Certificate # 2861.01

TEST REPORT

Verified Code: 219410

Report No.:	E20201007701201-5	**Application No.:**	E20201007701201
Client:	Fiberhome Telecommunication Technologies Co., Ltd.		
Address:	No.88 Youkeyuan Road, Hongshan District, Wuhan,Hubei, China		
Sample Description:	Wireless Router		
Model:	SR1041D		
Test Specification:	CFR 47, FCC Part 2.1091 Radio frequency radiation exposure evaluation: mobile devices. KDB 447498 D01 General RF Exposure Guidance v06		
Receipt Date:	2020-10-14		
Test Date:	2020-10-14 to 2020-12-03		
Issue Date:	2021-04-21		
Test Result:	Pass		

Prepared By:	**Reviewed By:**	**Approved By:**
Test Engineer	Technical Manager	Manager
Xie Fang	Jiang Tao	GUANGZHOU GRG METROLOGY & TEST CO.,LTD. GRGTEST APPROVED(03)

Other Aspects:

Note: Note

Abbreviations: *ok / P = passed; fail / F = failed; n.a. / N = not applicable;*

The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT.

DIRECTIONS OF TEST

1. **This station carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.**

2. **The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.**

3. **If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.**

TABLE OF CONTENTS

1. GENERAL DESCRIPTION OF EUT 3
   1.1. APPLICANT 3
   1.2. MANUFACTURER 3
   1.3. FACTORY 3
   1.4. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST 3
2. LABORATORY AND ACCREDITATIONS 7
   2.1. LABORATORY 7
   2.2. ACCREDITATIONS 7
3. EVALUATION METHOD 8
4. LIMITS FOR GENERAL POPULATION/UNCONTROLLEDEXPOSURE 8
5. CALCULATION METHOD 9
6. ESTIMATION RESULT 10
   6.1 CONDUCTED POWER RESULTS 10
   6.2 MANUFACTURING TOLERANCE 14
   6.3 MEASUREMENT RESULTS 16
      6.3.1 STANDALONE MPE 16
7. CONCLUSION 19

1. GENERAL DESCRIPTION OF EUT

1.1. APPLICANT

Name:	Fiberhome Telecommunication Technologies Co., Ltd.
Address:	No.88 Youkeyuan Road, Hongshan District, Wuhan,Hubei, China

1.2. MANUFACTURER

Name:	Fiberhome Telecommunication Technologies Co., Ltd.
Address:	No.88 Youkeyuan Road, Hongshan District, Wuhan,Hubei, China

1.3. FACTORY

Name:	Fiberhome Telecommunication Technologies Co.Ltd.
Address:	No.67,Chuangye Street,East Lake High-tech Development Zone,Wuhan City,Hubei Province,P.R.China

1.4. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment:	Wireless Router
Model No.:	SR1041D
Adding Model:	/
Trade Name:	FiberHome
FCC ID:	2AV2N-SR1041D
Power Supply:	DC12V power supplied by adapter
Adapter Specification:	Model: RD1201000-C55-35MGD Input: 100-240V~50/60Hz 0.6A MAX Output: 12.0V ⎓ 1.0A
Frequency Range:	**2.4G wifi:** 2412MHz~2462MHz: 802.11b; 802.11g; 802.11n(HT20) 2422MHz~2452MHz: 802.11n(HT40); **5G wifi:** U-NII-1: 5150 MHz~5250 MHz U-NII-2A: 5250 MHz~5350 MHz U-NII-2C: 5470 MHz~5725 MHz U-NII-3: 5725 MHz~5850 MHz
Transmit Power:	**2.4G wifi:** Non-beamforming 12.20dBm for 802.11b mode (antenna 1) 12.22dBm for 802.11b mode (antenna 2) 17.58dBm for 802.11g mode (antenna 1) 17.55dBm for 802.11g mode (antenna 2) 16.89dBm for 802.11n HT20 mode(MIMO) 16.91dBm for 802.11n HT40 mode(MIMO) Beamforming

16.43dBm for 802.11n HT20 mode(MIMO)
16.45dBm for 802.11n HT40 mode(MIMO)

5G wifi:

Non-Beamforming

U-NII-1:

18.87dBm for IEEE 802.11a (antenna 1)
18.75dBm for IEEE 802.11a (antenna 2)
17.90dBm for IEEE 802.11n HT20(MIMO)
16.94dBm for IEEE 802.11ac VHT20(MIMO)
16.96dBm for IEEE 802.11n HT40(MIMO)
16.84dBm for IEEE 802.11ac VHT40(MIMO)
16.45dBm for IEEE 802.11ac VHT80(MIMO)

U-NII-2A:

18.85dBm for IEEE 802.11a (antenna 1)
18.78dBm for IEEE 802.11a (antenna 2)
15.21dBm for IEEE 802.11n HT20(MIMO)
14.36dBm for IEEE 802.11ac VHT20(MIMO)
16.94dBm for IEEE 802.11n HT40(MIMO)
16.79dBm for IEEE 802.11ac VHT40(MIMO)
16.68dBm for IEEE 802.11ac VHT80(MIMO)

U-NII-2C:

18.84dBm for IEEE 802.11a (antenna 1)
18.81dBm for IEEE 802.11a (antenna 2)
15.73dBm for IEEE 802.11n HT20(MIMO)
15.17dBm for IEEE 802.11ac VHT20(MIMO)
16.95dBm for IEEE 802.11n HT40(MIMO)
16.82dBm for IEEE 802.11ac VHT40(MIMO)
16.94dBm for IEEE 802.11ac VHT80(MIMO)

U-NII-3:

18.85dBm for IEEE 802.11a (antenna 1)
18.83dBm for IEEE 802.11a (antenna 2)
17.96dBm for IEEE 802.11n HT20(MIMO)
16.96dBm for IEEE 802.11ac VHT20(MIMO)
16.93dBm for IEEE 802.11n HT40(MIMO)
16.84dBm for IEEE 802.11ac VHT40(MIMO)
16.86dBm for IEEE 802.11ac VHT80(MIMO)

Beamforming

U-NII-1:

17.69dBm for IEEE 802.11n HT20(MIMO)
16.53dBm for IEEE 802.11ac VHT20(MIMO)
16.79dBm for IEEE 802.11n HT40(MIMO)
16.65dBm for IEEE 802.11ac VHT40(MIMO)
16.04dBm for IEEE 802.11ac VHT80(MIMO)

U-NII-2A:

	14.84dBm for IEEE 802.11n HT20(MIMO) 14.03dBm for IEEE 802.11ac VHT20(MIMO) 16.70dBm for IEEE 802.11n HT40(MIMO) 16.60dBm for IEEE 802.11ac VHT40(MIMO) 16.10dBm for IEEE 802.11ac VHT80(MIMO) U-NII-2C: 15.36 dBm for IEEE 802.11n HT20(MIMO) 14.78dBm for IEEE 802.11ac VHT20(MIMO) 16.76dBm for IEEE 802.11n HT40(MIMO) 16.65dBm for IEEE 802.11ac VHT40(MIMO) 16.74dBm for IEEE 802.11ac VHT80(MIMO) U-NII-3: 17.61dBm for IEEE 802.11n HT20(MIMO) 16.51dBm for IEEE 802.11ac VHT20(MIMO) 16.74dBm for IEEE 802.11n HT40(MIMO) 16.56dBm for IEEE 802.11ac VHT40(MIMO) 16.41dBm for IEEE 802.11ac VHT80(MIMO)
Modulation type:	**2.4G wifi:** DSSS for 802.11b mode; OFDM for 802.11g mode; OFDM for 802.11n mode.
Channel space:	**2.4G wifi:**5MHz **5G wifi:** IEEE 802.11a: 20MHz IEEE 802.11n HT20: 20MHz IEEE 802.11n HT40: 40MHz IEEE 802.11ac VHT20: 20MHz IEEE 802.11ac VHT40: 40MHz IEEE 802.11ac VHT80: 80MHz
Antenna Specification:	**2.4G wifi:** External antenna 1 with 5.62dBi gain (Max.) External antenna 2 with 5.37dBi gain (Max) **5G wifi:** U-NII-1: External antenna 1 with 5.85dBi gain (Max.) External antenna 2 with 5.74dBi gain (Max.) U-NII-2A: External antenna 1 with 5.32dBi gain (Max.) External antenna 2 with 5.46dBi gain (Max.) U-NII-2C: External antenna 1 with 4.56dBi gain (Max.) External antenna 2 with 5.01dBi gain (Max.) U-NII-3: External antenna 1 with 5.35dBi gain (Max.) External antenna 2 with 5.50dBi gain (Max.)
Temperature Range:	-5 ℃ ~ 45 ℃

Hardware Version:	SR1041D_R1A
Software Version:	RP0100
Sample No:	E20201007701201-0001, E20201007701201-0003, E20201007701201-0008
Note:	/

2. LABORATORY AND ACCREDITATIONS

2.1. LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of Guangzhou GRG Metrology & Test Co,. Ltd.

Add.:	No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China.
P.C.:	518000
Tel :	0755-61180008
Fax:	0755-61180008

2.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to GB/T 27025(ISO/IEC 17025:2017)

USA	A2LA(Certificate #:2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada
USA	FCC

3. EVALUATION METHOD

Exposure category: General population/uncontrolled environment
EUT Type: Production Unit
Device Type: Mobile Device

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 modeled 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.

4. LIMITS FOR GENERAL POPULATION/UNCONTROLLEDEXPOSURE

(B)Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength(H) (A/m)	Power Density (S) (Mw/cm^2)	Averaging Time$[E]^2$, $[H]^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100,000	/	/	1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

5. 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 anisotropic radiator
R=distance to the center of radiation of the antenna
From the EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the maximum gain of the used as following information, the RF power density can be obtained.

Frequency Band	Antenna type	Internal Identification		Maximum antenna gain
2.4GHz	External antenna	Antenna 1		5.62dBi
		Antenna 2		5.37dBi
5GHz	External antenna	Antenna 1	U-NII-1	5.85dBi
			U-NII-2A	5.32dBi
			U-NII-2C	4.56dBi
			U-NII-3	5.35dBi
		Antenna 2	U-NII-1	5.74dBi
			U-NII-2A	5.46dBi
			U-NII-2C	5.01dBi
			U-NII-3	5.50dBi

6. ESTIMATION RESULT

6.1 CONDUCTED POWER RESULTS

2.4G wifi
Non-beamforming

Antenna	Mode	Frequency(MHz)	AVG Conducted Output Power (dBm)
Antenna 1	IEEE 802.11b	2412	9.35
		2437	12.20
		2462	12.06
	IEEE 802.11g	2412	15.55
		2437	17.58
		2462	16.85
	IEEE 802.11n HT20	2412	13.97
		2437	13.95
		2462	13.80
	IEEE 802.11n HT40	2422	13.78
		2437	13.98
		2452	13.59

Antenna	Mode	Frequency(MHz)	AVG Conducted Output Power (dBm)
Antenna 2	IEEE 802.11b	2412	9.44
		2437	12.22
		2462	12.08
	IEEE 802.11g	2412	15.12
		2437	17.55
		2462	16.90
	IEEE 802.11n HT20	2412	13.73
		2437	13.81
		2462	13.87
	IEEE 802.11n HT40	2422	13.12
		2437	13.82
		2452	12.89

Beamforming

Antenna	Mode	Frequency(MHz)	AVG Conducted Output Power (dBm)
Antenna 1	IEEE 802.11n HT20	2412	13.42
		2437	13.41
		2462	13.31
	IEEE 802.11n HT40	2422	13.28
		2437	13.44
		2452	13.12

Antenna	Mode	Frequency(MHz)	AVG Conducted Output Power (dBm)
Antenna 2	IEEE 802.11n HT20	2412	13.30
		2437	13.43
		2462	13.46
	IEEE 802.11n HT40	2422	12.72
		2437	13.43
		2452	12.42

5GHz WIFI
Non-beamforming

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power (dBm)	
			antenna 1	antenna 2
802.11a	U-NII-1	5180	18.47	18.42
		5200	18.74	18.71
		5240	18.87	18.75
	U-NII-2A	5260	18.69	18.63
		5300	18.85	18.78
		5320	15.81	16.32
	U-NII-2C	5500	18.82	18.79
		5580	18.84	18.81
		5700	18.75	18.73
	U-NII-3	5745	18.83	18.76
		5785	18.84	18.82
		5825	18.85	18.83
802.11n HT20	U-NII-1	5180	14.87	14.85
		5200	14.89	14.72
		5240	14.97	14.80
	U-NII-2A	5260	12.39	12.01
		5300	12.42	11.78
		5320	12.57	11.52
	U-NII-2C	5500	12.30	12.8
		5580	12.61	12.83
		5700	12.73	12.46
	U-NII-3	5745	14.95	14.94
		5785	14.60	14.89
		5825	14.89	14.69
IEEE 802.11ac VHT20	U-NII-1	5180	13.88	13.79
		5200	13.85	13.75
		5240	13.91	13.95
	U-NII-2A	5260	11.41	11.29
		5300	11.51	10.90
		5320	11.73	10.79
	U-NII-2C	5500	11.74	11.86
		5580	12.43	11.41
		5700	12.53	11.75
	U-NII-3	5745	13.99	13.91
		5785	13.97	13.92
		5825	13.94	13.50
802.11n HT40	U-NII-1	5190	13.97	13.92
		5230	13.98	13.90
	U-NII-2A	5270	13.97	13.89
		5310	13.96	13.87

	U-NII-2C	5510	13.95	13.89
		5550	13.97	13.90
		5670	13.96	13.87
	U-NII-3	5755	13.95	13.87
		5795	13.98	13.86

802.11ac VHT40	U-NII-1	5190	13.81	13.85
		5230	13.81	13.73
	U-NII-2A	5270	13.82	13.68
		5310	13.87	13.69
	U-NII-2C	5510	13.83	13.66
		5550	13.84	13.71
		5670	13.81	13.81
	U-NII-3	5755	13.79	13.77
		5795	13.87	13.78
802.11ac VHT80	U-NII-1	5210	13.45	13.42
	U-NII-2A	5290	13.68	13.65
	U-NII-2C	5530	13.93	13.92
		5610	13.89	13.95
	U-NII-3	5775	13.71	13.98

Beamforming

Test Mode	Band	Frequency (MHz)	AVG Conducted Output Power (dBm)	
			antenna 1	antenna 2
802.11n HT20	U-NII-1	5180	14.74	14.61
		5200	14.75	14.57
		5240	14.81	14.54
	U-NII-2A	5260	12.02	11.64
		5300	12.13	11.42
		5320	12.21	11.16
	U-NII-2C	5500	11.97	12.43
		5580	12.32	12.37
		5700	12.36	12.08
	U-NII-3	5745	14.31	14.35
		5785	14.20	14.72
		5825	14.77	14.43
IEEE 802.11ac VHT20	U-NII-1	5180	13.58	13.46
		5200	13.60	13.42
		5240	13.70	13.30
	U-NII-2A	5260	11.05	10.98
		5300	11.21	10.61
		5320	11.27	10.35
	U-NII-2C	5500	11.28	11.40
		5580	12.01	11.05

		5700	12.18	11.32
	U-NII-3	5745	13.20	13.35
		5785	13.35	13.65
		5825	13.62	13.24
802.11n HT40	U-NII-1	5190	13.75	13.80
		5230	13.73	13.72
	U-NII-2A	5270	13.71	13.66
		5310	13.70	13.64
	U-NII-2C	5510	13.80	13.64
		5550	13.75	13.68
		5670	13.73	13.76
	U-NII-3	5755	13.69	13.72
		5795	13.72	13.74

802.11ac VHT40	U-NII-1	5190	13.63	13.65
		5230	13.6	13.57
	U-NII-2A	5270	13.61	13.51
		5310	13.65	13.53
	U-NII-2C	5510	13.62	13.52
		5550	13.63	13.54
		5670	13.66	13.61
	U-NII-3	5755	13.59	13.51
		5795	13.58	13.52
802.11ac VHT80	U-NII-1	5210	13.04	13.02
	U-NII-2A	5290	13.14	13.03
	U-NII-2C	5530	13.74	13.71
		5610	13.57	13.36
	U-NII-3	5775	13.14	13.64

6.2 MANUFACTURING TOLERANCE

Non-beamforming

Frequency (MHz)	Antenna 1			
	IEEE 802.11b	IEEE 802.11g	IEEE 802.11n HT20	IEEE 802.11n HT40
	2437	2437	2412	2437
Target (dBm)	12.0	17.0	13.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0	1.0

Frequency (MHz)	Antenna 2			
	IEEE 802.11b	IEEE 802.11g	IEEE 802.11n HT20	IEEE 802.11n HT40
	2437	2437	2462	2437
Target (dBm)	12.0	17.0	13.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0	1.0

Frequency (MHz)	Antenna 1			
	802.11a	802.11n HT20	802.11ac VHT20	802.11n HT40
	5240	5240	5745	5230
Target (dBm)	18.0	14.0	13.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0	1.0

Frequency (MHz)	Antenna 2			
	802.11a	802.11n HT20	802.11ac VHT20	802.11n HT40
	5825	5745	5240	5190
Target (dBm)	18.0	14.0	13.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0	1.0

Frequency (MHz)	Antenna 1		Antenna 2	
	802.11ac VHT40	802.11ac VHT80	802.11ac VHT40	802.11ac VHT80
	5310	5530	5190	5775
Target (dBm)	13.0	13.0	13.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0	1.0

Beamforming

Frequency (MHz)	Antenna 1			
	IEEE 802.11b	IEEE 802.11g	IEEE 802.11n HT20	IEEE 802.11n HT40
	/	/	2412	2437
Target (dBm)	/	/	13.0	13.0
Tolerance ±(dB)	/	/	1.0	1.0

Frequency (MHz)	Antenna 2			
	IEEE 802.11b	IEEE 802.11g	IEEE 802.11n HT20	IEEE 802.11n HT40
	/	/	2462	2437
Target (dBm)	/	/	13.0	13.0
Tolerance ±(dB)	/	/	1.0	1.0

Frequency (MHz)	Antenna 1			
	802.11a	802.11n HT20	802.11ac VHT20	802.11n HT40
	/	5240	5240	5510
Target (dBm)	/	14.0	13.0	13.0
Tolerance ±(dB)	/	1.0	1.0	1.0

Frequency (MHz)	Antenna 2			
	802.11a	802.11n HT20	802.11ac VHT20	802.11n HT40
	/	5785	5785	5190
Target (dBm)	/	14.0	13.0	13.0
Tolerance ±(dB)	/	1.0	1.0	1.0

Frequency (MHz)	Antenna 1		Antenna 2	
	802.11ac VHT40	802.11ac VHT80	802.11ac VHT40	802.11ac VHT80
	5670	5530	5190	5530
Target (dBm)	13.0	13.0	13.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0	1.0

6.3 MEASUREMENT RESULTS

6.3.1 STANDALONE MPE

2.4G wifi

Non-beamforming

Antenna 1

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	(dBm)	(mW)					
IEEE 802.11 b	13.0	19.9526	5.62	3.6475	100%	0.0145	1.0000
IEEE 802.11 g	18.0	63.0957	5.62	3.6475	100%	0.0458	1.0000
IEEE 802.11 n HT20	14.0	25.1189	5.62	3.6475	100%	0.0182	1.0000
IEEE 802.11 n HT40	14.0	25.1189	5.62	3.6475	100%	0.0182	1.0000

Antenna 2

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	(dBm)	(mW)					
IEEE 802.11 b	13.0	19.9526	5.37	3.4435	100%	0.0137	1.0000
IEEE 802.11 g	18.0	63.0957	5.37	3.4435	100%	0.0432	1.0000
IEEE 802.11 n HT20	13.0	19.9526	5.37	3.4435	100%	0.0137	1.0000
IEEE 802.11 n HT40	14.0	25.1189	5.37	3.4435	100%	0.0172	1.0000

Beamforming

Antenna 1

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	(dBm)	(mW)					
IEEE 802.11 n HT20	14.0	25.1189	5.62	3.6475	100%	0.0182	1.0000
IEEE 802.11 n HT40	14.0	25.1189	5.62	3.6475	100%	0.0182	1.0000

Antenna 2

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	(dBm)	(mW)					
IEEE 802.11 n HT20	14.0	25.1189	5.37	3.4435	100%	0.0172	1.0000
IEEE 802.11 n HT40	14.0	25.1189	5.37	3.4435	100%	0.0172	1.0000

5G wifi

Non-beamforming

Antenna 1

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	(dBm)	(mW)					
IEEE 802.11 a	19.0	79.4328	5.85	3.8459	100%	0.0608	1.0000
IEEE 802.11 n HT20	15.0	31.6228	5.85	3.8459	100%	0.0242	1.0000
IEEE 802.11 n HT40	14.0	25.1189	5.32	3.4041	100%	0.0170	1.0000
IEEE 802.11ac VHT20	14.0	25.1189	5.35	3.4277	100%	0.0171	1.0000
IEEE 802.11ac VHT40	14.0	25.1189	5.32	3.4041	100%	0.0170	1.0000
IEEE 802.11 ac VHT80	14.0	25.1189	4.56	3.5975	100%	0.0180	1.0000

Antenna 2

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	(dBm)	(mW)					
IEEE 802.11 a	19.0	79.4328	5.50	3.5481	100%	0.0561	1.0000
IEEE 802.11 n HT20	16.0	39.8107	5.50	3.5481	100%	0.0281	1.0000
IEEE 802.11 n HT40	14.0	25.1189	5.74	3.7497	100%	0.0187	1.0000
IEEE 802.11ac VHT20	15.0	31.6228	5.74	3.7497	100%	0.0236	1.0000
IEEE 802.11ac VHT40	14.0	25.1189	5.74	3.7497	100%	0.0187	1.0000
IEEE 802.11 ac VHT80	14.0	25.1189	5.50	3.5481	100%	0.0177	1.0000

Beamforming

Antenna 1

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	(dBm)	(mW)					
IEEE 802.11 n HT20	15.0	31.6228	5.85	3.8459	100%	0.0242	1.0000
IEEE 802.11 n HT40	14.0	25.1189	4.56	2.8576	100%	0.0143	1.0000
IEEE 802.11ac VHT20	14.0	25.1189	5.37	3.4435	100%	0.0172	1.0000
IEEE 802.11ac VHT40	14.0	25.1189	4.56	2.8576	100%	0.0143	1.0000
IEEE 802.11 ac VHT80	14.0	25.1189	4.56	2.8576	100%	0.0143	1.0000

Antenna 2

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	(dBm)	(mW)					
IEEE 802.11 n HT20	15.0	31.6228	5.01	3.1696	100%	0.0200	1.0000
IEEE 802.11 n HT40	14.0	25.1189	5.74	3.7497	100%	0.0187	1.0000
IEEE 802.11ac VHT20	14.0	25.1189	5.01	3.1696	100%	0.0158	1.0000
IEEE 802.11ac VHT40	14.0	25.1189	5.74	3.7497	100%	0.0187	1.0000
IEEE 802.11 ac VHT80	14.0	25.1189	5.01	3.1696	100%	0.0158	1.0000

Remark: 1. Maximum average power including tune-up tolerance;
2. MPE use distance is 20cm from manufacturer declaration of user manual.

According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;
∑of MPE ratios≤ 1.0

The sample support 2T2R MIMO antennas, 2.4GHz and 5GHz share same antenna.

Antenna 1 and Antenna 2 for 2.4GWLAN and 5GWLAN

Non-beamforming

Band	Mode	MPE Ratio Antenna 1	MPE Ratio Antenna 2	∑MPE ratios	Limit	Results
2.4G	IEEE 802.11b	0.0145	0.0137	/	1.000	Pass
	IEEE 802.11g	0.0458	0.0432	/	1.000	Pass
	IEEE 802.11n HT20	0.0182	0.0137	0.0319	1.000	Pass
	IEEE 802.11n HT40	0.0182	0.0172	0.0354	1.000	Pass

Band	Mode	MPE Ratio Antenna 1	MPE Ratio Antenna 2	∑MPE ratios	Limit	Results
5G	IEEE 802.11a	0.0608	0.0561	/	1.000	Pass
	IEEE 802.11n HT20	0.0242	0.0281	0.0523	1.000	Pass
	IEEE 802.11n HT40	0.0170	0.0187	0.0357	1.000	Pass
	IEEE 802.11ac VHT20	0.0171	0.0236	0.0407	1.000	Pass
	IEEE 802.11ac VHT40	0.0170	0.0187	0.0357	1.000	Pass
	IEEE 802.11ac 80	0.0180	0.0177	0.0357	1.000	Pass

Beamforming

Band	Mode	MPE Ratio Antenna 1	MPE Ratio Antenna 2	∑MPE ratios	Limit	Results
2.4G	IEEE 802.11b	/	/	/	/	/
	IEEE 802.11g	/	/	/	/	/
	IEEE 802.11n HT20	0.0182	0.0172	0.0354	1.000	Pass
	IEEE 802.11n HT40	0.0182	0.0172	0.0354	1.000	Pass

Band	Mode	MPE Ratio Antenna 1	MPE Ratio Antenna 2	∑MPE ratios	Limit	Results
5G	IEEE 802.11a	/	/	/	/	/
	IEEE 802.11n HT20	0.0242	0.0200	0.0442	1.000	Pass
	IEEE 802.11n HT40	0.0143	0.0187	0.0330	1.000	Pass
	IEEE 802.11ac VHT20	0.0172	0.0158	0.0330	1.000	Pass
	IEEE 802.11ac VHT40	0.0143	0.0187	0.0330	1.000	Pass
	IEEE 802.11ac 80	0.0143	0.0158	0.0301	1.000	Pass

Remark:

1. *Maximum average power including tune-up tolerance;*
2. *MPE use distance is 20cm from manufacturer declaration of user manual.*

We first evaluate WLAN simultaneous transmission and later evaluate WLAN simultaneous transmission;

Maximum Simultaneous transmission MPE Ratio for WLAN
Non-beamforming

Maximum MPE ratio $_{2.4G}$	Maximum MPE ratio $_{5G}$	∑ MPE ratios	Limit	Results
0.0354	0.0523	0.0877	1.000	Pass

Beamforming

Maximum MPE ratio $_{2.4G}$	Maximum MPE ratio $_{5G}$	∑ MPE ratios	Limit	Results
0.0354	0.0442	0.0796	1.000	Pass

Note: The estimation distance is 20cm

7. CONCLUSION

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

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