

FCC Test Report

Product Name	ROG CETRA TRUE WIRELESS
Model No.	ROG CETRA TRUE WIRELESS
FCC ID.	2A3PJ-0RCTW

Applicant	PALM GARDEN ENTERPRISES CORP.
Address	4F, 540-1, Zhong Zheng Rd., Xindian Dist., New Taipei City 231, Taiwan

Date of Receipt	Nov. 20, 2021
Issued Date	Jan. 26, 2022
Report No.	21B0790R-RFUSOTHV02-A
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test Report

Issued Date: Jan. 26, 2022

Report No.: 21B0790R-RFUSOTHV02-A



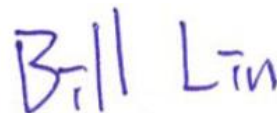
Product Name	ROG CETRA TRUE WIRELESS
Applicant	PALM GARDEN ENTERPRISES CORP.
Address	4F, 540-1, Zhong Zheng Rd., Xindian Dist., New Taipei City 231, Taiwan
Manufacturer	PALM GARDEN ENTERPRISES CORP.
Model No.	ROG CETRA TRUE WIRELESS
FCC ID.	2A3PJ-0RCTW
EUT Rated Voltage	DC 5V (Power by USB) or DC 3.7V (Power by Battery)
EUT Test Voltage	DC 5V (Power by USB)
Trade Name	ASUS
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By :



(Senior Project Specialist / Joanne Lin)

Tested By :



(Senior Engineer / Bill Lin)

Approved By :



(Senior Engineer / Alan Chen)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION.....	5
1.1. EUT Description	5
1.2. Test System Details.....	6
1.3. Configuration of Test System	7
1.4. EUT Exercise Software.....	8
1.5. Test Facility.....	9
1.6. List of Test Equipment.....	10
1.7. Uncertainty.....	11
2. Conducted Emission	12
2.1. Test Setup.....	12
2.2. Limits	12
2.3. Test Procedure.....	13
2.4. Test Result of Conducted Emission	14
3. Radiated Emission	15
3.1. Test Setup.....	15
3.2. Limits	16
3.3. Test Procedure.....	17
3.4. Test Result of Radiated Emission	18
4. EMI Reduction Method During Compliance Testing.....	22
Appendix 1: EUT Test Photographs	
Appendix 2: Product Photos-Please refer to the file: 21B0790R-Product Photos	

Revision History

Report No.	Version	Description	Issued Date
21B0790R-RFUSOTHV02-A	V1.0	Initial issue of report.	2022-01-26

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	ROG CETRA TRUE WIRELESS
Trade Name	ASUS
Model No.	ROG CETRA TRUE WIRELESS
FCC ID.	2A3PJ-0RCTW
Frequency Range	110-200kHz
Type of Modulation	ASK Modulation
Type of antenna	Coil Antenna
ROG CETRA TRUE WIRELESS	MFR: ASUS M/N: ROG CETRA TRUE WIRELESS(L) M/N: ROG CETRA TRUE WIRELESS(R)
USB Cable	MFR: ASUS, M/N: ROG CETRA TRUE WIRELESS, Shielded, 0.6m

Frequency of Channel:

Channel	Frequency
Channel 1:	128kHz

Note:

1. The EUT is an ROG CETRA TRUE WIRELESS with a built-in 110-200kHz transceiver.
2. Only the worst case is shown in the report.
3. The ROG CETRA TRUE WIRELESS only receiver.
4. The test fixture is WPT transmitter, FCC ID:K7SWIA002.
5. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.209.

Test Mode	Mode 1: Transmit
-----------	------------------

1.2. Test System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Transmit mode:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Power Adapter	CHEN YANG ELECTRONICS	MDY-09-EB	N/A	N/A
2	Wireless Charger base	Belkin	WIA002	35G10F66BA05195	N/A

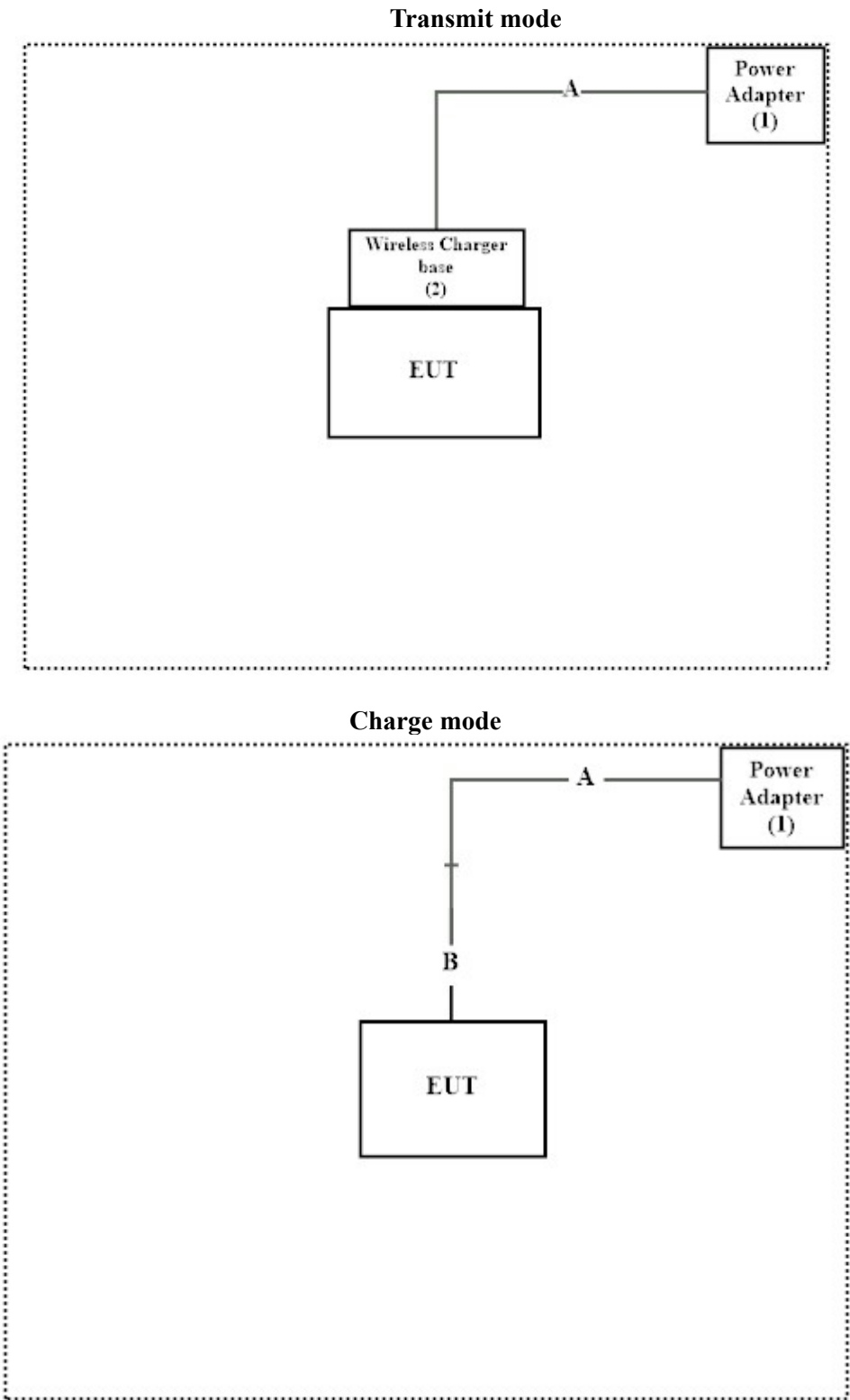
Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 0.6m

Charge mode:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Power Adapter	CHEN YANG ELECTRONICS	MDY-09-EB	N/A	N/A

Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 0.6m
B	USB Cable	Shielded, 1.8m

1.3. Configuration of Test System



1.4. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.3.
- (2) Turn on the power of all equipment.
- (3) Start the continuous receiver.
- (4) Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	22.8 °C
	Humidity (%RH)	10~90 %	47.9 %
Radiated Emission	Temperature (°C)	10~40 °C	22.3 °C
	Humidity (%RH)	10~90 %	62.6 %

USA : **FCC Registration Number: TW0033**

Canada : **IC Registration Number: 26930**

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan
Performed Location : No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C.
Phone number : +886-3-275-7255
Fax number : +866-3-327-8031
Email address : info.tw@dekra.com
Website : <http://www.dekra.com.tw>

1.6. List of Test Equipment

For Conduction measurements / SH1

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	EMI Test Receiver	R&S	ESR7	101601	2021/06/19	2022/06/18
X	Two-Line V-Network	R&S	ENV216	101306	2021/04/08	2022/04/07
X	Two-Line V-Network	R&S	ENV216	101307	2021/05/04	2022/05/03
X	Coaxial Cable	DEKRA	RG400 BNC	RF001	2021/05/24	2022/05/23

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : AUDIX e3 V9.

For Radiated measurements / 966-3

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Loop Antenna	AMETEK	HLA6121	56736	2021/04/14	2022/04/13
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-675	2021/08/11	2022/08/10
	Horn Antenna	ETS-Lindgren	3117	00227700	2021/10/12	2022/10/11
	Horn Antenna	Com-Power	AH-840	101100	2021/10/04	2022/10/03
	Pre-Amplifier	SGH	EM330	60736	2021/08/11	2022/08/10
X	Pre-Amplifier	SGH	PRAMP118	20200202	2021/03/25	2022/03/24
X	Pre-Amplifier	EMCI	EMC001330	980254	2021/07/06	2022/07/05
	Pre-Amplifier	EMCI	EMC051835SE	980313	2021/11/24	2022/11/23
	Pre-Amplifier	EMCI	EMC05820SE	980309	2021/09/27	2022/09/26
	Pre-Amplifier	EMCI	EMC05820SE	980310	2021/07/07	2022/07/06
	Pre-Amplifier	EMCI	EMC184045SE	980369	2021/04/27	2022/04/26
	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160314		
	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242		
	Filter	MICRO TRONICS	BRM50702	G251	2021/09/16	2022/09/15
	Filter	MICRO TRONICS	BRM50716	G188	2021/09/16	2022/09/15
X	EMI Test	R&S	ESR3	102793	2021/12/15	2022/12/14
X	Spectrum	R&S	FSV3044	101114	2021/02/04	2022/02/03
X	Coaxial Cable	SGH	HA800	GD20110222-3	2021/03/05	2022/03/04
	Coaxial Cable	SGH	SGH18	20110223-1		
	Coaxial Cable	SGH	SGH18	2021001-1		
	Coaxial Cable	SGH	SGH18	2021001-18		

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : AUDIX e3 V9.

1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.

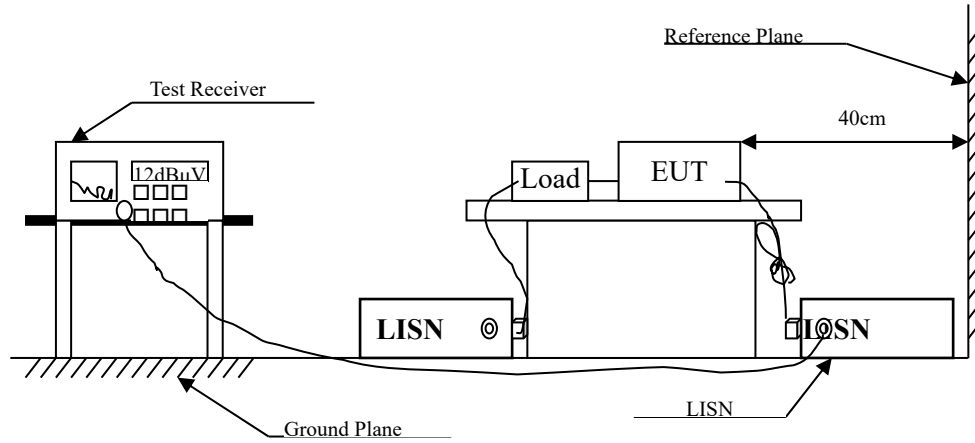
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	Uncertainty	
Conducted Emission	± 3.42 dB	
Radiated Emission	Under 1GHz ± 4.06 dB	Above 1GHz ± 3.73 dB

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB μ V) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56 _(註)	56-46 _(註)
0.50-5.0	56	46
5.0 - 30	60	50

2.3. Test Procedure

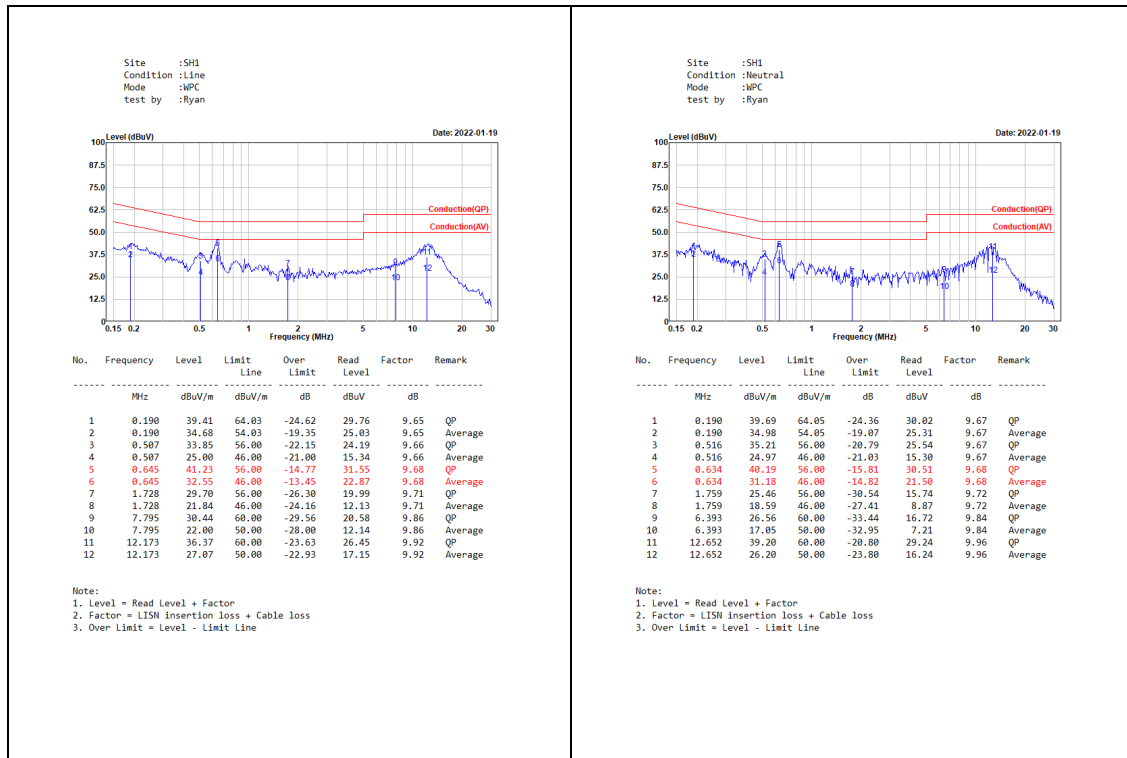
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

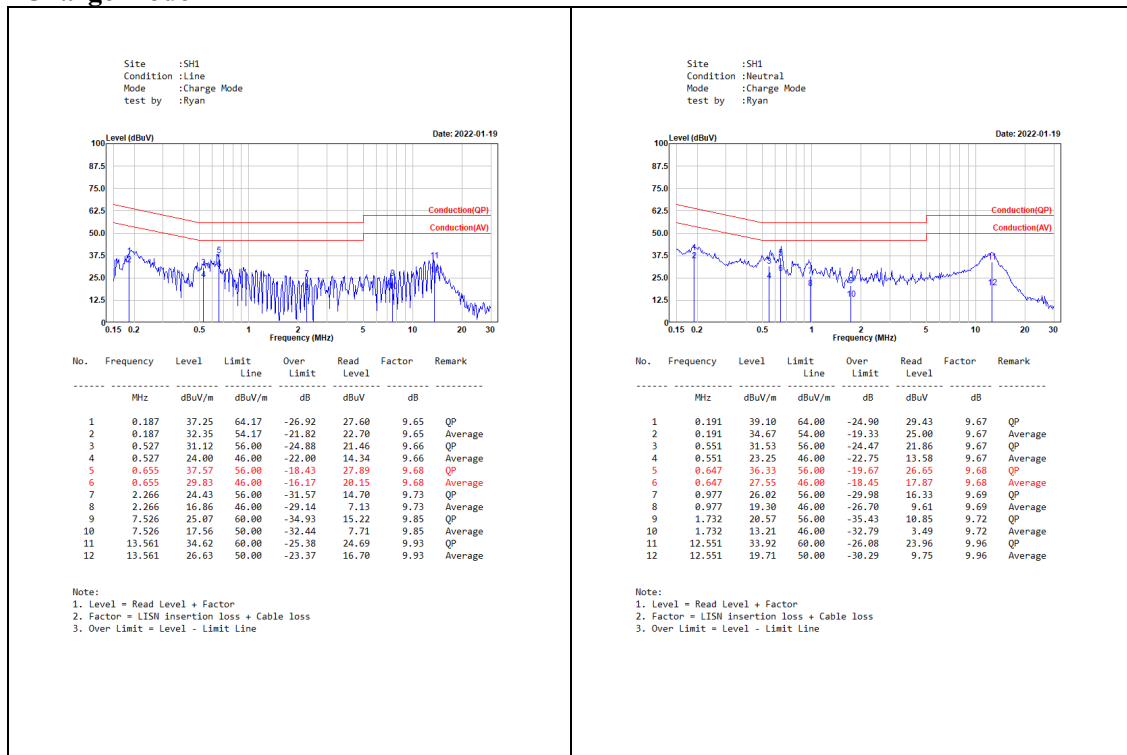
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Test Result of Conducted Emission

Transmit mode



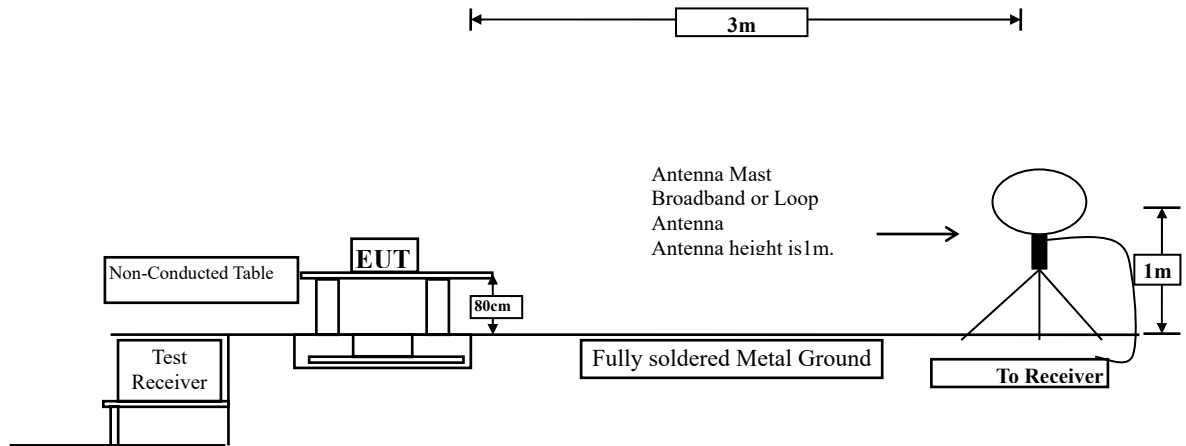
Charge mode



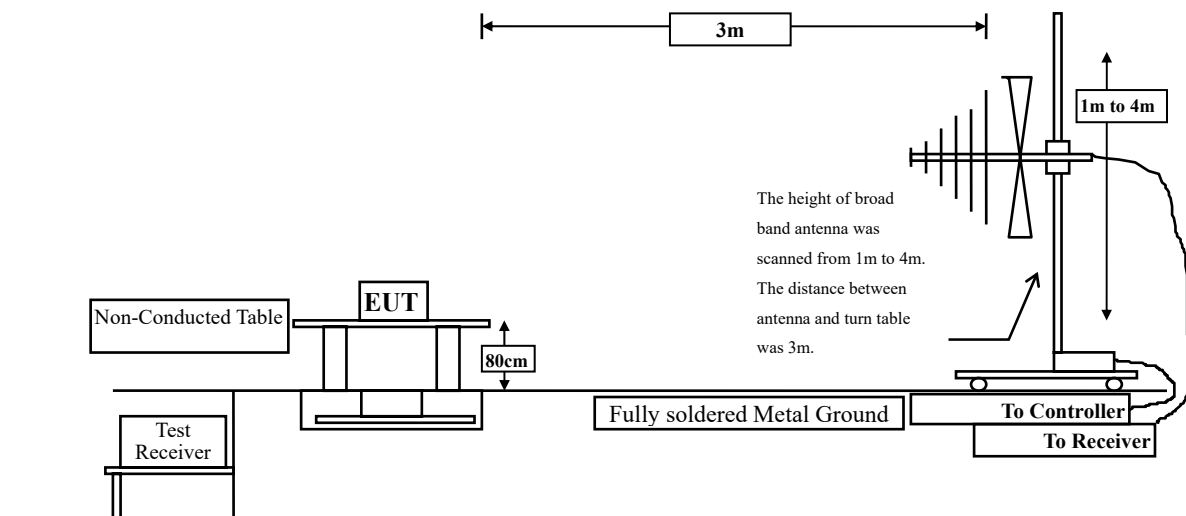
3. Radiated Emission

3.1. Test Setup

Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



3.2. Limits

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

- Remarks :
1. RF Voltage (dB μ V) = 20 log RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.209 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz. Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

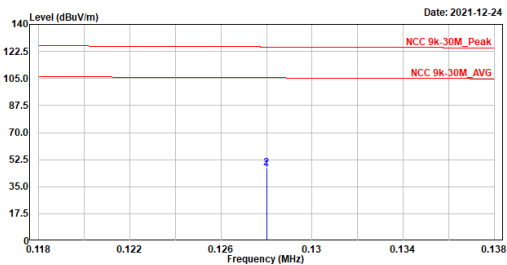
The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

3.4. Test Result of Radiated Emission

Site :966-3
Condition :3m ,Horizontal
Mode :TX_Fundamental_X
Test BY :Jing Chang

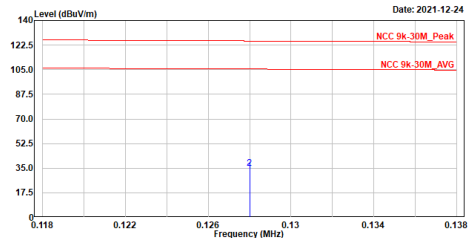


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	Limit	Level	dB	
1	0.128	46.08	105.46	-59.38	26.30	19.78	Average
2	0.128	46.88	125.46	-78.58	27.10	19.78	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :966-3
Condition :3m ,Horizontal
Mode :TX_Fundamental_Y
Test BY :Jing Chang

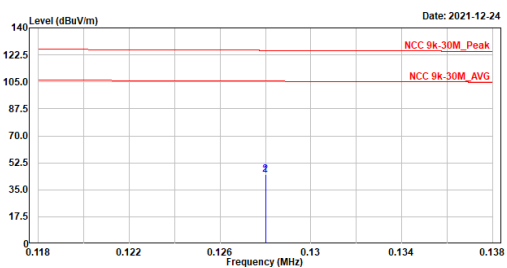


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	Limit	Level	dB	
1	0.128	32.88	105.46	-72.58	13.10	19.78	Average
2	0.128	34.88	125.46	-90.58	15.10	19.78	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :966-3
Condition :3m ,Horizontal
Mode :TX_Fundamental_Z
Test BY :Jing Chang



No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	Limit	Level	dB	
1	0.128	44.18	105.46	-61.28	24.40	19.78	Average
2	0.128	44.78	125.46	-80.68	25.00	19.78	Peak

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :966-3
Condition :3m ,Horizontal
Mode :TX_9K-30M
Test BY :Jing Chang

Site :966-3
Condition :3m ,Vertical
Mode :TX_9K-30M
Test BY :Jing Chang

Date: 2021-12-24

Level (dBuV/m)

Frequency (MHz)

130
113.8
97.5
81.3
65.0
48.8
32.5
16.3

0.009 0.02 0.05 0.1 0.2 0.5 1 2 5 10 20 30

2
3
NCC#6-30M

No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	3.046	39.60	69.50	-29.90	19.79	19.81	QP
2	3.250	42.40	69.50	-27.10	22.56	19.84	QP
3	8.532	35.00	69.50	-34.50	13.91	21.09	QP
4	15.678	37.84	69.50	-31.66	16.17	21.67	QP
5	17.996	38.82	69.50	-30.68	17.08	21.74	QP
6	26.563	39.17	69.50	-30.33	17.24	21.93	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Date: 2021-12-24

Level (dBuV/m)

Frequency (MHz)

130
113.8
97.5
81.3
65.0
48.8
32.5
16.3

0.009 0.02 0.05 0.1 0.2 0.5 1 2 5 10 20 30

1
2
3
4
NCC#6-30M

No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	3.250	41.36	69.50	-28.14	21.52	19.84	QP
2	6.582	36.01	69.50	-33.49	15.47	20.54	QP
3	13.658	35.81	69.50	-33.69	14.20	21.61	QP
4	15.678	39.21	69.50	-30.29	17.54	21.67	QP
5	17.851	40.81	69.50	-28.69	19.07	21.74	QP
6	22.954	36.46	69.50	-33.04	14.60	21.86	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :966-3
Condition :3m ,Horizontal
Mode :RX_9K-30M
Test BY :Jing Chang

Site :966-3
Condition :3m ,Vertical
Mode :RX_9K-30M
Test BY :Jing Chang

Date: 2021-12-24

Level (dBuV/m)

Frequency (MHz)

130
113.8
97.5
81.3
65.0
48.8
32.5
16.3

0.009 0.02 0.05 0.1 0.2 0.5 1 2 5 10 20 30

1
2
NCC#6-30M

No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	3.250	43.63	69.50	-25.87	23.79	19.84	QP
2	4.112	35.30	69.50	-34.20	15.33	19.97	QP
3	15.551	39.73	69.50	-29.77	18.06	21.67	QP
4	17.996	39.67	69.50	-29.83	17.93	21.74	QP
5	22.769	35.94	69.50	-33.56	14.08	21.86	QP
6	29.517	36.81	69.50	-32.69	14.82	21.99	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Date: 2021-12-24

Level (dBuV/m)

Frequency (MHz)

130
113.8
97.5
81.3
65.0
48.8
32.5
16.3

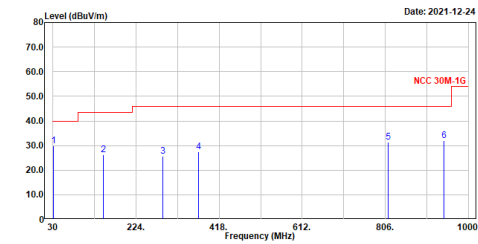
0.009 0.02 0.05 0.1 0.2 0.5 1 2 5 10 20 30

1
2
3
4
5
NCC#6-30M

No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2.831	36.19	69.50	-33.31	16.35	19.84	QP
2	3.250	41.29	69.50	-28.21	21.45	19.84	QP
3	4.112	34.87	69.50	-34.63	14.90	19.97	QP
4	15.678	38.07	69.50	-31.43	16.40	21.67	QP
5	17.996	40.15	69.50	-29.35	18.41	21.74	QP
6	22.954	37.04	69.50	-32.46	15.18	21.86	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :966-3
Condition :3m ,Horizontal
Mode :TX 30M-1G
Test BY :Jing Chang

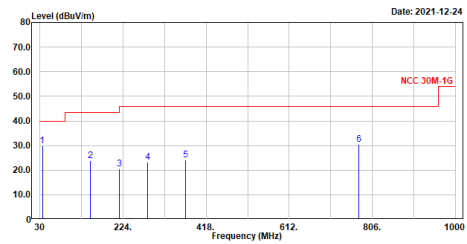


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	31.940	29.74	40.00	-10.26	42.68	-12.94	QP
2	148.340	26.14	43.50	-17.36	37.46	-11.32	QP
3	286.080	25.72	46.00	-20.28	36.70	-10.98	QP
4	370.470	27.61	46.00	-18.39	36.52	-8.91	QP
5	812.790	31.27	46.00	-14.73	32.10	-0.83	QP
6	942.770	31.86	46.00	-14.14	31.16	0.70	QP

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :966-3
Condition :3m ,Vertical
Mode :TX 30M-1G
Test BY :Jing Chang

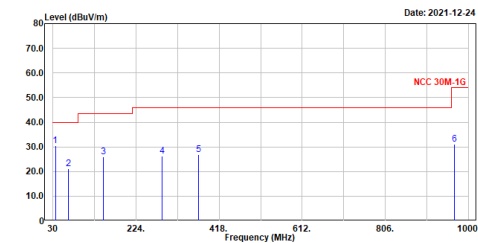


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	35.820	29.78	40.00	-10.22	42.36	-12.58	QP
2	148.340	23.96	43.50	-19.54	35.28	-11.32	QP
3	215.270	20.59	43.50	-22.91	34.34	-13.75	QP
4	281.230	23.33	46.00	-22.67	34.42	-11.09	QP
5	369.500	24.19	46.00	-21.81	33.12	-8.93	QP
6	774.960	30.63	46.00	-15.37	31.70	-1.07	QP

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :966-3
Condition :3m ,Horizontal
Mode :RX 30M-1G
Test BY :Jing Chang

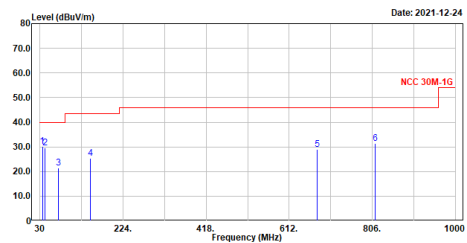


No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	35.820	30.50	40.00	-9.50	43.08	-12.58	QP
2	65.890	21.19	40.00	-18.81	34.52	-13.33	QP
3	148.340	25.87	43.50	-17.63	37.19	-11.32	QP
4	285.110	26.26	46.00	-19.74	37.26	-11.00	QP
5	369.500	27.01	46.00	-18.99	35.94	-8.93	QP
6	967.990	31.06	54.00	-22.94	29.98	1.08	QP

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

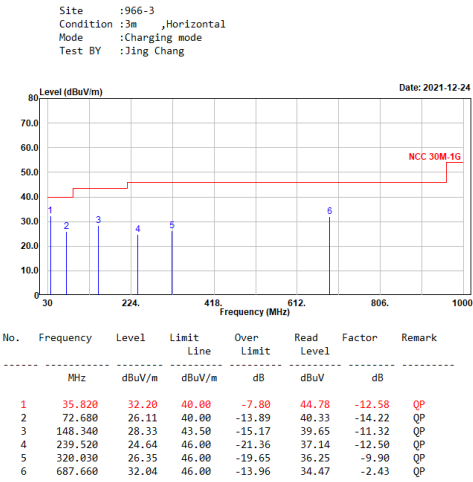
Site :966-3
Condition :3m ,Vertical
Mode :RX 30M-1G
Test BY :Jing Chang



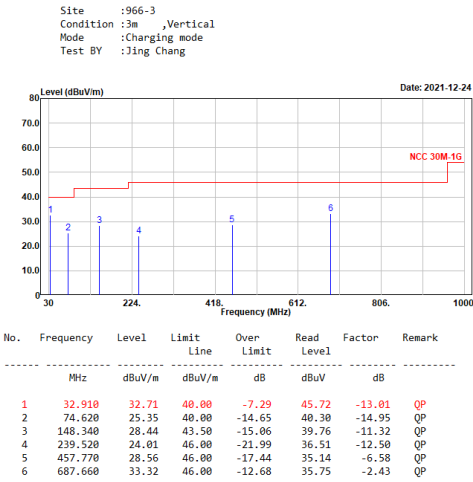
No.	Frequency	Level	Limit	Over	Read	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	35.820	30.19	40.00	-9.81	42.77	-12.58	QP
2	42.610	29.61	40.00	-10.39	41.15	-11.54	QP
3	73.650	21.31	40.00	-18.69	36.81	-14.70	QP
4	148.340	25.49	43.50	-18.01	36.81	-11.32	QP
5	676.990	28.85	46.00	-17.15	31.61	-2.76	QP
6	812.790	31.35	46.00	-14.65	32.18	-0.83	QP

Note:

1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.



Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.



Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.