

MERCHSOURCE.LLC

TEST REPORT

SCOPE OF WORK

SAR Assessment– SI TWS

REPORT NUMBER

200418010SZN-004

ISSUE DATE

11 June 2020

[REVISED DATE]

[-----]

PAGES

10

DOCUMENT CONTROL NUMBER

RF Exposure

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Test Report

Applicant : MERCHSOURCE.LLC
7755 Irvine Center Drive, Suite 100, Irvine, CA 92618, USA.

Sample Description

Product : Earbuds True Wireless In Ear with Qi Charging

Model No. : SI TWS

Brand Name : SHARPER IMAGE

Electrical Rating : Input: DC 5V, 500mA through USB port
Wireless charging: DC5V, 500mA

Date Received : 18 April 2020

Date Test Conducted : 18 April 2020 to 10 June 2020

Test Requested : Test for compliance with CFR 47 part 1

Test Method : Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(c) and (d), 1.1310

Test Result : Pass

Conclusion : When determining of test conclusion, measurement uncertainty of tests have been considered.

***** End of Page *****

Prepared and Checked By:

Approved By:

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Engineer

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Technical Supervisor
Date: 11 June 2020

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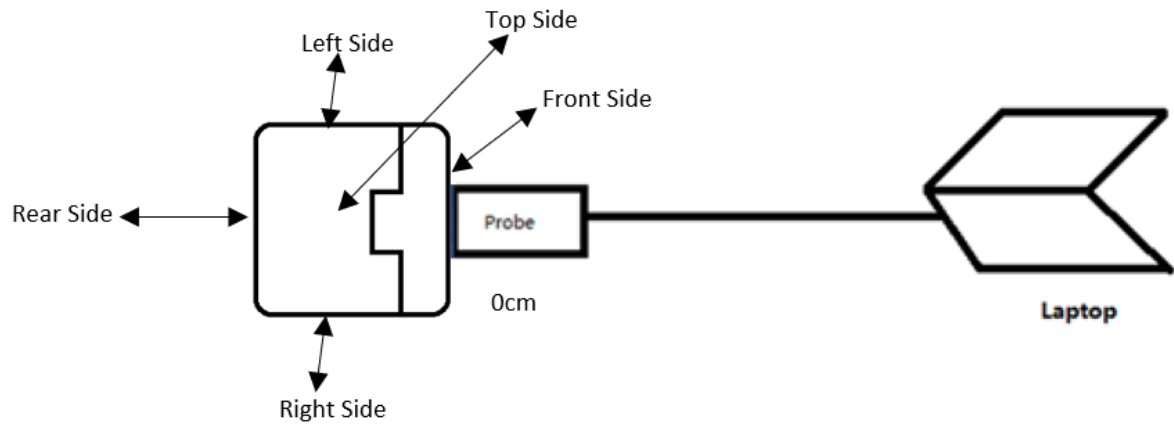
101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen.

Tel: (86 755) 8601 6288

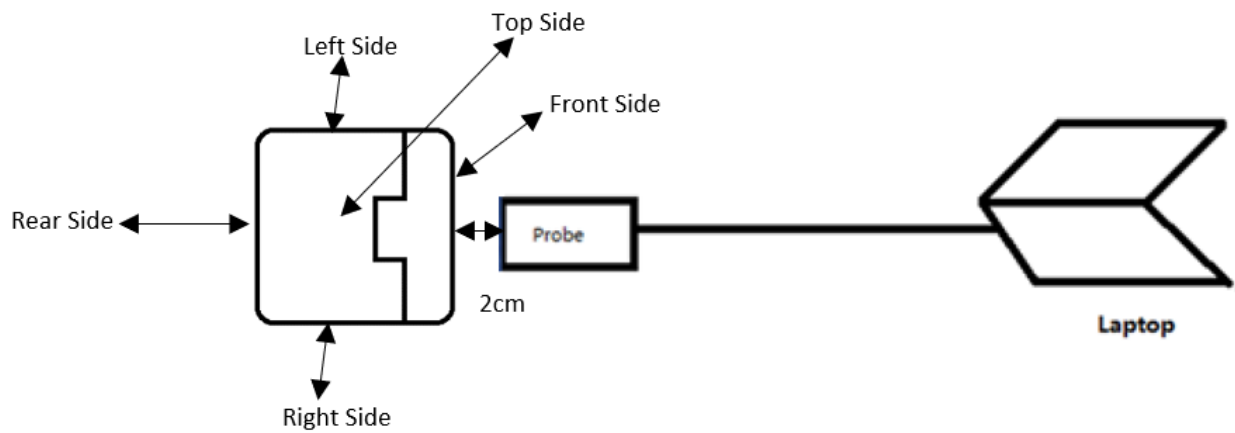
Fax: (86 755) 8601 6751

Test Report

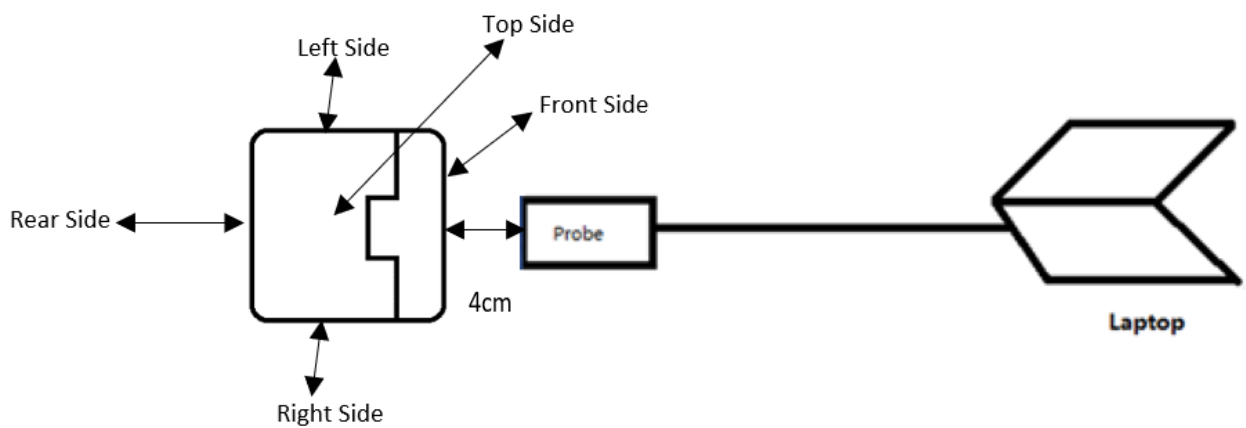
Test Setup Configuration



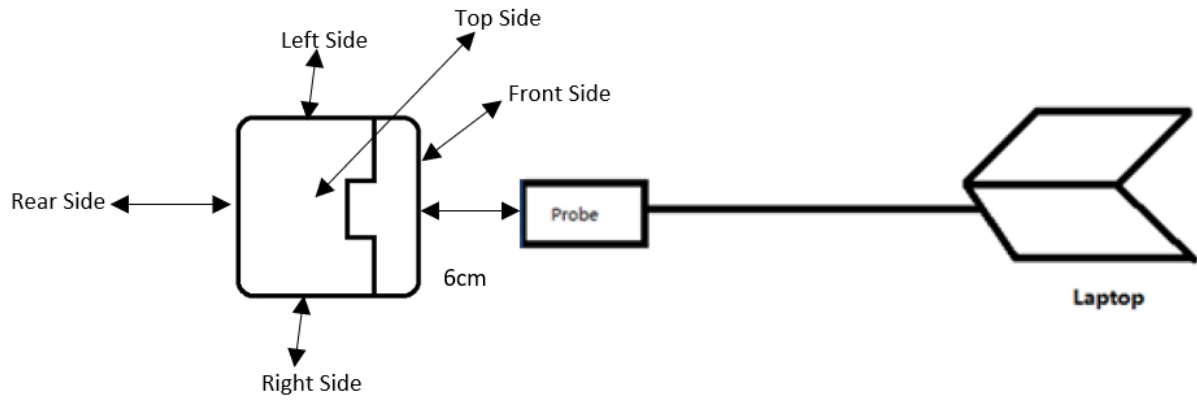
Test Distance: 0mm



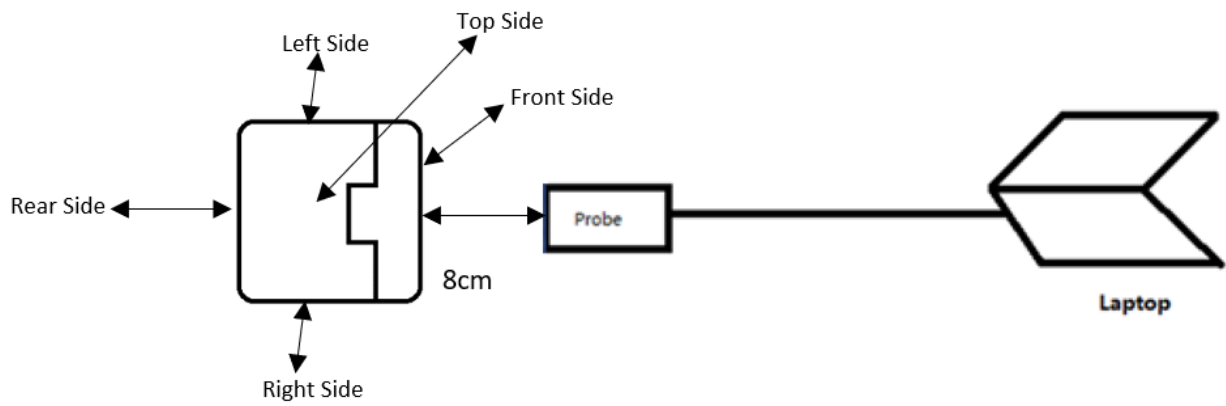
Test Distance: 2cm



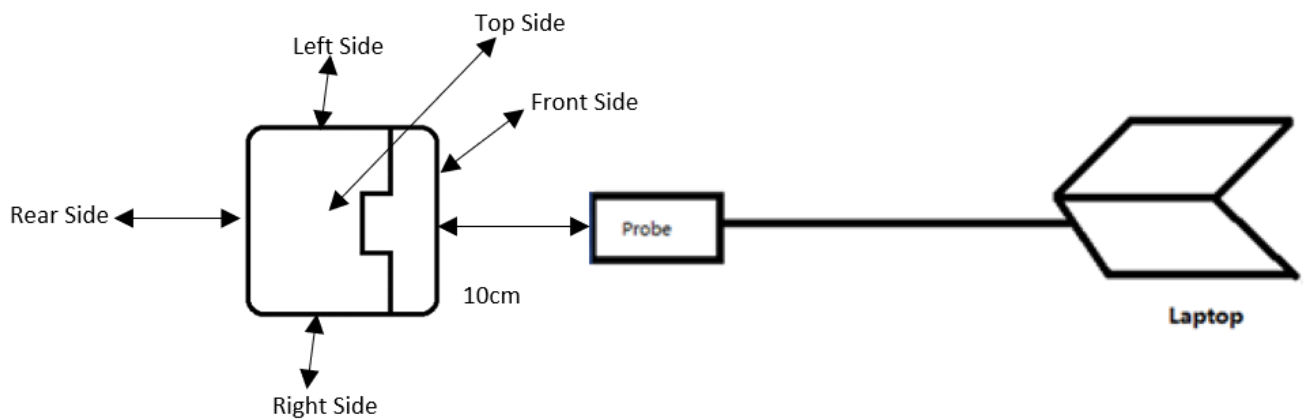
Test Distance: 4cm



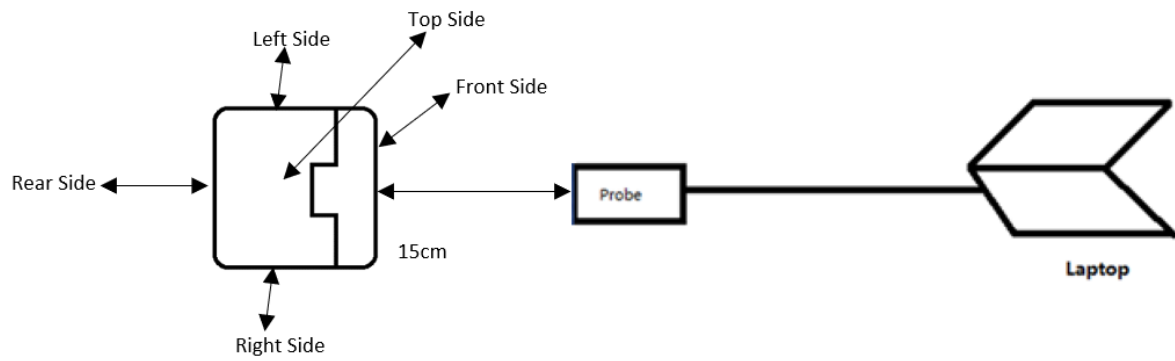
Test Distance: 6cm



Test Distance: 8cm



Test Distance: 10cm



Test Distance: 15cm

Note

- The RF exposure test is performed in the shield room.
- The test distance is between the edge of the charger and the the measurement probe.

Test Equipment List

Name of instrument	Model	Manufacturer	Cal. Date	Due Date
Electric and Magnetic Field Analyzer	EHP-200A	Narda	2019-06-27	2020-06-27

Support Equipment List

Description	Manufacturer	Detail
Wireless power bank	XIAOMI	Model: WP815ZM Input: 5V3A Output: 10W (Max)

Reference Limit:

Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(c) and (d), 1.1310

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation.

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3 – 1.34	614	1.63	(100) *	30

Note: * = Plane wave equivalent power density

Test Result: Pass

H-Field Strength at 0 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (A/m)	Probe Position Rear (A/m)	Probe Position Left (A/m)	Probe Position Right (A/m)	Probe Position Top (A/m)	Probe Position Bottom (A/m)	Limits (A/m)
0.110-0.205	1% Battery Level	0.0987	0.0921	0.1049	0.0787	0.1217	0.0909	1.63
0.110-0.205	50% Battery Level	0.0711	0.0512	0.0643	0.0487	0.0917	0.0509	1.63
0.110-0.205	99% Battery Level	0.0654	0.0451	0.0654	0.0453	0.0887	0.0449	1.63
0.110-0.205	Stand-by	0.0432	0.0443	0.0423	0.0441	0.0456	0.0441	1.63

E-Field Strength at 0 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (V/m)	Probe Position Rear (V/m)	Probe Position Left (V/m)	Probe Position Right (V/m)	Probe Position Top (V/m)	Probe Position Bottom (V/m)	Limits (V/m)
0.110-0.205	1% Battery Level	0.9961	0.5542	1.1697	0.8697	1.5745	1.0733	614
0.110-0.205	50% Battery Level	0.9432	0.5511	1.1321	0.8612	1.2745	0.8733	614
0.110-0.205	99% Battery Level	0.7642	0.5453	1.1290	0.7497	1.1745	0.7733	614
0.110-0.205	Stand-by	0.3533	0.3417	0.3642	0.3697	0.3745	0.3733	614

H-Field Strength at 2 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (A/m)	Probe Position Rear (A/m)	Probe Position Left (A/m)	Probe Position Right (A/m)	Probe Position Top (A/m)	Probe Position Bottom (A/m)	Limits (A/m)
0.110-0.205	1% Battery Level	0.0860	0.0955	0.1049	0.0720	0.1099	0.0867	1.63
0.110-0.205	50% Battery Level	0.0701	0.0814	0.0789	0.0487	0.0944	0.0775	1.63
0.110-0.205	99% Battery Level	0.0676	0.0788	0.0712	0.0453	0.0798	0.0789	1.63
0.110-0.205	Stand-by	0.0445	0.0446	0.0454	0.0473	0.0436	0.0425	1.63

E-Field Strength at 2 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (V/m)	Probe Position Rear (V/m)	Probe Position Left (V/m)	Probe Position Right (V/m)	Probe Position Top (V/m)	Probe Position Bottom (V/m)	Limits (V/m)
0.110-0.205	1% Battery Level	0.9545	0.5786	1.2011	0.7908	1.4674	1.0988	614
0.110-0.205	50% Battery Level	0.9267	0.5342	1.1299	0.8554	1.2465	0.8544	614
0.110-0.205	99% Battery Level	0.7866	0.5243	1.1178	0.7957	1.1190	0.8021	614
0.110-0.205	Stand-by	0.3169	0.3177	0.3437	0.3379	0.3500	0.3488	614

H-Field Strength at 4 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (A/m)	Probe Position Rear (A/m)	Probe Position Left (A/m)	Probe Position Right (A/m)	Probe Position Top (A/m)	Probe Position Bottom (A/m)	Limits (A/m)
0.110-0.205	1% Battery Level	0.0723	0.0576	0.0667	0.0621	0.0788	0.0543	1.63
0.110-0.205	50% Battery Level	0.0643	0.0533	0.0633	0.0567	0.0665	0.0512	1.63
0.110-0.205	99% Battery Level	0.0577	0.0516	0.0613	0.0545	0.0611	0.0509	1.63
0.110-0.205	Stand-by	0.0488	0.0453	0.0454	0.0475	0.0445	0.0412	1.63

E-Field Strength at 4 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (V/m)	Probe Position Rear (V/m)	Probe Position Left (V/m)	Probe Position Right (V/m)	Probe Position Top (V/m)	Probe Position Bottom (V/m)	Limits (V/m)
0.110-0.205	1% Battery Level	0.5233	0.4987	0.5456	0.5906	0.6341	0.4987	614
0.110-0.205	50% Battery Level	0.4768	0.4790	0.4911	0.5677	0.6118	0.4533	614
0.110-0.205	99% Battery Level	0.4665	0.4478	0.4890	0.5542	0.5709	0.4513	614
0.110-0.205	Stand-by	0.3362	0.3487	0.3538	0.3416	0.3387	0.3346	614

H-Field Strength at 6 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (A/m)	Probe Position Rear (A/m)	Probe Position Left (A/m)	Probe Position Right (A/m)	Probe Position Top (A/m)	Probe Position Bottom (A/m)	Limits (A/m)
0.110-0.205	1% Battery Level	0.0645	0.0556	0.0612	0.0666	0.0732	0.0612	1.63
0.110-0.205	50% Battery Level	0.0613	0.0520	0.0583	0.0602	0.0645	0.0534	1.63
0.110-0.205	99% Battery Level	0.0589	0.0511	0.0571	0.0576	0.0655	0.0509	1.63
0.110-0.205	Stand-by	0.0411	0.0427	0.0434	0.0418	0.0429	0.0423	1.63

E-Field Strength at 6 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (V/m)	Probe Position Rear (V/m)	Probe Position Left (V/m)	Probe Position Right (V/m)	Probe Position Top (V/m)	Probe Position Bottom (V/m)	Limits (V/m)
0.110-0.205	1% Battery Level	0.5334	0.5542	0.5564	0.5933	0.6342	0.4675	614
0.110-0.205	50% Battery Level	0.4875	0.4874	0.5123	0.5578	0.6118	0.4231	614
0.110-0.205	99% Battery Level	0.4910	0.4564	0.5109	0.5542	0.5709	0.4244	614
0.110-0.205	Stand-by	0.3037	0.3184	0.3183	0.3366	0.3465	0.3289	614

H-Field Strength at 8 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (A/m)	Probe Position Rear (A/m)	Probe Position Left (A/m)	Probe Position Right (A/m)	Probe Position Top (A/m)	Probe Position Bottom (A/m)	Limits (A/m)
0.110-0.205	1% Battery Level	0.0635	0.0582	0.0665	0.0612	0.0643	0.0546	1.63
0.110-0.205	50% Battery Level	0.0627	0.0546	0.0620	0.0545	0.0566	0.0533	1.63
0.110-0.205	99% Battery Level	0.0546	0.0523	0.0623	0.0571	0.0523	0.0512	1.63
0.110-0.205	Stand-by	0.0430	0.0423	0.0439	0.0446	0.0448	0.0448	1.63

E-Field Strength at 8 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (V/m)	Probe Position Rear (V/m)	Probe Position Left (V/m)	Probe Position Right (V/m)	Probe Position Top (V/m)	Probe Position Bottom (V/m)	Limits (V/m)
0.110-0.205	1% Battery Level	0.5210	0.5134	0.5478	0.5908	0.6342	0.4765	614
0.110-0.205	50% Battery Level	0.4896	0.4987	0.5244	0.5654	0.6243	0.4513	614
0.110-0.205	99% Battery Level	0.4777	0.4545	0.5115	0.5433	0.5655	0.4422	614
0.110-0.205	Stand-by	0.3279	0.3815	0.3623	0.3112	0.3210	0.3236	614

H-Field Strength at 10 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (A/m)	Probe Position Rear (A/m)	Probe Position Left (A/m)	Probe Position Right (A/m)	Probe Position Top (A/m)	Probe Position Bottom (A/m)	Limits (A/m)
0.110-0.205	1% Battery Level	0.0687	0.0576	0.0690	0.0644	0.0625	0.0589	1.63
0.110-0.205	50% Battery Level	0.0643	0.0523	0.0588	0.0567	0.0579	0.0554	1.63
0.110-0.205	99% Battery Level	0.0577	0.0566	0.0564	0.0582	0.0535	0.0547	1.63
0.110-0.205	Stand-by	0.0428	0.0435	0.0440	0.0430	0.0393	0.0375	1.63

E-Field Strength at 10 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (V/m)	Probe Position Rear (V/m)	Probe Position Left (V/m)	Probe Position Right (V/m)	Probe Position Top (V/m)	Probe Position Bottom (V/m)	Limits (V/m)
0.110-0.205	1% Battery Level	0.5190	0.5043	0.5321	0.5876	0.6290	0.4655	614
0.110-0.205	50% Battery Level	0.4875	0.4874	0.5123	0.5578	0.6118	0.4453	614
0.110-0.205	99% Battery Level	0.4910	0.4564	0.5109	0.5542	0.5709	0.4467	614
0.110-0.205	Stand-by	0.3182	0.3154	0.3234	0.3282	0.3182	0.3338	614

H-Field Strength at 15 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (A/m)	Probe Position Rear (A/m)	Probe Position Left (A/m)	Probe Position Right (A/m)	Probe Position Top (A/m)	Probe Position Bottom (A/m)	Limits (A/m)
0.110-0.205	1% Battery Level	0.0690	0.0544	0.0690	0.0581	0.0614	0.0567	1.63
0.110-0.205	50% Battery Level	0.0634	0.0513	0.0691	0.0571	0.0610	0.0554	1.63
0.110-0.205	99% Battery Level	0.0635	0.0503	0.0654	0.0565	0.0583	0.0532	1.63
0.110-0.205	Stand-by	0.0393	0.0433	0.0433	0.0434	0.0447	0.0443	1.63

E-Field Strength at 15 cm surrounding the EUT

Frequency Range (MHz)	EUT Operation mode	Probe Position Front (V/m)	Probe Position Rear (V/m)	Probe Position Left (V/m)	Probe Position Right (V/m)	Probe Position Top (V/m)	Probe Position Bottom (V/m)	Limits (V/m)
0.110-0.205	1% Battery Level	0.4919	0.4966	0.5146	0.5971	0.6161	0.4312	614
0.110-0.205	50% Battery Level	0.4919	0.4966	0.5146	0.5971	0.6161	0.4312	614
0.110-0.205	99% Battery Level	0.4919	0.4966	0.5146	0.5971	0.6161	0.4312	614
0.110-0.205	Stand-by	0.3219	0.3341	0.3323	0.3313	0.3366	0.3164	614

Configuration photo of the test:

For electronic filing, the worst-case configuration photographs are saved with filename: setup photos.pdf.

***** End of Report*****