

SAR Evaluation Report

Application No.: SZEM2010010097CR
Applicant: Bensussen Deutsch & Associates, LLC
Address of Applicant: 15525 Woodinville-Redmond Road NE Woodinville, WA 98072-6977 USA
Manufacturer: Bensussen Deutsch & Associates, LLC
Address of Manufacturer: 15525 Woodinville-Redmond Road NE Woodinville, WA 98072-6977 USA
Factory: Dashine Electronics Co., Ltd
Address of Factory: No.53, Guangtian Road, Yanchuan community, Yanluo street, Bao'an District, ShenZhen, China

Equipment Under Test (EUT):
EUT Name: MOGA XP7-X Plus Wireless controller
Model No.: 1510706-01, 1522435-01, 1510706-02, 1522435-02, 1510706-03, 1522435-03

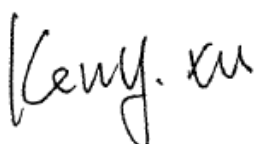
*
Please refer to section 2.1 of this report which indicates which model was actually tested and which were electrically identical.

*
Trade Mark: PowerA
FCC ID: YFK-1510706DA
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06

Date of Receipt: 2020-09-24
Date of Test: 2020-09-25 to 2020-10-13
Date of Issue: 2020-10-19

Test Result :	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu
EMC Laboratory Manager



2 Version

<i>Revision Record</i>				
<i>Version</i>	<i>Chapter</i>	<i>Date</i>	<i>Modifier</i>	<i>Remark</i>
01		2020-10-19		Original

Authorized for issue by:			
			
		<hr/>	
		Harry Wu /Project Engineer	
			
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		Eric Fu /Reviewer	



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4 General Information

4.1 General Description of EUT

Battery:	DC 3.7V Lithium-ion rechargeable battery which can be charged from USB port
BLE	
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V5.0 LE
Modulation Type:	GFSK
Number of Channels:	40
Channel Spacing:	2MHz
Antenna Type:	PCB Antenna
Antenna Gain:	2dBi
WPC	
Operation Frequency:	110.417KHz to 145.513KHz
Modulation type:	Load modulation
Antenna type:	Loop Antenna

Remark:

Model No.: 1510706-01, 1522435-01, 1510706-02, 1522435-02, 1510706-03, 1522435-03

The model 1510706-01 was tested. Since according to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, with only difference on model number for market strategy.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
SAMSUNG Galaxy S8	SAMSUNG	SM-G9500	R28J9140LPB



4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.4 Test Facility

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

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

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

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.



5 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Due date
1	Electric and Magnetic Field Analyzer	Narda	EHP-50F	EMC092	2020-11-27

6 SAR Evaluation

6.1 RF Exposure Compliance Requirement

6.1.1 Requirement for Bluetooth

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

6.1.2 Requirement for WPC

47 CFR PART 1, Subpart I, Section 1.1310

6.1.3 Limits for Bluetooth

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 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

6.1.4 Limits for WPC



Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
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
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	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
 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).

6.1.5 EUT RF Exposure

For Bluetooth:

The Max. power (including tune-up tolerance) is 3.89 dBm on the highest channel 2.48 GHz (*)
 3.89 dBm logarithmic terms convert to numeric result is nearly 2.45 mW
 According to the formula. calculate the test exclusion thresholds:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [v_f(\text{GHz})]$$

$$\text{General RF Exposure} = (2.45 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.48 \text{ GHz}} = 0.77 \tag{1}$$

SAR requirement:

$$S = 3.0 \tag{2}$$

$$(1) < (2)$$

So the SAR report is not required.

(*) Max. power refer to Report No.:SZEM201001009702



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Magnetic Field Emissions(WPC)

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50%Limit (A/m)
			10% charge	50% charge	90% charge	
129 kHz	0	Side 1	0.2343	0.2195	0.2150	0.815
		Side 2	0.2051	0.1897	0.1857	0.815
		Side 3	0.2514	0.2397	0.2351	0.815
		Side 4	0.2140	0.2005	0.1963	0.815
		Top	0.1962	0.1818	0.1780	0.815
		Botton	0.2231	0.2109	0.1987	0.815

Magnetic Field Emissions(WPC)

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50%Limit (A/m)
			10% charge	50% charge	90% charge	
129 kHz	2	Side 1	0.2011	0.1864	0.1821	0.815
		Side 2	0.1759	0.1602	0.1564	0.815
		Side 3	0.2201	0.2083	0.2033	0.815
		Side 4	0.1704	0.1585	0.1536	0.815
		Top	0.1643	0.1533	0.1491	0.815
		Botton	0.1836	0.1653	0.1548	0.815



Magnetic Field Emissions(WPC)

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50%Limit (A/m)
			10% charge	50% charge	90% charge	
129 kHz	4	Side 1	0.1674	0.1568	0.1528	0.815
		Side 2	0.1415	0.1308	0.1269	0.815
		Side 3	0.1907	0.1805	0.1756	0.815
		Side 4	0.1466	0.1341	0.1298	0.815
		Top	0.1417	0.1303	0.1263	0.815
		Botton	0.1498	0.1342	0.1267	0.815

Magnetic Field Emissions(WPC)

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50%Limit (A/m)
			10% charge	50% charge	90% charge	
129 kHz	6	Side 1	0.1415	0.1311	0.1263	0.815
		Side 2	0.1207	0.1049	0.1004	0.815
		Side 3	0.1534	0.1422	0.1388	0.815
		Side 4	0.1207	0.1091	0.1049	0.815
		Top	0.1415	0.1311	0.1263	0.815
		Botton	0.1487	0.1248	0.1149	0.815



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Magnetic Field Emissions(WPC)

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50%Limit (A/m)
			10% charge	50% charge	90% charge	
129 kHz	8	Side 1	0.1123	0.1022	0.0971	0.815
		Side 2	0.1027	0.0912	0.0874	0.815
		Side 3	0.1295	0.1096	0.1044	0.815
		Side 4	0.1019	0.0878	0.0836	0.815
		Top	0.0944	0.0804	0.0769	0.815
		Botton	0.1064	0.0928	0.0829	0.815

Magnetic Field Emissions(WPC)

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50%Limit (A/m)
			10% charge	50% charge	90% charge	
129 kHz	10	Side 1	0.0890	0.0765	0.0731	0.815
		Side 2	0.0823	0.0675	0.0629	0.815
		Side 3	0.0981	0.0837	0.0798	0.815
		Side 4	0.0791	0.0679	0.0633	0.815
		Top	0.0772	0.0612	0.0572	0.815
		Botton	0.0837	0.0718	0.0636	0.815



Magnetic Field Emissions(WPC)

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50%Limit (A/m)
			10% charge	50% charge	90% charge	
129 kHz	15	Side 1	0.0473	0.0338	0.0301	0.815
		Side 2	0.0466	0.0328	0.0276	0.815
		Side 3	0.0528	0.0414	0.0370	0.815
		Side 4	0.0461	0.0349	0.0300	0.815
		Top	0.0458	0.0328	0.0286	0.815
		Botton	0.0487	0.0361	0.0301	0.815

Exposure conditions for simultaneous transmission operations of Bluetooth and WPC

According to the formula. Calculate the test exclusion thresholds:

$[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] \cdot [\sqrt{f(GHz)/x}] W/kg$, for test separation distances ≤ 50 mm;

where $x = 7.5$ for 1-g SAR

Simultaneous transmission SAR test is not required, because the Max. sum of the MPE ratios for Bluetooth and WPC is $0.103 < 1.6$

Max. power of Bluetooth is 2.45mW at Frequency 2.48GHz referring to Report No.:SZEM201001009702.

Max. Electric Field Strength of WPC is 74.69dBuV/m at 0.13253MHz referring to Report No.:SZEM201001009703.

- End of the Report -

