Maximum Permissible Exposure Report

1. Product Information

EUT	:	FriggaT7
Model Number	:	FriggaT7, Frigga T70(5G), Frigga T70 Pro(5G), Frigga T71(5G), Frigga T72(5G), Frigga T7H(5G),Frigga T71Pro(5G), Frigga T72 Pro(5G), Frigga T7H Pro(5G), Frigga T7A Pro(5G), Frigga T7B Pro(5G)
Test Model	:	FriggaT7
Power Supply	:	1,DC 3.7V by battery 2,DC 5.0V charged by adapter
Hardware version	:	T70MR41H
Software version	:	T7_LH_FG_L02
Sample ID	:	TZ230804732–1# & TZ230804732–2#
Bluetooth		
Bluetooth Version	:	V5.0
Operation Frequency	:	2402 – 2480 MHz
Channel Number	:	40 Channels for BLE (DTS)
Modulation Technology	:	GFSK for BLE (DTS)
Data Rates	:	BLE (DTS): 1Mbps
Antenna Type And Gain		Internal Antenna /2.3 dBi(Max.)
GSM		
GSM FCC Operation Frequency	:	GSM850(UL: 824 – 849 MHz/DL: 869 – 894 MHz) GSM1900(UL: 1850 –1910 MHz/DL: 1930 – 1990 MHz)
Channel Separation	:	0.2MHz
Modulation Technology	:	GMSK, 8PSK
Antenna Type And Gain	:	Internal Antenna GSM850: 0.3 dBi PCS1900: 0.12 dBi
E-UTRA		
E-UTRA FCC Operation Frequency	:	FDD Band 2 (UL: 1850 – 1910 MHz/DL: 1930 – 1990 MHz) FDD Band 4 (UL: 1710 – 1755 MHz/DL: 2110 – 2155 MHz) FDD Band 5 (UL: 824 – 849 MHz/DL: 869 – 894 MHz) FDD Band 7(UL: 2500 MHz - 2570 MHz/DL: 2620 - 2690 MHz) FDD Band 66 (UL: 1710 – 1780 MHz/DL: 2110 – 2180 MHz)
Channel Separation	:	0.1 MHz
Modulation Technology	:	OFDM (16QAM, QPSK)
Antenna Type And Gain	:	Internal Antenna FDD Band 2: -1.01 dBi, FDD Band 4: -0.9 dBi, FDD Band 5: -0.89 dBi, FDD Band 7: 0.28 dBi, FDD Band 66: 0.17 dBi

Note: Antenna position refer to EUT Photos.

2. Refer evaluation method

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
FCC KDB publication 447498 D01 General 1 RF Exposure Guidance v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.
FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.

3. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	($900/f^2$)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	($180/f^2$)*	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

4. MPE 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 an isotropic radiator
R=distance to the center of radiation of the antenna

5. Antenna Information

This Product can only use antennas certificated as follows provided by manufacturer;

Note: The Antenna gain shows in section 1 of this file

6. Max Conducted Power

According to test report: TZ230804732-E1, TZ230804732-E2 and TZ230804732-E3.

7. Manufacturing Tolerance

<GPRS/EGPRS >

Band	Mode	The Tune-up Maximum Power (Customer Declared)(dBm)
GSM 850	GPRS(GMSK, 1 Tx slot)	30±2
	GPRS(GMSK, 2 Tx slot)	30±2
	GPRS(GMSK, 3 Tx slot)	28±2
	GPRS(GMSK, 4 Tx slot)	27±2
	EDGE (8PSK, 1 Tx slot)	28±2
	EDGE (8PSK, 2 Tx slot)	27±2
	EDGE (8PSK, 3 Tx slot)	25±2
	EDGE (8PSK, 4 Tx slot)	24±2
GSM 1900	GPRS(GMSK, 1 Tx slot)	26.5±2
	GPRS(GMSK, 2 Tx slot)	26±2
	GPRS(GMSK, 3 Tx slot)	24±2
	GPRS(GMSK, 4 Tx slot)	23±2
	EDGE (8PSK, 1 Tx slot)	26±2
	EDGE (8PSK, 2 Tx slot)	25±2
	EDGE (8PSK, 3 Tx slot)	23±2
	EDGE (8PSK, 4 Tx slot)	22.5±2

< LTE >

Band	The Tune-up Maximum Power (Customer Declared)(dBm)	
LTE Band 2	QPSK	18.25±2.75
	16QAM	18.25±2.75
LTE Band 4	QPSK	19±3.5
	16QAM	19±3.5
LTE Band 5	QPSK	20.25±2.25
	16QAM	20.25±2.25
LTE Band 7	QPSK	18.75±2.75
	16QAM	18.75±2.75
LTE Band 66	QPSK	18.25±3.75
	16QAM	18.25±3.75

< Bluetooth >

GFSK(1Mbps) (Peak)			
Channel	Channel 0	Channel 19	Channel 39
Target (dBm)	-0.5	-0.5	-0.5
Tolerance ±(dB)	1.0	1.0	1.0
GFSK(2Mbps) (Peak)			
Channel	Channel 0	Channel 19	Channel 39
Target (dBm)	-1.0	0.0	-1.0
Tolerance ±(dB)	1.0	1.0	1.0

8. Measurement Results

8.1 Standalone MPE

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, r =20cm, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

Band	Max Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
GSM850	32.0	1584.8932	0.3	1.0715	100%	0.3380	0.5493
GSM1900	28.5	707.9458	0.12	1.0280	100%	0.1449	1.0000
LTE BAND 2	21.0	125.8925	-1.01	0.7925	100%	0.0251	1.0000
LTE BAND 4	22.5	177.8279	-0.9	0.8128	100%	0.0354	1.0000
LTE BAND 5	22.5	177.8279	-0.89	0.8147	100%	0.0354	0.5493
LTE BAND 7	21.5	141.2538	0.28	1.0666	100%	0.0300	1.0000
LTE BAND 66	22.0	158.4893	1.63	1.4555	100%	0.0459	1.0000
Bluetooth	1.0	1.2589	2.3	1.6982	100%	0.0004	1.0000

Remark:
1. Output power including tune-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer;

8.2 Simultaneous Transmission MPE

Bluetooth + GSM/LTE

Maximum MPE(mW/cm^2) BT Ant.1	Maximum MPE(mW/cm^2) GSM/LTE Ant.2	∑MPE (mW/cm^2)	Limit (mW/cm^2)	Results
0.0004	0.6135	0.6139	1.0000	PASS

Remark:
1. Output power including tune-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer;

9. Conclusion

Compliance

----------THE END OF REPORT----------