



Maximum Permissible Exposure Evaluation

FCC ID: 2AW68-NP3081GC

1. Client Information

Applicant	:	Shenzhen SDMC Technology Co., Ltd.
Address	:	Floor 1, Building 5, Hengtongfa Industrial Zone, Tangtou Industrial Park, Tangtou Community, Shiyan Street, Baoan District, Shenzhen, China
Manufacturer	:	Shenzhen SDMC Technology Co., Ltd.
Address	:	Floor 1, Building 5, Hengtongfa Industrial Zone, Tangtou Industrial Park, Tangtou Community, Shiyan Street, Baoan District, Shenzhen, China

2. General Description of EUT

EUT Name	:	AX3000 Dual Band Wi-Fi6 GPON Terminal
Models No.	:	NP3081GB, NP3081GC
Model Difference	:	NP3081GB and NP3081GC models are identical in the same PCB, layout and electrical circuit, The only difference is adapter and 5.8G built-in antenna. NP3081GB without 2.5G port.
Brand Name	:	N/A
Sample ID	:	HC-C-202407-0114-03-01
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 (NP3081GC)	:	AC Adapter (Model: AD-0181200150NOM): Input: 100-240V~, 50/60Hz, 0.6A Output: 12.0V=1.5A
Power Rating (NP3081GB)	:	AC Adapter (Model: F24L15-120300SPAU): Input: 100-240V~, 50/60Hz, 0.6A Output: 12.0V=2.0A 24.0W
Software Version	:	N/A
Hardware Version	:	N/A

Remark:

- (1) The antenna gain and adapter provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.
- (2) The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

TB-RF-074-1.0

Method of Measurement for FCC

1. Max. Antenna Gain:

Band	Antenna Gain(dBi)		
	Ant. 1(Dipole)	Ant. 2(Dipole)	Ant. 3(PCB)
2.4G Wi-Fi	5.08	5.05	/
5G U-NII-1	5.02	5.04	4.66
5G U-NII-2A	5.02	5.04	4.66
5G U-NII-2C	5.02	5.04	4.66
5G U-NII-3	5.02	5.04	4.66

Note: the report is Change II report, the Original antenna gain of Ant.3 is 5.07 dBi. So the MPE result will be better.

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	11.12	11±1	12	5.08	20	0.0102	1
	Ant2	2412	11.05	11±1	12	5.05	20	0.0101	1
	Ant1	2437	11.06	11±1	12	5.08	20	0.0102	1
	Ant2	2437	10.89	11±1	12	5.05	20	0.0101	1
	Ant1	2462	10.77	11±1	12	5.08	20	0.0102	1
	Ant2	2462	11.22	11±1	12	5.05	20	0.0101	1
11B-CDD	Ant1	2412	11.10	11±1	12	5.08	20	0.0102	1
	Ant2	2412	12.04	12±1	13	5.05	20	0.0127	1
	Ant1	2437	11.14	11±1	12	5.08	20	0.0102	1
	Ant2	2437	11.90	11±1	12	5.05	20	0.0101	1
	Ant1	2462	10.90	11±1	12	5.08	20	0.0102	1
	Ant2	2462	11.20	11±1	12	5.05	20	0.0101	1
11G-SISO	Ant1	2412	16.32	16±1	17	5.08	20	0.0321	1
	Ant2	2412	16.74	16±1	17	5.05	20	0.0319	1
	Ant1	2437	16.35	16±1	17	5.08	20	0.0321	1
	Ant2	2437	16.56	16±1	17	5.05	20	0.0319	1
	Ant1	2462	16.22	16±1	17	5.08	20	0.0321	1
	Ant2	2462	16.45	16±1	17	5.05	20	0.0319	1
11G-CDD	Ant1	2412	13.36	14±1	15	5.08	20	0.0203	1
	Ant2	2412	13.70	14±1	15	5.05	20	0.0201	1
	Ant1	2437	13.48	14±1	15	5.08	20	0.0203	1
	Ant2	2437	13.71	14±1	15	5.05	20	0.0201	1
	Ant1	2462	13.33	14±1	15	5.08	20	0.0203	1
	Ant2	2462	13.52	14±1	15	5.05	20	0.0201	1
11N20-CDD	Ant1	2412	15.75	16±1	17	5.08	20	0.0321	1
	Ant2	2412	16.19	16±1	17	5.05	20	0.0319	1
	Ant1	2437	15.80	16±1	17	5.08	20	0.0321	1
	Ant2	2437	16.03	16±1	17	5.05	20	0.0319	1
	Ant1	2462	15.68	16±1	17	5.08	20	0.0321	1
	Ant2	2462	15.99	16±1	17	5.05	20	0.0319	1
11N40-CDD	Ant1	2422	14.75	14±1	15	5.08	20	0.0203	1
	Ant2	2422	15.00	14±1	15	5.05	20	0.0201	1
	Ant1	2437	14.73	14±1	15	5.08	20	0.0203	1
	Ant2	2437	14.99	14±1	15	5.05	20	0.0201	1
	Ant1	2452	14.72	14±1	15	5.08	20	0.0203	1
	Ant2	2452	14.93	14±1	15	5.05	20	0.0201	1
11AX20-CDD	Ant1	2412	16.00	16±1	17	5.08	20	0.0321	1
	Ant2	2412	16.53	16±1	17	5.05	20	0.0319	1
	Ant1	2437	16.06	16±1	17	5.08	20	0.0321	1
	Ant2	2437	16.29	16±1	17	5.05	20	0.0319	1
	Ant1	2462	15.84	16±1	17	5.08	20	0.0321	1
	Ant2	2462	16.05	16±1	17	5.05	20	0.0319	1
11AX40-CDD	Ant1	2422	14.95	15±1	16	5.08	20	0.0255	1
	Ant2	2422	15.30	15±1	16	5.05	20	0.0253	1
	Ant1	2437	14.93	15±1	16	5.08	20	0.0255	1
	Ant2	2437	15.24	15±1	16	5.05	20	0.0253	1
	Ant1	2452	14.97	15±1	16	5.08	20	0.0255	1
	Ant2	2452	15.19	15±1	16	5.05	20	0.0253	1



5G Wi-Fi Worst MPE Result								
Test Mode	Ant.	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm)[P]	Max. ANT Gain (dBi)[G]	Distance (cm) [R]	Power Density (mW/ cm ²) [S]	Limit (mW/ cm ²)
5G a-SISO	Ant1	18.23	18±1	19	5.02	20	0.0502	1
	Ant2	17.79	18±1	19	5.04	20	0.0504	1
	Ant3	18.78	18±1	19	5.07	20	0.0508	1
5G a-CDD	Ant1	16.03	16±1	17	5.02	20	0.0317	1
	Ant2	15.86	16±1	17	5.04	20	0.0318	1
	Ant3	16.51	16±1	17	5.07	20	0.0320	1
5G n20-CDD	Ant1	16.50	17±1	18	5.02	20	0.0399	1
	Ant2	16.33	17±1	18	5.04	20	0.0401	1
	Ant3	17.04	17±1	18	5.07	20	0.0403	1
5G n40-CDD	Ant1	16.61	17±1	18	5.02	20	0.0399	1
	Ant2	16.27	17±1	18	5.04	20	0.0401	1
	Ant3	17.01	17±1	18	5.07	20	0.0403	1
5G ac20-CDD	Ant1	16.45	17±1	18	5.02	20	0.0399	1
	Ant2	16.33	17±1	18	5.04	20	0.0401	1
	Ant3	17.06	17±1	18	5.07	20	0.0403	1
5G ac40-CDD	Ant1	16.57	17±1	18	5.02	20	0.0399	1
	Ant2	16.44	17±1	18	5.04	20	0.0401	1
	Ant3	16.84	17±1	18	5.07	20	0.0403	1
5G ac80-CDD	Ant1	17.42	17±1	18	5.02	20	0.0399	1
	Ant2	16.87	17±1	18	5.04	20	0.0401	1
	Ant3	16.66	17±1	18	5.07	20	0.0403	1
5G ac160-CDD	Ant1	13.90	13±1	14	5.02	20	0.0159	1
	Ant2	13.86	13±1	14	5.04	20	0.0159	1
	Ant3	14.49	14±1	15	5.07	20	0.0202	1
5G ax20-CDD	Ant1	16.59	17±1	18	5.02	20	0.0399	1
	Ant2	16.75	17±1	18	5.04	20	0.0401	1
	Ant3	17.40	17±1	18	5.07	20	0.0403	1
5G ax40-CDD	Ant1	16.79	17±1	18	5.02	20	0.0399	1
	Ant2	16.63	17±1	18	5.04	20	0.0401	1
	Ant3	17.20	17±1	18	5.07	20	0.0403	1
5G ax80-CDD	Ant1	17.80	17±1	18	5.02	20	0.0399	1
	Ant2	17.10	17±1	18	5.04	20	0.0401	1
	Ant3	17.05	17±1	18	5.07	20	0.0403	1
5G ax160-CDD	Ant1	14.02	14±1	15	5.02	20	0.0200	1
	Ant2	13.96	13±1	14	5.04	20	0.0159	1
	Ant3	14.77	14±1	15	5.07	20	0.0202	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 $0.0508mW / cm^2 < limit 1mW / cm^2$.

6. Summary simultaneous transmission information

Modulation Type	Work Frequency Band	Transmit Antenna			Antenna 1&2 Synchronization Transmit
		Ant. 1	Ant.2	Ant.3	
IEEE 802.11b	2.4GHz	Yes	Yes	/	Yes
IEEE 802.11g	2.4GHz	Yes	Yes	/	Yes
IEEE 802.11n HT20	2.4GHz	Yes	Yes	/	Yes
IEEE 802.11n HT40	2.4GHz	Yes	Yes	/	Yes
IEEE 802.11ax HE20	2.4GHz	Yes	Yes	/	Yes
IEEE 802.11ax HE40	2.4GHz	Yes	Yes	/	Yes
IEEE 802.11a	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes
IEEE 802.11n HT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes
IEEE 802.11n HT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes
IEEE 802.11ac VHT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes
IEEE 802.11ac VHT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes
IEEE 802.11ac VHT80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes
IEEE 802.11ax HE20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes
IEEE 802.11ax HE40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes
IEEE 802.11ax HE80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes
IEEE 802.11ac VHT160	U-NII-2A/U-NII-2C	Yes	Yes	Yes	Yes
IEEE 802.11ax HE160	U-NII-2A/U-NII-2C	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)	ΣMPE ratios	Limit	Results
2.4G	0.0321	0.0319	/	0.0640	1.0	PASS
5G	0.0399	0.0401	0.0403	0.1203	1.0	PASS

WiFi support Synchronization transmittre

Maximum MPE ratio 2.4GWiFi	Maximum MPE ratio 5GWiFi	ΣMPE ratios	Limit	Results
0.0640	0.1203	0.1843	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 THE REPORT-----

