

Test Report No:
24A0579R-RFUSV10S-A

TEST REPORT

FCC Rules&Regulations

Product Name	8 inch Touch Screen wall mount 10.1 inch Touch Screen wall mount
Brand Name	CRESTRON
Model No.	M202404001, M202404002
FCC ID	EROTSW80
Applicant's Name / Address	Crestron Electronics, Inc. 15 Volvo Drive, Rockleigh, NJ 07647
Manufacturer's Name	Crestron Electronics, Inc.
Test Method Requested, Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.10-2013
Verdict Summary	IN COMPLIANCE
Documented By Ida Tung	<i>Ida Tung</i>
Tested By Ivan Chuang	<i>Ivan Chuang</i>
Approved By Alan Chen	<i>Alan Chen</i>
Date of Receipt	2024/10/22
Date of Issue	2024/12/10
Report Version	V1.0

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Appendix B. Test Result of Occupied Bandwidth

Appendix C. Test Result of Maximum output power (EIRP)

Appendix D. Test Result of Radiated Emissions

Appendix E. Test Result of Frequency Stability

Appendix F. Test Setup Photograph

Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

General Conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. 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.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	2024/12/10

Summary of Test Result

Report Clause	Test Items	Result (PASS/FAIL)	Remark
3	AC Power Line Conducted Emission	--	-
4	Occupied Bandwidth	PASS	-
5	Maximum output power (EIRP)	PASS	-
6	Radiated Emission	PASS	-
7	Frequency Stability	PASS	-

Note:

The EUT was powered by DC-Powered. It's not necessary to apply to AC Power Line Conducted Emission test.

Comments and Explanations

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1. General Information

1.1. EUT Description

Frequency Band	61.0 ~ 61.5 GHz
Operating Frequency / Channel Number	61.20 GHz / 1 Channel
Type of Modulation	FMCW

The difference for each model is shown as below:

Model No.	Description
M202404001	screen size 8 Inch wall mount
M202404002	screen size 10.1 Inch wall mount

From the above models, model: M202404002 was selected as representative model for the test and its data was recorded in this report.

Antenna Information

Item.	Brand Name	Part No.	Type	Gain (dBi)
1	infineon	BGT60LTR11SAIP	Microstrip	6

Working Frequency of Each Channel

Channel	Frequency (GHz)
1	61.20

Note: The above EUT information is declared by the manufacturer.

1.2. EUT Information

EUT Power Type	From PoE
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1.3. Testing Location Information

USA	FCC Designation Number: TW0033
Canada	CAB Identifier Number: TW3023 / Company Number: 26930

Site Description	Accredited by TAF
	Accredited Number: 3023

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
	Linkou Laboratory
Address	No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C.
Performed Location	No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C.
Phone Number	+886-3-275-7255
Fax Number	+886-3-327-8031

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual	Test Date
Radiated Emission	Temperature (°C)	10~40 °C	23.8 °C	2424/11/07~2024/11/21
	Humidity (%RH)	10~90 %	61.3 %	
RF Conducted Emission	Temperature (°C)	10~40 °C	23.7 °C	2024/11/13
	Humidity (%RH)	10~90 %	59.6 %	

1.4. Measurement Uncertainty

Uncertainties have been calculated according to the DEKRA internal document 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).

Test item	Uncertainty
AC Power Line Conducted Emission	±3.50 dB
Occupied Bandwidth	±1580.61 Hz
Maximum output power (EIRP)	±4.02 dB
Radiated Emission	9kHz~30MHz: ±3.88dB 30MHz~1GHz: ±4.42dB 1GHz~18GHz: ±4.28dB 18GHz~40GHz: ±3.90dB 40GHz~50GHz: ±5.06dB 50GHz~325GHz: ±5.71dB
Frequency Stability	±1580.61 Hz

1.5. List of Test Equipment

For Conduction Measurements / HY-SR01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
	EMI Test Receiver	R&S	ESR7	101601	2024/06/24	2025/06/23
	Two-Line V-Network	R&S	ENV216	101306	2024/04/01	2026/03/31
	Two-Line V-Network	R&S	ENV216	101307	2023/08/17	2025/08/16
	Coaxial Cable	SUHNER	RG400_BNC	RF001	2024/01/10	2025/01/09

Note:

1. Two-Line V-Network is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software Version: e3 230303 dekra V9.

For RF Conducted Emission / HY-SR03

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Temperature Chamber	KSON	THS-D4T-100	A0606	2024/03/06	2025/03/05
V	DC Power Supply	GW Insteck	SPD-3606	GEQ820915	2024/08/05	2025/08/04
V	Spectrum Analyzer	Keysight	N9030B	MY56320509	2024/07/19	2025/07/18
V	Horn Antenna	VDI	RCH012RL (60-90GHz)	N/A	2022/03/10	2025/03/09

Note:

1. The mm-Wave VDI equipment (above 50GHz) is calibrated every three years, the other equipments are calibrated every one year.
2. The test instruments marked with "V" are used to measure the final test results.

For Radiated Measurements / HY-CB02

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V Loop Antenna	AMETEK	HLA6121	49611	2024/02/23	2025/02/22
V Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-675	2023/08/09	2025/08/08
V Horn Antenna	RF SPIN	DRH18-E	210507A18ES	2024/05/15	2025/05/14
V Horn Antenna	Com-Power	AH-840	101101	2023/12/04	2025/12/03
V Pre-Amplifier	SGH	0301-9	20211007-11	2024/01/10	2025/01/09
V Pre-Amplifier	EMCI	EMC051845SE	980632	2024/01/10	2025/01/09
V Pre-Amplifier	EMCI	EMC05820SE	980361	2024/01/10	2025/01/09
V Horn Antenna with waveguide adapter	QuinStar	QWH-QPDR00	1409700013	2024/01/10	2025/01/09
V Preamplifier	EMCI	EMC335045SE	980639	2024/01/10	2025/01/09
V Coaxial Cable	SGH	SGH40	HC360-2.4M2.4M-1M-202108-1	2024/01/10	2025/01/09
V Coaxial Cable	SGH	SGH40	HC360-2.4M/2.4M-3M-202108-1	2024/01/10	2025/01/09
V Horn Antenna	VDI	RCH015RL (50-75GHz)	--	2022/03/10	2025/03/09
V Horn Antenna	VDI	RCH012RL(60-90GHz)	--	2022/03/10	2025/03/09
V Horn Antenna	VDI	RCH08RL(90-140GHz)	--	2022/03/10	2025/03/09
V Horn Antenna	VDI	RCH05RL(140-220GHz)	--	2022/03/10	2025/03/09
V Down Convertor (SAX405)	VDI	N9029AV15(AT0-55847)	US54250164	2022/03/10	2025/03/09
V Down Convertor (SAX404)	VDI	N9029AV12(AT0-59570)	US54250170	2022/03/10	2025/03/09
V Down Convertor (SAX403)	VDI	N9029AV08(AT0-59571)	US53250012	2022/03/10	2025/03/09
Down Convertor (SAX402)	VDI	N9029AV05(AT0-60029)	US53250019	2022/03/10	2025/03/09
Filter	MICRO TRONICS	BRM50702	G269	2024/01/05	2025/01/04
Filter	MICRO TRONICS	BRM50716	G196	2024/01/05	2025/01/04
V EMI Test Receiver	R&S	ESR3	102793	2023/12/11	2024/12/10
V Spectrum Analyzer	R&S	FSV3044	101114	2024/02/21	2025/02/20
V Spectrum Analyzer	Keysight	N9030B	MY56320509	2024/07/19	2025/07/18
V Coaxial Cable	SGH	SGH18	2021005-1	2024/01/10	2025/01/09
V Coaxial Cable	SGH	SGH18	202108-4	2024/01/10	2025/01/09
V Coaxial Cable	SGH	HA800	GD20110223-1	2024/01/10	2025/01/09
V Coaxial Cable	SGH	HA800	GD20110222-3	2024/01/10	2025/01/09

Note:

1. Bi-Log Antenna and Horn Antenna (AH-840) is calibrated every two years, VDI and Millitech equipments is calibrated every three years, other equipment are calibrated every one year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software Version: e3 230303 dekra V9.

2. Test Configuration of EUT

2.1. Test Condition

EUT Operational Condition	
Testing Voltage	DC 48V

2.2. Test Software

Test Software Version	N/A
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Modulation	Frequency (GHz)	Power Setting
FMCW	61.20	N/A

2.3. The Worst Case Measurement Configuration

Test Mode	Mode 1: Transmit
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Note:

1. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. For radiated emission below 1 GHz and AC power line conducted emission have performed all modes of operation were investigated and the worst-case emissions are reported.
3. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
4. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance of transmitter with Part 15 Subpart C Paragraph 15.255(a), (c)(2)(v) For field disturbance sensors.

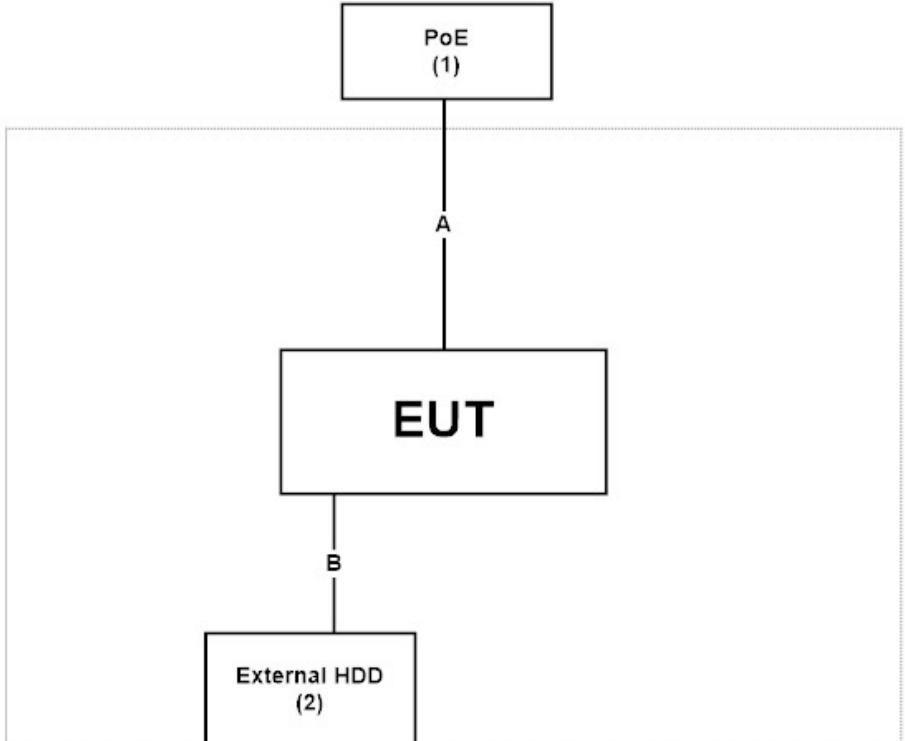
2.4. Tested System Details

For Radiated Emission / AC Power Line Conducted Emission

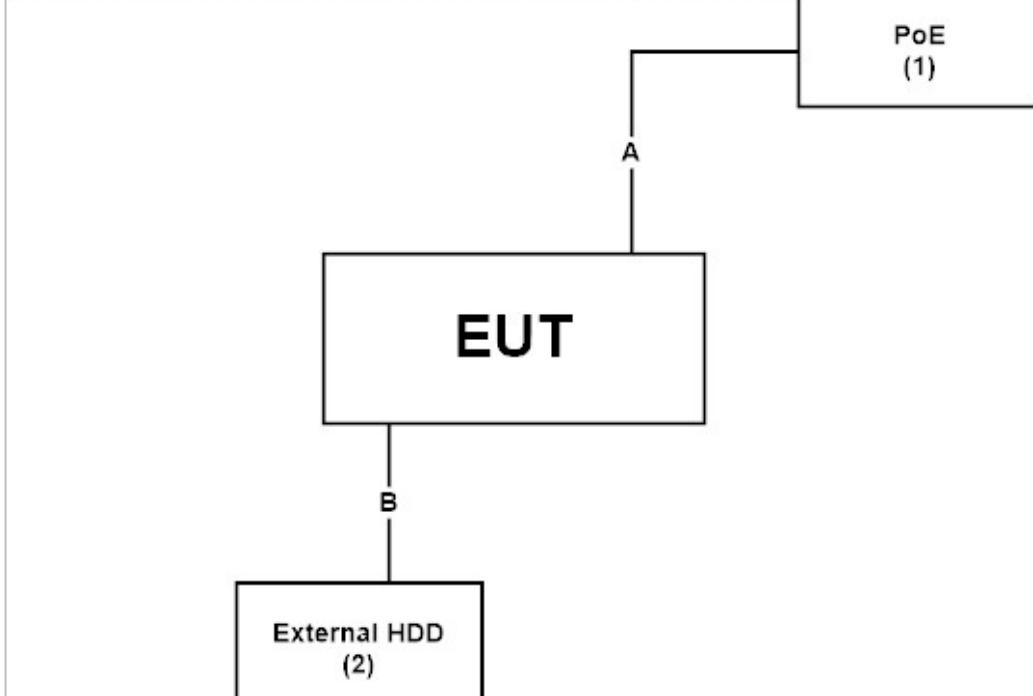
No.	Equipment	Brand Name	Model No.	Serial No.	Power Cord
1	PoE	NETGEAR	GS305EPP	N/A	N/A
2	External HDD	Transcend	TS1TSJ25MC	F30467-0003	N/A

2.5. Configuration of tested System

For Radiated Emission

Connection Diagram	
	
Signal Cable Type	Signal Cable Description
A LAN Cable	Shielded, 5m
B USB Cable	Shielded, 0.5m

For AC Power Line Conducted Emission

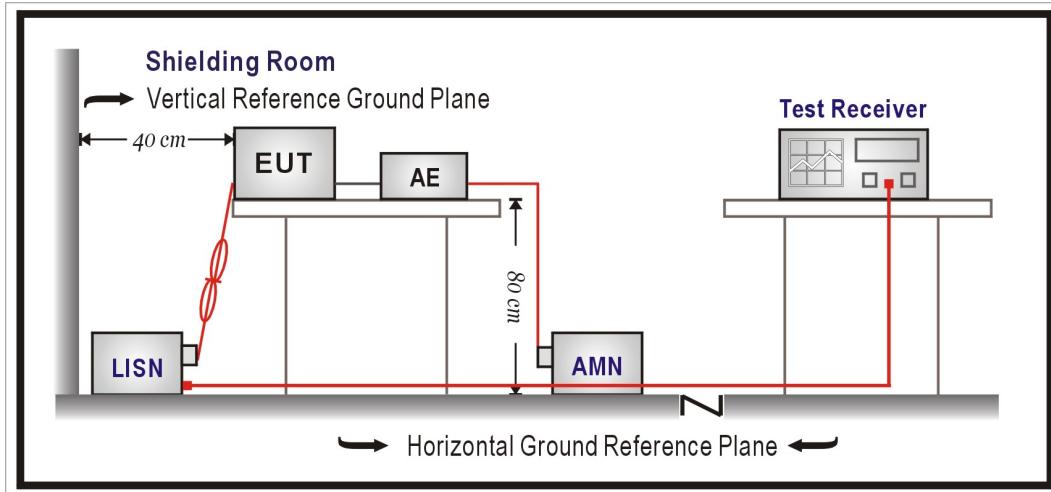
Connection Diagram	
	
Signal Cable Type	Signal Cable Description
A LAN Cable	Shielded, 5m
B USB Cable	Shielded, 0.5m

2.6. EUT Exercise Software**For Radiated Emission / AC Power Line Conducted Emission**

1.	Setup the EUT as shown in Section 2.6.
2.	Provide the DC Power Source, Start transmits continually.
3.	Configure the test mode, the test channel.
4.	Verify that the EUT works properly.

3. AC Power Line Conducted Emission

3.1. Test Setup



3.2. Test Limit

Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

3.3. 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 /50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm /50 uH coupling impedance with 50ohm termination. (Please refer 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 C63.10: 2013 on conducted measurement.

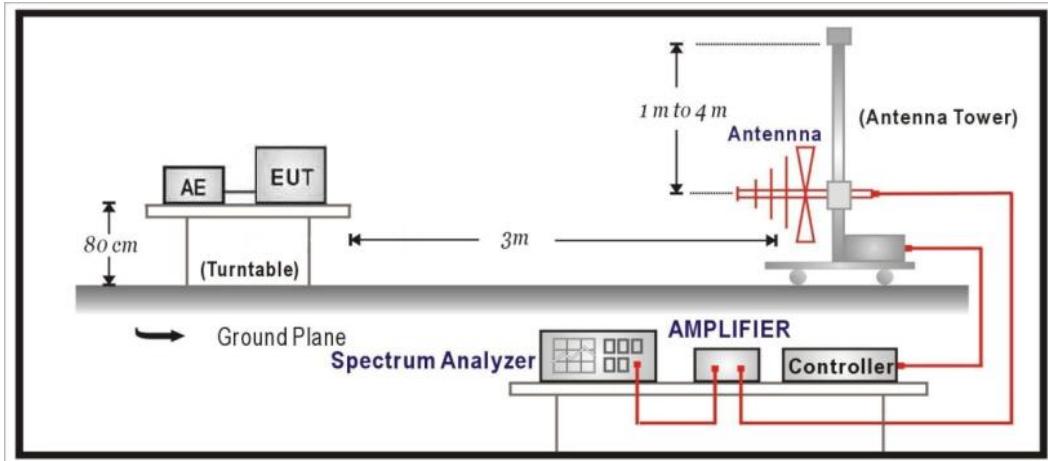
Conducted emissions were invested over the frequency range from 0.15 MHz to 30 MHz using a receiver bandwidth of 9 kHz.

3.4. Test Result of AC Power Line Conducted Emission

Refer as Appendix A

4. Occupied Bandwidth

4.1. Test Setup



4.2. Test Limit

Within the designated 57-71GHz frequency band.

(15.255(c)(2)(v) For fixed field disturbance sensors within the frequency band 61.0-61.5 GHz)

4.3. Test Procedures

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 ~ 5 % of the expected OBW & VBW $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = Max hold.
5. Sweep = Auto couple.
6. The trace was allowed to stabilize.
7. If necessary, step 2 ~ 6 were repeated after changing the RBW such that it would be within 1 ~ 5 % of the 99 % occupied bandwidth observed in step 6.

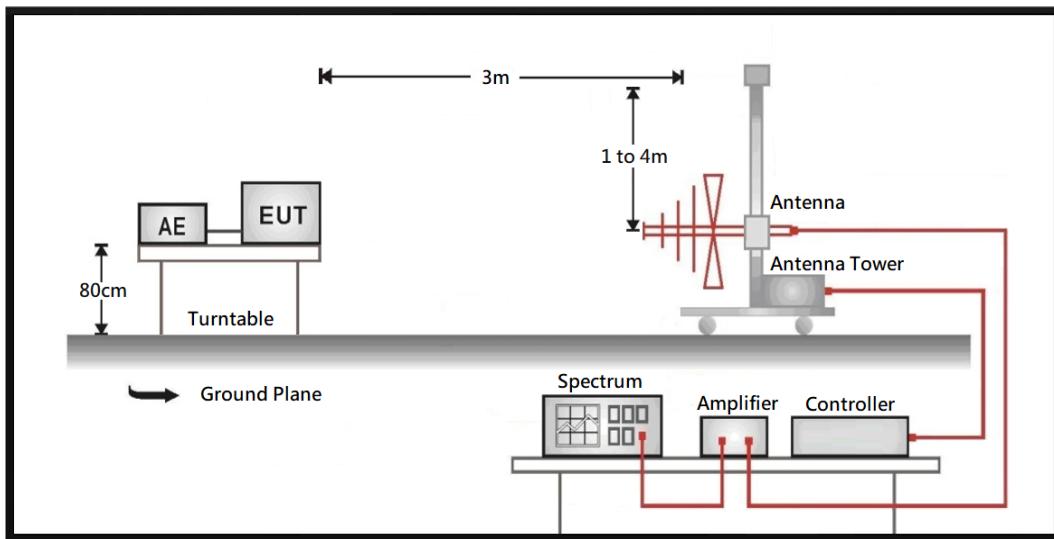
Note: The RBW and VBW were setting up to the limitations of the test equipment.

4.4. Test Result of Occupied Bandwidth

Refer as Appendix B

5. Maximum output power (EIRP)

5.1. Test Setup



5.2. Test Limit

FCC 15.255(c)(2)(v): Within the 57-71 GHz band, emission levels shall not exceed the following equivalent isotropically radiated power:

For fixed field disturbance sensors other than those operating under the provisions of paragraph (c)(2)(v) of this section, For field disturbance sensors/radars that occupy 500 MHz bandwidth or less that are contained wholly within the frequency band 61.0-61.5 GHz, the average power of any emission, measured during the transmit interval, shall not exceed 40 dBm, and the peak power of any emission shall not exceed 43 dBm. In addition, the average power of any emission outside of the 61.0-61.5 GHz band.

5.3. Test Procedures

Maximum power(EIRP) –Averaging detector

Note: The maximum power(averaging detector) measurements are performed using the “channel power” measurement capability and integrated over the 99% OBW to obtain the result.

1. Measurement capability of instrument = channel power
2. Set RBW = 1MHz
3. Set VBW \geq 3 x RBW
4. span to 2 x to 3 x the OBW
5. Channel bandwidth setting of instrument \geq OBW
6. Detector = power averaging (rms)
7. Set number of points in sweep $\geq 2 \times$ span / RBW
8. Sweep time=auto-couple
9. Trace = averaging

Maximum peak power(EIRP) –Peak detector

1. Set RBW = 1MHz
2. Set VBW \geq 3 x RBW
3. span to 2 x to 3 x the OBW
4. Detector = Peak
5. Set number of points in sweep $\geq 2 \times$ span / RBW
6. Sweep time=auto-couple
7. Trace = max-hold

Measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 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 is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.26: 2015-Section 5.5 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is above 1GHz is 1MHz.

Radiated emission measurements 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.

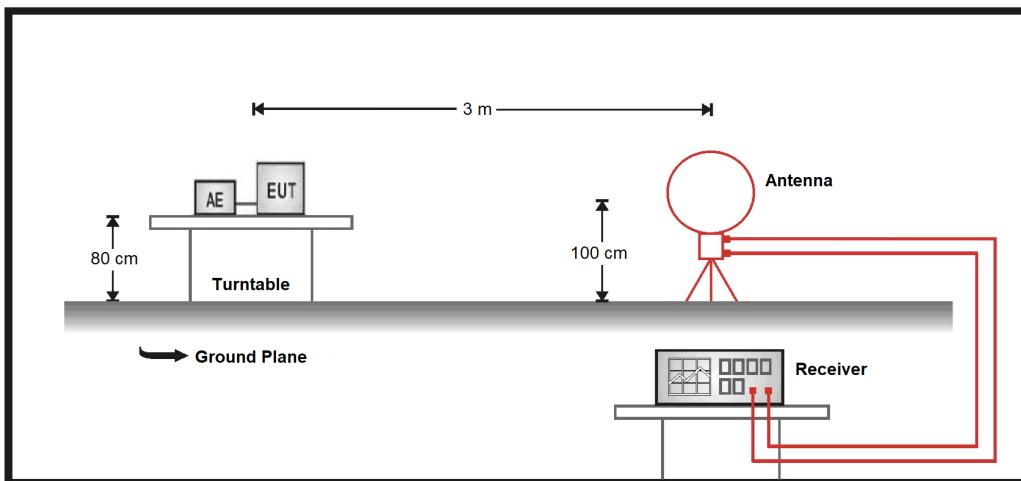
5.4. Test Result of Maximum output power (EIRP)

Refer as Appendix C

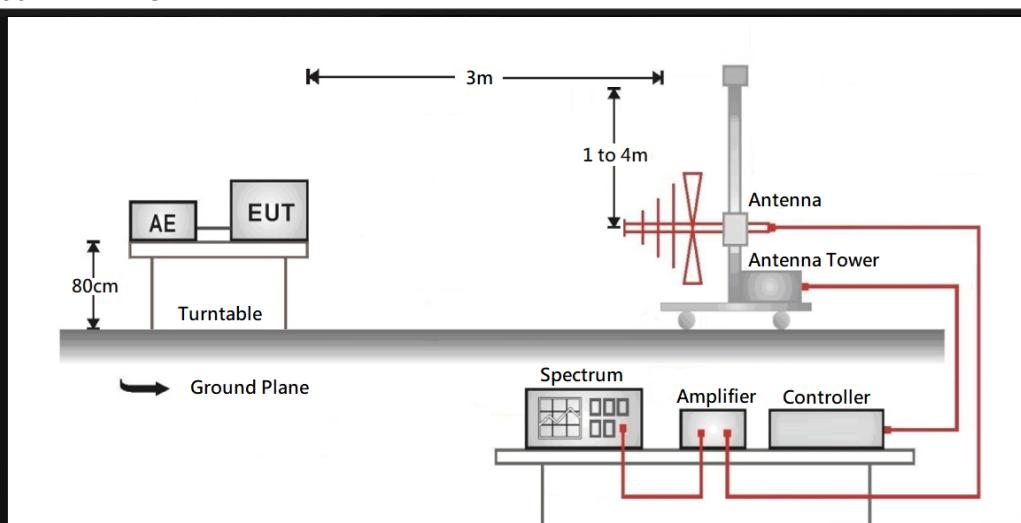
6. Radiated Emission

6.1. Test Setup

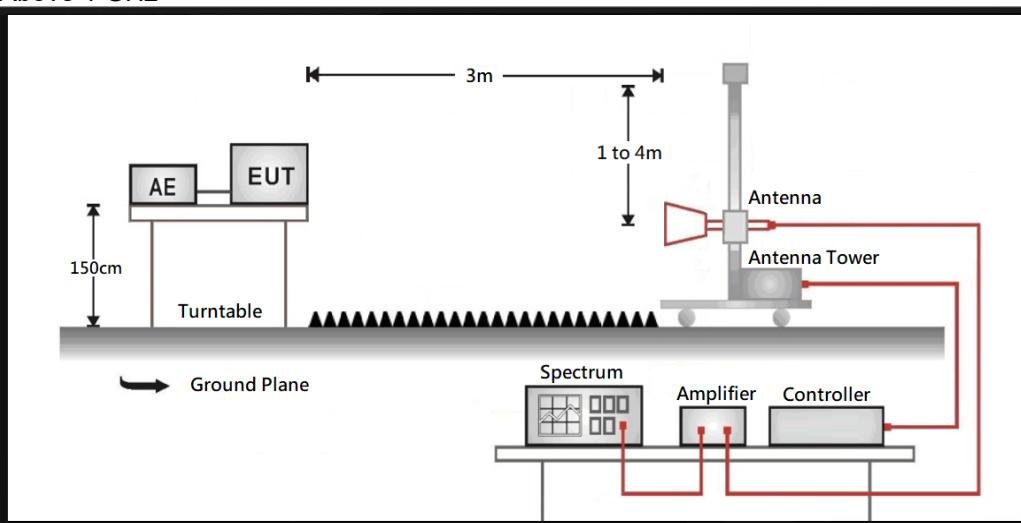
9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz



6.2. Test Limit

Frequency (MHz)	Field strength (uV/m)	Field strength (dBuV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	20 log (2400/F(kHz))	300
0.490 – 1.705	24000/F(kHz)	20 log (24000/F(kHz))	30
1.705 - 30	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Between 40 GHz and 200 GHz, the level of these emissions shall not exceed 90 pW / cm² at a distance of 3 meters.

Remarks:

1. Field strength (dBuV/m) = 20 log Field strength (uV/m)
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

6.3. Test Procedure

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 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 is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and

30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~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.

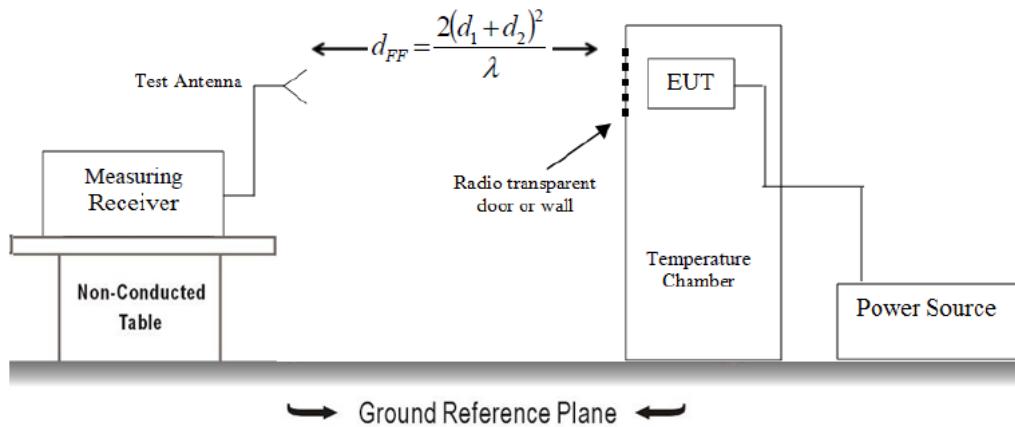
The measurement frequency range from 9kHz – 231GHz was investigated.

6.4. Test Result of Radiated Emissions

Refer as Appendix D

7. Frequency Stability

7.1. Test Setup



7.2. Limit

Fundamental emissions must be contained within the frequency bands specified in this section during all conditions of operation.

7.3. Test Procedure

The carrier frequency of the transmitter is measured at room temperature. (20°C to provide a reference)

At 10 °C intervals of temperatures between -30 °C and +50 °C at the manufacturer's rated supply voltage, and At +20 °C temperature and $\pm 15\%$ supply voltage variations. If a product is specified to operate over a range of input voltage then the -15% variation is applied to the lowermost voltage and the +15% is applied to the uppermost voltage.

Measurement data showing variation in transmitter output frequency from a cold start and the elapsed time necessary for the frequency to stabilize within the applicable tolerance. Tests shall be made after temperature stabilization at each of the ambient temperature levels; the lower temperature limit, 0° centigrade and + 30° centigrade with no primary power applied.

Beginning at each temperature level, the frequency shall be measured within one minute after application of primary power to the transmitter and at intervals of no more than one minute thereafter until ten minutes have elapsed or until sufficient measurements are obtained to indicate clearly that the frequency has stabilized within the applicable tolerance, whichever time period is greater. During each test, the ambient temperature shall not be allowed to rise more than 10° centigrade above the respective beginning ambient temperature level.

7.4. Test Result of Frequency Stability

Refer as Appendix E