Maximum Permissible Exposure Report

1. Product Information

FCC ID:	2ASFLSML5045W6
Product name	IPTV Set-Top Box
Test Model	SML-5045W6
Power supply	Input: 12V⎓1.5A Output: USB 5V⎓1.0A
Hardware Version	JUW7.820.00293831 V2
Software Version	4.22.1
Bluetooth	
Frequency Range	2402MHz ~ 2480MHz
Channel Number	79 channels for Bluetooth V5.2(DSS) 40 channels for Bluetooth V5.2 (DTS)
Channel Spacing	1MHz for Bluetooth V5.2 (DSS) 2MHz for Bluetooth V5.2 (DTS)
Modulation Type	GFSK, π/4-DQPSK, 8-DPSK for Bluetooth V5.2(DSS) GFSK for Bluetooth V5.2 (DTS)
Bluetooth Version	V5.2
Antenna Description	PCB Antenna, 1.4dBi (max.)
2.4G WLAN	
Frequency Range	2412MHz ~ 2462MHz
Channel Spacing	5MHz
Channel Number	11 Channels for 20MHz bandwidth (2412~2462MHz) 7 Channels for 40MHz bandwidth (2422~2452MHz)
Modulation Type	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Antenna Description	Antenna 0: Internal Antenna, 3.31dBi (max.) Antenna 1: Internal Antenna, 2.1dBi (max.)
5.2G WLAN	
Frequency Range	5180-5240MHz
Channel Number	4 Channels for 20MHz bandwidth(5180MHz-5240MHz) 2 channels for 40MHz bandwidth(5190MHz~5230MHz) 1 channels for 80MHz bandwidth(5210MHz)
Modulation Type	IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)

Antenna Description	Antenna 0: Internal Antenna, 2.84dBi (max.) Antenna 1: Internal Antenna, 1.4dBi (max.)
5.8G WLAN	
Frequency Range	5745MHz-5825MHz
Channel Number	5 channels for 20MHz bandwidth(5745MHz-5825MHz) 2 channels for 40MHz bandwidth(5755MHz~5795MHz) 1 channels for 80MHz bandwidth(5775MHz)
Modulation Type	IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Antenna Description	Antenna 0: Internal Antenna, -1.14dBi (max.) Antenna 1: Internal Antenna, 1.5dBi (max.)
Exposure category	General population/uncontrolled environment
EUT Type	Production Unit
Device Type	Mobile Devices

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/cm²)	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/f²)*	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/cm²)	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/f²)*	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

The EUT can only use antennas certificated as follows provided by manufacturer;

Antenna type and antenna number	Operate frequency band	Maximum antenna gain	Notes
PCB Antenna	2400MHz ~ 2500MHz	1.4dBi	BT Antenna
Internal Antenna 0	2400MHz ~ 2500MHz	3.31dBi	WIFI Antenna
	5180MHz ~ 5240MHz	2.84dBi	
	5745MHz ~ 5825MHz	-1.14dBi	
Internal Antenna 1	2400MHz ~ 2500MHz	2.1dBi	WIFI Antenna
	5180MHz ~ 5240MHz	1.4dBi	
	5745MHz ~ 5825MHz	1.5dBi	

6. Conducted Power

[BT Max Conducted Power]

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
GFSK	0	2402	3.6
	39	2441	3.74
	78	2480	3.95
π/4DQPSK	0	2402	3.3
	39	2441	3.55
	78	2480	3.73
8DPSK	0	2402	3.42
	19	2441	3.63
	39	2480	3.84

[BLE Max Conducted Power]

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
BLE_1M	0	2402	0.56
	19	2440	0.74
	39	2480	0.53

[2.4GWIFI Max Conducted Power]

Mode	Channel	Frequency (MHz)	Ant 0 Max Conducted Power(dBm)	Ant 1 Max Conducted Power(dBm)	MIMO Max Conducted Power(dBm)
11B	1	2412	12.02	12.1	/
	6	2437	12.57	12.71	/
	11	2462	12.67	12.29	/
11G	1	2412	12.99	12.22	/
	6	2437	12.73	12.47	/
	11	2462	12.84	12.3	/
11N20 SISO	1	2412	13.05	12.37	15.73
	6	2437	12.76	12.31	15.55
	11	2462	12.02	13.03	15.56
11N40 SISO	3	2422	11.85	11.93	14.90
	6	2437	11.93	12.1	15.03
	9	2452	11.9	11.78	14.85
11AX20 SISO	1	2412	12.32	11.73	15.05
	6	2437	12.17	11.95	15.07
	11	2462	12.47	11.73	15.13
11AX40 SISO	3	2422	12.76	12.49	15.64
	6	2437	12.65	12.69	15.68
	9	2452	12.72	12.34	15.54

[5.2GWIFI Max Conducted Power]

Mode	Channel	Frequency (MHz)	Ant 0 Max Conducted Power(dBm)	Ant 1 Max Conducted Power(dBm)	MIMO Max Conducted Power(dBm)
11A	36	5180	9.41	9.16	/
	40	5200	9.72	8.52	/
	48	5240	9.48	8.82	/
11N20 SISO	36	5180	8.89	9.03	11.97
	40	5200	8.81	9.12	11.98
	48	5240	9.23	9.86	12.57
11N40 SISO	38	5190	9.05	8.64	11.86
	46	5230	9.3	8.77	12.05
11AC20 SISO	36	5180	9.03	8.64	11.85
	40	5200	9.11	9.16	12.15
	48	5240	9.55	8.84	12.22
11AC40 SISO	38	5190	9.02	8.56	11.81
	46	5230	9.17	8.8	12.00
11AC80 SISO	42	5210	9.56	9.30	12.44
11AX20 SISO	36	5180	9.44	9.43	12.45
	40	5200	9.27	9.65	12.47
	48	5240	9.41	8.68	12.07
11AX40 SISO	38	5190	8.78	8.42	11.61
	46	5230	8.74	9.76	12.29
11AX80 SISO	42	5210	9.58	9.79	12.70

[5.8WIFI Max Conducted Power]

Mode	Channel	Frequency (MHz)	Ant 0 Max Conducted Power(dBm)	Ant 1 Max Conducted Power(dBm)	MIMO Max Conducted Power(dBm)
11A	149	5745	6.65	6.47	/
	157	5785	5.87	6.46	/
	165	5825	5.97	6.19	/
11N20 SISO	149	5745	6.69	6.11	9.42
	157	5785	5.86	5.41	8.65
	165	5825	6.78	5.75	9.31
11N40 SISO	151	5755	6.57	6.37	9.48
	159	5795	6.35	5.66	9.03
11AC20 SISO	149	5745	6.78	6.28	9.55
	157	5785	6.67	6.69	9.69
	165	5825	6.87	6.06	9.49
11AC40 SISO	151	5755	6.73	5.96	9.37
	159	5795	6.26	5.95	9.12
11AC80 SISO	155	5775	6.47	6.05	9.28
11AX20 SISO	149	5745	6.59	6.49	9.55
	157	5785	6.56	6.91	9.75
	165	5825	6.68	6.34	9.52
11AX40 SISO	151	5755	6.38	6.57	9.49
	159	5795	6.21	6.62	9.43
11AX80 SISO	155	5775	6.57	6.53	9.56

7. Manufacturing Tolerance

[BT]

GFSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	3.0	3.0	3.0
Tolerance ±(dB)	1.0	1.0	1.0
π/4DQPSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	3.0	3.0	3.0
Tolerance ±(dB)	1.0	1.0	1.0
8DPSK (Peak)			
Channel	Channel 0	Channel 19	Channel 39
Target (dBm)	3.0	3.0	3.0
Tolerance ±(dB)	1.0	1.0	1.0

[BLE]

BT LE (Peak)			
Channel	Channel 0	Channel 19	Channel 39
Target (dBm)	0.0	0.0	0.0
Tolerance ±(dB)	1.0	1.0	1.0

[2.4G WIFI Ant0]

11B (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
11G (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
11N20 (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	13.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
11N40 (Peak)			
Channel	Channel 3	Channel 6	Channel 9
Target (dBm)	11.0	11.0	11.0
Tolerance ±(dB)	1.0	1.0	1.0
11AX20 (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
11AX40 (Peak)			
Channel	Channel 3	Channel 6	Channel 9
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0

[2.4G WIFI Ant1]

11B (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
11G (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
11N20 (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	12.0	12.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0
11N40 (Peak)			
Channel	Channel 3	Channel 6	Channel 9
Target (dBm)	11.0	12.0	11.0
Tolerance ±(dB)	1.0	1.0	1.0
11AX20 (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	11.0	11.0	11.0
Tolerance ±(dB)	1.0	1.0	1.0
11AX40 (Peak)			
Channel	Channel 3	Channel 6	Channel 9
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0

[5.2G WIFI Ant0]

11A (Conducted)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	9.0	9.0	9.0
Tolerance ±(dB)	1.0	1.0	1.0
11N20 (Conducted)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	8.0	8.0	9.0
Tolerance ±(dB)	1.0	1.0	1.0
11N40 (Conducted)			
Channel	Channel 38		Channel 46
Target (dBm)	9.0		9.0
Tolerance ±(dB)	1.0		1.0
11AC20 (Conducted)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	9.0	9.0	9.0
Tolerance ±(dB)	1.0	1.0	1.0
11AC40 (Conducted)			
Channel	Channe38		Channel 46
Target (dBm)	9.0		9.0
Tolerance ±(dB)	1.0		1.0
11AC80 (Conducted)			
Channel	Channel 42		
Target (dBm)	9.0		
Tolerance ±(dB)	1.0		
11AX20 (Conducted)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	9.0	9.0	9.0
Tolerance ±(dB)	1.0	1.0	1.0
11AX40 (Conducted)			
Channel	Channe38		Channel 46
Target (dBm)	8.0		8.0
Tolerance ±(dB)	1.0		1.0
11AX80 (Conducted)			
Channel	Channel 42		
Target (dBm)	9.0		
Tolerance ±(dB)	1.0		

[5.2G WIFI Ant1]

11A (Conducted)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	9.0	8.0	8.0
Tolerance ±(dB)	1.0	1.0	1.0
11N20 (Conducted)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	9.0	9.0	9.0
Tolerance ±(dB)	1.0	1.0	1.0
11N40 (Conducted)			
Channel	Channel 38		Channel 46
Target (dBm)	8.0		8.0
Tolerance ±(dB)	1.0		1.0
11AC20 (Conducted)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	8.0	9.0	8.0
Tolerance ±(dB)	1.0	1.0	1.0
11AC40 (Conducted)			
Channel	Channe38		Channel 46
Target (dBm)	8.0		8.0
Tolerance ±(dB)	1.0		1.0
11AC80 (Conducted)			
Channel	Channel 42		
Target (dBm)	9.0		
Tolerance ±(dB)	1.0		
11AX20 (Conducted)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	9.0	9.0	8.0
Tolerance ±(dB)	1.0	1.0	1.0
11AX40 (Conducted)			
Channel	Channe38		Channel 46
Target (dBm)	8.0		9.0
Tolerance ±(dB)	1.0		1.0
11AX80 (Conducted)			
Channel	Channel 42		
Target (dBm)	9.0		
Tolerance ±(dB)	1.0		

[5.8G WIFI Ant0]

11A (Conducted)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	5.0	5.0
Tolerance ±(dB)	1.0	1.0	1.0
11N20 (Conducted)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	5.0	6.0
Tolerance ±(dB)	1.0	1.0	1.0
11N40 (Conducted)			
Channel	Channel 151		Channel 159
Target (dBm)	6.0		6.0
Tolerance ±(dB)	1.0		1.0
11AC20 (Conducted)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	6.0	6.0
Tolerance ±(dB)	1.0	1.0	1.0
11AC40 (Conducted)			
Channel	Channe151		Channel 159
Target (dBm)	6.0		6.0
Tolerance ±(dB)	1.0		1.0
11AC80 (Conducted)			
Channel	Channel 155		
Target (dBm)	6.0		
Tolerance ±(dB)	1.0		
11AX20 (Conducted)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	6.0	6.0
Tolerance ±(dB)	1.0	1.0	1.0
11AX40 (Conducted)			
Channel	Channe151		Channel 159
Target (dBm)	6.0		6.0
Tolerance ±(dB)	1.0		1.0
11AX80 (Conducted)			
Channel	Channel 155		
Target (dBm)	6.0		
Tolerance ±(dB)	1.0		

[5.8G WIFI Ant1]

11A (Conducted)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	6.0	6.0
Tolerance ±(dB)	1.0	1.0	1.0
11N20 (Conducted)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	5.0	5.0
Tolerance ±(dB)	1.0	1.0	1.0
11N40 (Conducted)			
Channel	Channel 151		Channel 159
Target (dBm)	6.0		5.0
Tolerance ±(dB)	1.0		1.0
11AC20 (Conducted)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	6.0	6.0
Tolerance ±(dB)	1.0	1.0	1.0
11AC40 (Conducted)			
Channel	Channe151		Channel 159
Target (dBm)	5.0		5.0
Tolerance ±(dB)	1.0		1.0
11AC80 (Conducted)			
Channel	Channel 155		
Target (dBm)	6.0		
Tolerance ±(dB)	1.0		
11AX20 (Conducted)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	6.0	6.0
Tolerance ±(dB)	1.0	1.0	1.0
11AX40 (Conducted)			
Channel	Channe151		Channel 159
Target (dBm)	6.0		6.0
Tolerance ±(dB)	1.0		1.0
11AX80 (Conducted)			
Channel	Channel 155		
Target (dBm)	6.0		
Tolerance ±(dB)	1.0		

[2.4G WIFI MIMO]

Mode	Channel	Frequency (MHz)	Target (dBm)	Tolerance ±(dB)
11N20 MIMO	1	2412	15.0	1.0
	6	2437	15.0	1.0

	11	2462	15.0	1.0
11N40 MIMO	3	2422	14.0	1.0
	6	2437	15.0	1.0
	9	2452	14.0	1.0
11AX20 MIMO	1	2412	15.0	1.0
	6	2437	15.0	1.0
	11	2462	15.0	1.0
11AX40 MIMO	3	2422	15.0	1.0
	6	2437	15.0	1.0
	9	2452	15.0	1.0

[5.2GWIFI Max Conducted Power]

Mode	Channel	Frequency (MHz)	MIMO Max Conducted Power(dBm)	Tolerance ±(dB)
11A	36	5180	/	/
	40	5200	/	/
	48	5240	/	/
11N20 MIMO	36	5180	11.0	1.0
	40	5200	11.0	1.0
	48	5240	12.0	1.0
11N40 MIMO	38	5190	11.0	1.0
	46	5230	12.0	1.0
11AC20 MIMO	36	5180	11.0	1.0
	40	5200	12.0	1.0
	48	5240	12.0	1.0
11AC40 MIMO	38	5190	11.0	1.0
	46	5230	12.0	1.0
11AC80 SMIMO	42	5210	12.0	1.0
11AX20 SMIMO	36	5180	12.0	1.0
	40	5200	12.0	1.0
	48	5240	12.0	1.0
11AX40 MIMO	38	5190	11.0	1.0
	46	5230	12.0	1.0
11AX80 MIMO	42	5210	12.0	1.0

[5.8WIFI Max Conducted Power]

Mode	Channel	Frequency (MHz)	MIMO Max Conducted Power(dBm)	Tolerance ±(dB)
11A	149	5745	/	/
	157	5785	/	/
	165	5825	/	/
11N20 MIMO	149	5745	9.0	1.0
	157	5785	8.0	1.0
	165	5825	9.0	1.0
11N40 MIMO	151	5755	9.0	1.0
	159	5795	9.0	1.0
11AC20 MIMO	149	5745	9.0	1.0
	157	5785	9.0	1.0
	165	5825	9.0	1.0
11AC40 MIMO	151	5755	9.0	1.0
	159	5795	9.0	1.0
11AC80 MIMO	155	5775	9.0	1.0
11AX20 MIMO	149	5745	9.0	1.0
	157	5785	9.0	1.0
	165	5825	9.0	1.0
11AX40 MIMO	151	5755	9.0	1.0
	159	5795	9.0	1.0
11AX80 MIMO	155	5775	9.0	1.0

8. Measurement Results

8.1 Standalone MPE Evaluation

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 =20cm, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

[BT]

Band/Mode	RF output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)
	dBm	mW				
GFSK	4.0	2.5119	1.4	1.3804	0.0007	1.0000
π/4DQPSK	4.0	2.5119	1.4	1.3804	0.0007	1.0000
8DPSK	4.0	2.5119	1.4	1.3804	0.0007	1.0000

[BLE]

Band/Mode	RF output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)
	dBm	mW				
BT LE	1.0	1.2589	1.4	1.3804	0.0003	1.0000

[2.4G WIFI Ant0]

Band/Mode	RF output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)
	dBm	mW				
IEEE 802.11b	13.0	19.9526	3.31	2.1429	0.0085	1.0000
IEEE 802.11g	13.0	19.9526	3.31	2.1429	0.0085	1.0000
IEEE 802.11n HT20	14.0	25.1189	3.31	2.1429	0.0107	1.0000
IEEE 802.11n HT40	12.0	15.8489	3.31	2.1429	0.0068	1.0000
IEEE 802.11ax HEW20	13.0	19.9526	3.31	2.1429	0.0085	1.0000
IEEE 802.11ax HEW40	13.0	19.9526	3.31	2.1429	0.0085	1.0000

[2.4G WIFI Ant1]

Band/Mode	RF output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)
	dBm	mW				
IEEE 802.11b	13.0	19.9526	2.1	1.6218	0.0064	1.0000
IEEE 802.11g	13.0	19.9526	2.1	1.6218	0.0064	1.0000
IEEE 802.11n HT20	14.0	25.1189	2.1	1.6218	0.0081	1.0000
IEEE 802.11n HT40	13.0	19.9526	2.1	1.6218	0.0064	1.0000
IEEE 802.11ax HT20	12.0	15.8489	2.1	1.6218	0.0051	1.0000
IEEE 802.11ax HT40	13.0	19.9526	2.1	1.6218	0.0064	1.0000

[2.4G WIFI MIMO]

Band/Mode	RF output power		Directional Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)	MPE ratios
	dBm	mW					
IEEE 802.11n HT20	16.0	39.8107	3.31	2.1429	0.0170	1.0000	0.0170
IEEE 802.11n HT40	16.0	39.8107	3.31	2.1429	0.0170	1.0000	0.0170
IEEE 802.11ax HT20	16.0	39.8107	3.31	2.1429	0.0170	1.0000	0.0170
IEEE 802.11ax HT40	16.0	39.8107	3.31	2.1429	0.0170	1.0000	0.0170

[5.2G WIFI Ant0]

Band/Mode	RF output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)
	dBm	mW				
11A	10.0	10.0000	2.84	1.9231	0.0038	1.0000
11N20	10.0	10.0000	2.84	1.9231	0.0038	1.0000
11N40	10.0	10.0000	2.84	1.9231	0.0038	1.0000
11AC20	10.0	10.0000	2.84	1.9231	0.0038	1.0000
11AC40	10.0	10.0000	2.84	1.9231	0.0038	1.0000
11AC80	10.0	10.0000	2.84	1.9231	0.0038	1.0000
11AX20	10.0	10.0000	2.84	1.9231	0.0038	1.0000
11AX40	9.0	7.9433	2.84	1.9231	0.0030	1.0000
11AX80	10.0	10.0000	2.84	1.9231	0.0038	1.0000

[5.2G WIFI Ant1]

Band/Mode	RF output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)
	dBm	mW				
11A	10.0	10.0000	1.4	1.3804	0.0027	1.0000
11N20	10.0	10.0000	1.4	1.3804	0.0027	1.0000
11N40	9.0	7.9433	1.4	1.3804	0.0022	1.0000
11AC20	10.0	10.0000	1.4	1.3804	0.0027	1.0000
11AC40	9.0	7.9433	1.4	1.3804	0.0022	1.0000
11AC80	10.0	10.0000	1.4	1.3804	0.0027	1.0000
11AX20	10.0	10.0000	1.4	1.3804	0.0027	1.0000
11AX40	9.0	7.9433	1.4	1.3804	0.0022	1.0000
11AX80	10.0	10.0000	1.4	1.3804	0.0027	1.0000

[5.2G WIFI MIMO]

Band/Mode	RF output power		Directional Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)	MPE ratios
	dBm	mW					
11N20	13.0	19.9526	2.84	1.9231	0.0076	1.0000	0.0076
11N40	13.0	19.9526	2.84	1.9231	0.0076	1.0000	0.0076
11AC20	13.0	19.9526	2.84	1.9231	0.0076	1.0000	0.0076
11AC40	13.0	19.9526	2.84	1.9231	0.0076	1.0000	0.0076
11AC80	13.0	19.9526	2.84	1.9231	0.0076	1.0000	0.0076

11AX20	13.0	19.9526	2.84	1.9231	0.0076	1.0000	0.0076
11AX40	13.0	19.9526	2.84	1.9231	0.0076	1.0000	0.0076
11AX80	13.0	19.9526	2.84	1.9231	0.0076	1.0000	0.0076

[5.8G WIFI Ant0]

Band/Mode	RF output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)
	dBm	mW				
11A	7.0	5.0119	-1.14	0.7691	0.0008	1.0000
11N20	7.0	5.0119	-1.14	0.7691	0.0008	1.0000
11N40	7.0	5.0119	-1.14	0.7691	0.0008	1.0000
11AC20	7.0	5.0119	-1.14	0.7691	0.0008	1.0000
11AC40	7.0	5.0119	-1.14	0.7691	0.0008	1.0000
11AC80	7.0	5.0119	-1.14	0.7691	0.0008	1.0000
11AX20	7.0	5.0119	-1.14	0.7691	0.0008	1.0000
11AX40	7.0	5.0119	-1.14	0.7691	0.0008	1.0000
11AX80	7.0	5.0119	-1.14	0.7691	0.0008	1.0000

[5.8G WIFI Ant1]

Band/Mode	RF output power		Directional Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)
	dBm	mW				
11A	7.0	5.0119	1.5	1.4125	0.0014	1.0000
11N20	7.0	5.0119	1.5	1.4125	0.0014	1.0000
11N40	7.0	5.0119	1.5	1.4125	0.0014	1.0000
11AC20	7.0	5.0119	1.5	1.4125	0.0014	1.0000
11AC40	6.0	3.9811	1.5	1.4125	0.0011	1.0000
11AC80	7.0	5.0119	1.5	1.4125	0.0014	1.0000
11AX20	7.0	5.0119	1.5	1.4125	0.0014	1.0000
11AX40	7.0	5.0119	1.5	1.4125	0.0014	1.0000
11AX80	7.0	5.0119	1.5	1.4125	0.0014	1.0000

[5.8G WIFI MIMO]

Band/Mode	RF output power		Directional Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE Limits (mW/cm2)	**MPE ratios**
	dBm	mW					
11N20	10.0	10.0000	1.5	1.4125	0.0028	1.0000	0.0028
11N40	10.0	10.0000	1.5	1.4125	0.0028	1.0000	0.0028
11AC20	10.0	10.0000	1.5	1.4125	0.0028	1.0000	0.0028
11AC40	10.0	10.0000	1.5	1.4125	0.0028	1.0000	0.0028
11AC80	10.0	10.0000	1.5	1.4125	0.0028	1.0000	0.0028
11AX20	10.0	10.0000	1.5	1.4125	0.0028	1.0000	0.0028
11AX40	10.0	10.0000	1.5	1.4125	0.0028	1.0000	0.0028
11AX80	10.0	10.0000	1.5	1.4125	0.0028	1.0000	0.0028

8.2 Simultaneous Transmission MPE

The EUT equiped with one BT antenna, and 2.4GWIFI/5.2G WIFI/5.8GWIFI antenna and other one 2.4GWIFI/5.2G WIFI/5.8GWIFI antenna. so need consider simultaneous transmission;
Simultaneous transmission MPE
According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;
∑∑of MPE ratios ≤ 1.0

mode	BT MPE ratios	2.4GWIFI MPE ratios	5.2GWIFI MPE ratios	5.8GWIF MPE ratios	∑ MPE ratios	Limit	Results
BT+2.4GWIFI+5.2GWIFI+5.8GWIFI	0.0007	0.0170	0.0076	0.0028	0.0281	1.0	Pass

Remark:
1. Output power including turn-up tolerance;
2. Output power is burst average power;
3. MPE evaluate distance is 20cm from user manual provide by manufacturer;
4. MPE values = $PG/4\pi R^2$
5. only the result of the worst case was recorded in the report.

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----------