

Test Report No:
2520368R-RFUSV03S-C

Test Result for Inspection (Class II Permissive Change)

Product Name	C6490
Brand Name	RuggON
Model No.	C6490-U8A
FCC ID	2ABTU-C6490
Applicant's Name / Address	RuggON Corporation 4F, No. 298, Yang Guang St., NeiHu Dist., Taipei City, Taiwan
Manufacturer's Name	RuggON Corporation
Test Method Requested, Standard	FCC CFR Title 47 Part 15 Subpart E Section 15.407 ANSI C63.10-2013
Verdict Summary	IN COMPLIANCE
Documented By Genie Chang	<i>Genie Chang</i>
Tested by Ivan Chuang	<i>Ivan Chuang</i>
Approved by Steven Tsai	<i>Steven Tsai</i>
Date of Receipt	2025/02/14
Date of Issue	2025/05/20
Report Version	V1.0

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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	2025/05/20

Permissive Change

Report No.	Version	Description	Issued Date
2520368R-RFUSV03S-C	V1.0	This is to request a Class II permissive change. The major change filed under this application is: Change #1: Addition of a new antenna type. Change #2: Addition of a new platform. (Ruggon / MT7050)	2025/05/20

Summary of Test Result

Report Clause	Test Items	Result (PASS/FAIL)	Remark
3	Maximum E.I.R.P. Power	PASS	-
4	Transmitter Radiated Spurious Emission	PASS	-

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 Range	5850 ~ 5895 MHz	
Operating Frequency / Channel Number	IEEE 802.11a/n/ac/ax (20 MHz)	5845 ~ 5885 MHz / 3 Channels
	IEEE 802.11n/ac/ax (40 MHz)	5835 MHz ~ 5875 / 2 Channels
	IEEE 802.11ac/ax (80 MHz)	5855 MHz / 1 Channel
	IEEE 802.11ac/ax (160 MHz)	5815 MHz / 1 Channel
Type of Modulation	IEEE 802.11a/n	OFDM-BPSK, QPSK, 16QAM, 64QAM
	IEEE 802.11ac	OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM
	IEEE 802.11ax	OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM

Accessories Information		
No.	Equipment Name	Description
1	Power Cord	Non-shielded, 2.1m

Antenna Information				
Item	Brand Name	Model No.	Type	Antenna Gain (dBi)
1	AWAN	ALP6Y-100011(Main)	PIFA	2.01
		ALP6Y-100012(Aux)		1.92

Note:

1. Only the higher gain antenna was tested and recorded in this report.
2. The antenna of EUT conforms to FCC 15.203.
3. For IEEE 802.11a/n/ac/ax Mode: (2TX, 2RX)

1.2. EUT Information

EUT Power Type	From Host system (Battery / DC Power)			
Resource Unit of 802.11ax	☐	Full RU	☒	Partial RU

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. 85, Wenlin St., Linkou Dist., New Taipei City 244017, 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	22.1 °C	2025/03/12~2025/05/07
	Humidity (%RH)	10~90 %	60.7 %	
RF Conducted Emission	Temperature (°C)	10~40 °C	26.8 °C	2025/02/21~2025/05/16
	Humidity (%RH)	10~90 %	50.2 %	

1.4. Measurement 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
Maximum E.I.R.P. Power	Spectrum Analyzer: ± 2.14 dB Power Meter: ± 1.05 dB
Transmitter Radiated Spurious Emission	9 kHz~30 MHz: ± 3.30 dB 30 MHz~1 GHz: ± 4.79 dB 1 GHz~18 GHz: ± 4.17 dB 18 GHz~40 GHz: ± 3.32 dB
Duty Cycle	± 0.51 %

1.5. List of Test Equipment

For Conducted Measurements / HY-SR02

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Spectrum Analyzer	R&S	FSV30	103466	2024/12/18	2025/12/17
V	Spectrum Analyzer	KEYSIGHT	N9010A	MY53470892	2024/10/30	2025/10/29
V	Peak Power Analyzer	KEYSIGHT	8990B	MY51000539	2025/05/05	2026/05/04
V	Wideband Power Sensor	KEYSIGHT	N1923A	MY59240002	2025/05/07	2026/05/06
V	Wideband Power Sensor	KEYSIGHT	N1923A	MY59240003	2025/05/07	2026/05/06

Note:

1. All equipment is calibrated every year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software Version : DTC_RF_Tool_Release V100

For Radiated Measurements /HY-CB02

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
V	Loop Antenna	TESEQ	HLA6121	49611	2025/02/18	2026/02/17
V	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-0675	2023/08/09	2025/08/08
V	Horn Antenna	RF SPIN	DRH18-E	210503A18ES	2024/02/29	2026/02/28
V	Horn Antenna	Com-Power	AH-840	101101	2023/12/04	2025/12/03
V	Pre-Amplifier	SGH	SGH0301	20230308-1	2025/02/06	2026/02/05
V	Pre-Amplifier	SGH	SGH118-HS	20211102-1	2025/01/10	2026/01/09
V	Pre-Amplifier	EMCI	EMC05820SE	980285	2025/01/10	2026/01/09
	Pre-Amplifier	MICZEN	MZLNA1850GAC40	WB0103001	2025/01/10	2026/01/09
V	Pre-Amplifier	EMCI	EMC184045SE	980369	2025/01/10	2026/01/09
V	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160311	2025/01/10	2026/01/09
V	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242	2025/01/10	2026/01/09
	Filter	MICRO TRONICS	BRM20887	G002	2025/01/05	2026/01/04
V	Filter	MICRO TRONICS	BRM50716	G067	2025/01/05	2026/01/04
V	WIFI 6E Filter	MVE.	MFN-5850.5895.S1	A80006N	2025/01/05	2026/01/04
	WIFI 6E Filter	Marvelous Microwave Inc.	MFN-5925.7125.S1	C50002N	2025/01/05	2026/01/04
V	EMI Test Receiver	R&S	ESR3	102793	2024/12/06	2025/12/05
V	Spectrum Analyzer	R&S	FSV3044	101113	2025/01/22	2026/01/21
V	Coaxial Cable	SGH	HA800	GD20110223-2	2025/01/10	2026/01/09
V	Coaxial Cable	SGH	HA800	GD20110222-4	2025/01/10	2026/01/09
V	Coaxial Cable	SGH	SGH18	202108-5	2025/01/10	2026/01/09
V	Coaxial Cable	SGH	SGH18	202212-2	2025/01/10	2026/01/09

Note:

1. Bi-Log Antenna and Horn Antenna(AH-840) and RF SPIN are calibrated every two years, the other equipment is calibrated every 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 12 V by DC power supply

2.2. Test Frequency Mode

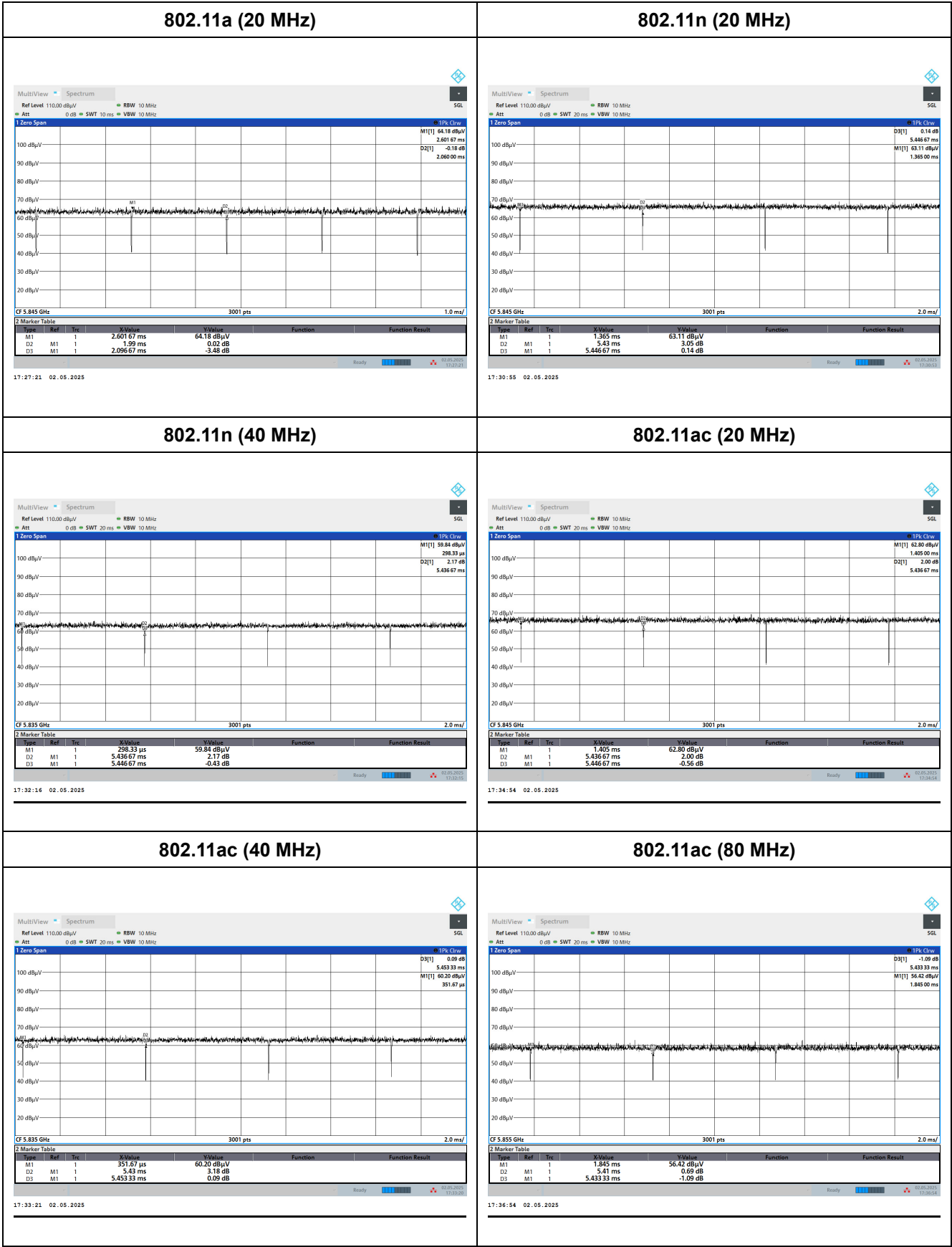
Test Software Version	QRCT / Version 4.0.211.0
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Modulation	Frequency (MHz)	Power Setting
802.11a (20 MHz)	5845	14.5
	5865	15
	5885	15
802.11n (20 MHz)	5845	15
	5865	15
	5885	15
802.11n (40 MHz)	5835	15
	5875	15.5
802.11ac (20 MHz)	5845	15
	5865	15
	5885	15
802.11ac (40 MHz)	5835	15
	5875	15
802.11ac (80 MHz)	5855	15.5
802.11ac (160 MHz)	5815	15

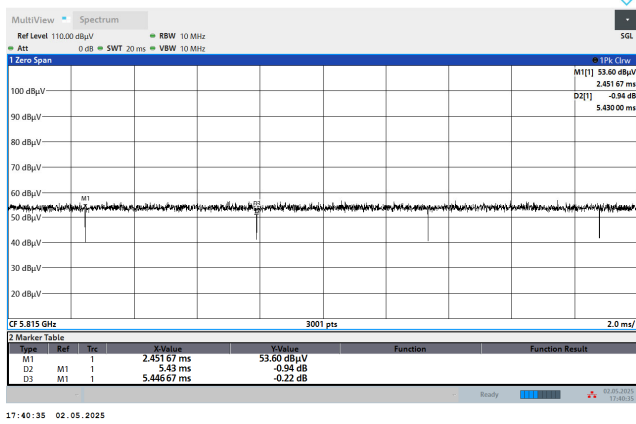
Modulation	Frequency (MHz)	RU Config	Power Setting
802.11ax (20 MHz)	5845	26/0	5.5
		52/37	5.5
		106/53	6
		242/61	14.5
	5865	26/0	5.5
		52/37	5.5
		106/53	6
		242/61	15
	5885	26/0	1
		52/37	3.5
		106/53	3.5
		242/61	9
802.11ax (40 MHz)	5835	26/0	5.5
		52/37	5.5
		106/53	6
		242/61	5.5
		484/65	15
	5875	26/0	5.5
		52/37	5.5
		106/53	5.5
		242/61	5.5
		484/65	15
802.11ax (80 MHz)	5855	26/0	4.5
		52/37	5
		106/53	5
		242/61	5
		484/65	5
		996/67	15.5
802.11ax (160 MHz)	5815	26/0	5
		52/37	4.5
		106/53	5
		242/61	5
		484/65	5
		996/67	5
		2x996/68	12.5

2.3. Duty Cycle

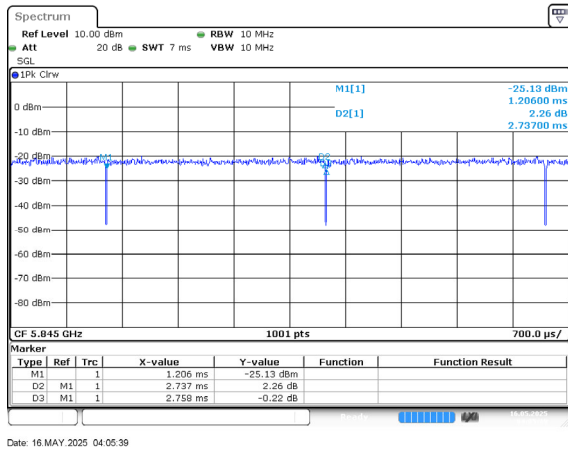
Modulation	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (Hz)
802.11a (20 MHz)	1.9900	2.0967	94.91	0.23	1000
802.11n (20 MHz)	5.4300	5.4467	99.69	0.01	10
802.11n (40 MHz)	5.4367	5.4467	99.82	0.01	10
802.11ac (20 MHz)	5.4367	5.4467	99.82	0.01	10
802.11ac (40 MHz)	5.4300	5.4533	99.57	0.02	10
802.11ac (80 MHz)	5.4100	5.4333	99.57	0.02	10
802.11ac (160 MHz)	5.4300	5.4467	99.69	0.01	10
802.11ax (20 MHz)	2.7370	2.7580	99.24	0.03	10
802.11ax (40 MHz)	1.4000	1.4210	98.52	0.06	10
802.11ax (80 MHz)	0.7120	0.7280	97.80	0.10	2000
802.11ax (160 MHz)	12.9520	13.7020	94.53	0.24	100



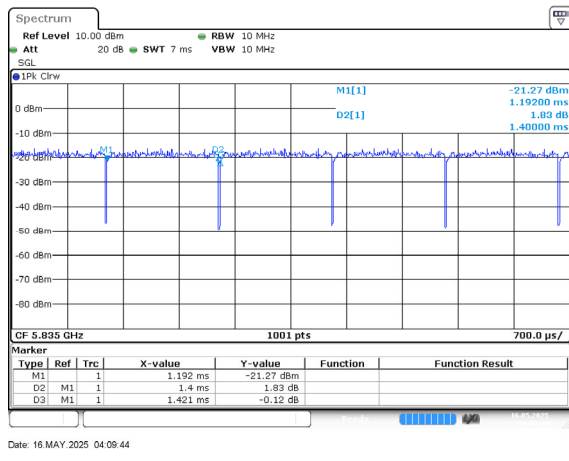
802.11ac (160 MHz)



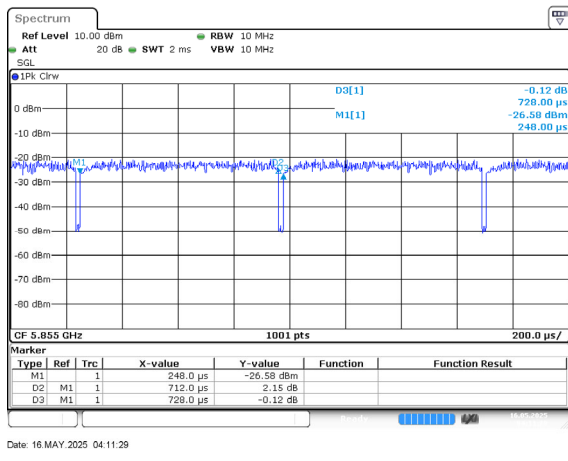
802.11ax (20 MHz)



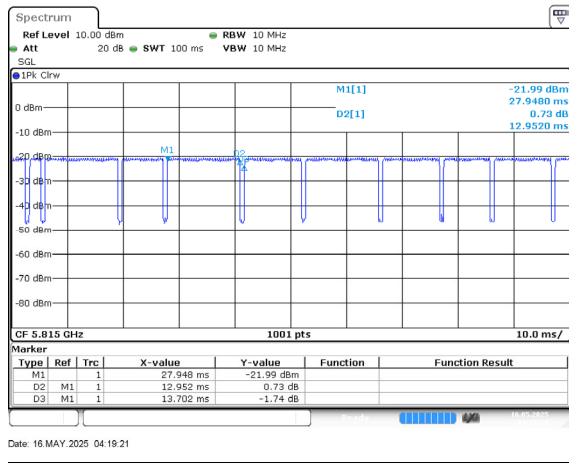
802.11ax (40 MHz)



802.11ax (80 MHz)



802.11ax (160 MHz)



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2.4. Measurement Configuration

Test Mode	Mode 1 (Transmit)	802.11a
		802.11n (20 MHz)
		802.11n (40 MHz)
		802.11ac (20 MHz)
		802.11ac (40 MHz)
		802.11ac (80 MHz)
		802.11ac (160 MHz)
		802.11ax (20 MHz)_Partial RU
		802.11ax (40 MHz)_Partial RU
		802.11ax (80 MHz)_Partial RU
		802.11ax (160 MHz)_Partial RU

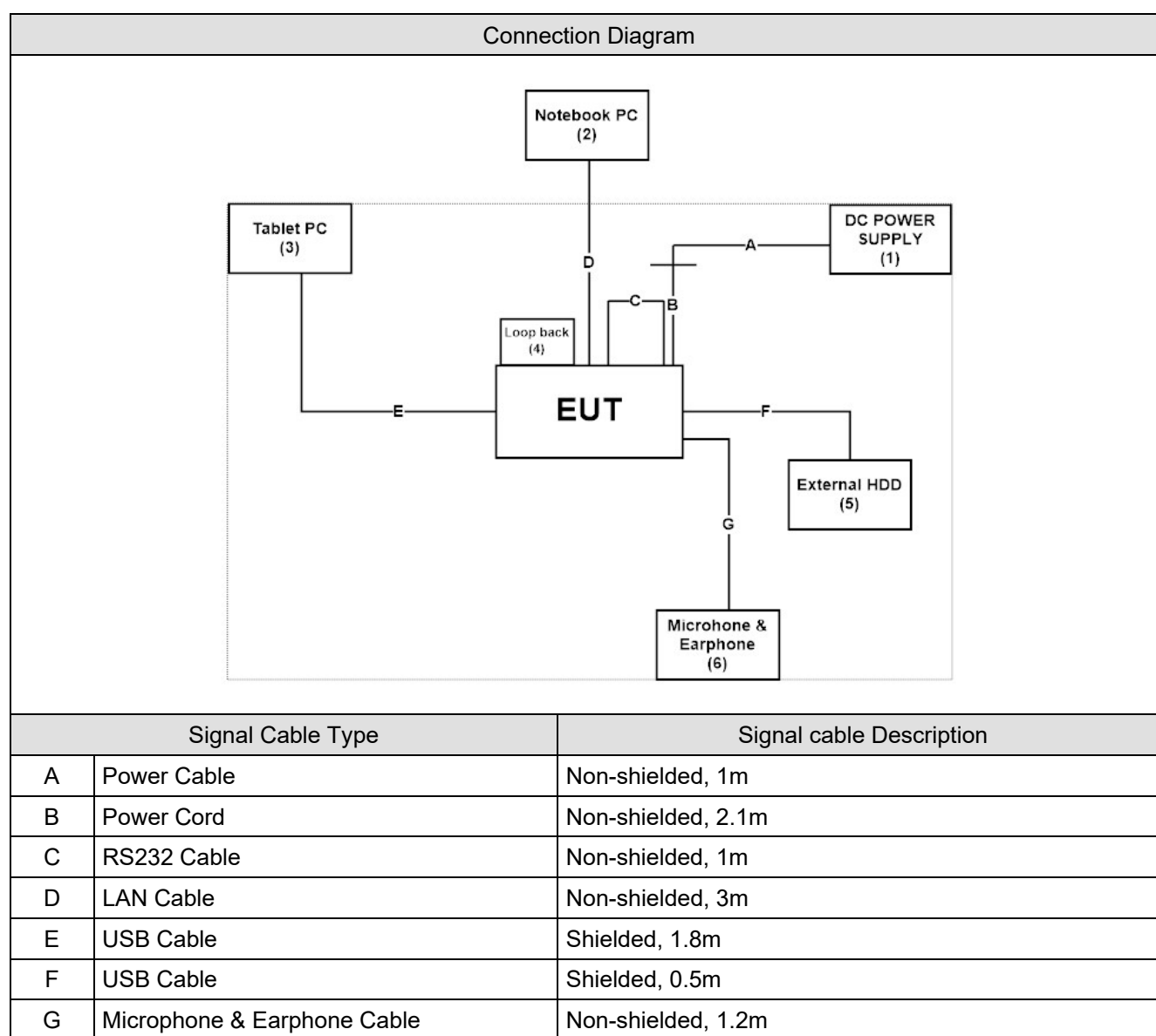
Note:

1. Determining compliance shall be based on the results of the compliance measurement, without taking measurement instrumentation uncertainty into account.
2. For radiated emissions below 1 GHz, all modes of operation were investigated, and the worst-case emissions are reported.
3. The radiation measurements are performed in the X, Y, and Z axis positions. Only the worst case is shown in the report.
4. The lowest data rates are tested in each mode. Only the worst case is shown in the report.
(802.11a is 6 Mbps, 802.11 n is MCS0, 802.11ac is MCS0, 802.11ax is MCS0)

2.5. Tested System Details

No.	Equipment	Brand Name	Model No.	Serial No.	Power Cord
1	DC POWER SUPPLY	KEYSIGHT	E36234A	MY59001234	Non-shielded, 1.8m
2	Notebook PC	Lenovo	TP00067C	PF-0EW0C3	N/A
3	Tablet PC	Lenovo	L13	N/A	N/A
4	Loop back	N/A	N/A	N/A	N/A
5	External HDD	Transcend	TS1TSJ25H3B	F21786-0005	N/A
6	Microphone & Earphone	Verbatim	C09024VB	N/A	N/A

2.6. Configuration of tested System

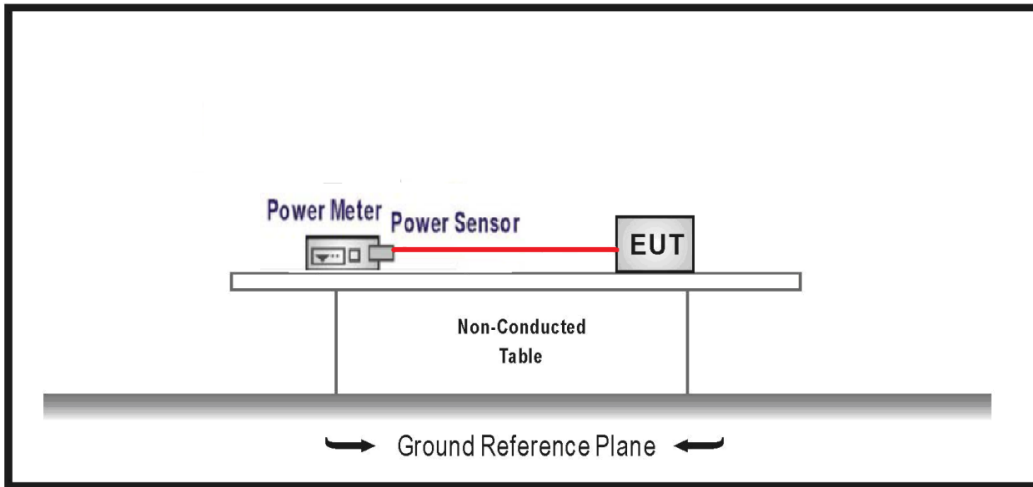


2.7. EUT Operating Procedures

1	Setup the EUT as shown in Section 2.6.
2	Execute software “QRCT / Version 4.0.211.0” on the Tablet PC.
3	Configure the test mode, the test channel, and the data rate.
4	Verify that the EUT works properly.

3. Maximum E.I.R.P. Power

3.1. Test Setup



3.2. Test Limit

1. For an indoor access point operating in the 5.850-5.895 GHz band, the maximum e.i.r.p. over the frequency band of operation must not exceed 36 dBm. Indoor access points operating on a channel that spans the 5.725-5.850 GHz and 5.850-5.895 GHz bands must not exceed an e.i.r.p. of 36 dBm.
2. For client devices operating under the control of an indoor access point in the 5.850-5.895 GHz band, the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm. Client devices operating on a channel that spans the 5.725-5.850 GHz and 5.850-5.895 GHz bands must not exceed an e.i.r.p. of 30 dBm.
3. For a subordinate device operating under the control of an indoor access point in the 5.850-5.895 GHz band, the maximum e.i.r.p. over the frequency band of operation must not exceed 36 dBm.

3.3. Test Procedure

The EUT was setup to ANSI C63.10: 2013; tested to U-NII test procedure of 789033.

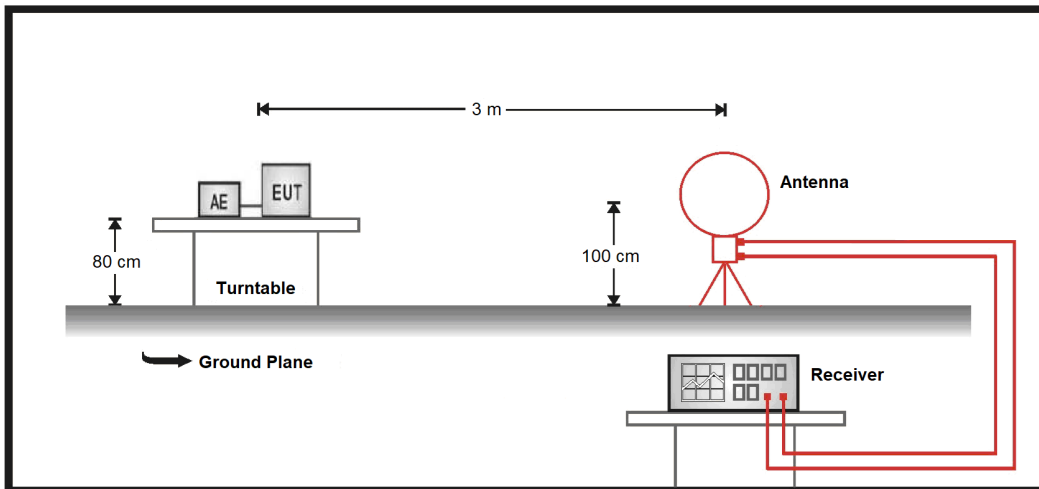
3.4. Test Result of Maximum E.I.R.P. Power

Refer as Appendix A

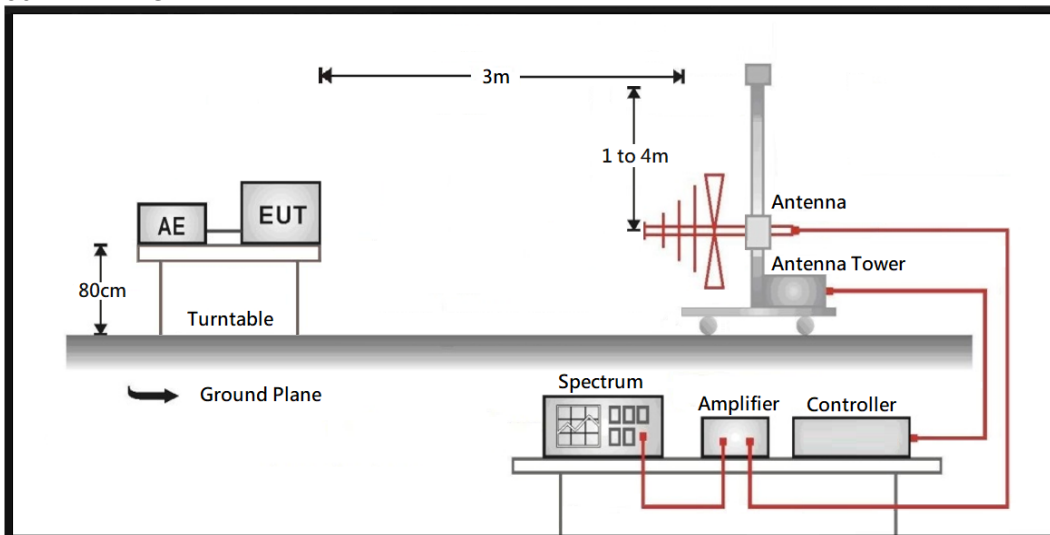
4. Transmitter Radiated Spurious Emission

4.1. Test Setup

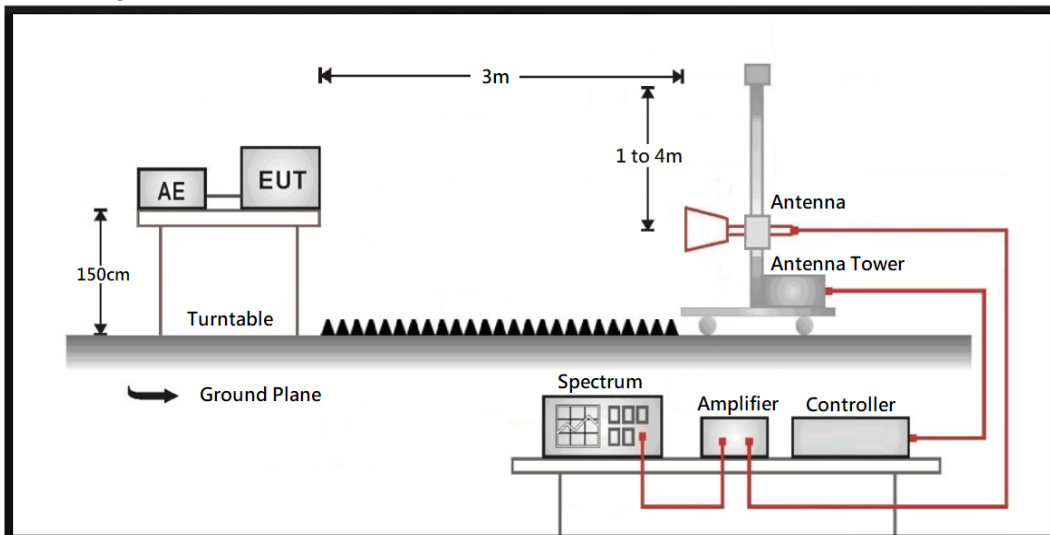
9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz



4.2. Test Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) 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: E field strength (dB μ V/m) = $20 \log E$ field strength (μ V/m)

- For transmitters operating solely in the 5.850-5.895 GHz band or operating on a channel that spans across 5.725-5.895 GHz:
 - (i) For an indoor access point or subordinate device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of 15 dBm/MHz and shall decrease linearly to an e.i.r.p. of -7 dBm/MHz at or above 5.925 GHz.
 - (ii) For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of -5 dBm/MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at or above 5.925 GHz.
 - (iii) For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.

Based on ANSI C63.10-2013 Section 12.7.3 d) provides the conversion formula between field strength and EIRP, if distance is 3m, -27dBm is equivalent to 68.22dBuV/m.

4.3. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 or 1.5 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 additional latch filter below 1 GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

The bandwidth below 1 GHz setting on the field strength meter is 120 kHz, above 1 GHz are 1 MHz.

The frequency range from 9 kHz to 10th harmonics and included The frequency range from the lowest oscillator frequency generated within the device up to the 10th harmonic was checked is checked.

4.4. Test Result of Transmitter Radiated Spurious Emission

Refer as Appendix B