

TEST REPORT

Product : LED Light strip
Trade mark : N/A
Model/Type reference : 904105-RGB-NF-US
Serial Number : N/A
Report Number : EED32M00268701
FCC ID : 2A3MADEPU87762157
Date of Issue : Dec. 24, 2021
Test Standards : 47 CFR Part 15Subpart C
Test result : PASS

Prepared for:

Lepro Innovation INC**3651 Lindell Road Suite D1048, Las Vegas, NV 89103, USA**

Prepared by:

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Date:

Dec. 24, 2021

Check No.:2447625033



2 Version

Version No.	Date	Description
00	Dec. 24, 2021	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203/15.247 (c)	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	PASS
Conducted Peak Output Power	47 CFR Part 15 Subpart C Section 15.247 (b)(3)	ANSI C63.10-2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.247 (a)(2)	ANSI C63.10-2013	PASS
Power Spectral Density	47 CFR Part 15 Subpart C Section 15.247 (e)	ANSI C63.10-2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
Radiated Spurious Emissions	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS

Remark:

Test according to ANSI C63.4-2014 & ANSI C63.10-2013.

Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

Model No.: PR904118-RGB-US, 904105-RGB-NF-US, PR904110-RGB-WP-US, PR904110-RGB-US, PR904114-RGBW-WP-US, PR904118-RGB-US, PR904116-RGB-WP-US, 904103-RGB-F-US, PR904116-RGB-US, 904103-RGB-NF-US, PR904119-RGB-US, 904106-RGB-US, PR904107-RGB-US, PR904108-RGB-US, PR904111-RGB-WP-US, PR904112-RGB-WP-US, PR904113-RGB-WP-US, PR904111-RGB-US, PR904112-RGB-US, PR904113-RGB-US, PR904117-RGB-WP-US, 904104-RGB-F-US, PR904117-RGB-US, 904104-RGB-NF-US.

Only the model 904105-RGB-NF-US was tested, PR904118-RGB-US, PR904110-RGB-WP-US, PR904110-RGB-US, PR904114-RGBW-WP-US, PR904118-RGB-US, PR904116-RGB-WP-US, 904103-RGB-F-US, PR904116-RGB-US, 904103-RGB-NF-US, PR904119-RGB-US, 904106-RGB-US, PR904107-RGB-US, PR904108-RGB-US, PR904111-RGB-WP-US, PR904112-RGB-WP-US, PR904113-RGB-WP-US, PR904111-RGB-US, PR904112-RGB-US, PR904113-RGB-US, PR904117-RGB-WP-US, 904104-RGB-F-US, PR904117-RGB-US and 904104-RGB-NF-US compared with 904105-RGB-NF-US, all parts of the product, Their electrical circuit design, layout, components used and internal wiring are identical, except only the length of the light strip, and model name are different.

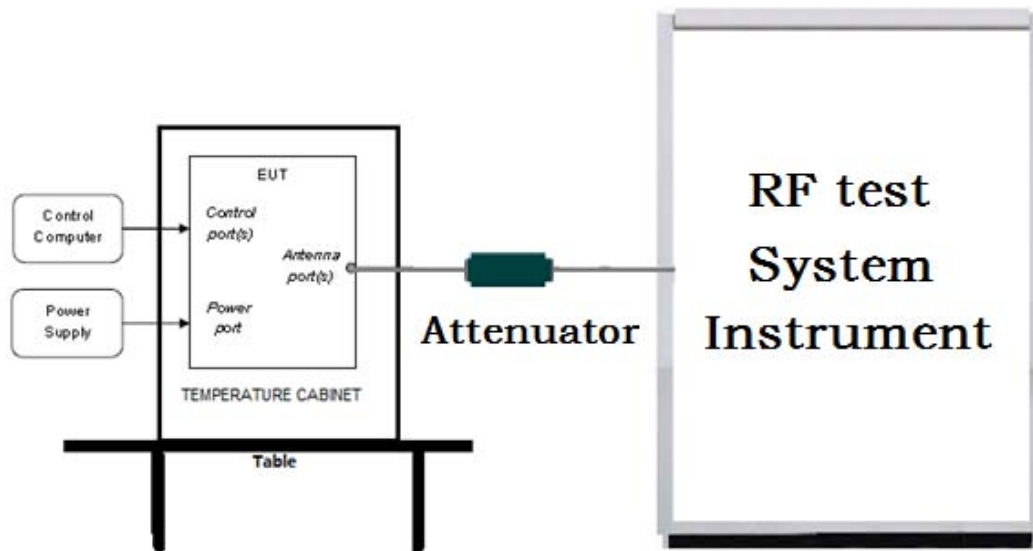
4 Content

1 COVER PAGE	1
2 VERSION	2
3 TEST SUMMARY	3
4 CONTENT	4
5 TEST REQUIREMENT	5
5.1 TEST SETUP	5
5.1.1 For Conducted test setup	5
5.1.2 For Radiated Emissions test setup	5
5.1.3 For Conducted Emissions test setup	6
5.2 TEST ENVIRONMENT	6
5.3 TEST CONDITION	6
6 GENERAL INFORMATION	7
6.1 CLIENT INFORMATION	7
6.2 GENERAL DESCRIPTION OF EUT	7
6.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	7
6.4 DESCRIPTION OF SUPPORT UNITS	8
6.5 TEST LOCATION	8
6.6 DEVIATION FROM STANDARDS	8
6.7 ABNORMALITIES FROM STANDARD CONDITIONS	8
6.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER	8
6.9 MEASUREMENT UNCERTAINTY (95% CONFIDENCE LEVELS, $k=2$)	8
7 EQUIPMENT LIST	9
8 RADIO TECHNICAL REQUIREMENTS SPECIFICATION	12
Appendix A): Conducted Peak Output Power	16
Appendix B): 6dB Occupied Bandwidth	18
Appendix C): Band-edge for RF Conducted Emissions	24
Appendix D): RF Conducted Spurious Emissions	28
Appendix E): Power Spectral Density	36
Appendix F): Antenna Requirement	39
Appendix G): AC Power Line Conducted Emission	41
Appendix H): Restricted bands around fundamental frequency (Radiated)	44
Appendix I): Radiated Spurious Emissions	61
PHOTOGRAPHS OF TEST SETUP	66
PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS	69

5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

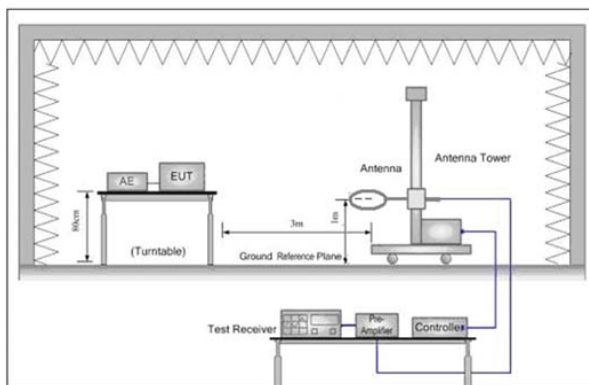


Figure 1. Below 30MHz

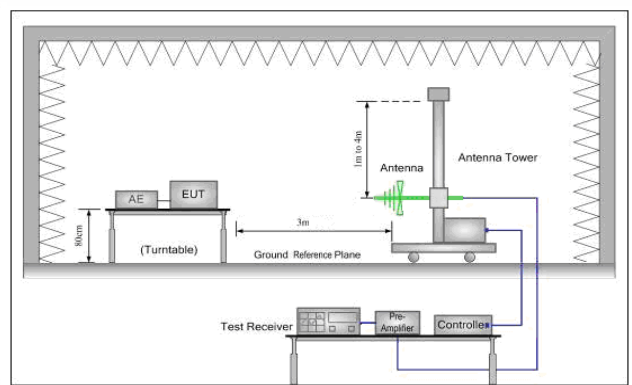


Figure 2. 30MHz to 1GHz

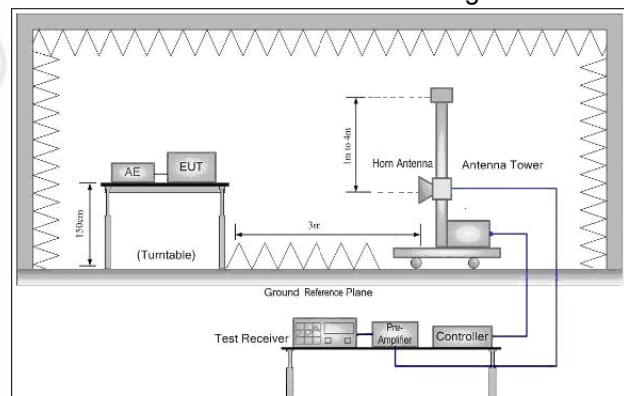
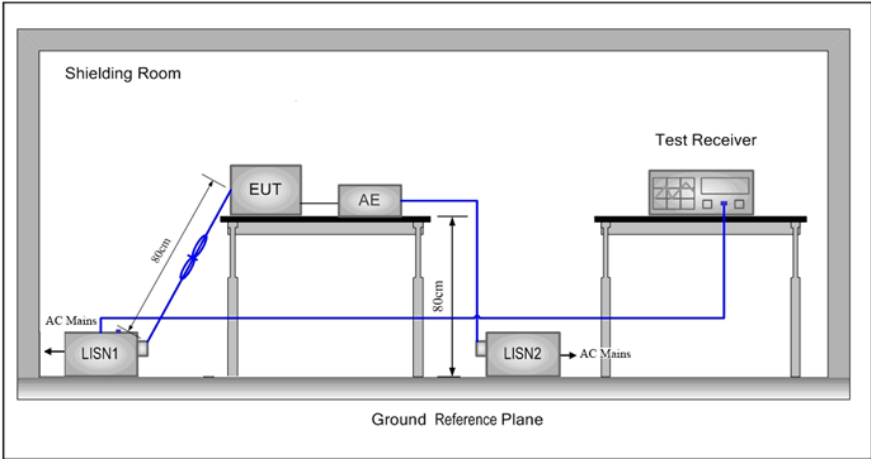


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup
Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11b/g	2412MHz ~2462 MHz	Channel 1	Channel 6	Channel11
		2412MHz	2437MHz	2462MHz
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.			

Test mode:

Through Pre-scan, 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g.

6 General Information

6.1 Client Information

Applicant:	Lepro Innovation INC
Address of Applicant:	3651 Lindell Road Suite D1048, Las Vegas, NV 89103, USA
Manufacturer:	Zhongshan Depu Lighting Co., Ltd.
Address of Manufacturer:	2/F, Building 2, No. 35 Yihui 1st Road, Henglan Town, Zhongshan City, Guangdong Province, P.R. China
Factory:	Zhongshan Depu Lighting Co., Ltd.
Address of Factory:	2/F, Building 2, No. 35 Yihui 1st Road, Henglan Town, Zhongshan City, Guangdong Province, P.R. China

6.2 General Description of EUT

Product Name:	LED Light strip	
Model No.:	904105-RGB-NF-US	
Test model.:	PR904118-RGB-US, 904105-RGB-NF-US, PR904110-RGB-WP-US, PR904110-RGB-US, PR904114-RGBW-WP-US, PR904118-RGB-US, PR904116-RGB-WP-US, 904103-RGB-F-US, PR904116-RGB-US, 904103-RGB-NF-US, PR904119-RGB-US, 904106-RGB-US, PR904107-RGB-US, PR904108-RGB-US, PR904111-RGB-WP-US, PR904112-RGB-WP-US, PR904113-RGB-WP-US, PR904111-RGB-US, PR904112-RGB-US, PR904113-RGB-US, PR904117-RGB-WP-US, 904104-RGB-F-US, PR904117-RGB-US, 904104-RGB-NF-US	
Trade mark:	N/A	
EUT Supports Radios application:	IEEE 802.11 b/g: 2412MHz to 2462MHz	
Power Supply:	Class 2 Power Supply	MODEL:HP18A-1201500-AU INPUT:100-240V~,50/60Hz ,0.5A OUTPUT:12V--- 1.5A
Sample Received Date:	Aug. 28, 2020	
Sample tested Date:	Aug. 28, 2020 to Nov. 17, 2020	

6.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g: 2412MHz to 2462MHz
Channel Numbers:	IEEE 802.11b/g: 11 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g :OFDM(64QAM, 16QAM, QPSK, BPSK)
Test Power Grade:	Reference Table
Test Software of EUT:	espRFTool.exe
Antenna Type and Gain:	Type: PCB antenna Gain:3.5 dBi
Test Voltage:	AC 120V/60Hz

Operation Frequency each of channel(802.11b/g)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

6.4 Description of Support Units

The EUT has been tested with associated equipment below.

Associated equipment name		Manufacture	model	S/N serial number	Supplied by	Certification
AE1	Notebook	DELL	DELL 3490	D245DX2	CTI	IC&FCC

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd
Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China
Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385
No tests were sub-contracted.
FCC Designation No.: CN1164

6.6 Deviation from Standards

None.

6.7 Abnormalities from Standard Conditions

None.

6.8 Other Information Requested by the Customer

None.

6.9 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.3dB (30MHz-1GHz)
		4.5dB (1GHz-12.75GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%

7	DC power voltages	0.026%
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7 Equipment List

RF test system					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Spectrum Analyzer	Keysight	N9010A	MY54510339	02-17-2020	02-16-2021
Signal Generator	Keysight	N5182B	MY53051549	02-17-2020	02-16-2021
Temperature/Humidity Indicator	biaozhi	HM10	1804186	06-29-2020	06-28-2021
High-pass filter	Sinoscite	FL3CX03WG18N M12-0398-002	---	---	---
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	---	---
DC Power	Keysight	E3642A	MY56376072	02-17-2020	02-16-2021
PC-1	Lenovo	R4960d	---	---	---
BT&WI-FI Automatic control	R&S	OSP120	101374	02-17-2020	02-16-2021
RF control unit	JS Tonscend	JS0806-2	158060006	02-17-2020	02-16-2021
BT&WI-FI Automatic test software	JS Tonscend	JS1120-3	---	---	---

Conducted disturbance Test					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Receiver	R&S	ESCI	100435	04-28-2020	04-27-2021
Temperature/Humidity Indicator	Defu	TH128	/	---	---
LISN	R&S	ENV216	100098	03-05-2020	03-04-2021
Barometer	changchun	DYM3	1188	---	---

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05-24-2019	05-23-2022
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	05-16-2020	05-15-2021
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-25-2018	04-24-2021
Receiver	R&S	ESCI7	100938-003	10-16-2020	10-15-2021
Multi device Controller	maturo	NCD/070/107 11112	---	---	---
Temperature/ Humidity Indicator	Shanghai qixiang	HM10	1804298	06-29-2020	06-28-2021
Cable line	Fulai(7M)	SF106	5219/6A	---	---
Cable line	Fulai(6M)	SF106	5220/6A	---	---
Cable line	Fulai(3M)	SF106	5216/6A	---	---
Cable line	Fulai(3M)	SF106	5217/6A	---	---

3M full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
RSE Automatic test software	JS Tonscend	JS36-RSE	10166	---	---
Receiver	Keysight	N9038A	MY57290136	03-05-2020	03-04-2021
Spectrum Analyzer	Keysight	N9020B	MY57111112	03-05-2020	03-04-2021
Spectrum Analyzer	Keysight	N9030B	MY57140871	03-05-2020	03-04-2021
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-25-2018	04-24-2021
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-25-2018	04-24-2021
Horn Antenna	ETS-LINDGREN	3117	00057407	07-10-2018	07-09-2021
Preamplifier	EMCI	EMC184055SE	980597	05-20-2020	05-19-2021
Preamplifier	EMCI	EMC001330	980563	04-22-2020	04-21-2021
Preamplifier	JS Tonscend	980380	EMC051845 SE	01-09-2020	01-08-2021
Temperature/Humidity Indicator	biaozhi	GM1360	EE1186631	04-27-2020	04-26-2021
Fully Anechoic Chamber	TDK	FAC-3	---	01-17-2018	01-16-2021
Filter bank	JS Tonscend	JS0806-F	188060094	04-10-2018	04-09-2021
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	---	---
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	---	---
Cable line	Times	EMC104-NMNM-1000	SN160710	---	---
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	---	---
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	---	---
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	---	---
Cable line	Times	HF160-KMKM-3.00M	393493-0001	---	---

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15C	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Test Results List:

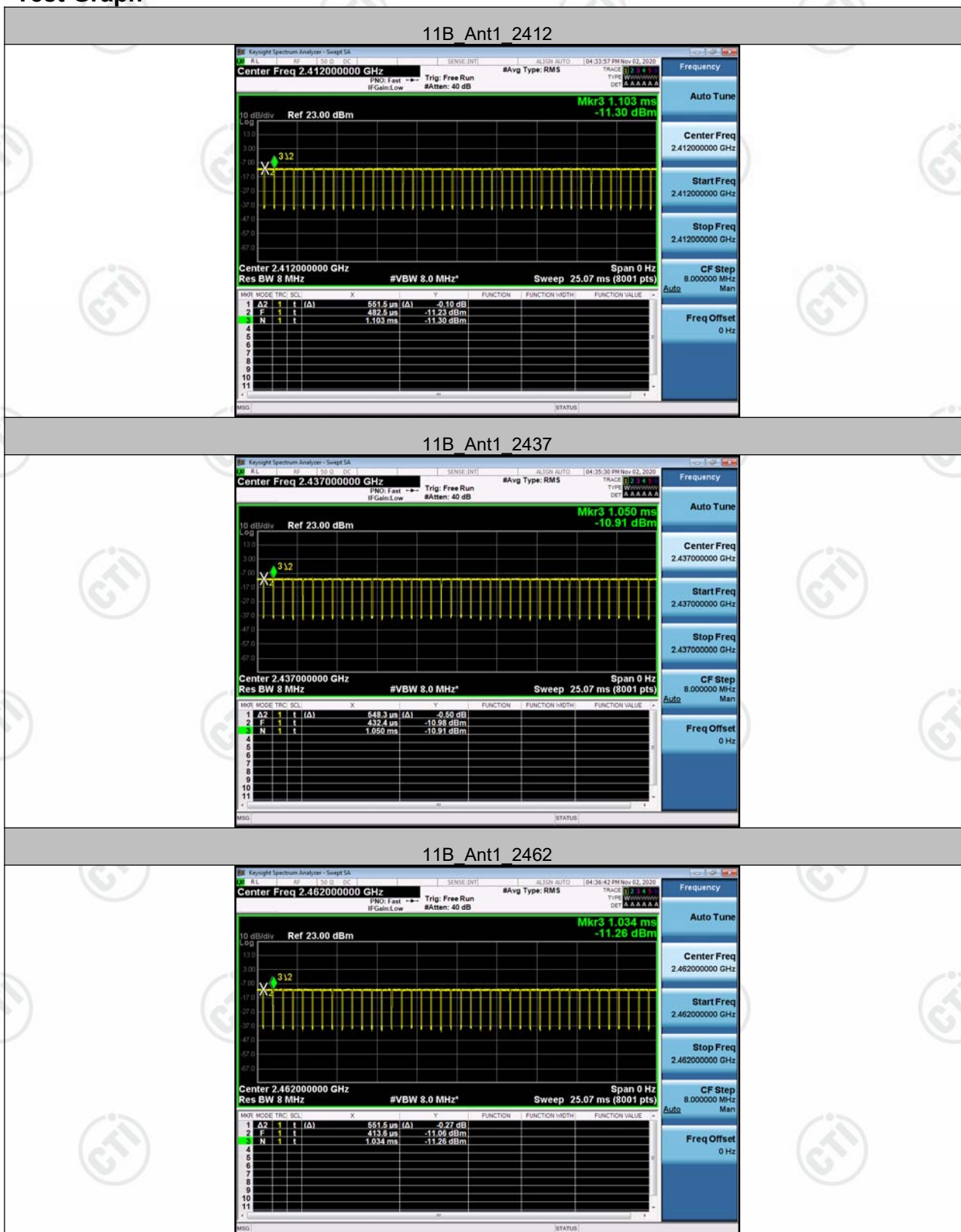
Test Requirement	Test method	Test item	Verdict	Note
Part15C Section 15.247 (b)(3)	ANSI C63.10	Conducted Peak Output Power	PASS	Appendix A)
Part15C Section 15.247 (a)(2)	ANSI C63.10	6dB Occupied Bandwidth	PASS	Appendix B)
Part15C Section 15.247(d)	ANSI C63.10	Band-edge for RF Conducted Emissions	PASS	Appendix C)
Part15C Section 15.247(d)	ANSI C63.10	RF Conducted Spurious Emissions	PASS	Appendix D)
Part15C Section 15.247 (e)	ANSI C63.10	Power Spectral Density	PASS	Appendix E)
Part15C Section 15.203/15.247 (c)	ANSI C63.10	Antenna Requirement	PASS	Appendix F)
Part15C Section 15.207	ANSI C63.10	AC Power Line Conducted Emission	PASS	Appendix G)
Part15C Section 15.205/15.209	ANSI C63.10	Restricted bands around fundamental frequency (Radiated Emission)	PASS	Appendix H)
Part15C Section 15.205/15.209	ANSI C63.10	Radiated Spurious Emissions	PASS	Appendix I)

EUT DUTY CYCLE

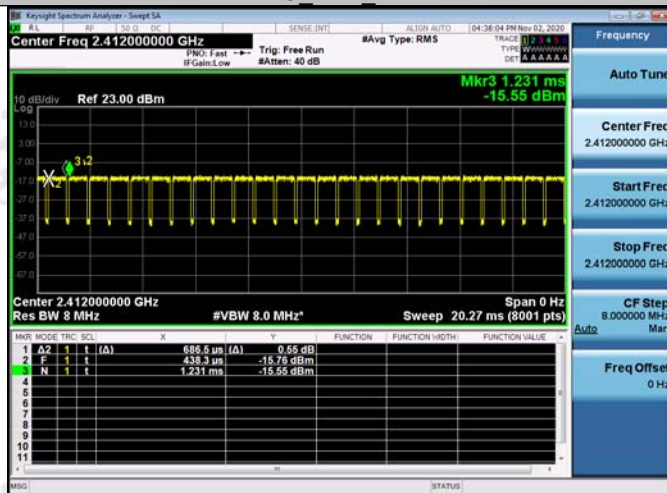
Result Table

Test Mode	Antenna	Channel	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	88.89	---	PASS
	Ant1	2437	88.83	---	PASS
	Ant1	2462	88.89	---	PASS
11G	Ant1	2412	86.58	---	PASS
	Ant1	2437	86.31	---	PASS
	Ant1	2462	86.62	---	PASS

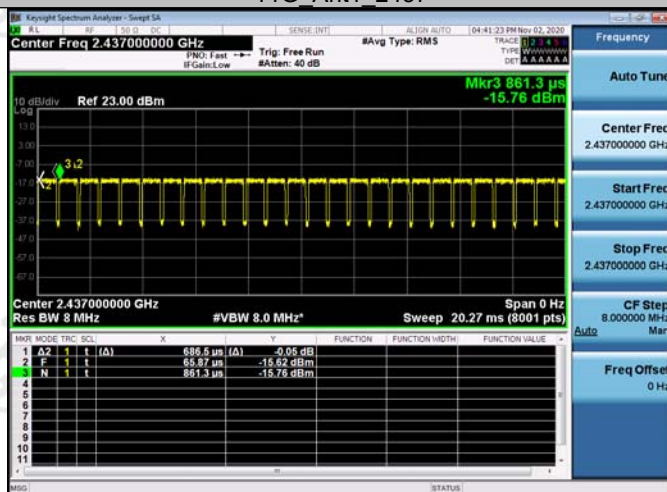
Test Graph



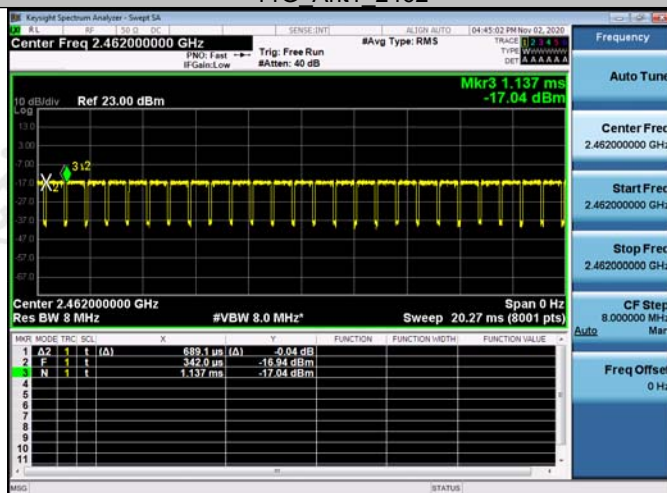
11G Ant1 2412



11G Ant1 2437



11G Ant1 2462



Appendix A): Conducted Peak Output Power

Test Limit

According to §15.247(b)(3),

Peak output power :

For systems using digital modulation in the 2400-2483.5 MHz: 1 Watt(30 dBm), base on the use of antennas with directional gain not exceed 6 dBi. If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	☒ Antenna not exceed 6 dBi : 30dBm ☐ Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6)] ☐ Point-to-point operation :
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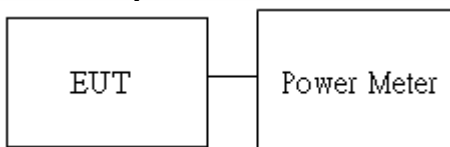
Average output power : For reporting purposes only.

Test Procedure

Test method Refer as KDB 558074 D01.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

Test Setup



Test Result

Mode	Channel	Conducted Peak Output Power [dBm]	Verdict
11B	LCH	15.14	PASS
11B	MCH	15.63	PASS
11B	HCH	15.47	PASS
11G	LCH	14.6	PASS
11G	MCH	14.45	PASS
11G	HCH	14.23	PASS

Appendix B): 6dB Occupied Bandwidth

Test Limit

According to §15.247(a)(2),

6 dB Bandwidth :

Limit	Shall be at least 500kHz
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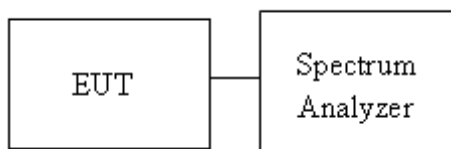
Occupied Bandwidth(99%) : For reporting purposes only.

Test Procedure

Test method Refer as KDB 558074 D01 and ANSI C63.10: 2013 clause 6.9.2,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW =100KHz , VBW = 300KHz and Detector = Peak, to measurement 6dB Bandwidth
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

Test Setup



Test Result

Mode	Channel	6dB Bandwidth [MHz]	99% OBW [MHz]	Verdict
11B	LCH	8.456	11.240	PASS
11B	MCH	8.461	11.201	PASS
11B	HCH	8.462	11.212	PASS
11G	LCH	15.81	16.394	PASS
11G	MCH	15.80	16.375	PASS
11G	HCH	15.80	16.362	PASS

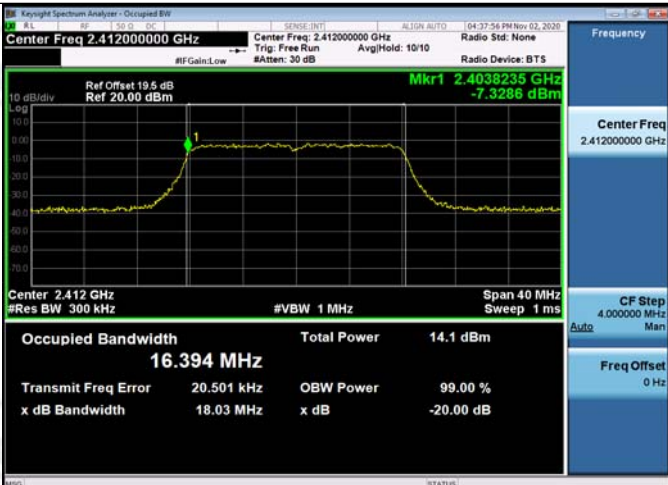
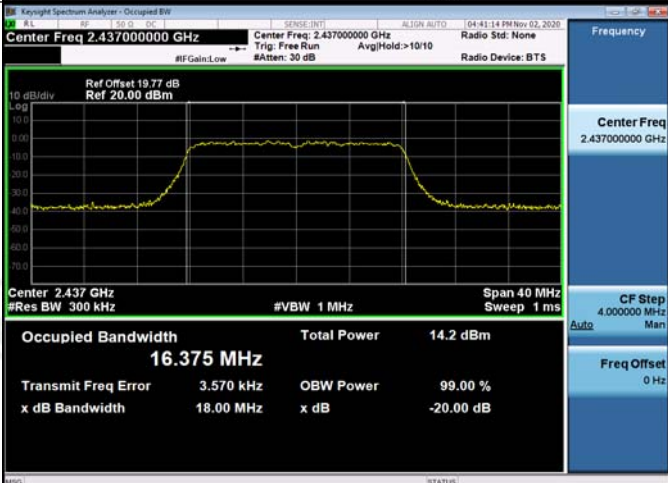
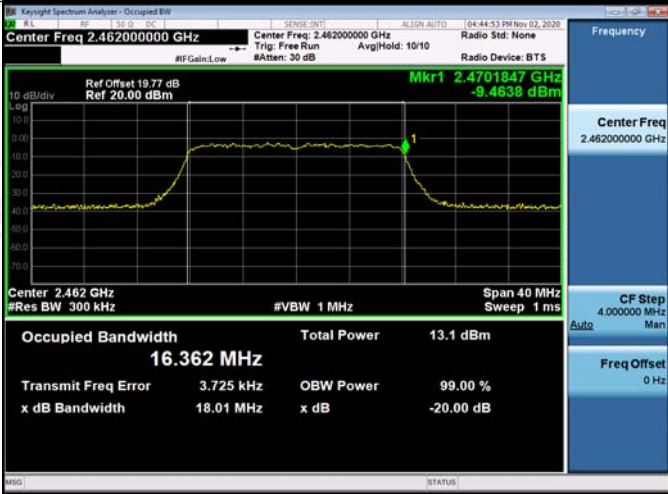
6 dB Bandwidth

Hotline:400-6788-333 www.cti-cert.com E-mail:info@cti-cert.com Complaint call:0755-33681700 Complaint E-mail:complaint@cti-cert.com



Occupied Bandwidth(99%)

Graphs	
11B/LCH	Keygraph Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Center Freq: 2.412000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS Ref Offset 19.5 dB Ref 20.00 dBm Mkr1 2.4064093 GHz -9.5577 dBm Center 2.412 GHz #Res BW 300 kHz #VBW 1 MHz Span 40 MHz Sweep 1 ms Occupied Bandwidth 11.240 MHz Total Power 16.0 dBm Transmit Freq Error 29.286 kHz OBW Power 99.00 % x dB Bandwidth 13.20 MHz x dB -20.00 dB
11B/MCH	Keygraph Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS Ref Offset 19.77 dB Ref 20.00 dBm Center 2.437 GHz #Res BW 300 kHz #VBW 1 MHz Span 40 MHz Sweep 1 ms Occupied Bandwidth 11.201 MHz Total Power 16.5 dBm Transmit Freq Error -3.654 kHz OBW Power 99.00 % x dB Bandwidth 13.15 MHz x dB -20.00 dB
11B/HCH	Keygraph Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS Ref Offset 19.77 dB Ref 20.00 dBm Mkr1 2.4676127 GHz -9.6069 dBm Center 2.462 GHz #Res BW 300 kHz #VBW 1 MHz Span 40 MHz Sweep 1 ms Occupied Bandwidth 11.212 MHz Total Power 16.3 dBm Transmit Freq Error 6.721 kHz OBW Power 99.00 % x dB Bandwidth 13.16 MHz x dB -20.00 dB

11G/LCH	
11G/MCH	
11G/HCH	

Appendix C): Band-edge for RF Conducted Emissions

Test Limit

According to §15.247(d),

In any 100 kHz bandwidth outside the authorized frequency band, Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Test Procedure

Test method Refer as KDB 558074 D01.

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.
2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.
3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Test Setup

