



Maximum Permissible Exposure Evaluation

FCC ID: 2A4DV-D1221

1. Client Information

Applicant	:	HUNAN ETOE Technology Co., Ltd
Address	:	Room 603, Building 3, Zone A, Jindaoyuan, NO.169, Huizhi Zhong Road, High-tech District, Changsha, China
Manufacturer	:	HUNAN ETOE Technology Co., Ltd
Address	:	Room 603, Building 3, Zone A, Jindaoyuan, NO.169, Huizhi Zhong Road, High-tech District, Changsha, China

2. General Description of EUT

EUT Name	:	ETOE TV
Model(s) No.	:	D1221
Model Difference	:	----
Product Description	:	Operation Frequency: Bluetooth V5.0: 2402MHz~2480MHz 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz U-NII-1: 5180MHz~5240MHz U-NII-2A: 5260MHz~5320MHz U-NII-2C: 5500MHz~5700MHz U-NII-3: 5745MHz~5825MHz
Power Supply	:	For Adapter (Model: TPA-46B050100UU) Input: 100-240V~50/60Hz 0.2A Output: 5.0V=1000mA
Software Version	:	----
Hardware Version	:	DV6071Z-LD4-V2
Remark: The antenna gain provided by the applicant, the adapter and verified for the RF conduction test and adapter provided by TOBY test lab.		

Note: More test information about the EUT please refer the RF Test Report.

MPE Calculations for WIFI

1. Antenna Gain:

BT Ceramic Antenna: 2dBi.
2.4G WIFI PCB Antenna 1: 2.14dBi
2.4G WIFI PCB Antenna 2: 1.87dBi
5G WIFI PCB Antenna 1: 2.72dBi
5G WIFI PCB Antenna 2: 2.42dBi

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. Test Result:

Worst Maximum MPE Result								
BT								
Mode	N _{TX}	Freq. (MHz)	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]
GFSK	1	2402	4.73	5±1	6	2	20	0.0013
		2441	5.66	6±1	7	2	20	0.0016
		2480	5.13	5±1	6	2	20	0.0013
π/4-DQPSK	1	2402	6.07	6±1	7	2	20	0.0016
		2441	6.74	7±1	8	2	20	0.0020
		2480	6.74	7±1	8	2	20	0.0020
8-DPSK	1	2402	6.16	6±1	7	2	20	0.0016
		2441	6.92	7±1	8	2	20	0.0020
		2480	6.37	6±1	7	2	20	0.0016
BLE								
1Mbps	1	2402	5.11	5±1	6	2	20	0.0013
	1	2440	5.86	6±1	7	2	20	0.0016
	1	2480	5.89	6±1	7	2	20	0.0016
2Mbps	1	2402	5.08	5±1	6	2	20	0.0013
	1	2440	6.15	6±1	7	2	20	0.0016
	1	2480	5.8	6±1	7	2	20	0.0016
Note: (1) N _{TX} = Number of Transmit Antennas (2) RF Output power specifies that Maximum Conducted Peak Output Power.								



2.4G WiFi MPE Result								
Test Mode	Antenna	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/ cm2) [S]
11B	Ant1	2412	15.70	16±1	17	2.14	20	0.0163
	Ant2	2412	15.22	15±1	16	1.87	20	0.0122
	Ant1	2437	15.48	15±1	16	2.14	20	0.0130
	Ant2	2437	15.56	16±1	17	1.87	20	0.0153
	Ant1	2462	15.62	16±1	17	2.14	20	0.0163
	Ant2	2462	15.43	15±1	16	1.87	20	0.0122
11G	Ant1	2412	16.05	16±1	17	2.14	20	0.0163
	Ant2	2412	16.19	16±1	17	1.87	20	0.0153
	Ant1	2437	15.73	16±1	17	2.14	20	0.0163
	Ant2	2437	16.08	16±1	17	1.87	20	0.0153
	Ant1	2462	15.71	16±1	17	2.14	20	0.0163
	Ant2	2462	15.73	16±1	17	1.87	20	0.0153
11N20MIMO	Ant1	2412	13.85	14±1	15	2.14	20	0.0103
	Ant2	2412	13.43	13±1	14	1.87	20	0.0077
	total	2412	16.66	/	/	/	/	/
	Ant1	2437	13.48	13±1	14	2.14	20	0.0082
	Ant2	2437	13.04	13±1	14	1.87	20	0.0077
	total	2437	16.28	/	/	/	/	/
	Ant1	2462	13.45	13±1	14	2.14	20	0.0082
	Ant2	2462	12.93	13±1	14	1.87	20	0.0077
11N40MIMO	total	2462	16.21	/	/	/	/	/
	Ant1	2422	13.96	14±1	15	2.14	20	0.0103
	Ant2	2422	13.56	14±1	15	1.87	20	0.0097
	total	2422	16.77	/	/	/	/	/
	Ant1	2437	13.63	14±1	15	2.14	20	0.0103
	Ant2	2437	12.99	13±1	14	1.87	20	0.0077
	total	2437	16.33	/	/	/	/	/
	Ant1	2452	13.63	14±1	15	2.14	20	0.0103
	Ant2	2452	14.14	14±1	15	1.87	20	0.0097
	total	2452	16.90	/	/	/	/	/

Note: RF Output power specifies that Maximum Conducted Peak Output Power.



5G Wi-Fi(U-NII-1) MPE Result

Test Mode	Antenna	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]
11A	Ant1	5180	15.41	15±1	16	2.72	20	0.0148
	Ant2	5180	15.83	16±1	17	2.42	20	0.0174
	Ant1	5200	15.22	15±1	16	2.72	20	0.0148
	Ant2	5200	16.16	16±1	17	2.42	20	0.0174
	Ant1	5240	15.42	15±1	16	2.72	20	0.0148
	Ant2	5240	16.24	16±1	17	2.42	20	0.0174
11N20	Ant1	5180	12.57	13±1	14	2.72	20	0.0093
	Ant2	5180	13.50	14±1	15	2.42	20	0.0110
	total	5180	16.07	/	/	/	/	/
	Ant1	5200	12.56	13±1	14	2.72	20	0.0093
	Ant2	5200	13.86	14±1	15	2.42	20	0.0110
	total	5200	16.27	/	/	/	/	/
	Ant1	5240	12.76	13±1	14	2.72	20	0.0093
	Ant2	5240	14.38	14±1	15	2.42	20	0.0110
	total	5240	16.66	/	/	/	/	/
11N40	Ant1	5190	13.71	14±1	15	2.72	20	0.0118
	Ant2	5190	14.14	14±1	15	2.42	20	0.0110
	total	5190	16.94	/	/	/	/	/
	Ant1	5230	13.27	13±1	14	2.72	20	0.0093
	Ant2	5230	14.68	15±1	16	2.42	20	0.0138
	total	5230	17.04	/	/	/	/	/
11AC20	Ant1	5180	12.73	13±1	14	2.72	20	0.0093
	Ant2	5180	13.58	14±1	15	2.42	20	0.0110
	total	5180	16.19	/	/	/	/	/
	Ant1	5200	13.28	13±1	14	2.72	20	0.0093
	Ant2	5200	13.49	13±1	14	2.42	20	0.0087
	total	5200	16.40	/	/	/	/	/
	Ant1	5240	13.30	13±1	14	2.72	20	0.0093
	Ant2	5240	14.10	14±1	15	2.42	20	0.0110
	total	5240	16.73	/	/	/	/	/
11AC40	Ant1	5190	13.50	14±1	15	2.72	20	0.0118
	Ant2	5190	13.67	14±1	15	2.42	20	0.0110
	total	5190	16.60	/	/	/	/	/
	Ant1	5230	13.84	14±1	15	2.72	20	0.0118
	Ant2	5230	14.57	15±1	16	2.42	20	0.0138
	total	5230	17.23	/	/	/	/	/
11AC80	Ant1	5210	13.70	14±1	15	2.72	20	0.0118
	Ant2	5210	14.71	15±1	16	2.42	20	0.0138
	total	5210	17.24	/	/	/	/	/

Note: RF Output power specifies that Maximum Conducted Peak Output Power.



5G Wi-Fi(U-NII-2A) MPE Result								
Test Mode	Antenna	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]
11A	Ant1	5260	15.33	15±1	16	2.72	20	0.0148
	Ant2	5260	16.27	16±1	17	2.42	20	0.0174
	Ant1	5300	15.45	15±1	16	2.72	20	0.0148
	Ant2	5300	16.18	16±1	17	2.42	20	0.0174
	Ant1	5320	15.98	16±1	17	2.72	20	0.0187
	Ant2	5320	16.09	16±1	17	2.42	20	0.0174
11N20	Ant1	5260	12.70	13±1	14	2.72	20	0.0093
	Ant2	5260	13.66	14±1	15	2.42	20	0.0110
	total	5260	16.22	/	/	/	/	/
	Ant1	5300	13.10	13±1	14	2.72	20	0.0093
	Ant2	5300	13.68	14±1	15	2.42	20	0.0110
	total	5300	16.41	/	/	/	/	/
	Ant1	5320	13.67	14±1	15	2.72	20	0.0118
	Ant2	5320	13.49	13±1	14	2.42	20	0.0087
11N40	total	5320	16.59	/	/	/	/	/
	Ant1	5270	13.48	13±1	14	2.72	20	0.0093
	Ant2	5270	14.16	14±1	15	2.42	20	0.0110
	total	5270	16.84	/	/	/	/	/
	Ant1	5310	13.82	14±1	15	2.72	20	0.0118
	Ant2	5310	14.14	14±1	15	2.42	20	0.0110
11AC20	total	5310	16.99	/	/	/	/	/
	Ant1	5260	13.38	13±1	14	2.72	20	0.0093
	Ant2	5260	14.13	14±1	15	2.42	20	0.0110
	total	5260	16.78	/	/	/	/	/
	Ant1	5300	13.62	14±1	15	2.72	20	0.0118
	Ant2	5300	14.11	14±1	15	2.42	20	0.0110
	total	5300	16.88	/	/	/	/	/
	Ant1	5320	13.79	14±1	15	2.72	20	0.0118
11AC40	Ant2	5320	13.71	14±1	15	2.42	20	0.0110
	total	5320	16.76	/	/	/	/	/
	Ant1	5270	13.75	14±1	15	2.72	20	0.0118
	Ant2	5270	14.41	14±1	15	2.42	20	0.0110
	total	5270	17.10	/	/	/	/	/
	Ant1	5310	14.34	14±1	15	2.72	20	0.0118
11AC80	Ant2	5310	14.29	14±1	15	2.42	20	0.0110
	total	5310	17.33	/	/	/	/	/
	Ant1	5290	13.75	14±1	15	2.72	20	0.0118
11AC80	Ant2	5290	13.93	14±1	15	2.42	20	0.0110
	total	5290	16.85	/	/	/	/	/
	Ant1	5290	13.75	14±1	15	2.72	20	0.0118

Note: RF Output power specifies that Maximum Conducted Peak Output Power.



5G Wi-Fi(U-NII-2C) MPE Result

Mode	Antenna	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]
11A	Ant1	5500	16.67	17±1	18	2.72	20	0.0235
	Ant2	5500	16.53	17±1	18	2.42	20	0.0219
	Ant1	5580	16.01	16±1	17	2.72	20	0.0187
	Ant2	5580	15.30	15±1	16	2.42	20	0.0138
	Ant1	5700	16.18	16±1	17	2.72	20	0.0187
	Ant2	5700	15.10	15±1	16	2.42	20	0.0138
11N20	Ant1	5500	14.31	14±1	15	2.72	20	0.0118
	Ant2	5500	14.07	14±1	15	2.42	20	0.0110
	total	5500	17.20	/	/	/	/	/
	Ant1	5580	13.26	13±1	14	2.72	20	0.0093
	Ant2	5580	13.01	13±1	14	2.42	20	0.0087
	total	5580	16.15	/	/	/	/	/
	Ant1	5700	13.19	13±1	14	2.72	20	0.0093
	Ant2	5700	12.77	13±1	14	2.42	20	0.0087
	total	5700	16.00	/	/	/	/	/
11N40	Ant1	5510	15.61	16±1	17	2.72	20	0.0187
	Ant2	5510	14.67	15±1	16	2.42	20	0.0138
	total	5510	18.18	/	/	/	/	/
	Ant1	5550	14.76	15±1	16	2.72	20	0.0148
	Ant2	5550	14.27	14±1	15	2.42	20	0.0110
	total	5550	17.53	/	/	/	/	/
	Ant1	5670	13.83	14±1	15	2.72	20	0.0118
	Ant2	5670	12.66	13±1	14	2.42	20	0.0087
	total	5670	16.29	/	/	/	/	/
11AC20	Ant1	5500	14.73	15±1	16	2.72	20	0.0148
	Ant2	5500	14.51	15±1	16	2.42	20	0.0138
	total	5500	17.63	/	/	/	/	/
	Ant1	5580	13.76	14±1	15	2.72	20	0.0118
	Ant2	5580	12.92	13±1	14	2.42	20	0.0087
	total	5580	16.37	/	/	/	/	/
	Ant1	5700	13.47	13±1	14	2.72	20	0.0093
	Ant2	5700	12.87	13±1	14	2.42	20	0.0087
	total	5700	16.19	/	/	/	/	/
11AC40	Ant1	5510	13.88	14±1	15	2.72	20	0.0118
	Ant2	5510	14.62	15±1	16	2.42	20	0.0138
	total	5510	17.28	/	/	/	/	/
	Ant1	5550	13.52	14±1	15	2.72	20	0.0118
	Ant2	5550	13.82	14±1	15	2.42	20	0.0110
	total	5550	16.68	/	/	/	/	/
	Ant1	5670	13.33	13±1	14	2.72	20	0.0093
	Ant2	5670	12.65	13±1	14	2.42	20	0.0087
	total	5670	16.01	/	/	/	/	/
11AC80	Ant1	5530	14.25	14±1	15	2.72	20	0.0118
	Ant2	5530	14.15	14±1	15	2.42	20	0.0110
	total	5530	17.21	/	/	/	/	/
	Ant1	5610	13.19	13±1	14	2.72	20	0.0093



	Ant2	5610	13.17	13±1	14	2.42	20	0.0087
	total	5610	16.19	/	/	/	/	/

Note: RF Output power specifies that Maximum Conducted Peak Output Power.



5G Wi-Fi(U-NII-3) MPE Result

Test Mode	Antenna	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]
11A	Ant1	5745	16.34	16±1	17	2.72	20	0.0187
	Ant2	5745	16.42	16±1	17	2.42	20	0.0174
	Ant1	5785	16.56	17±1	18	2.72	20	0.0235
	Ant2	5785	16.78	17±1	18	2.42	20	0.0219
	Ant1	5825	16.33	16±1	17	2.72	20	0.0187
	Ant2	5825	15.82	16±1	17	2.42	20	0.0174
11N20	Ant1	5745	13.91	14±1	15	2.72	20	0.0118
	Ant2	5745	14.55	15±1	16	2.42	20	0.0138
	total	5745	17.25	/	/	/	/	/
	Ant1	5785	14.05	14±1	15	2.72	20	0.0118
	Ant2	5785	15.02	15±1	16	2.42	20	0.0138
	total	5785	17.57	/	/	/	/	/
	Ant1	5825	13.73	14±1	15	2.72	20	0.0118
	Ant2	5825	14.19	14±1	15	2.42	20	0.0110
	total	5825	16.98	/	/	/	/	/
11N40	Ant1	5755	13.66	14±1	15	2.72	20	0.0118
	Ant2	5755	13.81	14±1	15	2.42	20	0.0110
	total	5755	16.75	/	/	/	/	/
	Ant1	5795	13.76	14±1	15	2.72	20	0.0118
	Ant2	5795	13.65	14±1	15	2.42	20	0.0110
	total	5795	16.72	/	/	/	/	/
11AC20	Ant1	5745	14.13	14±1	15	2.72	20	0.0118
	Ant2	5745	14.36	14±1	15	2.42	20	0.0110
	total	5745	17.26	/	/	/	/	/
	Ant1	5785	13.79	14±1	15	2.72	20	0.0118
	Ant2	5785	14.33	14±1	15	2.42	20	0.0110
	total	5785	17.08	/	/	/	/	/
	Ant1	5825	13.52	14±1	15	2.72	20	0.0118
	Ant2	5825	13.38	13±1	14	2.42	20	0.0087
	total	5825	16.46	/	/	/	/	/
11AC40	Ant1	5755	13.48	13±1	14	2.72	20	0.0093
	Ant2	5755	13.19	13±1	14	2.42	20	0.0087
	total	5755	16.35	/	/	/	/	/
	Ant1	5795	13.75	14±1	15	2.72	20	0.0118
	Ant2	5795	13.18	13±1	14	2.42	20	0.0087
	total	5795	16.48	/	/	/	/	/
11AC80	Ant1	5775	14.04	14±1	15	2.72	20	0.0118
	Ant2	5775	14.85	15±1	16	2.42	20	0.0138
	total	5775	17.47	/	/	/	/	/

Note: RF Output power specifies that Maximum Conducted Peak Output Power.



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 BT&BLE&2.4GWIFI&5GWIFI

MPE limit S: 1mW/ cm²

6. Summary simultaneous transmission results

WiFi and Bluetooth support simultaneous transmit the

WIFI ANT1 MPE (Ratio)	WIFI ANT2 MPE (Ratio)	Bluetooth MPE (Ratio)	simultaneous MPE (Ratio)	MPE Limits (Ratio)
0.0235	0.0219	0.0020	0.0474	1.0000

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 CFR2.1091 (b). The RF Exposure Information page from the manual is included here for reference.

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

