18 $\pm$ 1
IEEE 802.11ac VHT80	155	5775	19.69	19.14	1.0	19 $\pm$ 1	19 $\pm$ 1

2.4GHz WLAN ANT. 0

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11b	18.00	63.096	3	1.9953	20	0.0250	1.0000
IEEE 802.11g	13.00	19.953	3	1.9953	20	0.0079	1.0000
IEEE 802.11n HT20	14.00	25.119	3	1.9953	20	0.0100	1.0000
IEEE 802.11n HT40	12.00	15.849	3	1.9953	20	0.0063	1.0000

2.4GHz WLAN ANT. 1

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11b	18.00	63.096	3	1.9953	20	0.0250	1.0000
IEEE 802.11g	12.00	15.849	3	1.9953	20	0.0063	1.0000
IEEE 802.11n HT20	12.00	15.849	3	1.9953	20	0.0063	1.0000
IEEE 802.11n HT40	11.00	12.589	3	1.9953	20	0.0050	1.0000

5GHz WLAN U-NII-1 ANT. 0

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11a	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11n HT20	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11ac VHT20	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11n HT40	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11ac VHT40	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11ac VHT80	20.00	100.00	3	1.9953	20	0.0397	1.0000

5GHz WLAN U-NII-1 ANT. 1

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11a	19.00	79.433	3	1.9953	20	0.0315	1.0000
IEEE 802.11n HT20	19.00	79.433	3	1.9953	20	0.0315	1.0000
IEEE 802.11ac VHT20	19.00	79.433	3	1.9953	20	0.0315	1.0000
IEEE 802.11n HT40	19.00	79.433	3	1.9953	20	0.0315	1.0000
IEEE 802.11ac VHT40	19.00	79.433	3	1.9953	20	0.0315	1.0000
IEEE 802.11ac VHT80	19.00	79.433	3	1.9953	20	0.0315	1.0000

5GHz WLAN U-NII-3 ANT. 0

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11a	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11n HT20	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11ac VHT20	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11n HT40	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11ac VHT40	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11ac VHT80	20.00	100.00	3	1.9953	20	0.0397	1.0000

5GHz WLAN U-NII-3 ANT. 1

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11a	19.00	79.433	3	1.9953	20	0.0315	1.0000
IEEE 802.11n HT20	19.00	79.433	3	1.9953	20	0.0315	1.0000
IEEE 802.11ac VHT20	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11n HT40	20.00	100.00	3	1.9953	20	0.0397	1.0000
IEEE 802.11ac VHT40	19.00	79.433	3	1.9953	20	0.0315	1.0000
IEEE 802.11ac VHT80	20.00	100.00	3	1.9953	20	0.0397	1.0000

Remark:

1. Output power (Average) including turn-up tolerance;
2. Output power was adjust to duty cycle at 100% if measured duty cycle less than 98%;
3. MPE evaluate distance is 20cm from user manual provide by manufacturer.

6. Summary simultaneous transmission information

Modulation Type	Work Frequency Band	Transmit Antenna		Antenna 0 Antenna 1 Synchronization transmit
		Antenna 0	Antenna 1	
IEEE 802.11a	U-NII-1/U-NII-3	Yes	Yes	Yes
IEEE 802.11b	2.4GHz	Yes	Yes	No
IEEE 802.11g	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT20	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT20	U-NII-1/ U-NII-3	Yes	Yes	Yes
IEEE 802.11n HT40	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT40	U-NII-1/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT20	U-NII-1/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT40	U-NII-1/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT80	U-NII-1/ U-NII-3	Yes	Yes	Yes

7. Summary simultaneous transmission results

Antenna A and Antenna B for 2.4GWLAN

Modulation Type	MPE _{Antenna 0} (mW/cm ²)	MPE _{Antenna 1} (mW/cm ²)	ΣMPE ratios	Limit	Results
IEEE 802.11b	0.0250	0.0250	/	1.0	PASS
IEEE 802.11g	0.0079	0.0063	0.0142	1.0	PASS
IEEE 802.11n HT20	0.0100	0.0063	0.0163	1.0	PASS
IEEE 802.11n HT40	0.0063	0.0050	0.0113	1.0	PASS

Antenna A and Antenna B for 5GWLAN U-NII-1

Modulation Type	MPE _{Antenna 0} (mW/cm ²)	MPE _{Antenna 1} (mW/cm ²)	ΣMPE ratios	Limit	Results
IEEE 802.11a	0.0397	0.0315	0.0712	1.0	PASS
IEEE 802.11n HT20	0.0397	0.0315	0.0712	1.0	PASS
IEEE 802.11ac VHT20	0.0397	0.0315	0.0712	1.0	PASS
IEEE 802.11n HT40	0.0397	0.0315	0.0712	1.0	PASS
IEEE 802.11ac VHT40	0.0397	0.0315	0.0712	1.0	PASS
IEEE 802.11ac VHT80	0.0397	0.0315	0.0712	1.0	PASS

Antenna A and Antenna B for 5GWLAN U-NII-3

Modulation Type	MPE _{Antenna 0} (mW/cm ²)	MPE _{Antenna 1} (mW/cm ²)	ΣMPE ratios	Limit	Results
IEEE 802.11a	0.0397	0.0315	0.0712	1.0	PASS
IEEE 802.11n HT20	0.0397	0.0315	0.0712	1.0	PASS
IEEE 802.11ac VHT20	0.0397	0.0397	0.0794	1.0	PASS
IEEE 802.11n HT40	0.0397	0.0397	0.0794	1.0	PASS
IEEE 802.11ac VHT40	0.0397	0.0315	0.0712	1.0	PASS
IEEE 802.11ac VHT80	0.0397	0.0397	0.0794	1.0	PASS

Maximum Simultaneous transmission MPE Ratios is $0.0794 \leq 1.0$.

8. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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