

RF Exposure Evaluation Report

Date of Report	18/05/2023	Client's Contact person:	Ido Rosenfeld
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Tested devices	PureOne		
Related reports:	-		
Testing has been carried out in accordance with:	47CFR §2.1093 Radiofrequency Radiation Exposure Evaluation: Portable Devices FCC published RF exposure KDB procedures		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory		
Test Results:	The DUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document		

Date and signatures: 18.05.2023

For the contents:

Laboratory Manager

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Device under Test (DUT):

Product:	PureOne
Manufacturer:	SuperCom LTD
Model:	PureOne
Hardware Version:	3.0
FCC ID:	2BAX3PRFPUREONE30
FCC Test Firm Designation Number:	FI0005
Document ID:	FCC RF Exposure Evaluation Report_PureOne_ID6166_18052023.docx
Document History/changes	Initial

1.2 Evaluation Results

The device conforms to the requirements of the standards when the maximum output power is less than or equal to the Test Exclusion Threshold Limit.

Regulator	System	Maximum Power* [mW]	Test Exclusion Threshold Limit at 5 mm separation** [mW]	Result
FCC	GSM 850	17.54	22.50	PASS
FCC	GSM 1900	6.37	8.25	PASS
FCC	WCDMA 2	3.59	8.25	PASS
FCC	WCDMA 4	3.59	9.00	PASS
FCC	WCDMA 5	4.95	22.50	PASS
FCC	LTE 2	3.59	8.25	PASS
FCC	LTE 4	3.59	9.00	PASS
FCC	LTE 5	4.95	22.50	PASS
FCC	LTE 7	3.20	6.50	PASS
FCC	LTE 12	4.95	28.75	PASS
FCC	LTE 13	4.95	25.00	PASS
FCC	LTE 14	4.95	24.75	PASS
FCC	LTE 25	3.59	8.25	PASS
FCC	LTE 26	4.95	22.50	PASS
FCC	LTE 40	3.59	7.00	PASS
FCC	LTE 41	3.20	6.25	PASS
FCC	LTE 66	3.59	8.75	PASS

FCC	LTE 71	4.95	29.75	PASS
FCC	Bluetooth Low Energy	0.08	6.75	PASS

* According to Appendix A at 447498 D04 Interim General RF Exposure Guidance, the equation (B.2.) defines the thresholds for available maximum time-averaged power or maximum time-averaged ERP, whichever is greater.

**For Extremity SAR a factor of 2.5 is applied for SAR-based exemption thresholds.

2. DESCRIPTION OF THE DEVICE UNDER TEST (DUT)

The DUT is a wearable device for electronic and position monitoring of offenders. It is attached to the foot of the user. BT and Cellular technologies cannot transmit simultaneously.

According to "2JF14 24Pa Product Datasheet" following cellular peak antenna gain information has been used in the calculations:

698-960 MHz: 4.1dBi

1710-2170 MHz: 2.7dBi

2500-2700 MHz: 2.2dBi

According to "UBX-20035327 - R08" datasheet the antenna gain for Bluetooth Low Energy is 3dBi.



Figure 1 DUT

Exposure Environment	General population, uncontrolled
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2.1 Supported Frequency Bands and Operational Modes

TX Frequency bands	Modes of Operation	Transmitter Frequency Range (MHz)
	GSM 850	824.2 – 848.8
	GSM 1900	1850.2 – 1909.8
	WCDMA 2	1850 – 1910
	WCDMA 4	1710 – 1755
	WCDMA 5	824 – 849
	LTE 2	1850 – 1910
	LTE 4	1710 – 1755
	LTE 5	824 – 849
	LTE 7	2500 – 2570
	LTE 12	699 – 716
	LTE 13	777 – 787
	LTE 14	788 – 798
	LTE 25	1850 – 1915
	LTE 26	814 – 849
	LTE 40	2300 – 2400
	LTE 41	2496 – 2690
	LTE 66	1710 – 1780
	LTE 71	663 – 698
	Bluetooth Low Energy	2400 – 2483.5

3. TEST EXCLUSIONS

FCC SAR test exclusion threshold is calculated according to 447498D04 Interim General RF Exposure Guidance, equation B.2 and B.1:

$$P_{th} (mW) = \begin{cases} ERP_{20\text{ cm}} (d / 20\text{ cm})^x & d \leq 20\text{ cm} \\ ERP_{20\text{ cm}} & 20\text{ cm} < d \leq 40\text{ cm} \end{cases} \quad (\text{Equation 1})$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20\text{ cm}} \sqrt{f}} \right) \quad (\text{Equation 2})$$

and f is in GHz, d is the separation distance (cm), and ERP20cm is per Equation 3 (B.1) below.

$$ERP_{20\text{ cm}} (mW) = \begin{cases} 2040f & 0.3 \leq f < 1.5\text{ GHz} \\ 3060 & 1.5\text{ GHz} \leq f \leq 6\text{ GHz} \end{cases} \quad (\text{Equation 3})$$

Transmission mode	Frequency (f)	Separation distance (d)	P _{th} * [mW]
GSM 850	848.8	5	22.50
GSM 1900	1909.8	5	8.25
WCDMA 2	1910	5	8.25
WCDMA 4	1755	5	9.00
WCDMA 5	849	5	22.50
LTE 2	1910	5	8.25
LTE 4	1755	5	9.00
LTE 5	849	5	22.50
LTE 7	2570	5	6.50
LTE 12	716	5	28.75
LTE 13	787	5	25.00
LTE 14	798	5	24.75
LTE 25	1915	5	8.25
LTE 26	849	5	22.50
LTE 40	2400	5	7.00
LTE 41	2690	5	6.25
LTE 66	1780	5	8.75
LTE 71	698	5	29.75
Bluetooth Low Energy	2483.5	5	6.75

*For Extremity SAR a factor of 2.5 is applied for SAR-based exemption thresholds.

4. RESULTS

4.1 Maximum defined Output Power and ERP

According to Appendix A at 447498 D04 Interim General RF Exposure Guidance, the equation (B.2.) defines the thresholds for available maximum time-averaged power or maximum time-averaged ERP, whichever is greater.

According to the manufacturer the maximum duty cycle of the transmission is 1%.

Since the ERP is greater than the output power, it is used for SAR test exclusion.

Transmission mode	Output Power [dBm]	Time-Averaged Output power [dBm]	Time-Averaged Output power [mW]	Power Gain of Antenna, G [dBi]	Time-Averaged EIRP [dBm]	Time-Averaged ERP [dBm]	Time-Averaged ERP [mW]	P _{th} [mW]
GSM 850 (4-TX Slots)	33.5	10.5	11.19	4.1	14.59	12.44	17.54	22.50
GSM 1900 (4-TX Slots)	30.5	7.5	5.61	2.7	10.19	8.04	6.37	8.25
WCDMA 2	25	5	3.16	2.7	7.70	5.55	3.59	8.25
WCDMA 4	25	5	3.16	2.7	7.70	5.55	3.59	9.00
WCDMA 5	25	5	3.16	4.1	9.10	6.95	4.95	22.50
LTE 2	25	5	3.16	2.7	7.70	5.55	3.59	8.25
LTE 4	25	5	3.16	2.7	7.70	5.55	3.59	9.00
LTE 5	25	5	3.16	4.1	9.10	6.95	4.95	22.50
LTE 7	25	5	3.16	2.2	7.20	5.05	3.20	6.50
LTE 12	25	5	3.16	4.1	9.10	6.95	4.95	28.75
LTE 13	25	5	3.16	4.1	9.10	6.95	4.95	25.00
LTE 14	25	5	3.16	4.1	9.10	6.95	4.95	24.75
LTE 25	25	5	3.16	2.7	7.70	5.55	3.59	8.25
LTE 26	25	5	3.16	4.1	9.10	6.95	4.95	22.50
LTE 40	25	5	3.16	2.7	7.70	5.55	3.59	7.00
LTE 41	25	5	3.16	2.2	7.20	5.05	3.20	6.25
LTE 66	25	5	3.16	2.7	7.70	5.55	3.59	8.75
LTE 71	25	5	3.16	4.1	9.10	6.95	4.95	29.75
Bluetooth Low Energy	8	-12	0.06	3.0	-9.00	-11.15	0.08	6.75

The maximum time-averaged ERP of the DUT is below the SAR test exclusion threshold.