

TEST REPORT

Product Name : Smart Terminal
Model Number : NG-TC2
FCC ID : 2AJ9T-10601

Prepared for : ZKTECO CO., LTD.
Address : No.32, Pingshan Industrial Avenue, Tangxia Town,
Dongguan City, Guangdong Province, China 523728

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

Tel: (0755) 26954280
Fax: (0755) 26954282

Report Number : ENS2411120146W00105R
Date(s) of Tests : November 19, 2024 to December 9, 2024
Date of issue : December 10, 2024

1 TEST RESULT CERTIFICATION

Applicant : ZKTECO CO., LTD.
Address : No.32, Pingshan Industrial Avenue, Tangxia Town, Dongguan City, Guangdong Province, China 523728
Manufacturer : ZKTECO CO., LTD.
Address : No.32, Pingshan Industrial Avenue, Tangxia Town, Dongguan City, Guangdong Province, China 523728
EUT : Smart Terminal
Model Name : NG-TC2
Trademark : 

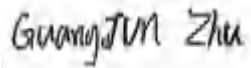
Measurement Procedure Used:

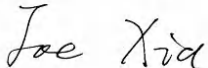
APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart E	PASS

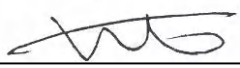
The above equipment was tested by EMTEK (SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the above table standards requirement.

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

Date of Test : November 19, 2024 to December 9, 2024

Prepared by : 
Guangjun Zhu/Editor

Reviewer : 
Joe Xia /Supervisor

Approve & Authorized Signer : 
Lisa Wang/Manager



Modified History

Version	Report No.	Revision Date	Summary
V1.0	ENS2411120146W00105R	/	Original Report



TABLE OF CONTENTS

1 TEST RESULT CERTIFICATION	2
2 EUT TECHNICAL DESCRIPTION	5
3 SUMMARY OF TEST RESULT	7
4 TEST METHODOLOGY	8
4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS	8
4.2 MEASUREMENT EQUIPMENT USED	8
4.3 DESCRIPTION OF TEST MODES	9
5 FACILITIES AND ACCREDITATIONS	13
5.1 FACILITIES	13
5.2 LABORATORY ACCREDITATIONS AND LISTINGS	13
6 TEST SYSTEM UNCERTAINTY	14
7 SETUP OF EQUIPMENT UNDER TEST	15
7.1 RADIO FREQUENCY TEST SETUP	15
7.2 RADIO FREQUENCY TEST SETUP	15
7.3 CONDUCTED EMISSION TEST SETUP	17
7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM	18
7.5 SUPPORT EQUIPMENT	18
8 TEST REQUIREMENTS	19
8.1 BANDWIDTH MEASUREMENT	19
8.2 MAXIMUM CONDUCTED OUTPUT POWER	64
8.3 MAXIMUM PEAK POWER DENSITY	88
8.4 UNDESIRABLE RADIATED SPURIOUS EMISSION	112
8.5 POWER LINE CONDUCTED EMISSIONS	126
8.6 ANTENNA APPLICATION	129

2 EUT TECHNICAL DESCRIPTION

Characteristics	Description
Product	Smart Terminal
Model Number	NG-TC2
Sample number	2#
Wifi Type	UNII-1: 5150MHz-5250MHz Band UNII-2A: 5250MHz-5350MHz Band UNII-2C: 5470MHz-5725MHz Band UNII-3: 5725MHz-5850MHz Band
WLAN Supported	IEEE 802.11a IEEE 802.11n(20MHz channel bandwidth) IEEE 802.11n(40MHz channel bandwidth) IEEE 802.11ac(20MHz channel bandwidth) IEEE 802.11ac(40MHz channel bandwidth) IEEE 802.11ac(80MHz channel bandwidth)
Modulation	OFDM/OFDMA
Frequency Range:	5150MHz-5250MHz Band: 5180-5240MHz for 802.11a 5180-5240MHz for 802.11n(20) 5190-5230MHz for 802.11n(40) 5180-5240MHz for 802.11ac(20) 5190-5230MHz for 802.11ac(40) 5210MHz for 802.11ac(80)
	5250MHz-5350MHz Band: 5260-5320MHz for 802.11a 5260-5320MHz for 802.11n(20) 5270-5310MHz for 802.11n(40) 5260-5320MHz for 802.11ac(20) 5270-5310MHz for 802.11ac(40) 5290MHz for 802.11ac(80)
	5470MHz-5725MHz Band: 5500-5700MHz for 802.11a 5500-5700MHz for 802.11n(20) 5510-5670MHz for 802.11n(40) 5500-5700MHz for 802.11ac(20) 5510-5670MHz for 802.11ac(40) 5530-5610MHz for 802.11ac(80)
	5725MHz-5850MHz Band: 5745-5825MHz for 802.11a 5745-5825MHz for 802.11n(20) 5755-5795MHz for 802.11n(40) 5745-5825MHz for 802.11ac(20)

	5755-5795MHz for 802.11ac(40) 5775MHz for 802.11ac(80)	
TPC Function	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> Not Applicable
Antenna Type	FPC Antenna	
Antenna Gain	2.77 dBi Note: The antenna information provided by the manufacturer will have a certain impact on the test results.	
Power Supply	DC 12V from adapter	
Adapter	MODEL:FJ-SW124S1201500E INPUT: 100-240V~, 50Hz/60Hz, 0.6A Max OUTPUT:12.0V, 1.5A, 18.0W	
Temperature Range	0°C ~ +45°C	

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

3 SUMMARY OF TEST RESULT

FCC Part Clause	Test Parameter	Verdict	Remark
15.407 (a) 15.407 (e)	99% , 6dB and 26dB Bandwidth	PASS	
15.407 (a)	Maximum Conducted Output Power	PASS	
15.407 (a)	Peak Power Spectral Density	PASS	
15.407 (b)	Radiated Spurious Emission	PASS	
15.407 (b)(6) 15.207	Power Line Conducted Emission	PASS	
15.407(a) 15.203	Antenna Application	PASS	
NOTE1: N/A (Not Applicable) Remark: The test method refers to KDB 789033 and FCC 47 CFR Part 2, Subpart J			

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for FCC ID: 2AJ9T-10601 filing to comply with Section 15.407 of the FCC Part 15, Subpart E 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 15, Subpart E

4.2 MEASUREMENT EQUIPMENT USED

4.2.1 Conducted Emission Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LASTCAL.
EMI Test Receiver	Rohde & Schwarz	ESCI	101045	2024/5/10
AMN	Schwarzbeck	NNLK 8129	8129203	2024/5/11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100107	2024/5/10
Voltage Probe	Rohde & Schwarz	TK9416	N/A	2024/5/11
AMN	Rohde & Schwarz	ESH3-Z5	100191	2024/5/10

4.2.2 Radiated Emission Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.
EMI Test Receiver	Rohde & Schwarz	ESU 26	100154	2024/5/10
Pre-Amplifier	HP	8447F	2944A07999	2024/5/11
Bilog Antenna	Schwarzbeck	VULB9163	141	2024/6/26
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2024/5/12
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1177	2024/5/12
Horn Antenna	Schwarzbeck	BBHA9170	9170-399	2024/5/12
Cable	Schwarzbeck	AK9513	ACRX1	2024/5/11
Cable	Rosenberger	N/A	FP2RX2	2024/5/11
Cable	Schwarzbeck	AK9513	CRPX1	2024/5/11
Cable	Schwarzbeck	AK9513	CRRX2	2024/5/11

4.2.3 Radio Frequency Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LASTCAL.
Signal Analyzer	Agilent	N9010A	MY53470879	2024/5/10
Vector Signal Generator	Agilent	N5182B	MY53050878	2024/5/10
Analog Signal Generator	Agilent	N5171B	MY53050553	2024/5/10
RF Control Unit(Power Meter)	Tonscend	JS0806-2	\	2024/5/10
Temperature&Humidity Chamber	ESPEC	EL-02KA	12107166	2024/5/10

Remark: Each piece of equipment is scheduled for calibration once a 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.

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 5150-5250MHz

Frequency and Channels list for 802.11a/n(20)/ac(20):

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

Frequency and Channels list for 802.11n (40)/ac(40):

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

Frequency and Channel list for 802.11ac(80):

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

Test Frequency and Channels for 802.11a/n(20)/ac(20):

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

Test Frequency and channels for 802.11n (40)/ac(40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	-	-	46	5230

Test Frequency and channels for 802.11ac(80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	-	-	-	-

WIFI 5G with 5250-5350MHz

Frequency and Channels list for 802.11a/n(20)/ac(20):

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

Frequency and Channels list for 802.11n (40)/ac(40):

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

Frequency and Channels list for 802.11ac(80):

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

Test Frequency and Channels for 802.11a/n(20)/ac(20):

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

Test Frequency and channels for 802.11n (40)/ac(40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	-	-	62	5310

Test Frequency and channels for 802.11ac(80):

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

WIFI 5G with 5470-5725MHz

Frequency and Channels list for 802.11a/n(20)/ac(20):

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 Channels list for 802.11n(40)/ac(40):

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

Frequency and Channels list for 802.11ac(80):

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

Test Frequency and Channels for 802.11a/n(20)/ac(20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	116	5580	140	5700

Test Frequency and channels for 802.11n (40)/ac(40):

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

Test Frequency and channels for 802.11ac(80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	122	5610	-	-

Wifi 5G with 5725MHz-5850MHz

Frequency and Channels list for 802.11a/n(20)/802.11ac(20):

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

Frequency and Channels list for 802.11n(40)/ac(40):

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

Frequency and Channels list for 802.11ac(80):

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

Test Frequency and Channels for 802.11a/n(20)/ac(20):

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

Test Frequency and channels for 802.11n(40)/ac(40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	-	-	159	5795

Test Frequency and channels for 802.11ac(80):

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

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

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

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

5.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

EMC Lab.

: **Accredited by CNAS**

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)

Accredited by FCC

Designation Number: CN1204

Test Firm Registration Number: 882943

Accredited by A2LA

The Certificate Number is 4321.01

Accredited by Industry Canada

The Conformity Assessment Body Identifier is CN0008

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:

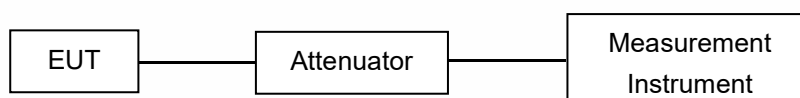
Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0\text{dB}$
Conducted Emissions Test	$\pm 2.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
Power Density	$\pm 2.0\text{dB}$
Occupied Bandwidth Test	$\pm 1.0\text{dB}$
Band Edge Test	$\pm 3\text{dB}$
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:

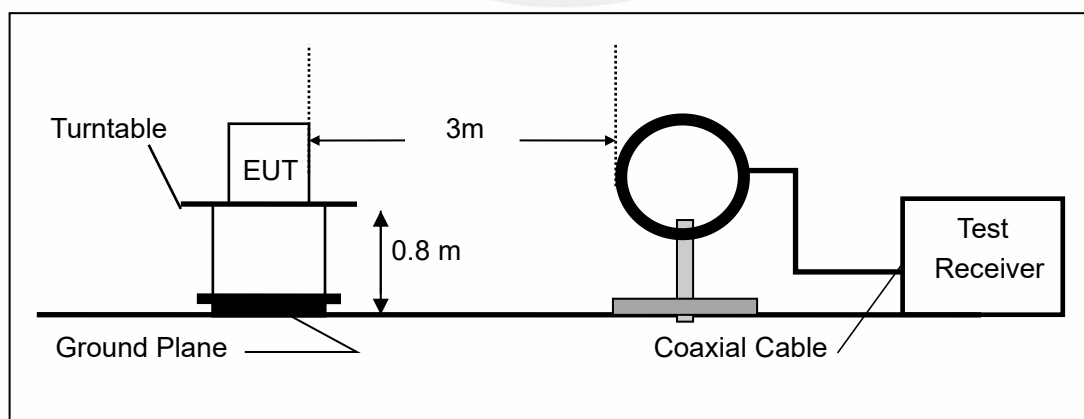
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is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

Above 1GHz:

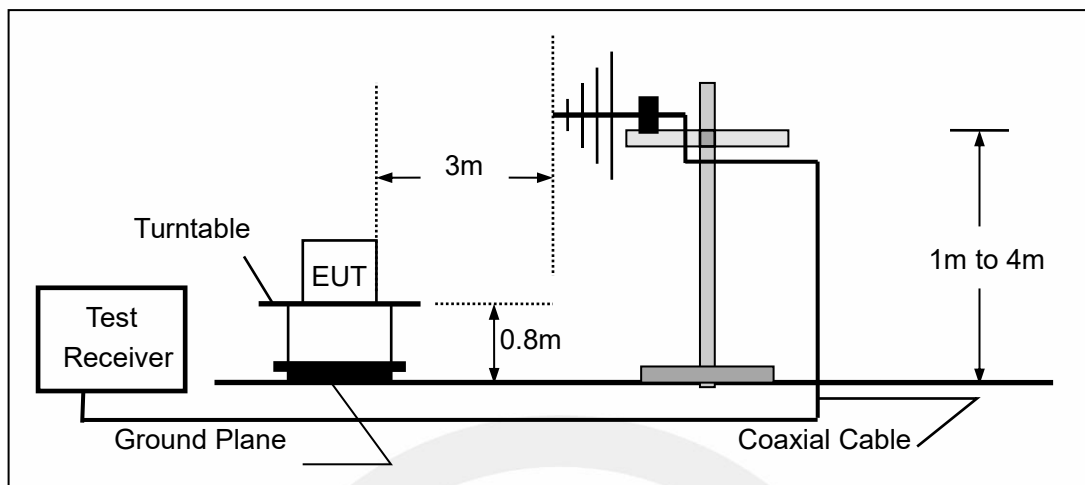
(Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.)

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).

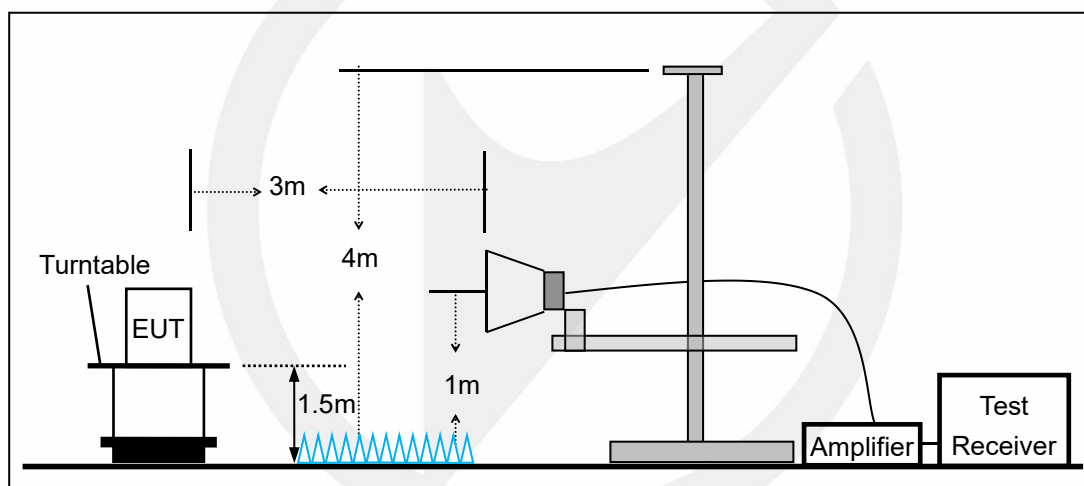
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



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

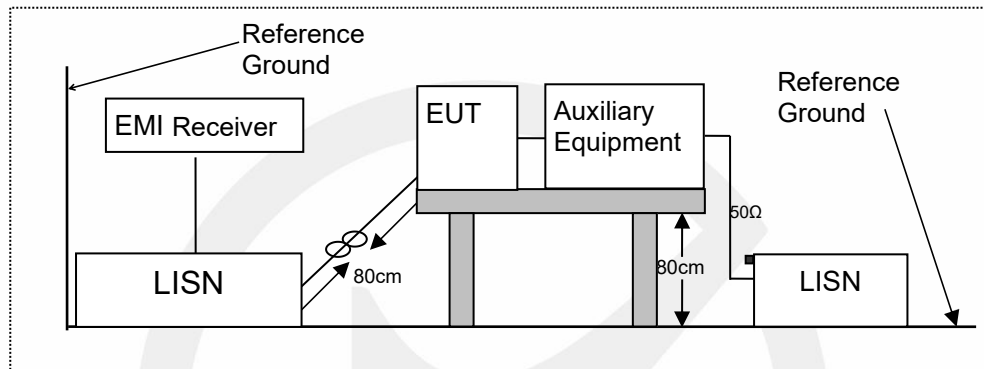


7.3 CONDUCTED EMISSION TEST SETUP

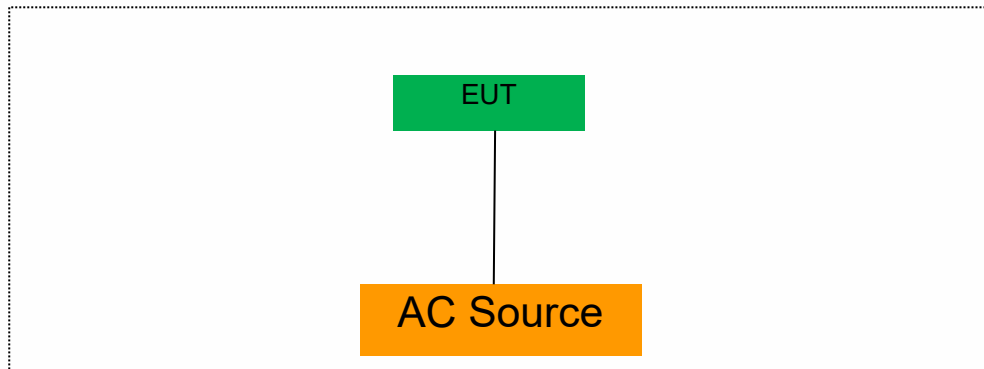
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All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

8.1.2 Conformance Limit

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. 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 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(e) 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 6.1 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)

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- 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) $\geq 3 \times \text{RBW}$.
- 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 $\geq 3 \cdot \text{RBW}$
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

Emission Bandwidth

TestMode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	21.080	5169.840	5190.920	---	---
		5200	22.200	5188.880	5211.080	---	---
		5240	21.360	5229.160	5250.520	---	---
		5260	21.480	5249.200	5270.680	---	---
		5280	21.480	5269.560	5291.040	---	---
		5320	22.240	5308.800	5331.040	---	---
		5500	20.520	5489.920	5510.440	---	---
		5580	20.760	5569.960	5590.720	---	---
		5700	21.360	5689.640	5711.000	---	---
		5745	20.240	5734.840	5755.080	---	---
		5785	20.440	5774.920	5795.360	---	---
		5825	20.520	5814.640	5835.160	---	---
11N20SISO	Ant1	5180	21.760	5169.360	5191.120	---	---
		5200	21.920	5189.200	5211.120	---	---
		5240	22.240	5228.600	5250.840	---	---
		5260	21.960	5248.600	5270.560	---	---
		5280	22.920	5268.160	5291.080	---	---
		5320	23.040	5309.440	5332.480	---	---
		5500	20.800	5489.560	5510.360	---	---
		5580	21.040	5569.680	5590.720	---	---
		5700	22.520	5689.280	5711.800	---	---
		5745	21.000	5734.520	5755.520	---	---
		5785	21.280	5774.360	5795.640	---	---
		5825	22.960	5814.440	5837.400	---	---
11N40SISO	Ant1	5190	41.120	5169.360	5210.480	---	---
		5230	41.440	5209.040	5250.480	---	---
		5270	55.840	5244.240	5300.080	---	---
		5310	41.840	5289.280	5331.120	---	---
		5510	41.680	5489.280	5530.960	---	---
		5550	41.520	5529.440	5570.960	---	---
		5670	41.600	5649.200	5690.800	---	---
		5755	43.040	5733.160	5776.200	---	---
		5795	41.280	5774.120	5815.400	---	---
11AC20SISO	Ant1	5180	21.520	5169.200	5190.720	---	---
		5200	20.920	5189.440	5210.360	---	---
		5240	24.880	5227.480	5252.360	---	---
		5260	21.280	5249.280	5270.560	---	---
		5280	20.640	5269.560	5290.200	---	---
		5320	20.680	5309.720	5330.400	---	---
		5500	20.760	5489.560	5510.320	---	---
		5580	21.000	5569.400	5590.400	---	---
		5700	21.120	5689.120	5710.240	---	---
		5745	21.080	5734.120	5755.200	---	---
		5785	20.680	5774.520	5795.200	---	---
		5825	21.120	5814.240	5835.360	---	---
11AC40SISO	Ant1	5190	41.600	5169.120	5210.720	---	---
		5230	42.480	5209.120	5251.600	---	---
		5270	41.280	5249.360	5290.640	---	---
		5310	42.080	5289.120	5331.200	---	---
		5510	41.920	5489.520	5531.440	---	---

		5550	42.080	5529.120	5571.200	---	---
		5670	40.720	5649.840	5690.560	---	---
		5755	41.360	5734.360	5775.720	---	---
		5795	41.360	5774.200	5815.560	---	---
11AC80SISO	Ant1	5210	80.320	5169.840	5250.160	---	---
		5290	80.960	5249.360	5330.320	---	---
		5530	80.480	5490.000	5570.480	---	---
		5610	81.120	5569.200	5650.320	---	---
		5775	80.640	5734.840	5815.480	---	---

Occupied channel bandwidth

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.138	5171.4562	5188.5942	---	---
		5200	17.207	5191.4074	5208.6144	---	---
		5240	17.191	5231.4242	5248.6152	---	---
		5260	17.169	5251.4303	5268.5993	---	---
		5280	17.215	5271.4041	5288.6191	---	---
		5320	17.208	5311.4274	5328.6354	---	---
		5500	17.036	5491.5223	5508.5583	---	---
		5580	17.070	5571.5019	5588.5719	---	---
		5700	17.202	5691.4322	5708.6342	---	---
		5745	17.086	5736.4743	5753.5603	---	---
		5785	17.068	5776.4812	5793.5492	---	---
		5825	17.091	5816.4706	5833.5616	---	---
11N20SISO	Ant1	5180	18.090	5170.9509	5189.0409	---	---
		5200	18.146	5190.9114	5209.0574	---	---
		5240	18.086	5230.9425	5249.0285	---	---
		5260	18.131	5250.9083	5269.0393	---	---
		5280	18.159	5270.8983	5289.0573	---	---
		5320	18.159	5310.8993	5329.0583	---	---
		5500	18.020	5491.0019	5509.0219	---	---
		5580	18.036	5570.9849	5589.0209	---	---
		5700	18.144	5690.8946	5709.0386	---	---
		5745	18.038	5735.9622	5754.0002	---	---
		5785	18.048	5775.9533	5794.0013	---	---
		5825	18.047	5815.9576	5834.0046	---	---
11N40SISO	Ant1	5190	36.597	5171.7244	5208.3214	---	---
		5230	36.993	5211.5485	5248.5415	---	---
		5270	37.033	5251.4627	5288.4957	---	---
		5310	37.136	5291.4143	5328.5503	---	---
		5510	36.762	5491.7094	5528.4714	---	---
		5550	36.866	5531.6888	5568.5548	---	---
		5670	36.773	5651.6384	5688.4114	---	---
		5755	36.836	5736.5893	5773.4253	---	---
		5795	36.908	5776.5129	5813.4209	---	---
11AC20SISO	Ant1	5180	18.121	5170.9222	5189.0432	---	---
		5200	17.993	5190.9689	5208.9619	---	---
		5240	18.164	5230.8667	5249.0307	---	---
		5260	18.185	5250.8773	5269.0623	---	---
		5280	18.183	5270.8553	5289.0383	---	---
		5320	18.180	5310.8433	5329.0233	---	---
		5500	18.001	5490.9727	5508.9737	---	---
		5580	18.085	5570.9356	5589.0206	---	---