

# TEST REPORT

**Product Name** : Laser Projector  
**Model Number** : L206FGN, L206\*\*\*\*\* (\*=0-9, a-z, A-Z, - or blank, indicates for different market purposes)  
**FCC ID** : 2AZNP-L206FGN

**Prepared for** : Formovie (Chongqing) Innovative Technology Co., Ltd.  
**Address** : 4-401, #2 Longgang Road, Guojiatuo Area, Jiangbei District, Chongqing, China

**Prepared by** : EMTEK (SHENZHEN) CO., LTD.  
**Address** : Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

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**Report Number** : ENS2201110045W00604R  
**Date(s) of Tests** : January 11, 2022 to March 9, 2022  
**Date of issue** : March 11, 2022

# 1 TEST RESULT CERTIFICATION

Applicant : Formovie (Chongqing) Innovative Technology Co., Ltd.  
 Address : 4-401, #2 Longgang Road, Guojiatuo Area, Jiangbei District, Chongqing, China  
 Manufacturer : Formovie (Chongqing) Innovative Technology Co., Ltd.  
 Address : 4-401, #2 Longgang Road, Guojiatuo Area, Jiangbei District, Chongqing, China  
 EUT : Laser Projector  
 Model Name : L206FGN, L206\*\*\*\*\* (\*=0-9, a-z, A-Z, - or blank, indicates for different market purposes)  
 Trademark : FORMOVIE, WEMAX


Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart E	PASS
IC RSS-GEN, Issue 5(04-2018)+A1(03-2019)+A2(02-2021) IC RSS-247 Issue 2(02-2017)	PASS

The above equipment was tested by EMTEK (SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 2, Part 15.407, IC RSS-247 Issue 2 and IC RSS-GEN, Issue 5.

The test results of this report relate only to the tested sample identified in this report.

Date of Test : January 11, 2022 to March 9, 2022

Prepared by :   
 Una Yu /Editor

Reviewer :   
 Joe Xia/Supervisor

Approve & Authorized Signer :   
 Lisa Wang/Manager



## Modified History

Version	Report No.	Revision Date	Summary
V1.0	ENS2201110045W00604R	/	Original Report



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## 2 EUT TECHNICAL DESCRIPTION

Characteristics	Description
<b>Product:</b>	Laser Projector
<b>Model Number:</b>	L206FGN, L206***** (*=0-9, a-z, A-Z, - or blank, indicates for different market purposes)
<b>Sample Number:</b>	2#
<b>Wifi Type:</b>	Wifi 5G with 5150MHz-5250MHz Band Wifi 5G with 5250MHz-5350MHz Band Wifi 5G with 5470MHz-5725MHz Band Wifi 5G with 5725MHz-5850MHz Band
<b>WLAN Supported:</b>	802.11a/n/ac/ax
<b>Data Rate :</b>	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: MCS0-MCS15 802.11ac: MCS0-MCS9 802.11ax: MCS0-MCS11
<b>Modulation:</b>	OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11ac OFDM with BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM for 802.11ax
<b>Frequency Range:</b>	UNII-1: 5150MHz-5250MHz Band  5180-5240MHz for 802.11a/n(HT20)/ac(VHT20)/ax(HE20); 5190-5230MHz for 802.11n(HT40)/ac(VHT40)/ax(HE40); 5210MHz for 802.11ac(VHT80)/ax(HE80);
	UNII-2A: 5250MHz-5350MHz Band  5260-5320MHz for 802.11a/n(HT20)/ac(VHT20)/ax(HE20); 5270-5310MHz for 802.11n(HT40)/ac(VHT40)/ax(HE40); 5290MHz for 802.11ac(VHT80)/ax(HE80);
	UNII-2C: 5470MHz-5725MHz Band  5500-5700MHz for 802.11a/n(HT20)/ac(VHT20)/ax(HE20); 5510-5670MHz for 802.11n(HT40)/ac(VHT40)/ax(HE40); 5530MHz for 802.11ac(VHT80)/ax(HE80);
	UNII-3 with 5725MHz-5850MHz Band  5745-5825MHz for 802.11a/n(HT20)/ac(VHT20)/ax(HE20); 5755-5795MHz for 802.11n(HT40)/ac(VHT40)/ax(HE40); 5775MHz for 802.11ac(VHT80)/ax(HE80);
<b>TPC Function:</b>	Applicable
<b>Antenna Type:</b>	FPC Antenna
<b>Antenna Gain:</b>	ANT 1: 4.69 dBi ANT 2: 4.82 dBi

<b>Transmit Power:</b>	UNII-1 Band: 15.01 dBm UNII-2A Band: 15.97 dBm UNII-2C Band: 16.40 dBm UNII-3 Band: 15.66 dBm
<b>Power Supply :</b>	AC 100-120/200-240V ~ 3.5/2.5A, 60/50Hz
<b>Date of Received:</b>	January 11, 2022
<b>Temperature Range:</b>	0°C ~ +40°C

**Note:** For more details, please refer to the User's manual of the EUT.



### 3 SUMMARY OF TEST RESULT

FCC Part Clause	IC Part Clause	Test Parameter	Verdict	Remark
15.407 (a) 15.407 (e) 2.1049	RSS-247 6.2 RSS-Gen 6.7	99% , 6dB and 26dB Bandwidth	PASS	
15.407 (a)	RSS-247 6.2	Maximum Conducted Output Power	PASS	
15.407 (a)	RSS-247 6.2	Peak Power Spectral Density	PASS	
15.407 (b) 15.209 15.205	RSS-247 6.2 RSS-Gen 8.9 RSS-Gen 8.10 RSS-Gen 6.13	Radiated Spurious Emission	PASS	
15.207	RSS-Gen 8.8	Power Line Conducted Emission	PASS	
15.407(a) 15.203	RSS-Gen 6.8	Antenna Application	PASS	
NOTE1: N/A (Not Applicable)				
NOTE2: According to FCC OET KDB 789033, the report use radiated measurements in the restricted frequency bands. In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.				

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for **FCC ID: 2AZNP-L206FGN** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

## 4 TEST METHODOLOGY

### 4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:

FCC 47 CFR Part 2, Subpart J

FCC 47 CFR Part 15, Subpart E

IC RSS-GEN, Issue 5(04-2018)+A1(03-2019)+A2(02-2021)

IC RSS-247 Issue 2(02-2017)

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

FCC KDB 789033 D2 General UNII Test Procedures New Rules v02r01

### 4.2 MEASUREMENT EQUIPMENT USED

#### Conducted Emission Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Test Receiver	Rohde & Schwarz	ESCI	101384	May 15, 2021	1 Year
L.I.S.N.	Rohde & Schwarz	ENV216	5	May 15, 2021	1 Year
L.I.S.N.	Kyoritsu	KNW-407	8-1492-9	May 16, 2021	1 Year

#### For Spurious Emissions Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESU 26	100154	May 15, 2021	1 Year
Pre-Amplifier	Lunar EM	LNA30M3G-25	J10100000070	May 15, 2021	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	661	Aug. 22, 2021	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1177	Jul. 04, 2020	2 Year
Pre-Amplifier	SKET	LNPA_0118G-45	SK2019051801	May 15, 2021	1 Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	Jun. 12, 2021	2 Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	May 15, 2021	1 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1178	Jul. 04, 2020	2 Year
Band reject Filter(50dB)	WI/DE	WRCGV-2400(2400-2485MHz)	2	May 15, 2021	1 Year

#### For other test items:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Wireless Connectivity Tester	R&S	CMW270	102543	Aug. 27, 2021	1Year
Automatic Control Unit	Tonscend	JS0806-2	2118060480	Nov. 18, 2021	1Year
Signal Analyzer	KEYSIGHT	N9010B	MY60240204	Sep. 30, 2021	1Year
Signal Analyzer	KEYSIGHT	N9010B	MY60242456	Jan. 21, 2022	1Year
Analog Signal Generator	KEYSIGHT	N5173B	MY61252625	Oct. 29, 2021	1Year
UP/DOWN-Converter	R&S	CMW-Z800A	100274	Sep. 14, 2021	1Year
Vector Signal Generator	KEYSIGHT	N5182B	MY61252674	Oct. 28, 2021	1Year
Frequency Extender	KEYSIGHT	N5182BX07	MY59362541	Nov. 23, 2021	1Year
Temperature&Humidity test chamber	ESPEC	EL-02KA	12107166	Jul. 03, 2021	1 Year



### 4.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates (802.11a: 54 Mbps; 802.11n(HT20): MCS0; 802.11ac(VHT20): MCS0; 802.11ax(HE20): MCS0; 802.11n(HT40): MCS0; 802.11ac(VHT40): MCS0; 802.11ax(HE40): MCS0; 802.11ac(VHT80): MCS0; 802.11ax(HE80): MCS0;) were used for all test.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

#### Wifi 5G with U-NII - 1

Frequency and Channel list for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220		
40	5200	48	5240		

Frequency and Channel list for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230		

Frequency and Channel list for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210				

Test Frequency and Channel for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	48	5240

Test Frequency and channel for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	N/A	N/A	46	5230

Test Frequency and channel for 802.11ac (VHT80), 802.11ax (HE80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	N/A	N/A	N/A	N/A

**Wifi 5G with U-NII -2A**

Frequency and Channel list 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300		
56	5280	64	5320		

Frequency and Channel list for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270				
62	5310				

Frequency and Channel list for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
58	5290				

Test Frequency and Channel for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	56	5280	64	5320

Test Frequency and channel for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	N/A	N/A	62	5310

Test Frequency and channel for 802.11ac (VHT80), 802.11ax (HE80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
58	5290				

**Wifi 5G with U-NII -2C**

Frequency and Channel list for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	116	5580	132	5660
104	5520	120	5600	136	5680
108	5540	124	5620	140	5700
112	5560	128	5640		

Frequency and Channel list for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	118	5590	134	5670
110	5550	126	5630		

Frequency and Channel list for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	122	5610		

Test Frequency and Channel for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	120	5600	140	5700

Test Frequency and channel for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510			134	5670

Test Frequency and channel for 802.11ac (VHT80), 802.11ax (HE80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530				

**Wifi 5G with U-NII -3**

Frequency and Channel list for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825
153	5765	161	5805		

Frequency and Channel list for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795		

Frequency and Channel list for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775				

Test Frequency and Channel for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825

Test Frequency and channel for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	N/A	N/A	159	5795

Test Frequency and channel for 802.11ac (VHT80), 802.11ax (HE80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775				

Multi-antenna correlation:

<input checked="" type="checkbox"/>	Transmit Signals are Correlated
	Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ dBi
<input type="checkbox"/>	All Transmit Signals are Completely Uncorrelated
	Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{ANT}]$ dBi

Directional gain =  $10 \log [(10^{4.69/20} + 10^{4.82/20})^2 / 2]$  dBi=7.77 dBi

## 5 FACILITIES AND ACCREDITATIONS

### 5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at:

EMTEK (Shenzhen) Co., Ltd.

Building 69, Majialong Industry Zone District, Nanshan District, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### 5.3 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description	
EMC Lab.	<p><b>Accredited by CNAS</b> The Certificate Registration Number is L2291. The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017)</p> <p><b>Accredited by FCC</b> Designation Number: CN1204 Test Firm Registration Number: 882943</p> <p><b>Accredited by A2LA</b> The Certificate Number is 4321.01.</p> <p>Accredited by Industry Canada The Conformity Assessment Body Identifier is CN0008</p>
Name of Firm	: EMTEK (SHENZHEN) CO., LTD.
Site Location	: Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

## 6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

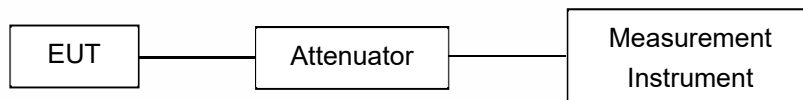
Test Parameter	Measurement Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0\text{dB}$
Conducted Emissions Test	$\pm 2.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
Power Density	$\pm 2.0\text{dB}$
Occupied Bandwidth Test	$\pm 1.0\text{dB}$
Band Edge Test	$\pm 3\text{dB}$
All emission, radiated	$\pm 3\text{dB}$
Antenna Port Emission	$\pm 3\text{dB}$
Temperature	$\pm 0.5^\circ\text{C}$
Humidity	$\pm 3\%$

Measurement Uncertainty for a level of Confidence of 95%

## 7 SETUP OF EQUIPMENT UNDER TEST

### 7.1 RADIO FREQUENCY TEST SETUP

The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



### 7.2 RADIO FREQUENCY TEST SETUP

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Below 30MHz:

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

Above 30MHz:

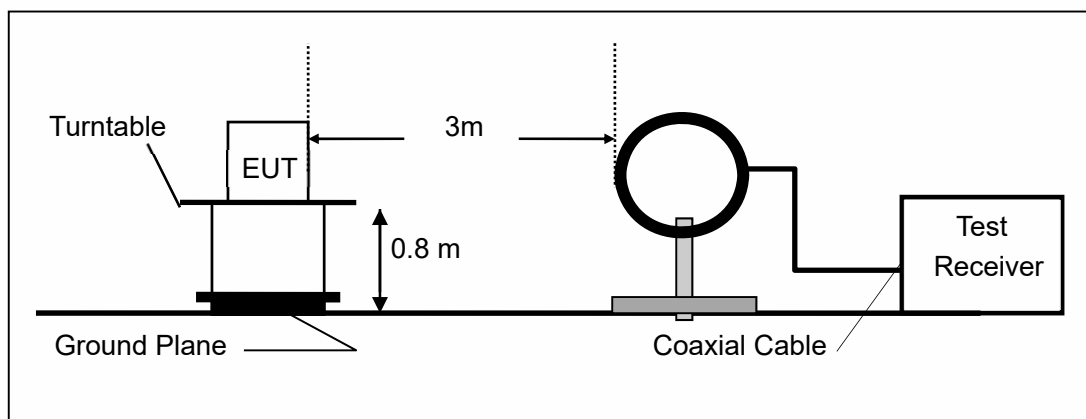
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

Above 1GHz:

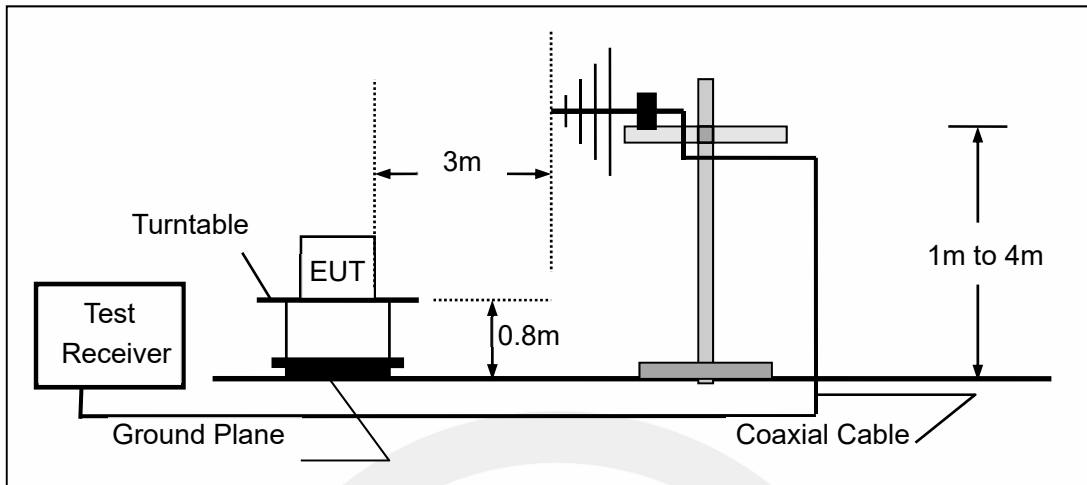
(Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.)

The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

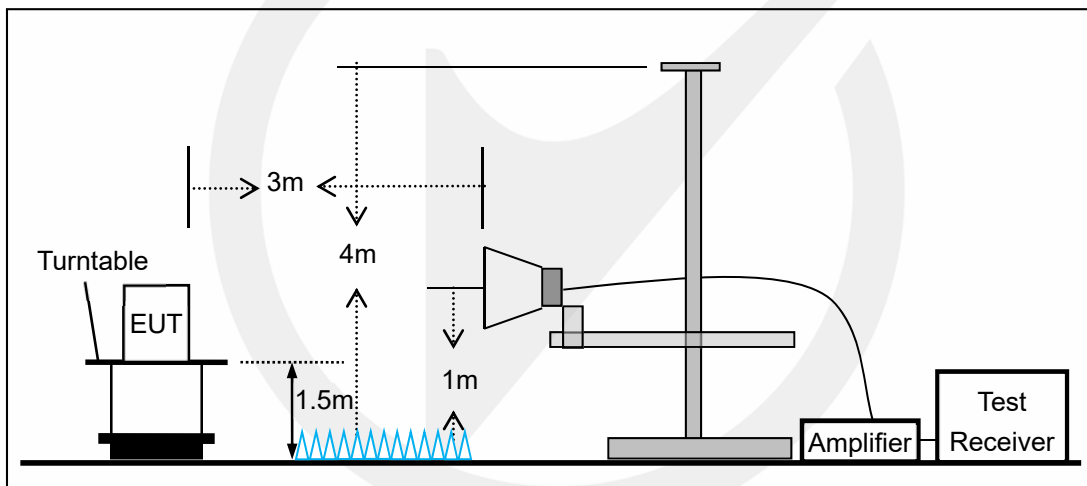
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz



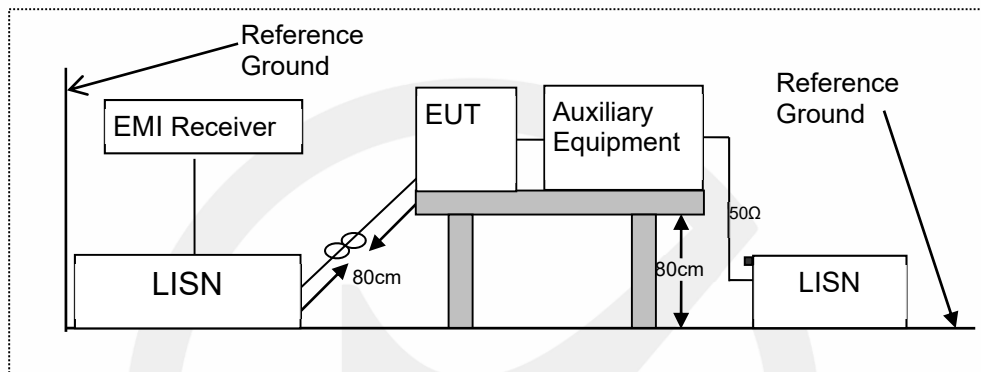


### 7.3 CONDUCTED EMISSION TEST SETUP

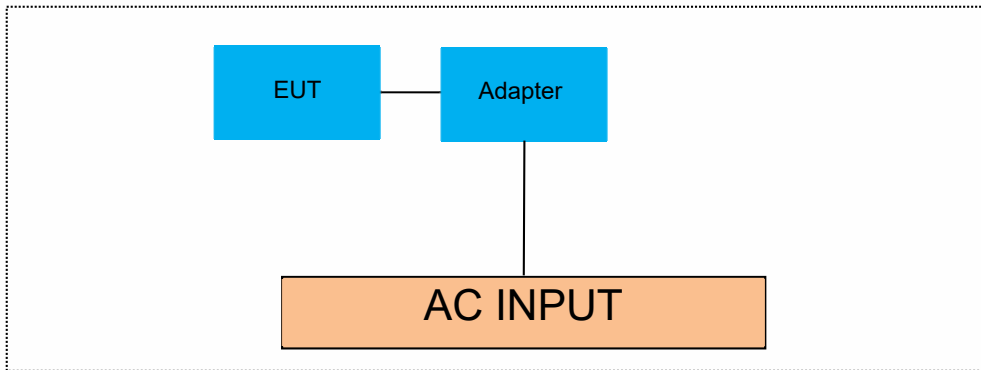
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



### 7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM



### 7.5 SUPPORT EQUIPMENT

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

**Notes:**

- 1.All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2.Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

## 8 TEST REQUIREMENTS

### 8.1 BANDWIDTH MEASUREMENT

#### 8.1.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I  
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C  
According to FCC Part 15.407(a)(3) for UNII Band III  
According to FCC Part 15.407(e) for UNII Band III  
According to 789033 D02 Section II(C)  
According to 789033 D02 Section II(D)  
According to RSS-Gen 6.6, RSS 247 6.2

#### 8.1.2 Conformance Limit

The 26dB bandwidth is used to determine the conducted power limits.  
Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

#### 8.1.3 Test Configuration

Test according to clause 7.1 radio frequency test setup

#### 8.1.4 Test Procedure

According to 789033 D02 v02r01 section C&D, the following is the measurement procedure.

##### 1. Emission Bandwidth (EBW)

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

##### 2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

#### D. 99 Percent Occupied Bandwidth

The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to 789033 D02 v01r02 General UNII Test Procedures New Rules v01 define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E.

However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW  $\geq 3 \cdot$  RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.



8.1.5 Test Results

Temperature:	25°C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

Note: N/A

TestMode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	28.600	5167.720	5196.320	---	---
	Ant2	5180	25.800	5167.040	5192.840	---	---
	Ant1	5220	25.480	5206.800	5232.280	---	---
	Ant2	5220	25.000	5207.480	5232.480	---	---
	Ant1	5240	20.000	5229.880	5249.880	---	---
	Ant2	5240	19.520	5230.240	5249.760	---	---
	Ant1	5260	24.040	5247.400	5271.440	---	---
	Ant2	5260	24.680	5247.680	5272.360	---	---
	Ant1	5300	25.000	5287.520	5312.520	---	---
	Ant2	5300	27.080	5287.200	5314.280	---	---
	Ant1	5320	25.040	5306.760	5331.800	---	---
	Ant2	5320	25.920	5307.440	5333.360	---	---
	Ant1	5500	24.760	5487.800	5512.560	---	---
	Ant2	5500	26.240	5486.080	5512.320	---	---
	Ant1	5580	24.680	5567.640	5592.320	---	---
	Ant2	5580	24.960	5567.440	5592.400	---	---
	Ant1	5700	25.440	5687.080	5712.520	---	---
	Ant2	5700	27.080	5685.640	5712.720	---	---
	Ant1	5745	25.520	5731.920	5757.440	---	---
	Ant2	5745	26.200	5731.360	5757.560	---	---
Ant1	5785	25.280	5771.680	5796.960	---	---	
Ant2	5785	25.400	5772.640	5798.040	---	---	
Ant1	5825	24.600	5812.880	5837.480	---	---	
Ant2	5825	24.480	5812.840	5837.320	---	---	
11N20SISO	Ant1	5180	28.680	5166.400	5195.080	---	---
	Ant2	5180	25.720	5167.360	5193.080	---	---
	Ant1	5220	26.520	5206.760	5233.280	---	---
	Ant2	5220	25.760	5207.040	5232.800	---	---
	Ant1	5240	20.200	5229.960	5250.160	---	---
	Ant2	5240	20.320	5229.760	5250.080	---	---
	Ant1	5260	26.440	5246.560	5273.000	---	---
	Ant2	5260	26.840	5246.640	5273.480	---	---
	Ant1	5300	25.800	5287.280	5313.080	---	---
	Ant2	5300	26.360	5286.520	5312.880	---	---
	Ant1	5320	29.400	5303.400	5332.800	---	---
	Ant2	5320	25.600	5307.320	5332.920	---	---
	Ant1	5500	25.640	5487.240	5512.880	---	---
	Ant2	5500	34.720	5483.400	5518.120	---	---
	Ant1	5580	25.760	5566.680	5592.440	---	---
	Ant2	5580	25.160	5567.120	5592.280	---	---
	Ant1	5700	26.120	5686.760	5712.880	---	---
	Ant2	5700	25.800	5686.880	5712.680	---	---
	Ant1	5745	26.280	5731.640	5757.920	---	---
	Ant2	5745	25.760	5732.320	5758.080	---	---
Ant1	5785	25.040	5772.520	5797.560	---	---	
Ant2	5785	25.720	5772.320	5798.040	---	---	
Ant1	5825	27.040	5812.160	5839.200	---	---	
Ant2	5825	27.440	5811.840	5839.280	---	---	
11N40SISO	Ant1	5190	40.080	5169.840	5209.920	---	---
	Ant2	5190	40.000	5169.920	5209.920	---	---

	Ant1	5230	39.920	5210.080	5250.000	---	---
	Ant2	5230	40.320	5209.760	5250.080	---	---
	Ant1	5270	40.080	5249.920	5290.000	---	---
	Ant2	5270	40.160	5250.080	5290.240	---	---
	Ant1	5310	39.760	5290.160	5329.920	---	---
	Ant2	5310	40.160	5289.920	5330.080	---	---
	Ant1	5510	39.840	5490.080	5529.920	---	---
	Ant2	5510	40.320	5489.840	5530.160	---	---
	Ant1	5550	39.680	5530.320	5570.000	---	---
	Ant2	5550	40.400	5529.760	5570.160	---	---
	Ant1	5670	39.920	5649.920	5689.840	---	---
	Ant2	5670	39.840	5650.000	5689.840	---	---
	Ant1	5755	40.160	5735.000	5775.160	---	---
	Ant2	5755	40.240	5735.000	5775.240	---	---
	Ant1	5795	39.920	5775.000	5814.920	---	---
	Ant2	5795	39.840	5775.160	5815.000	---	---
11AC20SISO	Ant1	5180	26.520	5166.600	5193.120	---	---
	Ant2	5180	25.520	5167.360	5192.880	---	---
	Ant1	5220	26.040	5207.240	5233.280	---	---
	Ant2	5220	26.520	5207.280	5233.800	---	---
	Ant1	5240	20.200	5229.880	5250.080	---	---
	Ant2	5240	20.200	5230.000	5250.200	---	---
	Ant1	5260	24.560	5247.680	5272.240	---	---
	Ant2	5260	26.800	5246.320	5273.120	---	---
	Ant1	5300	25.680	5287.400	5313.080	---	---
	Ant2	5300	26.880	5286.800	5313.680	---	---
	Ant1	5320	25.520	5307.320	5332.840	---	---
	Ant2	5320	25.080	5308.040	5333.120	---	---
	Ant1	5500	25.960	5487.040	5513.000	---	---
	Ant2	5500	26.320	5486.520	5512.840	---	---
	Ant1	5580	26.680	5566.560	5593.240	---	---
	Ant2	5580	26.960	5566.200	5593.160	---	---
	Ant1	5700	26.880	5686.320	5713.200	---	---
	Ant2	5700	27.080	5686.800	5713.880	---	---
	Ant1	5745	25.320	5732.320	5757.640	---	---
	Ant2	5745	25.800	5732.400	5758.200	---	---
Ant1	5785	27.000	5771.360	5798.360	---	---	
Ant2	5785	26.000	5772.120	5798.120	---	---	
Ant1	5825	26.400	5811.720	5838.120	---	---	
Ant2	5825	25.280	5812.200	5837.480	---	---	
11AC40SISO	Ant1	5190	39.520	5170.240	5209.760	---	---
	Ant2	5190	40.000	5170.000	5210.000	---	---
	Ant1	5230	40.240	5209.680	5249.920	---	---
	Ant2	5230	40.560	5209.840	5250.400	---	---
	Ant1	5270	39.760	5250.160	5289.920	---	---
	Ant2	5270	40.080	5250.080	5290.160	---	---
	Ant1	5310	39.600	5290.080	5329.680	---	---
	Ant2	5310	39.680	5290.160	5329.840	---	---
	Ant1	5510	39.840	5490.160	5530.000	---	---
	Ant2	5510	40.080	5489.840	5529.920	---	---
	Ant1	5550	39.760	5530.160	5569.920	---	---
	Ant2	5550	40.000	5529.840	5569.840	---	---
	Ant1	5670	40.080	5650.000	5690.080	---	---
	Ant2	5670	39.840	5650.000	5689.840	---	---
	Ant1	5755	40.240	5734.760	5775.000	---	---
	Ant2	5755	40.240	5734.920	5775.160	---	---
Ant1	5795	39.680	5775.160	5814.840	---	---	
Ant2	5795	40.160	5775.000	5815.160	---	---	
11AC80SISO	Ant1	5210	80.320	5169.520	5249.840	---	---
	Ant2	5210	116.800	5133.040	5249.840	---	---
	Ant1	5290	80.000	5250.000	5330.000	---	---

	Ant2	5290	79.840	5250.000	5329.840	---	---
	Ant1	5530	79.680	5490.160	5569.840	---	---
	Ant2	5530	79.840	5489.840	5569.680	---	---
	Ant1	5610	79.840	5570.160	5650.000	---	---
	Ant2	5610	80.000	5570.160	5650.160	---	---
	Ant1	5775	80.000	5735.160	5815.160	---	---
11AX20SISO	Ant2	5775	79.840	5735.160	5815.000	---	---
	Ant1	5180	23.280	5168.160	5191.440	---	---
	Ant2	5180	21.920	5168.800	5190.720	---	---
	Ant1	5220	21.800	5209.000	5230.800	---	---
	Ant2	5220	25.600	5205.880	5231.480	---	---
	Ant1	5240	19.800	5230.080	5249.880	---	---
	Ant2	5240	19.880	5230.040	5249.920	---	---
	Ant1	5260	21.600	5249.280	5270.880	---	---
	Ant2	5260	22.160	5248.480	5270.640	---	---
	Ant1	5300	21.880	5289.240	5311.120	---	---
	Ant2	5300	22.760	5289.280	5312.040	---	---
	Ant1	5320	25.560	5305.400	5330.960	---	---
	Ant2	5320	29.800	5304.800	5334.600	---	---
	Ant1	5500	24.600	5486.040	5510.640	---	---
	Ant2	5500	24.240	5486.680	5510.920	---	---
	Ant1	5580	21.760	5569.000	5590.760	---	---
	Ant2	5580	21.920	5568.880	5590.800	---	---
	Ant1	5700	23.880	5686.760	5710.640	---	---
	Ant2	5700	21.800	5689.360	5711.160	---	---
	Ant1	5745	21.920	5733.560	5755.480	---	---
Ant2	5745	23.720	5733.360	5757.080	---	---	
11AX40SISO	Ant1	5785	22.120	5773.560	5795.680	---	---
	Ant2	5785	21.280	5774.320	5795.600	---	---
	Ant1	5825	25.120	5812.200	5837.320	---	---
	Ant2	5825	24.960	5813.880	5838.840	---	---
	Ant1	5190	39.360	5170.160	5209.520	---	---
	Ant2	5190	39.200	5170.400	5209.600	---	---
	Ant1	5230	39.200	5210.320	5249.520	---	---
	Ant2	5230	39.440	5210.240	5249.680	---	---
	Ant1	5270	39.280	5250.320	5289.600	---	---
	Ant2	5270	39.200	5250.320	5289.520	---	---
	Ant1	5310	39.280	5290.320	5329.600	---	---
	Ant2	5310	39.360	5290.320	5329.680	---	---
	Ant1	5510	39.360	5490.240	5529.600	---	---
	Ant2	5510	39.360	5490.240	5529.600	---	---
	Ant1	5550	39.280	5530.320	5569.600	---	---
	Ant2	5550	39.360	5530.240	5569.600	---	---
	Ant1	5670	39.440	5650.240	5689.680	---	---
	Ant2	5670	39.440	5650.240	5689.680	---	---
	Ant1	5755	39.440	5735.240	5774.680	---	---
	Ant2	5755	39.360	5735.240	5774.600	---	---
11AX80SISO	Ant1	5795	39.200	5775.320	5814.520	---	---
	Ant2	5795	39.200	5775.400	5814.600	---	---
	Ant1	5210	80.160	5169.840	5250.000	---	---
	Ant2	5210	79.840	5170.000	5249.840	---	---
	Ant1	5290	79.680	5250.160	5329.840	---	---
	Ant2	5290	80.160	5249.680	5329.840	---	---
	Ant1	5530	79.840	5490.000	5569.840	---	---
	Ant2	5530	80.000	5490.000	5570.000	---	---
	Ant1	5610	79.840	5570.000	5649.840	---	---
	Ant2	5610	79.840	5570.000	5649.840	---	---
Ant1	5775	79.840	5735.000	5814.840	---	---	
Ant2	5775	79.840	5735.000	5814.840	---	---	











