

CTC Laboratories, Inc.

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Г	EST REPORT			
Report No. ·····:	CTC20192260E01			
FCC ID:	2AC88-GLMU19A02			
Applicant······:	HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED			
Address······	Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, Hong Kong, China, China			
Manufacturer	HONGKONG UCLOUDLINK NETWORK TECHNOLOGY			
Address······	Suite 603, 6/F, Laws Commercial Plaz Road, Kowloon, Hong Kong, China	a, 788 Cheung Sha Wan		
Product Name······	4G Wireless Data Terminal			
Trade Mark······	GlocalMe			
Model/Type reference······:	GLMU19A02			
Listed Model(s) ······:				
Standard······:	·: FCC CFR Title 47 Part 15 Subpart C Section 15.247			
Date of receipt of test sample:	Nov. 25, 2019			
Date of testing	Nov. 26, 2019 to Dec. 02, 2019			
Date of issue	Dec. 15, 2019			
Result:	PASS			
Compiled by:		That T'		
(Printed name+signature)	Torny Fang	lorny Fang Tois shang		
Supervised by:		7-in share		
(Printed name+signature)	Eric Zhang	porator		
Approved by:		CTC		
(Printed name+signature)	Walter Chen			
Testing Laboratory Name:	: CTC Laboratories, Inc.			
Address	2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan			
	High-Tech Park, Longhua District, Shenzhen, Guangdong, China			
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should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by CTC. The test results in the report only apply to the tested sample. The test report shall be invalid without all the signatures of testing engineers, 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.



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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.

<u>RSS 247 Issue 2:</u> 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	Dec. 15, 2019	Original



1.3. Test Description

FCC Part 15 Subpart C (15.247) / RSS 247 Issue 2					
Test Item	Standard	Section	Result	Test	
rest item	FCC	IC	Result	Engineer	
Antenna Requirement	15.203	/	Pass	Lucy Lan	
Conducted Emission	15.207	RSS-Gen 8.8	Pass	Jon Huang	
Band Edge 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

Address of the report laboratory

CTC Laboratories, Inc.

Add: 2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, 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: 2005 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 th e 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 Indus try 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 (F CC) Federal Communications Commission. The acceptance letter from the FCC is maintained inour 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 TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile 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.

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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	3.20 dB	(1)
Radiated Emissions 30~1000MHz	4.70 dB	(1)
Radiated Emissions 1~18GHz	5.00 dB	(1)
Radiated Emissions 18~40GHz	5.54 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:	20°C-25°C
Relative Humidity:	50 %-55 %
Air Pressure:	101.2kPa

2. GENERAL INFORMATION

2.1. Client Information

Applicant:	HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED
Address:	Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, Hong Kong, China
Manufacturer:	HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED
Address:	Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, Hong Kong, China
Factory:	Shenzhen uCloudlink Network Technology Co., Ltd
Address:	3rd Floor, A part of Building 1, Shenzhen Software Industry Base, Nanshan District Xuefu Road, 518057 Shenzhen City, Guangdong, China

2.2. General Description of EUT

4G Wireless Data Terminal				
GlocalMe				
GLMU19A02				
N/A				
N/A				
3.8Vdc 3000mAh,11.40Wh from Li-ion Battery				
U3_MAINBOARD_VA				
U3Q19_TSV3.2.001.001.191204				
WIFI 802.11b/ g/ n(HT20)/ n(HT40)				
802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(BPSK,QPSK,16QAM,64QAM)				
802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz				
802.11b/g/n(HT20):11channels 802.11n(HT40):7channels				
5MHz				
PIFA Antenna				
2.2dBi				

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2.3. 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)

Test mode

For RF test items:

The engineering test program was provided and enabled to make EUT continuous transmit (duty cycle>98%).

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 (duty cycle>98%). The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report.



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2.4. Measurement Instruments List

Tonsce	Tonscend JS0806-2 Test system						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until		
1	Spectrum Analyzer	Rohde & Schwarz	FSU26	100105	Dec. 28, 2019		
2	Spectrum Analyzer	Rohde & Schwarz	FUV40-N	101331	Mar. 13, 2020		
3	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 28, 2019		
4	Signal Generator	Agilent	E8257D	MY46521908	Dec. 28, 2019		
5	Power Sensor	Agilent	U2021XA	MY5365004	Dec. 28, 2019		
6	Power Sensor	Agilent	U2021XA	MY5365006	Dec. 28, 2019		
7	Simultaneous Sampling DAQ	Agilent	U2531A	TW54493510	Dec. 28, 2019		
8	Climate Chamber	TABAI	PR-4G	A8708055	Dec. 28, 2019		
9	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 28, 2019		
10	Climate Chamber	ESPEC	MT3065	/	Dec. 28, 2019		
11	300328 v2.1.1 test system	TONSCEND	v2.6	1	/		

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. 28, 2019	
2	High pass filter	micro-tranics	HPM50111	142	Dec. 28, 2019	
3	Log-Bicon Antenna	Schwarzbeck	CBL6141A	4180	Dec. 28, 2019	
4	Ultra-Broadband Antenna	ShwarzBeck	BBHA9170	25841	Dec. 28, 2019	
5	Loop Antenna	LAPLAC	RF300	9138	Dec. 28, 2019	
6	Spectrum Analyzer	Rohde & Schwarz	FSU26	100105	Dec. 28, 2019	
7	Horn Antenna	Schwarzbeck	BBHA 9120D	647	Dec. 28, 2019	
8	Pre-Amplifier	HP	8447D	1937A03050	Dec. 28, 2019	
9	Pre-Amplifier	EMCI	EMC051835	980075	Dec. 28, 2019	
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. 28, 2019	
13	Cable Above 1GHz	Hubersuhner	SUCOFLEX 102	DA1580	Dec. 28, 2019	
14	Splitter	Mini-Circuit	ZAPD-4	400059	Dec. 28, 2019	
15	RF Connection Cable	HUBER+SUHNER	RE-7-FL	N/A	Dec. 28, 2019	
16	RF Connection Cable	Chengdu E-Microwave			Dec. 28, 2019	

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17	High pass filter	Compliance Direction systems	BSU-6	34202	Dec. 28, 2019
18	Attenuator	Chengdu E-Microwave	EMCAXX-10 RNZ-3		Dec. 28, 2019
19	High and low temperature box	ESPEC	MT3065	12114019	Dec. 28, 2019

Conduc	ted Emission				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	LISN	R&S	ENV216	101112	Dec. 28, 2019
2	LISN	R&S	ENV216	101113	Dec. 28, 2019
3	EMI Test Receiver	R&S	ESCI	100658	Dec. 28, 2019

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

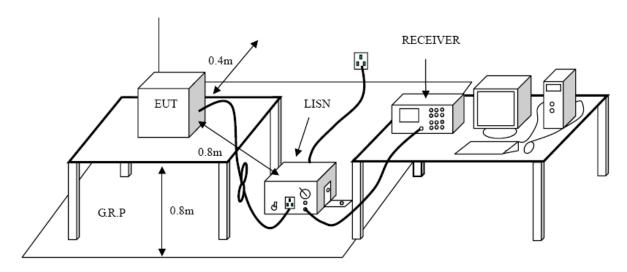
<u>Limit</u>

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.

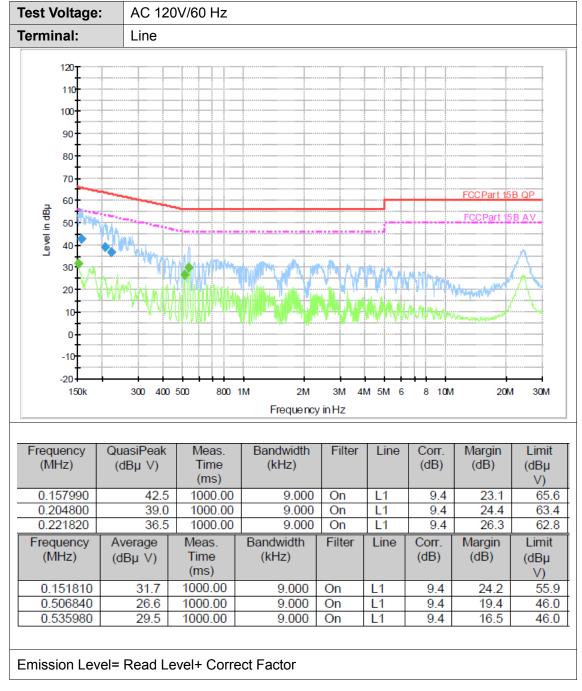
2/F., Building 1 and 1-2/F., Building 2, Jiaquan Buil	CTC Laboratories, Inc. Iding, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China
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Test Mode:

Please refer to the clause 2.3.

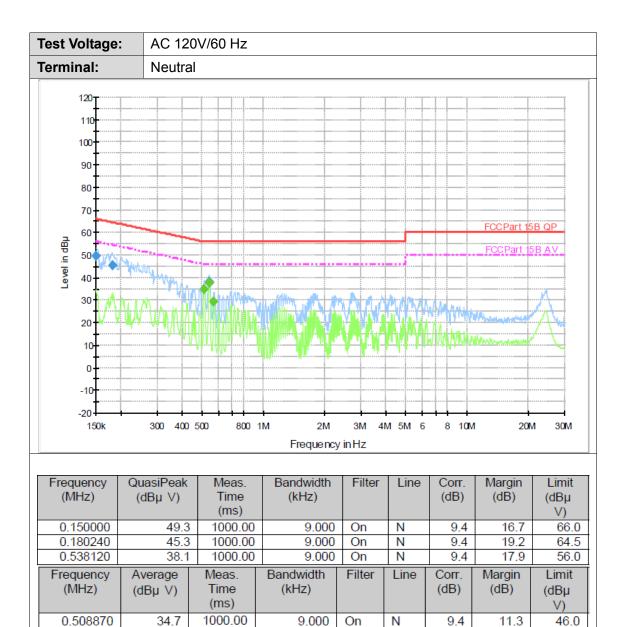
Test Results



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9.000

9.000

On

On

Ν

Ν

Emission Level= Read Level+ Correct Factor

37.4

29.2

1000.00

1000.00

0.538120

0.569050

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9.4

9.4

8.6

16.8

46.0

46.0



3.2. Radiated Emission

<u>Limit</u>

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

Frequency	Limit (dBuV/m @3m)	Value
30 MHz ~ 88 MHz	40.00	Quasi-peak
88 MHz ~ 216 MHz	43.50	Quasi-peak
216 MHz ~ 960 MHz	46.00	Quasi-peak
960 MHz ~ 1 GHz	54.00	Quasi-peak
	54.00	Average
Above 1 GHz	74.00	Peak

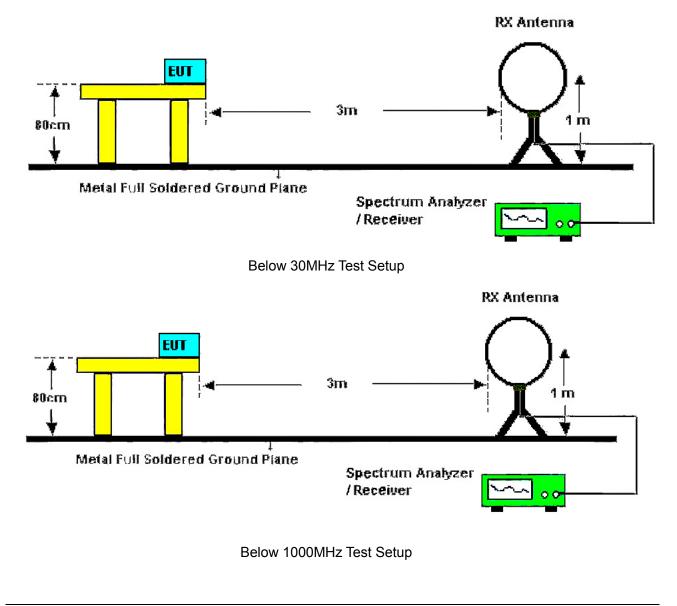
Note:

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

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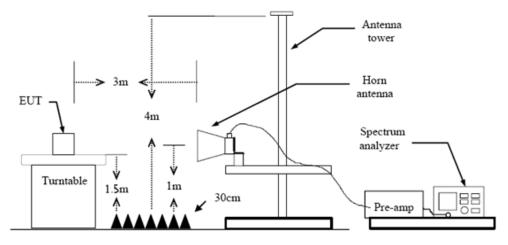
(2) Emission Level (dBuV/m)=20log Emission Level (uV/m).

Test Configuration



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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=3MHz RMS detector for Average value.

Test Mode

Please refer to the clause 2.3.

<u>Test Result</u>

9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS

可监

下理 赤

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

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No.	40 50 Frequen (MHz) 72.846	60 70 Cy 5	Facto (dB/m -20.8	n) 35	Read (dBu 38.	ding uV) 95	(dBu 18.	vel V/m) 10	00 Li (dB) 41	400 50 imit uV/m) 0.00	Margi (dB) -21.9	in))0	Detecto QP
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No. 1 2 3	40 50 Frequen (MHz) 72.846 142.324 171.392	60 7 5 40 25 50 35	Factor (dB/m -20.8 -17.4 -18.5	n) 35 44 53 5 32	Read (dB) 38. 53. 45.	ding uV) 95 24 93 95 42	(dBu 18. 35. 27.	vel V/m) 10 .80 .40 .80 .10	0 Li (dB) 4 4 4 4 4 4	400 50 mit uV/m) 0.00 3.50 3.50	Margi (dB) -21.9 -7.70 -16.1	in))) 0 10 70)0	QP QP QP QP

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

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	40 50	60 7	0 80			(MHz)							0 1	000.00
30.000	Frequer	су	Fa	ctor		ading		vel		100 S	00 60 Mar	o zo		
30.000 No.	Frequer (MHz)	icy)	Fa (dE	3/m)	(d	ading BuV)	(dBu	vel IV/m)	u Lii (dBu	₩ s mit V/m)	Mar (dl	rgin B)	Det	ector
30.000	Frequer	icy)	Fa (dE		(d	ading	(dBu	vel	u Lii (dBu	100 S	Mar (dl	o zo	Det	
30.000 No.	Frequer (MHz)	icy))1	Fa (dB -18	3/m)	(d	ading BuV)	(dBu 31	vel IV/m)	00 / Lii (dBu 40	₩ s mit V/m)	Mar (dl	rgin B)	Det	ector
30.000 No. 1	Frequer (MHz) 34.760	icy))1 }9	Fa (dE -18	3/m) 3.01	(d 49 41	ading BuV) 9.61	(dBu 31 27	vel V/m) .60	00 4 (dBu 40	mit V/m)	Mar (dl -8.	rgin B) .40	Det (ector QP
30.000 No. 1 2 3	Frequer (MHz) 34.760 66.498 122.40	icy))1 39 38	Fa (dB -18 -19	3/m) 3.01 9.74 9.09	(d) 49 41 49	ading BuV) 9.61 7.24 9.19	(dBu 31 27 30	vel V/m) .60 .50 .10	D0 /	mit V/m) 0.00 0.50	Mar (dl -8. -12 -13	rgin B) .40 2.50 3.40	Det (ector QP QP QP
No. 1 2 3 4	Frequen (MHz) 34.760 66.498 122.40 143.32	icy))1 39 38 58	Fa (dE -18 -19 -19 -17	3/m) 3.01 9.74 9.09 7.36	(d) 49 41 49 52	ading BuV) 9.61 7.24 9.19 2.56	(dBu 31 27 30 35	vel V/m) .60 .50 .10 .20	Lin (dBu 40 40 43 43	mit V/m) 0.00 0.00 0.50 0.50	Mar (dl -8. -12 -13 -8.	rgin B) .40 2.50 3.40 .30	Det () () ()	ector 2P 2P 2P 2P
30.000 No. 1 2 3	Frequer (MHz) 34.760 66.498 122.40	icy))1 39 38 58 53	Fa (dB -18 -19 -19 -17 -18	3/m) 3.01 9.74 9.09	(d) 49 47 49 50 50 40	ading BuV) 9.61 7.24 9.19	(dBu 31 27 30 35 27	vel V/m) .60 .50 .10	Lin (dBu 40 40 43 43 43	mit V/m) 0.00 0.50	Mar (dl -8. -12 -13 -8. -15	rgin B) .40 2.50 3.40	Det () () ()	ector QP QP QP

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2.Margin value = Level -Limit value

EN

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Adobe 1GHz Show worst case only:

Ant. P	ol.	Horiz	zontal					
Test M	lode:	TX E	3 Mode 241	2MHz				
Remar	rk:		eport for the cribed limit.	e emission v	which more t	than 10 dB I	pelow the	;
90.0 di	Bu¥/m			1				
					ECC Pa	rt15 Class C 3M Ab	ove-16 Peak	
	2							
					FCC	Part15 Class C 3M	Above-1G AV	
	*							
40								
-10								
1000.00	00 3575.00 6	150.00	8725.00 11	300.00 13875.0	0 16450.00 1	19025.00 21600).00	26750.00 MHz
No.	Frequer (MHz		Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4824.2	52	36.41	14.32	50.73	54.00	-3.27	AVG
2	4824.3	572	36.41	28.64	65.05	74.00	-8.95	peak
				dB/m)+Cabl	e Factor (dE	3)-Pre-ampli	fier Facto	or

CTC Laboratories, Inc.



EN

An	t. Pol	I.	Ve	tical									
Tes	st Mo	de:	ТХ	B Mod	de 241	2MHz							
Re	mark	:			for the d limit.	e emissio	on v	vhich	more t	than 10) dB k	pelow the	;
90.0	D dBu\	//m											
									FCC Pa	rt15 Class	с зм Аб	ove-16 Peak	
		1 X											
									FCC	Part15 Cla	ss C 3M	Above-1G AV	
		*											
40													
-10		3575.00	6150.00	8725.	00 112	00.00 13	875.0	104	50.00 1	9025.00	21600	00	26750.00 MHz
	00.000	3373.00	0130.00	0725.	00 113	00.00 13	575.0	5 104.	30.00	5025.00	21000	.00	20730.00 M112
Γ.		Frequ	encv	Fa	actor	Readi	na	Le	vel	Lin	nit	Margin	
	Vo.	(M	-		3/m)	(dBu\	-		iV/m)			(dB)	Detector
	1	4824	.574	36	6.41	28.5	В	64	.99	74.	00	-9.01	peak
	2	4824	.738	36	6.41	14.3	3	50	.74	54.	00	-3.26	AVG
	mark		. .	_				_				с <u> </u>	
		ˈ (dB/m) ı value =				iB/m)+C	abl	e Fac	tor (dE	3)-Pre-	ampli	fier Facto	or
<u> </u>	.a. gii		-010		70.00								

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AII	t. Po	I.	Но	izontal											
Tes	st Mo	de:	ΤX	TX B Mode 2437MHz No report for the emission which more than 10 dB below the											
Re	mark	:		report fo		emissio	n whic	h more	than 1	0 dB k	pelow the	;			
90.0	D dBu	//m	p.c												
										C 214 AL	ove-1G Peak				
								FLUT	artio Class	C 3M AD	iove-tu reak				
		1 X	:												
								FC	C Part15 Cla	iss C 3M	Above-1G AV				
		\$													
40															
10		3575.00	6150.00	8725.00	11300	00 120	75.00 1	6450.00	19025.00	21600	00	26750.00 MHz			
1	No.		uency Hz)	Fact (dB/r		Readin (dBuV	-	_evel BuV/m	Lir (dBu)		Margin (dB)	Detector			
	1	487	3.946	36.5	55	29.00	(65.55	74	.00	-8.45	peak			
	2	487	4.758	36.5	55	14.53	Ę	51.08	54	.00	-2.92	AVG			
	mark										fier Facto				

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An	t. Pol	-	Ve	tical									
Tes	st Mo	de:	ТХ	B Mod	e 243	7MHz							
Re	mark	:		report scribed			sion v	vhich	more	than 10) dB k	pelow the	;
90.0	∫ dBu∖	//m											
									FCC Pa	ırt15 Class	С ЗМ АЬ	ove-16 Peak	
		ŝ											
									FCC	Part15 Cla	ss C 3M	Above-1G AV	
		~											
40													
-10													
	000.000	3575.00	6150.00	8725.0	0 11:	300.00 1	13875.0	0 164	50.00	19025.00	21600	.00	26750.00 MHz
		From		5	ctor	Read	ling		vel	Lin	ait	Morgin	
1	۱o.		uency Hz)		/m)	dBu	-		iVei iV/m)			Margin (dB)	Detector
	1	487	4.030	36	.55	14.4	48	51	.03	54	.00	-2.97	AVG
	2	487	4.938	36	.55	28.0	60	65	.15	74	.00	-8.85	peak
De	morle												
	marks actor		= Ante	nna Fa	ctor (d	dB/m)+	Cabl	e Fac	tor (dE	3)-Pre-	ampli	fier Facto	or
		value				,			``	•	•		

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Ant. F	ol.		Hori	Horizontal												
Fest N	/lode:		TX E	TX B Mode 2462MHz No report for the emission which more than 10 dB below the												
Rema	rk:				for the		sion v	vhich	more t	han 10) dB I	pelow the	;			
90.0	lBu¥/m															
				FCC Part15 Class C 3M Above-16 Peak												
		- 1	_													
		X														
		, Å							FCC	Part15 Cla	ss C 3M	Above-1G AV				
		Î														
40			_							_						
										_						
10																
	000 3575.)0 6.	150.00	8725.	00 11	300.00	13875.00	0 164	50.00 1	9025.00	21600	.00	26750.00 MI			
No		eque (MHz	-		actor 3/m)	Read (dBu	-		vel ıV/m)	Lin (dBu)		Margin (dB)	Detector			
1	4	923.5	524	36	6.68	28.	15	64	.83	74	.00	-9.17	peak			
2	4	923.8	328	36	6.68	14.	22	50	.90	54	.00	-3.10	AVG			
Rema																

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-ر **ت** (0 ۱ŀ 2.Margin value = Level -Limit value



est Mo	ode:	TX F	Mode 246	2MHz				
lemark		No r			hich more t	han 10 dB t	elow the	!
90.0 dBu	ıV/m	1 0.00						
					FCC Par	t15 Class C 3M Ab	ove-16 Peak	
	1 *							
					FCC	Part15 Class C 3M	Above-16 AV	
							ADOVE-TO AV	
40								
40								
0								
	3575.00 (6150.00	8725.00 113	300.00 13875.0	0 16450.00 1	9025.00 21600	.00	26750.00 MH
No.	Freque (MH		Factor (dB/m)	Reading (dBu∀)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4923.	938	36.68	28.14	64.82	74.00	-9.18	peak
2	4923.	968	36.68	14.20	50.88	54.00	-3.12	AVG

2.Margin value = Level -Limit value

CTC Laboratories, Inc.



nt. Po	I.	Horiz	zontal					
est Mo	ode:	TX C	GMode 241	2MHz				
emark	(:		eport for the cribed limit.		which more th	an 10 dB t	pelow the	•
0.0 dBu	iV/m		ĺ					
					FCC Part	5 Class C 3M Ab	ove-16 Peak	
	2 X							
					FCC Pa	art15 Class C 3M	Above-1G AV	
	*							
10								
)								
1000.000	3575.00	6150.00	8725.00 11	300.00 13875.0	0 16450.00 19	025.00 21600).00	26750.00 M
No.	Frequ (MF		Factor (dB/m)	Reading (dBu∀)	Level (dBuV/m) (Limit (dBuV/m)	Margin (dB)	Detector
1	4823	.586	36.41	14.27	50.68	54.00	-3.32	AVG
2	4824	.572	36.41	28.59	65.00	74.00	-9.00	peak

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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.	Pol.			Vert	ical									
Fest	Мо	de:		TX (G Mo	de 24 <i>°</i>	12MH	z						
Rem	ark:	:				t for th d limit		ssion v	vhich	more t	han 10	dB b	pelow the	;
90.0	dBu¥	/m												
										500 B			ove-16 Peak	
										FLL Par	(15 Liass L .	SM AD	ove-16 Peak	
		2	K											
										FCC F	Part15 Class	С ЗМ	Above-1G AV	
		5	\$											
40														
							_							
	0.000	3575.00	61!	50.00	8725	00 11	300.00	13875.0	0 164	50.00 1	9025.00	21600	00	26750.00 MI
		Free				actor	Ber	alina		vel	Limi		Margin	
No	b .	Freq (M	uer Hz)			B/m)		ading BuV)		vei iV/m)	(dBuV/		Margin (dB)	Detector
1	1	482	4.3	42	30	6.41	27	' .97	64	.38	74.0	0	-9.62	peak
2	2	482	4.6	76	30	6.41	14	.33	50	.74	54.0	0	-3.26	AVG

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Remarks:

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

CTC Laboratories, Inc.



	Ant. Pol. Horizontal												
An	t. Pol		Horiz	zontal									
Tes	st Mo	de:	TX G	6 Mode	243	7MHz							
Re	mark:	1				e emissio	n w	vhich r	nore t	han 10 dB l	pelow the	;	
90.	0 dBu¥		pres	cribed	limit.								
30.		7 m											
									F66 D-		10.0		
	<u> </u>						-		FLL Pa	t15 Class C 3M At	ove-tu Peak		
		1 X											
									FCC	Part15 Class C 3M	Above-1G AV		
		Â.											
40													
-10		3575.00 6	150.00	8725.00	11	300.00 138	75.0	0 164	50.00 1	9025.00 21600	1.00	26750.00 MHz	
		0010.00 0	00.00	0120.00		100.00	0.0	0 101		0020.00 21000		Lorod.od hite	
		Freese	-	Fac	4.0.4	Deedin	_			Limit	Margin	T	
1	No.	Freque (MHz		rac (dB/		Readin (dBuV		1	vel V/m)	(dBuV/m)	Margin (dB)	Detector	
	1	4873.3	'	36.		28.59	·	•	.14	74.00	-8.86	poak	
												peak	
	2 4874.434 36.5					14.50		51.	.05	54.00	-2.95	AVG	
	marks												
						dB/m)+Ca	able	e Fact	or (dB)-Pre-ampli	fier Facto	or	
∠.IV	iargin	value = L	.evel -	limit v	alue								

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2.Margin value = Level -Limit value

CTC Laboratories, Inc.



An	t. Pol	l .	Vert	ical					
Tes	st Mo	de:	TX	G Mode 243	37MHz				
Re	mark	:		eport for the cribed limit.	e emission v	vhich more t	han 10 dB t	pelow the	;
90.0	D dBu¥	//m							
						ECC Pa	rt15 Class C 3M Ab	ove.16 Peak	
						10010		ove ru r euk	
		1	<						
						FCC	Part15 Class C 3M	Above-1G AV	
		Š	2						
40									
10									
10	000.000	3575.00	6150.00	8725.00 11	300.00 13875.0	0 16450.00 1	9025.00 21600	.00	26750.00 MH
1	No.		uency Hz)	Factor (dB/m)	Reading (dBu∀)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	487	3.702	36.55	28.71	65.26	74.00	-8.74	peak
	2	487	4.958	36.55	14.54	51.09	54.00	-2.91	AVG
Rei 1.F	marks	5:							

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2.Margin value = Level -Limit value

CTC Laboratories, Inc.



nt. Po	I.	ŀ	Horiz	zontal									
'est Mo	de:		TX G	G Mode	246	2MHz							
Remark	(:			eport fo cribed		e emis	sion v	vhich	more	than 1	0 dB	below the	e
90.0 dBu	V/m	F											
									FCC Pa	rt15 Class	C 3M AL	ove-16 Peak	
	:	1 X											
									FCC	Part15 Cl	ass C 3M	Above-1G AV	
		*											
40													
1000.000	3575.00	6150	.00	8725.00	11:	300.00	13875.0	0 164	50.00	19025.00	21600).00	26750.00 MH
No.	Freq (M	uenc Hz)	зу –	Fact (dB/r		Read (dB			vel IV/m)		nit V/m)	Margin (dB)	Detector
1	492	3.73	0	36.6	88	27.	71	64	.39	74	.00	-9.61	peak
2	492	4.53	6	36.6	88	14.	15	50	.83	54	.00	-3.17	AVG

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• •												
	. Pol			ertical								
	t Mo				de 246							
Rer	nark:	:			t for the ed limit.	e emissior	ו w	hich mor	e tł	nan 10 dB k	pelow the	:
90.0) dBuV	//m										
								FCC	Part	15 Class C 3M Ab	ove-16 Peak	
		ŝ	3									
			`							art15 Class C 3M /	10.01	
			(- '	LL P	artio classiciomi	ADOVE-TO AV	
40												
-10												
10	00.000	3575.00	6150.0	0 8725	.00 113	300.00 1387	5.00	16450.00	19	9025.00 21600.	00	26750.00 MHz
N	lo.	Frequ	iency	/ F	actor	Readin	g	Level		Limit	Margin	Detector
	10.	(MI	Hz)	(d	B/m)	(dBuV))	(dBuV/r	n)	(dBuV/m)	(dB)	Delector
	1	4923	3.928	3 3	6.68	14.20		50.88		54.00	-3.12	AVG
	2	4924	1.800) 3	6.68	28.04		64.72		74.00	-9.28	peak
	1											L

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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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nt. Pol	l .	Horiz	zontal					
est Mo	de:	TXN	20 Mode 2	412MHz				
emark	:		eport for the cribed limit.	emission w	hich more t	han 10 dB t	pelow the	;
90.0 dBu'	V/m							
					FCC Par	15 Class C 3M Ab	ove-16 Peak	
	2 X							
					FCC F	Part15 Class C 3M	Above-1G AV	
	*							
40								
o								
1000.000	3575.00 6	150.00	8725.00 11	300.00 13875.0	D 16 4 50.00 1	9025.00 21600	.00	26750.00 M
No.	Freque (MH		Factor	Reading (dBuV)	Level (dBuV/m)	Limit	Margin	Detecto
	4824.	1	(dB/m) 36.41	(dBdV) 14.31	50.72	(dBuV/m) 54.00	(dB) -3.28	AVG
1	4024.		36.41	28.55	64.96	74.00	-9.04	peak
1	4824.				1 n4 Mn I	74101	-9 04	

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

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An	t. Po	l.	Vert	ical								
Tes	st Mo	de:	TXT	120 Mo	de 2	412MHz						
Re	mark	•		eport fo cribed l			n v	/hich ı	more t	han 10 dB	below the	•
90.0	D dBu	V/m										
									FCC Pa	t15 Class C 3M A	bove-16 Peak	
		2 X										
							_		FCC	Part15 Class C 3N	Above-16 AV	
		×										
40												
			_									
			_									
-10												
10	000.000	3575.00 6	150.00	8725.00	11	300.00 138	75.0	D 1649	50.00 1	9025.00 2160	0.00	26750.00 MHz
1	۱o.	Freque (MHz	-	Fact (dB/n		Readir (dBu∀			vel V/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	4823.9	990	36.4	1	14.31		50	.72	54.00	-3.28	AVG
	2	4824.1	138	36.4	1	27.85	5	64	.26	74.00	-9.74	peak
De	mark											
1.F	actor					dB/m)+C	abl	e Fact	or (dB)-Pre-ampl	ifier Facto	or

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2.Margin value = Level -Limit value

CTC Laboratories, Inc.



Ant.	Pol.		Ho	rizont	al								
Test	Mode) :	TX	N20	Mode 2	2437MF	Ηz						
Rem	ark:				t for th ed limit		sion v	vhich	more t	han 10) dB l	pelow the	;
90.0	dBu¥∕m												
									FCC Par	r15 Class	C 3M Ab	ove-16 Peak	
		1 X	:										
									FCC	Part15 Cla	ss C 3M	Above-1G AV	
		×	2										
40													
10													
	0.000 35	75.00	6150.00	8725	.00 11	300.00	13875.0	D 164	50.00 1	9025.00	21600	.00	26750.00 M
No	p.		uency Hz)		actor B/m)	Read (dBu	-		vel IV/m)	Lin (dBu\		Margin (dB)	Detecto
1	1	4873	3.452	3	6.55	29.	19	65	.74	74.	.00	-8.26	peak
2	2	4874	1.596	3	6.55	14.	57	51	.12	54.	00	-2.88	AVG
Dom	arks:					·						·	

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2.Margin value = Level -Limit value

CTC Laboratories, Inc.



Ant	t. Pol.	ı.	Ver	tical						
Гes	st Moo	de:	TX	N20 Mode	2437MHz					
Rei	mark:			report for t scribed lim	he emission it.	which	more t	han 10 dB	below the	;
90.0) dBuV	/m								
							FCC Devi	t15 Class C 3M A	have 10 Back	
							FLL Pan	(15 Class C 3M A	Dove-To Peak	
		}	4							
							FCC F	Part15 Class C 3M	Above-1G AV	
		5	2							
40										
10										
10	00.000	3575.00	6150.00	8725.00	1300.00 13875	5.00 1645	50.00 1	9025.00 2160	0.00	26750.00 MH
1	No.		uency Hz)	Factor (dB/m)	Reading (dBuV)	-	vel iV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	487	3.162	36.55	28.71	65	.26	74.00	-8.74	peak
	2	487	4.130	36.55	14.52	51	.07	54.00	-2.93	AVG
	narks									

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-, 2.Margin value = Level -Limit value

CTC Laboratories, Inc.



Ant	t. Pol		Hori	zontal								
Tes	st Mo	de:	TXI	N20 Mod	e 24	462MHz						
Rei	mark	:		eport for		emissio	n w	hich	more t	han 10 dB	below the	;
90.0) dBu\	//m										
									FCC Parl	15 Class C 3M At	oove-1G Peak	
		1 X										
									FCC F	Part15 Class C 3M	Above-1G AV	
		Ŷ										
40												
-10		3575.00	6150.00	8725.00	113	00.00 1387	5 00	164	50.00 1 ¹	9025.00 21600	00	26750.00 MHz
١	No.	Frequ (MI		Facto (dB/m		Readin (dBuV			vel iV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	4923	3.552	36.6	8	28.63		65	.31	74.00	-8.69	peak
	2	4924	.354	36.6	8	14.16		50	.84	54.00	-3.16	AVG
	morte											

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Remarks:

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



۸n	t. Pol	I	Ve	ertical								
	t Mo				Mode 2	462MHz						
	mark		No	o repor				/hich ı	nore t	han 10 dB	below the	;
90.0) dBu\	√/m										
			•						FCC Pa	rt15 Class C 3M A	bove-16 Peak	
		:										
									FCC	Part15 Class C 3M	Above-1G AV	
			ŧ.									
40												
40												
							_					
							-					
-10	00.000	2575.00	6150.00) 8725	00 11	300.00 138	975.0	0 104	5 0.00 1	9025.00 2160	0.00	26750.00 MHz
	00.000	3575.00	6130.00	J 0723	.00 11.	500.00 130	07 <u>0.</u> 0	U 104:	0.00	3023.00 2160	0.00	20730.00 MH2
N	۱o.	Freq	uency	Fa	actor	Readir	ng	Le	vel	Limit	Margin	Detector
	NO.	(M	Hz)	(dl	B/m)	(dBuV	')	(dBu	V/m)	(dBuV/m)	(dB)	Delector
	1	492	3.910	3	6.68	27.97	'	64.	.65	74.00	-9.35	peak
	2 4924.232			3	6.68	14.20)	50.	.88	54.00	-3.12	AVG
	marks			_								
						dB/m)+C	abl	e Fact	or (dE	3)-Pre-ampl	ifier Facto	or
2.IV	iargir	n value :	= Leve	ei -limi	t value							

Page 35 of 77



No r	V40 Mode 2 eport for the cribed limit.			han 10 dB k		<u></u>
		emission v	FCC Par			
				15 Class C 3M Ab	ove-16 Peak	
				15 Class C 3M Ab	ove-16 Peak	
				15 Class C 3M Ab	ove-16 Peak	
			ECC 1			
			ECC I			
			ECC I			
			rtt r	art15 Class C 3M .	Above-1G AV	
6150.00	8725.00 113	300.00 13875.0	0 16450.00 1	9025.00 21600	.00	26750.00 MH
-	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
· ·	36.47	14.37	50.84	54.00	-3.16	AVG
.760	36.47	29.11	65.58	74.00	-8.42	peak
	6150.00 Jency Hz) 3.970 4.760	Hz) Factor (dB/m) 3.970 36.47	uency Factor Reading Hz) (dB/m) (dBu∨) 3.970 36.47 14.37	Jency Hz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) 3.970 36.47 14.37 50.84	Jency Hz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) 3.970 36.47 14.37 50.84 54.00	Jency Hz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dB) 3.970 36.47 14.37 50.84 54.00 -3.16

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	. Pol		Verti	ical					
es	t Mo	de:	TXN	V40 Mode 2	422MHz				
ler	nark:			eport for th cribed limit	e emission v	which more t	han 10 dB l	below the	e
0.06 1	dBu¥	/m				1			
						FCC Par	t15 Class C 3M Ab	ove-16 Peak	
		2 X							
						FCC	Part15 Class C 3M	Above-1G AV	
		*							
10									
0	00.000	2E7E 00	6150.00	8725.00 11	300.00 13875.0	0 16450.00 1	9025.00 21600	00	26750.00 MI
	۷o.	Frequ (MH		Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
١	NO.		12)						AVG
1	1	4844		36.47	14.37	50.84	54.00	-3.16	AVG

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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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Image: state	Ant	. Pol		Hoi	izont	al								
No. Frequency (MHz) Factor (dB/M) Reading (dB/V) Level (dB/V/m) Limit (dB/V/m) Margin (dB) Detector 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak 2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG	Tes	t Mo	de:	TX	N40	Mode 2	437MHz	2						
0.0 dBuV/m FCC Part15 Class C 3M Above-16 Peak 1 1 FCC Part15 Class C 3M Above-16 AV 1 1 FCC Part15 Class C 3M Above-16 AV 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak 2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG	Rer	nark	:					on v	vhich	more t	than 10 d	dB I	below the	;
No. Frequency (MHz) Factor (dB/m) Reading (dBuV) (dBuV/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detector 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak 2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG	90.0	dBu¥	/m											
No. Frequency (MHz) Factor (dB/m) Reading (dBuV) (dBuV/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detector 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak 2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG										ECC P-	ulE Class C 3		euro 1C De els	
No. Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detector 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak AVG										FUU Fal		om Au	Uve-Iti Feak	
No. Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Detector 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak 2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG			¥											
No. Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Detector 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak 2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG										FCC	Part15 Class	с зм	Above-1G AV	
No. Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Detector 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak 2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG			×								_			
Internation	40													
Internation														
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Internation														
Internation											_			
Internation														
No. Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detector 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak 2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG	10													
No. (MHz) (dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) Detector 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak 2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG	100	00.000	3575.00	6150.00	8725	5.00 113	300.00 13	875.0) 164	50.00 1	9025.00	21600	.00	26750.00 MI
(MHz) (dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) 1 4873.416 36.55 28.61 65.16 74.00 -8.84 peak 2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG	N	lo									1			Detector
2 4874.716 36.55 14.51 51.06 54.00 -2.94 AVG							•	· ·	•		•			
lemarks:														
		2	4874	1.716	3	6.55	14.5	1	51	.06	54.0	0	-2.94	AVG
	Rer	nark												
.Margin value = Level -Limit value	1.Fa	actor	(dB/m)				dB/m)+C	abl	e Fac	tor (dE	3)-Pre-ar	npli	fier Facto	or

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nt. Po	l.	Vert	ical					
est Mo	de:	1 X T	V40 Mode 2	437MHz				
Remark	:		eport for the cribed limit.	e emission v	which more t	han 10 dB l	pelow the	:
90.0 dBu	V/m							
					FCC Pa	t15 Class C 3M Ab	ove-16 Peak	
	1 ¥							
					FCC	Part15 Class C 3M	Above-1G AV	
	×							
40								
10								
1000.000	3575.00 6	150.00	8725.00 11	300.00 13875.0	0 16450.00 1	9025.00 21600	.00	26750.00 MH
No.	Freque (MHz	-	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
No. 1		:)		-				Detector peak

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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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An	t. Po	.	Hori	zontal										
Tes	st Mo	de:	ТХТ	140 M	ode 2	452MHz								
Re	mark	:		eport f			on v	vhich	more t	han 10 d	3 below	the	;	
90.0	∫ dBu∿	//m												
									FCC Pa	rt15 Class C 3N	Above-1G P	eak		
		2 X												
									FCC	Part15 Class C	3M Above-10	i AV		
		×					_					_		
40														
40														
												-		
												-		
10														
-10 1()00.000	3575.00 6	150.00	8725.00) 11	300.00 134	375.0	0 1649	50.00 1	9025.00 21	600.00		26750.00 MHz	2
١	۷o.	Freque (MHz		Fac (dB/		Readir (dBu∖	-		vel V/m)	Limit (dBuV/r	Marg n) (dB		Detector	
	1	4903.2	,	36.		14.30		•	.93	54.00	· ·		AVG	Ē
	2	4904.	596	36.	63	28.56	6	65	.19	74.00	-8.8	1	peak	
De	morie													
	mark	s: (dB/m) =	∆nten	na Fa	ctor (dB/m)+C	ahl	e Fad	tor (dE	N_Pre_am	nlifior Ea	acto)r	
		(ub/iii) – i value = l					aur	c i au		<i>j</i> -i ie-ali			Л	

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2.Margin value = Level -Limit value

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Ant. Po	l.	Verti	cal						
Test Mo	de:	TXN	40 Mode	2452M	Ηz				
Remark			eport for t cribed lim		sion v	hich more	than 10 dB l	pelow the	
90.0 dBu	iV/m								
						FCC Pa	rt15 Class C 3M Ab	ove-16 Peak	
	2 X								
						FCC	Part15 Class C 3M	Above-1G AV	
	*								
40									
-10			0705.00	11000.00	10075.0		10005-00		
1000.000	3575.00	150.00	8725.00	11300.00	13875.0	0 16450.00	19025.00 21600	.00	26750.00 MHz
No.	Freque		Factor			Level	Limit	Margin	Detector
	(MH	<i>'</i>	(dB/m)			(dBuV/m)	. ,	· · ·	
1	4903.	404	36.63	14.	26	50.89	54.00	-3.11	AVG
2	4903.	482	36.63	28.	52	65.15	74.00	-8.85	peak

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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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3.3. Band Edge Emissions

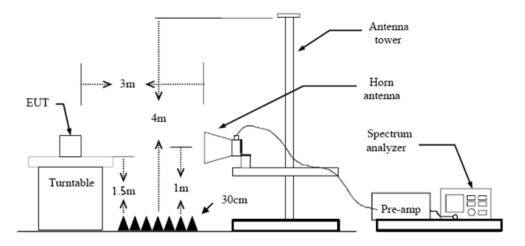
<u>Limit</u>

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

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

Conducted band edge limit: The highest point of the operating frequency waveform down 20dB

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 waspositioned 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 themaximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
- The receiver set as follow: RBW=1MHz, VBW=3MHz PEAK detector for Peak value. RBW=1MHz, VBW=10Hz with PEAK Detector for Average Value.

Test Mode

Please refer to the clause 2.3.

Test Results

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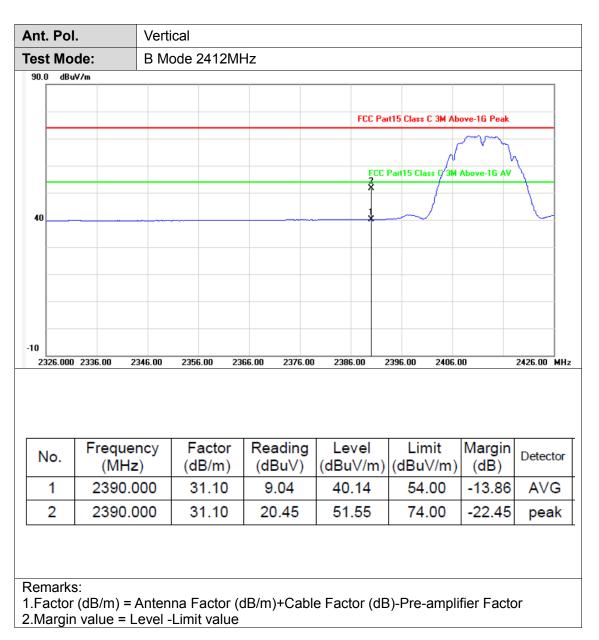
EN

nt. Pol.		orizontal							
st Mod	: BN	Mode 241	2MHz						
0 dBuV/									
					FCC	Part15	Class C 3M	Above-16 Peak	
								m	
<u> </u>					F		15 Class C 3	Above-1G A	h
					,	\$	(
					ś	2			
325.500 2	5.50 2345.50	2355.50	2365.50	2375.50	2385.50	2395	5.50 240	5.50	2425.50 MI
No.	requency			ading	Level		Limit	Margir	Detecto
				-	-				
1	2390.000	31.1		.12	51.22		74.00		
2	2390.000		0 8.	.96	40.06		54.00	-13.94	AVG
No.	requency (MHz) 2390.000	Facto (dB/n 31.1	n) (dE 0 20	3uV)).12	(dBuV/r 51.22	n) ((dBuV/m 74.00	1) (dB) -22.78	3

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

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An	t. Po	I.		Hori	zonta	al													
Tes	st Mo	de:		ΒM	ode	246	2 M	Hz											
90.0) dBu\	√/m															_		
												FCC Pa	rt15	Class (C 3M A	bove-1G F	eak		
		~	~										-				+		
		\checkmark	۲ ''									FCC	Part	15 Clas	» Г 3	Above-1	: AV		
	-/					X	(100			s C 31	- Abore - I	-		
				$\left \right\rangle$		3	5												
40																			
													_				+		
																	-		
													-				+		
-10														50					
24	49.500	2459.50	U 246	9.50	2479	.50	248	9.50	2499	1.50	2509	1.50 2	2519	.50	2529	.50		2549.50	MHZ
N	lo.	Fre	quen	су		act		Rea	adin	g	Le	vel		Lim	nit	Marg	jin	Detecto	or
	NO.	(MHz)		(d	B/n	n)	(dE	Bu∀)	(dBu	V/m)	(d	Bu\	//m)	dB))	Delection	
	1	24	83.5	00	3	1.5	0	20).42		51	.92		74.	00	-22.	08	peal	k
	2	24	83.5	00	3	1.5	0	9	.46		40	.96		54.	00	-13.	04	AVG	3
	mark					· ·		ID /					۰. F	-			1		
								IR/W)+Ca	DIG	e Fac	ior (de	5)-H	-re-a	amp	lifier Fa	acto	וכ	
2.N	largir	n valu	ie = Le	evel -	Limi	t va	lue												

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Ant.	Pol.			Ver	tical													
est	Mod	e:		ΒM	lode	246	2 M	Hz										
90.0	dBuV∕ı	n																_
												FCC Pa	rt15 Cl	ass C 3N	I Abe	ove-16 Pea	k	
		~	m															
	0	5	v _	١.														
	-/			\mathbb{A}								FCC	Part15	Class C	3М /	Above-1G A	v	
				\uparrow			¥											
k	/					_	2											
40							*		_	_					_			
															-			
				_											-			
10																		
2448	.000 24	458.00	24	68.00	24	78.00	24	38.00	2498	.00	250	3.00	2518.0	0 25	528.0	0	2548.00	M
No		Frec (N	quer /Hz	-	1	⁻ acto dB/m			ading BuV)	-		vel V/m)		.imit 3uV/n		Margir (dB)	Detec	tor
1		248	33.5	00		31.5	0	19	9.82		51	.32	7	4.00		-22.68	B pea	ak
2		248	33.5	00	;	31.5	0	9	.50		41	.00	Ę	54.00		-13.00	AV	G

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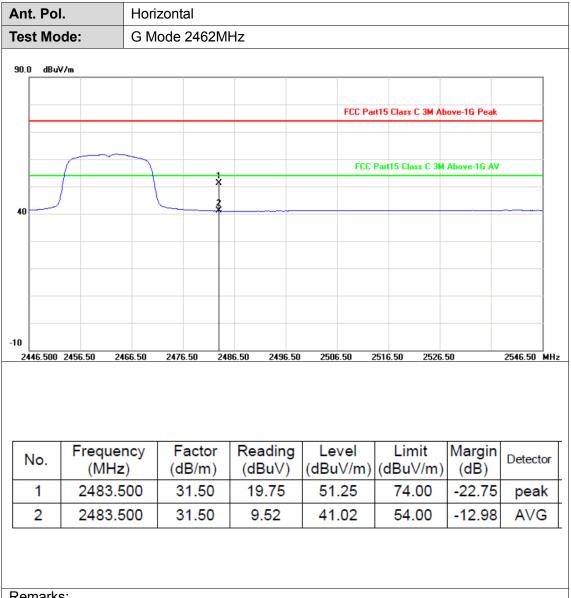


Ant. Po	I.	Hori	zontal							
Fest Mo	de:	GM	ode 241	2MH	z					
90.0 dBu	V/m									
							FCC Pa	art15 Class C 3M A	bove-1G Peak	
							7 2 2	Part15 Class C/3	A Above-1G AV	\rightarrow
40							` _			
10										
2325.500	2335.50	2345.50	2355.50	2365	.50 2375	5.50 238	85.50	2395.50 2405	.50	2425.50 M
No.	Frequ (MF		Facto (dB/m		Readin (dBuV)		evel iV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390	.000.	31.1	0	8.94	40	.04	54.00	-13.96	AVG
2	2390	.000.	31.1	0	20.69	51	.79	74.00	-22.21	peak
	1		1	1				1	1	1

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	Pol.		Verti		04400	41.1							
90.0			GM	ode	24121	VIH	Z						
90.0	dB uv /	n											
									FCC Par	t15 Class	: C 3M AI	bove-1G Peak	
									500				
┝										Part15 CI	ass U 3M	Above-1G AV	\rightarrow
											\mathcal{I}		
40									-				
10	5.000 2	335.00	2345.00	2355	00 3	2365	i.00 2375.00	2385	00 2	395.00	2405.	00	2425.00 M
N	0.	Freque (MH	-		actor B/m)		Reading (dBuV)	1	vel V/m)		nit Ⅳ/m)	Margin (dB)	Detecto
1	1	2390.	000	3	1.10	╡	21.24	52	.34	74	.00	-21.66	peak
2	2	2390.	000	3	1.10	T	9.32	40	.42	54	.00	-13.58	AVG

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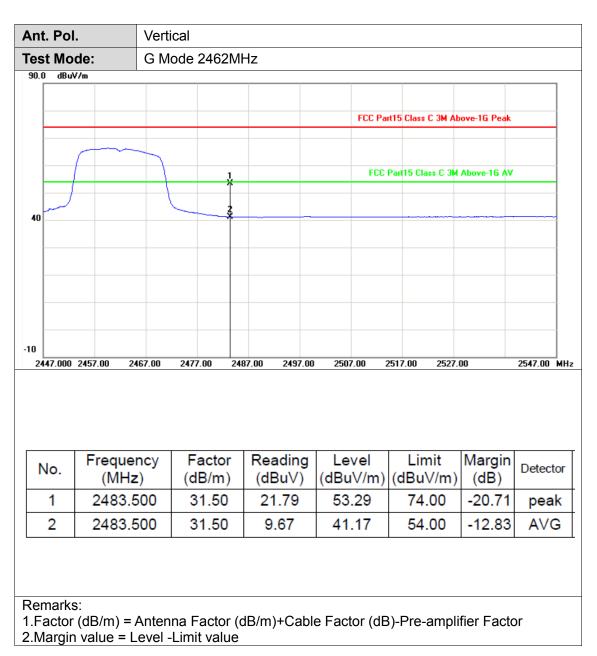
Remarks:

EN

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. Po	Ι.	Horiz	zontal					
est Mo	de:	N(H	T20) Mode	2412MHz				
90.0 dBu	W/m							
					FCC Par	t15 Class C 3M Ab	ove-1G Peak	
					FCC	Part15 Class C 3M	Above-16 AV	
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40					1			U I
40			· · ·		Ť			
2323.500	2333.50	2343.50	2353.50 23	63.50 2373.50	2383.50 2	393.50 2403.9	50	2423.50 Mi
No.	Frequ (MF		Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390	· ·	31.10	9.03	40.13	54.00	-13.87	AVG
2	2390					74.00		
2	2390	.000	31.10	19.56	50.66	74.00	-23.34	peak

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nt. Pol		Ver	tical									
est Mo	de:	N(H	T20) M	ode 2	2412MH	z						
90.0 dBu	√/m											
								FCC Pa	rt15 Class C	ЗМ АН	oove-16 Peak	
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								FCC			1	
								1	Part 15 Class	L 3M	Above-1G AV	-
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10												
2327.500	2337.50	2347.50	2357.50	23	67.50 23	377.50	2387	.50 .	2397.50	2407.	50	2427.50 M
No.		uency Hz)	Fact (dB/i	I	Readi (dBu\		Lev (dBu	vel V/m)	Limi (dBuV		Margin (dB)	Detecto
1	239	0.000	31.1	10	22.0	6	53.	16	74.0	0	-20.84	peak
2	239	0.000	31.1	10	9.44		40.	54	54.0	0	-13.46	AVG
			1			1			1			

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Ant. Po			zontal									
est M		N(H	T20) M	ode	2462M	Ηz						
90.0 dB	uV/m											
								FCC Pa	rt15 Class (: 3M AI	ove-16 Peak	
				1				FCC	Part15 Clas	s C 3M	Above-1G AV	
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40				3								
10												
	0 2458.50	2468.50	2478.50	24	88.50 2	2498.50	2508.	.50 2	2518.50	2528.	50	2548.50
No.	Frequ (Mł		Fact (dB/r		Read (dBu	-	Lev (dBu)		Lim (dBu∖		Margin (dB)	Detecto
1	2483	,	31.5		21.3		52.		74.0		-21.12	peak
2	2483		31.5		9.5		41.		54.0		-12.96	AVG
2	2483	0.500	51.5	50	9.5	4	41.	04	54.0	00	-12.90	AVG



nt. Po	I.		Vert	ical											
est Mo	de:		N(H	T20)	Mode	e 246	62MH	z							
90.0 dBu	V/m														
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2447.500	2457.5	0 24	67.50	2477	50 2	2487.50) 24	97.50	250	7.50	251	7.50	2527	.50	2547.50 M
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No.		equei (MHz			B/m)		dBu			iVer iV/m) (0	dBu\		Margi (dB)	Detecto
1	2	483.5	00	3	1.50		9.79)	41	.29		54.	00	-12.7	1 AVG
2	2	483.5	00	3	1.50		22.3	0	53	.80		74.	00	-20.2	0 peak

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

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e: n	N(H	۲40) Mode	2422MHz					
n								
					FCC Part	15 Class C 3M Ab	ove-16 Peak	
			1		ECC+	art 15 Cla ss C 3M	Above 16 AV.	\rightarrow
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		Factor (dB/m)				Limit (dBuV/m)	Margin (dB)	Detecto
2390.	000	31.10	22.15	53.	25	74.00	-20.75	peak
0000	000	31.10	9.35	40.4	45	54.00	-13.55	AVG
	Freque (MH:	354.50 2364.50 Frequency (MHz) 2390.000	Frequency Factor (MHz) (dB/m)	Frequency (MHz) Factor (dB/m) Reading (dBuV)	Image: state	Image: state	Image: Non-State Image: Non-State<	Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dB)

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

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nt. Po	l.	Vert	ical									
est Mo	ode:	N(H	T40) M	ode 2	422M⊦	lz						
90.0 dBu	iV/m											
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2347.500	2357.50	2367.50	2377.50	2387	7.50 23	97.50	240	7.50 2	417.50	2427.	50	2447.50 N
											1	
No.	Frequ (MH		Fac (dB/	I	Readi (dBu			vel iV/m)	Lin (dBu'		Margir (dB)	Detecto
1	2390	000.	31.	10	23.0	5	54	.15	74	.00	-19.85	5 peak
	2390	.000.	31.	10	10.7	2	41	.82	54	.00	-12.18	AVG
	2390	0.000	31.	10	23.0	5	54	.15	74	.00	-19.85	5 pe

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Ant. Po	I.	Hori	zontal								
lest Mc	ode:	N(H	T40) Mo	de 245	2MHz						
90.0 dBu	JV/m										
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						,					
40				~		<u>*</u>					
-10											
2430.500	2440.50	2450.50	2460.50	2470.50	2480.5	0 249	0.50 2	2500.50	2510.9	50	2530.50 M
No.		uency	Facto		eading		evel	Lim		Margin	Detecto
		Hz)	(dB/m		dBuV)	-	ıV/m)	-			
1	2483	3.500	31.50) 2	21.92	53	3.42	74.0	00	-20.58	peak
2	2483	3.500	31.50	כ	9.85	41	.35	54.0	00	-12.65	AVG

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Ant. Po	Ι.	Verti	cal						
est Mo	de:	N(H	T40) Moc	le 2452	MHz				
90.0 dBu	lV/m	,	,						
						FCC P	art15 Class C 3M Al	oove-16 Peak	
				_					
4					1	FCC	Part15 Class C 3M	Above-1G AV	
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40						È			
10									
	2440.50	2450.50	2460.50	2470.50	2480.50	2490.50	2500.50 2510.	50	2530.50 MI
No.	Frequ (MF		Facto (dB/m		ading BuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	2483	.500	31.50	22	2.34	53.84	74.00	-20.16	peak
1							= / 00	-11.87	AVG
1 2	2483	.500	31.50	1 1	0.63	42.13	54.00	-11.07	AVG

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3.4. Bandwidth

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(2)/ RSS-247 5.2 a:

Test Item	Limit	Frequency Range(MHz)
Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5

Test Configuration



Test Procedure

- 1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- 2. Spectrum Setting:
 - (1) Set RBW = 100 kHz.
 - (2) Set the video bandwidth (VBW) \geq 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

Test Mode

Please refer to the clause 2.3.

Test Results

DTS Bandwidth:

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2412	8.640	2407.920	2416.560	0.5	PASS
11B	Ant1	2437	8.640	2432.440	2441.080	0.5	PASS
		2462	8.120	2457.440	2465.560	0.5	PASS
		2412	16.400	2403.800	2420.200	0.5	PASS
11G	Ant1	2437	16.480	2428.720	2445.200	0.5	PASS
		2462	16.040	2453.760	2469.800	0.5	PASS
		2412	17.400	2403.400	2420.800	0.5	PASS
11N20SISO	Ant1	2437	17.680	2428.120	2445.800	0.5	PASS
		2462	16.760	2453.160	2469.920	0.5	PASS
		2422	32.800	2404.320	2437.120	0.5	PASS
11N40SISO	Ant1	2437	35.920	2418.760	2454.680	0.5	PASS
		2452	35.200	2434.400	2469.600	0.5	PASS

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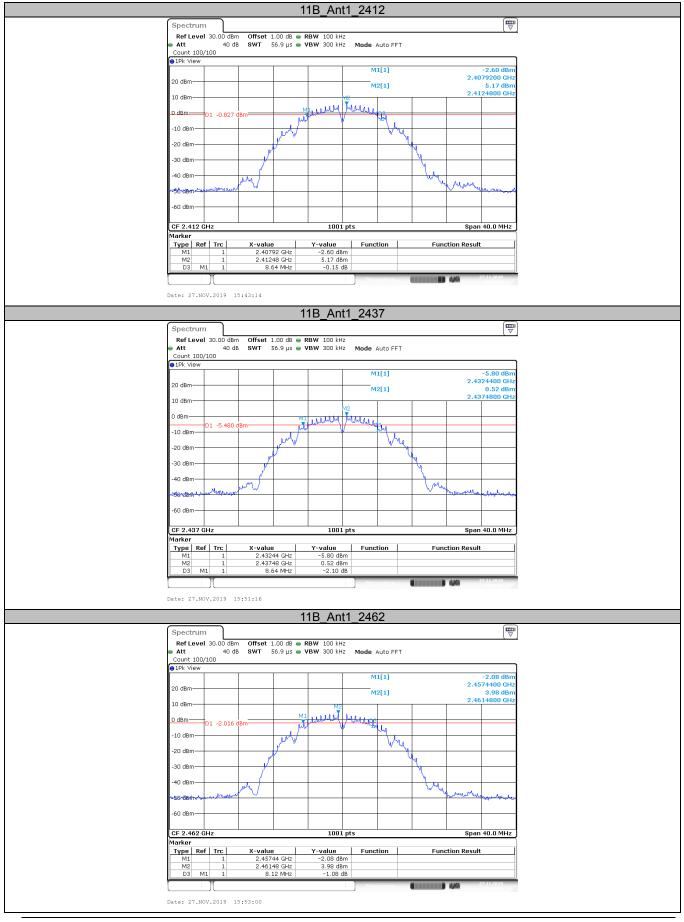
Occupied Channel Bandwidth:

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2412	12.667	2405.806	2418.474		PASS
11B	Ant1	2437	13.067	2430.367	2443.434		PASS
		2462	12.747	2455.407	2468.154		PASS
		2412	16.464	2403.768	2420.232		PASS
11G	Ant1	2437	16.623	2428.648	2445.272		PASS
		2462	16.503	2453.688	2470.192		PASS
		2412	17.662	2403.169	2420.831		PASS
11N20SISO	Ant1	2437	17.782	2428.089	2445.871		PASS
		2462	17.662	2453.129	2470.791		PASS
		2422	35.644	2404.018	2439.662		PASS
11N40SISO	Ant1	2437	36.204	2418.858	2455.062		PASS
		2452	35.724	2434.178	2469.902		PASS

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DTS Bandwidth:



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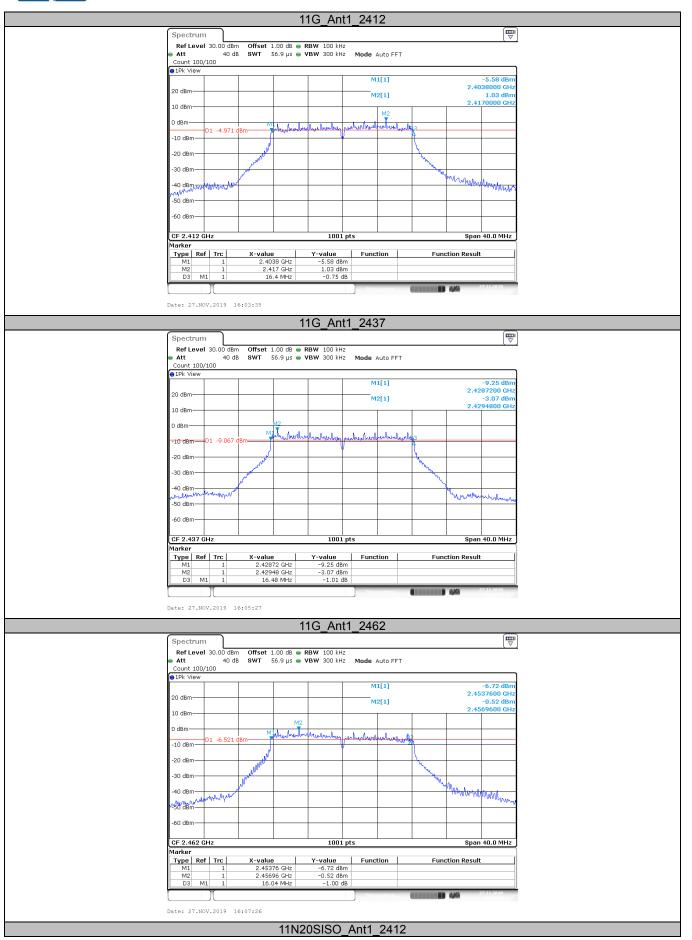
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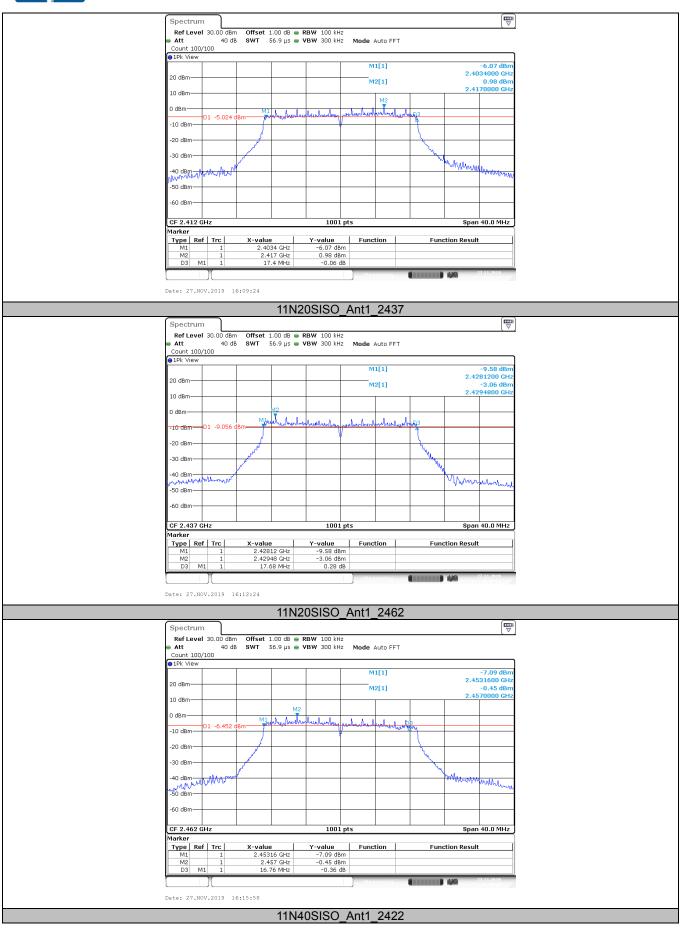




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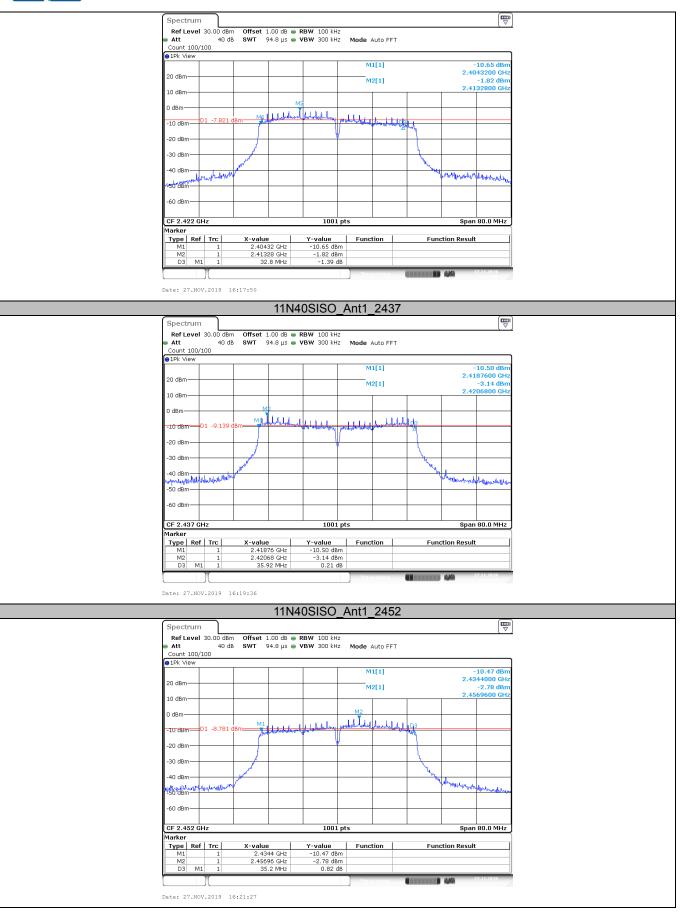


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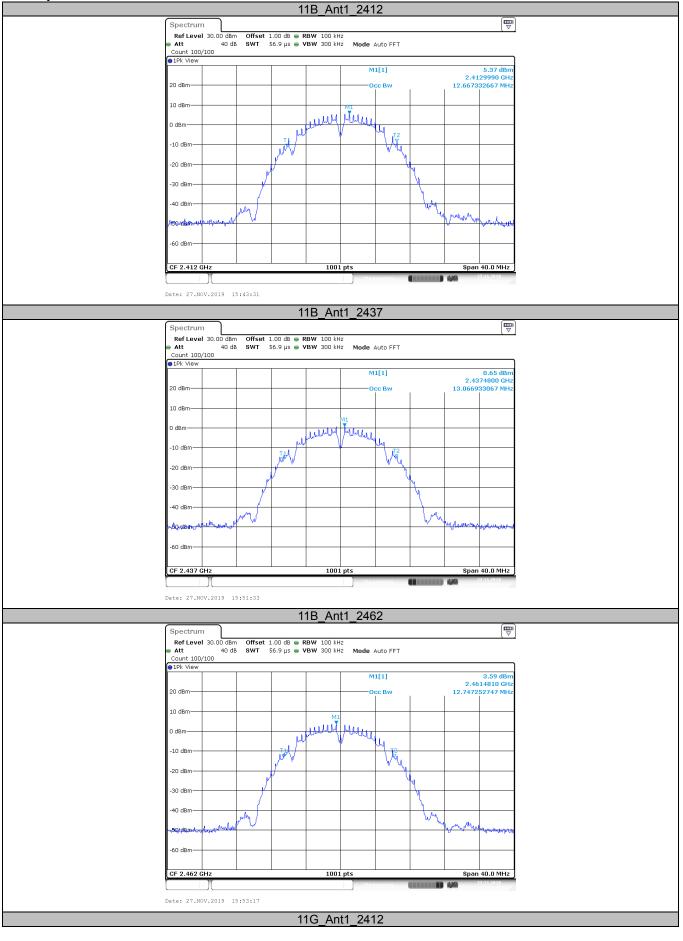
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Occupied Channel Bandwidth:



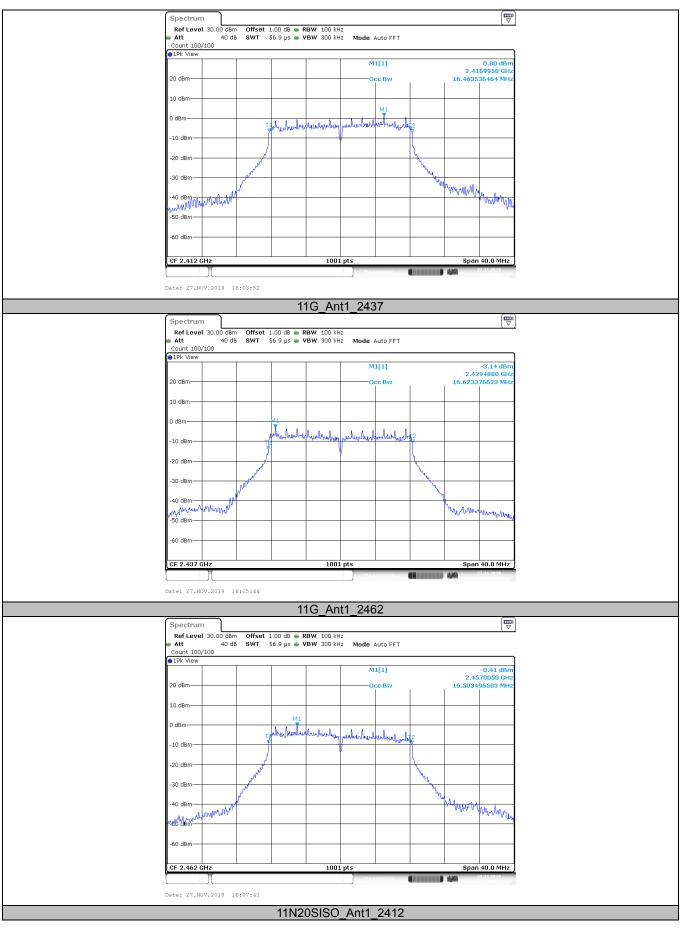
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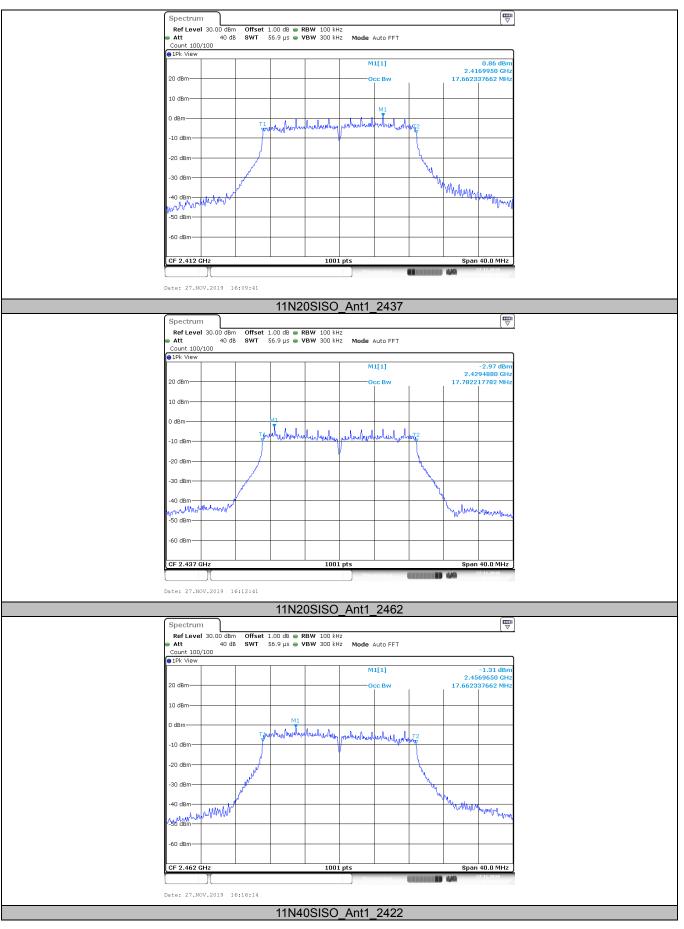




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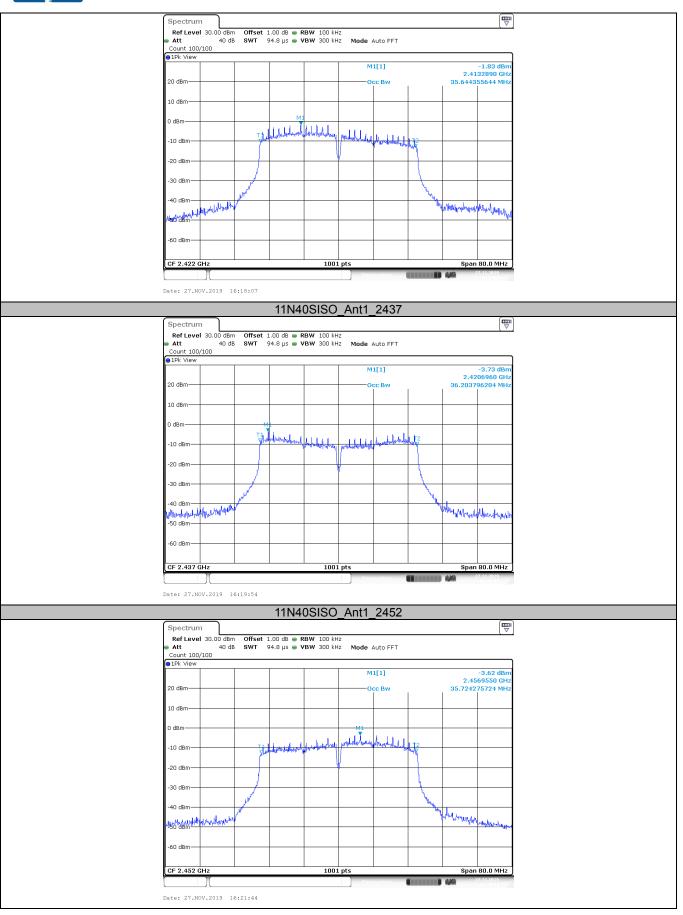




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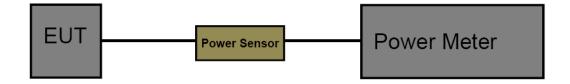
3.5. Peak Output Power

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3)/ RSS-247 5.4:

Section	Test Item	Limit	Frequency Range(MHz)
CFR 47 FCC 15.247(b)(3)	Maximum conducted output power	1 Watt or 30dBm	2400~2483.5
ISED RSS-247 5.4 d	EIRP	4 Watt or 36dBm	2400~2483.5

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

2. Spectrum Setting:

Peak Detector: RBW≥DTS Bandwidth, VBW≥3*RBW.

Sweep time=Auto.

Detector=Peak.

Trace mode=Maxhold.

Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

Test Mode

Please refer to the clause 2.2

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
		2412	14.28	<=30	PASS
11B	Ant1	2437	14.41	<=30	PASS
		2462	13.09	<=30	PASS
		2412	7.92	<=30	PASS
11G	Ant1	2437	4.14	<=30	PASS
		2462	6.18	<=30	PASS
		2412	8.30	<=30	PASS
11N20SISO	Ant1	2437	5.17	<=30	PASS
		2462	6.15	<=30	PASS
		2422	2.75	<=30	PASS
11N40SISO	Ant1	2437	0.77	<=30	PASS
		2452	1.49	<=30	PASS

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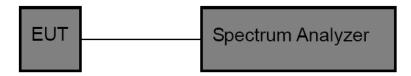
3.6. Power Spectral Density

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (e)/ RSS-247 5.2 b:

Test Item	Limit	Frequency Range(MHz)	
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5	

Test Configuration



Test Procedure

- 1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- 2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.

3. Spectrum Setting:

Set analyzer center frequency to DTS channel center frequency.

Set the span to 1.5 times the DTS bandwidth.

Set the RBW to: 3 kHz

Set the VBW to: 10 kHz Detector: peak

Sweep time: auto

Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

Test Mode

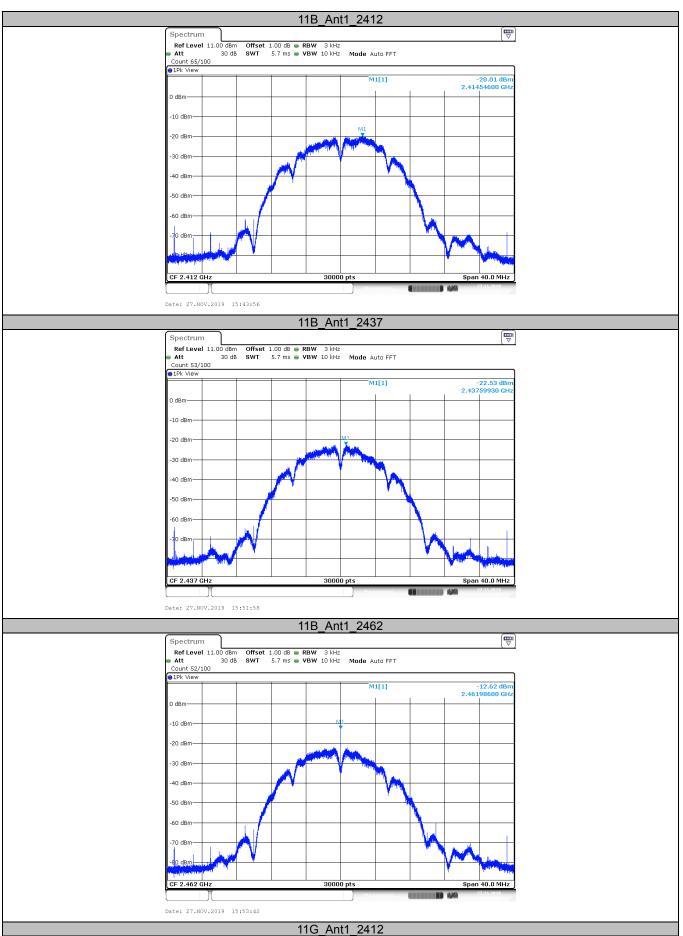
Please refer to the clause 2.3.

Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B Ant1	2412	-20.01	<=8	PASS	
	2437	-22.53	<=8	PASS	
	2462	-12.62	<=8	PASS	
11G Ant1		2412	-23.25	<=8	PASS
	Ant1	2437	-26.72	<=8	PASS
		2462	-23.76	<=8	PASS
11N20SISO Ant1		2412	-23.01	<=8	PASS
	2437	-28.95	<=8	PASS	
	2462	-23.72	<=8	PASS	
11N40SISO Ant1		2422	-24.32	<=8	PASS
	Ant1	2437	-25.93	<=8	PASS
		2452	-25.69	<=8	PASS

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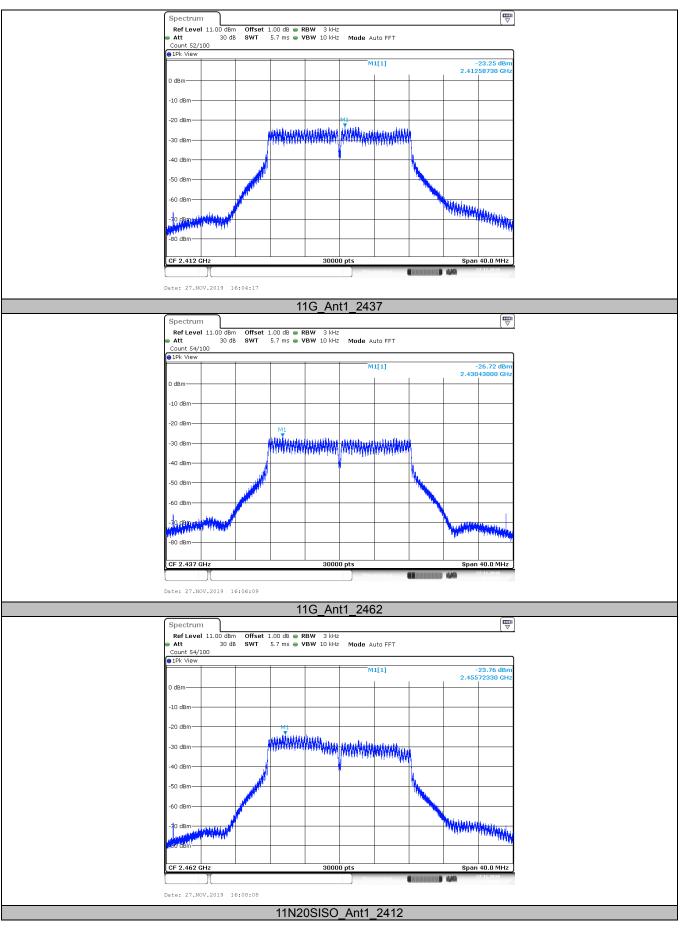


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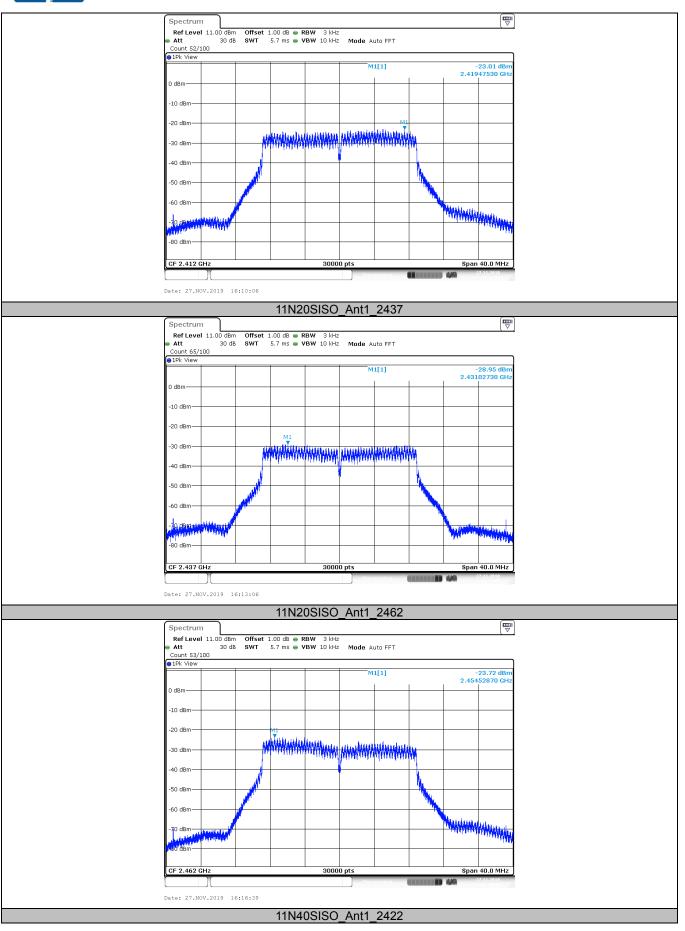




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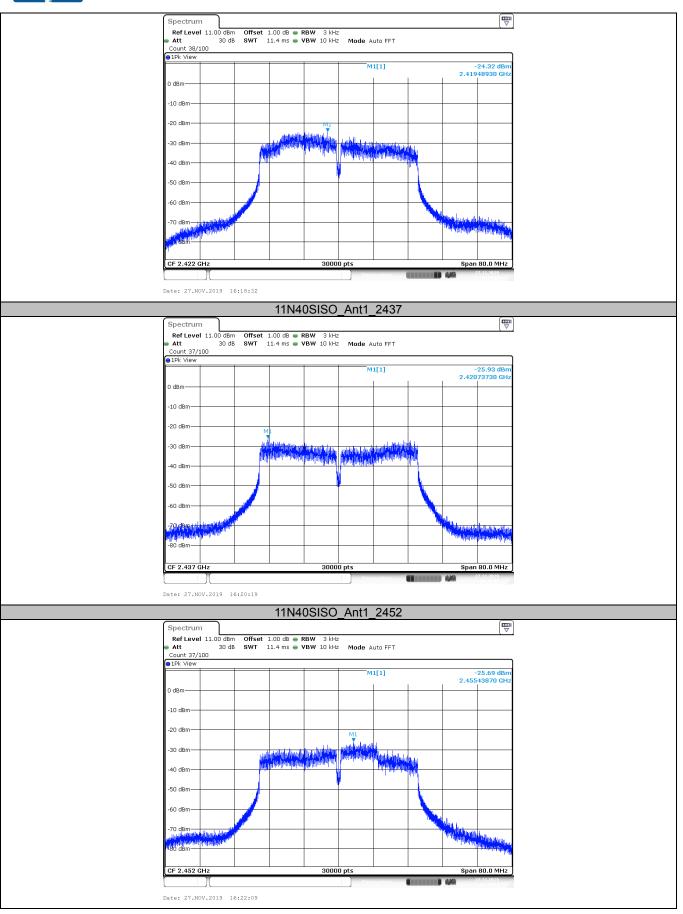


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3.7. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C 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 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.

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

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

<u>Test Result</u>

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.





Reference to the Report No.: Test Photo 2

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5.PHOTOGRAPHS OF EUT CONSTRUCTIONAL

Reference to the Report No.: External photos and Internal photos

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