



Maximum Permissible Exposure Evaluation

FCC ID: 2AW68-GR140IG

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	:	FTTH GEN8 AX GPON GR140IG V2 B05-1
Models No.	:	GR140IG
Model Different	:	N/A
Brand Name	:	Altice Labs
Sample ID	:	HC-C-202304-0016-01-01#
Operation Frequency	:	U-NII-1: 5180MHz~5240MHz; U-NII-2A: 5250MHz~5320MHz U-NII-2C: 5500MHz~5720MHz; U-NII-3: 5745MHz~5825MHz 2.4G Wi-Fi: 2412MHz~2462MHz
Modulation Type:	:	802.11a: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11b: DSSS (DQPSK, DBPSK, CCK) 802.11g: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11n: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11ac: OFDM (QPSK, BPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (QPSK, BPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Power Rating	:	AC Adapter (Model: S024-1C120200VU): 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.		

Method of Measurement for FCC

1. Max. Antenna Gain:

Band	Antenna Type	Antenna Gain(dBi)			
		Ant. 1	Ant. 2	Ant. 3	Ant. 4
2.4G WiFi	PCB	3.92	/	/	3.42
5G U-NII-1		5.45	5.89	5.65	4.59
5G U-NII-2A					
5G U-NII-2C					
5G U-NII-3					
Note: The antenna gain corresponding to the test data is: 2.4G: Ant.1: 3.92dBi; Ant.2: 3.42dBi; 5G: Ant.1: 5.65dBi; Ant.2: 5.89dBi; Ant.3: 4.59dBi; Ant.4: 5.45dBi;					

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:

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



4. Test Result:

2.4G Wi-Fi MPE Result									
Test Mode	Ant.	Channel	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]	Limit (mW/ cm ²)
11B-SISO	Ant1	2412	22.19	22±1	23	3.92	25	0.0627	1
	Ant2	2412	22.66	23±1	24	3.42	25	0.0703	1
	Ant1	2437	22.21	22±1	23	3.92	25	0.0627	1
	Ant2	2437	22.96	23±1	24	3.42	25	0.0703	1
	Ant1	2462	22.76	23±1	24	3.92	25	0.0789	1
	Ant2	2462	22.91	23±1	24	3.42	25	0.0703	1
11G-SISO	Ant1	2412	22.01	22±1	23	3.92	25	0.0627	1
	Ant2	2412	22.09	23±1	24	3.42	25	0.0703	1
	Ant1	2437	22.20	22±1	23	3.92	25	0.0627	1
	Ant2	2437	22.80	23±1	24	3.42	25	0.0703	1
	Ant1	2462	22.31	23±1	24	3.92	25	0.0789	1
	Ant2	2462	22.46	23±1	24	3.42	25	0.0703	1
11B-CDD	Ant1	2412	20.65	21±1	22	3.92	25	0.0498	1
	Ant2	2412	20.81	21±1	22	3.42	25	0.0444	1
	Ant1	2437	20.74	21±1	22	3.92	25	0.0498	1
	Ant2	2437	20.82	21±1	22	3.42	25	0.0444	1
	Ant1	2462	20.96	21±1	22	3.92	25	0.0498	1
	Ant2	2462	20.91	21±1	22	3.42	25	0.0444	1
11G-CDD	Ant1	2412	20.46	21±1	22	3.92	25	0.0498	1
	Ant2	2412	20.54	21±1	22	3.42	25	0.0444	1
	Ant1	2437	21.02	21±1	22	3.92	25	0.0498	1
	Ant2	2437	21.25	21±1	22	3.42	25	0.0444	1
	Ant1	2462	20.70	21±1	22	3.92	25	0.0498	1
	Ant2	2462	20.81	21±1	22	3.42	25	0.0444	1
11N20	Ant1	2412	20.50	21±1	22	3.92	25	0.0498	1
	Ant2	2412	20.71	21±1	22	3.42	25	0.0444	1
	Ant1	2437	20.93	21±1	22	3.92	25	0.0498	1
	Ant2	2437	21.30	21±1	22	3.42	25	0.0444	1
	Ant1	2462	20.89	21±1	22	3.92	25	0.0498	1
	Ant2	2462	20.74	21±1	22	3.42	25	0.0444	1
11N40	Ant1	2422	18.53	19±1	20	3.92	25	0.0314	1
	Ant2	2422	18.54	19±1	20	3.42	25	0.0280	1
	Ant1	2437	19.00	19±1	20	3.92	25	0.0314	1
	Ant2	2437	19.17	19±1	20	3.42	25	0.0280	1
	Ant1	2452	18.91	19±1	20	3.92	25	0.0314	1
	Ant2	2452	18.80	19±1	20	3.42	25	0.0280	1
VHT20	Ant1	2412	20.88	21±1	22	3.92	25	0.0498	1
	Ant2	2412	21.17	21±1	22	3.42	25	0.0444	1
	Ant3	2437	21.65	21±1	22	3.92	25	0.0498	1
	Ant4	2437	21.91	21±1	22	3.42	25	0.0444	1
	Ant1	2462	21.29	21±1	22	3.92	25	0.0498	1
	Ant2	2462	21.25	21±1	22	3.42	25	0.0444	1
VHT40	Ant1	2422	18.76	19±1	20	3.92	25	0.0314	1
	Ant2	2422	18.88	19±1	20	3.42	25	0.0280	1
	Ant1	2437	19.55	19±1	20	3.92	25	0.0314	1
	Ant2	2437	19.51	19±1	20	3.42	25	0.0280	1
	Ant1	2452	18.96	19±1	20	3.92	25	0.0314	1
	Ant2	2452	19.04	19±1	20	3.42	25	0.0280	1
11AX20	Ant1	2412	20.90	21±1	22	3.92	25	0.0498	1
	Ant2	2412	21.21	21±1	22	3.42	25	0.0444	1
	Ant3	2437	21.66	21±1	22	3.92	25	0.0498	1
	Ant4	2437	21.83	21±1	22	3.42	25	0.0444	1
	Ant1	2462	21.28	21±1	22	3.92	25	0.0498	1
	Ant2	2462	21.39	21±1	22	3.42	25	0.0444	1
11AX40	Ant1	2422	19.10	19±1	20	3.92	25	0.0314	1
	Ant2	2422	19.06	19±1	20	3.42	25	0.0280	1
	Ant1	2437	19.87	19±1	20	3.92	25	0.0314	1
	Ant2	2437	19.96	19±1	20	3.42	25	0.0280	1
	Ant1	2452	19.35	19±1	20	3.92	25	0.0314	1
	Ant2	2452	19.15	19±1	20	3.42	25	0.0280	1



5G Wi-Fi Worst MPE Result								
Test Mode	Ant.	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]	Limit (mW/ cm ²)
5G a-SISO	Ant1	25.85	25±1	26	5.65	25	0.1862	1
	Ant2	25.92	25±1	26	5.89	25	0.1968	1
	Ant3	25.14	25±1	26	4.59	25	0.1459	1
	Ant4	25.60	25±1	26	5.45	25	0.1778	1
5G a-CDD	Ant1	23.06	24±1	25	5.65	25	0.1479	1
	Ant2	23.33	24±1	25	5.89	25	0.1563	1
	Ant3	23.44	24±1	25	4.59	25	0.1159	1
	Ant4	23.41	24±1	25	5.45	25	0.1412	1
5G n20-CDD	Ant1	23.55	23±1	24	5.65	25	0.1175	1
	Ant2	23.96	23±1	24	5.89	25	0.1241	1
	Ant3	22.60	23±1	24	4.59	25	0.0920	1
	Ant4	23.00	23±1	24	5.45	25	0.1122	1
5G n40-CDD	Ant1	23.25	23±1	24	5.65	25	0.1175	1
	Ant2	23.90	23±1	24	5.89	25	0.1241	1
	Ant3	22.89	23±1	24	4.59	25	0.0920	1
	Ant4	23.49	23±1	24	5.45	25	0.1122	1
5G ac20-CDD	Ant1	23.34	23±1	24	5.65	25	0.1175	1
	Ant2	23.83	23±1	24	5.89	25	0.1241	1
	Ant3	22.47	23±1	24	4.59	25	0.0920	1
	Ant4	22.84	23±1	24	5.45	25	0.1122	1
5G ac40-CDD	Ant1	23.39	23±1	24	5.65	25	0.1175	1
	Ant2	23.67	23±1	24	5.89	25	0.1241	1
	Ant3	22.48	23±1	24	4.59	25	0.0920	1
	Ant4	22.93	23±1	24	5.45	25	0.1122	1
5G ac80-CDD	Ant1	23.43	23±1	24	5.65	25	0.1175	1
	Ant2	23.80	23±1	24	5.89	25	0.1241	1
	Ant3	22.94	23±1	24	4.59	25	0.0920	1
	Ant4	23.26	23±1	24	5.45	25	0.1122	1
5G ac160 -CDD	Ant1	17.30	18±1	19	5.65	25	0.0371	1
	Ant2	17.66	18±1	19	5.89	25	0.0393	1
	Ant3	17.27	18±1	19	4.59	25	0.0291	1
	Ant4	17.27	18±1	19	5.45	25	0.0355	1
5G ax20-CDD	Ant1	23.95	24±1	25	5.65	25	0.1479	1
	Ant2	24.39	24±1	25	5.89	25	0.1563	1
	Ant3	23.15	24±1	25	4.59	25	0.1159	1
	Ant4	23.63	24±1	25	5.45	25	0.1412	1
5G ax40 -CDD	Ant1	23.88	24±1	25	5.65	25	0.1479	1
	Ant2	24.26	24±1	25	5.89	25	0.1563	1
	Ant3	23.17	24±1	25	4.59	25	0.1159	1
	Ant4	23.40	24±1	25	5.45	25	0.1412	1
5G ax80-CDD	Ant1	23.47	24±1	25	5.65	25	0.1479	1
	Ant2	23.87	24±1	25	5.89	25	0.1563	1
	Ant3	22.96	24±1	25	4.59	25	0.1159	1
	Ant4	23.26	24±1	25	5.45	25	0.1412	1
5G ax160-CDD	Ant1	17.44	18±1	19	5.65	25	0.0371	1
	Ant2	17.85	18±1	19	5.89	25	0.0393	1
	Ant3	17.36	18±1	19	4.59	25	0.0291	1
	Ant4	17.55	18±1	19	5.45	25	0.0355	1



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

MPE limit S: 1mW/cm²

The worst MPE is calculated as **0.1968mW / cm² < limit 1mW / cm²**.

6. Summary simultaneous transmission information

Modulation Type	Work Frequency Band	Transmit Antenna				Antenna 1&2 Synchronization Transmit
		Ant. 1		Ant.2		
IEEE 802.11b	2.4GHz	Yes	Yes	Yes	Yes	Yes
IEEE 802.11g	2.4GHz	Yes	Yes	Yes	Yes	Yes
IEEE 802.11n HT20	2.4GHz	Yes	Yes	Yes	Yes	Yes
IEEE 802.11n HT40	2.4GHz	Yes	Yes	Yes	Yes	Yes
VHT20	2.4GHz	Yes	Yes	Yes	Yes	Yes
VHT40	2.4GHz	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ax HE20	2.4GHz	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ax HE40	2.4GHz	Yes	Yes	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-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes
IEEE 802.11n HT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes
IEEE 802.11n HT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ac VHT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ac VHT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ac VHT80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ac VHT160	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ax HE20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ax HE40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ax HE80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes
IEEE 802.11ax HE160	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes	Yes



7. Summary simultaneous transmission results

Band	MPE Antenna 1 (mW/cm ²)	MPE Antenna 2 (mW/cm ²)	MPE Antenna 3 (mW/cm ²)	MPE Antenna 4 (mW/cm ²)	ΣMPE ratios	Limit	Results
2.4G	0.0627	0.0703	/	/	0.1330	1.0	PASS
5G	0.1479	0.1563	0.1159	0.1412	0.5613	1.0	PASS

WiFi support Synchronization transmitthe

Maximum MPE ratio 2.4GWiFi	Maximum MPE ratio 5GWiFi	ΣMPE ratios	Limit	Results
0.1330	0.5613	0.6943	1	PASS

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

The EUT will only be used with a separation of 25cm 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-----

