


FCC Radio Test Report

FCC ID: RWO-RC21019901

This report concerns: Original Grant

Project No. : 2204E012
Equipment : Wireless Charging Dock
Brand Name : 
Test Model : RAZER, RC21-019901
Series Model : RC21-019901XX-XXXX(X can be 0-9 or A-Z)
Applicant : Razer Inc.
Address : 9 Pasteur, Suite 100, Irvine, CA92618, USA
Manufacturer : Razer (Asia-Pacific) Pte.,Ltd.
Address : 1 one-north Crescent, #02-01 Singapore 138538
Factory : RAZER TECHNOLOGY AND DEVELOPMENT (SHENZHEN) CO., LTD
Address : East Wing, 3rd Floor, Block 2, Phase 1 of Vision Shenzhen Business Park
Keji South Road, Hi-Tech Industrial Park, Shenzhen 518057, China
Date of Receipt : Apr. 14, 2022
Date of Test : Apr. 15, 2022 ~ Apr. 29, 2022
Issued Date : Jul. 13, 2022
Report Version : R00
Test Sample : Sample No.: DG2022041493
Standard(s) : FCC CFR Title 47, Part 15, Subpart C
ANSI C63.10-2013

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

Vincent Tan

Prepared by : Vincent Tan

Chay Cai

Approved by : Chay Cai



TESTING CERT #5123.02

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the U.S. Government.

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BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

Table of Contents	Page
REPORT ISSUED HISTORY	4
1 . SUMMARY OF TEST RESULTS	5
1.1 TEST FACILITY	6
1.2 MEASUREMENT UNCERTAINTY	6
1.3 TEST ENVIRONMENT CONDITIONS	6
2 . GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 DESCRIPTION OF TEST MODES	8
2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	9
2.4 SUPPORT UNITS	9
3 . AC POWER LINE CONDUCTED EMISSIONS TEST	10
3.1 LIMIT	10
3.2 TEST PROCEDURE	10
3.3 DEVIATION FROM TEST STANDARD	10
3.4 TEST SETUP	11
3.5 EUT OPERATING CONDITIONS	11
3.6 TEST RESULTS	11
4 . RADIATED EMISSION TEST	12
4.1 LIMIT	12
4.2 TEST PROCEDURE	12
4.3 DEVIATION FROM TEST STANDARD	12
4.4 TEST SETUP	13
4.5 EUT OPERATING CONDITIONS	14
4.6 TEST RESULT - 9 KHZ TO 30 MHZ	14
4.7 TEST RESULTS - 30 MHZ TO 1000 MHZ	14
5 . MEASUREMENT INSTRUMENTS LIST	15
APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS	16
APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ	19
APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ	24

REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-3-2204E012	R00	Original Report	Jul. 13, 2022	Valid

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC CFR Title 47, Part 15, Subpart C				
Standard(s) Section	Test Item	Test Result	Judgment	Remark
15.207	AC Power Line Conducted Emissions	APPENDIX A	PASS	-----
15.209(a)	Radiated Emissions	APPENDIX B APPENDIX C	PASS	-----

NOTE:

(1) "N/A" denotes test is not applicable to this device.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792 People's Republic of China.

BTL's Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

The BTL measurement uncertainty as below table:

A. AC power line conducted emissions Measurement:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-C02	CISPR	150kHz ~ 30MHz	2.60

B. Radiated emissions Measurement:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB01	CISPR	9kHz ~ 30MHz	2.36

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m)	CISPR	30MHz ~ 200MHz	V	4.36
		30MHz ~ 200MHz	H	3.32
		200MHz ~ 1,000MHz	V	4.08
		200MHz ~ 1,000MHz	H	3.96


Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
AC Power Line Conducted Emissions	25°C	58%	AC 120V/60Hz	Rod Tang
Radiated Emissions-9K-30MHz	20°C	55%	DC 5V	Torocat Yuan
Radiated Emissions-30 MHz to 1GHz	23°C	53%	DC 5V	Meers Zhang

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless Charging Dock
Brand Name	 RAZER,
Test Model	RC21-019901
Series Model	RC21-019901XX-XXXX(X can be 0-9 or A-Z)
Model Difference(s)	The system's model name is RZ81-0199XXXX-XXXX (X: Can be 0-9, A-Z), and the system contains a Wireless Charging Dock (Model name: RC21-019901) and Wireless Charging Puck (Model name: RC21-019902).
Power Source	Wireless Charging Dock: Supplied from USB Port. Wireless Charging Puck: Supplied from Wireless Charging Dock.
Power Rating	Wireless Charging Dock: 5V==1.5A Wireless Charging Puck: 5V==500mA
Operation Frequency	110kHz~205kHz

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. Output power from primary coil is to 5 watts (MAX).
3. Mobile exposure conditions only.

2.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1	TX Mode

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

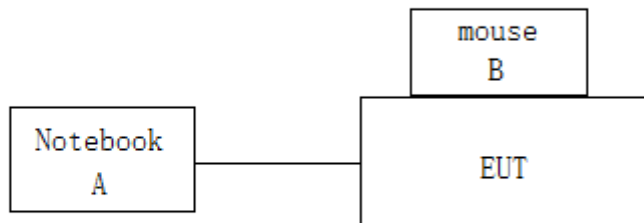
AC power line conducted emissions test	
Final Test Mode	Description
Mode 1	TX Mode

Radiated emissions test	
Final Test Mode	Description
Mode 1	TX Mode

Note:

(1) The EUT has the maximum average output power when the support unit is in low power and being charged by EUT.

2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
A	Notebook	Honor	14SER5 3500	N/A
B	mouse	RAZER	RZ01-0462	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	USB Cable	NO	NO	1.5m

3. AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

Frequency of Emission (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56*	56 to 46*
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

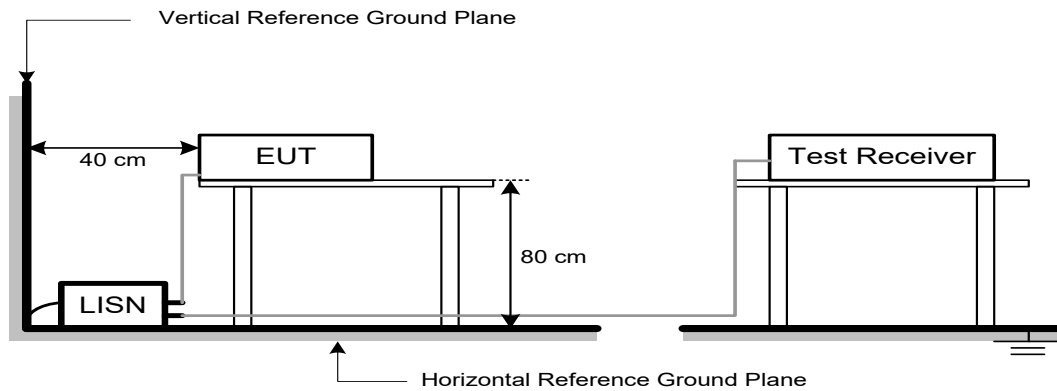
3.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3 DEVIATION FROM TEST STANDARD

No deviation

3.4 TEST SETUP



3.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.6 TEST RESULTS

Please refer to the APPENDIX A.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』 . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150 kHz to 30 MHz.

4. RADIATED EMISSION TEST

4.1 LIMIT

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT(9 kHz-1000 MHz)

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

Note:

- (1) The limit for radiated test was performed according to FCC CFR Title 47, Part 15, Subpart C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

4.2 TEST PROCEDURE

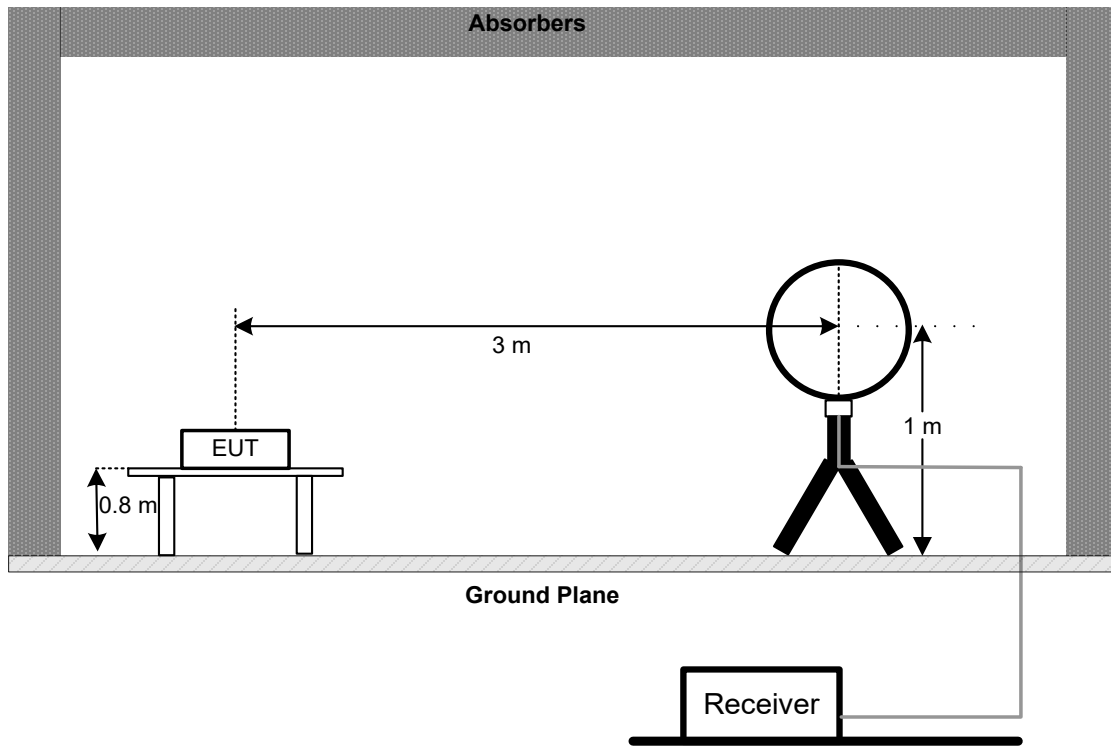
- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- b. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- d. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
(below 1 GHz)
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.3 DEVIATION FROM TEST STANDARD

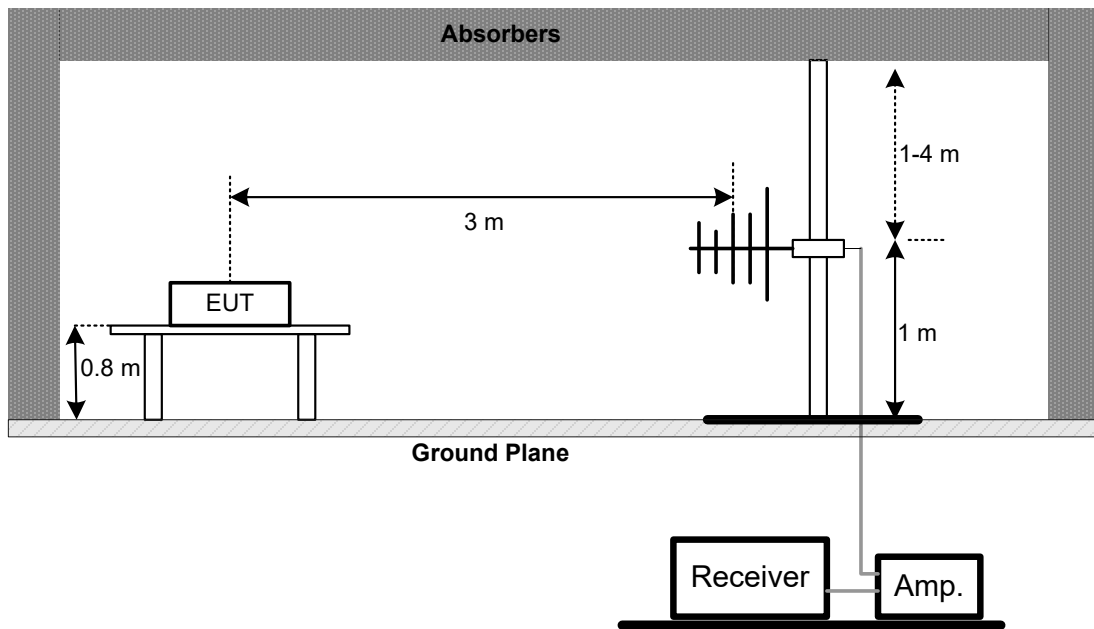
No deviation.

4.4 TEST SETUP

9 kHz-30 MHz



30 MHz to 1 GHz



4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULT - 9 kHz TO 30 MHz

Please refer to the APPENDIX B

Remark:

- (1) Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB).
- (2) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.7 TEST RESULTS - 30 MHz TO 1000 MHz

Please refer to the APPENDIX C.

5. MEASUREMENT INSTRUMENTS LIST

AC Power Line Conducted Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMI Test Receiver	R&S	ESCI	100382	Jan. 22, 2023
2	LISN	EMCO	3816/2	52765	Jan. 23, 2023
3	TWO-LINE V-NETWORK	R&S	ENV216	101447	Jan. 23, 2023
4	50Ω Terminator	SHX	TF5-3	15041305	N/A
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	Cable	N/A	RG223	12m	Mar. 08, 2023
7	643 Shield Room	ETS	6*4*3	N/A	N/A

Radiated Emissions - 9 kHz to 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	MXE EMI Receiver	Keysight	N9038A	MY56400091	Jan. 22, 2023
2*	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Aug. 23, 2024
3	Cable	N/A	RG 213/U(9kHz~1GHz)	N/A	Jul. 09, 2022
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
5	966 Chamber Room	ETS	9*6*6	N/A	Jul. 17, 2022

Radiated Emissions - 30 MHz to 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 03, 2023
2	Amplifier	HP	8447D	2944A08742	Jan. 22, 2023
3	Cable	emci	LMR-400	N/A	Nov. 30, 2022
4	Controller	CT	SC100	N/A	N/A
5	Controller	MF	MF-7802	MF780208416	N/A
6	Receiver	Agilent	N9038A	MY52130039	Jan. 22, 2023
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
8	966 Chamber Room	RM	9*6*6	N/A	Jul. 24, 2022

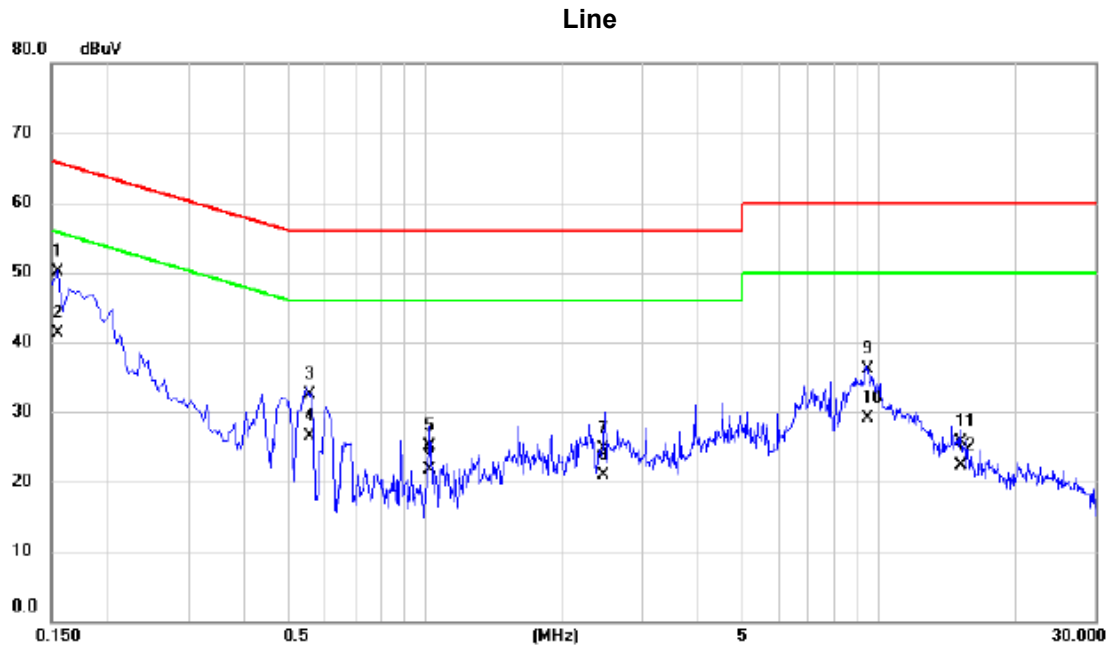
Remark: "N/A" denotes no model name, serial no. or calibration specified.

"**" calibration period of equipment list is three year.

Except * item, all calibration period of equipment list is one year.

APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

Test Mode: TX Mode



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1543	40.48	9.66	50.14	65.77	-15.63	QP	
2	*	0.1543	31.60	9.66	41.26	55.77	-14.51	AVG	
3		0.5581	22.80	9.78	32.58	56.00	-23.42	QP	
4		0.5581	16.80	9.78	26.58	46.00	-19.42	AVG	
5		1.0175	15.29	9.83	25.12	56.00	-30.88	QP	
6		1.0175	11.90	9.83	21.73	46.00	-24.27	AVG	
7		2.4606	14.82	9.93	24.75	56.00	-31.25	QP	
8		2.4606	10.90	9.93	20.83	46.00	-25.17	AVG	
9		9.4181	25.69	10.44	36.13	60.00	-23.87	QP	
10		9.4181	18.60	10.44	29.04	50.00	-20.96	AVG	
11		15.1190	15.07	10.60	25.67	60.00	-34.33	QP	
12		15.1190	11.80	10.60	22.40	50.00	-27.60	AVG	

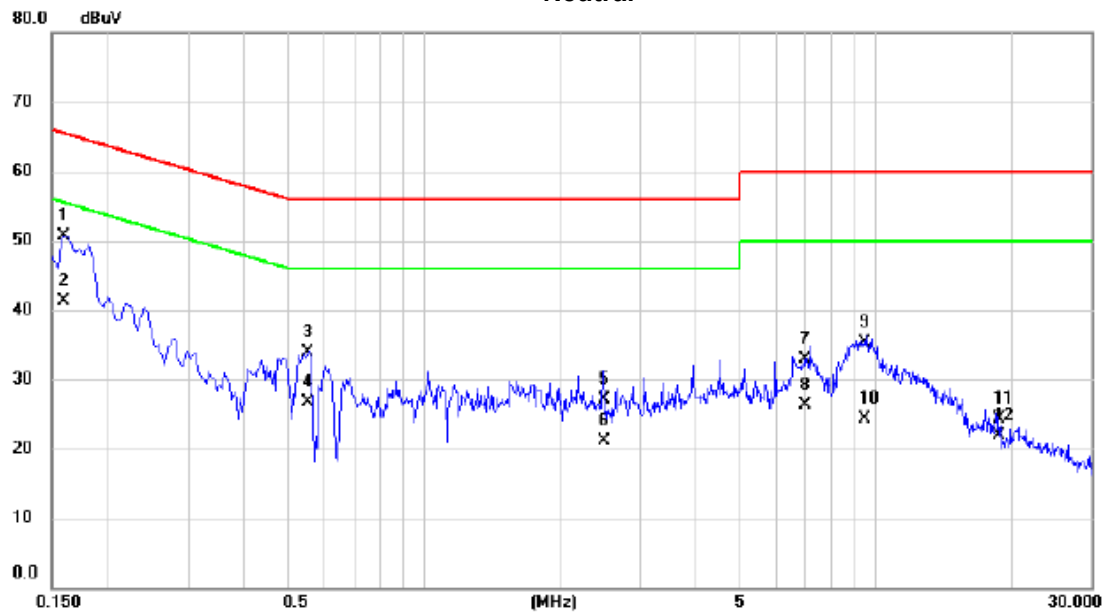
REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX Mode

Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1598	40.99	9.71	50.70	65.47	-14.77	QP	
2	*	0.1598	31.60	9.71	41.31	55.47	-14.16	AVG	
3		0.5542	24.14	9.81	33.95	56.00	-22.05	QP	
4		0.5542	16.90	9.81	26.71	46.00	-19.29	AVG	
5		2.4956	17.18	9.96	27.14	56.00	-28.86	QP	
6		2.4956	11.10	9.96	21.06	46.00	-24.94	AVG	
7		7.0001	22.49	10.32	32.81	60.00	-27.19	QP	
8		7.0001	15.90	10.32	26.22	50.00	-23.78	AVG	
9		9.4181	24.86	10.44	35.30	60.00	-24.70	QP	
10		9.4181	13.80	10.44	24.24	50.00	-25.76	AVG	
11		18.6880	13.62	10.78	24.40	60.00	-35.60	QP	
12		18.6880	11.20	10.78	21.98	50.00	-28.02	AVG	

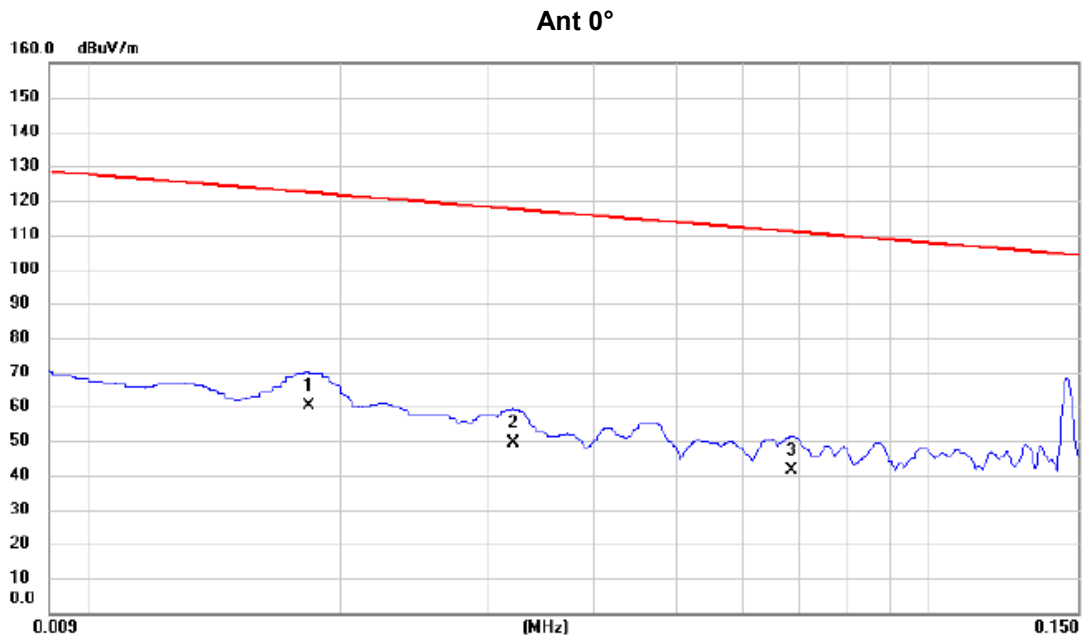
REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

Test Mode: TX Mode

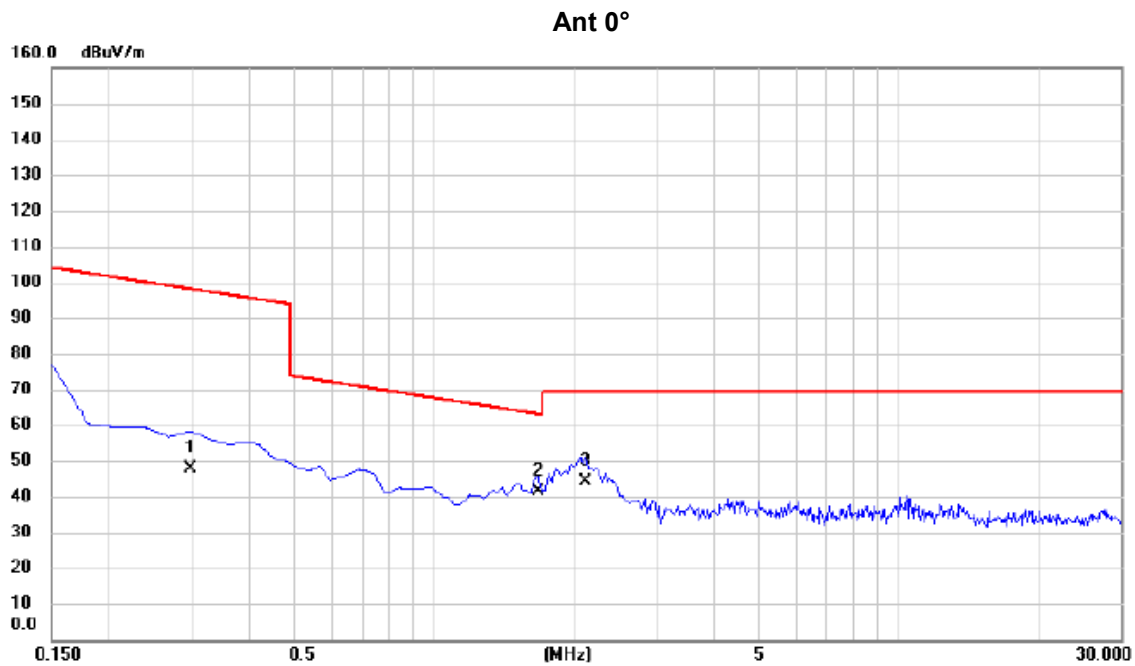


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0183	45.22	14.82	60.04	122.36	-62.32	AVG	
2		0.0320	35.36	14.01	49.37	117.50	-68.13	AVG	
3		0.0685	27.81	13.61	41.42	110.89	-69.47	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
 (2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX Mode
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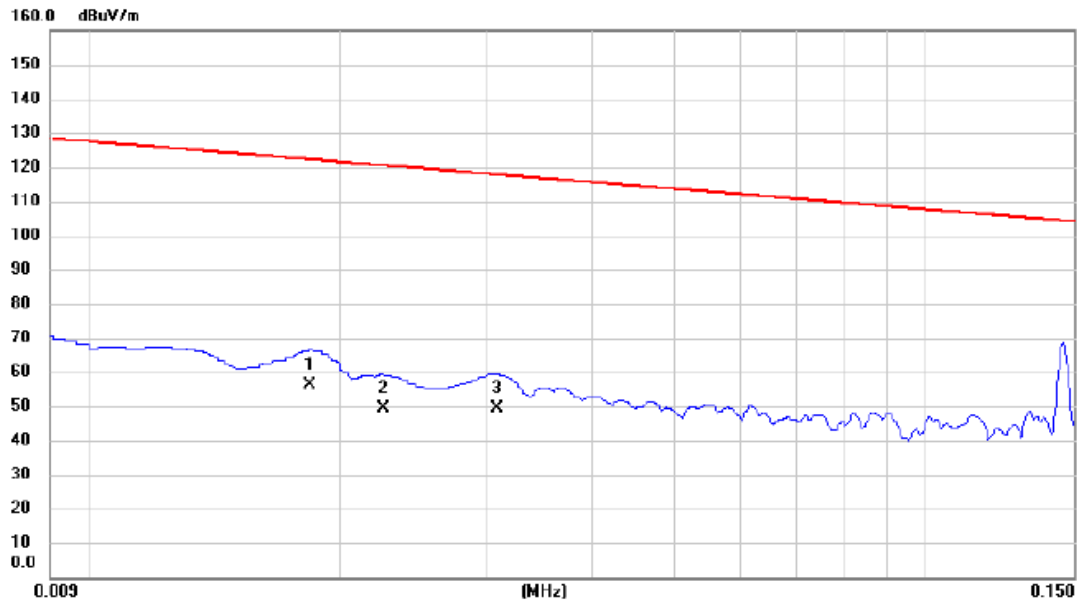
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.2993	34.25	13.56	47.81	98.08	-50.27	AVG	
2	*	1.6724	29.12	12.33	41.45	63.14	-21.69	QP	
3		2.1201	32.25	12.04	44.29	69.54	-25.25	QP	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
 (2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX Mode

Ant 90°



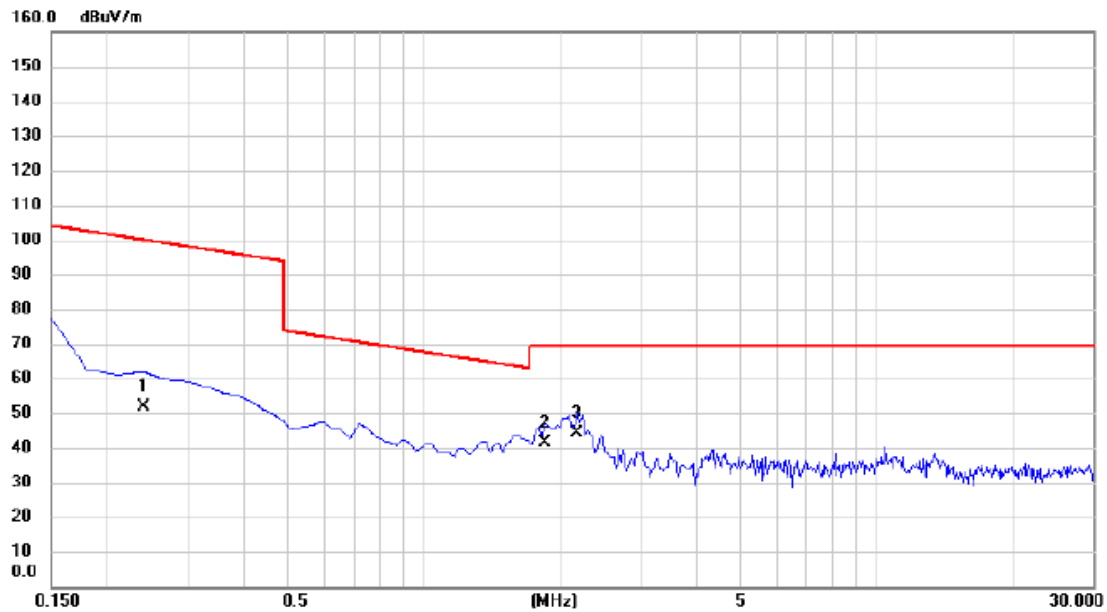
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0184	41.22	14.79	56.01	122.31	-66.30	AVG	
2		0.0225	35.36	14.23	49.59	120.56	-70.97	AVG	
3		0.0307	35.35	14.04	49.39	117.86	-68.47	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
 (2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX Mode
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Ant 90°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.2396	38.25	13.62	51.87	100.02	-48.15	AVG	
2		1.8515	29.33	12.20	41.53	69.54	-28.01	QP	
3	*	2.1798	32.12	12.02	44.14	69.54	-25.40	QP	

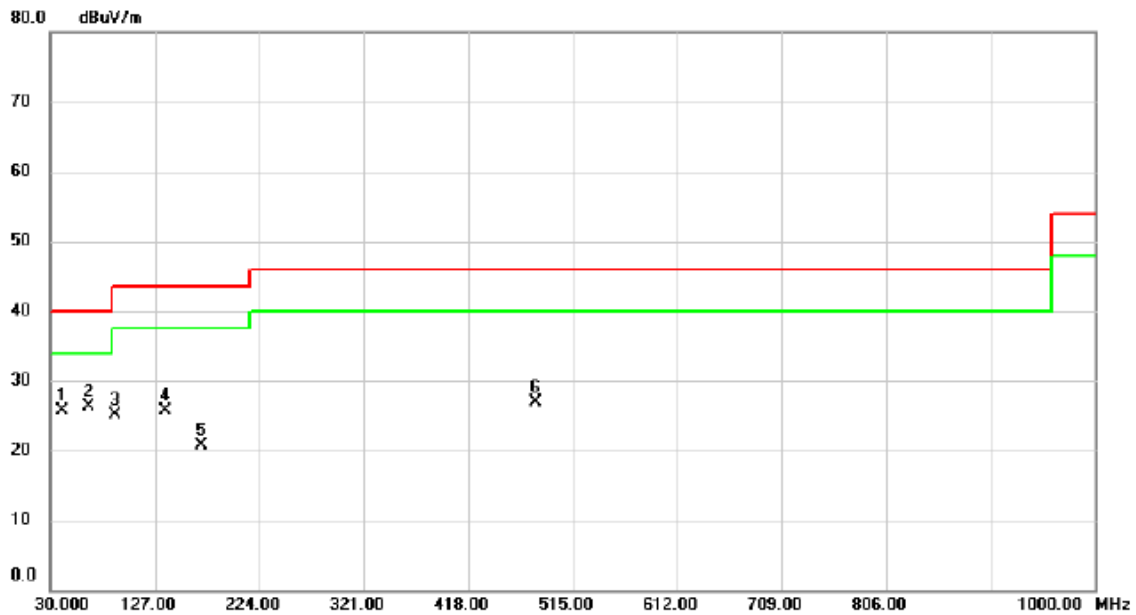
REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

Test Mode: TX Mode

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		40.6700	40.64	-14.88	25.76	40.00	-14.24	peak	
2	*	64.9200	41.88	-15.53	26.35	40.00	-13.65	peak	
3		90.1400	43.87	-18.82	25.05	43.50	-18.45	peak	
4		136.7000	39.12	-13.43	25.69	43.50	-17.81	peak	
5		170.6500	34.04	-13.24	20.80	43.50	-22.70	peak	
6		480.0800	34.32	-7.42	26.90	46.00	-19.10	peak	

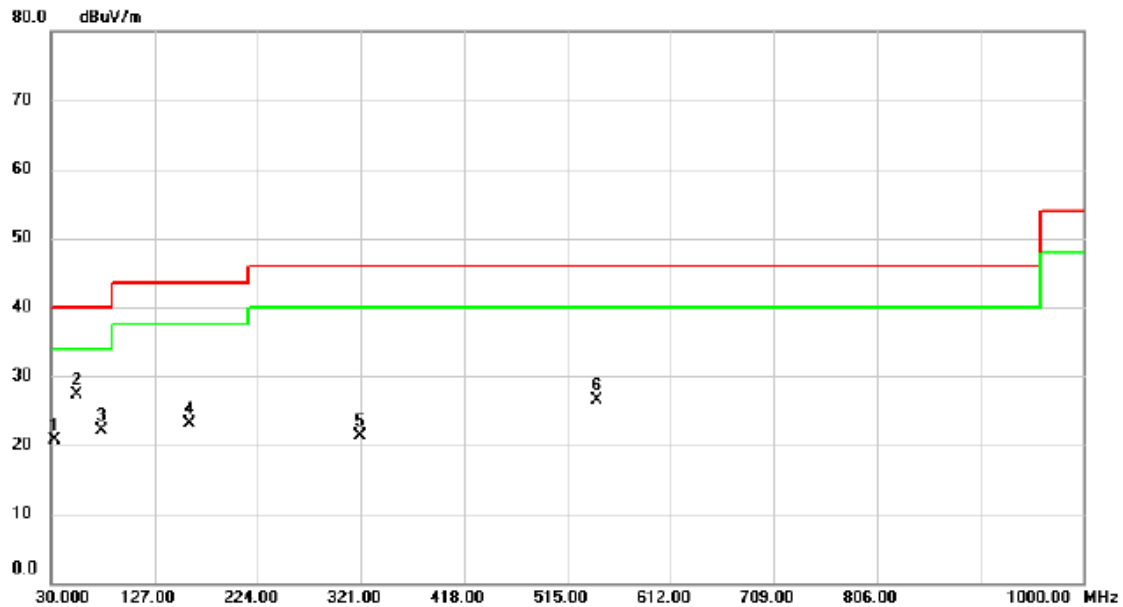
REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.

Test Mode: TX Mode

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		32.9100	36.33	-15.70	20.63	40.00	-19.37	peak	
2	*	54.2500	41.80	-14.47	27.33	40.00	-12.67	peak	
3		77.5300	40.21	-18.05	22.16	40.00	-17.84	peak	
4		159.9800	36.06	-12.90	23.16	43.50	-20.34	peak	
5		320.0300	32.40	-11.07	21.33	46.00	-24.67	peak	
6		543.1300	32.49	-6.08	26.41	46.00	-19.59	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
 (2) Margin Level = Measurement Value - Limit Value.

End of Test Report