

ACCREDITE
CERT #3816.01

Report No.: SZEM190301189701

Page: 1 of 25

TEST REPORT

Application No.: SZEM1903011897CR

Applicant: SHENZHEN DBK ELECTRONICS CO., LTD

Address of Applicant: No.8 Qinghua Road, Zhu Village, Fucheng New Community, Guanlan

Street, Longhua District, Shenzhen City, Guangdong Province, China

Manufacturer: SHENZHEN DBK ELECTRONICS CO., LTD

Address of Manufacturer: No.8 Qinghua Road, Zhu Village, Fucheng New Community, Guanlan

Street, Longhua District, Shenzhen City, Guangdong Province, China

Factory: SHENZHEN DBK ELECTRONICS CO., LTD

Address of Factory: No.8 Qinghua Road, Zhu Village, Fucheng New Community, Guanlan

Street, Longhua District, Shenzhen City, Guangdong Province, China

Equipment Under Test (EUT):

EUT Name: Wireless Charging RAPID Car Mount, Wireless Car Charger Mount

Model No.: QC10RCMBK, CP510 .

Please refer to section 2 of this report which indicates which model was

actually tested and which were electrically identical.

Trade mark: ALOGIC, DBK FCC ID 2ARVRCP510

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

 Date of Receipt:
 2019-03-21

 Date of Test:
 2019-03-25

 Date of Issue:
 2019-03-27

Test Result: Pass*

Keny Xu EMC Laboratory Manager



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^{*} In the configuration tested, the EUT complied with the standards specified above.



Report No.: SZEM190301189701

Page: 2 of 25

	Revision Record						
Version	Chapter	Date	Modifier	Remark			
01		2019-03-27		Original			

Authorized for issue by:		
	leo. 61	
	Leo Li /Project Engineer	
	EvicFu	
	Eric Fu /Reviewer	



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Report No.: SZEM190301189701

Page: 3 of 25

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 Matter Part						
Item	Standard	Method	Requirement	Result		
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.: QC10RCMBK, CP510

Only the model CP510 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference as below:

Product description:	Wireless Car Charger Mount	Wireless Charging RAPID Car Mount
Model No.:	CP510	QC10RCMBK
Trademark:	DBK	ALOGIC
Surface treatment:	Texture	Rubber Painting



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Report No.: SZEM190301189701

Page: 4 of 25

Contents

		Page
1	1 COVER PAGE	1
2	2 TEST SUMMARY	3
_		
3	3 CONTENTS	4
4	4 GENERAL INFORMATION	5
	4.1 DETAILS OF E.U.T	Ę
	4.2 DESCRIPTION OF SUPPORT UNITS	
	4.3 MEASUREMENT UNCERTAINTY	
	4.4 TEST LOCATION	
	4.5 TEST FACILITY	6
	4.6 DEVIATION FROM STANDARDS	
	4.7 ABNORMALITIES FROM STANDARD CONDITIONS	6
5	5 EQUIPMENT LIST	7
6	6 RADIO SPECTRUM TECHNICAL REQUIREMENT	g
	6.1 ANTENNA REQUIREMENT	g
	6.1.1 Test Requirement:	
	6.1.2 Conclusion	G
7	7 RADIO SPECTRUM MATTER TEST RESULTS	10
	7.1 20DB BANDWIDTH	10
	7.1.1 E.U.T. Operation	
	7.1.2 Test Setup Diagram	
	7.1.3 Measurement Procedure and Data	
	7.2 RESTRICTED BANDS	
	7.2.1 E.U.T. Operation	12
	7.2.2 Test Setup Diagram	
	7.2.3 Measurement Procedure and Data	
	7.3 RADIATED EMISSIONS (9KHz-30MHz)	
	,	15
	7.3.1 E.U.T. Operation	15
	7.3.1 E.U.T. Operation 7.3.2 Test Setup Diagram	15
	7.3.1 E.U.T. Operation	
8	7.3.1 E.U.T. Operation	
8	7.3.1 E.U.T. Operation	15 16 16 16 19 20 21 21



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Report No.: SZEM190301189701

Page: 5 of 25

General Information

4.1 Details of E.U.T.

Power supply:	Input: DC 5V/2A DC 9V/1.67A
	Output:
	Wireless 5W(DC 5V/1A), 7.5W(DC 5V/1.5A), 10W(DC 9V/1.1A)
Cable:	USB line: 100cm, shielded
Operation Frequency:	114.50kHz to 177.50kHz
Modulation Type:	Load Modulation
Antenna Type:	Loop Antenna
Antenna Gain:	0dBi
Remark:	Tests were conducted in all three load modes and the worst case10W(DC 9V/1.1A) is reported only.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	SAMSUNG	EP-TA200	R37J8YA7W71DK3
iPhone 8	Apple	A1863	F4GVQ656JC6D
Mobile Phone	SAMSUNG	SM-G9500	R28J9140LPB

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10 ⁻⁸
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	RF conducted power	± 0.75dB
5	RF power density	± 2.84dB
6	Conducted Spurious emissions	± 0.75dB
7	DE Dadieted newer	± 4.5dB (below 1GHz)
,	RF Radiated power	± 4.8dB (above 1GHz)
8	Dedicted Courieus emission test	± 4.5dB (Below 1GHz)
0	Radiated Spurious emission test	± 4.8dB (Above 1GHz)
9	Temperature test	± 1 ℃
10	Humidity test	± 3%
11	Supply voltages	± 1.5%
12	Time	± 3%



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Report No.: SZEM190301189701

Page: 6 of 25

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:

CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

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.

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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Page: 7 of 25

5 **Equipment List**

20dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2018-09-25	2019-09-24
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2018-09-27	2019-09-26
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2018-07-12	2019-07-11
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018-09-27	2019-09-26
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018-09-25	2019-09-24

Restricted Bands Measurement					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2018-09-25	2019-09-24
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2018-09-27	2019-09-26
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2018-07-12	2019-07-11
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018-09-27	2019-09-26
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018-09-25	2019-09-24

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	2018-07-12	2019-07-11
EMI Test Receiver (9kHz-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2018-04-02	2019-04-01
Trilog-Broadband Antenna (30MHz-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-28
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2018-04-13	2019-04-12
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21



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Report No.: SZEM190301189701

Page: 8 of 25

Radiated Emissions (30MHz-1GHz)										
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	2018-07-12	2019-07-11					
EMI Test Receiver (9kHz-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2018-04-02	2019-04-01					
Trilog-Broadband Antenna (30MHz-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-28					
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2018-04-13	2019-04-12					
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21					

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	2018-09-27	2019-09-26					
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2018-09-27	2019-09-26					
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2018-09-27	2019-09-26					
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2018-04-08	2019-04-07					



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Report No.: SZEM190301189701

Page: 9 of 25

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

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 permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit 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. The best case gain of the antenna is 0dBi.

Antenna location: Refer to Appendix(Internal photos)



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Report No.: SZEM190301189701

Page: 10 of 25

7 Radio Spectrum Matter Test Results

7.1 20dB Bandwidth

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

Limit: N/A

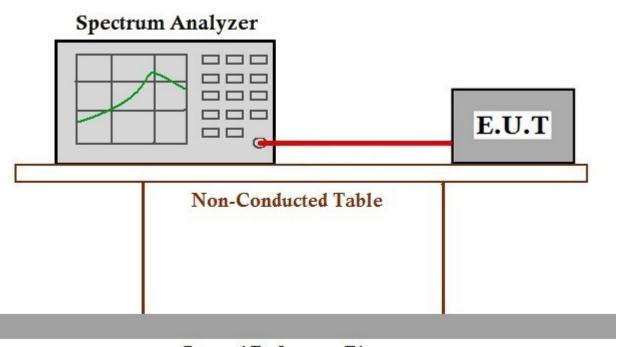
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.3 °C Humidity: 59 % RH Atmospheric Pressure: 1020 mbar

Test mode a:Charge mode_Keep the EUT charging

7.1.2 Test Setup Diagram



Ground Reference Plane

7.1.3 Measurement Procedure and Data

Test Frequency(KHz)	20dB bandwidth (KHz)	Limit (KHz)	Results
142.7	2.83	N/A	Pass



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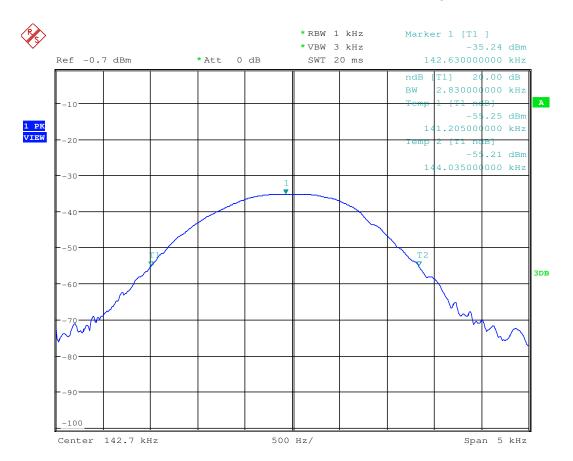
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Report No.: SZEM190301189701

Page: 11 of 25





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Report No.: SZEM190301189701

Page: 12 of 25

7.2 Restricted Bands

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

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

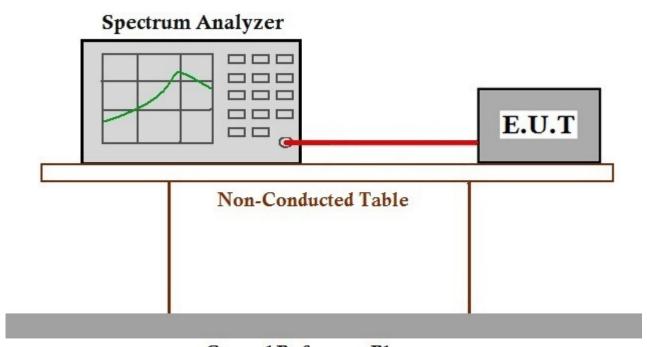
7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 56.3 °C Humidity: 58.6 % RH Atmospheric Pressure: 1020 mbar

Test mode: a:Charge mode_Keep the EUT charging

7.2.2 Test Setup Diagram



Ground Reference Plane



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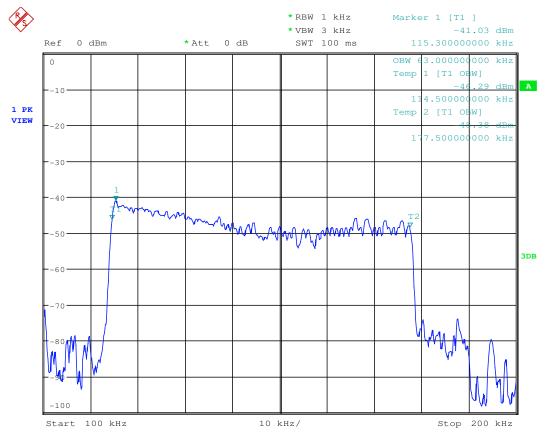
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Report No.: SZEM190301189701

Page: 13 of 25

7.2.3 Measurement Procedure and Data





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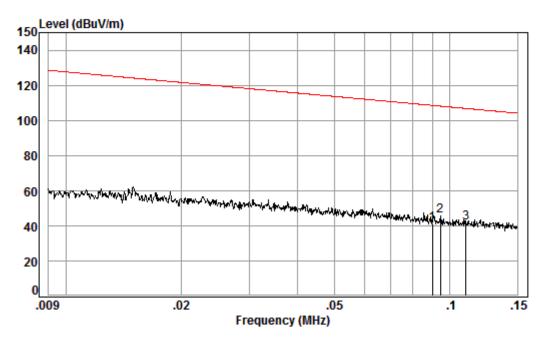
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Report No.: SZEM190301189701

Page: 14 of 25



Condition: 3m

Job No. : 11897CR

Test Mode: a

1 2 3

		Cable	Ant	Preamp	Read		Limit	0ver
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
-								
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
	0.09	0.00	12 04	22 62	61 43	40 01	100 53	67 61
				32.62				
pp	0.09	0.06	12.02	32.65	66.21	45.64	108.09	-62.45
	0.11	0.05	11.93	32.68	62.44	41.74	106.78	-65.04

According the test data above, the fundamental wave is not fall in the restricted band 90KHz-110KHz, the field strength also meet the 15.209 requirement, so this test is Pass.



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Report No.: SZEM190301189701

Page: 15 of 25

7.3 Radiated Emissions (9kHz-30MHz)

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

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

Measurement Distance: 10m

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
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 9-90kHz, 110-490kHz and 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.

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 $\lambda/2\pi$ and the limit distance is greater than $\lambda/2\pi$, 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_{MHz} is the frequency of the emission being measured in MHz.



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Report No.: SZEM190301189701

Page: 16 of 25

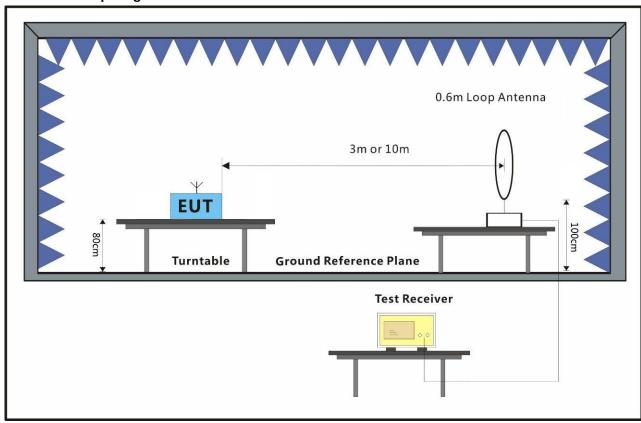
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: Humidity: 51 % RH Atmospheric Pressure: 1020 mbar °C

Test mode a:Charge mode Keep the EUT charging

7.3.2 Test Setup Diagram



7.3.3 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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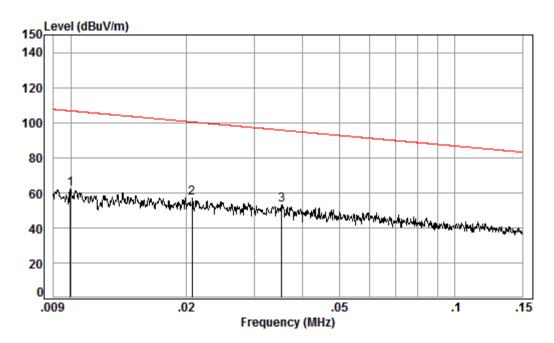
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Report No.: SZEM190301189701

Page: 17 of 25

Mode: a 9kHz-150KHz



Condition: 10m Job No. : 11897CR

Test Mode: a

		Cable	Ant	Preamp	Read		Limit	0ver
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	0.01	0.29	19.33	31.38	73.67	61.91	106.72	-44.81
2	0.02	0.21	14.90	31.80	73.73	57.04	100.37	-43.33
3 рр	0.04	0.16	13.38	32.10	71.86	53.30	95.70	-42.40



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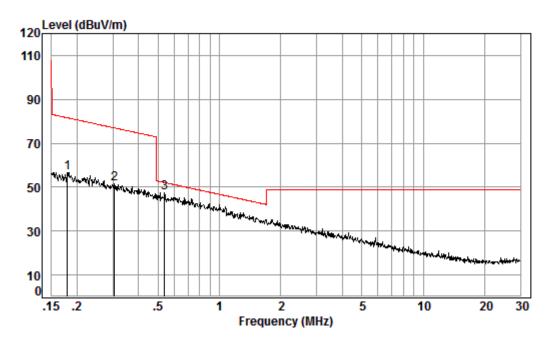
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Report No.: SZEM190301189701

Page: 18 of 25

150kHz-30MHz



Condition: 10m Job No. : 11897CR

Test Mode: a

	Freq			Preamp Factor				
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	0.18	0.08	11.81	32.67	77.53	56.75	81.61	-24.86
2	0.31	0.10	11.91	32.66	72.10	51.45	77.00	-25.55
3 pp	0.54	0.13	11.75	32.66	68.05	47.27	52.08	-4.81



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Report No.: SZEM190301189701

Page: 19 of 25

7.4 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

Frequency Range: 30MHz to 1GHz

Measurement Distance: 10m

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
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 9-90kHz, 110-490kHz and 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.





Report No.: SZEM190301189701

Page: 20 of 25

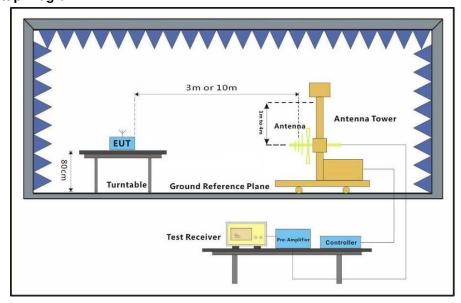
7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar

Test mode a:Charge mode_Keep the EUT charging

7.4.2 Test Setup Diagram





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Report No.: SZEM190301189701

Page: 21 of 25

7.4.3 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

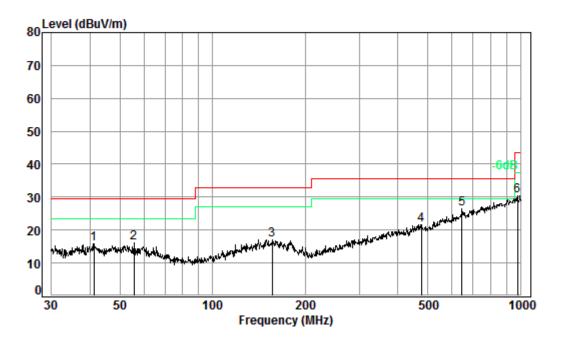




Report No.: SZEM190301189701

Page: 22 of 25

Mode: a; Polarization: Horizontal;



Condition: 10m HORIZONTAL

Job No. : 11897CR

Test Mode: a

	Freq			Preamp Factor				
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	41.13	6.83	13.22	32.46	28.20	15.79	29.50	-13.71
2	55.61	6.97	12.33	32.45	29.23	16.08	29.50	-13.42
3	156.46	7.47	13.40	32.42	28.51	16.96	33.00	-16.04
4	477.17	8.54	16.48	32.35	28.98	21.65	35.60	-13.95
5 pp	645.12	8.97	19.48	32.34	30.29	26.40	35.60	-9.20
6	979.18	9.56	22.82	30.93	28.83	30.28	43.50	-13.22



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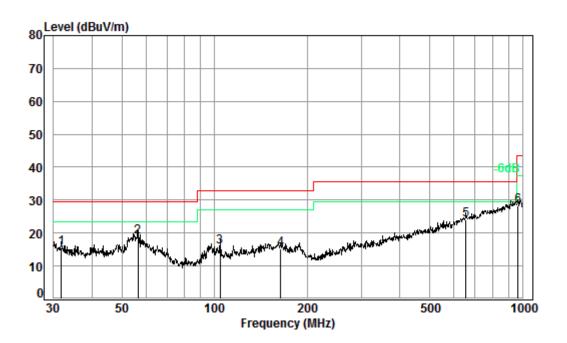
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Report No.: SZEM190301189701

Page: 23 of 25

Mode :a; Polarization: Vertical



Condition: 10m VERTICAL

Job No. : 11897CR

Test Mode: a

	Freq			Preamp Factor				
-	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	31.84	6.73	12.54	32.47	28.60	15.40	29.50	-14.10
2 pp	56.39	6.98	12.27	32.45	31.93	18.73	29.50	-10.77
3	104.17	7.22	9.81	32.47	31.36	15.92	33.00	-17.08
4	163.76	7.50	13.02	32.42	27.02	15.12	33.00	-17.88
5	656.53	9.00	19.62	32.33	27.82	24.11	35.60	-11.49
6	968.93	9.55	22.79	31.02	26.94	28.26	43.50	-15.24



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Report No.: SZEM190301189701

Page: 24 of 25

The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance.

 $L_3 / L_{10} = D_{10} / D_3$

Note:

L₃: Level @ 3m distance. Unit: uV/m; L₁₀: Level @ 10m distance. Unit: uV/m;

D₃: 3m distance. Unit: m D₁₀: 10m distance. Unit: m

The level at 3m test distance is below:

Frequency (MHz)	Polarity	Level @ 10m (dBuV/m)	Level @ 3m (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)
41.13	Н	15.79	26.25	40.00	-13.75
55.61	Н	16.08	26.54	40.00	-13.46
156.46	Н	16.96	27.42	43.50	-16.08
477.17	Н	21.65	32.11	46.00	-13.89
645.12	Н	26.40	36.86	46.00	-9.14
979.18	Н	30.28	40.74	54.00	-13.26
31.84	V	15.40	25.86	40.00	-14.14
56.39	V	18.73	29.19	40.00	-10.81
104.17	V	15.92	26.38	43.50	-17.12
163.76	V	15.12	25.58	43.50	-17.92
656.53	V	24.11	34.57	46.00	-11.43
968.93	V	28.26	38.72	54.00	-15.28



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Report No.: SZEM190301189701

Page: 25 of 25

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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