

Maximum Permissible Exposure Report

Product Information

EUT	: OTT+speaker
Model Number	: SK410A,SK410AX("X" on behalf of one of 26 English Letters A-Z)
Model Declaration	: All the same except for model name and color of cover
Test Model	: SK410A
Power Supply	: DC 12V by adapter
Hardware version	: SMB.282.05
Software version	: Android 10
Sample ID	: TZ210101970-2#&TZ210101970-4#

Bluetooth

Bluetooth Version	: V5.0
Channel Number	: 79 Channels for Bluetooth BR/EDR(DSS) : 40 Channels for BLE (DTS)
Modulation Technology	: GFSK, $\pi/4$ -DQPSK, 8-DPSK for Bluetooth BR/EDR (DSS) : GFSK for BLE (DTS)
Data Rates	: Bluetooth BR/EDR (DSS): 1/2/3Mbps : BLE (DTS): 1/2Mbps
Antenna Type And Gain	: Internal Antenna 3: : 3.52dBi

WiFi

WLAN	: Supported IEEE 802.11a/b/g/n/ac/ax
WLAN FCC Operation Frequency	: IEEE 802.11b:2412-2462MHz : IEEE 802.11g:2412-2462MHz : IEEE 802.11n HT20:2412-2462MHz / 5180-5240MHz / : 5745-5825MHz : IEEE 802.11a: 5180-5240MHz / 5745-5825MHz : IEEE 802.11ac VHT20: 5180-5240MHz / 5745-5825MHz : IEEE 802.11ac VHT40: 5190-5230MHz / 5755-5795MHz : IEEE 802.11ac VHT80: 5210MHz / 5775MHz : IEEE 802.11ax HT20: 2412-2462MHz / 5180-5240MHz / : 5745-5825MHz : IEEE 802.11ax HT40: 5190-5230MHz / 5755-5795MHz : IEEE 802.11ax HT80: 5210MHz / 5775MHz
WLAN Channel Number	: 11 Channels for 2412-2462MHz(IEEE 802.11b/g/n HT20) : 4 Channels for 5180-5240MHz (IEEE 802.11a/ac VHT20/n HT20/ax HT20) : 2 Channels for 5190-5230MHz (IEEE 802.11ac VHT40/n HT40/ax HT40) : 1 Channels for 5210MHz (IEEE 802.11ac VHT80/ax HT80) : 5 Channels for 5745-5825MHz(IEEE 802.11a/ac VHT20/n HT20/ax HT20) : 2 Channels for 5755-5795MHz(IEEE 802.11ac VHT40/n HT40/ax HT40) : 1 Channels for 5775MHz(IEEE 802.11ac VHT80/ax HT80)

WLAN Modulation Technology	: IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: OFDM (1024-QAM,256QAM, 64QAM, 16QAM, QPSK, BPSK)
Antenna Type And Gain	: Antenna 1: 4.56dBi(Max.), for TX/RX (WLAN 2.4G Band) 4.08dBi(Max.), for TX/RX (WLAN 5.2G Band) 5.87dBi (Max.), for TX/RX (WLAN 5.8G Band) Antenna 2: 3.94dBi(Max.), for TX/RX (WLAN 2.4G Band) 4.37dBi(Max.), for TX/RX (WLAN 5.2G Band), 7.2dBi(Max.), for TX/RX (WLAN 5.8G Band) 802.11n/ac/ax support 2T2R.[Antenna 1 and Antenna 2]

Note: Antenna position refer to EUT Photos.

2. Evaluation Method

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

In accordance with KDB447498D01 for 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 modelled or measured field strengths or power density, is ≤ 1.0 . The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

3. Limit

3.1 Refer evaluation method

ANSI C95.1-1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

FCC KDB publication 447498 D01 General 1 RF Exposure Guidance v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.

FCC CFR 47 part2 2.1091: Radiofrequency radiation exposure evaluation: mobile devices

3.2 Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1842/f	4.89/f	(900/f ²)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100)*	30
3.0 – 30	824/f	2.19/f	(180/f ²)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

4. MPE Calculation Method

Predication of MPE limit at a given distance

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 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

5. Antenna Information

This Product can only use antennas certificated as follows provided by manufacturer;

Antenna Gain and type refer to Product information

6. Conducted Power

2.4G Band:

Bluetooth(BDR+EDR)

Test Mode	Channel	Frequency (MHz)	Measured Peak Output Power (dBm)
GFSK	00	2402	2.92
	39	2441	4.95
	78	2480	5.51
$\pi/4$ -DQPSK	00	2402	4.68
	39	2441	5.80
	78	2480	6.40
8-DPSK	00	2402	5.17
	39	2441	6.14
	78	2480	6.82

Bluetooth(BLE)

Test Mode	Channel	Frequency (MHz)	Measured Peak Output Power (dBm)
BLE_1Mbps	00	2402	3.48
	39	2441	5.00
	78	2480	5.81
BLE_2Mbps	00	2402	3.58
	39	2441	5.29
	78	2480	6.01

WiFi 2.4GHz Band

Test Mode	Channel	Frequency (MHz)	Measured Peak Output Power (dBm)		
			Antenna 1	Antenna 2	Sum
IEEE 802.11b	1	2412	15.69	17.69	-/-
	6	2437	16.9	16.63	-/-
	11	2462	16.46	16.62	-/-
IEEE 802.11g	1	2412	17.33	16.44	-/-
	6	2437	17.51	16.71	-/-
	11	2462	17.12	15.96	-/-
IEEE 802.11n HT20	1	2412	15.15	14.31	17.8
	6	2437	15.18	13.89	17.6
	11	2462	15.16	13.98	17.6
IEEE 802.11ax HT20	1	2412	14.79	13.76	17.3
	6	2437	14.53	13.58	17.1
	11	2462	14.44	13.54	17.0

5G Band
UNII-1 Band

Test Mode	Channel	Frequency (MHz)	Measured Conducted Peak Power (dBm)		
			Antenna 1	Antenna 2	Sum
IEEE 802.11a	36	5180	11.53	10.3	/
	40	5200	10.96	9.4	/
	48	5240	11.39	10.61	/
IEEE 802.11n HT20	36	5180	9.11	7.93	11.6
	40	5200	8.35	6.77	10.6
	48	5240	8.84	7.87	11.4
IEEE802.11ac VHT20	36	5190	9.19	7.72	11.5
	40	5230	8.36	6.92	10.7
	48	5180	8.89	8.06	11.5
IEEE 802.11ax HT20	36	5180	7.24	5.57	9.5
	40	5200	6.32	4.63	8.6
	48	5240	6.46	5.46	9.0
IEEE 802.11n HT40	38	5190	9.25	8.12	11.7
	46	5230	9.73	8.79	12.3
IEEE802.11ac VHT40	38	5190	10.25	9.03	12.7
	46	5230	10.81	9.77	13.3
IEEE802.11ax HT40	38	5190	7.12	5.9	9.6
	46	5230	7.69	6.5	10.1
IEEE802.11ac VHT80	42	5210	8.26	7.68	11.0
IEEE802.11ax HT80	42	5210	7.02	5.72	9.4

UNII-3 Band

Test Mode	Channel	Frequency (MHz)	Measured Conducted Peak Power (dBm)		
			Antenna 1	Antenna 2	Sum
IEEE 802.11a	149	5745	9.61	7.25	/
	157	5785	9.03	7.01	/
	165	5825	8.96	7.55	/
IEEE 802.11n HT20	149	5745	9.6	7.48	11.7
	157	5785	8.99	7.21	11.2
	165	5825	9.06	7.87	11.5
IEEE 802.11ac VHT20	149	5745	9.63	7.56	11.7
	157	5785	9.08	7.2	11.3
	165	5825	9.11	7.75	11.5
IEEE 802.11ax HT20	149	5745	9.84	7.26	11.7
	157	5785	9.16	6.99	11.2
	165	5825	9.05	7.63	11.4
IEEE 802.11n HT40	151	5755	9.34	7.73	11.6
	159	5795	8.77	7.84	11.3
IEEE802.11ac VHT40	151	5755	10.41	7.81	12.3
	159	5795	9.63	7.41	11.7
IEEE802.11ax HT40	151	5755	9.76	7.61	11.8
	159	5795	9.17	7.54	11.4
IEEE802.11ac VHT80	155	5775	9.06	6.93	11.1
IEEE802.11ax HT80	155	5775	9.32	6.15	11

7. Manufacturing Tolerance

Bluetooth(BDR+EDR)

GFSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	3.0	5.0	5.0
Tolerance \pm (dB)	1.0	1.0	1.0
$\pi/4$ -DQPSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	5.5	5.5	5.5
Tolerance \pm (dB)	1.0	1.0	1.0
8-DPSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	6.0	6.0	6.0
Tolerance \pm (dB)	1.0	1.0	1.0

Bluetooth(BLE)

GFSK(1Mbps) (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	3.5	5.5	5.5
Tolerance \pm (dB)	1.0	1.0	1.0
GFSK(2Mbps) (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	3.5	5.5	5.5
Tolerance \pm (dB)	1.0	1.0	1.0

WiFi 2.4GHz Band – Antenna 1

IEEE 802.11b (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	16.0	16.0	16.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11g (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	17.0	17.0	17.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11ax HT20 (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance \pm (dB)	1.0	1.0	1.0

WiFi 2.4GHz Band – Antenna 2

IEEE 802.11b (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	17.0	17.0	17.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11g (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	16.0	16.0	16.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	14.0	14.0	14.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11ax HT20 (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	13.0	13.0	13.0
Tolerance \pm (dB)	1.0	1.0	1.0

UNII-1 Band – Antenna 1

IEEE 802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	11.0	11.0	11.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	8.5	8.5	8.5
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	8.5	8.5	8.5
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11ax HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	6.5	6.5	6.5
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Average)			
Channel	Channel 38	Channel 46	--
Target (dBm)	9.5	9.5	--
Tolerance \pm (dB)	1.0	1.0	--
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 38	Channel 46	--
Target (dBm)	10.0	10.0	--
Tolerance \pm (dB)	1.0	1.0	--
IEEE 802.11ax HT40 (Average)			
Channel	Channel 38	Channel 46	--
Target (dBm)	7.0	7.0	--
Tolerance \pm (dB)	1.0	1.0	--
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 42	--	--
Target (dBm)	7.5	--	--
Tolerance \pm (dB)	1.0	--	--
IEEE 802.11ax HT80 (Average)			
Channel	Channel 42	--	--
Target (dBm)	7.0	--	--
Tolerance \pm (dB)	1.0	--	--

UNII-1 Band – Antenna 2

IEEE 802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	10.0	10.0	10.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	7.0	7.0	7.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	7.5	7.5	7.5
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11ax HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	5.5	5.5	5.5
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Average)			
Channel	Channel 38	Channel 46	--
Target (dBm)	8.0	8.0	--
Tolerance \pm (dB)	1.0	1.0	--
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 38	Channel 46	--
Target (dBm)	9.0	9.0	--
Tolerance \pm (dB)	1.0	1.0	--

IEEE 802.11ax HT40 (Average)			
Channel	Channel 38	Channel 46	--
Target (dBm)	6.0	6.0	--
Tolerance ±(dB)	1.0	1.0	--
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 42	--	--
Target (dBm)	7.5	--	--
Tolerance ±(dB)	1.0	--	--
IEEE 802.11ax HT80 (Average)			
Channel	Channel 42	--	--
Target (dBm)	5.5	--	--
Tolerance ±(dB)	1.0	--	--

UNII-3 Band – Antenna 1

IEEE 802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	9.0	9.0	9.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	9.0	9.0	9.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	9.0	9.0	9.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11ax HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	9.0	9.0	9.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Average)			
Channel	Channel 151	Channel 159	--
Target (dBm)	9.5	9.5	--
Tolerance \pm (dB)	1.0	1.0	--
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 151	Channel 159	--
Target (dBm)	9.5	9.5	--
Tolerance \pm (dB)	1.0	1.0	--
IEEE 802.11ax HT40 (Average)			
Channel	Channel 151	Channel 159	--
Target (dBm)	9.5	9.5	--
Tolerance \pm (dB)	1.0	1.0	--
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 155	--	--
Target (dBm)	9.5	--	--
Tolerance \pm (dB)	1.0	--	--
IEEE 802.11ax VHT80 (Average)			
Channel	Channel 155	--	--
Target (dBm)	9.5	--	--
Tolerance \pm (dB)	1.0	--	--

UNII-3 Band – Antenna 2

IEEE 802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	7.0	7.0	7.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	7.0	7.0	7.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	7.0	7.0	7.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11ax HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	7.0	7.0	7.0
Tolerance \pm (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Average)			
Channel	Channel 151	Channel 159	--
Target (dBm)	7.0	7.0	--
Tolerance \pm (dB)	1.0	1.0	--
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 151	Channel 159	--
Target (dBm)	7.0	7.0	--

Tolerance ±(dB)	1.0	1.0	--
IEEE 802.11ax HT40 (Average)			
Channel	Channel 151	Channel 159	--
Target (dBm)	7.0	7.0	--
Tolerance ±(dB)	1.0	1.0	--
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 155	--	--
Target (dBm)	6.5	--	--
Tolerance ±(dB)	1.0	--	--
IEEE 802.11ax VHT80 (Average)			
Channel	Channel 155	--	--
Target (dBm)	6.5	--	--
Tolerance ±(dB)	1.0	--	--

8. Measurement Results

8.1 Standalone MPE

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, $r=20\text{cm}$, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

Bluetooth(BDR+EDR)

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
GFSK	6.00	3.9811	3.52	2.2491	100%	0.0018	1.0000
$\pi/4$ -DQPSK	6.50	4.4668	3.52	2.2491	100%	0.0020	1.0000
8-DPSK	7.00	5.0119	3.52	2.2491	100%	0.0022	1.0000

Bluetooth(BLE)

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
GFSK	6.50	4.4668	3.52	2.2491	100%	0.0020	1.0000

WiFi 2.4GHz Band – Ant 1

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
IEEE 802.11b	17.00	50.1187	4.56	2.8576	100%	0.0285	1.0000
IEEE 802.11g	18.00	63.0957	4.56	2.8576	100%	0.0359	1.0000
IEEE 802.11n HT20	16.00	39.8107	4.56	2.8576	100%	0.0226	1.0000
IEEE 802.11ax HT20	16.00	39.8107	4.56	2.8576	100%	0.0226	1.0000

WiFi 2.4GHz Band – Ant 2

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
IEEE 802.11b	18.00	63.0957	3.94	2.4774	100%	0.0311	1.0000
IEEE 802.11g	17.00	50.1187	3.94	2.4774	100%	0.0247	1.0000
IEEE 802.11n HT20	15.00	31.6228	3.94	2.4774	100%	0.0156	1.0000
IEEE 802.11ax HT20	14.00	25.1189	3.94	2.4774	100%	0.0124	1.0000

UNII-1 Band – Ant 1

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11a	12.00	15.8489	4.08	2.5586	100%	0.0081	1.0000
IEEE 802.11n HT20	9.50	8.9125	4.08	2.5586	100%	0.0045	1.0000
IEEE 802.11ac VHT20	9.50	8.9125	4.08	2.5586	100%	0.0045	1.0000
IEEE 802.11ax HT20	7.50	5.6234	4.08	2.5586	100%	0.0029	1.0000
IEEE 802.11n HT40	10.50	11.2202	4.08	2.5586	100%	0.0057	1.0000
IEEE 802.11ac VHT40	11.00	12.5893	4.08	2.5586	100%	0.0064	1.0000
IEEE 802.11ax HT40	8.00	6.3096	4.08	2.5586	100%	0.0032	1.0000
IEEE 802.11ac VHT80	8.50	7.0795	4.08	2.5586	100%	0.0036	1.0000
IEEE 802.11ax HT80	8.00	6.3096	4.08	2.5586	100%	0.0032	1.0000

UNII-1 Band – Ant 2

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11a	11.00	12.5893	4.37	2.7353	100%	0.0069	1.0000
IEEE 802.11n HT20	8.00	6.3096	4.37	2.7353	100%	0.0034	1.0000
IEEE 802.11ac VHT20	8.50	7.0795	4.37	2.7353	100%	0.0039	1.0000
IEEE 802.11ax HT20	6.50	4.4668	4.37	2.7353	100%	0.0024	1.0000
IEEE 802.11n HT40	9.00	7.9433	4.37	2.7353	100%	0.0043	1.0000
IEEE 802.11ac VHT40	10.00	10.0000	4.37	2.7353	100%	0.0054	1.0000
IEEE 802.11ax HT40	7.00	5.0119	4.37	2.7353	100%	0.0027	1.0000
IEEE 802.11ac VHT80	8.50	7.0795	4.37	2.7353	100%	0.0039	1.0000
IEEE 802.11ax HT80	6.50	4.4668	4.37	2.7353	100%	0.0024	1.0000

UNII-3 Band – Ant 1

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11a	10.00	10.0000	5.87	3.8637	100%	0.0077	1.0000
IEEE 802.11n HT20	10.00	10.0000	5.87	3.8637	100%	0.0077	1.0000
IEEE 802.11ac VHT20	10.00	10.0000	5.87	3.8637	100%	0.0077	1.0000
IEEE 802.11ax HT20	10.00	10.0000	5.87	3.8637	100%	0.0077	1.0000
IEEE 802.11n HT40	10.50	11.2202	5.87	3.8637	100%	0.0086	1.0000
IEEE 802.11ac VHT40	10.50	11.2202	5.87	3.8637	100%	0.0086	1.0000
IEEE 802.11ax HT40	10.50	11.2202	5.87	3.8637	100%	0.0086	1.0000
IEEE 802.11ac VHT80	10.50	11.2202	5.87	3.8637	100%	0.0086	1.0000
IEEE 802.11ax HT80	10.50	11.2202	5.87	3.8637	100%	0.0086	1.0000

UNII-3 Band – Ant 2

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11a	8.00	6.3096	7.20	5.2481	100%	0.0066	1.0000
IEEE 802.11n HT20	8.00	6.3096	7.20	5.2481	100%	0.0066	1.0000
IEEE 802.11ac VHT20	8.00	6.3096	7.20	5.2481	100%	0.0066	1.0000
IEEE 802.11ax HT20	8.00	6.3096	7.20	5.2481	100%	0.0066	1.0000
IEEE 802.11n HT40	8.00	6.3096	7.20	5.2481	100%	0.0066	1.0000
IEEE 802.11ac VHT40	8.00	6.3096	7.20	5.2481	100%	0.0066	1.0000
IEEE 802.11ax HT40	8.00	6.3096	7.20	5.2481	100%	0.0066	1.0000
IEEE 802.11ac VHT80	7.50	5.6234	7.20	5.2481	100%	0.0059	1.0000
IEEE 802.11ax HT80	7.50	5.6234	7.20	5.2481	100%	0.0059	1.0000

Remark:

1. Output power including tune-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer;

8.2 Simultaneous Transmission MPE

Bluetooth + Wi-Fi

Maximum MPE(mW/cm ²) BT Ant.	Maximum MPE(mW/cm ²) WIFI Ant.0	Maximum MPE(mW/cm ²) WIFI Ant.1	ΣMPE (mW/cm ²)	Limit (mW/cm ²)	Results
0.0022	0.0359	0.0311	0.0692	1.0000	PASS

Remark:

1. Output power including tune-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer;

9. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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