



Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-0948/20-01-17-A MPE (FCC_ISED)

Certification numbers and labeling requirements	
FCC ID	O6QPMT8X4G
ISED number	3892A-PMT8X4G
HVIN (Hardware Version Identification Number)	PMT8X4G
PMN (Product Marketing Name)	PLICSMOBILE T81
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	-/-

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

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EUT technologies:

Technologies:	Max. measured power [dBm]		Antenna gain max.: [dBi]	Max. EIRP Declared by Customer	#
	conducted	EIRP			
GSM 850 MHz	28.4	28.3	--	28.3 dBm $\pm$ 1.0 dB	A
PCS 1900 MHz	24.8	23.6	--	23.6 dBm $\pm$ 1.0 dB	B
UMTS FDD II 1880 MHz	22.1	21.1	--	21.1 dBm $\pm$ 1.5 dB	C
UMTS FDD IV 1700 MHz	21.9	20.9	--	20.9 dBm $\pm$ 1.5 dB	D
UMTS FDD V 850 MHz	22.7	22.4	--	22.4 dBm $\pm$ 1.5 dB	E
LTE FDD 2 1900 MHz	18.6	17.6	--	17.6 dBm $\pm$ 1.5 dB	F
LTE FDD 4 850 MHz	17.9	19.1	--	19.1 dBm $\pm$ 1.5 dB	G
LTE FDD 5 1750 MHz	18.2	15.7	--	15.7 dBm $\pm$ 1.5 dB	H
LTE FDD 7 2600 MHz	18.8	24.0	--	24.0 dBm $\pm$ 1.5 dB	I
LTE FDD 17 700 MHz	18.3	17.5	--	17.5 dBm $\pm$ 1.5 dB	J
BT LE 2450 MHz	-2.2	0.3	2.5	0.3 dBm	K

Details and origins of the measurements shown in the table above:

#	Results from:		Additional information
A	1-0948/20-01-13	CTC Advanced GmbH	Max conducted / ERP page 23
B	1-0948/20-01-13	CTC Advanced GmbH	Max conducted / EIRP page 35
C	1-0948/20-01-13	CTC Advanced GmbH	Max conducted / EIRP page 47
D	1-0948/20-01-13	CTC Advanced GmbH	Max conducted / EIRP page 55
E	1-0948/20-01-13	CTC Advanced GmbH	Max conducted / ERP page 63
F	1-0948/20-01-13	CTC Advanced GmbH	Max conducted / EIRP page 72 to 74
G	1-0948/20-01-13	CTC Advanced GmbH	Max conducted / ERP page 93 to 95
H	1-0948/20-01-13	CTC Advanced GmbH	Max conducted / EIRP page 83 to 84
I	1-0948/20-01-13	CTC Advanced GmbH	Max conducted / EIRP page 104 to 105
J	1-0948/20-01-13	CTC Advanced GmbH	Max conducted / ERP page 114 to 115
K	1-0948/20-01-15	CTC Advanced GmbH	Antenna Gain page 19 Max conducted page 23

Collocation overview:

Active scenario: Technology	1	2	3	4
GSM/ UMTS / LTE	x		x	
BT LE	x	x		

Prediction of MPE limit at given distance - FCC

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 the antenna
 G = Antenna gain
 R = Distance to the center of radiation of the antenna
 PG = Output Power including antenna gain

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled "Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure"

Frequency Range (MHz)	Power Density (mW/cm ²)	Averaging Time (minutes)
300 -1500	f/1500	30
1500 - 100000	1.0	30

where f = Frequency (MHz)

Prediction: worst case

Technologies:		GSM / UMTS / LTE						BT LE	
	Frequency (MHz)	700	850	1700	1880	1900	2600	2450	
PG	Declared max power (EIRP)	19	29.3	22.4	22.6	24.6	25.5	0.3	dBm
R	Distance	20	20	20	20	20	20	20	cm
S	MPE limit for uncontrolled exposure	0.467	0.567	1	1	1	1	1	mW/cm ²
	Calculated Power density:	0.0158	0.1694	0.0346	0.0362	0.0574	0.0706	0.0002	mW/cm ²
	Calculated percentage of Limit:	3.39%	29.90%	3.46%	3.62%	5.74%	7.06%	0.02%	
Collocation:									
	Scenario 1: GSM / UMTS / LTE + BT LE								
	Calculated percentage of Limit:	29.92%							

This prediction demonstrates the following:

The power density levels for FCC at a distance of 20 cm are below the maximum levels allowed by regulations.

Prediction of MPE limit at given distance - ISED

RSS-102, Issue 5, 2.5.2

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

Prediction: worst case

		GSM / UMTS / LTE						BT LE	
	Frequency	700	850	1700	1880	1900	2600	2450	MHz
R	Distance	20	20	20	20	20	20	20	cm
PG	Maximum EIRP	19	29.3	22.4	22.6	24.6	25.5	0.3	dBm
PG	Maximum EIRP	79.4	851.1	173.8	182.0	288.4	354.8	1.1	mW
	Exclusion Limit from above:	1.15	1.32	2.11	2.26	2.28	2.83	2.71	W
	Calculated percentage of Limit:	6.89%	64.68%	8.22%	8.04%	12.65%	12.56%	0.04%	
Collocation:									
	Scenario 1: GSM / UMTS / LTE + BT LE								
	Calculated percentage of Limit:	64.72%							

Conclusion: RF exposure evaluation is not required.