



RF Exposure Evaluation Report

APPLICANT : Acer Incorporated
EQUIPMENT : Dual band WiFi LGA Module
BRAND NAME : Acer
MODEL NAME : T77H389
FCC ID : HLZ-T77H389
FILING TYPE : Certification
STANDARD : OET Bulletin 65 Supplement C (Edition 01-01)

We, SPORTON INTERNATIONAL INC., would like to declare that the device has been evaluated in accordance with FCC OET Bulletin 65 Supplement C (Edition 01-01), and pass the limit. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai / Manager

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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1. Administration Data

1.1. Testing Laboratory

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

1.2. Applicant

Company Name	Acer Incorporated
Address	8F., No. 88, Sec. 1, Xintai 5th Rd., New Taipei City 22181, Taiwan, R.O.C.

1.3. Manufacturer

Company Name	1. AMBIT MICROSYSTEMS (SHANGHAI) LTD. 2. Hon Fu Jin Precision Industry (Shenzhen) Co., Ltd. 3. Hong Fu Jin Precision Electrons (YanTai) Co., Ltd. 4. Hong Fu Jin Precision Electronics (Chongqing) Co., Ltd. 5. Foxconn CMMSG Industria de Eletronicos Ltda. 6. Fenix Industria de Eletronicos Ltda. 7. Foxconn MOEBG Industria De Eletronicos Ltda 8. Nanning Fu Tai Hong Precision Electronic Co.,Ltd. 9. Nanning Fu Tai Hong Precision Electronics Co.,Ltd. 10. Nanning Fu Gui Precision Electronics Co.,Ltd. 11. FUNING Precision Component (Bac Ninh) Co., Ltd. 12. Fuhong Precision Component (Bac Giang) Limited.
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Address	
	1. No. 1925, Nanle Road, Songjiang Export Process Zone, Shanghai, China
	2. Communication Network Solution Business Group; No. 2, 2nd Donghuan Road, 10th Yousong Industrial District, Longhua Town, Baoan District, Shenzhen, Guangdong 518109 China
	3. CNSBG-CPE1; A11 Building, Export Processing Zone, Economic & Technologic Development Area, YanTai, Shandong, 264006, China
	4. Building D02, No. 1, East Zone 1st Road, Shapingba District, Chongqing, 401332, China
	5. Av. Marginal Rodovia dos Bandeirantes n 800, Bairro Engordadouro, Jundiai, Sao Paulo, 13213-008 Brasil
	6. Rua Jose Palma Renno, 236 Santa Rita do Sapucal, Minas Gerais 37540-000 Brasil
	7. Rua Acai,1580 A Distrito Industrial Manaus Amazonas 69075-020 Brasil
	8. HWV Product Division No. 13 Road, Keyuan East; High Technical Industrial, Development Zone, Nanning, Guangzi, 530007, China
	9. The Forth Building, China-ASEAN Advanced Business Part Phase Three, No. 18, Zongbu Road, High Technical Industrial Development Zone, Nanninb, Guangxi, 530007, China
	10. China-ASEAN Advanced Business Park Phase Three, No. 18, Zongbu Road, Hgh Technical Industrial Development Zone, Nanning , Guangxi , 530007, China
	11. Que Vo industrial park, Van Duong commune, Bac Ninh city, BacNinh province, Vietnam
	12. Dinh Tram Industrial Park, Viet Yen District Bac Giang Province 236100, Vietnam

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Dual band WiFi LGA Module
Brand Name	Acer
Model Name	T77H389
FCC ID	HLZ-T77H389
Tx Frequency	802.11b/g/n : 2412 MHz ~ 2462 MHz 802.11a/n : 5150 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz; 5725 MHz ~ 5825 MHz; 5725 MHz ~ 5850 MHz Bluetooth: 2402MHz ~ 2482 MHz
Antenna Type	WLAN <2412 MHz ~ 2462 MHz> PIFA Antenna with Antenna Gain -0.15 dBi Chip Antenna with Antenna Gain 2.5 dBi <5150 MHz ~ 5350 MHz> PIFA Antenna with Antenna Gain -0.18 dBi Chip Antenna with Antenna Gain 2.48 dBi <5470 MHz ~ 5850 MHz> PIFA Antenna with Antenna Gain 0.04 dBi Chip Antenna with Antenna Gain 2.48 dBi
	Bluetooth PIFA Antenna with Antenna Gain -0.15 dBi Chip Antenna with Antenna Gain 2.5 dBi
HW Version	035
SW Version	045
Uplink Modulation	802.11b: DSSS (BPSK / QPSK / CCK) 802.11a/g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth: GFSK Bluetooth +EDR: $\pi/4$ -DQPSK, 8-DPSK Bluetooth v4.0+LE: GFSK

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



3. RF Exposure Limit Introduction

The FCC categorizes the RF exposure limit based on the intended usage of the device and the user’s awareness and ability to exercise control over his or her exposure. This is a consumer product to be used in the home, hence this device was evaluated by mobile device with general population/uncontrolled exposure condition. The definition of these category are shown as follows:

▪ **Mobile Devices:**

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitters' radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR 2.1091.

▪ **General Population/Uncontrolled Exposure:**

The general population / uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category and the general population/uncontrolled exposure limits apply to these devices.

Per OET Bulletin 65, the power density limit for General Population/Uncontrolled Exposure summary here:

Table: Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Power Density (S) (mW/cm ²)
0.3–1.34	*(100)
1.34–30	*(180/f ²)
30–300	0.2
300–1500	f/1500
1500–100,000	1.0

f = frequency in MHz

* = Plane-wave equivalent power density



4. Conducted RF Output Power (Unit: dBm)

<WLAN 2.4GHz Conducted Power – with PIFA Antenna>

WLAN 2.4G 802.11b Average Power (dBm)							
Power vs. Channel				Power vs. Data Rate			
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)		
			1M		2M	5.5M	11M
CH 01	2412	0	15.77	CH 11	16.83	16.81	16.60
CH 06	2437	0	17.01				
CH 11	2462	0	17.02				

WLAN 2.4G 802.11b Average Power (dBm)							
Power vs. Channel				Power vs. Data Rate			
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)		
			1M		2M	5.5M	11M
CH 01	2412	1	15.51	CH 06	16.53	16.68	16.66
CH 06	2437	1	16.71				
CH 11	2462	1	16.68				

WLAN 2.4G 802.11g Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)						
			6M		9M	12M	18M	24M	36M	48M	54M
CH 01	2412	0	14.00	CH 06	14.86	14.83	14.85	14.90	14.85	14.74	14.87
CH 06	2437	0	15.05								
CH 11	2462	0	13.54								

WLAN 2.4G 802.11g Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)						
			6M		9M	12M	18M	24M	36M	48M	54M
CH 01	2412	1	12.21	CH 06	14.91	14.80	14.53	14.60	14.59	14.61	14.52
CH 06	2437	1	15.04								
CH 11	2462	1	14.58								



WLAN 2.4G 802.11n (BW 20MHz) Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	MCS Index	Channel	MCS Index						
			MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412	0	12.84	CH 06	13.74	13.71	13.61	13.67	13.68	13.64	13.76
CH 06	2437	0	13.89								
CH 11	2462	0	12.95								

WLAN 2.4G 802.11n (BW 20MHz) Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	MCS Index	Channel	MCS Index						
			MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412	1	12.54	CH 06	13.62	13.57	13.54	13.64	13.80	13.56	13.68
CH 06	2437	1	13.87								
CH 11	2462	1	13.54								

<WLAN 2.4GHz Conducted Power – with Chip Antenna>

WLAN 2.4G 802.11b Average Power (dBm)									
Power vs. Channel				Power vs. Data Rate					
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)				
			1M		2M	5.5M	11M		
CH 01	2412	0	15.77	CH 11	16.83	16.81	16.60		
CH 06	2437	0	17.01						
CH 11	2462	0	17.02						

WLAN 2.4G 802.11b Average Power (dBm)									
Power vs. Channel				Power vs. Data Rate					
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)				
			1M		2M	5.5M	11M		
CH 01	2412	1	15.51	CH 06	16.53	16.68	16.66		
CH 06	2437	1	16.71						
CH 11	2462	1	16.68						

WLAN 2.4G 802.11g Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)						
			6M		9M	12M	18M	24M	36M	48M	54M
CH 01	2412	0	14.00	CH 06	14.86	14.83	14.85	14.90	14.85	14.74	14.87
CH 06	2437	0	15.05								
CH 11	2462	0	13.54								

WLAN 2.4G 802.11g Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)						
			6M		9M	12M	18M	24M	36M	48M	54M
CH 01	2412	1	12.21	CH 06	14.91	14.80	14.53	14.60	14.59	14.61	14.52
CH 06	2437	1	15.04								
CH 11	2462	1	14.58								



WLAN 2.4G 802.11n (BW 20MHz) Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	MCS Index	Channel	MCS Index						
			MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412	0	12.84	CH 06	13.74	13.71	13.61	13.67	13.68	13.64	13.76
CH 06	2437	0	13.89								
CH 11	2462	0	12.95								

WLAN 2.4G 802.11n (BW 20MHz) Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	MCS Index	Channel	MCS Index						
			MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412	1	12.54	CH 06	13.62	13.57	13.54	13.64	13.80	13.56	13.68
CH 06	2437	1	13.87								
CH 11	2462	1	13.54								

<Bluetooth Conducted Power - with Chip Antenna>

Channel	Frequency (MHz)	Average power (dBm)		
		Mode		
		GFSK	$\pi/4$ -DQPSK	8-DPSK
CH 0	2402	8.16	5.96	6.05
CH 39	2441	8.87	6.74	6.92
CH 78	2480	8.89	7.04	6.98

Channel	Frequency (MHz)	Average power (dBm)
		Mode
		BT v4.0 LE, GFSK
CH 0	2402	3.96
CH 19	2440	4.78
CH 39	2480	4.98



<WLAN 5GHz Conducted Power - with PIFA Antenna>

WLAN 5G 802.11a Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)						
			6M		9M	12M	18M	24M	36M	48M	54M
CH 36	5180	0	15.17	CH 40	15.13	15.16	15.15	15.14	15.15	15.17	15.17
CH 40	5200	0	15.21								
CH 44	5220	0	15.20								
CH 48	5240	0	15.16								
CH 52	5260	0	15.11	CH 56	14.18	15.05	15.08	15.13	15.13	15.09	15.17
CH 56	5280	0	15.19								
CH 60	5300	0	15.03								
CH 64	5320	0	15.00								
CH 100	5500	0	15.28	CH 104	15.27	15.20	15.18	15.16	15.19	15.24	15.23
CH 104	5520	0	15.33								
CH 108	5540	0	15.28								
CH 112	5560	0	15.24								
CH 116	5580	0	15.11								
CH 132	5660	0	15.06								
CH 136	5680	0	15.05								
CH 140	5700	0	15.00								
CH 149	5745	0	15.50	CH 149	15.42	15.43	15.45	15.47	15.47	15.48	15.47
CH 153	5765	0	15.47								
CH 157	5785	0	15.47								
CH 161	5805	0	15.41								
CH 165	5825	0	15.38								



WLAN 5G 802.11a Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)						
			6M		9M	12M	18M	24M	36M	48M	54M
CH 36	5180	1	15.09	CH 48	15.12	15.12	15.05	15.06	15.07	15.00	15.03
CH 40	5200	1	15.13								
CH 44	5220	1	15.08								
CH 48	5240	1	15.14								
CH 52	5260	1	15.01								
CH 56	5280	1	15.12	CH 56	15.10	15.10	15.05	15.09	15.10	14.98	15.10
CH 60	5300	1	15.03								
CH 64	5320	1	15.09								
CH 100	5500	1	15.18								
CH 104	5520	1	15.23	CH 104	15.20	15.16	15.12	15.14	15.16	15.19	15.20
CH 108	5540	1	15.15								
CH 112	5560	1	15.12								
CH 116	5580	1	15.08								
CH 132	5660	1	15.10								
CH 136	5680	1	15.12								
CH 140	5700	1	15.13								
CH 149	5745	1	15.43	CH 149	15.31	15.25	15.23	15.20	15.28	15.20	15.21
CH 153	5765	1	15.40								
CH 157	5785	1	15.40								
CH 161	5805	1	15.32								
CH 165	5825	1	15.38								



WLAN 5G 802.11n (BW 20M) Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	MCS Index	Channel	MCS Index						
			MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	0	14.46	CH 36	14.36	14.30	14.33	14.35	14.34	14.40	14.43
CH 40	5200	0	14.46								
CH 44	5220	0	14.39								
CH 48	5240	0	14.43								
CH 52	5260	0	14.46	CH 52	14.38	14.38	14.40	14.42	14.40	14.42	14.45
CH 56	5280	0	14.40								
CH 60	5300	0	14.40								
CH 64	5320	0	14.37								
CH 100	5500	0	14.47	CH 100	14.41	14.38	14.37	14.37	14.39	14.40	14.41
CH 104	5520	0	14.45								
CH 108	5540	0	14.35								
CH 112	5560	0	14.33								
CH 116	5580	0	14.36								
CH 132	5660	0	14.24								
CH 136	5680	0	14.20								
CH 140	5700	0	14.26								
CH 149	5745	0	14.49	CH 149	14.35	14.40	14.39	14.41	14.39	14.40	14.38
CH 153	5765	0	14.41								
CH 157	5785	0	14.44								
CH 161	5805	0	14.37								
CH 165	5825	0	14.35								

WLAN 5G 802.11n (BW 20M) Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	MCS Index	Channel	MCS Index						
			MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	1	14.36	CH 40	14.39	14.32	14.35	14.39	14.42	14.39	14.38
CH 40	5200	1	14.43								
CH 44	5220	1	14.40								
CH 48	5240	1	14.43								
CH 52	5260	1	14.37	CH 64	14.36	14.38	14.34	14.39	14.37	14.38	14.39
CH 56	5280	1	14.36								
CH 60	5300	1	14.40								
CH 64	5320	1	14.41								
CH 100	5500	1	14.41	CH 140	14.43	14.43	14.44	14.43	14.44	14.42	14.36
CH 104	5520	1	14.44								
CH 108	5540	1	14.39								
CH 112	5560	1	14.40								
CH 116	5580	1	14.35								
CH 132	5660	1	14.34								
CH 136	5680	1	14.35								
CH 140	5700	1	14.45								
CH 149	5745	1	14.47	CH 149	14.44	14.45	14.42	14.44	14.45	14.46	14.44
CH 153	5765	1	14.46								
CH 157	5785	1	14.42								
CH 161	5805	1	14.43								
CH 165	5825	1	14.38								



<WLAN 5GHz Conducted Power - with Chip Antenna>

WLAN 5G 802.11a Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)						
			6M		9M	12M	18M	24M	36M	48M	54M
CH 36	5180	0	15.17	CH 40	15.13	15.16	15.15	15.14	15.15	15.17	15.17
CH 40	5200	0	15.21								
CH 44	5220	0	15.20								
CH 48	5240	0	15.16								
CH 52	5260	0	15.11	CH 56	14.18	15.05	15.08	15.13	15.13	15.09	15.17
CH 56	5280	0	15.19								
CH 60	5300	0	15.03								
CH 64	5320	0	15.00								
CH 100	5500	0	15.28	CH 104	15.27	15.20	15.18	15.16	15.19	15.24	15.23
CH 104	5520	0	15.33								
CH 108	5540	0	15.28								
CH 112	5560	0	15.24								
CH 116	5580	0	15.11								
CH 132	5660	0	15.06								
CH 136	5680	0	15.05								
CH 140	5700	0	15.00								
CH 149	5745	0	15.50	CH 149	15.42	15.43	15.45	15.47	15.47	15.48	15.47
CH 153	5765	0	15.47								
CH 157	5785	0	15.47								
CH 161	5805	0	15.41								
CH 165	5825	0	15.38								



WLAN 5G 802.11a Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	Data Rate (bps)	Channel	Data Rate (bps)						
			6M		9M	12M	18M	24M	36M	48M	54M
CH 36	5180	1	15.09	CH 48	15.12	15.12	15.05	15.06	15.07	15.00	15.03
CH 40	5200	1	15.13								
CH 44	5220	1	15.08								
CH 48	5240	1	15.14								
CH 52	5260	1	15.01								
CH 56	5280	1	15.12	CH 56	15.10	15.10	15.05	15.09	15.10	14.98	15.10
CH 60	5300	1	15.03								
CH 64	5320	1	15.09								
CH 100	5500	1	15.18								
CH 104	5520	1	15.23								
CH 108	5540	1	15.15	CH104	15.20	15.16	15.12	15.14	15.16	15.19	15.20
CH 112	5560	1	15.12								
CH 116	5580	1	15.08								
CH 132	5660	1	15.10								
CH 136	5680	1	15.12								
CH 140	5700	1	15.13								
CH 149	5745	1	15.43								
CH 153	5765	1	15.40								
CH 157	5785	1	15.40	CH149	15.31	15.25	15.23	15.20	15.28	15.20	15.21
CH 161	5805	1	15.32								
CH 165	5825	1	15.38								



WLAN 5G 802.11n (BW 20M) Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	MCS Index	Channel	MCS Index						
			MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	0	14.46	CH 36	14.36	14.30	14.33	14.35	14.34	14.40	14.43
CH 40	5200	0	14.46								
CH 44	5220	0	14.39								
CH 48	5240	0	14.43								
CH 52	5260	0	14.46	CH 52	14.38	14.38	14.40	14.42	14.40	14.42	14.45
CH 56	5280	0	14.40								
CH 60	5300	0	14.40								
CH 64	5320	0	14.37								
CH 100	5500	0	14.47	CH100	14.41	14.38	14.37	14.37	14.39	14.40	14.41
CH 104	5520	0	14.45								
CH 108	5540	0	14.35								
CH 112	5560	0	14.33								
CH 116	5580	0	14.36								
CH 132	5660	0	14.24								
CH 136	5680	0	14.20								
CH 140	5700	0	14.26								
CH 149	5745	0	14.49	CH149	14.35	14.40	14.39	14.41	14.39	14.40	14.38
CH 153	5765	0	14.41								
CH 157	5785	0	14.44								
CH 161	5805	0	14.37								
CH 165	5825	0	14.35								

WLAN 5G 802.11n (BW 20M) Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain	MCS Index	Channel	MCS Index						
			MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	1	14.36	CH 40	14.39	14.32	14.35	14.39	14.42	14.39	14.38
CH 40	5200	1	14.43								
CH 44	5220	1	14.40								
CH 48	5240	1	14.43								
CH 52	5260	1	14.37	CH 64	14.36	14.38	14.34	14.39	14.37	14.38	14.39
CH 56	5280	1	14.36								
CH 60	5300	1	14.40								
CH 64	5320	1	14.41								
CH 100	5500	1	14.41	CH140	14.43	14.43	14.44	14.43	14.44	14.42	14.36
CH 104	5520	1	14.44								
CH 108	5540	1	14.39								
CH 112	5560	1	14.40								
CH 116	5580	1	14.35								
CH 132	5660	1	14.34								
CH 136	5680	1	14.35								
CH 140	5700	1	14.45								
CH 149	5745	1	14.47	CH149	14.44	14.45	14.42	14.44	14.45	14.46	14.44
CH 153	5765	1	14.46								
CH 157	5785	1	14.42								
CH 161	5805	1	14.43								
CH 165	5825	1	14.38								



5. Radio Frequency Radiation Exposure Evaluation

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna (i.e., 20 cm for this product)

For this device, the calculation is as follows:

<PIFA Antenna>

WLAN (Chain 0) Operating Frequency > 1.5GHz

Function	Freq. (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Source-Based Time-Average Power (dBm)	Source-Based Time-Average Power (mW)	Source-Based Time-Average EIRP (mW)	Calculated RF Exposure (mW/cm ²)	Limit (mW/cm ²)
WiFi 2.4G (802.11b)	2462	-0.15	0.97	17.02	50.35	48.64	0.01	1.00
WiFi 2.4G (802.11g)	2437	-0.15	0.97	15.05	31.99	30.90	0.01	1.00
WiFi 2.4G (802.11n-HT20)	2437	-0.15	0.97	13.89	24.49	23.66	0.00	1.00
WiFi 5G (802.11a)	5745	0.04	1.01	15.50	35.48	35.81	0.01	1.00
WiFi 5G (802.11n-HT20)	5745	0.04	1.01	14.49	28.12	28.38	0.01	1.00

WLAN (Chain 1) Operating Frequency > 1.5GHz

Function	Freq. (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Source-Based Time-Average Power (dBm)	Source-Based Time-Average Power (mW)	Source-Based Time-Average EIRP (mW)	Calculated RF Exposure (mW/cm ²)	Limit (mW/cm ²)
WiFi 2.4G (802.11b)	2437	-0.15	0.97	16.71	46.88	45.29	0.01	1.00
WiFi 2.4G (802.11g)	2437	-0.15	0.97	15.04	31.92	30.83	0.01	1.00
WiFi 2.4G (802.11n-HT20)	2437	-0.15	0.97	13.87	24.38	23.55	0.00	1.00
WiFi 5G (802.11a)	5745	0.04	1.01	15.43	34.91	35.24	0.01	1.00
WiFi 5G (802.11n-HT20)	5745	0.04	1.01	14.47	27.99	28.25	0.01	1.00



<Chip Antenna>

WLAN (Chain 0) Operating Frequency > 1.5GHz

Function	Freq. (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Source-Based Time-Average Power (dBm)	Source-Based Time-Average Power (mW)	Source-Based Time-Average EIRP (mW)	Calculated RF Exposure (mW/cm ²)	Limit (mW/cm ²)
WiFi 2.4G (802.11b)	2462	2.50	1.78	17.02	50.35	89.54	0.02	1.00
WiFi 2.4G (802.11g)	2437	2.50	1.78	15.05	31.99	56.89	0.01	1.00
WiFi 2.4G (802.11n-HT20)	2437	2.50	1.78	13.89	24.49	43.55	0.01	1.00
WiFi 5G (802.11a)	5745	2.48	1.77	15.50	35.48	62.81	0.01	1.00
WiFi 5G (802.11n-HT20)	5745	2.48	1.77	14.49	28.12	49.77	0.01	1.00

WLAN (Chain 1) Operating Frequency > 1.5GHz

Function	Freq. (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Source-Based Time-Average Power (dBm)	Source-Based Time-Average Power (mW)	Source-Based Time-Average EIRP (mW)	Calculated RF Exposure (mW/cm ²)	Limit (mW/cm ²)
WiFi 2.4G (802.11b)	2437	2.50	1.78	16.71	46.88	83.37	0.02	1.00
WiFi 2.4G (802.11g)	2437	2.50	1.78	15.04	31.92	56.75	0.01	1.00
WiFi 2.4G (802.11n-HT20)	2437	2.50	1.78	13.87	24.38	43.35	0.01	1.00
WiFi 5G (802.11a)	5745	2.48	1.77	15.43	34.91	61.80	0.01	1.00
WiFi 5G (802.11n-HT20)	5745	2.48	1.77	14.47	27.99	49.55	0.01	1.00

Bluetooth Operating Frequency > 1.5GHz

Function	Freq. (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Source-Based Time-Average Power (dBm)	Source-Based Time-Average Power (mW)	Source-Based Time-Average EIRP (mW)	Calculated RF Exposure (mW/cm ²)	Limit (mW/cm ²)
Bluetooth 2.4G	2480	2.50	1.78	8.89	7.74	13.77	0.00	1.00

Conclusion:

Per part 2.1091(c), EUT source-based time-averaged ERP < 1.5W for RF operating frequency ≤ 1.5GHz, EUT source-based time-averaged EIRP < 3W for RF operating frequency > 1.5GHz, routine evaluation of MPE is not required; MPE calculation is sufficient to show compliance. The MPE calculation results indicate that the EUT complies with the RF exposure limit of FCC OET Bulletin 65 Supplement C (Edition 01-01).