

Test Report No:
2470952R-RFUSV03S-A

Test Result for Inspection (Class II Permissive Change)

Product Name	Peplink Pepwave Wireless Product
Brand Name	 PEPWAVE
Model No.	B One 5G B-ONE-5GN-T-PRM B One Plus B-ONE-PLUS-LTE-US-T-PRM
FCC ID	U8G-P1AX23
Applicant's Name / Address	PISMO LABS TECHNOLOGY LIMITED A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Hong Kong
Manufacturer's Name	PISMO LABS TECHNOLOGY LIMITED
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 April Chen	
Tested by Bill Lin	
Approved by Steven Tsai	
Date of Receipt	2024/07/31
Date of Issue	2024/09/23
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	2024/09/23

Permissive Change

Report No.	Version	Description	Issued Date
2360237R-RFUSV03S-A	V1.0	The major change filed under this application is: Change #1: Adding FTDI components addition. Change #2: Added new e-SIM (M/N: MFXS-M006B-MFOCMW).	2024/09/23

Summary of Test Result

Report Clause	Test Items	Result (PASS/FAIL)	Remark
3	Maximum Conducted Output 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	5150 ~ 5250 MHz 5725 ~ 5850 MHz	
Operating Frequency / Channel Number	IEEE 802.11a	5180 ~ 5240 MHz / 4 Channels
	IEEE 802.11n/ac/ax (20 MHz)	5745 ~ 5825 MHz / 5 Channels
	IEEE 802.11n/ac/ax (40 MHz)	5190 ~ 5230 MHz / 2 Channels 5755 ~ 5795 MHz / 2 Channels
	IEEE 802.11ac/ax (80 MHz)	5210 MHz / 1 Channel 5775 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	Manufacturer	Model No.	Rating	Remark
1	Adapter	Zhuzhou Dachuan Electronic Technology Co.,Ltd.	DCT36W120300 ZZ-D2	Input: 100-240Vac~ 50/60Hz, 1.0A Output: 12V, 3.0A, 36.0W	With power cable : Non-Shielded, 1.5m
2	Adapter	FLYPOWER	PS36LA120K300 0UD	Input: 100-240Vac~ 50/60Hz, 1.0A Output: 12V, 3.0A, 36.0W	With power cable : Non-Shielded, 1.5m

The difference for each model is shown as below:

Model	WWAN module	WWAN function	WIFI function	BT function
B One 5G	Quectel RM520N-GL	✓	✓	✓
B-ONE-5GN-T-PRM				
B One Plus	Quectel EC25-AFXD	✓	✓	✓
B-ONE-PLUS-LTE-US-T-PRM				

From the above models, model: B One 5G was selected as representative model for the test and its data was recorded in this report.

Antenna Information						
Item	Brand Name	Model No.	Type	Antenna Gain (dBi)		Directional Gain (dBi)
1	INPAQ	RFDPA191300SBLB813	Omni-directional	U-NII 1	4.46	U-NII 1
				U-NII 3	4.51	
2	INPAQ	RFDPA191300SBLB813	Omni-directional	U-NII 1	4.46	U-NII 3
				U-NII 3	4.51	

Note: The antenna of EUT is conforming to FCC 15.203.

For IEEE 802.11a/n/ac/ax Mode: (2TX, 2RX)

Both Ant. 0 and Ant. 1 can be used as transmitting/receiving antennas.

1.2. EUT Information

EUT Power Type	From DC 10~30V			
EUT Function	<input checked="" type="checkbox"/>	Point-to-multipoint	<input type="checkbox"/>	Point-to-point
TPC Function	<input checked="" type="checkbox"/>	With TPC Function	<input type="checkbox"/>	Without TPC Function
Weather Band (5600 ~ 5650 MHz)	<input type="checkbox"/>	With 5600 ~ 5650 MHz	<input checked="" type="checkbox"/>	Without 5600 ~ 5650 MHz
Resource Unit of 802.11ax	<input checked="" type="checkbox"/>	Full RU	<input type="checkbox"/>	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.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	24.6 °C	2024/09/05~2024/09/13
	Humidity (%RH)	10~90 %	57.3 %	
Conducted Emission	Temperature (°C)	10~40 °C	23.4 °C	2024/08/07
	Humidity (%RH)	10~90 %	55.2 %	

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 Conducted Output Power	Spectrum Analyzer: ± 2.13 dB Power Meter: ± 1.07 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	2024/01/05	2025/01/04
V	Peak Power Analyzer	KEYSIGHT	8990B	MY51000539	2024/05/07	2025/05/06
V	Wideband Power Sensor	KEYSIGHT	N1923A	MY59240002	2024/05/08	2025/05/07
V	Wideband Power Sensor	KEYSIGHT	N1923A	MY59240003	2024/05/08	2025/05/07

Note:

1. All 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: RF Conducted Test Tools R3 V3.0.1.14.

For Radiated Measurements /HY-CB01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
V	Loop Antenna	TESEQ	HLA6121	49611	2024/02/23	2025/02/22
V	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-0675	2023/08/09	2025/08/08
V	Horn Antenna	RF SPIN	DRH18-E	210802A18ES	2024/03/28	2025/03/27
V	Horn Antenna	Com-Power	AH-840	101101	2023/12/04	2025/12/03
V	Pre-Amplifier	SGH	0301	20211007-7	2024/01/10	2025/01/09
V	Pre-Amplifier	EMCI	EMC051845SE	980632	2024/01/10	2025/01/09
V	Pre-Amplifier	EMCI	EMC05820SE	980362	2024/01/10	2025/01/09
V	Pre-Amplifier	EMCI	EMC184045SE	980369	2024/01/10	2025/01/09
V	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160314	2024/01/10	2025/01/09
V	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242	2024/01/10	2025/01/09
	Filter	MICRO TRONICS	BRM50702	G251	2024/01/05	2025/01/04
V	Filter	MICRO TRONICS	BRM50716	067	2024/01/05	2025/01/04
V	EMI Test Receiver	R&S	ESR3	102792	2024/01/05	2025/01/04
V	Spectrum Analyzer	R&S	FSV3044	101115	2024/01/11	2025/01/10
V	Coaxial Cable	SUHNER	SUCOFLEX 106	25450/6	2024/01/10	2025/01/09
V	Coaxial Cable	SGH	SGH18	2021003-8	2024/01/10	2025/01/09
V	Coaxial Cable	SGH	HA800	GD20110222-8	2024/01/10	2025/01/09
V	Coaxial Cable	EMCI	EMC106	151113	2024/01/10	2025/01/09

Note:

1. Bi-Log Antenna and Horn Antenna (AH-840) 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.

2. Test Configuration of EUT

2.1. Test Condition

EUT Operational Condition	
Testing Voltage	AC 120V/60Hz to DC 12V (power by adapter)

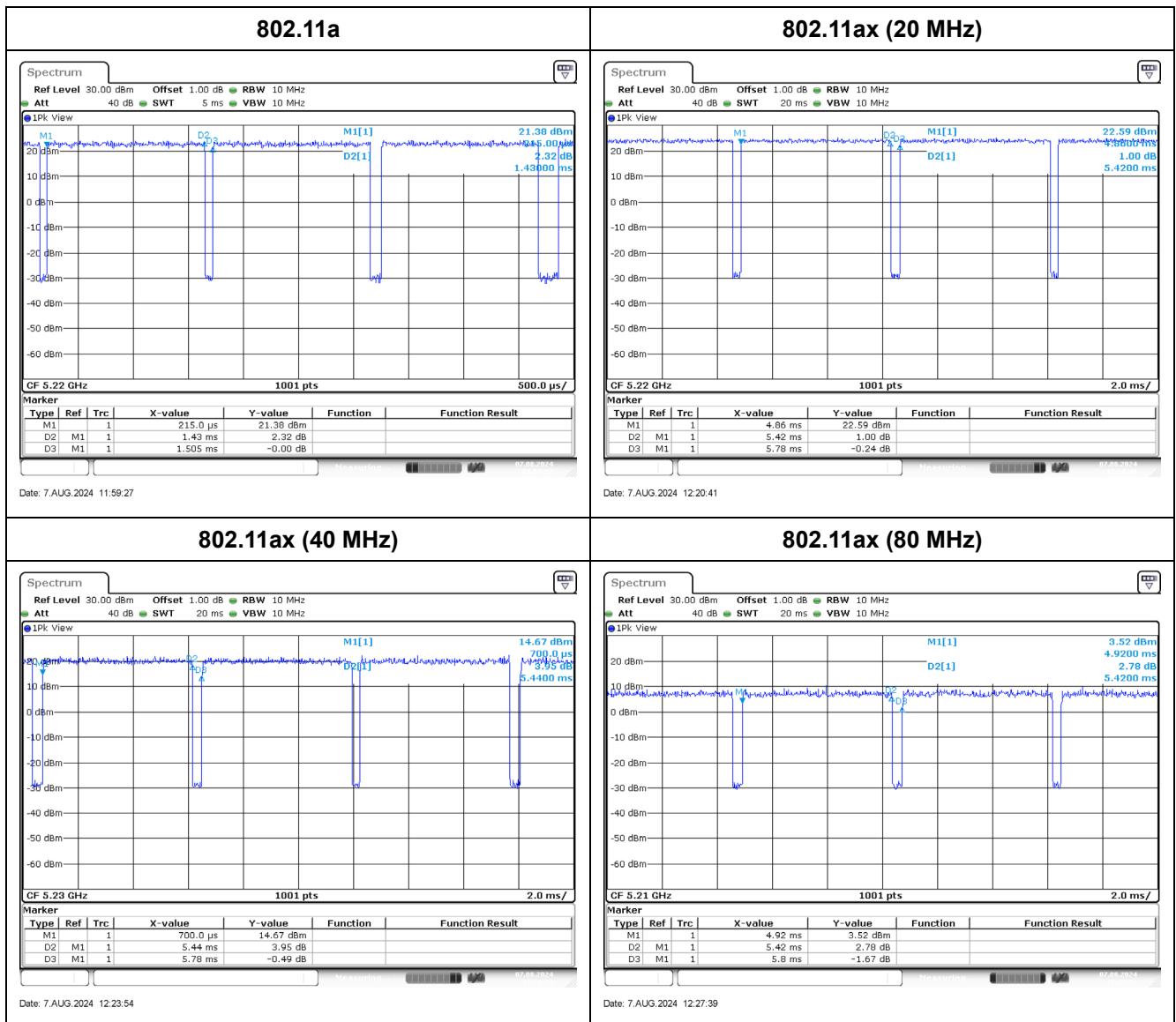
2.2. Test Frequency Mode

Test Software Version	Qualcomm Sequence Profiling Resource Version 5.0-00197
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Modulation	Frequency (MHz)	Power Setting
802.11a	5220	23.5
	5745	21
802.11ax (20 MHz)	5220	24.5
	5825	21
802.11ax (40 MHz)	5230	22
	5755	22.5
802.11ax (80 MHz)	5210	11.5
	5775	18

2.3. Duty Cycle

Modulation	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (Hz)
802.11a	1.4300	1.5050	95.02	0.22	1000
802.11ax (20 MHz)	5.4200	5.7800	93.77	0.28	200
802.11ax (40 MHz)	5.4400	5.7800	94.12	0.26	200
802.11ax (80 MHz)	5.4200	5.8000	93.45	0.29	200



2.4. Measurement Configuration

Test Mode	Mode 1 (Transmit)	802.11a
		802.11ax (20 MHz)
		802.11ax (40 MHz)
		802.11ax (80 MHz)

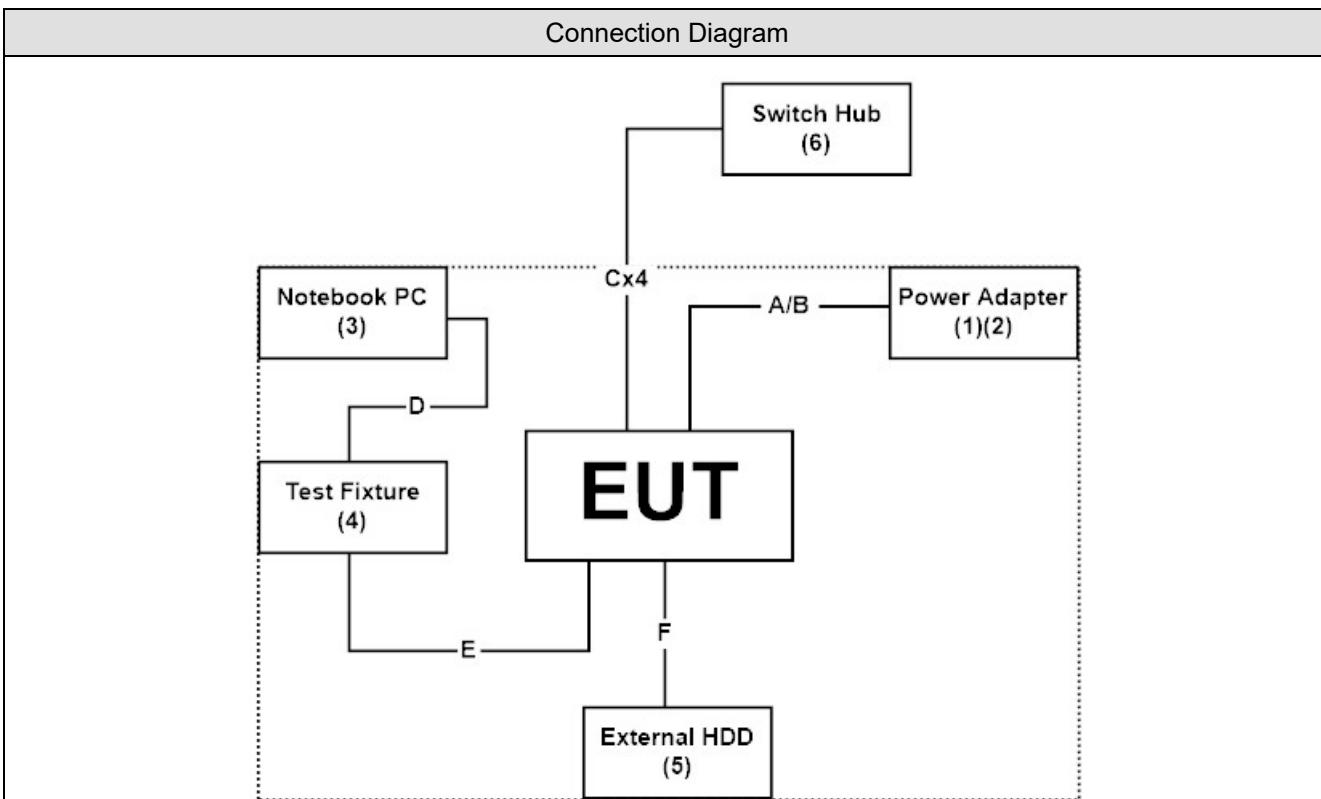
Note:

1. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
3. Lowest data rates are tested in each mode. Only worst case is shown in the report.
(802.11a is 6Mbps, 802.11ax is MCS0)

2.5. Tested System Details

No.	Equipment	Manufacturer	Model No.	Serial No.	Power Cord
1	Power Adapter	Zhuzhou Dachuan Electronic Technology Co.,Ltd.	DCT36W120300ZZ-D2	N/A	N/A
2	Power Adapter	FLYPOWER	PS36LA120K3000UD	N/A	N/A
3	Notebook PC	ASUS	P5430U	G8NXCV07J179325	N/A
4	Test Fixture	Askey	BBS tool Rev03	N/A	N/A
5	External HDD	Transcend	TS1TSJ25MC	F30467-0003	N/A
6	Switch Hub	ZYXEL	GS-108B v3	N/A	N/A

2.6. Configuration of tested System



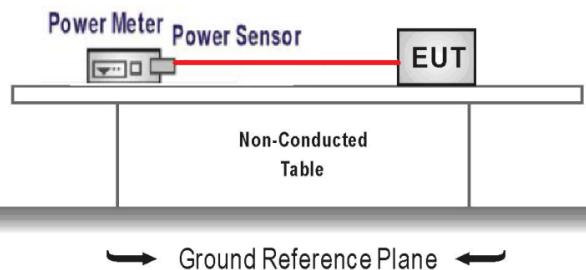
Signal Cable Type		Signal cable Description
A	Power Cable	Non-shielded, 1.5m
B	Power Cable	Non-shielded, 1.5m
C	LAN Cable	Non-shielded, 3m four PCS.
D	USB TO MicroB Cable	Shielded, 1m
E	Signal Cable	Non-shielded, .01m
F	USB Cable	Shielded, .05m

2.7. EUT Operating Procedures

1	Setup the EUT as shown in Section 2.6.
2	Execute software "Qualcomm Sequence Profiling Resource Version 5.0-00197" on the Notebook PC.
3	Configure the test mode, the test channel, and the data rate.
4	Verify that the EUT works properly.

3. Maximum Conducted Output Power

3.1. Test Setup



3.2. Test Limit

1. For an outdoor access point and an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3. Test Procedure

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

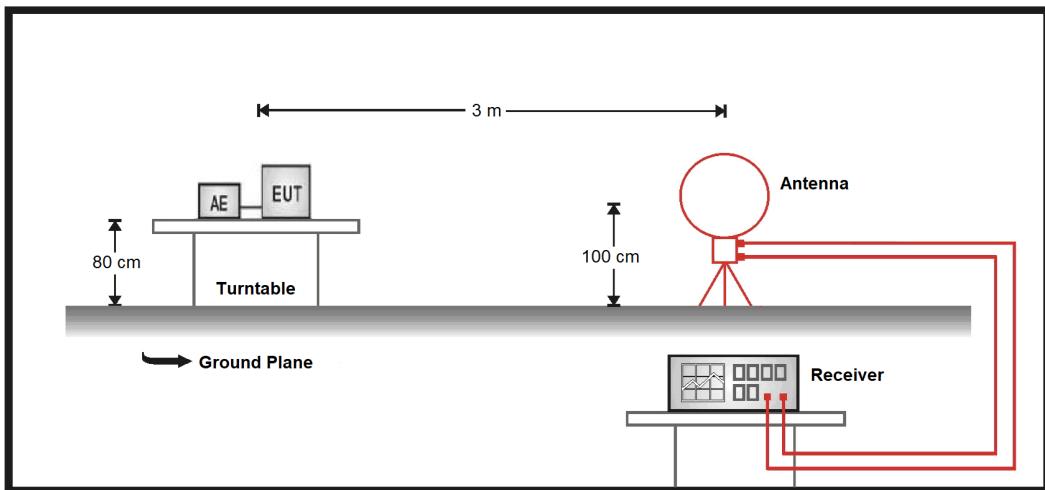
3.4. Test Result of Maximum Conducted Output Power

Refer as Appendix A

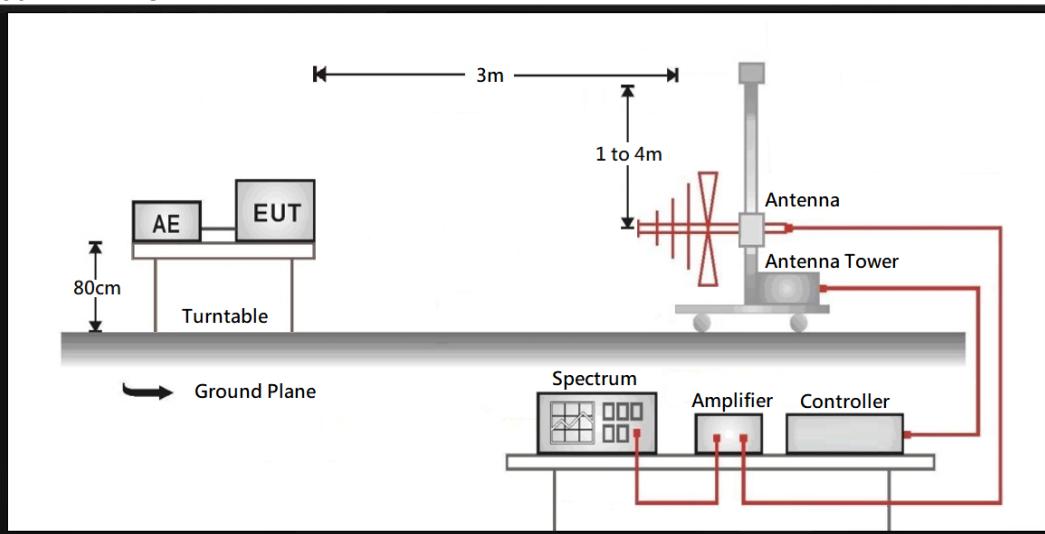
4. Transmitter Radiated Spurious Emission

4.1. Test Setup

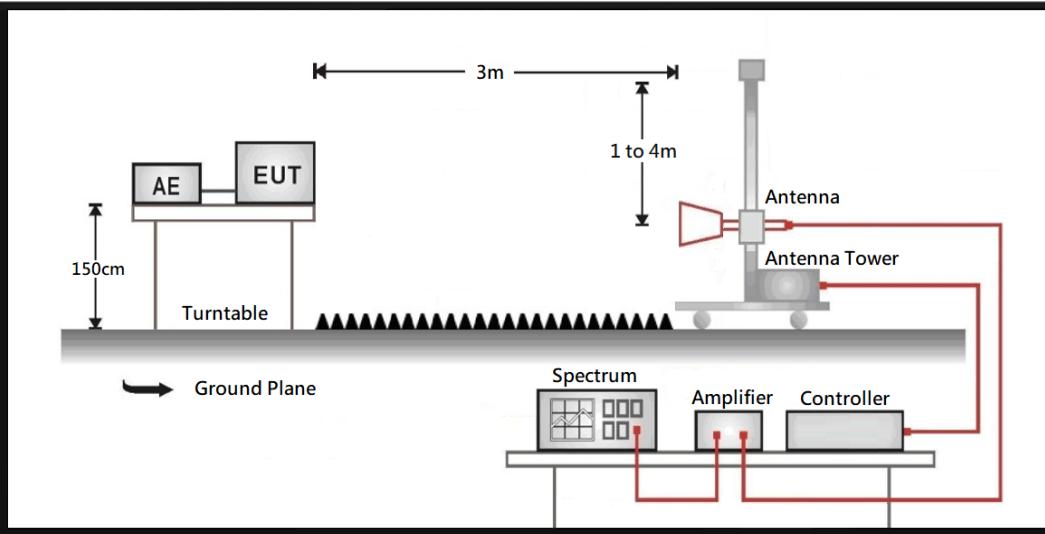
9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz



4.2. Test Limit

Frequency (MHz)	Field strength (μ V/m)	Field strength (dB μ V/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

Remarks:

1. Field strength (dB μ V/m) = 20 log Field strength (μ V/m)
2. In the Above Table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Unwanted Emission out of the restricted bands Test Limit

Frequency (MHz)	EIRP Limit (dBm/MHz)	Equivalent Field Strength (dB μ V/m@3m)
5150 – 5250	-27	68.2
5250 – 5350	-27	68.2
5470 – 5725	-27	68.2
5725 – 5850	-27 * ¹	68.2 * ¹
	10 * ²	105.2 * ²
	15.6 * ³	110.8 * ³
	27 * ⁴	122.2 * ⁴

*¹ beyond 75 MHz or more above of the band edge.

*² below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

*³ below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

*⁴ from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Remark:

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \text{ uV/m, where P is the eirp (Watts).}$$

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