

CTC Laboratories, Inc.

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	FEST REPORT		
Report No	CTC20211289E05		
FCC ID:	2AR24-AIBOX30US		
Applicant:	Shenzhen Absen Optoelectronic C	Co.,Ltd	
Address:	18-20F Building 3A, Cloud Park, Bar Shenzhen, China	ntian, Longgang District,	
Manufacturer:	Shenzhen Absen Optoelectronic Co.	.,Ltd	
Address:	18-20F Building 3A, Cloud Park, Bar Shenzhen, China	ntian, Longgang District,	
Product Name:	LED Multimedia Processor		
Trade Mark······:	/		
Model/Type reference······:	Ai Box3.0 US		
Listed Model(s) ······:	/		
Standard:	FCC CFR Title 47 Part 15 Subpart C Section 15.247		
Date of receipt of test sample:	Aug. 02, 2021		
Date of testing	Aug. 02, 2021 to Aug. 20, 2021		
Date of issue	Aug. 25, 2021		
Result:	PASS		
Compiled by:			
(Printed name+signature)	Lucy Lan	They Tom	
Supervised by:		Miller Ma	
(Printed name+signature)	Miller Ma	NWEY NA	
Approved by:		l	
(Printed name+signature)	Walter Chen	Matter chis	
Testing Laboratory Name:	CTC Laboratories, Inc.		
Address:	1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China		
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reviewer and approver. Any objections must be raised to CTC within 15 days since the date when the report is received. It will not be taken into consideration beyond this limit. The test report merely correspond to the test sample.



Table of Contents

Page

1.	TEST	SUMMARY	3
1	1.1.	Test Standards	3
1	1.2.	REPORT VERSION	3
1	1.3.	TEST DESCRIPTION	3
1	1.4.	TEST FACILITY	
1	1.5.	MEASUREMENT UNCERTAINTY	4
1	1.6.	Environmental Conditions	5
2.	GEN	ERAL INFORMATION	6
2	2.1.	CLIENT INFORMATION	6
2	2.2.	GENERAL DESCRIPTION OF EUT	6
2	2.3.	ACCESSORY EQUIPMENT INFORMATION	
2	2.4.	OPERATION STATE	
2	2.5.	Measurement Instruments List	9
3.	TEST	ITEM AND RESULTS	11
3	3.1.	CONDUCTED EMISSION	11
3	3.2.	RADIATED EMISSION	14
Э	3.3.	BAND EDGE EMISSIONS (RADIATED)	43
Э	3.4.	BAND EDGE AND SPURIOUS EMISSIONS (CONDUCTED)	60
3	3.5.	DTS BANDWIDTH	91
3	3.6.	PEAK OUTPUT POWER	
3	3.7.	POWER SPECTRAL DENSITY	
3	3.8.	DUTY CYCLE	
Э	3.9.	ANTENNA REQUIREMENT	123



1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

RSS 247 Issue 2: Standard Specifications for Frequency Hopping Systems (FHSs) and Digital Transmission Systems (DTSs) Operating in the Bands 902-928MHz, 2400-2483.5MHz and 5725-5850MHz.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report Version

Revised No.	Date of issue	Description
01	Aug 25, 2021	Original

1.3. Test Description

FCC Part 15 Subpart C (15.247) / RSS 247 Issue 2					
Test Item	Standard Section		Recult Test		
rest nem	FCC	IC	Result	Result Engineer	
Antenna Requirement	15.203	/	Pass	Lucy Lan	
Conducted Emission	15.207	RSS-Gen 8.8	Pass	Lucy Lan	
Radiated Band Edge and Spurious Emissions	15.205&15.209& 15.247(d)	RSS 247 5.5	Pass	Lucy Lan	
Conducted Band Edge and Spurious Emissions	15.247(d)	RSS 247 5.5	Pass	Lucy Lan	
6dB Bandwidth	15.247(a)(2)	RSS 247 5.2 (a)	Pass	Lucy Lan	
Conducted Max Output Power	15.247(b)(3)	RSS 247 5.4 (d)	Pass	Lucy Lan	
Power Spectral Density	15.247(e)	RSS 247 5.2 (b)	Pass	Lucy Lan	
Transmitter Radiated Spurious	15.209&15.247(d)	RSS 247 5.5& RSS-Gen 8.9	Pass	Lucy Lan	

Note: The measurement uncertainty is not included in the test result.





1.4. Test Facility

CTC Laboratories, Inc.

Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L5365

CTC Laboratories, Inc. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation. Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 951311, Aug. 26, 2017.

1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties radio equipment characteristics; Part 2" and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.



Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.42 dB	(1)
Transmitter power Radiated	2.14 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(1)
Conducted Emissions 9kHz~30MHz	3.08 dB	(1)
Radiated Emissions 30~1000MHz	4.51 dB	(1)
Radiated Emissions 1~18GHz	5.84 dB	(1)
Radiated Emissions 18~40GHz	6.12 dB	(1)
Occupied Bandwidth		(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

1.6. Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	21°C~27°C
Relative Humidity:	40%~60%
Air Pressure:	101kPa



ΕN

2. GENERAL INFORMATION

2.1. Client Information

Applicant:	Shenzhen Absen Optoelectronic Co.,Ltd
Address:	18-20F Building 3A, Cloud Park, Bantian, Longgang District, Shenzhen, China
Manufacturer:	Shenzhen Absen Optoelectronic Co.,Ltd
Address:	18-20F Building 3A, Cloud Park, Bantian, Longgang District, Shenzhen, China

2.2. General Description of EUT

Product Name:	LED Multimedia Processor
Trade Mark:	/
Model/Type reference:	Ai Box3.0 US
Listed Model(s):	/
Model Difference:	/
Power supply:	100-240V~ 50/60Hz 23W
RF Module Model:	RTL8822BU
Hardware version:	/
Software version:	/
WIFI 802.11b/ g/ n(HT20)/ n(HT40)	
Modulation:	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(BPSK, QPSK, 16QAM, 64QAM)
Operation frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
Channel number:	802.11b/g/n(HT20): 11 Channels 802.11n(HT40): 7 Channels
Channel separation:	5MHz
Antenna 1 or 2 type:	PCB Antenna
Antenna 1 or 2 gain:	5dBi



2.3. Accessory Equipment Information

Equipment Information				
Name	Model	S/N	Manufacturer	
Notebook	X220	/	Lenovo	
Cable Information				
Name	Shielded Type	Ferrite Core	Length	
USB Cable	Unshielded	NO	150cm	
AC Cable	Unshielded	NO	120cm	
Test Software Information				
Name	ne Software version / /			
REALTEK 11ac 8822BU USB WLAN NIC Massproduction Kit	1	/	/	



2.4. Operation State

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing.

Operation Frequency List:

Channel	Frequency (MHz)	
01	2412	
02	2417	
03	2422	
04	2427	
05	2432	
06	2437	
07	2442	
08	2447	
09	2452	
10	2457	
11	2462	

Note: CH 01~CH 11 for 802.11b/g/n(HT20), CH 03~CH 09 for 802.11n(HT40)

Data Rated

Preliminary tests were performed in different data rate, and found which the below bit rate is worst case mode, so only show data which it is a worst case mode.

Mode	Data rate (worst mode)	
802.11b	1Mbps	
802.11g	6Mbps	
802.11n(HT20)	HT-MCS0	
802.11n(HT40)	HT-MCS0	

Test mode

For RF test items:	
The engineering test program was provided and enabled to make EUT continuous transmit.	
For AC power line conducted emissions:	
The EUT was set to connect with the WLAN AP under large package sizes transmission.	
For Radiated spurious emissions test item:	

The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report.



2.5. Measurement Instruments List

Tonscei	Tonscend JS0806-2 Test system								
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until				
1	Spectrum Analyzer	Rohde & Schwarz	FSU26	100105	Dec. 25, 2021				
2	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	101331	Mar. 15, 2022				
3	Spectrum Analyzer	KEYSIGHT	N9020A	100231	Dec. 25, 2021				
4	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 25, 2021				
5	Signal Generator	Agilent	E8257D	MY46521908	Dec. 25, 2021				
6	Power Sensor	Agilent	U2021XA	MY5365004	Dec. 25, 2021				
7	Power Sensor	Agilent	U2021XA	MY5365006	Dec. 25, 2021				
8	Simultaneous Sampling DAQ	Agilent	U2531A	TW54493510	Dec. 25, 2021				
9	Climate Chamber	TABAI	PR-4G	A8708055	Dec. 25, 2021				
10	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 25, 2021				
11	Climate Chamber	ESPEC	MT3065	/	Dec. 25, 2021				
12	300328 v2.2.2 test system	TONSCEND	v2.6	/	/				

Radiate	Radiated Emission and Transmitter spurious emissions									
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until					
1	EMI Test Receiver	Rohde & Schwarz	ESCI	100658	Dec. 25, 2021					
2	High pass filter	micro-tranics	HPM50111	142	Dec. 25, 2021					
3	Log-Bicon Antenna	Schwarzbeck	CBL6141A	4180	Dec. 25, 2021					
4	Ultra-Broadband Antenna	ShwarzBeck	BBHA9170	25841	Dec. 25, 2021					
5	Loop Antenna	LAPLAC	RF300	9138	Dec. 25, 2021					
6	Spectrum Analyzer	Rohde & Schwarz	FSU26	100105	Dec. 25, 2021					
7	Horn Antenna	Schwarzbeck	BBHA 9120D	647	Dec. 25, 2021					
8	Pre-Amplifier	HP	8447D	1937A03050	Dec. 25, 2021					
9	Pre-Amplifier	EMCI	EMC051835	980075	Dec. 25, 2021					
10	Antenna Mast	UC	UC3000	N/A	N/A					
11	Turn Table	UC	UC3000	N/A	N/A					
12	Cable Below 1GHz	Schwarzbeck	AK9515E	33155	Dec. 25, 2021					
13	Cable Above 1GHz	Hubersuhner	SUCOFLEX 102	DA1580	Dec. 25, 2021					
14	Splitter	Mini-Circuit	ZAPD-4	400059	Dec. 25, 2021					
15	6 RF Connection Cable HUBER+SUHNER		RE-7-FL	N/A	Dec. 25, 2021					

CTC Laboratories, Inc.



EN

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16	RF Connection Cable	Chengdu E-Microwave			Dec. 25, 2021
17	High pass filter	Compliance Direction systems	BSU-6	34202	Dec. 25, 2021
18	Attenuator	ttenuator Chengdu E-Microwave			Dec. 25, 2021
19	High and low temperature box	ESPEC	MT3065	12114019	Dec. 25, 2021

Conduc	Conducted Emission									
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until					
1	LISN	R&S	ENV216	101112	Dec. 25, 2021					
2	LISN	R&S	ENV216	101113	Dec. 25, 2021					
3	EMI Test Receiver	R&S	ESCI	100658	Dec. 25, 2021					

Note:1. The Cal. Interval was one year.

2. The cable loss has calculated in test result which connection between each test instruments.



3. TEST ITEM AND RESULTS

3.1. Conducted Emission

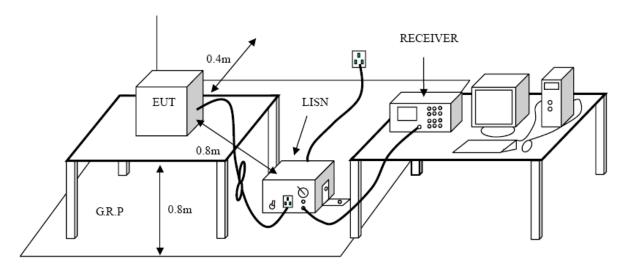
<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.207/ RSS - Gen 8.8:

	Limit (dBuV)				
Frequency range (MHz)	Quasi-peak	Average			
0.15-0.5	66 to 56*	56 to 46*			
0.5-5	56	46			
5-30	60	50			

* Decreases with the logarithm of the frequency.

Test Configuration



Test Procedure

1. The EUT was setup according to ANSI C63.10:2013 requirements.

2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.

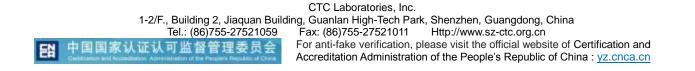
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)

4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

7. During the above scans, the emissions were maximized by cable manipulation.

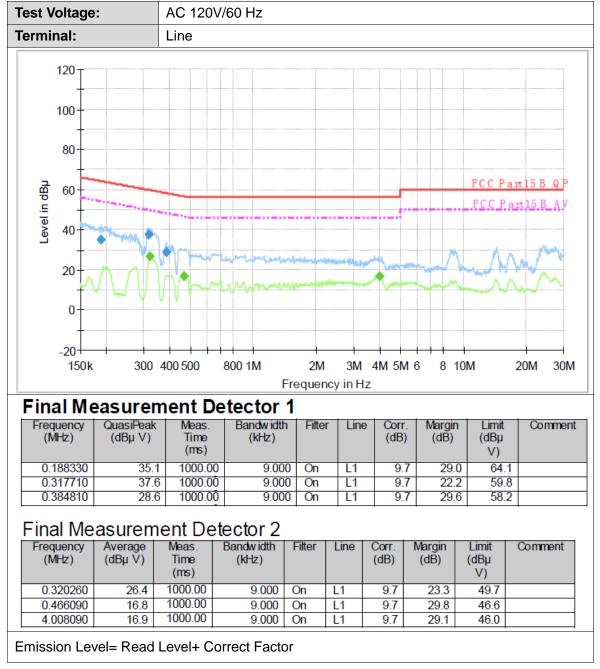




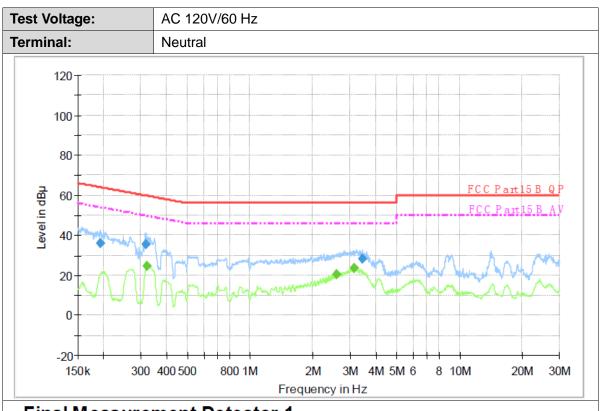
Test Mode:

Please refer to the clause 2.4.

Test Results







Final Measurement Detector 1

	Frequency (MHz)	QuasiPeak (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
Γ	0.192120	36.1	1000.00	9.000	On	Ν	10.0	27.8	63.9	
ſ	0.316440	35.3	1000.00	9.000	On	Ν	10.0	24.5	59.8	
	3.443940	28.2	1000.00	9.000	On	Ν	10.0	27.8	56.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.322820	24.5	1000.00	9.000	On	N	10.0	25.1	49.6	
2.593960	20.6	1000.00	9.000	On	Ν	10.0	25.4	46.0	
3.129300	23.4	1000.00	9.000	On	Ν	10.0	22.6	46.0	

Emission Level= Read Level+ Correct Factor



3.2. Radiated Emission

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.209/ RSS – Gen 8.9:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

	dB(uV/m) (at 3 meters)			
Frequency (MHz)	Peak	Average		
Above 1000	74	54		

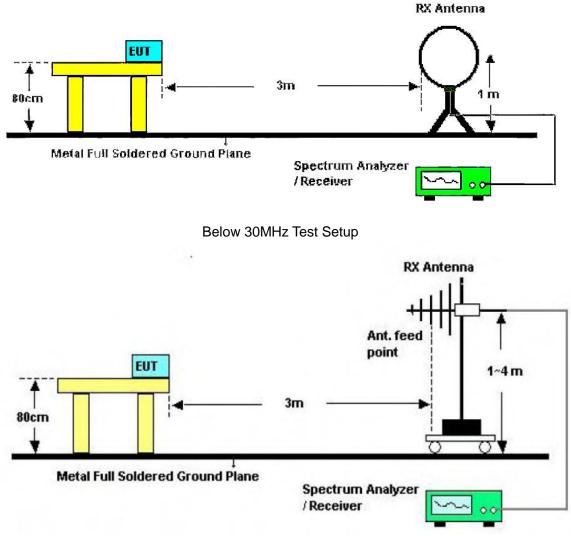
Note:

(1) The tighter limit applies at the band edges.

(2) Emission Level (dBuV/m)=20log Emission Level (uV/m).

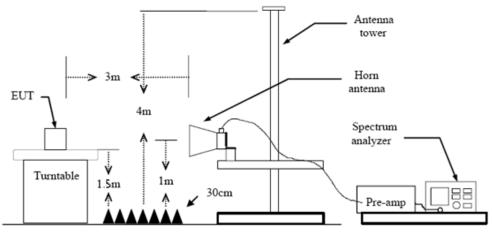
Test Configuration











Above 1GHz Test Setup

Test Procedure

1. The EUT was setup and tested according to ANSI C63.10:2013

2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.

3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.

4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.

5. Set to the maximum power setting and enable the EUT transmit continuously.

- 6. Use the following spectrum analyzer settings
- (1) Span shall wide enough to fully capture the emission being measured;
- (2) Below 1 GHz:

RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

(3) From 1 GHz to 10th harmonic:

RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW≥1/T Peak detector for Average value.

Note 1: For the 1/T& Duty Cycle please refer to clause 3.8 Duty Cycle.

Test Mode

Please refer to the clause 2.4.

<u>Test Result</u>

9 KHz~30 MHz

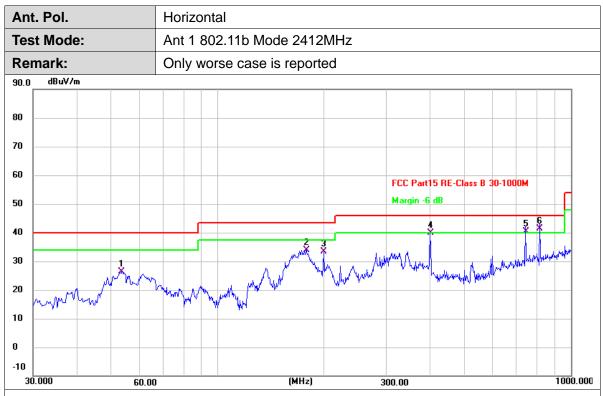
From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Pre-scan all antenna, only show the test data for worse case antenna on the test report.



30MHz-1GHz

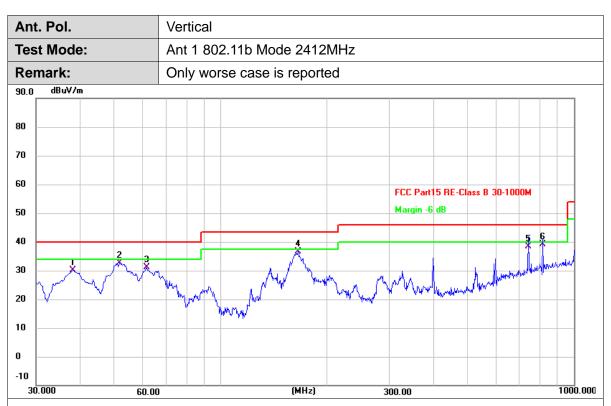


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	53.6033	41.29	-14.93	26.36	40.00	-13.64	QP
2	178.0867	49.89	-15.94	33.95	43.50	-9.55	QP
3	199.7500	51.16	-17.87	33.29	43.50	-10.21	QP
4	400.2167	51.74	-11.84	39.90	46.00	-6.10	QP
5	742.6267	44.33	-3.93	40.40	46.00	-5.60	QP
6 *	816.6700	44.14	-2.64	41.50	46.00	-4.50	QP

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value





No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	38.0833	44.82	-14.62	30.20	40.00	-9.80	QP
2	51.6633	47.47	-14.75	32.72	40.00	-7.28	QP
3	61.6867	46.65	-15.58	31.07	40.00	-8.93	QP
4 *	165.8000	51.34	-14.66	36.68	43.50	-6.82	QP
5	742.3033	42.34	-3.94	38.40	46.00	-7.60	QP
6	816.6700	41.74	-2.64	39.10	46.00	-6.90	QP

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Adobe 1GHz

Ant No.:	Ant 1
Ant. Pol.	Horizontal
Test Mode:	TX B Mode 2412MHz
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4823.974	42.60	3.17	45.77	54.00	-8.23	AVG
2	4823.990	44.62	3.17	47.79	74.00	-26.21	peak

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value

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Ant No.:		Ant 1					
Ant. Pol	-	Vertical					
Test Mo	de:	TX B Mode 2412MHz					
Remark:	:	No report for the emission which more than 20 dB below the prescribed limit.					e
				1			
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4823.940	41.60	3.17	44.77	54.00	-9.23	AVG
2	4824.060	46.18	3.17	49.35	74.00	-24.65	peak
_							poun
Remarks						_	
	(dB/m) = Anter	,	/m)+Cable	Factor (dB)-F	Pre-amplifier	Factor	
viargin	value = Level	-Limit value					



	427111-						
	107MLI-	Horizontal					
	TX B Mode 2437MHz						
No report for the emission which more than 20 dB below the prescribed limit.					е		
		1					
y Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector		
37.97	3.32	41.29	74.00	-32.71	peak		
32.68	3.32	36.00	54.00	-18.00	AVG		
	y Reading (dBuV)) 37.97	y Reading (dBuV) Factor (dB/m) 0 37.97 3.32	y Reading Factor Level (dBuV) (dB/m) (dBuV/m) 0 37.97 3.32 41.29	y Reading Factor Level Limit (dBuV) (dB/m) (dBuV/m) (dBuV/m) 0 37.97 3.32 41.29 74.00	y Reading Factor Level Limit (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) 0 37.97 3.32 41.29 74.00 -32.71		



ctor
'G
ak
/



Ant No.:		Ant 1					
Ant. Pol.		Horizontal					
Test Mod	de:	TX B Mode 2462MHz					
Remark:		No report for prescribed lin		n which more	e than 20 dB	below th	e
	I			1	I	1	
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4923.980	39.19	3.47	42.66	54.00	-11.34	AVG
2	4924.060	44.94	3.47	48.41	74.00	-25.59	peak
	I				1		-
Remarks	:						
	(dB/m) = Anter	•	/m)+Cable	Factor (dB)-F	Pre-amplifier	Factor	
2.Margin	value = Level	-Limit value					



Ant No.:	:	Ant 1						
Ant. Pol	-	Vertical	Vertical					
Test Mo	de:	TX B Mode 2462MHz						
Remark		No report for the emission which more than 20 dB below the prescribed limit.					e	
				1				
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1	4923.638	41.51	3.47	44.98	74.00	-29.02	peak	
2 *	4923.952	30.95	3.47	34.42	54.00	-19.58	AVG	
	1			1	1	1	1	
Remarks								
	(dB/m) = Anter	,	/m)+Cable	Factor (dB)-F	Pre-amplifier	Factor		
2.Margin	value = Level	-Limit value						



Ant No.:		Ant 1					
Ant. Pol	-	Horizontal					
Test Mo	de:	TX G Mode 2	TX G Mode 2412MHz				
Remark	:	No report for prescribed lin		n which more	e than 20 dB	below th	е
	1			1	1		
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4823.802	44.84	3.17	48.01	74.00	-25.99	peak
2 *	4823.972	34.42	3.17	37.59	54.00	-16.41	AVG
Remarks		nno Footor (dD	(m)+Cablo	Factor (dB)_E	Pre-amplifier	Factor	
1 Factor	(dB/m) = Antei	лоа настог гон					



Ant. Pol. Test Mod		Vertical					
est Mod		Vertical					
	le:	TX G Mode 2412MHz					
Remark:		No report for the emission which more than 20 dB below the prescribed limit.					е
				1	1		
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4823.622	44.27	3.17	47.44	74.00	-26.56	peak
2 *	4824.014	32.15	3.17	35.32	54.00	-18.68	AVG
	4823.622	44.27	3.17	47.44	74.00	-26.56	•



Ant No.:	:	Ant 1					
Ant. Pol	•	Horizontal					
Test Mo	de:	TX G Mode 2437MHz					
Remark		No report for prescribed lin		n which more	e than 20 dB	below th	e
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4873.908	41.96	3.32	45.28	74.00	-28.72	peak
2 *	4874.054	31.78	3.32	35.10	54.00	-18.90	AVG
	-				-		
	(dB/m) = Anter	,	/m)+Cable I	Factor (dB)-F	Pre-amplifier	Factor	
2.Margin	value = Level	-Limit value					



Mode 2437MHz							
		Vertical					
sort for the emission wh	TX G Mode 2437MHz						
No report for the emission which more than 20 dB below the prescribed limit.							
5			Detector				
).17 3.32 3	33.49 54.00	-20.51	AVG				
2.11 3.32 4	15.43 74.00	-28.57	peak				
	ading Factor L 3uV) (dB/m) (dE 0.17 3.32 3	ading BuV) Factor Level Limit (dB/m) (dBuV/m) (dBuV/m) 0.17 3.32 33.49 54.00	ading BuV) Factor Level Limit Margin (dB/m) (dBuV/m) (dBuV/m) (dB) 0.17 3.32 33.49 54.00 -20.51				



Ant No) .:	Ant 1					
Ant. P	ol.	Horizontal					
Test M	ode:	TX G Mode 2	2462MHz				
Remar	k:	No report for prescribed lin		n which more	e than 20 dB	below the	e
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4924.002	43.43	3.47	46.90	74.00	-27.10	peak
2 *	4924.026	32.85	3.47	36.32	54.00	-17.68	AVG
						- -	
	or (dB/m) = Ante	,	8/m)+Cable	Factor (dB)-F	Pre-amplifier	Factor	
2.Marg	in value = Level	-Limit value					



						Ant 1	1	Ant No.:
	Vertical							Ant. Pol.
	TX G Mode 2462MHz					de:	Test Mod	
	No report for the emission which more than 20 dB below the prescribed limit.						Remark:	
			1				-	
ctor	n I	(dB)	Limit (dBuV/m)	Level (dBuV/m)	Factor (dB/m)	(dBuV)	Frequency (MHz)	No.
′G	1	-21.21	54.00	32.79	3.47	29.32	4923.944	1 *
ak	5	-29.75	74.00	44.25	3.47	40.78	4924.222	2
/	1	-21.21	54.00	32.79	3.47	29.32	4923.944	1 *



Remark: No report for the emission which more than 20 dB below the prescribed limit. No. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detect 1 * 4823.938 38.41 3.17 41.58 54.00 -12.42 AVG	Test Mode: TX N20 Mode 2412MHz Remark: No report for the emission which more than 20 dB below the prescribed limit. No. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detector	Ant No.:		Ant 1 + Ant 2					
Remark: No report for the emission which more than 20 dB below the prescribed limit. No. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detect 1 * 4823.938 38.41 3.17 41.58 54.00 -12.42 AVG	Remark: No report for the emission which more than 20 dB below the prescribed limit. No. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detector 1 * 4823.938 38.41 3.17 41.58 54.00 -12.42 AVG	Ant. Pol.		Horizontal					
No.Frequency (MHz)Reading (dBuV)Factor (dB/m)Level (dBuV/m)Limit (dBuV/m)Margin (dBuV/m)Detect1 *4823.93838.413.1741.5854.00-12.42AVG	No.Frequency (MHz)Reading (dBuV)Factor (dB/m)Level (dBuV/m)Limit (dBuV/m)Margin (dBuV/m)1 *4823.93838.413.1741.5854.00-12.42AVG	Test Mod	de:	TX N20 Mode	e 2412MHz				
No. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detect 1 * 4823.938 38.41 3.17 41.58 54.00 -12.42 AVG	No. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detector 1 * 4823.938 38.41 3.17 41.58 54.00 -12.42 AVG	Remark:		•		n which more	e than 20 dB	below th	е
No. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detect 1 * 4823.938 38.41 3.17 41.58 54.00 -12.42 AVG	No. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detector 1 * 4823.938 38.41 3.17 41.58 54.00 -12.42 AVG								
No. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detect 1 * 4823.938 38.41 3.17 41.58 54.00 -12.42 AVG	No. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detector 1 * 4823.938 38.41 3.17 41.58 54.00 -12.42 AVG		1			1	1		
		No.						-	Detector
2 4022 040 E0 20 2 17 E2 27 74 00 20 62 mod	2 4823.948 50.20 3.17 53.37 74.00 -20.63 peak	1 *	4823.938	38.41	3.17	41.58	54.00	-12.42	AVG
2 4823.948 50.20 5.17 53.37 74.00 -20.63 pear		2	4823.948	50.20	3.17	53.37	74.00	-20.63	peak
2 4823.948 50.20 5.17 55.57 74.00 -20.65 pear									
Remarks:		I.Factor	(dB/m) = Anter		/m)+Cable	Factor (dB)-F	Pre-amplifier	Factor	
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value	1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor								



					Ant 1 + Ant 2		Ant No.:
					Vertical	-	Ant. Pol.
				e 2412MHz	TX N20 Mode	de:	Test Mod
1	below the	e than 20 dB	n which more		No report for prescribed lin		Remark:
	1		1		1		
Detector	Margin (dB)	Limit (dBuV/m)	Level (dBuV/m)	Factor (dB/m)	Reading (dBuV)	Frequency (MHz)	No.
AVG	-12.16	54.00	41.84	3.17	38.67	4823.830	1 *
peak	-20.48	74.00	53.52	3.17	50.35	4823.964	2
A	(dB) -12.16	(dBuV/m) 54.00	(dBuV/m) 41.84	(dB/m) 3.17	(dBuV) 38.67	(MHz) 4823.830	1 *



Ant No.:	:	Ant 1 + Ant 2					
Ant. Pol	•	Horizontal					
Test Mo	de:	TX N20 Mode	e 2437MHz				
Remark:		No report for prescribed lin		n which more	e than 20 dB	below th	е
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4873.752	39.03	3.32	42.35	54.00	-11.65	AVG
2	4873.796	50.56	3.32	53.88	74.00	-20.12	peak
Remarks 1.Factor	s: (dB/m) = Anter	nna Factor (dB	/m)+Cable	Factor (dB)-F	Pre-amplifier	Factor	
2 Marain	value = Level				-		



Ant No.:		Ant 1 + Ant 2					
Ant. Pol.		Vertical					
Test Mod	de:	TX N20 Mode	e 2437MHz				
Remark:		No report for prescribed lin		n which more	e than 20 dB	below the	e
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4873.890	37.04	3.32	40.36	54.00	-13.64	AVG
2	4874.210	48.85	3.32	52.17	74.00	-21.83	peak
	·	· · · · · · · · · · · · · · · · · · ·	·				·
Remarks	:						
	(dB/m) = Anter	na Factor (dB	/m)+Cable I	-actor (dB)-F	re-amplifier	Factor	



Ant No.:		Ant 1 + Ant 2					
Ant. Pol	•	Horizontal					
Test Mo	de:	TX N20 Mode	e 2462MHz				
Remark:		No report for prescribed lin		n which more	e than 20 dB	below th	e
				1			
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4923.844	36.55	3.47	40.02	54.00	-13.98	AVG
2	4923.946	48.16	3.47	51.63	74.00	-22.37	peak
	1			1	I	I	
	(dB/m) = Antei	· ·	/m)+Cable	Factor (dB)-F	Pre-amplifier	Factor	
2.Margin	value = Level	-Limit value					



Remark: No report for the emission which more than 20 dB below the prescribed limit. No Frequency Reading Factor Level Limit Margin Determination
prescribed limit.
No Dete
No Dete
No Dete
1 * 4823.974 42.60 3.17 45.77 54.00 -8.23 AV
2 4823.990 44.62 3.17 47.79 74.00 -26.21 pea



an 20 dB below th	10
an 20 dB below th	ıe
an 20 dB below th	ne
Limit Margin BuV/m) (dB)	Detector
74.00 -24.48	peak
54.00 -15.51	AVG
	3uV/m) (dB) 74.00 -24.48



Ant No.:		Ant 1 + Ant 2					
Ant. Pol		Vertical					
Test Mo	de:	TX N40 Mode	e 2422MHz				
Remark	:	No report for prescribed lin		n which more	e than 20 dB	below the	e
	I			1	I		
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	4844.088	34.95	3.23	38.18	54.00	-15.82	AVG
2	4844.480	46.15	3.23	49.38	74.00	-24.62	peak
Remarks 1.Factor	s: (dB/m) = Antei	nna Factor (dB	/m)+Cable I	Factor (dB)-F	Pre-amplifier	Factor	
2.Margin	value = Level	-Limit value			-		



Ant No.:	:	Ant 1 + Ant 2						
Ant. Pol		Horizontal						
Test Mo	de:	TX N40 Mode	e 2437MHz					
Remark	:	No report for the emission which more than 20 dB below the prescribed limit.						
	1			1				
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1	4873.464	47.71	3.32	51.03	74.00	-22.97	peak	
2 *	4873.856	35.53	3.32	38.85	54.00	-15.15	AVG	
2	4873.890	35.53	3.32	36.65	54.00	-15.15	AVG	
	s: (dB/m) = Antei n value = Level	•	/m)+Cable	Factor (dB)-F	Pre-amplifier	Factor		



Ant No.:	:	Ant 1 + Ant 2					
Ant. Pol	•	Vertical					
Test Mo	de:	TX N40 Mode	e 2437MHz				
Remark	-	e than 20 dB	below the	e			
				1	1		
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1 *	4873.436	33.64	3.32	36.96	54.00	-17.04	AVG
2	4874.956	46.30	3.32	49.62	74.00	-24.38	peak
2	4874.950	46.30	3.32	49.62	74.00	-24.38	реак
Remarks							
	(dB/m) = Anter	,	/m)+Cable	Factor (dB)-F	Pre-amplifier	Factor	
2.Margin	value = Level	-Limit value					



Ant No.: Ant 1 + Ant 2							
	Hor	izontal					
le:	TX I	N40 Mode 24	52MHz				
			emission whic	ch more than 2	20 dB below th	ie	
	су	Reading	Factor		Limit	Margin	
		(авиу)	(ab/m)	(abuv/m)	(abuv/m)	(dB)	
4903.52	2	45.40	3.40	48.80	74.00	-25.20	
4903.95	0	33.91	3.40	37.31	54.00	-16.69	
· /		· · · ·	Cable Factor	r (dB)-Pre-amp	olifier Factor		
	Frequence (MHz) 4903.52 4903.95	Hor le: TX No pres Frequency (MHz) 4903.522 4903.950	Horizontal He: TX N40 Mode 244 No report for the oprescribed limit. Frequency (MHz) Reading (dBuV) 4903.522 45.40 4903.950 33.91	Horizontal He: TX N40 Mode 2452MHz No report for the emission which prescribed limit. Frequency (MHz) Reading (dBuV) Factor (dB/m) 4903.522 45.40 3.40 4903.950 33.91 3.40 GB/m) = Antenna Factor (dB/m)+Cable Factor	Horizontal Ie: TX N40 Mode 2452MHz No report for the emission which more than 2 prescribed limit. Frequency (MHz) Reading (dBuV) (MHz) (dBuV) 4903.522 45.40 33.91 3.40 4903.950 33.91 3.40 37.31	Horizontal Ie: TX N40 Mode 2452MHz No report for the emission which more than 20 dB below th prescribed limit. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) 4903.522 45.40 3.40 48.80 74.00 4903.950 33.91 3.40 37.31 54.00	



	Ant 1 + Ant 2							
	Vertical							
le:	TX N40 Mode	e 2452MHz						
	No report for the emission which more than 20 dB below the prescribed limit.							
			1	1	1			
Frequency (MHz)	Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector		
4903.956	46.22	3.40	49.62	74.00	-24.38	peak		
4904.436	33.56	3.40	36.96	54.00	-17.04	AVG		
: (dD/ma) A rate m					. To star			
· /	· ·	sim)+Cable	Factor (dB)-H	-re-amplifier	Factor			
	le: Frequency (MHz) 4903.956 4904.436	Ie: TX N40 Model No report for prescribed line Frequency (MHz) Reading (dBuV) 4903.956 46.22 4904.436 33.56	Ie: TX N40 Mode 2452MHz No report for the emissio prescribed limit. Frequency (MHz) Reading (dBuV) Factor (dB/m) 4903.956 46.22 3.40 4904.436 33.56 3.40	Ie: TX N40 Mode 2452MHz No report for the emission which more prescribed limit. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) 4903.956 46.22 3.40 49.62 4904.436 33.56 3.40 36.96	Ie: TX N40 Mode 2452MHz No report for the emission which more than 20 dE prescribed limit. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) 4903.956 46.22 3.40 49.62 74.00 4904.436 33.56 3.40 36.96 54.00	Ie: TX N40 Mode 2452MHz No report for the emission which more than 20 dB below th prescribed limit. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) 4903.956 46.22 3.40 49.62 74.00 -24.38 4904.436 33.56 3.40 36.96 54.00 -17.04		



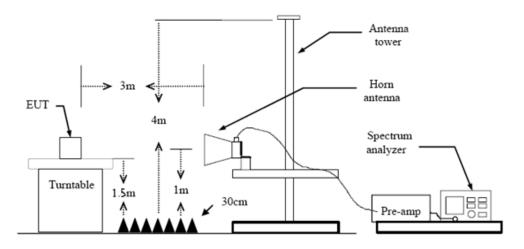
3.3. Band Edge Emissions (Radiated)

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d)/ RSS 247 5.5:

Restricted Frequency Band	(dBuV/m)(at 3m)				
(MHz)	Peak	Average			
2310 ~2390	74	54			
2483.5 ~2500	74	54			

Test Configuration



Test Procedure

- 1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
- 2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
- 4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
- 5. The receiver set as follow:

RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.7 Duty Cycle.

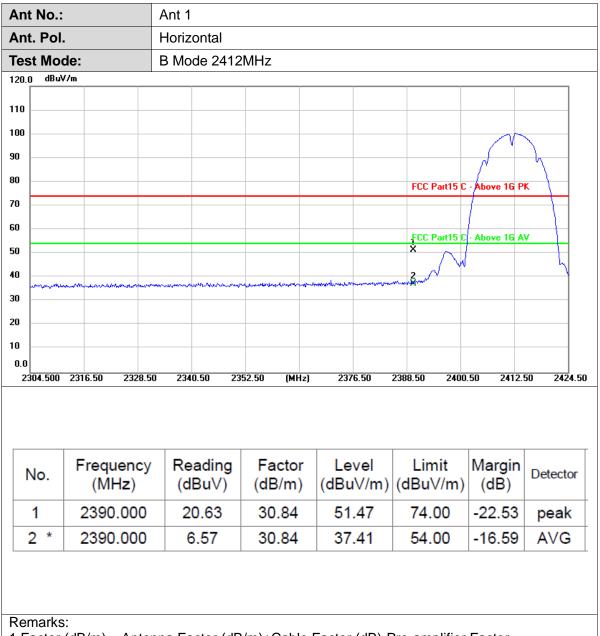
Test Mode

Please refer to the clause 2.4.



Test Results

Pre-scan all antenna, only show the test data for worse case antenna on the test report.





nt No.:	:	Ant 1					
nt. Pol	l .	Vertical					
est Mo	de:	B Mode 2412	2MHz				
0.0 dBu	V/m						
o							
						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
						- A - '	h
					FCC Part15 C	- Above 1G P	K \
					FCC Part15 C	- Above 1G A	<del>, }</del>
					X		
					2	N	
and marked and	were and the second	underhalter meren merelinderhansent	manaland terretering to start a	. Marcine and the or	apart and the same		
.0							
.0 2302.800	2314.80 2326.	80 2338.80 23	350.80 (MHz)	2374.80	2386.80 2398.	80 2410.5	30 2422.5
No.	Frequency (MHz)	y Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	18.78	30.84	49.62	74.00	-24.38	peak
2 *	2390.000	7.63	30.84	38.47	54.00	-15.53	AVG

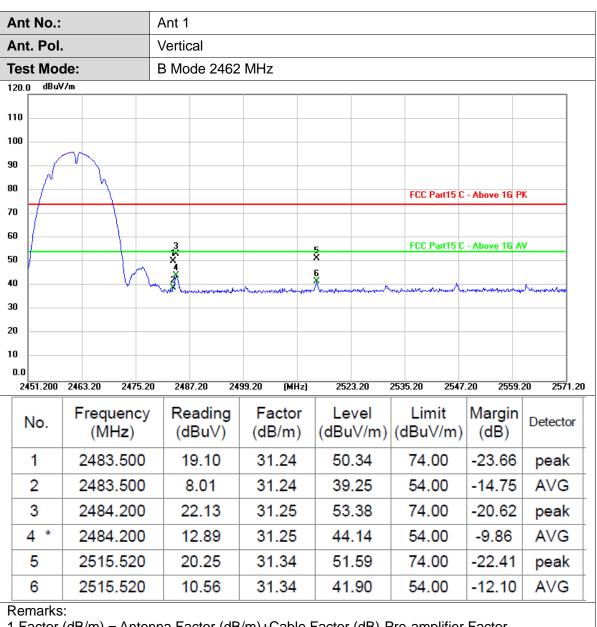


		Ant 1								
nt. Pol		Horizo	ntal							
est Mo	de:	B Mod	le 2462 Mł	Ηz						
20.0 dBu\	//m									
									- Above 16 - Above 16	
1 1 1		2			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
).0 2450.600	2462.60 2474	.60 2486.	60 2498.60	) (MHz)	2522	2.60	2534.60	2546.	60 255	8.60 2570.6
No.	Frequenc (MHz)		<b>u</b>	Factor dB/m)	Lev (dBu)		Limi (dBuV/	I	Margir (dB)	Detector
No.		(dE	BuV) (α			V/m)		/m)		Detector

2.Margin value = Level -Limit value

EN







Ant	No.:			Ant 1										
Ant	. Pol			Horiz	ontal									
Tes	t Mo	de:		G Mo	de 24	12MHz								
120.0	) dBu\	//m											Î	
110														
100														
90												~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
80														
70										FCC	Part15 C	- Above 10	i PK	
										-				
60										× _{FCC}	Part 15 C	- Above 10	AV	
50										2				
40	w.~	w.e.m.	manna	whenter	n whether	nenestration		www.wara	washerstowned	have the second s				
30														
20														
10														
0.0 23	05.800	2317.80	2329.8	0 234	1.80	2353.80	(MHz)	237	7.80	2389.80	2401	.80 24	13.80	2425.8
												1		
1	۷o.		uency Hz)		ading BuV)		actor B/m)	1	vel V/m)	Lin (dBu		Margi (dB)	n _{De}	etector
	1	2390	0.000	2	7.69	30	0.84	58	.53	74.	00	-15.4	7 p	beak
	2 *	2390	0.000	1	1.01	30	0.84	41	.85	54.	00	-12.1	5 A	٨VG
Por										-				



Ant No.:	Ant 1					
Ant. Pol.	Vertical					
Test Mode:	G Mode 241	2MHz				
120.0 dBuV/m			1		ĺ	
110						
100						
90						
80						
70				FCC Part15 C	Above 1G P	K
60				1	/	
50				1 ¥CC Part15 C	- Above 1G A	<u>v \</u>
40				2 million		
30	-university of the section of the se	week mange - when the	warden	and the second second		
20						
10						
0.0						
	28.60 2340.60 2	2352.60 (MHz)	2376.60	2388.60 2400.	.60 2412.	60 2424.60
No. Frequer (MHz)		Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 2390.00	0 26.24	30.84	57.08	74.00	-16.92	peak
2 * 2390.00	0 8.47	30.84	39.31	54.00	-14.69	AVG
Remarks:						



	Ant 1							
	Horizonta	d						
e:	G Mode 2	2462MHz						
'n								
				FCC Part15 C	- Above 1G P	۲K		
	1							
-	×							
	2			FCC Part15 C	- Above 1G A	<u>.v</u>		
	×							
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2462.00 2474.	00 2486.00	2498.00 (MHz)	2522.00	2534.00 2546	.00 2558.	00 2570.0		
Frequency (MHz)		-	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector		
2483.500	32.93	3 31.24	64.17	74.00	-9.83	peak		
2483.500	15.58	3 31.24	46.82	54.00	-7.18	AVG		
	m 2462.00 2474.0 Frequency	m 1 1 1 1 1 2 2 2 4 62.00 2474.00 2486.00 Frequency (MHz) Readin (dBu/	m	m	m	m FCC Part15 C - Above 16 P FCC Part15 C - Above 16 P FCC Part15 C - Above 16 A FCC Part15 C - Abo		

2.Margin value = Level -Limit value

ΕN



Ant No.:	:		Ant 1										
Ant. Pol			Vertic	cal									
Test Mo	de:		G Mo	de 246	62MHz								-
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	2463.20	2475.20	248	7.20 2	2499.20	(MHz)	252	3.20	2535.2	0 25	47.20 2	559.20	257
0.0 2451.200	2463.20	2475.20	248	7.20	2499.20	(MHz)	252	3.20	2535.2	0 25	47.20 2	559.20	25
No.	Freque	-		ading	1	ctor		vel		imit	Marg		ecto

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.500	24.53	31.24	55.77	74.00	-18.23	peak
2	2483.500	10.19	31.24	41.43	54.00	-12.57	AVG
3	2484.320	23.24	31.25	54.49	74.00	-19.51	peak
4 *	2484.320	13.51	31.25	44.76	54.00	-9.24	AVG
5	2515.520	21.68	31.34	53.02	74.00	-20.98	peak
6	2515.520	9.98	31.34	41.32	54.00	-12.68	AVG



Ant	No.:			Ant 1	+ An	t 2									
Ant.	Pol.			Horiz	ontal										
Test	Мос	de:		N(HT	[−] 20) N	lode	e 2412	2MHz							
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100 -															
90 -															_
80											FCC	Part15 C	- Above 16	PK	$\rightarrow$
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60 -											FCC	Part15 C	- Above 16	AV	-+
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20															
10 -															
0.0	4.000	2316.00	2328.0	0 234	0.00	2352	2.00	(MHz)	237	6.00	2388.00	2400	.00 241	2.00	2424.00
N	lo.	Frequ (M	uency Hz)		eadin IBuV)		Fac (dB/			vel IV/m)	Lir (dBu		Margii (dB)	n De	etector
1	1	2390	0.000	2	0.92		30.	84	51	.76	74	00	-22.24	1   r	beak
2	*	2390	0.000		7.52		30.	84	38	.36	54	00	-15.64	1 /	AVG
Rem															
		(dB/m) =	= Ante	nna Fa	actor (	dB/	m)+C	able I	actor	(dB)-F	Pre-am	plifier	Factor		

2.Margin value = Level -Limit value

ΕN



Ant N	No.:			A	nt 1	+ A	nt 2												
Ant.	Pol.			V	'ertic	cal													
Test	Мос	le:		Ν	I(HT	20)	Мос	le 24	12M	Hz									
120.0	dBu¥	/m																	1
110 _																			
100																			
90 -																			
80														CC Part	15 0	- Above 16	DV		
70													-	UL Part	19 0	- ADOVE TO			1
60																			
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10																			
0.0																			
2305	i.200	2317.20	2329	.20	234	1.20	23	53.20	(MI	Hz)	237	7.20	2389.	20 2	2401	.20 241	3.20	24	25.20
					_														
No	<b>D</b> .	Frequ (M	uenc Hz)	У		adir Bu∖			acto 3/m			vel V/m)		Limit BuV/r		Margii (dB)		Detect	or
1		2390	0.000	)	1	9.65	5	30	).84		50	.49	7	74.00		-23.51	1	peal	<b>&lt;</b>
2	*	2390	0.000	)	6	6.41		30	0.84		37	.25	5	54.00	)	-16.75	5	AVG	;
Pom																			



nt No.:		Ant 1 + Ant	2				
nt. Pol	ı	Horizontal					
est Mo	de:	N(HT20) M	ode 2462MHz				
20.0 dBu\	//m						
		1 1 2				- Above 1G P	
.0 2445.200	2457.20 2469	20 2481.20	2493.20 (MHz)	2517.20	2529.20 2541	.20 2553.	20 2565.
No.	Frequenc (MHz)	y Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
No. 1		(dBuV)					Detector peak



nt No.:	:		Ant 1	+ Ant 2	2							
nt. Pol	•		Vertic	al								
est Mo	de:		N(HT	20) Mo	de 2462	MHz						
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									FCC	Part15 C	- Above 1G	РК
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2448.800	2460.80	2472.8	0 2484	1.80 Z	496.80	(MHz)	252	0.80	2532.80	2544	.80 255	6.80     2568.
No.	Frequ (MI	-		ading BuV)	Fact (dB/r			vel V/m)	Lin (dBu\		Margir (dB)	Detector
1	2483	.500	28	3.92	31.2	24	60	.16	74.	00	-13.84	peak
2 *	2483	.500	1'	1.83	31.2	24	43	.07	54.	00	-10.93	AVG
							-		-			

ΕN



•	( NI -							
	t No.:		Ant 1 + Ant 2					
	t. Pol		Horizontal					
Те	st Mo		N(HT40) Mod	de 2422MHz				
120	.0 dBu\	//m	1					
110								
100								
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80						FCC Part15 C	-Above 1G P	K
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60						FCC Part15 C	- Above 1G A	v (
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40					an strangent			¥
30	and the second s	the second s	for a factor of the second	and the second				
20								
10								
0.0	)							
2	298.250	2313.25 2328.2	5 2343.25 23	58.25 (MHz)	2388.25	2403.25 2418	.25 2433.	25 2448.25
_								
	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	2390.000	17.02	30.84	47.86	74.00	-26.14	peak
	2 *	2390.000	8.94	30.84	39.78	54.00	-14.22	AVG



Ar	t No.:		Ant 1 + Ant 2					
	t. Pol	•	Vertical					
Те	st Mo	de:	N(HT40) Mod	de 2422MHz	<u>.</u>			
120	.0 dBu\	//m				1		
110								
100								
90								
80								
70						FLL Part 15 L	- Above 1G P	K
60								
50					1 X	FCC Part15 C	- Above 1G A	<u>×                                    </u>
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20								
10								
0.0	b							
2	296.750	2311.75 2326.7	5 2341.75 23	856.75 (MHz)	2386.75	2401.75 2416	.75 2431.	75 2446.75
_								
	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Γ	1	2390.000	21.10	30.84	51.94	74.00	-22.06	peak
	2 *	2390.000	8.31	30.84	39.15	54.00	-14.85	AVG



nt No.:		Ant	1 + A	nt 2									
nt. Pol.		Hor	izonta	al									
est Mod	de:	N(F	IT40)	Мос	le 2452	2MHz							
0.0 dBuV	//m								1	1			_
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	Ŷ		ļ —						FCC	Part15 0	- Above 1G	PK	
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			1	1 X					FCC	Part15 (- Above 1G	AV	
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.0 2427.250	2442.25 2457	.25 2	472.25	24	87.25	(MHz)	251	7.25	2532.25	2547	7.25 256	2.25	2577.
No.	Frequenc (MHz)		leadi dBu∖	-	Fac (dB/		1	vel V/m)		mit IV/m)	Margir (dB)	Det	tector
1	2483.50	D	27.1	4	31.	24	58	.38	74	.00	-15.62	pe	eak
2 *	2483.50	5	11.8	9	31.	24	43	.13	54	.00	-10.87	Α	VG



nt No.:	:	A	Ant 1 +	- Ant 2							
nt. Pol	•	١	/ertica	l							
est Mo	de:	١	N(HT4	0) Moc	de 2452N	1Hz					
20.0 dBu ¹	V/m				1				1		
0											
~			7								
	Y								FCC Part15	C - Above 1G	РК
						-					
4			\mathbf{h}	1 X					FCC Part15	C - Above 1G	AV
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					Mulling planaulen	m	manna	munad	when the man and	water the strategy and	ad market and the second
.0 2431.000	2446.00	2461.00	2476.0	00 24	91.00 (M	Hz)	252	1.00	2536.00 255	1.00 256	6.00 2581.
No.	Freque	-		ding	Facto		Le		Limit	Margin	Detector
	(MH	Z)	dB (dB	uV)	(dB/m)	(dBu	V/m)	(dBuV/m)) (dB)	
						.	50	~ 1	74.00	17 20	
1	2483.	500	25	.37	31.24		56.	.61	74.00	-17.39	peak

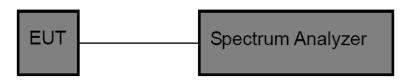


3.4. Band edge and Spurious Emissions (Conducted)

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Test Configuration



Test Procedure

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- Use the following spectrum analyzer settings: RBW = 100 kHz, VBW ≥ RBW, scan up through 10th harmonic.
- Sweep = auto, Detector function = peak, Trace = max hold
- 4. Measure and record the results in the test report.

Test Mode

Please refer to the clause 2.4.

Test Results



(1) Band edge Conducted Test



CTC Laboratories, Inc.



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1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China Tel.: (86)755-27521059 Fax: (86)755-27521011 Http://www.sz-ctc.org.cn For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : yz.cnca.cn



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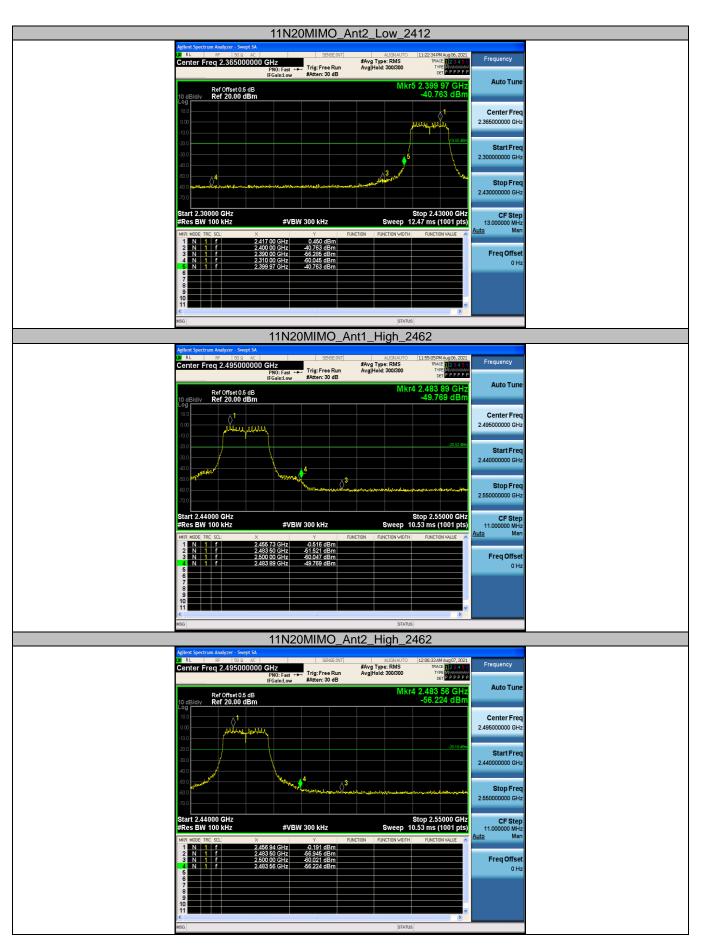
CTC Laboratories, Inc. 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China Tel.: (86)755-27521059 中国国家认证认可监督管理委员会 中国国家认证认可监督管理委员会







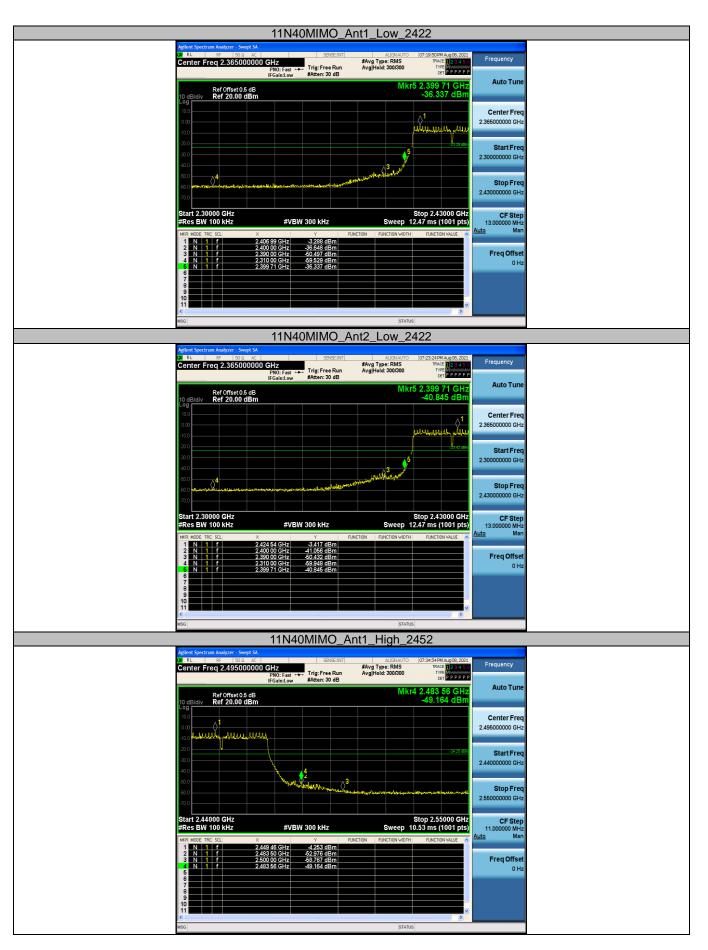
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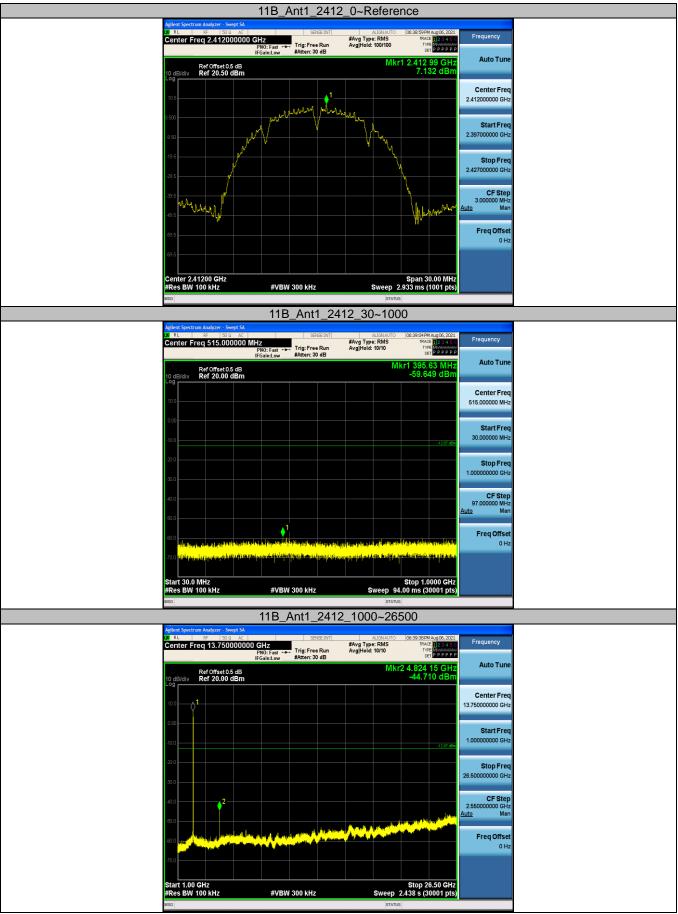
CTC Laboratories, Inc. 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China Tel.: (86)755-27521059 中国国家认证认可监督管理委员会 中国国家认证认可监督管理委员会



	11N40MIMO_/	Ant2_High_2452		
Agilent Spectrum Analyzer Sympt &A 2) RL = 520 (530 a AG Center Freq 2.495000000		#Avg Type: RMS TRACE 233496 Avg Hold: 300/300 TYPE M DET PPPPP	Frequency Auto Tune	
Ref Offset 0.5 dB 10 dB/div Ref 20.00 dBm		Mkr4 2.486 31 GHz -47.021 dBm	Auto Tulle	
100 000 100 below 1	hth,		Center Freq 2.495000000 GHz	
-20.0	24 ⁴	-23 40.8%	Start Freq 2.44000000 GHz	
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Start 2.44000 GHz #Res BW 100 kHz	#VBW 300 kHz	Stop 2.55000 GHz Sweep 10.53 ms (1001 pts)	CF Step 11.000000 MHz Auto Man	
2 N 1 F 2.4 3 N 1 F 2.5	455 73 GHz 3399 dBm 483 50 GHz 50 845 dBm 483 50 00 GHz 57 009 dBm 486 31 GHz 47 021 dBm	RUNCTION RUNCTION WIDTH PUNCTION VALUE	Auto Man Freq Offset 0 Hz	
KG	ш	STATUS		



(2) Conducted Spurious Emissions Test



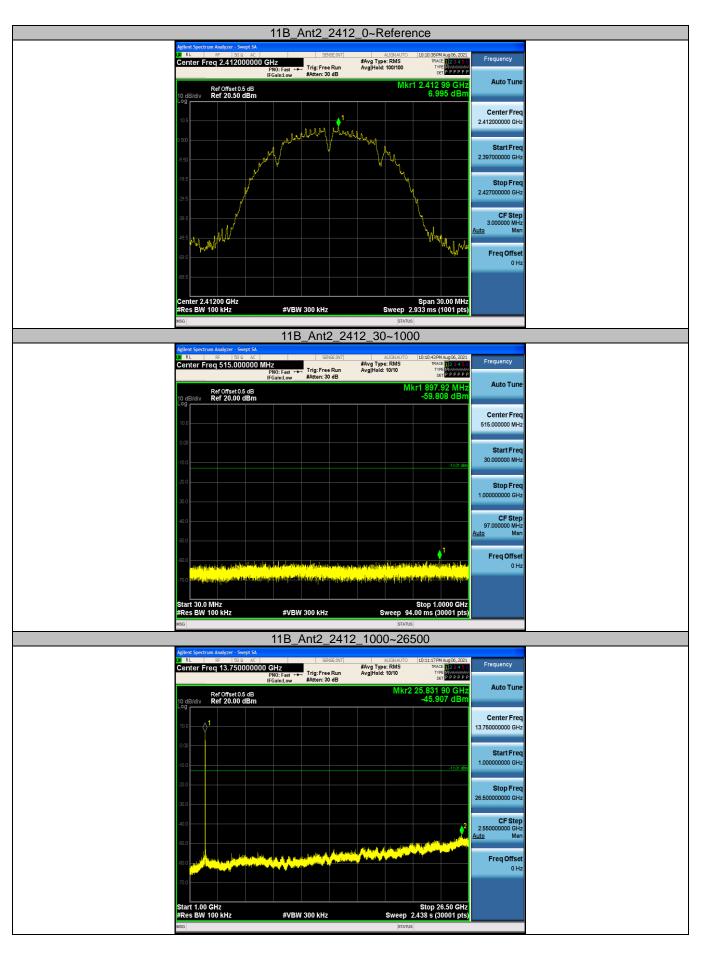
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