

Report No.: SZEM200300165901

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# TEST REPORT

Application No.: SZEM2003001659CR

Applicant: Theragun, Inc

Address of Applicant: 2803 Colorado Avenue, Santa Monica, California 90404, United States

Manufacturer: Theragun, Inc

Address of Manufacturer: 2803 Colorado Avenue, Santa Monica, California 90404, United States

Factory: Shenzhen Xiang Zhida Technology Co., Ltd

Address of Factory: Room 101, 201, 301, 401, Building C, No.121 of Lianxin Road, Wulian

Community, Longgang Street, Longgang District, Shenzhen, P.R.C.

**Equipment Under Test (EUT):** 

**EUT Name:** Multi-Device Wireless Charger **Model No.:** Multi-Device Wireless Charger

Trade Mark: Theragun

FCC ID: 2AU6TMDWC-01

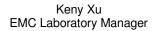
Standard(s): 47 CFR Part 15, Subpart C

**Date of Receipt:** 2020-03-19

**Date of Test:** 2020-03-21 to 2020-04-30

**Date of Issue:** 2020-05-09

Test Result: Pass\*



Ceny. Ku



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<sup>\*</sup> In the configuration tested, the EUT complied with the standards specified above.



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	Revision Record						
Version	Version Chapter Date Modifier Remark						
01		2020-05-09		Original			

Authorized for issue by:		
	Bim Chen	
	Bill Chen /Project Engineer	
	EvicFu	
	Eric Fu /Reviewer	



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# **Test Summary**

Radio Spectrum Technical Requirement						
Item Standard Method Requirement Result						
Antenna Requirement	47 CFR Part 15, Subpart C	N/A	47 CFR Part 15, Subpart C 15.203	Pass		

Radio Spectrum Matt	Radio Spectrum Matter Part							
Item	Standard	Method	Requirement	Result				
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass				
20dB Bandwidth	47 CFR Part 15, Subpart C	ANSI C63.10 (2013) Section 6.9.2	47 CFR Part 15, Subpart C 15.215	Pass				
Restricted Bands	47 CFR Part 15, Subpart C	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205	Pass				
Radiated Emissions (9kHz-30MHz)	47 CFR Part 15, Subpart C	ANSI C63.10 (2013) Section 6.4	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass				
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart C	ANSI C63.10 (2013) Section 6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass				

#### Remark:

Model No.: Multi-Device Wireless Charger

The model Multi-Device Wireless Charger was tested fully, and the Conducted disturbance and Radiated emission(30M-1GHz) for discrepancy, since the electrical circuit design, PCB layout, components used and internal wiring were identical for the above models, with only difference add R48, C51, C27, CM1, C49, on PCBA, in order to improve energy, no impact RF.



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8.2 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS) .......35



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### **General Information**

### 4.1 Details of E.U.T.

Power	Supply:	Adapter:
		Model:EA1046SAR
		Input:AC 100-240V 1.5A 50/60Hz
		Output:DC 20V 2.25A
		Wireless Output:27W
Operati	ion Frequency:	110.256kHz to 125.160kHz
Modula	tion Type:	Load Modulation
Antenn	а Туре:	Loop Antenna
Antenn	a Gain:	0dBi
Cable:		DC cable:94cm unshielded

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Wave Roller	Theragun	Wave Roller	N/A
Hand Held Massager	Theragun	Theragun Pro with wireless charger	N/A
Elite	Theragun	Elite	N/A

### 4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	RF Conducted	± 3%
2	Dedicted Courieus emission test	± 4.5dB (Below 1GHz)
2	Radiated Spurious emission test	± 4.8dB (Above 1GHz)
3	Conduction emission	± 3.0dB (150kHz to 30MHz)
4	Temperature test	± 1℃
5	Humidity test	± 3%
6	Supply voltages	± 1.5%
7	Time	± 3%



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#### 4.4 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.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

### 4.5 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.

#### · VCC

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.

#### 4.6 Deviation from Standards

None

#### 4.7 Abnormalities from Standard Conditions

None



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#### **Equipment List** 5

Conducted Emissions at AC Power Line (150kHz-30MHz)							
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date		
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2019-06-13	2022-06-12		
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A		
Coaxial Cable	SGS	N/A	SEM024-01	2019-07-11	2020-07-10		
LISN	Rohde & Schwarz	ENV216	SEM007-01	2019-09-24	2020-09-23		
LISN	ETS-LINDGREN	3816/2	SEM007-02	2020-04-01	2021-03-31		
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2020-03-24	2021-03-23		

20dB Bandwidth						
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date	
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12	
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23	
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23	
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A	
Coaxial Cable	SGS	N/A	SEM031-02	2019-07-11	2020-07-10	
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A	
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23	
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23	
Electric and Magnetic Field Analyzer	Narda	EHP-50F	SEM022-05	2019-11-28	2020-11-27	
Electric Field Probe	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20	
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07	



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Restricted Bands						
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date	
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12	
DC Dower Cumply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2019-03-25	2020-03-24	
DC Power Supply	Horide & Scriwarz	NGSW 32/10	SEIVIU I I-04	2020-03-24	2021-03-23	
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23	
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A	
Coaxial Cable	SGS	N/A	SEM031-02	2019-07-11	2020-07-10	
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A	
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23	
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23	
Electric and Magnetic Field Analyzer	Narda	EHP-50F	SEM022-05	2019-11-28	2020-11-27	
Electric Field Probe	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20	
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07	

Radiated Emissions (9kHz-30MHz)							
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date		
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2018-03-31	2021-03-30		
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A		
Coaxial Cable	SGS	N/A	SEM029-01	2019-07-11	2020-07-10		
MXE EMI receiver	KEYSIGHT	N9038A	SEM004-16	2019-12-16	2020-12-15		
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	SEM003-18	2019-08-08	2022-08-07		
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2020-04-09	2021-04-08		
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21		



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RE in Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-08-05	2020-08-04
MXE EMI receiver(3Hz- 3.6GHz)	KEYSIGHT	N9038A	SEM004-15	2019-12-16	2020-12-15
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	3142C SEM003-01		2020-06-26
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2020-04-01	2021-03-31
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2019-07-11	2020-07-10

General used equipment									
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date				
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2019-09-26	2020-09-25				
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2019-09-26	2020-09-25				
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2019-09-26	2020-09-25				
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2020-04-07	2021-04-06				



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#### Radio Spectrum Technical Requirement 6

### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 Limit:

#### 6.1.2 Conclusion

#### Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### **EUT Antenna:**

The antenna is integrated on the main PCB and no consideration of replacement.



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#### 7 **Radio Spectrum Matter Test Results**

### Conducted Emissions at AC Power Line (150kHz-30MHz)

47 CFR Part 15, Subpart C 15.207 Test Requirement Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of	Conducted limit(dBμV)					
emission(MHz)	Quasi-peak	Average				
0.15-0.5	66 to 56*	56 to 46*				
0.5-5	56	46				
5-30	60	50				
*Decreases with the logarithm of the frequency.						



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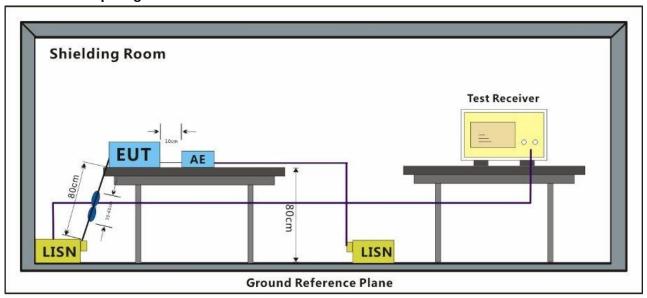
#### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.6 °C Humidity: 57.9 % RH Atmospheric Pressure: 1015 mbar

a:Wireless charging mode Keep the EUT wireless charging Test mode

#### 7.1.2 Test Setup Diagram



### 7.1.3 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50µH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor



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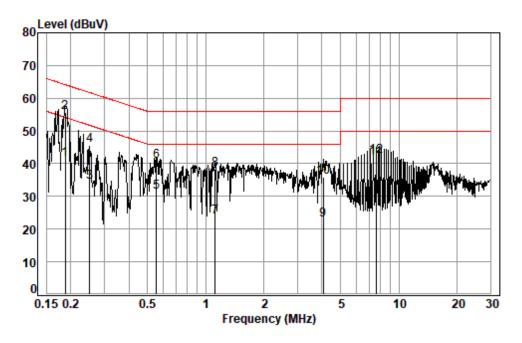
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Mode:a; Line:Live Line



: Shielding Room

Condition: Line Job No. : 01659CR

Test mode: a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1874	0.02	9.59	31.70	41.31	54.15	-12.84	Average
2	0.1874	0.02	9.59	45.98	55.59	64.15	-8.56	QP
3	0.2508	0.03	9.59	24.87	34.49	51.73	-17.24	Average
4	0.2508	0.03	9.59	36.08	45.70	61.73	-16.03	QP
5	0.5552	0.06	9.60	21.74	31.40	46.00	-14.60	Average
6	0.5552	0.06	9.60	31.05	40.71	56.00	-15.29	QP
7	1.1233	0.10	9.60	14.12	23.82	46.00	-22.18	Average
8	1.1233	0.10	9.60	28.64	38.34	56.00	-17.66	QP
9	4.0704	0.16	9.65	12.88	22.69	46.00	-23.31	Average
10	4.0704	0.16	9.65	26.08	35.89	56.00	-20.11	QP
11	7.6060	0.17	9.74	31.65	41.56	50.00	-8.44	Average
12	7.6060	0.17	9.74	32.51	42.42	60.00	-17.58	QP



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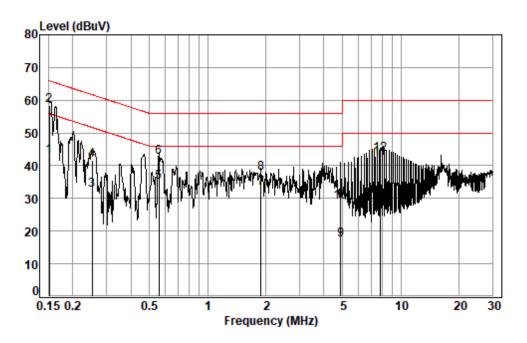
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Mode:a; Line:Live Line



: Shielding Room

Condition: Line Job No. : 01659CR

Test mode: a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1516	0.01	9.59	33.15	42.75	55.91	-13.16	Average
2	0.1516	0.01	9.59	48.75	58.35	65.91	-7.56	QP
3	0.2521	0.03	9.59	22.99	32.61	51.69	-19.08	Average
4	0.2521	0.03	9.59	32.07	41.69	61.69	-20.00	QP
5	0.5581	0.07	9.60	25.45	35.12	46.00	-10.88	Average
6	0.5581	0.07	9.60	32.81	42.48	56.00	-13.52	QP
7	1.8879	0.15	9.62	23.50	33.27	46.00	-12.73	Average
8	1.8879	0.15	9.62	27.86	37.63	56.00	-18.37	QP
9	4.8997	0.17	9.67	7.58	17.42	46.00	-28.58	Average
10	4.8997	0.17	9.67	18.97	28.81	56.00	-27.19	QP
11	7.8102	0.17	9.75	32.41	42.33	50.00	-7.67	Average
12	7.8102	0.17	9.75	33.68	43.60	60.00	-16.40	QP



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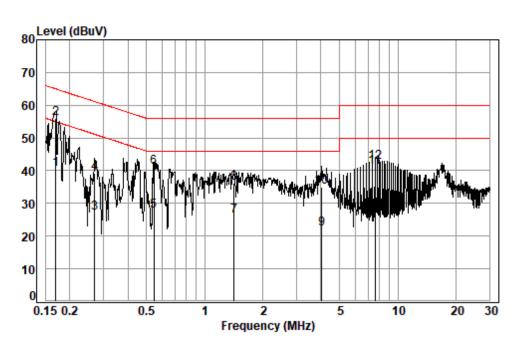


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Difference test:

Mode:a; Line:Live Line



: Shielding Room

Condition: Line Job No. : 01659CR

Test mode: a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1694	0.02	9.59	30.92	40.53	54.99	-14.46	Average
2	0.1694	0.02	9.59	46.27	55.88	64.99	-9.11	QP
3	0.2687	0.03	9.59	17.58	27.20	51.16	-23.96	Average
4	0.2687	0.03	9.59	29.53	39.15	61.16	-22.01	QP
5	0.5464	0.06	9.59	18.08	27.73	46.00	-18.27	Average
6	0.5464	0.06	9.59	31.28	40.93	56.00	-15.07	QP
7	1.4182	0.12	9.61	16.53	26.26	46.00	-19.74	Average
8	1.4182	0.12	9.61	26.48	36.21	56.00	-19.79	QP
9	4.0489	0.16	9.65	12.32	22.13	46.00	-23.87	Average
10	4.0489	0.16	9.65	25.15	34.96	56.00	-21.04	QP
11	7.6060	0.17	9.74	31.14	41.05	50.00	-8.95	Average
12	7.6060	0.17	9.74	32.82	42.73	60.00	-17.27	QP



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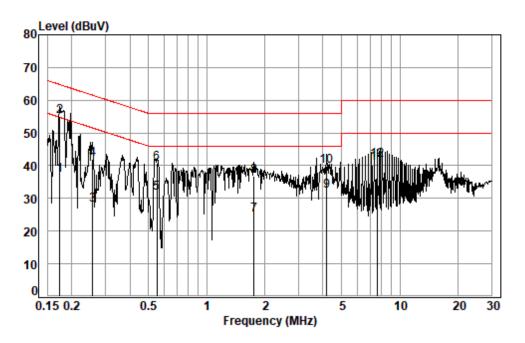
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Mode:a; Line:Neutral Line



: Shielding Room

Condition: Neutral Job No. : 01659CR

Test mode: a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1740	0.02	9.55	27.59	37.16	54.77	-17.61	Average
2	0.1740	0.02	9.55	45.54	55.11	64.77	-9.66	QP
3	0.2575	0.03	9.54	18.28	27.85	51.51	-23.66	Average
4	0.2575	0.03	9.54	32.50	42.07	61.51	-19.44	QP
5	0.5523	0.06	9.55	22.13	31.74	46.00	-14.26	Average
6	0.5523	0.06	9.55	31.10	40.71	56.00	-15.29	QP
7	1.7623	0.15	9.56	15.35	25.06	46.00	-20.94	Average
8	1.7623	0.15	9.56	27.17	36.88	56.00	-19.12	QP
9	4.1796	0.16	9.61	22.38	32.15	46.00	-13.85	Average
10	4.1796	0.16	9.61	30.19	39.96	56.00	-16.04	QP
11	7.6464	0.17	9.72	30.81	40.70	50.00	-9.30	Average
12	7.6464	0.17	9.72	31.88	41.77	60.00	-18.23	QP



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#### 7.2 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215 Test Method: ANSI C63.10 (2013) Section 6.9.2

Limit:

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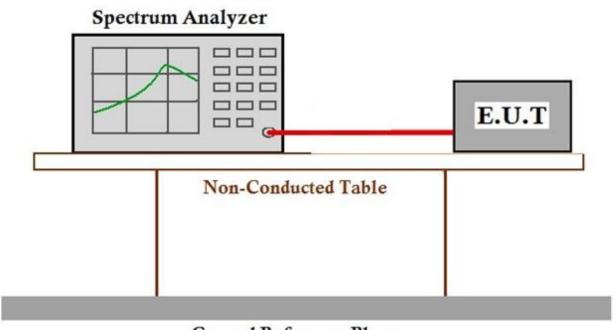
### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 21.9 °C Humidity: 45.5 % RH Atmospheric Pressure: 1015 mbar

Test mode a:Wireless charging mode Keep the EUT wireless charging

#### 7.2.2 Test Setup Diagram



### Ground Reference Plane

#### 7.2.3 Measurement Procedure and Data



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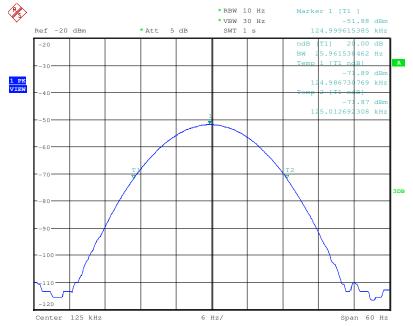


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Test Frequency(KHz)	20dB bandwidth (KHz)	Limit (KHz)	Results
125	0.026	N/A	Pass

### Mode:a





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#### 7.3 Restricted Bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 ANSI C63.10 (2013) Section 6.10.5 Test Method:

Limit:

The fundamental wave can not fall in the restricted band 90KHz-110KHz

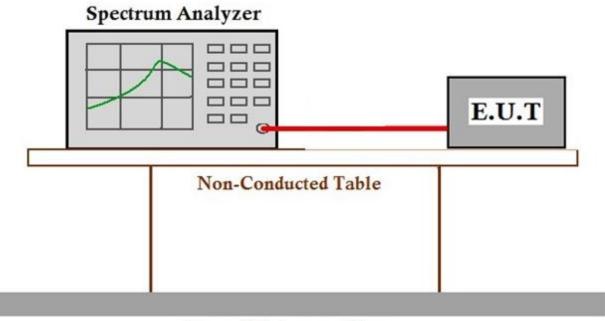
### 7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 21.9 °C Humidity: 45.3 % RH Atmospheric Pressure: 1015 mbar

Test mode a:Wireless charging mode Keep the EUT wireless charging

#### 7.3.2 Test Setup Diagram



### Ground Reference Plane

#### 7.3.3 Measurement Procedure and Data



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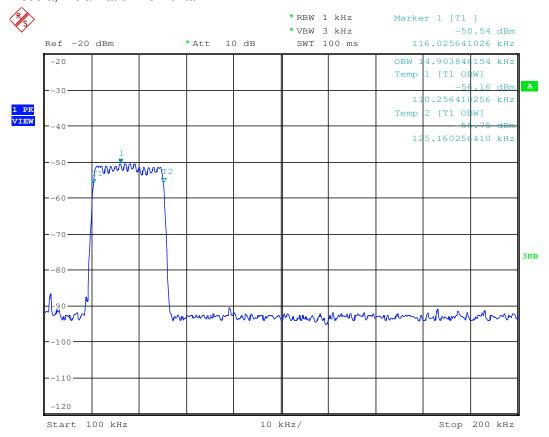


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Remark: For the F<sub>L</sub> to F<sub>H</sub> frequency range is 110.256kHz to 125.160kHz, and the nearest restricted band is 0.090-0.110 MHz and 2.1735-2.1905 MHz, this EUT meets the restricted band requirement.

### Mode:a; Polarization:Horizontal





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### 7.4 Radiated Emissions (9kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

ANSI C63.10 (2013) Section 6.4 Test Method:

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

If field strength is measured at only a single point, then that point shall be at the radial from the EUT that produces the maximum emission at the frequency being measured, as described in 5.4. If that point is closer to the EUT than  $N/2\pi$  and the limit distance is greater than  $N/2\pi$ , the measurement shall be extrapolated to the limit distance by conservatively presuming that the field strength decreases at a 40 dB/decade of distance rate to the  $\lambda/2\pi$  distance, and at a 20 dB/decade of distance rate beyond  $\lambda/2\pi$ . This shall be accomplished using Equation (2):

$$FS_{(10m)} = FS_{(30/300m)} + 40log\{d_{(near field)}/d_{(10m)}\} + 20log\{d_{(30/300m)}/d_{(near field)}\}$$
 (2)

If the single point measured is at a distance greater than  $\lambda/2\pi$ , then extrapolation to the limit distance shall be calculated using Equation (3):

$$FS_{(10m)} = FS_{(30/300m)} + 20log\{d_{(30/300m)}/d_{(10m)}\}$$
(3)

If both the single point and the limit distance are equal to or closer to the EUT than  $\lambda/2\pi$ , then extrapolation to the limit distance shall be calculated using Equation (4):

$$FS_{(10m)} = FS_{(30/300m)} + 40log\{d_{(30/300m)}/d_{(10m)}\}$$
(4)

Remark:

 $d_{near field} = 47.77 / f_{MHz}$ 

where f<sub>MHz</sub> is the frequency of the emission being measured in MHz.



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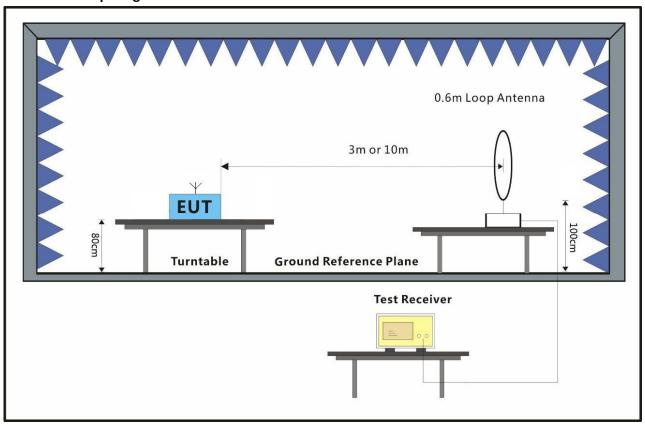
### 7.4.1 E.U.T. Operation

Operating Environment:

23 °C Atmospheric Pressure: 1015 mbar Temperature: Humidity: 50 % RH

Test mode a:Wireless charging mode\_ Keep the EUT wireless charging

#### 7.4.2 Test Setup Diagram



#### 7.4.3 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.



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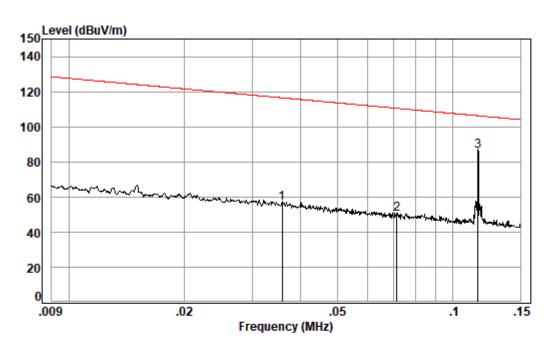
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9K-150K Mode: a



Condition: 3m

Job No. : 01659CR

Test Mode: a

: With Cylinder

	Freq		Preamp Factor						Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	0.036	15.19	31.50	0.01	72.74	56.44	116.50	-60.06	Average
2	0.071	14.19	31.96	0.01	67.69	49.93	110.53	-60.60	Average
3 рр	0.116	13.98	32.20	0.01	104.26	86.05	106.28	-20.23	Average



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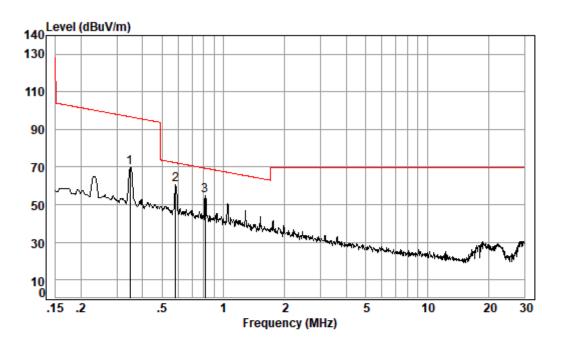
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150K-30M Mode: a



Condition: 3m

Job No. : 01659CR

Test Mode: a

: With Cylinder

		,							
		Ant	Preamp	Cable	Read		Limit	0ver	
	Freq	Factor	Factor	Loss	Level	Level	Line	Limit	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 av	0.348	13.80	32.23	0.04	88.10	69.71	96.76	-27.05	Average
2 pp	0.582								_
3	0.813	13.80	32.26	0.10	73.26	54.90	69.40	-14.50	OP



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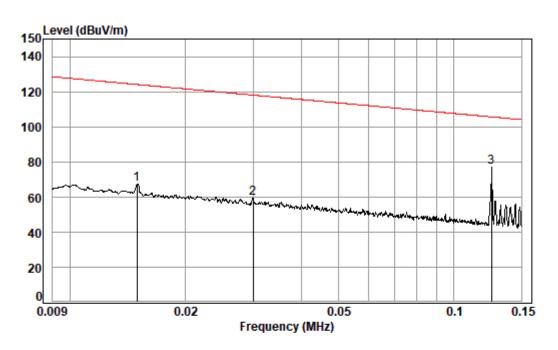
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Difference test: 9K-150K Mode: a



Condition: 3m

Job No. : 01659CR

Test Mode: a

	Freq		Preamp Factor						Remark
-	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	0.015	18.64	30.91	0.33	79.41	67.47	124.12	-56.65	QP
2	0.030	15.50	31.38	0.01	75.25	59.38	118.06	-58.68	QP
3 рр	0.125	13.97	32.20	0.02	95.40	77.19	105.65	-28.46	QP



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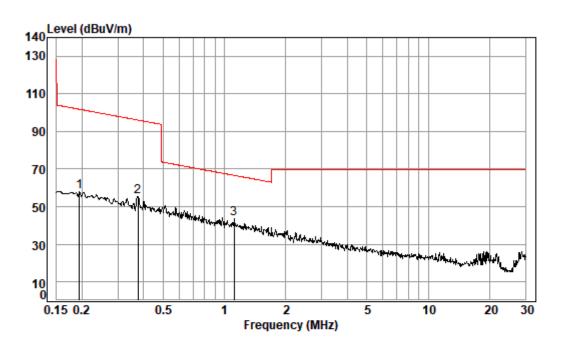
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150K-30M Mode: a



Condition: 3m

Job No. : 01659CR

Test Mode: a

	Freq		Preamp Factor						Remark
-	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	0.194	13.90	32.21	0.03	76.21	57.93	101.83	-43.90	QP
2	0.377	13.80	32.24	0.04	74.01	55.61	96.07	-40.46	QP
3 рр	1.117	13.82	32.27	0.13	61.71	43.39	66.64	-23.25	QP



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### 7.5 Radiated Emissions (30MHz-1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.5

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.





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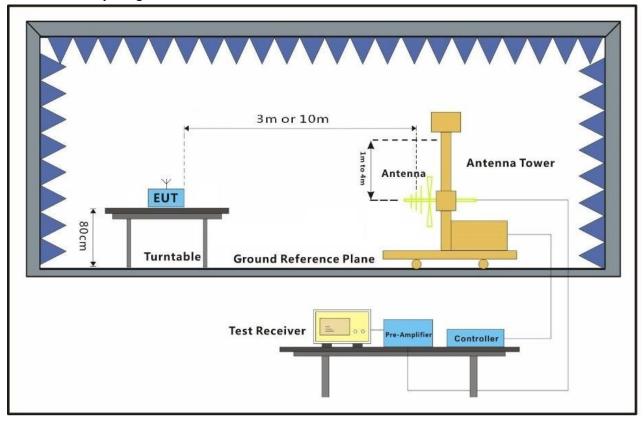
### 7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 50 % RH Atmospheric Pressure: 1015 mbar

Test mode a:Wireless charging mode\_ Keep the EUT wireless charging

#### 7.5.2 Test Setup Diagram





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#### 7.5.3 Measurement Procedure and Data

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground for below 1GHz at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

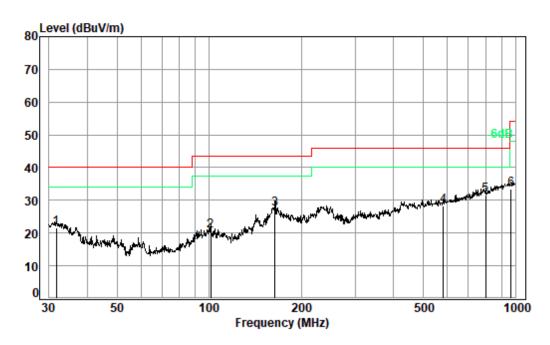




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Mode:a; Polarization:Horizontal



Condition: 3m HORIZONTAL

Job No. : 01659CR

Test Mode: a

		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	31.73	0.60	21.52	27.72	27.18	21.58	40.00	-18.42	QP
2	101.29	1.20	13.94	27.63	33.22	20.73	43.50	-22.77	QP
3	164.33	1.34	15.59	27.30	37.80	27.43	43.50	-16.07	QP
4	580.70	2.68	26.24	28.11	27.52	28.33	46.00	-17.67	QP
5 pp		3.20	28.49	27.72	27.78	31.75	46.00	-14.25	QP
6	968.93	3.67	30.15	27.02	26.77	33.57	54.00	-20.43	OP



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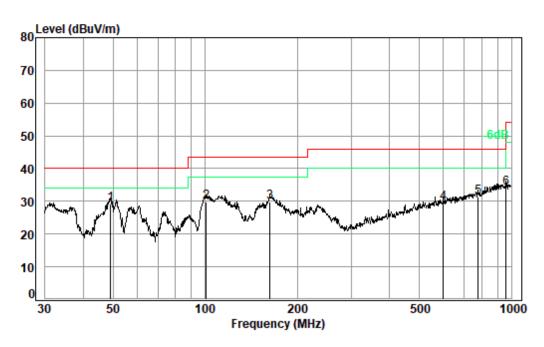
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Mode:a; Polarization:Vertical



Condition: 3m VERTICAL Job No. : 01659CR

Test Mode: a

		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
-	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	49.19	0.78	14.44	27.69	41.56	29.09	40.00	-10.91	QP
2	100.93	1.20	13.95	27.63	42.33	29.85	43.50	-13.65	QP
3	162.61	1.34	15.55	27.31	40.37	29.95	43.50	-13.55	QP
4	599.32	2.70	26.59	28.17	28.27	29.39	46.00	-16.61	QP
5	779.61	3.14	28.38	27.76	27.61	31.37	46.00	-14.63	QP
6	962.16	3.66	30.12	27.05	27.41	34.14	54.00	-19.86	OP



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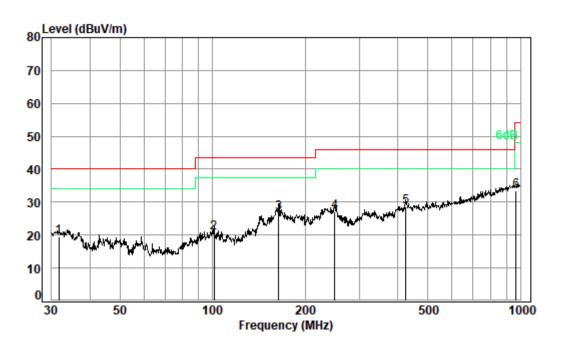


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Difference test:

Mode:a; Polarization:Horizontal



Condition: 3m HORIZONTAL

Job No. : 01659CR

Test Mode: a

	Freq			Preamp Factor					Remark
_	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	31.73	0.60	21.52	27.72	25.18	19.58	40.00	-20.42	QP
2	101.29	1.20	13.94	27.63	33.22	20.73	43.50	-22.77	QP
3 pp	164.33	1.34	15.59	27.30	37.20	26.83	43.50	-16.67	QP
4	249.43	1.67	18.94	27.02	33.47	27.06	46.00	-18.94	QP
5	425.03	2.31	23.00	27.53	30.85	28.63	46.00	-17.37	QP
6	968 93	3 67	30 15	27 02	26 77	33 57	54 00	-20 43	OP



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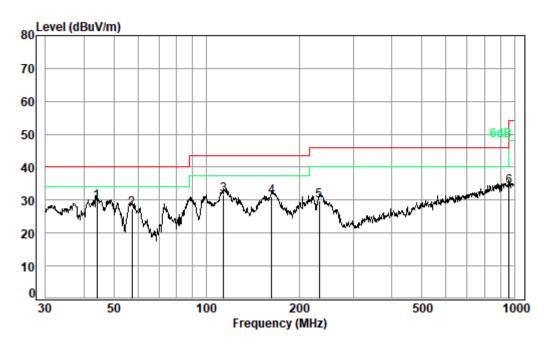
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Mode:a; Polarization:Vertical



Condition: 3m VERTICAL Job No. : 01659CR

Test Mode: a

	Freq			Preamp Factor					Remark
_	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	44.12	0.69	16.05	27.70	40.41	29.45	40.00	-10.55	QP
2	57.19	0.80	13.46	27.68	40.69	27.27	40.00	-12.73	QP
3	113.71	1.24	13.37	27.55	44.46	31.52	43.50	-11.98	QP
4	162.61	1.34	15.55	27.31	41.37	30.95	43.50	-12.55	QP
5	232.53	1.59	18.22	27.06	37.18	29.93	46.00	-16.07	QP
6	962.16	3.66	30.12	27.05	27.41	34.14	54.00	-19.86	OP



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#### **Photographs** 8

### 8.1 Test Setup

Please refer to setup photos.

### 8.2 EUT Constructional Details (EUT Photos)

Please Refer to external and internal photos for details.

- End of the Report -



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