Maximum Permissible Exposure Evaluation

FCC ID: 2AW68-NP2035G

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, 518000
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, 518000

2. General Description of EUT

EUT Name	:	AC2000 Dual Band WiFi GPON Terminal, Dual Band WiFi GPON Terminal
Models No.	:	NP2035G, NP2081GB
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is model name and product name.
Brand Name	:	SDMC
Sample ID	:	HC-C-202305-0139-01-02
Operation Frequency	:	U-NII-1: 5180MHz~5240MHz; U-NII-2A: 5260MHz~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)
Power Rating	:	AC Adapter (Model:SA182V-120150U)(SUNUN) Input: 100-240V~50/60Hz 0.4A Output: 12.0V⎓1.5A
Software Version	:	N/A
Hardware Version	:	V1.0

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.

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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	/	/	4.45	4.02
5G U-NII-1		5.06	4.71	5.02	5.41
5G U-NII-2A		5.06	4.72	5.39	5.03
5G U-NII-2C		5.36	5.06	5.34	5.10
5G U-NII-3		5.23	4.97	5.10	4.94

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:

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	21.93	22±1	23	4.45	20	0.1106	1
	Ant2	2412	22.27	22±1	23	4.02	20	0.1002	1
	Ant1	2437	21.93	22±1	23	4.45	20	0.1106	1
	Ant2	2437	22.04	22±1	23	4.02	20	0.1002	1
	Ant1	2462	21.86	22±1	23	4.45	20	0.1106	1
	Ant2	2462	21.62	22±1	23	4.02	20	0.1002	1
11G-SISO	Ant1	2412	18.34	18±1	19	4.45	20	0.0440	1
	Ant2	2412	18.67	18±1	19	4.02	20	0.0399	1
	Ant1	2437	18.23	18±1	19	4.45	20	0.0440	1
	Ant2	2437	18.66	18±1	19	4.02	20	0.0399	1
	Ant1	2462	18.22	18±1	19	4.45	20	0.0440	1
	Ant2	2462	17.94	18±1	19	4.02	20	0.0399	1
11B-CDD	Ant1	2412	21.29	21±1	22	4.45	20	0.0879	1
	Ant2	2412	21.53	21±1	22	4.02	20	0.0796	1
	Ant1	2437	21.15	21±1	22	4.45	20	0.0879	1
	Ant2	2437	21.31	21±1	22	4.02	20	0.0796	1
	Ant1	2462	21.12	21±1	22	4.45	20	0.0879	1
	Ant2	2462	20.86	21±1	22	4.02	20	0.0796	1
11G-CDD	Ant1	2412	16.78	16±1	17	4.45	20	0.0278	1
	Ant2	2412	16.85	16±1	17	4.02	20	0.0252	1
	Ant1	2437	16.83	16±1	17	4.45	20	0.0278	1
	Ant2	2437	16.91	16±1	17	4.02	20	0.0252	1
	Ant1	2462	16.72	16±1	17	4.45	20	0.0278	1
	Ant2	2462	16.31	16±1	17	4.02	20	0.0252	1
11N20-CDD	Ant1	2412	16.57	16±1	17	4.45	20	0.0278	1
	Ant2	2412	16.78	16±1	17	4.02	20	0.0252	1
	Ant1	2437	16.68	16±1	17	4.45	20	0.0278	1
	Ant2	2437	16.87	16±1	17	4.02	20	0.0252	1
	Ant1	2462	16.32	16±1	17	4.45	20	0.0278	1
	Ant2	2462	16.35	16±1	17	4.02	20	0.0252	1
11N40-CDD	Ant1	2422	14.67	14±1	15	4.45	20	0.0175	1
	Ant2	2422	14.56	14±1	15	4.02	20	0.0159	1
	Ant1	2437	14.29	14±1	15	4.45	20	0.0175	1
	Ant2	2437	14.95	14±1	15	4.02	20	0.0159	1
	Ant1	2452	14.97	14±1	15	4.45	20	0.0175	1
	Ant2	2452	14.99	14±1	15	4.02	20	0.0159	1

5G Wi-Fi 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]	Limit (mW/ cm^2)
5G a	Ant1	16.29	16±1	17	5.23	20	0.0332	1
	Ant2	18.14	18±1	19	4.97	20	0.0496	1
	Ant3	17.29	18±1	19	5.10	20	0.0511	1
	Ant4	18.43	18±1	19	4.94	20	0.0493	1
5G n20	Ant1	15.88	16±1	17	5.23	20	0.0332	1
	Ant2	17.57	18±1	19	4.97	20	0.0496	1
	Ant3	17.05	18±1	19	5.10	20	0.0511	1
	Ant4	18.37	18±1	19	4.94	20	0.0493	1
5G n40	Ant1	14.98	15±1	16	5.23	20	0.0264	1
	Ant2	17.36	18±1	19	4.97	20	0.0496	1
	Ant3	16.35	17±1	18	5.10	20	0.0406	1
	Ant4	18.27	18±1	19	4.94	20	0.0493	1
5G ac20	Ant1	15.79	15±1	16	5.23	20	0.0264	1
	Ant2	17.04	17±1	18	4.97	20	0.0394	1
	Ant3	16.47	17±1	18	5.10	20	0.0406	1
	Ant4	17.79	17±1	18	4.94	20	0.0392	1
5G ac40	Ant1	15.14	15±1	16	5.23	20	0.0264	1
	Ant2	17.28	17±1	18	4.97	20	0.0394	1
	Ant3	16.39	17±1	18	5.10	20	0.0406	1
	Ant4	18.10	18±1	19	4.94	20	0.0493	1
5G ac80	Ant1	15.67	15±1	16	5.23	20	0.0264	1
	Ant2	17.31	17±1	18	4.97	20	0.0394	1
	Ant3	16.48	17±1	18	5.10	20	0.0406	1
	Ant4	18.15	18±1	19	4.94	20	0.0493	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: $1mW/cm^2$
The worst MPE is calculated as ***0.3418mW / cm² < limit 1mW / cm²***.

6. Summary simultaneous transmission information

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	No
IEEE 802.11b	2.4GHz	No	No	Yes	Yes	Yes
IEEE 802.11g	2.4GHz	No	No	Yes	Yes	Yes
IEEE 802.11n HT20	2.4GHz	No	No	Yes	Yes	Yes
IEEE 802.11n HT40	2.4GHz	No	No	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

7. Summary simultaneous transmission results

Antenna 1&2&3&4 for 2.4GWLAN

Modulation Type	MPE Antenna 1 (mW/cm^2)	MPE Antenna 2 (mW/cm^2)	∑MPE ratios	Limit	Results
IEEE 802.11b-SISO	0.1106	0.1002	/	1.0	PASS
IEEE 802.11g-SISO	0.0440	0.0399	/	1.0	PASS
IEEE 802.11b-CDD	0.0879	0.0796	0.1675	1.0	PASS
IEEE 802.11g-CDD	0.0278	0.0252	0.0530	1.0	PASS
IEEE 802.11n HT20-CDD	0.0278	0.0252	0.0530	1.0	PASS
IEEE 802.11n HT40-CDD	0.0175	0.0159	0.0334	1.0	PASS

Antenna 1&2&3&4 for 5G RLAN

Modulation Type	MPE Antenna 1 (mW/cm^2)	MPE Antenna 2 (mW/cm^2)	MPE Antenna 3 (mW/cm^2)	MPE Antenna 4 (mW/cm^2)	∑MPE ratios	Limit	Results
IEEE 802.11a	0.0332	0.0496	0.0511	0.0493	/	1.0	PASS
IEEE 802.11n HT20	0.0332	0.0496	0.0511	0.0493	0.1832	1.0	PASS
IEEE 802.11n HT40	0.0264	0.0496	0.0406	0.0493	0.1659	1.0	PASS
IEEE 802.11ac VHT20	0.0264	0.0394	0.0406	0.0392	0.1456	1.0	PASS
IEEE 802.11ac VHT40	0.0264	0.0394	0.0406	0.0493	0.1557	1.0	PASS
IEEE 802.11ac VHT80	0.0264	0.0394	0.0406	0.0493	0.1557	1.0	PASS

WiFi support Synchronization transmit the

Maximum MPE ratio 2.4GWiFi	Maximum MPE ratio 5GWiFi	∑MPE ratios	Limit	Results
0.1675	0.1832	0.3507	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-----