Report Number: 68.930.16.038.01



FCC - TEST REPORT

Report Number	:	68.930.16.038.	01	Date of Issue:	March 16, 2017		
Model	: Acclarix AX8, Acclarix AX8 VET						
Product Type	:	Diagnostic Ultra	asound Sys	tem			
Applicant	:	EDAN INSTRU	MENTS,IN	C.			
Address	:	15# Jinhui Roa	d, Jinsha C	ommunity, Keng	zi Sub-District, Pingshan		
		District, 518122	Shenzhen	, P.R.China			
Production Facility	:	EDAN INSTRU	MENTS,IN	C.			
Address	:	15# Jinhui Roa	d, Jinsha C	ommunity, Keng	zi Sub-District, Pingshan		
		District, 518122	Shenzhen	, P.R.China			
Test Result	:	Positive	D Negati	ve			
Total pages including Appendices	:	61					

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, Shenzhen City, 518052, P. R. China
FCC Registration Number:	502708
Telephone: Fax:	86 755 8828 6998 86 755 8828 5299



3 Description of the Equipment Under Test

Product:	Diagnostic Ultrasound System
Model no.:	Acclarix AX8, Acclarix AX8 VET
FCC ID:	SMQAX8EDAN
Brand Name:	EDAN
Options and accessories:	NIL
Rating:	14.4Vdc 6150mAh supplied by Rechargeable Li-ion Battery Charged by and external adapter
Adapter Information	Model: MENB1150A1949F02 Input: 100-240Vac, 50/60Hz, Max 2.5A Output: 19Vdc, 7.8A
RF Transmission Frequency:	2412-2462MHz
No. of Operated Channel:	11
Modulation:	DSSS, OFDM
Antenna Type:	Internal Antenna
Antenna Gain:	Antenna0: 3.0dBi Antenna1: 3.0dBi
Description of the EUT:	The Equipment Under Test (EUT) is a Diagnostic Ultrasound System operated at 2.4GHz.

Remark 1: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Remark 2: As per Client Declaration, Acclarix AX8 and Acclarix AX8 VET are identical. So we use Acclarix AX8 as a representative to perform all testing.



4 Summary of Test Standards

Test Standards					
FCC Part 15 Subpart C	PART 15 - RADIO FREQUENCY DEVICES				
10-1-2016 Edition	Subpart C - Intentional Radiators				

All the test methods were according to KDB558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10 (2014).



Technical Requirements					
FCC Part 15 Subpart (C				
Test Condition		Pages	Test Site	Test Result	
§15.207	207 Conducted emission AC power port		Site 1	Pass	
§15.247(b)(1)	Conducted peak output power	13	Site 1	Pass	
§15.247(a)(2)	20dB bandwidth			N/A	
§15.247(a)(1)	6dB bandwidth and 99% Occupied Bandwidth	15	Site 1	Pass	
§15.247(a)(1)	Carrier frequency separation			N/A	
§15.247(a)(1)(iii)	Number of hopping frequencies			N/A	
§15.247(a)(1)(iii)	Dwell Time			N/A	
§15.247(e)	Power spectral density	21	Site 1	Pass	
§15.247(d)	Spurious RF conducted emissions	22	Site1	Pass	
§15.247(d)	Band edge	32	Site 1	Pass	
§15.247(d) & §15.209 & §15.205	Spurious radiated emissions for transmitter	36	Site 1	Pass	
§15.203	Antenna requirement	See note 2		Pass	

Note 1: N/A=Not Applicable.

Note 2: The EUT uses an internal antenna, which gain is 3.0dBi. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: SMQAX8EDAN, complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

SUMMARY:

All tests according to the regulations cited on page 5 were

- Performed
- □ Not Performed

The Equipment Under Test

- - Fulfills the general approval requirements.
- □ **Does not** fulfill the general approval requirements.

Sample Received Date:

Date: _____ December 16, 2016

Testing Start Date: December 16, 2016

Testing End Date:

January 10, 2017

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Reviewed by:

Johnshi

John Zhi Section Manager

Prepared by:

Alen Xion

Alan Xiong Project Engineer

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7 Test Setups

7.1 AC Power Line Conducted Emission test setups



7.2 Radiated test setups

Below 1GHz:



Above 1GHz:



7.3 Conducted RF test setups



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8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)

The system was configured to non-hopping mode.

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power.

Through pre-scan all kind of modulation and all kind of rates, find the 1Mbps of rate is the worst case of 802.11b; the 6Mbps of rate is the worst case of 802.11g; the 6.5Mbps of rate is the worst case of 802.11N20; the 13.5Mbps of rate is the worst case of 802.11N40, only the worst case transmitter rate data mode in recorded in the report.



9.1 Conducted Emission

Test Method

- 1. The EUT was placed on a table, which is 0.8m above ground plane
- 2. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.).
- 3. Maximum procedure was performed to ensure EUT compliance
- 4. A EMI test receiver is used to test the emissions from both sides of AC line

Limit

According to §15.207, conducted emissions limit as below:

Frequency	QP Limit	AV Limit
MHz	dBµV	dBµV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50
Deenseeine lineenles ssith	lo conidhan of the fuer	

Decreasing linearly with logarithm of the frequency

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Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.194000	46.87		63.86	17.00	L1	9.7
0.962000	41.31		56.00	14.69	L1	9.7
1.282000	42.09		56.00	13.91	L1	9.7
1.734000	42.57		56.00	13.43	L1	9.7
2.054000	42.18		56.00	13.82	L1	9.7
14.186000	43.37		60.00	16.63	L1	10.1

:

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Product Type M/N Operating Condition Test Specification Comment Diagnostic Ultrasound System Acclarix AX8 Normal Working with WiFi Traffic Neutral AC 120V/60Hz



Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.194000	47.28		63.86	16.58	N	9.6
0.962000	41.35		56.00	14.65	N	9.7
1.414000	42.86		56.00	13.14	N	9.7
1.734000	43.05		56.00	12.95	Ν	9.7
2.634000	42.63		56.00	13.37	Ν	9.7
4.494000	42.28		56.00	13.72	Ν	9.8



9.2 Conducted peak output power

Test Method

- Use the following spectrum analyzer settings: Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel RBW > the 20 dB bandwidth of the emission being measured, VBW≥RBW, Sweep = auto, Detector function = peak, Trace = max hold
- 2. Add a correction factor to the display.
- 3. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power

Limits

According to §15.247 (b) (1) and RSS-210 A8.4, conducted peak output power limit as below:

Frequency Range	Limit	Limit
MHz	W	dBm
2400-2483.5	≤1	≤30



Conducted peak output power

802.11b modulation Test Result

Frequency (MHz)	Antenna	Conducted Peak Output Power (dBm)	Limit (dBm)	Result
Low channel 2412MHz	Antenna 0	9.27	30	Pass
	Antenna 1	9.05	30	Pass
Middle channel 2437MHz	Antenna 0	9.59	30	Pass
	Antenna 1	9.53	30	Pass
High channel 2462MHz	Antenna 0	9.51	30	Pass
	Antenna 1	9.52	30	Pass

802.11g modulation Test Result

Frequency (MHz)	Antenna	Conducted Peak Output Power (dBm)	Limit (dBm)	Result
Low channel 2412MHz	Antenna 0	9.67	30	Pass
Low channel 2412MHz	Antenna 1	9.51	30	Pass
Middle shapped 2427MHz	Antenna 0	9.23	30	Pass
	Antenna 1	9.07	30	Pass
High channel 2462MHz	Antenna 0	9.09	30	Pass
Flight channel 2462101HZ	Antenna 1	9.29	30	Pass

802.11n-HT20 modulation Test Result

Frequency (MHz)	Antenna	Conducted Peak Output Power (dBm)	Limit (dBm)	Result
	Antenna 0	6.41	30	Pass
Low channel 2412MHz	Antenna 1	6.29	30	Pass
	MIMO	9.36	30	Pass
	Antenna 0	6.54	30	Pass
Middle channel 2437MHz	Antenna 1	6.84	30	Pass
	MIMO	9.70	30	Pass
	Antenna 0	6.19	30	Pass
High channel 2462MHz	Antenna 1	6.25	30	Pass
	MIMO	9.23	30	Pass

802.11n-HT40 modulation Test Result

Frequency (MHz)	Antenna	Conducted Peak Output Power (dBm)	Limit (dBm)	Result
	Antenna 0	7.08	30	Pass
Low channel 2422MHz	Antenna 1	6.63	30	Pass
	MIMO	9.35	30	Pass
	Antenna 0	6.10	30	Pass
Middle channel 2437MHz	Antenna 1	6.52	30	Pass
	MIMO	9.33	30	Pass
	Antenna 0	6.40	30	Pass
High channel 2452MHz	Antenna 1	6.45	30	Pass
Ū	MIMO	9.44	30	Pass

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9.3 6dB bandwidth

Test Method

- Use the following spectrum analyzer settings: RBW=100K, VBW≥3RBW, Sweep = auto, Detector function = peak, Trace = max hold
- 2. Use the automatic bandwidth measurement capability of an instrument, may be employed using the X dB bandwidth mode with X set to 6 dB, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.
- 3. Allow the trace to stabilize, record the X dB Bandwidth value.

Limit

Limit [kHz]

≥500

Frequency (MHz)	Antenna	6dB bandwidth (MHz)	Limit (MHz)	Result
	Antenna 0	10.072	0.5	Pass
Low channel 2412MHz	Antenna 1	10.116	0.5	Pass
Middle channel 0407ML	Antenna 0	10.072	0.5	Pass
Middle channel 2437 MHz	Antenna 1	10.116	0.5	Pass
High observal 2462MHz	Antenna 0	10.116	0.5	Pass
	Antenna 1	10.116	0.5	Pass

802.11b modulation Test Result

802.11g modulation Test Result

Frequency (MHz)	Antenna	6dB bandwidth (MHz)	Limit (MHz)	Result
Low chornel 2412MHz	Antenna 0	16.585	0.5	Pass
Low channel 2412MHz	Antenna 1	16.585	0.5	Pass
Middle shapped 2427MHz	Antenna 0	16.541	0.5	Pass
	Antenna 1	16.585	0.5	Pass
High channel 2462MHz	Antenna 0	16.585	0.5	Pass
High channel 2462MHz	Antenna 1	16.541	0.5	Pass

802.11n-HT20 modulation Test Result

Frequency (MHz)	Antenna	6dB bandwidth (MHz)	Limit (MHz)	Result
Low oboppol 2412MHz	Antenna 0	17.800	0.5	Pass
Low charmer 2412WHZ	Antenna 1	17.844	0.5	Pass
Middle abapped 2427MHz	Antenna 0	17.844	0.5	Pass
	Antenna 1	17.844	0.5	Pass
High channel 2462MHz	Antenna 0	17.844	0.5	Pass
High channel 2462MHz	Antenna 1	17.844	0.5	Pass



Frequency (MHz)	Antenna	6dB bandwidth (MHz)	Limit (MHz)	Result
Low observed 2422MHz	Antenna 0	36.643	0.5	Pass
	Antenna 1	36.556	0.5	Pass
Middle abappal 2427MHz	Antenna 0	36.643	0.5	Pass
Middle channel 2437 MHZ	Antenna 1	36.556	0.5	Pass
High chapped 2452MHz	Antenna 0	36.556	0.5	Pass
High channel 2452MHz	Antenna 1	36.577	0.5	Pass

802.11n-HT40 modulation Test Result

802.11b_2412MHz_Antenna 0



Date: 4.JAN.2017 09:34:15

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802.11b_2437MHz_Antenna 0

Date: 4.JAN.2017 09:37:31



802.11b_2462MHz_Antenna 0

Date: 4.JAN.2017 09:39:07

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802.11b_2412MHz_Antenna 1

Date: 3.JAN.2017 15:58:54





Date: 3.JAN.2017 16:00:05

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802.11b_2462MHz_Antenna1

Date: 3.JAN.2017 16:01:11



802.11g_2412MHz_Antenna0

Date: 4.JAN.2017 09:29:41

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802.11g_2437MHz_Antenna 0

Date: 4.JAN.2017 09:30:49



802.11g_2462MHz_Antenna0

Date: 4.JAN.2017 09:33:02

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802.11g_2412MHz_Antenna1

Date: 3.JAN.2017 15:55:06

Date: 3.JAN.2017 15:56:07



802.11g_2437MHz_Antenna1

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802.11g_2462MHz_Antenn1

Date: 3.JAN.2017 15:57:29



802.11N20_2412MHz_Antenna0

EMC_SZ_FR_21.00 FCC Release 2014-03-20



Spectrun									
Ref Level	12.00 dBm	Offset	0.50 dB 👄 R	BW 100 kHz					(*
Att	30 dB	SWT	75.9 µs 🖷 V	'BW 300 kHz	Mode A	uto FFT			
😑 1Pk Max									
					D	1[1]		17 7560	1.19 dB 2.8440 MHz
0 dBm	D1 -1.290	dBm	www.www.	anner	polionarily	uliklar	mont	2.42	-7.63 dBm 80560 GHz
-10 dBm		.290 uBm			/			λ. 1	
-20 dBm	howard							M. Summer	
~39.4Banale								<u>س</u>	monture
-40 dBm									
-50 dBm									
-60 dBm									
-70 dBm									
-80 dBm									
CF 2.437 C	GHz			691	pts			Span	30.0 MHz
					Mea	suring		4/0	4.01.2017 09:26:16

802.11N20 2437MHz Antenna0

Date: 4.JAN.2017 09:26:16



802.11N20_2462MHz_Antenna0

Date: 4.JAN.2017 09:27:32

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802.11N20_2412MHz_Antenna1

Date: 3.JAN.2017 15:48:32



802.11N20_2437MHz_Antenna1

Date: 3.JAN.2017 15:49:34

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802.11N20_2462MHz_Antenna1

Date: 3.JAN.2017 15:50:27



802.11N40_2422MHz_Antenna0

Date: 4.JAN.2017 09:20:12

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Spectrun	n								l □ □
Ref Level	12.00 dBm	Offset	0.50 dB 👄	RBW 100 kH	z				
Att	30 dB	SWT	132.7 µs 👄	VBW 300 kH	z Mode /	Auto FFT			
🔵 1 Pk Max									
					D	1[1]			-0.77 di
								36	5.6430 MH
0.40.00					0	cc Bw		36.3820	54993 MH:
U aBm					M	1[1]	-		-8.98 dBn
	DT -3.290	an manual	mound	monorman	ponorman		mound	2.41	86790 GH
-10 dBm	D2 -9	.590 dBm=	_				L		
				կ	h,			1	
00 40	1							14 <u>.</u>	
-20 aBm								1. No. 1	
	and the							W.	
-30 dBm	putri .		_					Uning	Nat
all months and	ſ								Will was a
40 40									~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
-40 aBm									
-50 dBm			_						
-60 uBm									
-70 dBm			_						
00 d0m									
-80 aBm									
CF 2.437 (GHz			691	pts			Span	60.0 MHz
					Mea	suring	Concession in the local division of the loca	00 0	04.01.2017
									09:18:55

802.11N40_2437MHz_Antenna0

Date: 4.JAN.2017 09:18:55



802.11N40_2452MHz_Antenna0

Date: 4.JAN.2017 09:22:24

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802.11N40_2422MHz_Antenna1

Date: 3.JAN.2017 15:44:49



802.11N40_2437MHz_Antenna1

Date: 3.JAN.2017 15:46:14

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Spectrun	n			_	_				
Ref Level	11.50 dBm	Offset	0.50 dB 😑 I	RBW 100 kH	z				`
Att	30 dB	SWT :	L32.7 µs 👄 '	VBW 300 kH	z Mode	Auto FFT			
⊖1Pk Max									
					C	01[1]			-0.02 dB
								36	.5770 MHz
0 dBm					C	Occ Bw	т	2 36.3820	54993 MHz
	D1 -2.500	BUILLIN	philipping	Month way my marked	pourounarol	hitebour	monorman		-6.97 авт 36790 GHz
-10 dBm	D2 -8.	500 dBm <u>—</u>						1	
				6	P			Į –	
-20 dBm	all a							- tu	
	malyder							My ville	
1930 ABM			-						WHAT IS A
Ť									
-40 dBm									
-50 dBm									
00 0.0.									
co dour									
-60 aBm									
-70 dBm									
-80 dBm						_			
CF 2.452 (GHz			691	pts			Span	60.0 MHz
	Υ				Me	asuring	COLUMN 2 D	100	3.01.2017
									15:47:15

802.11N40_2452MHz_Antenna1

Date: 3.JAN.2017 15:47:16

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9.4 Power spectral density

Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

- Set analyzer center frequency to DTS channel center frequency. RBW=3kHz,VBW≥3RBW,Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
- 2. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
- 3. Repeat above procedures until other frequencies measured were completed.

Limit

Limit [dBm]

≤8

Power spectral Frequency Limit Antenna density Result (MHz) (dBm) (dBm) Antenna 0 8 -8.57 Pass Low channel 2412MHz Antenna 1 -8.14 8 Pass Antenna 0 -7.88 8 Pass Middle channel 2437MHz Antenna 1 8 Pass -6.50 -8.75 Antenna 0 8 Pass High channel 2462MHz Antenna 1 8 Pass -8.79

802.11b modulation Test Result

802.11g modulation Test Result

Frequency (MHz)	Antenna	Power spectral density (dBm)	Limit (dBm)	Result
Low channel 2412MHz	Antenna 0	-10.19	8	Pass
Low channel 2412MHz	Antenna 1	-8.38	8	Pass
Middle channel 2427MHz	Antenna 0	-9.37	8	Pass
	Antenna 1	-9.56	8	Pass
High channel 2462MHz	Antenna 0	-10.96	8	Pass
	Antenna 1	-9.44	8	Pass



Frequency (MHz)	Antenna	Power spectral density (dBm)	Limit (dBm)	Result
	Antenna 0	-11.76	8	Pass
Low channel 2412MHz	Antenna 1	-10.24	8	Pass
	MIMO	-7.92	8	Pass
	Antenna 0	-11.49	8	Pass
Middle channel 2437MHz	Antenna 1	-7.88	8	Pass
	MIMO	-6.31	8	Pass
	Antenna 0	-13.48	8	Pass
High channel 2462MHz	Antenna 1	-10.96	8	Pass
	MIMO	-9.03	8	Pass

802.11n-HT20 modulation Test Result

802.11n-HT40 modulation Test Result

Frequency (MHz)	Antenna	Power spectral density (dBm)	Limit (dBm)	Result
	Antenna 0	-12.88	8	Pass
Low channel 2422MHz	Antenna 1	-12.12	8	Pass
	MIMO	-9.47	8	Pass
	Antenna 0	-12.89	8	Pass
Middle channel 2437MHz	Antenna 1	-11.29	8	Pass
	MIMO	-9.01	8	Pass
	Antenna 0	-14.61	8	Pass
High channel 2452MHz	Antenna 1	-12.09	8	Pass
	MIMO	-10.16	8	Pass



9.5 Spurious RF conducted emissions

Test Method

- 1. Use the following spectrum analyzer settings:
 - Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span. RBW = 100 kHz, VBW≥RBW, Sweep = auto, Detector function = peak, Trace = max hold
- 2. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
- 3. The level displayed must comply with the limit specified in this Section. Submit these plots.
- 4. Repeat above procedures until all frequencies measured were complete.

Limit

Frequency Range MHz	Limit (dBc)
30-25000	-20



Spurious RF conducted emissions

All modulation test result is listed in the report.

802.11b_2412MHz_Antenna 0 Spectrum Ref Level 18.00 dBm Offset 0.50 dB 👄 RBW 100 kHz 35 dB 9.7 ms 👄 **VBW** 300 kHz SWT Att Mode Auto Sweep 🔵 1Pk Max -52.01 dBm M1[1] 974.00 MHz 10 dBm 0 dBm -10 dBm D1 -15.560 dBm -20 dBm--30 dBm 40 dBm -50 dBm unutrifi una all molecular mandar Judahule human . dubn Marchelson H. An -60 dBm -70 dBm -80 dBm Start 30.0 MHz 691 pts Stop 1.0 GHz 04.01.2017 09:51:42 Measuring... Date: 4.JAN.2017 09:51:42 ₩ Spectrum Ref Level 18.00 dBm Offset 0.50 dB 👄 RBW 100 kHz Att 35 dB SWT 240 ms 👄 VBW 300 kHz Mode Auto Sweep ⊖1Pk Ma× M1[1] 4.44 dBn 2.4070 GH 10 dBm 0 dBm -10 dBm D1 -15.560 dBm -20 dBm -30 dB<mark>n</mark> 40 dB -50 dB Halp were ما قد قد ح 1. rated When a momone

Date: 4.JAN.2017 09:51:19

-60 dBm

-70 dBm

-80 dBm Start 1.0 GHz

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Measuring...

691 pts

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Stop 25.0 GHz 04.01.2017 09:51:19



Spectrun	ι								
Ref Level	18.00 dBm	Offset	0.50 dB 👄 RB	3W 100 kHz					
	35 GB	SWI	9.7 ms 🖷 🗸	BW 300 KHZ	Mode A	uto Sweep			
OTEK May					м	1[1]			53 39 dBm
10 10-						-[-]		g	48.80 MHz
10 aBm									
0 dBm									
o ubiii									
-10 dBm									
-10 0011	-D1 -14 940	dBm							
-20 dBm	DI -14.040								
-20 ubiii									
-30 dBm									
-40 dBm									
-50 dBm									M1
	م بالاستاد ال	المراجع والمراجع		. Askels where	H. J. March March Land	millionerradia	Johnerhander	manhunghly	Auropean
-60 dBm-	an Charlen and	WINH WINN	we we way the	hall a canna mar a					
-70 dBm			_						
-80 dBm									
Start 30.0	MHz			691	pts			Sto	p 1.0 GHz
					Mea	suring		4/0	4.01.2017 09:52:31

802.11b_2437MHz_Antenna 0

Date: 4.JAN.2017 09:52:31



Date: 4.JAN.2017 09:52:18

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Spectrun	n								
Ref Level	18.00 dBm	Offset	0.50 dB 😑 RI	3W 100 kHz					
Att	35 dB	SWT	9.7 ms 🖷 V	BW 300 KHz	Mode A	uto Sweep			,
●1Pk Max	1								
					M	1[1]			52.70 dBm
10 dBm			_					5	85.30 MHZ
0 dBm									
-10 dBm									
-10 0.011									
	D1 -15.850	dBm							
-20 dBm									
-30 dBm									
-40 dBm									
-50 dBm									M1
				يتماد الجلال	. Altohute P	and and a start of the start of	www.	handrand	mumum
Contraction of the second seco	(www.unupaupa.	h h h m m m m m m m m m m m m m m m m m	"murandalana	allingeren					
-00 0811									
-70 dBm									
-80 dBm									
Start 30.0	MHz			691	pts			Sto	p 1.0 GHz
	J				Mea	suring		4/0	09:53:28

802.11b_2462MHz_Antenna 0

Date: 4.JAN.2017 09:53:28



Date: 4.JAN.2017 09:53:13

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Spectrun	n								
Ref Level	30.50 dBm	Offset	0.50 dB 😑 RB	3W 100 kHz					
Att	50 dB	SWT	9.7 ms 👄 ۷	BW 300 kHz	Mode A	uto Sweep			
OIPK Max					M	1[1]			37.74 dBm
								. g	48.80 MHz
20 dBm									
10 dBm									
0 dBm									
o abiii									
-10 dBm									
	D1 -15.060	dBm							
-20 dBm—									
-30 dBm									M1
-40 dBm-t-						her and the	L LALIN MARK	his here and	и Тишь
un the phy and	mount	withathour	hand	home	~wh~vh~vhu~v~uv	1~100.0~00.00.00.00.00.00.00.00.00.00.00.00	1.0.000.000		···· 00 ··· 0.
-50 dBm									
-60 dBm									
Start 30.0	MHz			691	pts			Sto	p 1.0 GHz
					Mea	asuring		4/0	3.01.2017 16:38:57

802.11b_2412MHz_Antenna 1

Date: 3.JAN.2017 16:38:57



Date: 3.JAN.2017 16:38:31

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Spectrun	n								
Ref Level	30.50 dBm	Offset	0.50 dB 😑 RI	3W 100 kHz					`
Att	50 dB	SWT	9.7 ms 🖷 VI	BW 300 kHz	Mode	Auto Sweep			
OIPK Max					1	M1[1]		-	37.99 dBm
						1	1	9	37.50 MHz
20 dBm									
10 dBm									
10 000									
0 dBm									
-10 dBm—	D1 14 070	dD ar							
-20 dBm-	DI -14.370	dBm-							
-20 0011									
-30 dBm									
									M1
-40 dBm	browthermo	mature	verillionsuld	mylowner	nutrende	Martin warded	a daga and tages	here and a start of the second	and the second
-50 dBm-									
-50 0811									
-60 dBm									
Start 30.0	MHz	1	1	691	pts		1	Sto	p 1.0 GHz
					Me	asuring		4/0	13.01.2017 16:40:05

802.11b_2437MHz_Antenna 1

Date: 3.JAN.2017 16:40:05



Date: 3.JAN.2017 16:39:50

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Spectrun	'n								
Ref Level	30.50 dBm	Offset	0.50 dB 👄 RI	3W 100 kHz					`
Att	50 dB	SWT	9.7 ms 🛑 V	BW 300 kHz	Mode /	Auto Sweep			
UPK Max					N	41[1]			-38.02 dBm 809.80 MHz
20 dBm									
10 dBm									
0 dBm									
-10 dBm									
-20 dBm	D1 -16.250	dBm							
-30 dBm								11	
-40 dBm	unapenatura	unun	lalanderragens	all when the second	wither	www.	Marild and a second of the second of the second	an and the second s	
-50 dBm									
-60 dBm									
Start 30.0	MHz			691	pts			Sto	p 1.0 GHz
					Me	asuring		4)0	03.01.2017 16:41:15

802.11b_2462MHz_Antenna 1

Date: 3.JAN.2017 16:41:15



Date: 3.JAN.2017 16:41:01

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Spectrun	n									
Ref Level	14.00 dBm	Offset	0.50 dB 👄	RBW	100 kHz					`
1Pk Max	30 GB	511	9.7 ms 👅	ABM	300 KHZ	Mode	Auto Sweep			
10 dBm							M1[1]	1	- 9	•58.55 dBm 946.00 MHz
0 dBm				_						
-10 dBm				_						
- 20 dBm	D1 -20.160	dBm		-						
-30 dBm				+						
-40 dBm				_						
-50 dBm				_						
-60 dBm	hutun hutun	لللالم المسلم	unnudabutrativ	Manura	wulliyeliyeliyeli	www.takithere	mynhadathe	ala range and	and the work of the second second	M1
-70 dBm				_						
-80 dBm				_						
Start 30.0	MHz		1		691	pts			Sto) p 1.0 GHz
						M	easuring		1,70	04.01.2017 09:54:56

802.11g_2412MHz_Antenna 0

Date: 4.JAN.2017 09:54:56



Date: 4.JAN.2017 09:54:07

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Spectrun	ı)									
Ref Level	14.00 dBm	Offset	0.50 dB 🖷	RBW	100 kHz					`
Att	30 GB	5W1	9.7 ms 🖷	ABM	300 KHZ	Mode	Auto Sweep			
10 dBm						P	M1[1]	1	-	58.25 dBm /17.10 MHz
0 dBm				+						
-10 dBm				+						
-20 dBm	D1 -19.890	dBm								
-30 dBm				+						
-40 dBm				+						
-50 dBm								м1		
-60 dBm	northerite	-pourtube	Muumuhu	withur	nderafe	uuuwahaarint	ulu-upitul-huthi		buuluwodut. 4	وسلى روان ، روان م ىسو
-70 dBm——										
-80 dBm										
start 30.0	MHZ				691	pts Me	asuring		Sto	p 1.U GHz 14.01.2017 09:55:33

802.11g_2437MHz_Antenna 0

Date: 4.JAN.2017 09:55:34



Date: 4.JAN.2017 09:55:21

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Spectrun	n								
Ref Level	14.00 dBm	Offset	0.50 dB 👄 R	BW 100 kHz					
1Pk Max	30 GB	5W1	9.7 ms 🖶 🛛	BW 300 KHZ	Mode	Auto Sweep			
10 dBm						M1[1]	1	- 9	58.22 dBm)27.70 MHz
0 dBm									
-10 dBm—									
-20 dBm	D1 -21.220	dBm							
-30 dBm									
-40 dBm									
-50 dBm									
-60 dBD	munul	Mullhaungh	ununulunun	y word with had a had a man	tomand	nipplinellert	www.www.		affer a subless
-70 dBm—									
-80 dBm									
Start 30.0	MHz	1		691	ots			Sto	p 1.0 GHz
					Mi	easuring		4,40	14.01.2017 09:56:36

802.11g_2462MHz_Antenna 0

Date: 4.JAN.2017 09:56:37



Date: 4.JAN.2017 09:56:19

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Spectrun	n								
Ref Level	30.50 dBm	Offset	0.50 dB 👄 RB	3W 100 kHz					
Att	50 dB	SWT	9.7 ms 🖷 ۷	BW 300 KHZ	Mode A	uto Sweep			
TEK Max					M	1[1]		-	37.71 dBm 58.90 MHz
20 dBm									
10 dBm									
0 dBm									
-10 dBm									
-20 dBm	D1 -18.950	dBm====							
-30 dBm—								M1	
r-fordBminn	phoneterant	uunilungli	www.www.	1 have my mill	-dubouddidd flwg-u	tinger the second s	and an	parthrough had a fe	مەلىرىدىيەتلەردىمەرلىرىغا مەلىرىدىيەتلەردىمەر بىلىرىدىمەر بىلىرىدىمەر بىلىرىدىمەر بىلىرىدىمەر بىلىرىدىمەر بىلىرى
-50 dBm									
-60 dBm									
Start 30.0	MHz			691	pts			Sto	p 1.0 GHz
					Mea	asuring		40	3.01.2017 16:44:11

802.11g_2412MHz_Antenna 1

Date: 3.JAN.2017 16:44:11



Date: 3.JAN.2017 16:42:35

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Spectrun	n								
Ref Level Att	23.00 dBm 40 dB	Offset SWT	0.50 dB 👄 R 9.7 ms 👄 V	BW 100 kHz BW 300 kHz	Mode /	Auto Sweep			``````````````````````````````````````
⊖1Pk Max									
20 dBm					N	11[1]	1	- 9	48.33 dBm 985.30 MHz
10 dBm									
0 dBm									
-10 dBm—									
-20 dBm	D1 -19.510	dBm							
-30 dBm									
-40 dBm—									
1-50,dBm	heleward	withurry	uhuma halyyee	perphenetour	hunder	A COLONIC LAND OF DE	-	the second second	ull warn and
-60 dBm—									
-70 dBm—									
Start 30.0	MHz			691	pts			Sto	p 1.0 GHz
					Me	asuring		1/0)3.01.2017 16:45:13

802.11g_2437MHz_Antenna 1

Date: 3.JAN.2017 16:45:14



Date: 3.JAN.2017 16:45:00

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Spectrun	n								
Ref Level Att	23.00 dBm 40 dB	Offset SWT	0.50 dB 👄 RI 9.7 ms 👄 VI	3W 100 kHz BW 300 kHz	Mode A	uto Sweep			`
😑 1Pk Max									
20 dBm					M	1[1]	1	- g	48.15 dBm 16.50 MHz
10 dBm									
0 dBm									
-10 dBm—									
-20 dBm—	D1 -21.610	dBm							
-30 dBm									
-40 dBm—									
nialdemini	MillTreacherman	Mathematic	hindrathelpethan	-umunumumu	Inputruentia	adak wa	www.uwww.		- Andrettense
-60 dBm									
-70 dBm—									
Start 30.0	MHz	I		691	pts		1	Sto	p 1.0 GHz
)[]				Mea	suring		4/0	03.01.2017 16:46:23

802.11g_2462MHz_Antenna 1

Date: 3.JAN.2017 16:46:23



Date: 3.JAN.2017 16:46:10

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Spectrun	n								
Ref Level	23.00 dBm	Offset	0.50 dB 👄	RBW 100 kH	lz				
Att	40 dB	SWI	9.7 ms 🖷	VRM 300 KF	12 Mode	Auto Sweep)		
20 dBm						M1[1]		. 6	48.02 dBm 309.80 MHz
10 dBm									
0 dBm									
-10 dBm—			_	_					
-20 dBm—	D1 -22.540	dBm							
-30 dBm									
-40 dBm—								V11	
~5Ademin	water my	Munumun	hahudhmun	menoliter	-	he water and the second	بىرىدىندىغانايە مۇمۇمۇمىيە مەرەبىرىدىندىغانايە	u	from with a lift in
-60 dBm									
-70 dBm—									
Start 30.0	MHz				1 pts			Sto	p 1.0 GHz
][М	easuring		14 0	03.01.2017 17:12:17

802.11N20_2412MHz_MIMO

Date: 3.JAN.2017 17:12:16



Date: 3.JAN.2017 17:11:58

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Spectrun	n								
Ref Level Att	23.00 dBm 40 dB	Offset SWT	0.50 dB 👄 F 9.7 ms 👄 🛚	(BW 100 kHz /BW 300 kHz	Mode	Auto Sweep			
😑 1Pk Max									
20 dBm					r	M1[1]	1	-	47.49 dBm 378.60 MHz
10 dBm									
0 dBm									
-10 dBm—									
-20 dBm—	D1 -21.820	dBm							
-30 dBm									
-40 dBm—								MI	
-50 dBm	Millerenterrole	hound	half the equilibrium	www.mallander	Judashing	uternitrastelsontel	And the Andrew	-	the subscription of the second se
-60 dBm—									
-70 dBm—									
Start 30.0	MHz			691	pts			Sto	p 1.0 GHz
)[asuring		4/0)3.01.2017 17:13:10

802.11N20_2437MHz_MIMO

Date: 3.JAN.2017 17:13:11



Date: 3.JAN.2017 17:12:55

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Spectrun	n									
Ref Level	23.00 dBm	Offset	0.50 dB 👄	RBW	100 kHz					
Att	40 dB	SWT	9.7 ms 👄	VBW	300 kHz	Mode	Auto Sweep			
20 dBm							M1[1]		-	48.48 dBm 307.00 MHz
10 dBm			_							
0 dBm			_							
-10 dBm			_							
-20 dBm	D1 -23.050	dBm	_							
-30 dBm										
-40 dBm—										
-50 dBm	whiteward	n-un-Mile-Mehau	routertythe	.herster Part	herolation	Munpletatoth	Apolinionato	-	1 	hin anti-
-60 dBm			_	_						
-70 dBm—										
Start 30.0	MHz	1			691	pts			Sto	p 1.0 GHz
						м	easuring		490	13.01.2017 17:14:24

802.11N20_2462MHz_MIMO

Date: 3.JAN.2017 17:14:25



Date: 3.JAN.2017 17:14:06

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Spectrun	n								[₩
Ref Level	23.00 dBm	Offset	0.50 dB 👄 F	RBW 100 kHz					
ALL 1Pk Max	40 QB	SWI	9.7 ms 🖶 🕻	BW 300 KHZ	Mode	Auto Sweep			
20 dBm						M1[1]		ļ	48.23 dBm 10.90 MHz
10 dBm									
0 dBm			_						
-10 dBm—			_						
-20 dBm—	D1 -23.240	dBm							
-30 dBm—									
-40 dBm—									
150 dBm	materia	hung	Muhamundah	manuallanation	Winner	mt.m.m.m.the	anter of the second	a water	MI hter-ou-abd-My
-60 dBm									
-70 dBm									
Start 30.0	MHz			691	pts			Sto	p 1.0 GHz
][]				M	easuring		4/0)3.01.2017 16:51:12

802.11N40_2422MHz_MIMO

Date: 3.JAN.2017 16:51:13



Date: 3.JAN.2017 16:50:51

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Spectrun	n							
Ref Level	23.00 dBm	Offset	0.50 dB 😑 I	RBW 100 kHz				
Att	40 aB	SWI	9.7 ms 🔲 🖲	VBW 300 KHZ	Mode	Auto Sweep		
20 dBm						M1[1]	- 9	47.91 dBm 060.00 MHz
10 dBm								
0 dBm								
-10 dBm								
-20 dBm—	D1 -22.890	dBm	_					
-30 dBm			_					
-40 dBm—			_					
50.dBm-1	K-MA MAATINAN	cual X-bi card	like Ister Ariken	diate Hoursettler at	w to a start when	how when		M1
-60 dBm	2000 100.000		water word and be	and the second second				
-70 dBm								
	<u> </u>				l			
Start 30.0	MHz			691	pts		 Sto	p 1.0 GHz
					Me	easuring	LA	16:52:14

802.11N40_2437MHz_MIMO

Date: 3.JAN.2017 16:52:14



Date: 3.JAN.2017 16:52:02

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Spectrun	n								
Ref Level	23.00 dBm	Offset	0.50 dB 👄 R	BW 100 kHz	Mada	Auto Swoon			
• 1Pk Max	40 GB	3111	9.7 III3 👹 🖣	BW 300 KH2	Houe	Auto Sweep			
20 dBm						M1[1]			-48.60 dBm 382.80 MHz
10 dBm									
0 dBm									
-10 dBm—									
-20 dBm—	D1 -23.280	dBm							
-30 dBm									
-40 dBm									
	where where the second	Muhliman	on Millin Jourse	and the second of the second second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	the generation	worlduser-	of the second	
-60 dBm									
-70 dBm—									
Start 30.0	MHz			691	pts			Sto	pp 1.0 GHz
][]				M	easuring		440	03.01.2017 16:53:08

802.11N40_2452MHz_MIMO

Date: 3.JAN.2017 16:53:08



Date: 3.JAN.2017 16:52:53

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9.6 Band edge testing

Test Method

- Use the following spectrum analyzer settings: Span = wide enough to capture the peak level of the in-band emission and all spurious RBW = 100 kHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold
- 2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
- 3 The level displayed must comply with the limit specified in this Section. .
- 4 Repeat the test at the hopping off and hopping on mode, submit all the plots.

Limit:

According to §15.247(d) and RSS-210 A8.5, in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in 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, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a) and RSS-Gen7.2.2, must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)) and RSS-Gen.

Band edge testing

Test Result:



Date: 4.JAN.2017 09:49:42



802.11b_2462MHz_Antenna 0

Date: 4.JAN.2017 09:41:42

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Spect	rum												
Ref Le	vel 3	:0.50 d	Bm Offset	0.50 dB	🖷 RBW	100 kH	z						`
Att		50	dB SWT	246.5 µs	e vbw	300 kH	z I	Mode .	Auto FR	FT			
●1Pk M	эх												
								M	3[1]			-	42.38 dBn
20 dBm·												2.3	90000 GH
								IVI	1[1]			24	4.98 aBr 13000 CH:
10 dBm·												2.1	M1
0 dBm—												المليل	M ANUM.
												N.	N N
-10 dBm													• 1
-20 dBm		1 -15.	020 UBIII										
ee de													
-30 aBm	1		الدينافير								M3 MPM	2	
1-40.dBo	han	why	www.w.	at the france of the formation	when	regentin	many	Hours	yntu	winh	and the second second	N.	
-50 dBm													
60 dDm													
-60 aBm	1												
Start 2	.31 G	Hz				691	pts					Stop	2.422 GHz
Marker													
Type	Ref	Trc	X-va	lue	Y-1	value	1	Func	tion	1	Fund	tion Result	
M1		1	2	2.413 GHz		4.98 dB	Sm						
M2		1		2.4 GHz	-4	0.74 dB	Sm						
M3				2.39 GHZ	-4	2.38 dB	sm						
		Л						Mea	suring.	(1,70	03.01.2017 16:37:46

802.11b 2412MHz Antenna 1

Date: 3.JAN.2017 16:37:46



802.11b_2462MHz_Antenna 1

Date: 3.JAN.2017 16:36:09

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Snect	rum					0-			_							E
D-fi		L	10	04	0 50 40		100 H	-								ί 🗸
Ref Le	evel 1	.8.UU C	IBM JD	Offset	0.50 dB		100 KH	iz I-			-					
ALL		35	ав	5W1	240.5 µs	- ARM	300 KH	12	Mode /	AUTO FF	1					
●1PK M	iax															10
									M	1[1]					0.58	dBn
10 dBm										0141				2.4	-14790	J GH2
									IVI.	2[1]					23/04	
0 dBm-										1		1	1. (Nor Sugar	mr.	walky
															1	- 1
-10 dBr	n——															
	_															1
-20 dBr	п—О	01 -19.	420	dBm								1	12,/			
													P			
-30 dBr	n——											was helly the				
												N1.3 0000				
-40 dBr	n										AN	ŕ	<u> </u>			
										More	WD					
-50 dBr	n——			Lab A				ada	i durando	M			<u> </u>			
mour	when	hhall also	wy	May	molumes	moun	myem	00.00								
-60 dBr	n——															
-70 dBr	n——															
Start 2	2.31 G	Hz					691	nts						Stop	2.422	GHz
Marker								F								
Tyne	Ref	Trc		X-val	ue	Y-	value	1	Eunc	tion		Eun	tion	Result		
M1		1		2.4	1479 GHz	· ·	0.58 dE	3m						are		
M2		1			2.4 GHz	-:	25.61 dE	3m								
MЗ		1			2.39 GHz	-:	38.34 dE	3m								
		1							Mea	suring			DO	(04.01.201	7
															09:49:0	9 /

802.11g 2412MHz Antenna 0

Date: 4.JAN.2017 09:49:09



802.11g_2462MHz_Antenna 0

Date: 4.JAN.2017 09:42:48

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					-										
Spectr	um														₩
Ref Lev	vel 2	1.00 dB	m Offset	0.50 dB	RBW	100 kH:	z								<u>`</u>
Att		40 (dB SWT	246.5 µs	🛛 VBW	300 kH:	z P	Mode /	Auto FFT	Г					
⊖1Pk Ma	эх														
								M	1[1]					1.99	dBn
10 40 m													2.4	07330	GH:
TO UBIII-								M	2[1]				M1	25.15	dBn
0 dBm—									I			<u> </u>			GH.
0 00.00													Č.,	U.	- 1
-10 dBm												\vdash		<u> </u>	\rightarrow
												/			1
-20 dBm		1 -18.0	10 dBm								7	2/			
											1 101	r .			
-30 dBm	-		-								Manun				
10 10															
-40 aBM									J.M	yhull	r				
-50 dBm			A Alexandre					hallahl	բլուլ						
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m	man	and have a second	- prosent	william	Contract of	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·							
-60 dBm															
-70 dBm			_		_										
Start 2	.31 G	Hz				691	pts						Stop 2	2.422	GHz
Marker															
Туре	Ref	Trc	X-val	ue	Y-	value		Func	tion		Fund	tion I	Result	:	
M1		1	2.4	0733 GHz		1.99 dB	m								
M2 M2		1		2.4 GHZ	-2	25.15 dB 26 05 dB	m m								
1913				2.39 GHZ		0.95 UB		_		_				02.01.204	7
		Л					IJ	Mea	suring			LX1		16:24:0	ú /

802.11g 2412MHz Antenna 1

Date: 3.JAN.2017 16:24:01



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Spectrum         Mile           Ref Level 21.00 dBm         Offset 0.50 dB • RBW 100 kHz           Att         40 dB         SWT 246.5 µs         VBW 300 kHz         Mode Auto FFT           • IPk Max         • M1[1]         1.99 dBr         -26.5 µs         • VBW 300 kHz           • IPk Max         • M1[1]         1.99 dBr         -26.5 µs         • VBW 300 kHz           • 0 dBm         • • • • • • • • • • • • • • • • • • •						_		_			_
Ref Level         21.00 dBm         Offset         0.50 dB         RBW         100 kHz         Mode         Auto         FT           1Pk Max         40 dB         SWT         246.5 µs         VBW 300 kHz         Mode         Auto         FT           1Pk Max         M1[1]         1.99 dBr         2.407330 GH         2.407330 GH         2.407330 GH         -25.15 dBr           10 dBm         M2[1]         M2[1]         M2.400000 GH         M2.400000 GH <th>Spectru</th> <th>տ )</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Spectru	տ )									
Att       40 dB       SWT       246.5 µs       VBW 300 kHz       Mode Auto FFT <ul> <li>IPk Max</li> <li>IO dBm</li> <li>IO dBm</li></ul>	Ref Leve	21.00 c	dBm Offset	0.50 dB (	RBW :	100 kHz					
● 1Pk Max       Image: Max marked set of the se	Att	40	db SWT	246.5 µs (	• VBW 🤅	300 kHz	Mode /	Auto FFT			
10 dBm     1.99 dBr       10 dBm     2.407330 GH       0 dBm     1.25.55 dBr       -10 dBm     1.18.010 dBm       -20 dBm     01 -18.010 dBm       -30 dBm     1.18.010 dBm       -40 dBm     1.19 dBm       -70 dBm     1.18.010 dBm       -30 dBm     1.18.010 dBm       -30 dBm     1.18.010 dBm       -30 dBm     1.18.010 dBm       -40 dBm     1.18.010 dBm       -70 dBm     1.18.010 dBm       -70 dBm     1.18.010 dBm       -70 dBm     1.19 dBm       -70 dBm     1.19 dBm       -70 dBm     1.19 dBm       -70 dBm     1.19 dBm       -70 dBm     1.2.40733 GHz       -70 dBm     1.2.40733 GHz       -70 dBm     1.2.40733 GHz       -70 dBm     1.2.4073 GHz       -70 dBm     1.2.4073 GHz       -70 dBm     1.2.4073 GHz       -70 dBm     1.2.4073 GHz       -70 dBm     1.19 dBm       -70 dBm     1.2.4073 GHz	⊖1Pk Max										
10 dBm     2.407330 GH       0 dBm     -25.15 dBr       -10 dBm     -20 dBm       -20 dBm     -11 -18.010 dBm       -20 dBm     -11 -18.010 dBm       -30 dBm     -20 dBm       -30 dBm     -20 dBm       -20 dBm     -20 dBm       -20 dBm     -20 dBm       -20 dBm     -20 dBm       -30 dBm     -20 dBm       -30 dBm     -20 dBm       -40 dBm     -20 dBm       -40 dBm     -20 dBm       -40 dBm     -20 dBm       -40 dBm     -20 dBm       -50 dBm     -20 dBm       -70 dBm     -20 dBm       -20 dBm							M	1[1]			1.99 dBm
10 dbm     -20 dbm     -20 dbm     -10 dbm     -20 dbm	10 d8m-									2.	407330 GH
0 dBm -10 dBm -20 dBm -20 dBm -20 dBm -20 dBm -30 dBm -30 dBm -40 dBm -70 d	TO ODIII						M	2[1]		M1	-25.15 dBn 400000 cu-
-10 dBm -20 dBm -20 dBm -30 dBm -40 dBm -40 dBm -40 dBm -70	0 dBm			_	_			I		L , and a	
-10 dBm -20 dBm -30 dBm -40 dBm -40 dBm -40 dBm -50 dBm -70											_ V
-20 dBm     D1 -18.010 dBm     Image: Constraint of the second o	-10 dBm—										-
-20 dBm 01 -18.010 dBm 01 -18.0100 dBm 01 -		01 10	010 d0m								
-30 dBm -40 dBm -40 dBm -40 dBm -50 dBm -70	-20 dBm—	101 -10	.010 08/1							12/	
-30 dBm -40 dBm -40 dBm -50 dBm -70	00 ID								1 pull	· ·	
-40 dBm -40 dBm -50 dBm -70	-30 aBm—								Manural		
Statt 2.31 GHz     691 pts     Stop 2.422 GHz       Marker     -70 dBm     -691 pts     Stop 2.422 GHz       Marker     -70 dBm     -70 dBm     -70 dBm       -70 dBm     -70 dBm     -70 dBm     -70 dBm       Marker     -70 dBm     -70 dBm     -70 dBm       M1     1     2.40733 GHz     1.99 dBm       M2     1     2.4 GHz     -25.15 dBm       M3     1     2.39 GHz     -36.95 dBm	-40 dBm—										
Signal Barty     Control Barty     Control Barty     Control Barty       -70 dBm     -70 dBm     -70 dBm     -70 dBm       -70 dBm     -70 dBm     -70 dBm     -70 dBm       Start 2.31 GHz     691 pts     Stop 2.422 GHz       Marker     -70 dBm     -70 dBm       Type     Ref     Trc     X-value       M1     1     2.40733 GHz     1.99 dBm       M2     1     2.4 GHz     -25.15 dBm       M3     1     2.39 GHz     -36.95 dBm	io abiii							10 MM M	molt.		
-60 dBm -70	.50.d8m-	AL ARLIN	return rend here	- James	un fronter	m. hunter	and when the set	P-0			
-60 dBm         -70 dBm         691 pts         Stop 2.422 GHz           -70 dBm         691 pts         Stop 2.422 GHz           Marker         70 dBm         1         2.40733 GHz         1.99 dBm           M1         1         2.40733 GHz         1.99 dBm         Function         Function Result           M2         1         2.4 GHz         -25.15 dBm         93012017           M3         1         2.39 GHz         -36.95 dBm         93012017				1		~					
-70 dBm         Image: Start 2.31 GHz         691 pts         Stop 2.422 GHz           Start 2.31 GHz         691 pts         Stop 2.422 GHz           Marker         Type         Ref         Trc         X-value         Y-value         Function         Function Result           M1         1         2.40733 GHz         1.99 dBm         1.99 dBm         1.09 dBm         <	-60 dBm—										
Start 2.31 GHz         691 pts         Stop 2.422 GHz           Marker         Type         Ref         Trc         X-value         Y-value         Function         Function Result           M1         1         2.40733 GHz         1.99 dBm         Million         Milli											
Start 2.31 GHz         691 pts         Stop 2.422 GHz           Marker         Your Provide Control Contreletee Contreletee Control Control Contreletee Control Control Co	-70 aBm—										
Start 2.31 GHz         691 pts         Stop 2.422 GHz           Marker         Type         Ref         Trc         X-value         Y-value         Function         Function Result           M1         1         2.40733 GHz         1.99 dBm <td>01</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td>01</td> <td>0.100.011-</td>	01						_			01	0.100.011-
Marker         Type         Ref         Trc         X-value         Y-value         Function         Function Result           M1         1         2.40733 GHz         1.99 dBm         Mile         <	Start 2.3	I GHZ				091 ht	5			stop	2.422 GHZ
Mi         1         2.40733 GHz         1.99 dBm         Putterior         Putterior           M2         1         2.4 GHz         -25.15 dBm         93.01.2017           M3         1         2.39 GHz         -36.95 dBm         93.01.2017		of Tro	V-11		Y-11	aluo	L Eune	tion	Eup	tion Posu	1+
M2         1         2.4 GHz         -25.15 dBm           M3         1         2.39 GHz         -36.95 dBm             Measuring         03.01.2017	M1		2.4	10733 GHz	1-1	.99 dBm	Func		Fun	LION KESU	п
M3 1 2.39 GHz -36.95 dBm 03.01.2017	M2	1		2.4 GHz	-25	.15 dBm					
Measuring 03,01,2017	MЗ	1		2.39 GHz	-36	.95 dBm					
10:24:01							Mea	suring		4/0	03.01.2017

802.11N20 2412MHz MIMO

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Date: 4.JAN.2017 09:43:34

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Snect	um											Ē
Pofle	uol or		m Offect	0 50 49		100 64-						( ∀
Att	ver 2.	40 r	in onset ib swt	303.4 us		300 kHz	Mode	Auto FF	т			
●1Pk Ma	эх						, noue	Hatom				
-								M3[1]				-29.20 dBm
10 10											2.3	390000 GH2
10 dBm-								M1[1]				-1.66 dBn
0 dBm—										M1	2.4	+10380 GHz
o abiii										muture	for the second	many
-10 dBm			_	_								
										/		
-20 dBm		2 -21.6	60 dBm	_	_	=			1427			
20 dbm								M3	للعميد			
-30 UBIII							www.www.	1				
-40 dBm	ı——					- aller and		_				
				1 rolymb	Martin	<b>J</b> ~~						
-50,dBn	und chalanan	<del>راجو الردار</del>	the second second	wind).								
60 d0												
-ou ubili												
-70 dBm			_	_								
Start 2	.31 GI	Ηz				691 r	ots				Stop	2.442 GHz
Marker						·						
Туре	Ref	Trc	X-va	lue	Y-1	value	Fur	nction		Fund	tion Resul	t
M1		1	2.4	1038 GHz		1.66 dBn	n					
M2 M3		1		2.4 GHz	-2	:5.06 dBn 99 20 dBr	n					
6111		-		2.39 GHZ	-2	.9.20 ubl					1.142	03 01 2017
							M	easuring.			4	16:14:59

802.11N40_2422MHz_MIMO

Date: 3.JAN.2017 16:15:00



Spectr	um					_			_				
Ref Lev	vel 2	1.00 dB	m Offset 0.	.50 dB 😑	RBW	100 kHz							
Att		40 c	IB SWT	1 ms 😑	VBW	300 kHz	M	ode A	uto Swe	ер			
😑 1Pk Ma	эх												
10 dBm-								M	3[1]			2.5	40.61 dBm 00000 GHz
TO UBIII-					N 1			м	1[1]			2.4	-1.51 dBm 63550 GHz
0 dBm	m	hholashinada	annung pera	-	- INII	muntery							
-10 dBm			V								_		
$\int_{-20 \text{ dBm}}$	_					Ì	<u> </u>						
20 0011	D	1 -21.5	10 dBm				and a	- Marcheller	M2	2			
-30 dBm	ı —							V-0	Weber of the loss	where an advertage	Huberry	MO	
-40 dBm											" "Water	Walt To Mark	w.
-50 dBm													wight how
60 d0m													
-ou ubili													
-70 dBm													
Start 2	Start 2.432 GHz         691 pts         Stop 2.51 GHz												
Marker							_						
Type	Ref	Trc	X-value	9	Y	value		Func	tion	F	unction F	Result	
M1		1	2.463	55 GHz		-1.51 dB	m						
M2		1	2.48	35 GHz	-	29.97 dB	m						
			2	2.5 GHZ		40.61 dB	m						
		Л					]	Mea	suring		<b>1</b> 470	0	3.01.2017 16:18:07

Date: 3.JAN.2017 16:18:06

EMC_SZ_FR_21.00 FCC Release 2014-03-20



# 9.7 Spurious radiated emissions for transmitter

# **Test Method**

- 1. The EUT was place on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2. The EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned
- 5. Use the following spectrum analyzer settings According to C63.10:
  - For Above 1GHz

Span = wide enough to capture the peak level of the in-band emission and all spurious RBW = 1MHz, VBW≥RBW for peak measurement and VBW = 10Hz for average measurement, Sweep = auto, Detector function = peak, Trace = max hold. For Below 1GHz

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious RBW = 100 KHz, VBW≥RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

# Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.

2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for peak detection (PK) at frequency above 1GHz.

3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average ((duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (20log(1/duty cycle)).

4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.



# Limit

According to part 15.247(d), the radio emission outside the operating frequency band 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. Radiated emissions which fall in the restricted bands, as defined in section 15.205, must comply with the radiated emission limits specified in section 15.209.

Frequency	Field Strength	Field Strength	Detector
	uv/III	аврули	
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK



# Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

The only worse case (802.11B mode) test result is listed in the report.

# Transmitting spurious emission test result as below:

Frequency	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	dBuV/m		dBµV/m	dB		
159.98	33.60	Horizontal	43.50	9.90	QP	Pass
320.84	41.34	Horizontal	46.00	4.66	QP	Pass
619.01	41.36	Horizontal	46.00	4.64	QP	Pass
64.06	33.87	Vertical	40.00	6.13	QP	Pass
74.51	31.97	Vertical	40.00	8.03	QP	Pass
256.33	41.82	Vertical	46.00	4.18	QP	Pass
320.62	44.48	Vertical	46.00	1.52	QP	Pass
2560	51.75	Horizontal	74.00	22.25	PK	Pass
*4824	41.55	Horizontal	74.00	32.45	PK	Pass
2560	52.16	Vertical	74.00	21.84	PK	Pass
*4824	41.40	Vertical	74.00	32.60	PK	Pass

802.11B Modulation 2412MHz_Antenna 0 Test Result

## 802.11B Modulation 2437MHz_Antenna 0 Test Result

Frequency	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	dBuV/m		dBµV/m	dB		
2560	52.06	Horizontal	74.00	21.94	PK	Pass
*4874	38.68	Horizontal	74.00	35.32	PK	Pass
2560	52.18	Vertical	74.00	21.82	PK	Pass
*4874	40.78	Vertical	74.00	33.22	PK	Pass

802.11B Modulation 2462MHz_Antenna 0 Test Result

Frequency	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	dBuV/m		dBµV/m	dB		
2560	51.67	Horizontal	74.00	22.33	PK	Pass
*4924	40.53	Horizontal	74.00	33.47	PK	Pass
2560	51.84	Vertical	74.00	22.16	PK	Pass
*4924	40.43	Vertical	74.00	33.57	PK	Pass

Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) "*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.



# **10 Test Equipment List**

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
С	Signal Analyzer	Rohde & Schwarz	FSV40	101030	2017-7-15
	EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2017-7-15
RE	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2017-8-3
	Horn Antenna	Rohde & Schwarz	HF907	102294	2017-7-15
	Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2017-7-15
	Signal Generator	Rohde & Schwarz	SMY01	839369/005	2017-7-15
	Attenuator	Agilent	8491A MY39264334		2017-8-10
	3m Semi-anechoic chamber	TDK	9X6X6		2019-5-29
	Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A

C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth
- Power spectral density
- Spurious RF conducted emissions
- Band edge



For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.99dB; Vertical: 4.97dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-18000MHz	Horizontal: 4.96dB; Vertical: 4.95dB;
Uncertainty for Conducted RF test	Power level test involved: 2.06dB Frequency test involved: 1.16×10 ⁻⁷

## **System Measurement Uncertainty**

