Maximum Permissible Exposure Evaluation

FCC ID: 2AW68-D222AH

1. Client Information

Applicant	:	Shenzhen SDMC Technology Co., Ltd.
Address	:	Room 1022, Floor 10, Building A, Customs Building, No. 2, Xin'an 3rd Road, Dalang Community, Xin'an Street, Bao'an District, Shenzhen, China
Manufacturer	:	Shenzhen SDMC Technology Co., Ltd.
Address	:	Room 1022, Floor 10, Building A, Customs Building, No. 2, Xin'an 3rd Road, Dalang Community, Xin'an Street, Bao'an District, Shenzhen, China

2. General Description of EUT

EUT Name	:	D222AH Tri-band Wi-Fi 6E Extender
Models No.	:	D222AH
Brand Name	:	Altice Labs
Model Different	:	N/A
Sample ID	:	202208-0271-2-2#
Operation Frequency	:	U-NII-1: 5180MHz~5240MHz; U-NII-2A: 5250MHz~5320MHz U-NII-2C: 5500MHz~5720MHz; U-NII-3: 5745MHz~5825MHz U-NII-5: 5955MHz~6415MHz; U-NII-6: 6435MHz~6515MHz U-NII-7: 6535MHz~6875MHz; U-NII-8: 6895MHz~7095MHz 2.4G Wi-Fi: 2412MHz~2462MHz
Power Rating	:	AC Adapter (Model: S024-1D120200VU): Input: 100-240V~, 50/60Hz, 0.6A Output: 12.0V⎓2.0A
Software Version	:	N/A
Hardware Version	:	N/A
Remark: (1) The adapter provided by the applicant, the verified for the RF conduction test provided by TOBY test lab. (2) Antenna information from antenna specification.		

1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Tel: +86 75526509301 Fax: +86 75526509195

Method of Measurement for FCC

1. Max. Antenna Gain:

Band	Antenna Type	Antenna Gain(dBi)			
		Ant. 1	Ant. 2		
2.4G WiFi	PCB	3.01	4.03		
5G U-NII-1		3.61	4.49		
5G U-NII-2A		3.61	4.49		
5G U-NII-2C		3.61	4.49		
5G U-NII-3		3.61	4.49		
Band	**Antenna Type**	**Antenna Gain(dBi)**			
		Ant. 1	**Ant. 2**	**Ant. 3**	**Ant. 4**
6G U-NII-5	PCB	4.54	6.16	5.73	4.62
6G U-NII-6		4.54	6.16	5.73	4.62
6G U-NII-7		4.54	6.16	5.73	4.62
6G U-NII-8		4.54	6.16	5.73	4.62

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

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:

∑ of MPE ratios ≤ 1.0

4. Test Result:

Worst MPE Result							
Test Mode	Antenna	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/cm^2) [S]
2.4G b Mode	Ant1	20.08	20±1	21	3.01	20	0.0501
	Ant2	20.05	20±1	21	4.03	20	0.0633
2.4G g Mode	Ant1	18.73	18±1	19	3.01	20	0.0316
	Ant2	18.63	18±1	19	4.03	20	0.0400
2.4G n20 Mode	Ant1	18.59	18±1	19	3.01	20	0.0316
	Ant2	18.50	18±1	19	4.03	20	0.0400
2.4G n40 Mode	Ant1	17.64	18±1	19	3.01	20	0.0316
	Ant2	17.39	18±1	19	4.03	20	0.0400
2.4G VHT20 Mode	Ant1	18.71	18±1	19	3.01	20	0.0316
	Ant2	18.49	18±1	19	4.03	20	0.0400
2.4G VHT40 Mode	Ant1	16.74	17±1	18	3.01	20	0.0251
	Ant2	16.29	17±1	18	4.03	20	0.0317
2.4G ax20 Mode	Ant1	17.34	17±1	18	3.01	20	0.0251
	Ant2	17.72	17±1	18	4.03	20	0.0317
2.4G ax40 Mode	Ant1	16.81	17±1	18	3.01	20	0.0251
	Ant2	17.32	17±1	18	4.03	20	0.0317
5G a Mode	Ant1	21.53	22±1	23	3.61	20	0.0911
	Ant2	22.24	22±1	23	4.49	20	0.1116
5G n20 Mode	Ant1	21.40	21±1	22	3.61	20	0.0724
	Ant2	21.12	21±1	22	4.49	20	0.0887
5G n40 Mode	Ant1	21.41	21±1	22	3.61	20	0.0724
	Ant2	21.01	21±1	22	4.49	20	0.0887
5G ac20 Mode	Ant1	21.23	21±1	22	3.61	20	0.0724
	Ant2	21.56	21±1	22	4.49	20	0.0887
5G ac40 Mode	Ant1	21.41	21±1	22	3.61	20	0.0724
	Ant2	20.91	21±1	22	4.49	20	0.0887
5G ac80 Mode	Ant1	21.35	21±1	22	3.61	20	0.0724
	Ant2	21.34	21±1	22	4.49	20	0.0887
5G ac160 Mode	Ant1	19.48	19±1	20	3.61	20	0.0457
	Ant2	18.25	19±1	20	4.49	20	0.0559
5G ax20 Mode	Ant1	21.16	21±1	22	3.61	20	0.0724
	Ant2	21.46	21±1	22	4.49	20	0.0887
5G ax40 Mode	Ant1	21.30	21±1	22	3.61	20	0.0724
	Ant2	20.80	21±1	22	4.49	20	0.0887
5G ax80 Mode	Ant1	20.15	21±1	22	3.61	20	0.0724
	Ant2	20.17	21±1	22	4.49	20	0.0887
5G ax160 Mode	Ant1	19.65	19±1	20	3.61	20	0.0457
	Ant2	18.58	19±1	20	4.49	20	0.0559

Worst MPE Result							
Test Mode	Max. EIRP (dBm)	Max. Ant. Gain (dBi)	Power (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]
6G a CDD Mode	18.91	6.16	12.75	12±1	13	20	0.0164
6G ax20 CDD Mode	18.98	6.16	12.82	12±1	13	20	0.0164
6G ax40 CDD Mode	21.77	6.16	15.61	15±1	16	20	0.0327
6G ax80 CDD Mode	24.64	6.16	18.48	18±1	19	20	0.0653
6G ax160 CDD Mode	27.45	6.16	21.29	21±1	22	20	0.1302
Note: For Power CDD mode use max. antenna Gain.							

5. Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm^2)
300-1,500	**F/1500**
1,500-100,000	**1.0**

For: 2.4G&5G&6G WiFi
MPE limit S: 1mW/cm^2
The worst MPE is calculated as ***0.1116mW / cm^2 < limit 1mW / cm^2***.

6. Summary simultaneous transmission information

Modulation Type	Work Frequency Band	Transmit Antenna		Antenna 1 Antenna 2 Synchronization Transmit
		Antenna 1	Antenna 2	
IEEE 802.11a	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	No
IEEE 802.11b	2.4GHz	Yes	Yes	No
IEEE 802.11g	2.4GHz	Yes	Yes	No
IEEE 802.11n HT20	2.4GHz	Yes	Yes	Yes
VHT20	2.4GHz	Yes	Yes	Yes
IEEE 802.11ax HE20	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT40	2.4GHz	Yes	Yes	Yes
VHT40	2.4GHz	Yes	Yes	
IEEE 802.11ax HE40	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11n HT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT160	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ax HE20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ax HE40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ax HE80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ax HE160	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes

Modulation Type	Work Frequency Band	Transmit Antenna				Antenna 1/2/3/4 Synchronization Transmit
		Ant.1	Ant.2	Ant.3	Ant.4	
IEEE 802.11a	U-NII-5/ U-NII-6 U-NII-7/ U-NII-8	Yes	Yes	Yes	Yes	No
IEEE 802.11ax HE20	U-NII-5/ U-NII-6 U-NII-7/ U-NII-8	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ax HE40	U-NII-5/ U-NII-6 U-NII-7/ U-NII-8	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ax HE80	U-NII-5/ U-NII-6 U-NII-7/ U-NII-8	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ax HE160	U-NII-5/ U-NII-6 U-NII-7/ U-NII-8	Yes	Yes	Yes	Yes	Yes

7. Summary simultaneous transmission results

Antenna 1 and Antenna 2 for 2.4GWLAN

Modulation Type	MPE Antenna 1 (mW/cm^2)	MPE Antenna 2 (mW/cm^2)	∑MPE ratios	Limit	Results
IEEE 802.11b	0.0501	0.0633	/	1.0	PASS
IEEE 802.11g	0.0316	0.0400	/	1.0	PASS
IEEE 802.11n HT20	0.0316	0.0400	0.0716	1.0	PASS
IEEE 802.11n HT40	0.0316	0.0400	0.0716	1.0	PASS
VHT20	0.0316	0.0400	0.0716	1.0	PASS
VHT40	0.0251	0.0317	0.0568	1.0	PASS
IEEE 802.11ax HE20	0.0251	0.0317	0.0568	1.0	PASS
IEEE 802.11ax HE40	0.0251	0.0317	0.0568	1.0	PASS

Antenna 1 and Antenna 2 for 5G RLAN

Modulation Type	MPE Antenna 1 (mW/cm^2)	MPE Antenna 2 (mW/cm^2)	∑MPE ratios	Limit	Results
IEEE 802.11a	0.0911	0.1116	/	1.0	PASS
IEEE 802.11n HT20	0.0724	0.0887	0.1611	1.0	PASS
IEEE 802.11n HT40	0.0724	0.0887	0.1611	1.0	PASS
IEEE 802.11ac VHT20	0.0724	0.0887	0.1611	1.0	PASS
IEEE 802.11ac VHT40	0.0724	0.0887	0.1611	1.0	PASS
IEEE 802.11ac VHT80	0.0724	0.0887	0.1611	1.0	PASS
IEEE 802.11ac VHT160	0.0457	0.0559	0.1016	1.0	PASS
IEEE 802.11ax HE20	0.0724	0.0887	0.1611	1.0	PASS
IEEE 802.11ax HE40	0.0724	0.0887	0.1611	1.0	PASS
IEEE 802.11ax HE80	0.0724	0.0887	0.1611	1.0	PASS
IEEE 802.11ax HE160	0.0457	0.0559	0.1016	1.0	PASS

Antenna 1, Antenna 2, Antenna 3, Antenna 4 for 6G RLAN

Modulation Type	∑MPE ratios	Limit	Results
IEEE 802.11a	/	1.0	PASS
IEEE 802.11ax HE20	0.0164	1.0	PASS
IEEE 802.11ax HE40	0.0327	1.0	PASS
IEEE 802.11ax HE80	0.0653	1.0	PASS
IEEE 802.11ax HE160	0.1302	1.0	PASS

WiFi support Synchronization transmit the

Maximum MPE ratio 2.4GWiFi	Maximum MPE ratio 5GWiFi	Maximum MPE ratio 6GWiFi	∑MPE ratios	Limit	Results
0.0716	0.1611	0.1302	0.3629	1	PASS

So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR 2.1091 (b). The RF Exposure Information page from the manual is included here for reference.

-----END OF REPORT-----