

## FCC RF EXPOSURE REPORT

Positive LLC

Guitar Speaker

Model Number: Spark GO

FCC ID: 2A348SPARKGO

Applicant:	Positive LLC
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# 1. Applicable Standards

FCC Part 2(Section 2.1093)

FCC KDB 447498 D04 Interim General RF Exposure Guidance v01

## 2. Exposure Evaluation of Portable or Mobile Devices

Human exposure to RF emissions from portable devices (47 CFR §2.1093), as defined by the FCC, must be evaluated with respect to the FCC-adopted limits for SAR. Evaluation of mobile devices, as defined by the FCC, may also be performed with respect to SAR limits, but in such cases it is usually simpler and more cost-effective to evaluate compliance with respect to field strength or power density limits. For certain devices that are designed to be used in both mobile and portable configurations similar to those described in 47 CFR §2.1091(d)(4), such as certain desktop phones and wireless modem modules, compliance for mobile configurations is also satisfied when the same device is evaluated for SAR compliance in portable configurations.

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B.2})$$

where

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

and  $f$  is in GHz,  $d$  is the separation distance (cm), and  $ERP_{20 \text{ cm}}$  is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
		5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 300 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

### 3. Evaluation Results

Mode	Fre (MHz)	Peak Conducted output Power (dBm)	Antenna Gain (dBi)	E.I.R.P (dBm)	E.R.P (dBm)	E.R.P (mW)	SAR Test Exemption Limit (mW)
GFSK	2402	3.15	2.42	5.57	3.42	2.198	2.72
	2441	2.77	2.42	5.19	3.04	2.014	2.72
	2480	2.61	2.42	5.03	2.88	1.941	2.72
$\pi/4$ -DQPSK	2402	3.25	2.42	5.67	3.52	2.249	2.72
	2441	2.97	2.42	5.39	3.24	2.109	2.72
	2480	2.77	2.42	5.19	3.04	2.014	2.72
8-DPSK	2402	3.04	2.42	5.46	3.31	2.143	2.72
	2441	2.66	2.42	5.08	2.93	1.963	2.72
	2480	2.52	2.42	4.94	2.79	1.901	2.72
BLE 1Mbps	2402	2.98	2.42	5.40	3.25	2.113	2.72
	2440	2.72	2.42	5.14	2.99	1.991	2.72
	2480	2.48	2.42	4.90	2.75	1.884	2.72
BLE 2Mbps	2402	3.08	2.42	5.50	3.35	2.163	2.72
	2440	2.87	2.42	5.29	3.14	2.061	2.72
	2480	2.61	2.42	5.03	2.88	1.941	2.72

Note:

1. Limited=  $3060 \times (0.5/20)^{-\log_{10}(60/(3060 \times \sqrt{f}))}$  (where f is in GHz);
2. E.I.R.P(dBm)= Conducted output Power(dBm)+ Antenna Gain(dBi)
3. E.R.P(dBm)= E.I.R.P(dBm)-2.15
4. We choose 2.48GHz(highest frequency operate at Bluetooth) to calculate limit as lower frequency will have higher limits.

**End of Test Report**