



EMF TEST REPORT

Product Name: DTEN D7X 75"

Model Name: DB71475, DB71475-S1

FCC ID: 2AQ7Q-DB71475

Issued For : DTEN Inc

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Report Number: LGT22J013RF18

Sample Received Date: Oct. 13, 2022

Date of Test: Feb. 01, 2023 –Feb. 09, 2023

Date of Issue: Feb. 09, 2023

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RF Exposure Report-measurement

FCC-ID: 2AQ7Q-DB71475

RF Exposure Measurement

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached. Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

RF Exposure Limit

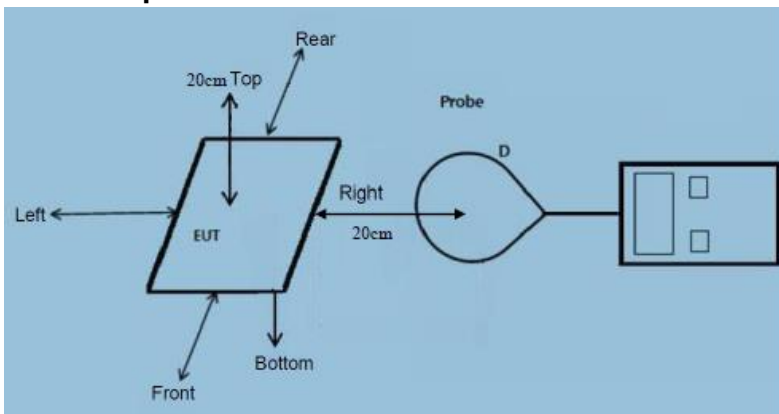
According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

Limits for Maximum Permissible Exposure (MPE)

F= Frequency in MHz

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

Test Setup



TEST

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
Power Sensor	Narda	EP601	511WX51129	2022.10.23	2023.10.22



Test Data

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.

ESP 32

Mode	Bluetooth+BLE1M
Detector	PEAK
Ant Gain(dBi)	2
Modulation Mode	GFSK, $\pi/4$ -DQPSK, 8DPSK

Protocol	Max Field strength V/M	Power Density (W/m ²)	Power Density (mW/cm ²)	Limit (mW/cm ²)
GFSK	2.53	0.02	0.002	1
$\pi/4$ -DQPSK	2.65	0.02	0.002	1
8DPSK	3.84	0.04	0.004	1
BLE1M	2.18	0.01	0.001	1

Conversion formula

$$w/m^2 = (V/m)^2 / 377$$

$$1 \text{ W/m}^2 = 0.1 \text{ mW/cm}^2$$

OPS

Mode	Bluetooth+BLE(1M PHY and 2M PHY)
Detector	PEAK
Ant Gain(dBi)	2
Modulation Mode	GFSK, $\pi/4$ -DQPSK, 8DPSK

Protocol	Max Field strength V/M	Power Density (W/m ²)	Power Density (mW/cm ²)	Limit (mW/cm ²)
GFSK	4.97	0.07	0.007	1
$\pi/4$ -DQPSK	4.36	0.05	0.005	1
8DPSK	3.95	0.04	0.004	1
BLE1M	3.68	0.04	0.004	1
BLE2M	3.58	0.03	0.003	1



2.4G WIFI WORST CASE

Mode	802.11b/g/n/ax 20:2412-2462MHz 802.11n/ax 40:2422-2452MHz
Detector	PEAK

Protocol	Max Field strength V/M	Power Density (W/m ²)	Power Density (mW/cm ²)	Limit (mW/cm ²)
802.11 b	9.15	0.22	0.022	1
802.11 g	8.84	0.21	0.021	1
802.11 n20	8.67	0.20	0.020	1
802.11 n40	8.45	0.19	0.019	1
802.11 ax20	8.53	0.19	0.019	1
802.11 ax40	8.36	0.19	0.019	1

5G WIFI WORST CASE

ANT Gain (G)

Mode	IEEE 802.11a/n(HT20)/ac(VHT20): 5.180GHz-5.240GHz IEEE 802.11n(HT40)/ac(VHT40): 5.190GHz-5.230GHz IEEE 802.11ac(VHT80): 5.210GHz IEEE 802.11ac(VHT160):5.250GHz-5.570GHz IEEE 802.11a/n(HT20)/ac(VHT20): 5.260GHz-5.320GHz IEEE 802.11 n(HT40)/ac(VHT40): 5.270GHz-5.310GHz IEEE 802.11ac(VHT80): 5.290GHz IEEE 802.11ac(VHT160):5.250GHz-5.570GHz IEEE 802.11a/n(HT20)/ac(VHT20): 5.500GHz-5.700GHz IEEE 802.11 n(HT40)/ac(VHT40): 5.510GHz-5.670GHz IEEE 802.11ac(VHT80): 5.530GHz-5.610GHz IEEE 802.11ac(VHT160):5.250GHz-5.570GHz IEEE 802.11a/n(HT20)/ac(VHT20): 5.745GHz-5.825GHz IEEE 802.11a/n(HT40)/ac(VHT40): 5.755GHz-5.795GHz IEEE 802.11ac(VHT80): 5.775GHz
Detector	AVG



Protocol	Max Field strength V/M	Power Density (W/m ²)	Power Density (mW/cm ²)	Limit (mW/cm ²)
802.11 a	7.56	0.15	0.015	1
802.11 n/ac20	6.63	0.12	0.012	1
802.11 n/ac40	6.42	0.11	0.011	1
802.11 ac80	6.36	0.11	0.011	1
802.11 ac160	5.95	0.09	0.009	1

6G WIFI WORST CASE

Operation Frequency:	IEEE 802.11ax(HE20): 5.935GHz-7.115GHz IEEE 802.11ax(HE40): 5.969GHz-7.085GHz IEEE 802.11ax(HE80): 5.985GHz-7.025GHz IEEE 802.11ax(HE160): 6.025GHz-6.985GHz
Modulation Type:	802.11ax: OFDM-BPSK,QPSK,16-QAM,64-QAM, 256-QAM and 1024QAM
Antenna Gain:	ANT 1: 2.22 ANT 2: 2.22 MIMO: 5.23

Protocol	Max Field strength V/M	Power Density (W/m ²)	Power Density (mW/cm ²)	Limit (mW/cm ²)
802.11 ax20	4.67	0.06	0.006	1
802.11 ax40	5.64	0.08	0.008	1
802.11 ax80	5.46	0.08	0.008	1
802.11 ax160	7.34	0.14	0.014	1

The max MPE of BT & WIFI simultaneous transmission:

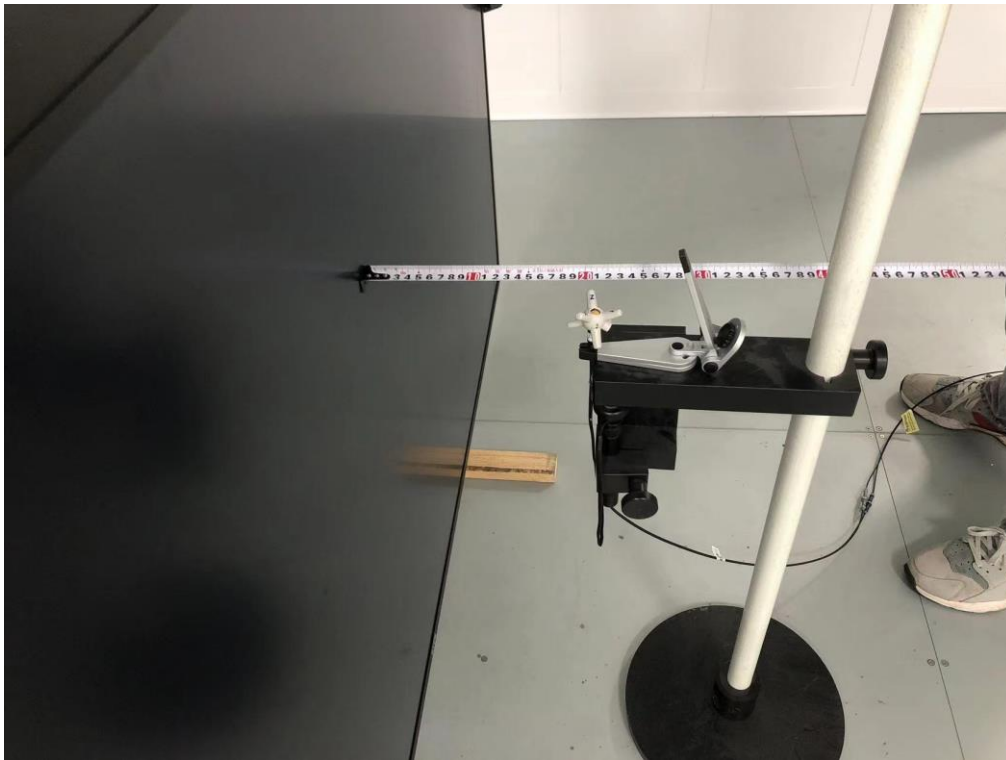
$$0.004(\text{ESP32 BT}) + 0.007(\text{OPS BT}) + 0.022(2.4\text{GHz Wi-Fi}) + 0.012(5\text{G Wi-Fi}) + 0.014(\text{WIFI 6E}) = 0.059 < 1$$

According to the maximum gain of the antenna and the total output power to the antenna, through measurement, we will know max MPE value 0.059 at distance 20cm. This is less than the limit 1. So SAR testing is not required.



TEST SETUP

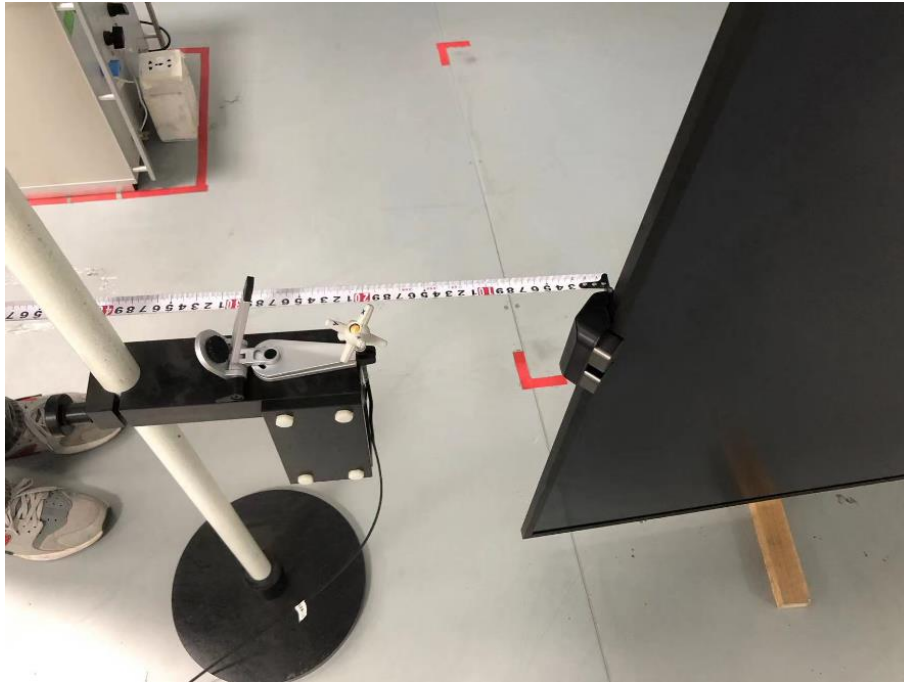
FRONT



Back



LEFT



RIGHT

