

Report No.: SHEM210800881602

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1 Cover Page

RF Exposure Evaluation Report

Application No.: SHCR2108000032AT **FCC ID**: 2A5PE-YUSHU001

Applicant: Unitree

Address of Applicant: 3rd Floor, Building 1, Fengda Creative Park, No. 88 Dongliu Road, Binjiang

District, Hangzhou, Zhejiang, China

Manufacturer: Unitree

Address of Manufacturer: 3rd Floor, Building 1, Fengda Creative Park, No. 88 Dongliu Road, Binjiang

District, Hangzhou, Zhejiang, China

Factory: Unitree

Address of Factory: 3rd Floor, Building 1, Fengda Creative Park, No. 88 Dongliu Road, Binjiang

District, Hangzhou, Zhejiang, China

Equipment Under Test (EUT):

EUT Name: Quadruped Robot

Model No.: Go1,Go1 Air,Go1 Edu,Go1 Pro,Go1 Max,Go1 Nx,Go1 Pro Max¤

Please refer to section 2 of this report which indicates which model was

actually tested and which were electrically identical.

Standard(s): FCC Rules 47 CFR §2.1091

KDB447498 D01 General RF Exposure Guidance v06

Date of Receipt: 2021-09-02

Date of Test: 2021-11-05 to 2022-01-07

Date of Issue: 2022-03-07

Test Result: Pass*

parlan 2han

Parlam Zhan Laboratory Manager

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^{*} In the configuration tested, the EUT complied with the standards specified above.



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Revision Record								
Version	Description	Date	Remark					
00	Original	2022-03-07	1					

Authorized for issue by:		
	Wade Thang	
	Wade Zhang / Project Engineer	-
	Darlam Zhan	
	Parlam Zhan /Reviewer	-



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SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

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3 General Information

3.1 General Description of E.U.T.

Power supply: DC 22.2V 6Ah Battery

Charger:

Model: KS150DU-2520600

Input: AC 100-240V, 50/60Hz, 2.5A

Output: DC 25.2V 6.0A

3.2 Technical Specifications

5G WiFi:

Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels
	UNII Band III	802.11a/n(HT20)/ac(HT20)	5745-5825	5
		802.11n(HT40)/ac(HT40)	5755-5795	2
		802.11ac(HT80)	5775	1
Modulation Type:	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK)	l	•
	802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM)		
	802.11ac: OFDM	(BPSK, QPSK, 16QAM, 64QAM	, 256QAM)	
Date Rate:	802.11a:6/9/12/18	3/24/36/48/54Mbps		
	802.11n: MCS0-N	MCS7		
	802.11ac: VHT M	ICS0-MCS7		
Channel Spacing:	802.11a/n(HT20)	/ac(HT20): 20MHz		
	802.11n(HT40)/a	c(HT40): 40MHz		
	802.11ac(HT80):	80MHz		
TPC Function:	Not support			
DFS Function:	Slaver without ra	dar detection		
Antenna Gain:	Antenna 1: 4dBi			
	Antenna 2: 4dBi			
	(Provided by mar	•		
	Directional gain:			
Antenna Type:	Antenna 1: Dipole			
	Antenna 2: Dipole	e antenna		



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LTE:

Hardware Version:	R1.0							
Software Version:	EG25GGBR07A06M4G							
Sample Type:	☐ Portable Device, ☐ Module							
Antenna Type:	□ External, □ Integrated							
Antenna Gain:	GSM850: 2.29dBi; GSM1900:1.59dBi WCDMA BAND II:1.59dBi WCDMA BAND VI:2dBi WCDMA BAND V:2.29dBi LTE BAND 2:1.59dBi; LTE BAND 4:2dBi; LTE BAND 5:2.29dBi; LTE BAND 7: 3dBi; LTE BAND 12: 3.26dBi; LTE BAND 13: 4.45dBi; LTE BAND 25: 1.59dBi; LTE BAND 26: 2.53dBi; LTE BAND 38: 2.06dBi;							
Characteristics	Description Description		LTE BAND 41: 3dBi;					
	I Describuori							
Characteristics								
	⊠ GSM							
Radio System Type	☐ GSM ☐ UMTS							
	☐ GSM ☐ UMTS	Тх	RX					
	☐ GSM ☐ UMTS ☐ LTE BAND	TX 824 to 849 MHz	RX 869 to 894 MHz					
	☐ GSM ☐ UMTS ☐ LTE BAND GSM850	824 to 849 MHz	869 to 894 MHz					
	☐ GSM ☐ UMTS ☐ LTE BAND ☐ GSM850 ☐ GSM1900	824 to 849 MHz 1850 to 1910 MHz	869 to 894 MHz 1930 to 1990 MHz					
	☐ GSM ☐ UMTS ☐ LTE BAND GSM850 GSM1900 UMTS BAND II	824 to 849 MHz 1850 to 1910 MHz 1850 to 1910 MHz	869 to 894 MHz 1930 to 1990 MHz 1930 to 1990 MHz					
	☐ GSM ☐ UMTS ☐ LTE BAND ☐ GSM850 ☐ GSM1900 UMTS BAND II UMTS BAND IV	824 to 849 MHz 1850 to 1910 MHz 1850 to 1910 MHz 1710 to 1755 MHz	869 to 894 MHz 1930 to 1990 MHz 1930 to 1990 MHz 2110 to 2155 MHz					
Radio System Type	GSM UMTS LTE BAND GSM850 GSM1900 UMTS BAND II UMTS BAND IV UMTS BAND V	824 to 849 MHz 1850 to 1910 MHz 1850 to 1910 MHz 1710 to 1755 MHz 824 to 849 MHz	869 to 894 MHz 1930 to 1990 MHz 1930 to 1990 MHz 2110 to 2155 MHz 869 to 894 MHz					
Radio System Type Supported Frequency	GSM UMTS LTE BAND GSM850 GSM1900 UMTS BAND II UMTS BAND IV UMTS BAND V LTE BAND 2	824 to 849 MHz 1850 to 1910 MHz 1850 to 1910 MHz 1710 to 1755 MHz 824 to 849 MHz 1850 to 1910 MHz	869 to 894 MHz 1930 to 1990 MHz 1930 to 1990 MHz 2110 to 2155 MHz 869 to 894 MHz 1930 to 1990 MHz					
Radio System Type Supported Frequency	☐ GSM ☐ UMTS ☐ LTE BAND ☐ GSM850 ☐ GSM1900 ☐ UMTS BAND II ☐ UMTS BAND IV ☐ UMTS BAND V ☐ LTE BAND 2 ☐ LTE BAND 4	824 to 849 MHz 1850 to 1910 MHz 1850 to 1910 MHz 1710 to 1755 MHz 824 to 849 MHz 1850 to 1910 MHz 1710 to 1755 MHz	869 to 894 MHz 1930 to 1990 MHz 1930 to 1990 MHz 2110 to 2155 MHz 869 to 894 MHz 1930 to 1990 MHz 2110 to 2155 MHz					
Radio System Type Supported Frequency	GSM UMTS LTE BAND GSM850 GSM1900 UMTS BAND II UMTS BAND IV UMTS BAND V LTE BAND 2 LTE BAND 4 LTE BAND 5	824 to 849 MHz 1850 to 1910 MHz 1850 to 1910 MHz 1710 to 1755 MHz 824 to 849 MHz 1850 to 1910 MHz 1710 to 1755 MHz 824 to 849 MHz	869 to 894 MHz 1930 to 1990 MHz 1930 to 1990 MHz 2110 to 2155 MHz 869 to 894 MHz 1930 to 1990 MHz 2110 to 2155 MHz 869 to 894 MHz					
Radio System Type Supported Frequency	☐ GSM ☐ UMTS ☐ LTE BAND ☐ GSM850 ☐ GSM1900 ☐ UMTS BAND II ☐ UMTS BAND IV ☐ UMTS BAND V ☐ LTE BAND 2 ☐ LTE BAND 4	824 to 849 MHz 1850 to 1910 MHz 1850 to 1910 MHz 1710 to 1755 MHz 824 to 849 MHz 1850 to 1910 MHz 1710 to 1755 MHz	869 to 894 MHz 1930 to 1990 MHz 1930 to 1990 MHz 2110 to 2155 MHz 869 to 894 MHz 1930 to 1990 MHz 2110 to 2155 MHz					



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	LTE BAND 13	777 to 787 MHz	746 to 756 MHz		
	LTE BAND 25	1850 to 1915MHz	1930 to 1995 MHz		
	LTE BAND 26	814 to 824MHz	859 to 869 MHz		
	(814 to 824 MHz)	014 10 024111112	033 to 003 WH IZ		
	LTE BAND 26	024 - 040 MIL	000 + 004 MIL		
	(824 to 849 MHz)	824 to 849 MHz	869 to 894 MHz		
	LTE BAND 38	2570 to 2620MHz	2570 to 2620MHz		
	LTE BAND 41	2496 to 2690MHz	2496 to 2690MHz		
Target TX Output Power	GSM850:35 dBm GSM1900: 32dBm UMTS BAND II: 25dBm UMTS BAND IV: 25dBm UMTS BAND V: 25dBm LTE BAND 2: 25dBm LTE BAND 4: 25dBm LTE BAND 5: 25dBm LTE BAND 7: 25dBm LTE BAND 12: 25dBm LTE BAND 13: 25dBm LTE BAND 25: 25dBm LTE BAND 25: 25dBm LTE BAND 26: 25dBm LTE BAND 38: 25dBm LTE BAND 38: 25dBm LTE BAND 41: 25dBm				
	GSM system:	⊠0.2 MHz			
	UMTS system:				
	LTE BAND 2				
	LTE BAND 4	⊠1.4 MHz;⊠3 MHz; ⊠ ⊠15 MHz, ⊠20 MHz	5 MHz; ⊠10 MHz;		
	LTE BAND 5	∑1.4 MHz; ∑3 MHz; ∑!			
Supported Channel	LTE BAND 7		15 MHz, ⊠20 MHz		
Supported Channel	LTE BAND 7 LTE BAND 12	⊠5 MHz; ⊠10 MHz; ⊠ ⊠1.4 MHz;⊠3 MHz; ⊠	15 MHz, ⊠20 MHz		
Supported Channel Bandwidth	LTE BAND 7		15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz		
	LTE BAND 7 LTE BAND 12		15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz		
	LTE BAND 7 LTE BAND 12 LTE BAND 13		15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz;		
	LTE BAND 7 LTE BAND 12 LTE BAND 13 LTE BAND 25		15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz;		
	LTE BAND 7 LTE BAND 12 LTE BAND 13 LTE BAND 25 LTE BAND 26(814-824)	□ 5 MHz; □ 10 MHz; □ □ 1.4 MHz; □ 3 MHz; □ □ 5 MHz; □ 10 MHz □ 1.4 MHz; □ 3 MHz; □ □ 1.5 MHz, □ 20 MHz □ 1.4 MHz; □ 3 MHz; □ □ 1.4 MHz; □ 3 MHz; □ □ 1.5 MHz	15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz;		
	LTE BAND 7 LTE BAND 12 LTE BAND 13 LTE BAND 25 LTE BAND 26(814-824) LTE BAND 26(824-849)	□ 5 MHz; □ 10 MHz; □ □ 1.4 MHz; □ 3 MHz; □ □ 5 MHz; □ 10 MHz □ 1.4 MHz; □ 3 MHz; □ □ 15 MHz, □ 20 MHz □ 1.4 MHz; □ 3 MHz; □ □ 1.4 MHz; □ 3	15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 15 MHz, ⊠20 MHz		
	LTE BAND 7 LTE BAND 12 LTE BAND 13 LTE BAND 25 LTE BAND 26(814-824) LTE BAND 26(824-849) LTE BAND38	□ 5 MHz; □ 10 MHz; □ □ 1.4 MHz; □ 3 MHz; □ □ 5 MHz; □ 10 MHz □ 1.4 MHz; □ 3 MHz; □ □ 1.5 MHz □ 1.5 MHz □ 1.5 MHz; □ 10 MHz; □ □ 1.5 MHz; □ 10 MHz; □ 10 MHz; □ □ 1.5 MHz; □ 10	15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 15 MHz, ⊠20 MHz		
Bandwidth Characteristics	LTE BAND 7 LTE BAND 12 LTE BAND 13 LTE BAND 25 LTE BAND 26(814-824) LTE BAND 26(824-849) LTE BAND38 LTE BAND41	□ 5 MHz; □ 10 MHz; □ □ 1.4 MHz; □ 3 MHz; □ □ 5 MHz; □ 10 MHz □ 1.4 MHz; □ 3 MHz; □ □ 1.5 MHz □ 15 MHz □ 5 MHz; □ 10 MHz; □ □ 5 MHz; □ 10 MHz; □ □ 247KGXW; 245KG7W	15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 15 MHz, ⊠20 MHz		
Bandwidth Characteristics Designation of	LTE BAND 7 LTE BAND 12 LTE BAND 13 LTE BAND 25 LTE BAND 26(814-824) LTE BAND 26(824-849) LTE BAND38 LTE BAND41 Description	□ 5 MHz; □ 10 MHz; □ □ 1.4 MHz; □ 3 MHz; □ □ 5 MHz; □ 10 MHz □ 1.4 MHz; □ 3 MHz; □ □ 1.5 MHz □ 15 MHz □ 5 MHz; □ 10 MHz; □ □ 5 MHz; □ 10 MHz; □ □ 10 MHz; □ 10 MHz; □ 10 MHz; □ □ 10 MHz; □ 10 MHz; □ 10 MHz; □ 10 MHz; □ □ 10 MHz;	15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 15 MHz, ⊠20 MHz		
Bandwidth Characteristics	LTE BAND 7 LTE BAND 12 LTE BAND 13 LTE BAND 25 LTE BAND 26(814-824) LTE BAND 26(824-849) LTE BAND38 LTE BAND41 Description GSM850	□ 5 MHz; □ 10 MHz; □ □ 1.4 MHz; □ 3 MHz; □ □ 5 MHz; □ 10 MHz □ 1.4 MHz; □ 3 MHz; □ □ 1.5 MHz □ 15 MHz □ 5 MHz; □ 10 MHz; □ □ 5 MHz; □ 10 MHz; □ □ 247KGXW; 245KG7W	15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 15 MHz, ⊠20 MHz		
Bandwidth Characteristics Designation of Emissions	LTE BAND 7 LTE BAND 12 LTE BAND 13 LTE BAND 25 LTE BAND 26(814-824) LTE BAND 26(824-849) LTE BAND38 LTE BAND41 Description GSM850 GSM1900 UMTS BAND II		15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 15 MHz, ⊠20 MHz		
Characteristics Designation of Emissions (Remark: the necessary	LTE BAND 7 LTE BAND 12 LTE BAND 13 LTE BAND 25 LTE BAND 26(814-824) LTE BAND 26(824-849) LTE BAND38 LTE BAND41 Description GSM850 GSM1900 UMTS BAND II		15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 15 MHz, ⊠20 MHz		
Bandwidth Characteristics Designation of Emissions	LTE BAND 7 LTE BAND 12 LTE BAND 13 LTE BAND 25 LTE BAND 26(814-824) LTE BAND 26(824-849) LTE BAND38 LTE BAND41 Description GSM850 GSM1900 UMTS BAND II UMTS BAND IV	□ S MHz; □ 10 MHz; □ S MHz; □ 1.4 MHz; □ 3 MHz; □ 1.5 MHz; □ 10 MHz □ 1.4 MHz; □ 20 MHz □ 1.4 MHz; □ 3 MHz; □ 1.4 MHz; □ 3 MHz; □ 1.4 MHz; □ 3 MHz; □ 1.5 MHz □ 1.5 MHz; □ 1.0	15 MHz, ⊠20 MHz 5 MHz; ⊠10 MHz 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 5 MHz; ⊠10 MHz; 15 MHz, ⊠20 MHz		



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the measured econoised		AMAGCZD:AMAGWZD
the measured occupied		4M48G7D;4M49W7D
bandwidths for each		8M93G7D;8M93W7D
type of channel		13M5G7D;13M5W7D
bandwidth		17M9G7D;17M9W7D
configuration.)		1M10G7D;1M09W7D
comgaration.)		2M70G7D;2M69W7D
	LTE BAND 4	4M48G7D;4M49W7D
	212 8/118 4	8M93G7D;8M91W7D
		13M4G7D;13M4W7D
		17M9G7D;17M9W7D
		1M09G7D;1M09W7D
	LTE BAND 5	2M70G7D;2M69W7D;
	LIE BAND 5	4M48G7D;4M49W7D
		8M93G7D;8M93W7D
		4M48G7D;4M49W7D
	LTE DANID 7	8M93G7D;8M91W7D
	LTE BAND 7	13M5G7D;13M4W7D
		17M9G7D;17M9W7D
		1M09G7D;1M09W7D
		2M70G7D;2M69W7D
	LTE BAND 12	4M48G7D;4M50W7D
		8M93G7D;8M93W7D
		4M48G7D;4M49W7D
	LTE BAND13	8M91G7D;8M91W7D
		1M09G7D;1M09W7D
		2M70G7D:2M69W7D
		4M47G7D;4M49W7D
	LTE BAND 25	8M91G7D;4M45W7D
		13M5G7D;13M4W7D 17M9G7D;17M9W7D
	LTE BAND 26	1M09G7D;1M09W7D
		2M70G7D;2M69W7D
	(814-824)	4M48G7D;4M50W7D
o		8M91G7D;8M91W7D
		1M09G7D;1M09W7D
	LTE BAND 26	2M70G7D;2M69W7D
	(824-849)	4M48G7D;4M49W7D
	(024-043)	8M95G7D;8M93W7D
		13M5G7D;13M4W7D
		4M48G7D;4M49W7D
	LTE DANID 20	8M91G7D;8M91W7D
	LTE BAND 38	13M5G7D;13M5W7D
		17M8G7D;17M8W7D
		4M48G7D;4M50W7D
		8M91G7D;8M91W7D
	LTE BAND 41	13M5G7D;13M5W7D
		17M9G7D;17M9W7D
		THISOTO, THISWID



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3.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab 588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

No tests were sub-contracted.

3.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS (No. CNAS L0599)

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

A2LA (Certificate No. 6332.01)

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

• FCC (Designation Number: CN1301)

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

• ISED (CAB Identifier: CN0020)

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory Company Number: 8617A

VCCI (Member No.: 3061)

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.



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4 Test Standards and Limits

4.1 FCC Radiofrequency radiation exposure limits:

According to §1.1310, the limit for general population/uncontrolled exposures

Frequency	Power density(mW/cm²)	Averaging time(minutes)		
300MHz~1.5GHz	f/1500	30		
1.5GHz~100GHz	1.0	30		

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5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHCR210800003202-5G WiFi.

	Test	Power [dBm]			Pov	wer [m	W]
Test Mode	Channel	ANT1	ANT2	МІМО	ANT1	ANT2	МІМО
11A	5745	13.65	14.31	N/A	23.17	26.98	N/A
11A	5785	13.58	13.84	N/A	22.80	24.21	N/A
11A	5825	13.58	14.1	N/A	22.80	25.70	N/A
11N20	5745	12.92	14.09	16.55	19.59	25.64	45.19
11N20	5785	13.44	13.98	16.73	22.08	25.00	47.10
11N20	5825	13.55	13.84	16.71	22.65	24.21	46.88
11N40	5755	14.17	15	17.62	26.12	31.62	57.81
11N40	5795	14.4	14.86	17.65	27.54	30.62	58.21
11AC20	5745	12.95	13.92	16.47	19.72	24.66	44.36
11AC20	5785	13.41	14.2	16.83	21.93	26.30	48.19
11AC20	5825	13.51	14	16.77	22.44	25.12	47.53
11AC40	5755	14.09	15.12	17.65	25.64	32.51	58.21
11AC40	5795	14.41	14.93	17.69	27.61	31.12	58.75
11AC80	5775	14.55	15.2	17.90	28.51	33.11	61.66



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The Power Data is based on the RF Test Report HR/2019/1001601-LTE.

Operating Band	Frequency (MHz)	Antenna Gain (dBi)	Max Conducted Average Output Power (dBm)	Output Power to Antenna (dBm)	EIRP(ERP) Limit (dBm)	Output Power to Antenna (mw)	Power Density at R = 20 cm (mW/cm2)	Limit (mW/cm2)	Gain according to EIRP (dBi)	Gain according to Pd (dBi)	Max Gain Allowed (dBi)	conclusion
GSM850	824.2	2.29	25.81	25.95	38.45	381.0658	0.1284	0.5495	14.79	8.60	8.60	Pass
GSM1900	1850.2	1.59	22.81	24.40	33.00	190.9853	0.0548	1.0000	10.19	14.20	10.19	Pass
WCDMAB2	1852.4	1.59	25.00	26.59	33.00	316.2278	0.0907	1.0000	8.00	12.01	8.00	Pass
WCDMAB4	1712.4	2.00	25.00	27.00	30.00	316.2278	0.0997	1.0000	5.00	12.01	5.00	Pass
WCDMAB5	826.4	2.29	25.00	25.14	38.45	316.2278	0.1066	0.5509	15.60	9.42	9.42	Pass
LTE B2	1850.7	1.59	25.00	26.59	33.00	316.2278	0.0907	1.0000	8.00	12.01	8.00	Pass
LTE B4	1710.7	2.00	25.00	27.00	30.00	316.2278	0.0997	1.0000	5.00	12.01	5.00	Pass
LTE B5	824.70	2.29	25.00	25.14	38.45	316.2278	0.1066	0.5498	15.60	9.41	9.41	Pass
LTE B7	2502.50	3.00	25.00	28.00	33.00	316.2278	0.1255	1.0000	8.00	12.01	8.00	Pass
LTE B12	699.70	3.26	25.00	26.11	34.77	316.2278	0.1333	0.4665	11.92	8.70	8.70	Pass
LTE B13	779.50	4.45	25.00	27.30	34.77	316.2278	0.1753	0.5197	11.92	9.16	9.16	Pass
LTE B25	1850.7	1.59	25.00	26.59	33.00	316.2278	0.0907	1.0000	8.00	12.01	8.00	Pass
LTE B26(814-824)	814.7	2.53	25.00	25.38	50.00	316.2278	0.1126	0.5431	27.15	9.36	9.36	Pass
LTE B26(824-849)	824.7	2.53	25.00	25.38	38.45	316.2278	0.1126	0.5498	15.60	9.41	9.41	Pass
LTE B38	2572.5	2.06	25.00	27.06	33.00	316.2278	0.1011	1.0000	8.00	12.01	8.00	Pass
LTE B41	2498.5	3.00	25.00	28.00	33.00	316.2278	0.1255	1.0000	8.00	12.01	8.00	Pass



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5.2 MPE Calculation

According to the formula $S=P/4\pi R^2$, we can calculate S which is MPE.

Note:

1) P (mW)

2) R = distance to the center of radiation of antenna (in meter) = 20cm

3) MPE limit = 1mW/cm²

For 5GHz WiFi:

The max. antenna gain is

dBi

Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm ²)	Limit (mW/cm²)	Result
33.11	2.512	20	0.01655	1	Pass

In MIMO mode:

The max. antenna gain is

7.01 dBi

C	Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm ²)	Limit (mW/cm²)	Result
	61.66	5.023	20	0.06162	1	Pass

For GSM/LTE:

Operating Band	Frequency (MHz)	Antenna Gain (dBi)	Max Conducted Average Output Power (dBm)	Output Power to Antenna (dBm)	EIRP(ERP) Limit (dBm)	Output Power to Antenna (mw)	Power Density at R = 20 cm (mW/cm2)	Limit (mW/cm2)	Gain according to EIRP (dBi)	Gain according to Pd (dBi)	Max Gain Allowed (dBi)	conclusion
GSM850	824.2	2.29	25.81	25.95	38.45	381.0658	0.1284	0.5495	14.79	8.60	8.60	Pass
GSM1900	1850.2	1.59	22.81	24.40	33.00	190.9853	0.0548	1.0000	10.19	14.20	10.19	Pass
WCDMAB2	1852.4	1.59	25.00	26.59	33.00	316.2278	0.0907	1.0000	8.00	12.01	8.00	Pass
WCDMA B4	1712.4	2.00	25.00	27.00	30.00	316.2278	0.0997	1.0000	5.00	12.01	5.00	Pass
WCDMAB5	826.4	2.29	25.00	25.14	38.45	316.2278	0.1066	0.5509	15.60	9.42	9.42	Pass
LTE B2	1850.7	1.59	25.00	26.59	33.00	316.2278	0.0907	1.0000	8.00	12.01	8.00	Pass
LTE B4	1710.7	2.00	25.00	27.00	30.00	316.2278	0.0997	1.0000	5.00	12.01	5.00	Pass
LTE B5	824.70	2.29	25.00	25.14	38.45	316.2278	0.1066	0.5498	15.60	9.41	9.41	Pass
LTE B7	2502.50	3.00	25.00	28.00	33.00	316.2278	0.1255	1.0000	8.00	12.01	8.00	Pass
LTE B12	699.70	3.26	25.00	26.11	34.77	316.2278	0.1333	0.4665	11.92	8.70	8.70	Pass
LTE B13	779.50	4.45	25.00	27.30	34.77	316.2278	0.1753	0.5197	11.92	9.16	9.16	Pass
LTE B25	1850.7	1.59	25.00	26.59	33.00	316.2278	0.0907	1.0000	8.00	12.01	8.00	Pass
LTE B26(814-824)	814.7	2.53	25.00	25.38	50.00	316.2278	0.1126	0.5431	27.15	9.36	9.36	Pass
LTE B26(824-849)	824.7	2.53	25.00	25.38	38.45	316.2278	0.1126	0.5498	15.60	9.41	9.41	Pass
LTE B38	2572.5	2.06	25.00	27.06	33.00	316.2278	0.1011	1.0000	8.00	12.01	8.00	Pass
LTE B41	2498.5	3.00	25.00	28.00	33.00	316.2278	0.1255	1.0000	8.00	12.01	8.00	Pass



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Consider the GSM/LTE Module and 5G module can simultaneous transmitting, so the maximum rate of MPE is 0.06162/1+0.1284/0.5495=0.295 mW/cm²<1 mW/cm².

So according to the KDB447498 section 7.2 determine the device is exclusion from SAR test..

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