

# RF Exposure Evaluation Report

**Application No.:** SZCR2310003367AT  
**Applicant:** DT Research, Inc.  
**Address of Applicant:** 3RD FL NO 36 WUQUAN 7TH RD WUGU DISTRICT, NEW TAIPEI, Taiwan  
**Manufacturer:** DT Research, Inc.  
**Address of Manufacturer:** 2000 Concourse Drive, San Jose, CA 95131, USA  
**Factory:** DT Research, Inc. Taiwan Branch  
**Address of Factory:** 6F., No.36 Wuquan 7th Rd., Wugu Dist. New Taipei City 248 Taiwan  
**Product Name:** Graphics Station  
**Model No.:** 554GR, 554xxxx(x is -, any alphanumeric or blank) ♣  
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

**Trade Mark:**



**FCC ID:** YE3600-AX210NG  
**Standards:** 47 CFR Part 1.1307, 47 CFR Part 1.1310, 47 CFR Part 2.1091  
**Date of Receipt:** 2023-10-20  
**Date of Test:** 2024-01-02 to 2024-01-16  
**Date of Issue:** 2024-01-17

<b>Test Result :</b>	<b>PASS*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu  
EMC Laboratory Manager





# SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

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## 1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2024-01-17		Original

Authorized for issue by:			
		<i>Edison Li</i>	
		Edison Li/Project Engineer	
		<i>Eric Fu</i>	
		Eric Fu/Reviewer	



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### 3 General Information

#### 3.1 General Description

Power supply:	Medical AC Adapter Model: AC 100-240V, 5.0-2.5A, 50/60Hz Output: DC 19.0V, 14.73A, 280.0W
Cable(s):	AC cable:80cm unshielded DC cable:120cm with a ferrite core
Internal Source:	More than 108MHz
For Bluetooth Classic mode	
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V5.2
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channels:	79
Channel Spacing:	1MHz
Antenna Type:	PIFA Antenna
Antenna Gain:	2.8dBi
For Bluetooth LE mode	
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V5.2
Channel Spacing:	2MHz
Modulation Type:	GFSK
Number of Channels:	40
Data rate:	1Mbps, 2Mbps
Antenna Type:	PIFA Antenna
Antenna Gain:	2.8dBi
For 802.11b/g/n:	
Operation Frequency:	802.11b/g/n/ax(HT20): 2412MHz to 2472MHz





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	802.11n/ax(HT40): 2422MHz to 2462MHz			
Modulation Type:	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(QPSK, BPSK, 16QAM, 64QAM) 802.11ax: OFDMA(QPSK, BPSK, 16QAM, 64QAM, 256QAM, 1024QAM)			
Channel Numbers:	802.11b/g, 802.11n/ax HT20: 13 Channels 802.11n/ax HT40: 9 Channels			
Antenna Type:	PIFA Antenna			
Antenna Gain:	Antenna1: 2.8dBi, Antenna2: 3.0dBi Note: MIMO for 802.11n/ax.			
For 802.11a/n/ac/ax: U-NII-1, U-NII-2A, U-NII-2C, U-NII-3, U-NII-5, U-NII-6, U-NII-7, U-NII-8				
Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels
	UNII Band I	802.11a/n/ac/ax(HT20)	5180-5240	4
		802.11n/ac/ax(HT40)	5190-5230	2
		802.11ac/ax(HT80)	5210	1
	UNII Band II-A	802.11a/n/ac/ax(HT20)	5260-5320	4
		802.11n/ac/ax(HT40)	5270-5310	2
		802.11ac/ax(HT80)	5290	1
		802.11ac/ax(HT160)	5250	1
	UNII Band II-C	802.11a/n/ac/ax(HT20)	5500-5720	12
		802.11n/ac/ax(HT40)	5510-5710	6
		802.11ac/ax(HT80)	5530-5690	3
		802.11ac/ax(HT160)	5570	1
	UNII Band III	802.11a/n/ac/ax(HT20)	5745-5825	5
		802.11n/ac/ax(HT40)	5755-5795	2
		802.11ac/ax(HT80)	5775	1
	UNII Band 5	802.11a/n/ac/ax(HT20)	5955-6415	24
		802.11n/ac/ax(HT40)	5965-6405	12
		802.11ac/ax(HT80)	5985-6385	6



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		802.11ac/ax(HT160)	6025-6345	3
	UNII Band 6	802.11a/n/ac/ax(HT20)	6435-6515	5
		802.11n/ac/ax(HT40)	6445-6485	2
		802.11ac/ax(HT80)	6465-6545	2
		802.11ac/ax(HT160)	6505	1
	UNII Band 7	802.11a/n/ac/ax(HT20)	6535-6855	17
		802.11n/ac/ax(HT40)	6525-6845	9
		802.11ac/ax(HT80)	6625-6785	3
		802.11ac/ax(HT160)	6665	1
	UNII Band 8	802.11a/n/ac/ax(HT20)	6875-7115	13
		802.11n/ac/ax(HT40)	6885-7085	6
		802.11ac/ax(HT80)	6865-7025	3
		802.11ac/ax(HT160)	6985	1
Modulation Type:	802.11a: OFDM(QPSK, BPSK, 16QAM, 64QAM) 802.11n: OFDM(QPSK, BPSK, 16QAM, 64QAM) 802.11ac: OFDM(QPSK, BPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA(QPSK, BPSK, 16QAM, 64QAM, 256QAM, 1024QAM)			
DFS Function:	Slave without radar detection			
TPC Function:	Not support			
Antenna Type:	PIFA Antenna			
Antenna Gain:	Antenna1: 4.1dBi, Antenna2: 3.1dBi @5180MHz~5825MHz Antenna1: 3.9dBi, Antenna2: 3.8dBi @5180MHz~5825MHz Note: MIMO for 802.11n/ac/ax			

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Declaration of EUT Family Grouping:

Model No.: 554GR, 554xxxx(x is -, any alphanumeric or blank)

Only the model 554GR was tested, since according to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, with only difference on model No..



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### 3.2 Test Location

All tests were performed at:

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Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

### 3.3 Test Facility

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

- A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- VCCI (Member No. 1937)

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd.

Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- FCC - Designation Number: CN1336

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

- Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

### 3.4 Deviation from Standards

None.

### 3.5 Abnormalities from Standard Conditions

None.





## 4 RF Exposure Evaluation

### 4.1 RF Exposure Compliance Requirement

#### 4.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

**TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3–3.0 .....	614	1.63	*(100)	6
3.0–30 .....	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30–300 .....	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3–1.34 .....	614	1.63	*(100)	30
1.34–30 .....	824/f	2.19/f	*(180/f <sup>2</sup> )	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

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

For Uncontrolled Environment, the MPE limit of 300MHz to 1500MHz is f/1500 mW/cm<sup>2</sup>, the MPE limit of 1500MHz to 100000MHz is 1.0 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

#### 4.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.



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**4.1.3 EUT RF Exposure Evaluation**

**1) Test Results**

The max tune-up tolerance power Into Antenna1 & RF Exposure Evaluation Distance:

Type	Test Freq. (MHz)	Max Antenna Gain (dBi)	Max Antenna Gain (Numeric)	Max tune-up tolerance power (dBm)	Max tune-up Tolerance power to Antenna (mW)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	MPE Ratios	Result
BT	2402	2.80	1.91	11.50	14.13	0.0054	1.0000	0.0054	PASS
BLE	2402	2.80	1.91	10.00	10.00	0.0038	1.0000	0.0038	PASS
2.4G	2412	2.80	1.91	28.49	706.32	0.2677	1.0000	<b>0.2677</b>	PASS
5G	5180	4.10	2.57	22.14	163.68	0.0837	1.0000	0.0837	PASS
5.8G	5745	4.10	2.57	21.40	138.04	0.0706	1.0000	0.0706	PASS
6G	5955	3.90	2.45	14.12	25.82	0.0126	1.0000	0.0126	PASS

The max tune-up tolerance power Into Antenna2 & RF Exposure Evaluation Distance:

Type	Test Freq. (MHz)	Max Antenna Gain (dBi)	Max Antenna Gain (Numeric)	Max tune-up tolerance power (dBm)	Max tune-up Tolerance power to Antenna (mW)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	MPE Ratios	Result
2.4G	2412	3.00	2.00	26.31	427.56	0.1697	1.0000	<b>0.1697</b>	PASS
5G	5180	3.10	2.04	21.29	134.59	0.0547	1.0000	0.0547	PASS
5.8G	5745	3.10	2.04	21.26	133.66	0.0543	1.0000	0.0543	PASS
6G	5955	3.80	2.40	13.80	23.99	0.0114	1.0000	0.0114	PASS

Note: Refer to report No. 200611-03 or EUT test Max Conducted Peak Output Power value.

The distancer (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement, the MPE limit of 1500MHz to 100000MHz is 1.0 mW/cm<sup>2</sup>.

The antenna1 and antenna2 can synchronous transmission at the same time.

The simultaneous transmission result between of antenna1 and antenna2:

The SAR Exclusion Threshold Level:

$$=CPD1 / LPD1 + CPD2 / LPD2$$

(CPD = Calculation power density, LPD = Limit of power density)

$$= (0.2677/1) +(0.1697/1) = 0.4374 < 1$$

Since the SAR Exclusion Threshold Level is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.

-End of Report-

