

Report No.: SUCR240400012708

Rev.: 01

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# TEST REPORT

**Application No.:** SUCR2404000127MO  
**Applicant:** TP-Link Systems Inc.  
**Address of Applicant:** 10 Mauchly, Irvine, CA 92618  
**Manufacturer:** TP-Link Systems Inc.  
**Address of Manufacturer:** 10 Mauchly, Irvine, CA 92618  
**EUT Description:** 5G Mobile Wi-Fi  
**Model No.:** M8550  
**Trade Mark:** tp-link  
**FCC ID:** 2BH7FM8550  
**Standards:** 47 CFR Part 2.1091  
FCC KDB 447498 D01 v06  
**Date of Receipt:** 2024/04/23  
**Date of Issue:** 2024/09/02

**Test Result:****PASS\***

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Cloud Peng  
Technical Manager



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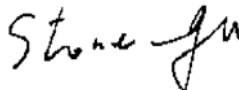
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## 1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2024/09/02		Original

Prepared By		 (Nick Hu) / Test Engineer
Checked By		 (Stone Gu) / Reviewer



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## 2 General Information

### 2.1 Client Information

Applicant:	TP-Link Systems Inc.
Address of Applicant:	10 Mauchly, Irvine, CA 92618
Manufacturer:	TP-Link Systems Inc.
Address of Manufacturer:	10 Mauchly, Irvine, CA 92618

### 2.2 Test Facility

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

• **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

• **FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number: 717327



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## 2.3 General Description of EUT

EUT Description:	5G Mobile Wi-Fi			
Model No.:	M8550			
Trade Mark:	tp-link			
Hardware Version:	V1.0			
Software Version:	V1.0			
Antenna Type:	Internal Antenna			
Power Class:	Class 2: LTE Band 41; LTE CA_41C; NR Band n41; NR Band n77; Class 1.5: UL MIMO NR Band n41; UL MIMO NR Band n77;			
Feature:	UL 2*2 MIMO: NR Band n41; NR Band n48; NR Band n77;			
Antenna Gain:	LTE Band 2:	1.72dBi	LTE Band 4:	1.56dBi
	LTE Band 5:	-0.98dBi	LTE Band 7:	1.98dBi
	LTE Band 12:	2.6dBi	LTE Band 13:	2.9dBi
	LTE Band 14:	2.85dBi	LTE Band 25:	1.72dBi
	LTE Band 26:	0.46dBi	LTE Band 30:	0.89dBi
	LTE Band 41:	2.27dBi	LTE Band 48:	0.98dBi
	LTE Band 66:	1.56dBi	LTE Band 71:	1.95dBi
	LTE CA_2C:	1.72dBi	LTE CA_5B:	-0.98dBi
	LTE CA_7C:	1.98dBi	LTE CA_41C:	2.27dBi
	LTE CA_48C:	0.98dBi	LTE CA_66B:	1.56dBi
	LTE CA_66C:	1.56dBi		
	NR Band n2:	1.72dBi	NR Band n5:	-0.98dBi
	NR Band n12:	2.6dBi	NR Band n14:	2.85dBi
	NR Band n25:	1.72dBi	NR Band n30:	0.89dBi
	NR Band n41 (MIMO):	2.27dBi	NR Band n48 (MIMO):	0.98dBi
	NR Band n66:	1.56dBi	NR Band n71:	1.95dBi
	NR Band n77 (MIMO):	2.11dBi		
	2.4G WIFI:	3.98dBi(Ant1); 3.98dBi(Ant2);		
	5150 MHz to 5250 MHz:	3.96dBi(Ant1); 3.96dBi(Ant2);		
	5250 MHz to 5350 MHz:	3.95dBi(Ant1); 3.95dBi(Ant2);		
	5470 MHz to 5725 MHz:	3.9dBi(Ant1); 3.9dBi(Ant2);		
	5725 MHz to 5850 MHz:	3.93dBi(Ant1); 3.93dBi(Ant2);		



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	5925 MHz to 6425 MHz: 3.97dBi(Ant1); 3.97dBi(Ant2);
	6425 MHz to 6525 MHz: 3.92dBi(Ant1); 3.92dBi(Ant2);
	6525 MHz to 6875 MHz: 3.92dBi(Ant1); 3.92dBi(Ant2);
	6875 MHz to 7125 MHz: 4.2dBi(Ant1); 4.2dBi(Ant2);
	<p>LTE CA:</p> <p>LTE CA_2C; LTE CA_5B; LTE CA_7C; LTE CA_41C;</p> <p>LTE CA_48C; LTE CA_66C; LTE CA_66B;</p> <p>ENDC:</p> <p>DC_5A_n2A;DC_14A_n2A;DC_30A_n2A;DC_12A_n2A;DC_66A_n2A;</p> <p>DC_71A_n2A;DC_13A_n2A;DC_7A_n2A;DC_4A_n2A;DC_13A_n5A;</p> <p>DC_2A_n5A;DC_12A_n5A;DC_30A_n5A;DC_66A_n5A;DC_7A_n5A;</p> <p>DC_48A_n5A;DC_5A_n7A;DC_5A_n7A;DC_66A_n7A;DC_71A_n7A;</p> <p>DC_13A_n7A;DC_2A_n7A;DC_4A_n7A;DC_2A_n12A;DC_2A_n12A;</p> <p>DC_2A_n12A;DC_7A_n12A;DC_5A_n12A;DC_48A_n12A;DC_2A_n14A;</p> <p>DC_30A_n14A;DC_66A_n14A;DC_66A_n25A;DC_12A_n25A;DC_48A_n25A;</p> <p>DC_7A_n25A;DC_71A_n25A;DC_5A_n25A;DC_5A_n25A;DC_5A_n25A;</p> <p>DC_2A_n30A;DC_5A_n30A;DC_12A_n30A;DC_14A_n30A;DC_66A_n30A;</p> <p>DC_2A_n41A;DC_66A_n41A;DC_25A_n41A;DC_26A_n41A;DC_5A_n41A;</p> <p>DC_4A_n41A;DC_12A_n41A;DC_12A_n41A;DC_12A_n41A;</p> <p>DC_71A_n41A;DC_2A_n48A;DC_5A_n48A;DC_13A_n48A;DC_66A_n48A;</p> <p>DC_66A_n48A;DC_2A_n66A;DC_5A_n66A;DC_5A_n66A;DC_14A_n66A;</p> <p>DC_30A_n66A;DC_71A_n66A;DC_48A_n66A;DC_48A_n66A;DC_2A_n71A;</p> <p>DC_2A_n71A;DC_5A_n71A;DC_7A_n71A;DC_48A_n71A;DC_48A_n71A;</p> <p>DC_7A_n77A;DC_7A_n77A;DC_7A_n77A;DC_13A_n77A;DC_66A_n77A;</p> <p>DC_12A_n77A;DC_14A_n77A;DC_30A_n77A;DC_25A_n77A;DC_71A_n77A;</p>
	<p>Note:</p> <p>The antenna gain are derived from the gain information report provided by the manufacturer.</p>
<p>Remark:</p> <p>As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.</p>	



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### 3 RF Exposure Evaluation

#### 3.1 RF Exposure Compliance Requirement

##### 3.1.1 Limits

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  
 \*=Plane-wave equivalent power density  
 RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

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

$R$  = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 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.



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### 3.1.2 Test Procedure

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

### 3.1.3 EUT RF Exposure Evaluation

Output Power Into Antenna & RF Exposure Evaluation Distance:

This confirmed that the device comply with MPE limit.

Band	Frequency	Max power (dBm)	Ant Gain (dBi)	EIRP (dBm)	Max EIRP (mW)	Limit (mW)	Distance R (cm)	Result	Ratio
LTE Band 2/CA_2C	1850.7	24	1.72	25.72	373.25	3060	20	Pass	0.1220
LTE Band 4	1710.7	24	1.56	25.56	359.75	3060	20	Pass	0.12
LTE Band 5/CA_5B	824.7	24.5	-0.98	23.52	224.91	1682	20	Pass	0.1337
LTE Band 7/CA_7C	2502.5	22.5	1.98	24.48	280.54	3060	20	Pass	0.0917
LTE Band 12	699.7	24.5	2.6	27.1	512.86	1427	20	Pass	0.3593
LTE Band 13	779.5	24.5	2.9	27.4	549.54	1590	20	Pass	0.3456
LTE Band 14	790.5	24.5	2.85	27.35	543.25	1613	20	Pass	0.3369
LTE Band 25	1850.7	24	1.72	25.72	373.25	3060	20	Pass	0.1220
LTE Band 26(814-824)	814.7	24.5	0.46	24.96	313.33	1662	20	Pass	0.1885
LTE Band 26(824-849)	824.7	24.5	0.46	24.96	313.33	1682	20	Pass	0.1862
LTE Band 30	2307.5	23	0.89	23.89	244.91	3060	20	Pass	0.0800
LTE Band 41/CA_41C	2498.5	23.5	2.27	25.77	377.57	3060	20	Pass	0.1234
LTE Band 41/CA_41C (PC2)	2498.5	25.5	2.27	27.77	598.41	3060	20	Pass	0.1956
LTE Band 48/CA_48C	3552.5	22	0.98	22.98	198.61	3060	20	Pass	0.0649
LTE Band 66/CA_66C/CA_66B	1710.7	24	1.56	25.56	359.75	3060	20	Pass	0.1176
LTE Band 71	665.5	24.5	1.95	26.45	441.57	1358	20	Pass	0.3253
NR Band n2	1852.5	24	1.72	25.72	373.25	3060	20	Pass	0.1220
NR Band n5	826.5	24.5	-0.98	23.52	224.91	1686	20	Pass	0.1334
NR Band n12	701.5	24.5	2.6	27.1	512.86	1431	20	Pass	0.3584
NR Band n14	790.5	24.5	2.85	27.35	543.25	1613	20	Pass	0.3369
NR Band n25	1852.5	24	1.72	25.72	373.25	3060	20	Pass	0.1220
NR Band n30	2307.5	23.5	0.89	24.39	274.79	3060	20	Pass	0.0898
NR Band n41 (PC2)	2501.01	26.5	2.27	28.77	753.36	3060	20	Pass	0.2462
NR Band n41 (MIMO)	2501.01	29	2.27	31.27	1339.68	3060	20	Pass	0.4378
NR Band n48	3555	22	0.98	22.98	198.61	3060	20	Pass	0.0649



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Band	Frequency	Max power (dBm)	Ant Gain (dBi)	EIRP (dBm)	Max EIRP (mW)	Limit (mW)	Distance R (cm)	Result	Ratio
NR Band n48 (MIMO)	3555	22	0.98	22.98	198.61	3060	20	Pass	0.0649
NR Band n66	1712.5	24	1.56	25.56	359.75	3060	20	Pass	0.1176
NR Band n71	665.5	24.5	1.95	26.45	441.57	1358	20	Pass	0.3253
NR Band n77(3450-3550) (PC2)	3455.01	25.5	2.11	27.61	576.77	3060	20	Pass	0.1885
NR Band n77(3450-3550) (MIMO)	3455.01	27.5	2.11	29.61	914.11	3060	20	Pass	0.2987
NR Band n77(3700-3980) (PC2)	3705	25.5	2.11	27.61	576.77	3060	20	Pass	0.1885
NR Band n77(3700-3980) (MIMO)	3705	27.5	2.11	29.61	914.11	3060	20	Pass	0.2987
Wifi2.4GHz	2412.0	22	3.98	25.98	396.28	3060	20	Pass	0.1295
Wifi 5GHz B1	5180.0	22	3.96	25.96	394.46	3060	20	Pass	0.1289
Wifi 5GHz B2	5260.0	22	3.95	25.95	393.55	3060	20	Pass	0.1286
Wifi 5GHz B3	5500.0	22	3.9	25.9	389.05	3060	20	Pass	0.1271
Wifi 5GHz B4	5745.0	22	3.93	25.93	391.74	3060	20	Pass	0.1280
Wifi 6E B1	5955.0	20	3.97	23.97	249.46	3060	20	Pass	0.0815
Wifi 6E B2	6435.0	20	3.92	23.92	246.60	3060	20	Pass	0.0806
Wifi 6E B3	6535.0	20	3.92	23.92	246.60	3060	20	Pass	0.0806
Wifi 6E B4	6895.0	20	4.2	24.2	263.03	3060	20	Pass	0.0860



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Due to the EUT support NR ENDC and CA

Both LTE and NR/LTE band can transmit simultaneously, the formula of the calculated the MPE is:

$$\sum_{i=1}^n \frac{S_{E_i}(\text{duty factor})}{MPE_{E_i}} < 1$$

NOTE The corresponding MEs must be expressed in terms of power density in the above summation

Therefore, the worst-case(DC\_12A\_n41A) situation is 0.3593+0.4378=0.7971, which is less than “1”, this confirmed that the device comply with MPE limit.



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### 3.1.4 Exposure calculations for multiple sources

To ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity. That is

$$\sum_{i=1}^n \frac{S_i}{MPE_i} \leq 1$$

The product also has multiple transmitters The Simultaneous Transmission Possibilities are as below:

Simultaneous Tx Combination	Configuration
1	WWAN+ WiFi 2.4G + WiFi 5G
2	WWAN+ WiFi 2.4G + WiFi 6E

No.	Mode	Max EIRP (mW)	Limit (mW)	Result Ratio	Total Ratio	Limit	Result
1	NR Band n41 (MIMO)*	1339.68	3060	0.4378	0.6962	1.0000	Pass
	WiFi 2.4G	396.28	3060	0.1295			
	WiFi 5G	394.46	3060	0.1289			
2	NR Band n41 (MIMO)*	1339.68	3060	0.4378	0.6488	1.0000	Pass
	WiFi 2.4G	396.28	3060	0.1295			
	WiFi 6E	249.46	3060	0.0815			

Remark\*: This WWAN Band was recalculated on worst Band.

---End of Report---



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