

Report No.: NTC2108196FV00

# FCC RADIO TEST REPORT

Applicant	: La Crosse Technology Ltd.
Address	: 2809 Losey Blvd. S. La Crosse Wisconsin 54601 United States
Manufacturer	: La Crosse Technology Ltd.
Address	: 2809 Losey Blvd. S. La Crosse Wisconsin 54601 United States
Factory	: La Crosse Technology Ltd.
Address	: 2809 Losey Blvd. S. La Crosse Wisconsin 54601 United States
Product Name	: WIRELESS CHARGER
Brand Name	: LA CROSSE TECHNOLOGY
Model No	: 616A-1413 (For additional models & model difference refer to section 2)
FCC ID	: OMO616A-1413
Measurement Standard	: 47 CFR FCC Part 15, Subpart C
Receipt Date of Samples	: August 11, 2021
Date of Tested	: August 11, 2021 to October 28, 2021
Date of Report	: November 06, 2021

This report shows that above equipment is technically compliant with the requirements of the standards above. All test results in this report apply only to the tested sample(s). Without prior written approval of Dongguan Nore Testing Center Co., Ltd, this report shall not be reproduced except in full,

Prepared by Alina Guo / Project Engineer

Approved by

lori Fan / Authorized Signatory

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#### **Table of Contents**

1. Summary of Test Result	4
2. General Description of EUT	5
3. Test Channels and Modes Detail	6
4. Configuration of EUT	6
5. Modification of EUT	6
6. Description of Support Device	7
7. Test Facility and Location	7
8. Applicable Standards and References	8
9. Deviations and Abnormalities from Standard Conditions	8
10. Test Conditions	8
11. Measurement Uncertainty	9
12. Sample Calculations	10
13. Test Items and Results	11
13.1 Conducted Emissions Measurement	
13.2 Radiated Spurious Emissions and Restricted Bands Measurement	
13.3 20dB Bandwidth Measurement	25
13.4 Antenna Requirement	27
14. Test Equipment List	



## **Revision History**

Report Number	Description	Issued Date
NTC2108196FV00	Initial Issue	2021-11-06



## 1. Summary of Test Result

FCC Rules	Description of Test	Result	Remarks
§15.207 (a)	AC Power Conducted Emission	PASS	
§15.209	Radiated Emissions	PASS	
§15.35	20dB Bandwidth	PASS	



## 2. General Description of EUT

Product Information	
Product Name:	WIRELESS CHARGER
Main Model Name:	616A-1413
Additional Model Name:	616x-xxxx, 616x-xxxx-xxx, 616x-xxxxxx, 616x-xxxxx, 616x-xxxx, 616x-xxxx,
	616x-xxxx-xx, 616x-xxxx, 616x-xxxx, 616x-xxxx, 616x-xxxxx, 616x-xxxxx, 616x-xxxx, 616x-xxxxx, 616x-xxxx, 616x-xxx, 616x-xxxx, 616x-xxxx, 616x-xxxx, 616x-xxxx, 616x-xxxx, 616x-xxxx, 616x-xxx, 616x-xx, 710x-xx, 616x-xx, 710x-xx, 710x-x
	Remark: "x" can be $0~9$ or $A~Z$ or $a~z$ , the difference for different version are the
	product shell color, and packaging upgrade version number, when upgrade a version
	the number progressed to next number.
Model Difference:	These models have the same circuit schematic, construction, PCB Layout and critical
	components. The differences are model number, shell color and packing upgrade
S/N:	version number. HQ800500001
5/IN.	
Brand Name:	LA CROSSE TECHNOLOGY
Hardware Version:	HQ8005(MA) R4
Software Version:	XCT8005
Rating:	DC 5V come from Adapter
Typical Arrangement:	Table-top
I/O Port:	DC Port, USB Port, Type C Port
Accessories Information	L
Adapter:	M/N: HX20A-0503500-AU
	Input: AC 100-240V 50/60Hz 1.0A Max
	Output: DC 5.0V 3.5A
Cable:	DC Line for Adapter: 1.86m unshielded
Other:	N/A
Additional Information	
Note:	1. According to the model difference, all tests were performed on model 616A-1413.
	2. The EUT consists of station unit and sensor unit. The station unit supports 433MHz
	wireless receiving feature and the sensor supports 433MHz wireless transmitting
	feature. This report only applies to station unit.
Remark:	All the information above are provided by the manufacturer. More detailed feature of
	the EUT please refers to the user manual.
	1

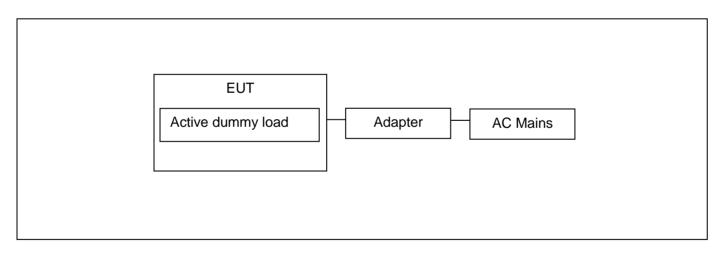


Technical Specification		
Frequency Range:	110.5-205KHz	
Modulation Type:	FSK	
Antenna Type:	Coil antenna	

## 3. Test Channels and Modes Detail

Mode		Modulation
1.	Full Load	FSK
2.	Half Load	FSK
3.	Empty Load	FSK

## 4. Configuration of EUT



## 5. Modification of EUT

No modifications are made to the EUT during all test items.



## 6. Description of Support Device

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Brand	M/N	S/N	Cable Specification	Remarks
1.	Active dummy load	Consumer Electronics	001			Power: 5W, 10W, 15W

## 7. Test Facility and Location

Test Site	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Accreditations and	:	The Laboratory has been assessed and proved to be in compliance with
Authorizations		CNAS/CL01
		Listed by CNAS, August 13, 2018
		The Certificate Registration Number is L5795.
		The Certificate is valid until August 13, 2024
		The Laboratory has been assessed and proved to be in compliance with
		ISO17025
		Listed by A2LA, November 01, 2017
		The Certificate Registration Number is 4429.01
		The Certificate is valid until December 31, 2021
		Listed by FCC, November 06, 2017
		Test Firm Registration Number is 907417
		Listed by Industry Canada, June 08, 2017
		The Certificate Registration Number is 46405-9743A
		The CAB identifier number is CN0015
Test Site Location	:	Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng
		District, Dongguan City, Guangdong Province, China



## 8. Applicable Standards and References

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

#### Test Standards:

47 CFR Part 15, Subpart C ANSI C63.10-2013

#### **References Test Guidance:**

N/A

## 9. Deviations and Abnormalities from Standard Conditions

No additions, deviations and exclusions from the standard.

#### **10. Test Conditions**

No.	Test Item	Test Mode	Test Voltage	Tested by	Remarks
1.	AC Power Conducted Emission	1-3	AC 120V 60Hz AC 240V 50Hz	Sean Yuan	See note 1
2.	Radiated Emissions	1-3	AC 120V 60Hz AC 240V 50Hz	Sean Yuan	See note 1
3.	20dB Bandwidth	1	AC 120V 60Hz AC 240V 50Hz	Sean Yuan	See note 1
Matai			•	•	•

Note:

1. The testing climatic conditions for temperature, humidity, and atmospheric pressure are within: 15~35 °C, 30~70%, 86~106kPa.

2. For the test voltage, only the worst case was recorded in this report.



## **11. Measurement Uncertainty**

No.	Test Item	Frequency	Uncertainty	Remarks
1.	Conducted Emission	150KHz ~ 30MHz	±2.52 dB	
2. Radiate		9kHz ~ 30MHz	±2.60 dB	
	Radiated Emission Test	30MHz ~ 1GHz	±4.68 dB	
		1GHz ~ 18GHz	±5.14 dB	
		18GHz ~ 40GHz	±5.14 dB	
3.	RF Conducted Test	10Hz ~ 40GHz	±1.06 dB	

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2. The measurement uncertainly levels above are estimated and calculated according to CISPR 16-4-2.

3. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.



## **12. Sample Calculations**

Conducted Emission								
Freq. (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector		
0.1900	30.10	10.60	40.70	79.00	-38.30	QP		
Where,								
Freq.	= Emiss	ion frequency in MH	lz					
Reading Lev	el = Uncor	rected Analyzer/Rec	ceiver reading					
Corrector Fa	Corrector Factor = Insertion loss of LISN + Cable Loss + RF Switching Unit attenuation							
Measuremer	nt = Readi	ng + Corrector Factor	or					
Limit	Limit = Limit stated in standard							
Margin	Margin = Measurement - Limit							
Detector	= Readi	ng for Quasi-Peak /	Average / Peak					

Radiated Spurious Emissions and Restricted Bands							
Freq. (MHz)	Reading Level (dBuV)	Correct Factor Measureme (dB/m) (dBuV/m)		Limit (dBuV/m)	Over (dB)	Detector	
60.0700	45.88	-18.38	27.50	49.00	-21.50	QP	
Where,	Where,						
Freq. = Emission frequency in MHz							
Reading Level = Uncorrected Analyze			lyzer/Receiver reading				
Corrector Fa	ctor = Anten	= Antenna Factor + Cable Loss - Pre-amplifier					
Measurement = Reading + Corrector Factor							
Limit = Limit stated in standard							
Over = Margin, which calculated by Measurement - Limit							
Detector = Reading for Quasi-Peak / Average / Peak							

Note: For all conducted test items, the spectrum analyzer offset or transducer is derived from RF cable loss and attenuator factor. The offset or transducer is equal to the RF cable loss plus attenuator factor.



## 13. Test Items and Results

#### **13.1 Conducted Emissions Measurement**

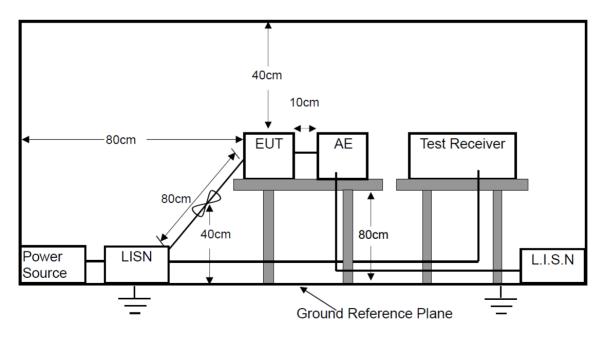
#### LIMIT

According to the requirements of FCC PART 15.207, the limits are as follows:

Frequency (MHz)	Quasi-peak	Average			
0.15 to 0.5	66 to 56	56 to 46			
0.5 to 5	56	46			
5 to 30	60	50			
Note: 1. If the limits for the average detector are met when using the quasi-peak detector, then the limits					
for the measurements with the average detector are considered to be met.					
2. The lower limit shall apply at the transition frequencies.					

3. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz.

#### **BLOCK DIAGRAM OF TEST SETUP**





#### **TEST PROCEDURES**

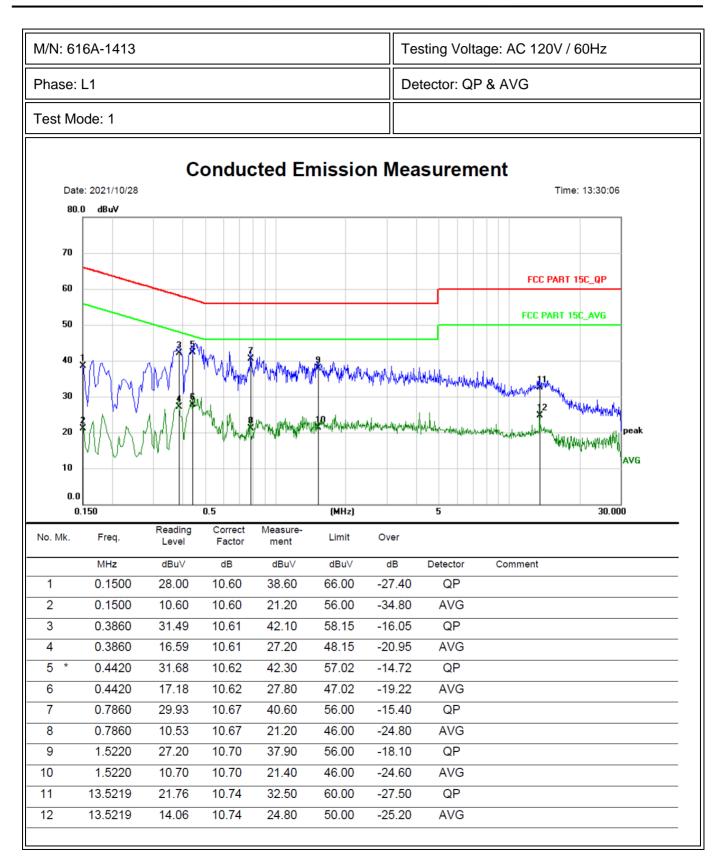
- a. The EUT was placed on a wooden table 0.8m height from the metal ground plan and 0.4m from the conducting wall of the shielding room and it was kept at 0.8m from any other grounded conducting surface.
- b. All I/O cables and support devices were positioned as per ANSI C63.10.
- c. Connect mains power port of the EUT to a line impedance stabilization network (LISN).
- d. Connect all support devices to the other LISN and AAN, if needed.
- e. Scan the frequency range from 150KHz to 30MHz at both sides of AC line for maximum conducted interference checking and record the test data.

#### **TEST RESULTS**

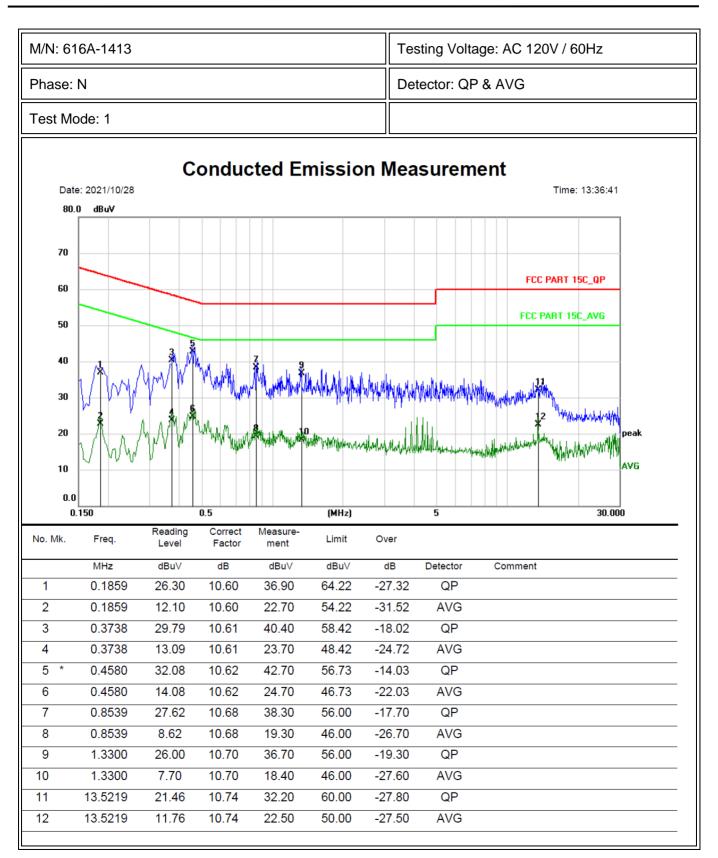
PASS

Please refer to the following pages of the worst case.











## 13.2 Radiated Spurious Emissions and Restricted Bands Measurement

#### LIMIT

Frequency range	Distance Meters	Field Strengths Limit (15.209)		
MHz		μV/m		
0.009 ~ 0.490	300	2400/F(kHz)		
0.490 ~ 1.705	30	24000/F(kHz)		
1.705 ~ 30	30	30		
30 ~ 88	3	100		
88 ~ 216	3	150		
216 ~ 960	3	200		
Above 960	3	500		
Frequency range	Distance Meters	Field Strengths Limit (15.249)		
MHz		mV/m (Field strength of fundamental)	μV/m (Field strength of Harmonics)	
902 ~ 928	3	50	500	
2400 ~ 2483.5	3	50	500	
5725 ~ 5875	3	50	500	
24000 ~ 2425000	3	250	2500	

Remark: (1) Emission level (dB) $\mu$ V = 20 log Emission level  $\mu$ V/m

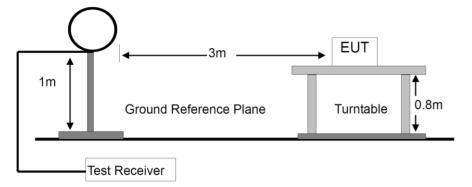
(2) The smaller limit shall apply at the cross point between two frequency bands.

- (3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
- (4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.
- (5) §15.249(d) specifies that emissions which fall in the restricted bands, as defined in §15.205 comply with radiated emission limits specified in §15.209.

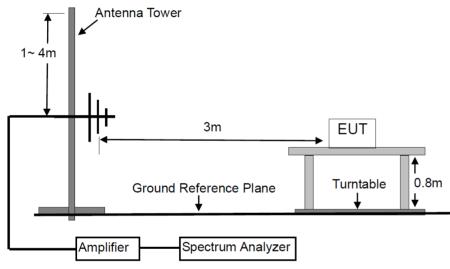


#### **BLOCK DIAGRAM OF TEST SETUP**

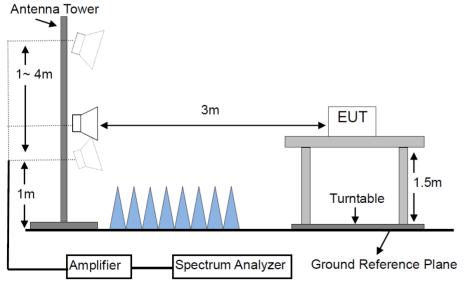
For Radiated Emission below 30MHz



#### For Radiated Emission 30-1000MHz



#### For Radiated Emission Above 1000MHz.





#### **TEST PROCEDURES**

- a. Below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.
- b. For the radiated emission test above 1GHz:

The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

- c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
- f. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Band	Detector	Resolution Bandwidth	Video Bandwidth	
9KHz to 150KHz	QP	300Hz	900Hz	
150KHz to 30MHz	QP	10KHz	300KHz	
30MHz to 1000MHz	QP	120 KHz	300 KHz	
Above 1000MHz	Peak	1 MHz	3 MHz	
Above 1000IVIH2	Average	1 MHz	10 Hz	

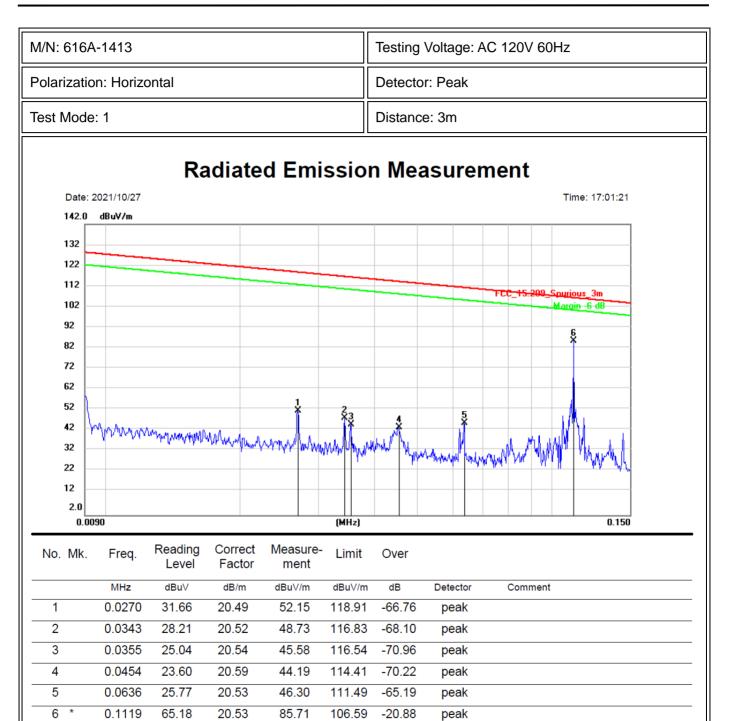


#### **TEST RESULTS**

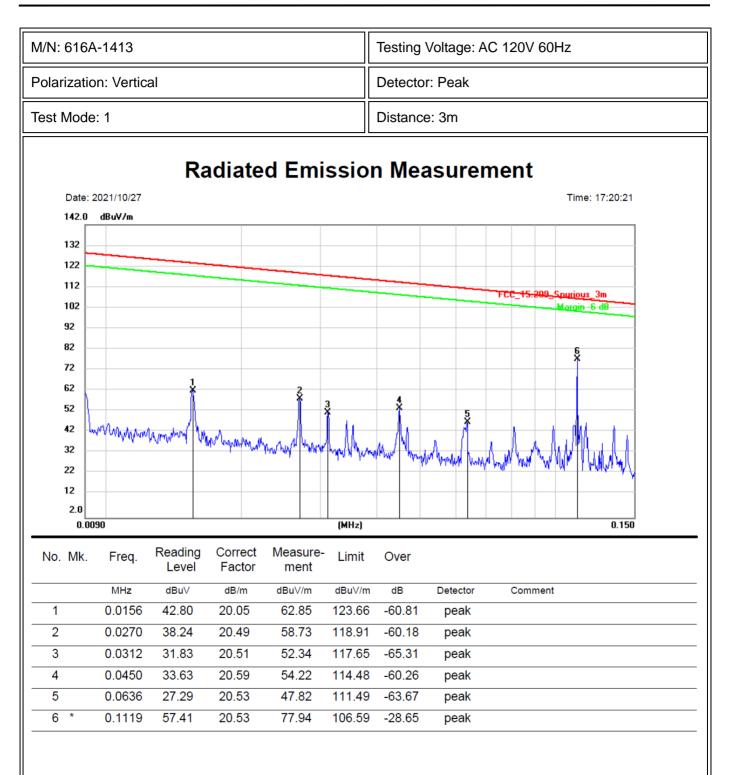
PASS

Please refer to the following pages of the worst case.

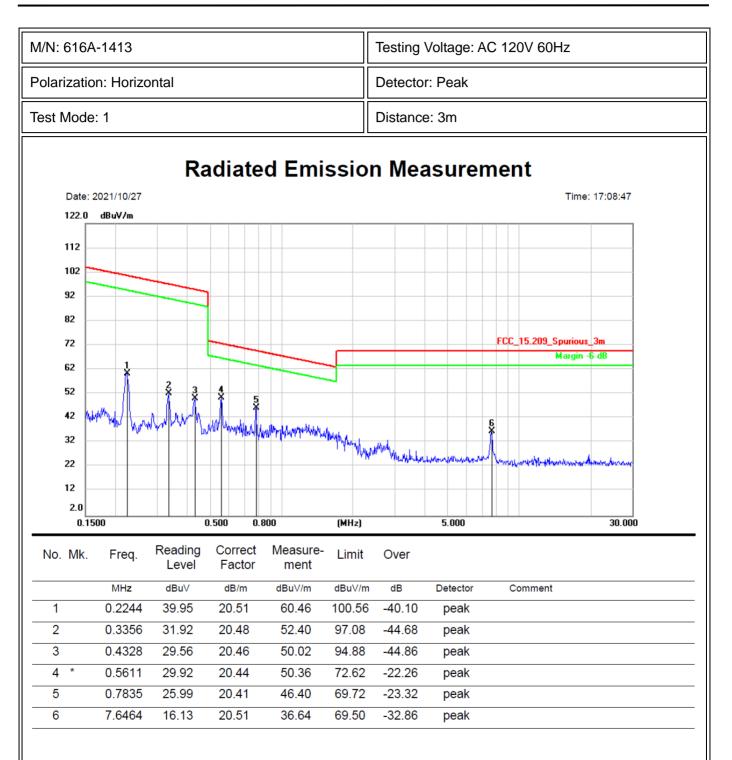




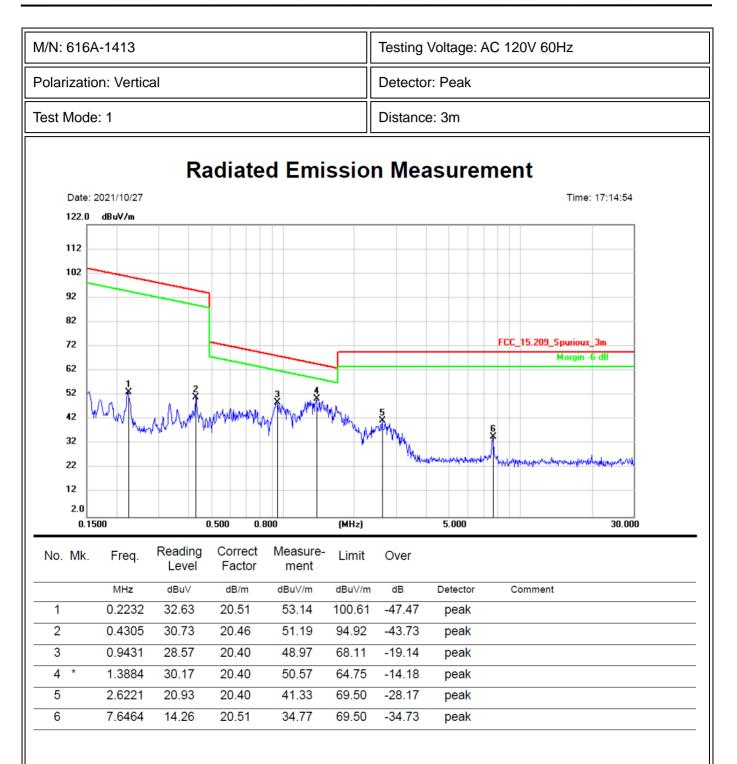




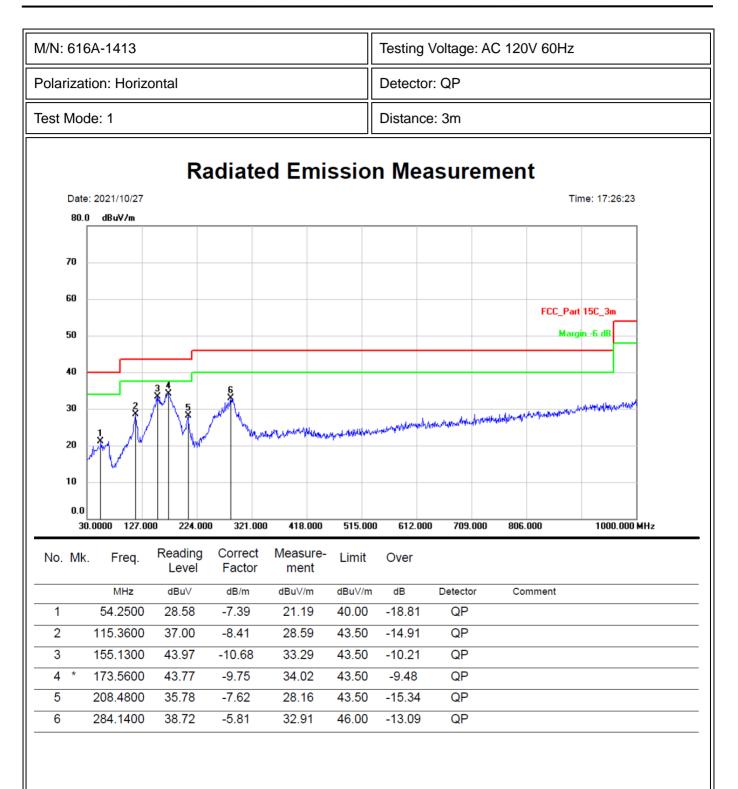




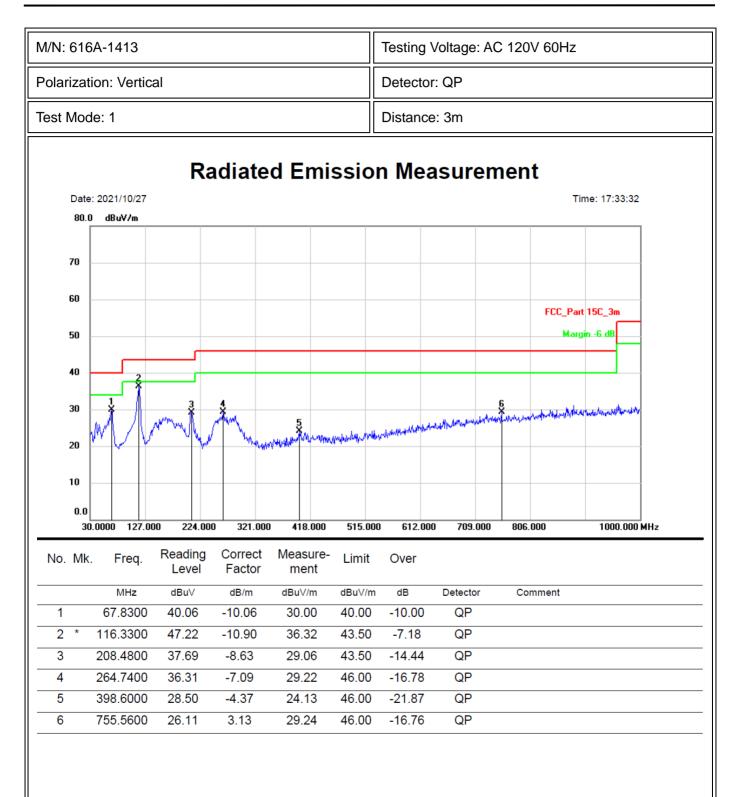












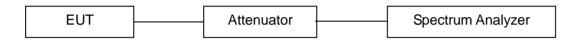


#### 13.3 20dB Bandwidth Measurement

#### LIMIT

There is no limit.

#### **BLOCK DIAGRAM OF TEST SETUP**



#### TEST PROCEDURES

The 20dB bandwidth of the emission was contained within the frequency band designated which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered, FCC Rule 15.35:

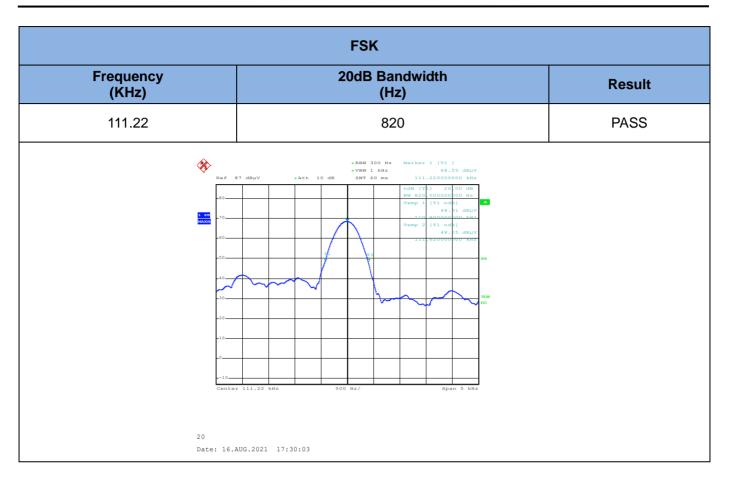
The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was chosen so that the display was a result of the tested channel modulation. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. Use the spectrum 20dB down delta function to measure the bandwidth.

#### TEST RESULTS

PASS

Please refer to the following table.







#### **13.4 Antenna Requirement**

#### STANDARD APPLICABLE

According to of FCC part 15C section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Systems operating in the 2400-2483.5MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

#### ANTENNA CONNECTED CONSTRUCTION

The antenna is Coil antenna that no antenna other than furnished by the responsible party shall be used with the device. Therefore, the antenna is consider meet the requirement.



## 14. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 13, 2021	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Mar. 23, 2021	1 Year
3.	Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	Mar. 13, 2021	1 Year
4.	Spectrum Analyzer	Keysight	N9020A	MY54200831	Mar. 13, 2021	1 Year
5.	Spectrum Analyzer	Rohde & Schwarz	FSV40	101094	Mar. 13, 2021	1 Year
6.	Horn Antenna	Schwarzbeck	BBHA9170	9170-172	Mar. 22, 2021	2 Year
7.	Power Sensor	DARE	RPR3006W	15l00041SNO 64	Mar. 13, 2021	1 Year
8.	Communication Tester	Rohde & Schwarz	CMW500	149004	Mar. 13, 2021	1 Year
9.	Horn Antenna	COM-Power	AH-118	071078	Mar. 23, 2021	1 Year
10.	Pre-Amplifier	HP	HP 8449B	3008A00964	Mar. 13, 2021	1 Year
11.	Pre-Amplifier	HP	HP 8447D	1145A00203	Mar. 13, 2021	1 Year
12.	Loop Antenna	Schwarzbeck	FMZB 1513	1513-272	Mar. 23, 2021	1 Year
13.	Test Receiver	Rohde & Schwarz	ESCI	101152	Mar. 14, 2021	1 Year
14.	L.I.S.N	Rohde & Schwarz	ENV 216	101317	Mar. 13, 2021	1 Year
15.	L.I.S.N	Rohde & Schwarz	ESH2-Z5	893606/014	Mar. 13, 2021	1 Year
16.	RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	Mar.13, 2021	1 Year
17.	Temperature & Humidity Chamber	REMAFEE	SYHR225L	N/A	Mar. 13, 2021	1 Year
18.	DC Source	Maynuo	MY8811	N/A	Mar. 13, 2021	1 Year
19.	Temporary antenna connector	TESCOM	SS402	N/A	N/A	N/A
20.	Chamber	SAEMC	9*7*7m	N/A	Apr. 21, 2021	2 Year
21.	Test Software	EZ	EZ_EMC	N/A	N/A	N/A

Note: For photographs of EUT and measurement, please refer to appendix in separate documents.