

Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 1 of 112

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO **FCC PART 15 SUBPART C REQUIREMENT** AND INDUSTRY CANADA RSS 247

OF

Product Name: Smart phone

Brand Name: BLU

Model No.: Studio Selfie LTE

Model Difference: N/A

FCC ID: YHLBLUSTSEELTE

IC: 11492A-STSEELTE

Report No.: ER/2015/70112

Issue Date: Sep. 18, 2015

§15.247, Cat: DTS FCC Rule Part:

IC Rule Part: RSS-247 issue 1:2015

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Page: 2 of 112

VERIFICATION OF COMPLIANCE

CT ASIA (HK) Ltd Applicant (FCC):

Unit 1309-11, 13th Floor 9, Wing Hong Street, Cheung Sha Wan,

Kowloon, Hong Kong

Applicant (IC): CT ASIA (HK) Ltd

Unit 1309-11, 13/F, 9 Wing Hong Street, Cheung Sha Wan,

Kowloon, Hong Kong

Product Name: Smart phone

Brand Name: BLU

Model No.: Studio Selfie LTE

Model Difference: N/A

FCC ID: YHLBLUSTSEELTE

IC: 11492A-STSEELTE

Report Number: ER/2015/70112

Date of test: Aug. 18, 2015 ~ Sep. 17, 2015

Date of EUT Received: Aug. 18, 2015

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Test By:	Marcus Iseng	Date	Sep. 18, 2015
-	Marcus Tseng / Sr. Engineer		
Prepared By:	Tiffany Kao	Date	Sep. 18, 2015
Approved By:	Tiffany Kao / Clerk Jim Chang	Date	Sep. 18, 2015
	Jim Chang / Asst. Manager		

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 3 of 112

Revision History

Report Number	Revision	Description	Issue Date
ER/2015/70112	Rev.00	Initial creation of document	Sep. 18, 2015

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 4 of 112

Table of Contents

1	GEN	IERAL INFORMATION	6
	1.1	Product description	6
	1.2	Product Feature of Equipment Under Test	8
	1.3	Test Methodology of Applied Standards	9
	1.4	Test Facility	9
	1.5	Special Accessories	9
	1.6	Equipment Modifications	9
2	SYS	TEM TEST CONFIGURATION	10
	2.1	EUT Configuration	10
	2.2	EUT Exercise	10
	2.3	Test Procedure	10
	2.4	Measurement Results Explanation Example	11
	2.5	Configuration of Tested System	12
3	SUM	MARY OF TEST RESULTS	13
4	DES	CRIPTION OF TEST MODES	14
	4.1	Operated in 2400 ~ 2483.5MHz Band	14
	4.2	The Worst Test Modes and Channel Details	14
5	MEA	ASUREMENT UNCERTAINTY	16
6	CON	IDUCTED EMISSION TEST	17
	6.1	Standard Applicable	17
	6.2	Measurement Equipment Used	17
	6.3	EUT Setup	17
	6.4	Test SET-UP (Block Diagram of Configuration)	18
	6.5	Measurement Procedure	18
	6.6	Measurement Result	18
7	DUT	Y CYCLE OF TEST SIGNAL	21
	7.1	DUTY CYCLE TEST SIGNAL Measurement Result	22
8	PEA	K OUTPUT POWER MEASUREMENT	24
	8.1	Standard Applicable	24
	8.2	Measurement Equipment Used	25
	8.3	Test Set-up	25
	8.4	Measurement Procedure	25
	0 5	Magaurament Pagult	26

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 5 of 112

9	6dB	% 99% BANDWIDTH MEASUREMENT	29
	9.1	Standard Applicable	29
	9.2	Measurement Equipment Used	29
	9.3	Test Set-up	29
	9.4	Measurement Procedure	29
	9.5	Measurement Result	30
10	CON	DUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT	43
	10.1	Standard Applicable	43
	10.2	Measurement Equipment Used	43
	10.3	Test SET-UP	43
	10.4	Measurement Result	44
11	RADI	ATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT	61
	11.1	Standard Applicable	61
	11.2	Measurement Equipment Used:	62
	11.3	Test SET-UP	63
	11.5	Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz	65
	11.6	Measurement Result	65
12	PEA	K POWER SPECTRAL DENSITY	104
	12.1	Standard Applicable	104
	12.2	Measurement Equipment Used	104
	12.3	Test Set-up	104
	12.4	Measurement Procedure	104
	12.5	Measurement Result	105
13	ANTE	ENNA REQUIREMENT	112
	13.1	Standard Applicable	112
	13 2	Antenna Connected Construction	112

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 6 of 112

GENERAL INFORMATION

1.1 Product description

General:

Product Name:	Smart phone			
Brand Name:	BLU			
Type No.:	Studio Se	lfie LTE		
Model Difference:	N/A			
Data Cable (USB):	Model No.: PCB042100307-4, Supplier: Jess-Link			
Simple Hands-Free:	Model No.: HF-AC04D-03, Supplier: Dongguan Galien Electron Co., Ltd			
Product SW/HW version:	BLU_S0070UU-V09_TMOBILE / OB			
Radio SW/HW version:	N/A	N/A		
Test SW Version:	N/A			
RF power setting in TEST SW:	N/A			
	3.8Vdc from Rechargeable Li-polymer Battery or 5.0V AC/DC Adapter			
Power Supply:	Battery:	Model No.: C635944200P, Supplier: APACK		
	Adapter:	Model No.: DSA-5PF02-05 FUS 050100, Supplier: DVE		

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 7 of 112

WLAN 2.4GHz:

Wi-Fi	Frequency Range	Channels	Rated Power / (EIRP)	Type of Emission	Modulation Technology	
11b/g	2412-2462	11	b: 20.77dBm b: 18.69dBm (EIRP) g: 22.57dBm g: 15.71dBm (EIRP)	b: 13M2G1D g:16M6D1D	DSSS, OFDM	
11n	HT20 2412-2462	11	HT20: 21 00dRm		OFDM	
11n	HT40 2422-2452	7	HT40: 21.28dBm HT40: 12.17dBm(EIRP)	HT40:37M0D1D	OFDM	
Antenna Designation:		PIFA Antenna, Gain: 0.75dBi				
Modulation type:		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM				
Transition Rate: 8		802.11 g: 802.11 n	2.11 b: up to 11 Mbps; 2.11 g: up to 54 Mbps 2.11 n_20MHz: up to 72.2Mbps 2.11 n_40MHz: up to 135Mbps			

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 8 of 112

1.2 Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is mobile phone supporting, GSM / WCDMA / LTF Wi-Fi 802.11bgn, Bluetooth features, and below is details of information

Product Feature				
Product Name:	Smart phone			
Brand Name:	BLU			
Model No.:	Studio Selfie LTE			
Model Difference:	N/A			
FCC ID	YHLBLUSTSEELTE			
IC ID	11492A-STSEELTE			
GSM Operating Band(s)	GSM 850/1900MHz			
GPRS / EGPRS Multi Slot Class	GPRS Class 33			
WCDMA Operating Band(s)	FDD Band II / IV / V			
WCDMA Rel. Version	Rel.8			
LTE Operating Band(s)	FCC Band 2 / 4 / 7 / 12 / 17			
LTE Rel. Version	Rel.9			
Wi-Fi Specification	802.11b/g/n			
Bluetooth Version	V4.1 dual mode + HS			

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

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 9 of 112

Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 DTS Meas. Guidance V03r03

FCC KDB 662911 D01 Multiple Transmitter Output V02r01

Canada RSS-247 issue 1 May 2015

Canada RSS-Gen issue 4 Nov. 2014

ANSI C63.10:2013

Note:

- All test items have been performed and record as per the above standards.
- The composite system is compliance with FCC Subpart B is authorized under a DoC procedure.

Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803. (TAF code 0513)

FCC Registration Numbers are: 990257

Canada Registration Number: 4620A-4.

1.5 Special Accessories

There are no special accessories used while test was conducted.

Equipment Modifications

There was no modification incorporated into the EUT.

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 10 of 112

SYSTEM TEST CONFIGURATION

EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

2.3 **Test Procedure**

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 11 of 112

Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Following shows an offset computation example with cable loss 0.8dB and 10dB attenuator.

offset

= RF cable loss (dB)+ attenuation factor(dB)=10.8(dB)

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 12 of 112

2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission

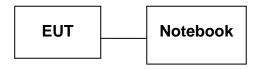


Fig. 2-2 Conducted (Antenna Port) Configuration

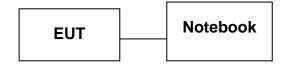


Fig. 2-3 AC Power Line Conducted Emission

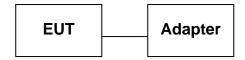


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2.	Notebook	Lenovo	L420	LR-7HXZA	shield	Un-shield

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 13 of 112

SUMMARY OF TEST RESULTS

FCC Rules / IC Rules	Description Of Test	Result
§15.207(a) RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant
§15.247(b) (3) RSS-247 §5.4(4)	Peak Output Power	Compliant
§15.247(a)(2) RSS-247 §5.2 (1) RSS-Gen §6.6	6dB & 99% Emission Bandwidth	Compliant
§15.247(d) RSS-247 §5.5	Conducted Band Edge and Spurious Emission	Compliant
§15.247(d) RSS-247 §5.5	Radiated Band Edge and Spurious Emission	Compliant
§15.247(e) RSS-247 §5.2(2)	Power Spectral Density	Compliant
§15.203 §15.247(b) RSS- Gen §6.7 RSS- Gen §8.3	Antenna Requirement	Compliant

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 14 of 112

DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz Band

11 channels are provided for 802.11b, 802.11g and 802.11n HT20

provided for 602.11b, 602.11g and 602.11n_11120							
CHANNEL FREQUENCY		CHANNEL	FREQUENCY				
1	2412 MHz	7	2442 MHz				
2	2417 MHz	8	2447 MHz				
3	3 2422 MHz		2452 MHz				
4	2427 MHz	10	2457 MHz				
5	2432 MHz	11	2462 MHz				
6	2437 MHz						

7 channels are provided for 802.11n HT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422 MHz	7	2442 MHz
4	2427 MHz	8	2447 MHz
5	2432 MHz	9	2452 MHz
6	2437 MHz		

4.2 The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
- 3. Investigation has been done on all the possible configurations for searching the worst case.

RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)							
MODE AVAILABLE TESTED MODULATION RATE (Mbps) PORT							
802.11g	1 to 11	1,6,11	OFDM	6	MAIN		
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 0	MAIN		

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 15 of 112

RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT	
802.11b	1 to 11	1, 6, 11	DSSS	1	MAIN	
802.11g	1 to 11	1, 6, 11	OFDM	6	MAIN	
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS 0	MAIN	
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 0	MAIN	

Note:

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 802.11b/g/n WLAN Transmitter for channel Low, Mid and High, the worst case E1 position was reported.

ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST						
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT	
802.11b	1 to 11	1, 6, 11	DSSS	1	MAIN	
802.11g	1 to 11	1, 6, 11	OFDM	6	MAIN	
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS 0	MAIN	
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 0	MAIN	

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 16 of 112

MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Peak Output Power	+/- 0.84 dB
6dB Bandwidth	+/- 51.33 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 0.84 dB
Peak Power Density	+/- 1.3 dB
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC= +/- 0.2%

Radiated Spurious Emission:

	30MHz - 180MHz: +/- 3.37dB		
Magaziramantzinagrafaintz	180MHz -417MHz: +/- 3.19dB		
Measurement uncertainty (Polarization : Vertical)	0.417GHz-1GHz: +/- 3.19dB		
(i cianzation : Vertical)	1GHz - 18GHz: +/- 4.04dB		
	18GHz - 40GHz: +/- 4.04dB		
	30MHz - 167MHz: +/- 4.22dB		
Measurement uncertainty	167MHz -500MHz· +/- 3 44dB		

	30MHz - 16/MHz: +/- 4.22dB
Measurement uncertainty	167MHz -500MHz: +/- 3.44dB
(Polarization : Horizontal)	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

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

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 17 of 112

CONDUCTED EMISSION TEST

Standard Applicable

Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

Frequency range	Limits dB(uV)			
MHz	Quasi-peak	Average		
0.15 to 0.50	66 to 56	56 to 46		
0.50 to 5	56	46		
5 to 30	60	50		

Note

- 1. The lower limit shall apply at the transition frequencies
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

6.2 Measurement Equipment Used

Conducted Emission Test Site							
EQUIPMENT MFR MODEL SERIAL LAST CAL							
TYPE		NUMBER	NUMBER	CAL.			
EMI Test Receiver	R&S	ESCI7	100760	2015/5/4	2016/5/3		
LISN	SCHWARZ BECK	NSLK 8127	8127-649	05/15/2015	05/14/2016		
LISN	FCC	FCC-LISN-50/250-2 5-2-01	04034	03/13/2015	03/12/2016		
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2014	11/25/2015		

6.3 EUT Setup

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI 63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

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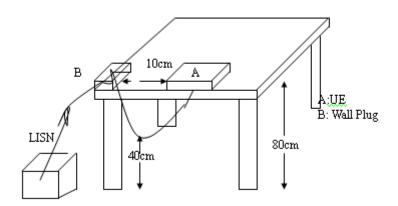
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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 18 of 112

6.4 Test SET-UP (Block Diagram of Configuration)



6.5 Measurement Procedure

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all phases of power being supplied by given UE are completed

Measurement Result

Note: Refer to next page for measurement data and plots.

Note2: The * reveals the worst-case results that closet to the limit

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 19 of 112

AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	Sep. 04, 2015
Temperature:	Humidity: 54 %			Test By:	Marcus
				Phase:	L1

Site Conduction Room Temperature: 25 °C AC 120V/60Hz Humidity: 60 % Limit: FCC Class B Conduction(QP) Power: Mode: Operation Mode Note: Adapter Model:DSA-5PF02-05 FUS 050100 Conducted Emission File:FCC 仁實 Data :#2 Date: 2015/9/4 Time: 下午 02:46:47 80.0 dBuV FCC Class B Conduction(QP) 40 0.0 0.150 (MHz) 5 30.000 Reading Measure-Correct Mk Freq. Limit Over No. Level Factor ment MHz dBuV dB dBuV dBuV dB Detector Comment 1 0.1660 47.12 0.03 47.15 65.16 -18.01 peak 2 0.2060 0.04 63.37 -25.11 38.22 38.26 peak 3 0.4580 37.46 0.04 37.50 56.73 -19.23peak 4 0.04 35.83 56.00 -20.170.6940 35.79 peak 5 0.9420 35.19 0.05 35.24 56.00 -20.76peak 6 1.0860 0.05 34.31 56.00 -21.69 34.26 peak

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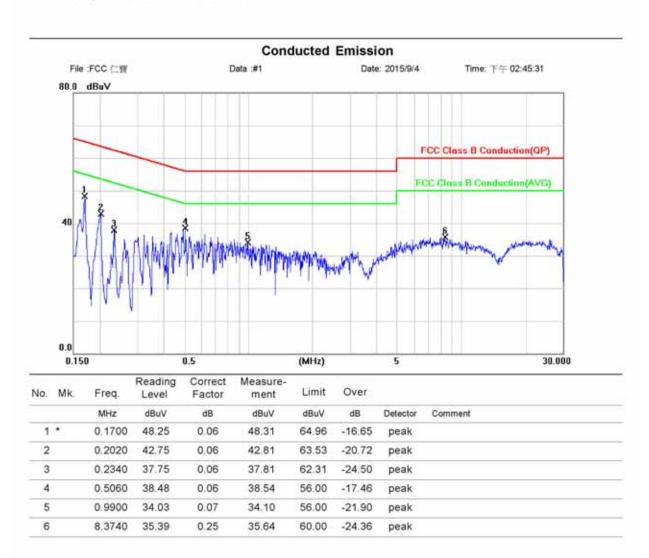
Page: 20 of 112

Operation Mode:	Operation mode			Test Date:	Sep. 04, 2015
Temperature:	Humidity: 54 %			Test By:	Marcus
				Phase:	N

Phase: Temperature: Site Conduction Room Limit: FCC Class B Conduction(QP) AC 120V/60Hz Humidity: 60 % Power:

Mode: Operation Mode

Note: Adapter Model:DSA-5PF02-05 FUS 050100



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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 21 of 112

DUTY CYCLE OF TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

Formula:

Duty Cycle = Ton / (Ton+Toff)

Measurement Procedure:

- Set span = Zero
- 2. RBW = 8MHz
- 3. VBW = 8MHz.
- 4. Detector = Peak

Duty Cycle:

	Duty Cycle	Duty Factor (dB)
802.11b	97.4 %	0.11
802.11g	87.4 %	0.58
802.11n_20	86.7 %	0.62
802.11n_40	76.2 %	1.18

Duty Cycle Factor: $10 * \log (1/0.974) = 0.11$ Duty Cycle Factor: 10 * log (1/0.874) = 0.58 Duty Cycle Factor: 10 * log (1/0.867) = 0.62 Duty Cycle Factor: $10 * \log (1/0.762) = 1.18$

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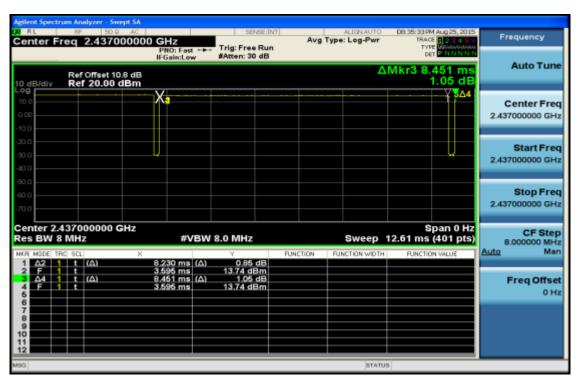
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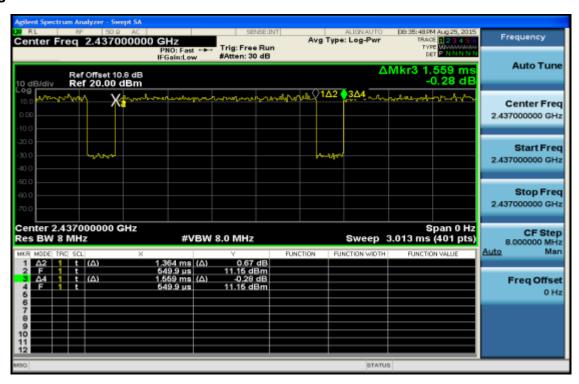
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 22 of 112

7.1 DUTY CYCLE TEST SIGNAL Measurement Result 802.11 b



802.11 g



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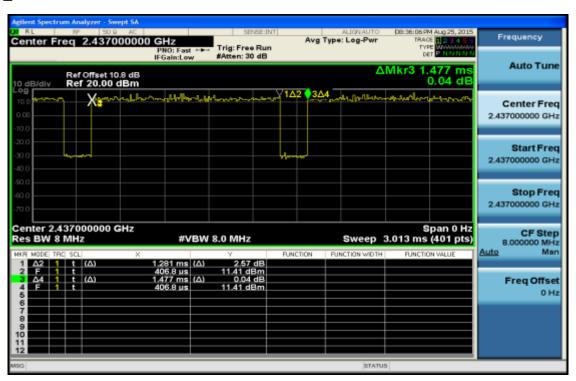
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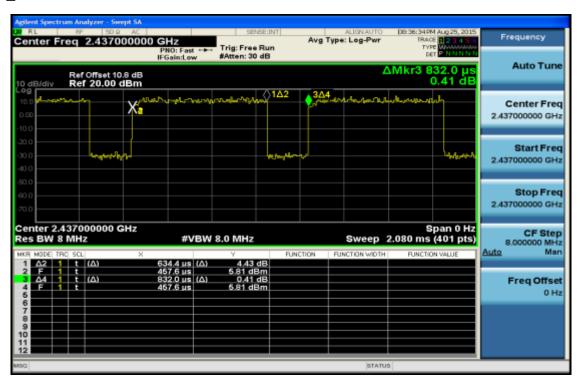
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 23 of 112

802.11 n_20 MHz



802.11 n_40 MHz



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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 24 of 112

PEAK OUTPUT POWER MEASUREMENT

Standard Applicable

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

If the transmitting antenna of directional gain greater than 6dBi are used the peak output power form the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

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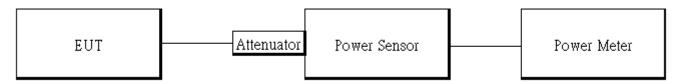
Page: 25 of 112

8.2 Measurement Equipment Used

Conducted Emission Test Site							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.		
TYPE		NUMBER	NUMBER	CAL.			
Power Meter	Anritsu	ML2495A	1005007	12/20/2014	12/19/2015		
Power Sensor	Anritsu	MA2411B	917032	12/20/2014	12/19/2015		
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016		
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016		

8.3 Test Set-up

Power Meter:



8.4 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

Power Meter:

It is used as the auxiliary test equipment to conduct the output power measurement.

4. Record the max. Reading as observed from Spectrum or Power Meter.

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 26 of 112

8.5 Measurement Result

802.11b

110					
СН	Frequenc y (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit
1	2412	1	20.59	114.55	1 Watt = 30
6	2437	1	20.77	119.40	1 Watt = 30
11	2462	1	20.37	108.89	1 Watt = 30

СН	Frequenc y (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
1	2412	1	17.78	59.98	1 Watt = 30
6	2437	1	17.94	62.23	1 Watt = 30
11	2462	1	17.82	60.53	1 Watt = 30

802.11a

СН	Frequenc y (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit
1	2412	6	22.35	171.79	1 Watt = 30
6	2437	6	22.56	180.30	1 Watt = 30
11	2462	6	22.57	180.72	1 Watt = 30

СН	Frequenc y (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
1	2412	6	14.93	31.12	1 Watt = 30
6	2437	6	14.96	31.33	1 Watt = 30
11	2462	6	14.81	30.27	1 Watt = 30

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 27 of 112

802.11n_HT20

СН	Frequenc y (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit
1	2412	MCS 0	20.77	119.40	1 Watt = 30
6	2437	MCS 0	21.00	125.89	1 Watt = 30
11	2462	MCS 0	20.99	125.60	1 Watt = 30

СН	Frequenc y (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
1	2412	MCS 0	11.44	13.93	1 Watt = 30
6	2437	MCS 0	11.17	13.09	1 Watt = 30
11	2462	MCS 0	11.48	14.06	1 Watt = 30

802.11n HT40

СН	Frequenc y (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit
3	2422	MCS 0	21.22	132.43	1 Watt = 30
6	2437	MCS 0	21.28	134.28	1 Watt = 30
9	2452	MCS 0	21.14	130.02	1 Watt = 30

СН	Frequenc y (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
3	2422	MCS 0	11.46	14.00	1 Watt = 30
6	2437	MCS 0	11.25	13.34	1 Watt = 30
9	2452	MCS 0	11.42	13.87	1 Watt = 30

^{*} Note: The duty cycle factor is compensated to obtain the maximum value of measurement in average.

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 28 of 112

EIRP Measurement:

802.11b

	Frequenc	Avg. Output Power				REQUIRED	
СН	y (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	LIMIT (dBm)	RESULT
1	2412	17.78	59.979	0.75	18.53	36	PASS
6	2437	17.94	62.230	0.75	18.69	36	PASS
11	2462	17.82	60.534	0.75	18.57	36	PASS

802.11a

•	, <u>z. i i g</u>							
ſ		Frequenc	Avg. Output Power				REQUIRED	
	СН	y (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	LIMIT (dBm)	RESULT
	1	2412	14.93	31.117	0.75	15.68	36	PASS
	6	2437	14.96	31.333	0.75	15.71	36	PASS
	11	2462	14.81	30.269	0.75	15.56	36	PASS

802.11n HT20

/ _	120						
	Frequenc	Avg. Output Power				REQUIRED	
СН	y (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	LIMIT (dBm)	RESULT
1	2412	11.44	13.932	0.75	12.19	36	PASS
6	2437	11.17	13.092	0.75	11.92	36	PASS
11	2462	11.48	14.060	0.75	12.23	36	PASS

802.11n_HT40

Freque	Frequenc	Avg. Output Power				REQUIRED	
СН	y (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	LIMIT (dBm)	RESULT
3	2422	11.46	13.996	0.75	12.21	36	PASS
6	2437	11.25	13.335	0.75	12.00	36	PASS
9	2452	11.42	13.868	0.75	12.17	36	PASS

^{*} Note: EIRP = Average Power + Gain

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Page: 29 of 112

6dB & 99% BANDWIDTH MEASUREMENT

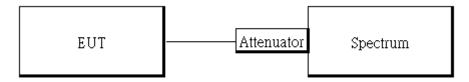
9.1 Standard Applicable

The minimum 6 dB bandwidth shall be at least 500 kHz.

9.2 Measurement Equipment Used

Conducted Emission Test Site									
EQUIPMENT MFR MODEL SERIAL LAST CAL DU									
TYPE		NUMBER	NUMBER	CAL.					
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/29/2015	01/28/2016				
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016				
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016				

9.3 Test Set-up



9.4 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. For 6dB Bandwidth:
 - Set the spectrum analyzer as RBW = 100 kHz, VBW = 3*RBW, Span = 30M/50MHz, Detector=peak, Sweep=auto.
- 5. Mark the peak frequency and –6dB (upper and lower) frequency.
- 6. For 99% Bandwidth:
 - Set the spectrum analyzer as RBW=1%, VBW = 3*RBW, Span = 30M/50MHz, Detector=Sample, Sweep=auto.
- 7. Turn on the 99% bandwidth function, max reading.
- 8. Repeat above procedures until all frequency of interest measured was complete.

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 30 of 112

Measurement Result

Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (kHz)	Result
802.11b				
2412	8.563	12.919	> 500	PASS
2437	8.022	13.199	> 500	PASS
2462	8.588	13.040	> 500	PASS
802.11g				
2412	16.33	16.493	> 500	PASS
2437	16.39	16.610	> 500	PASS
2462	16.42	16.514	> 500	PASS
802.11n_HT20				
2412	17.63	17.652	> 500	PASS
2437	17.61	17.705	> 500	PASS
2462	17.19	17.767	> 500	PASS
802.11n_HT40				
2422	34.12	36.276	> 500	PASS
2437	34.48	36.253	> 500	PASS
2452	35.07	36.956	> 500	PASS

^{*}Refer to next page for plots

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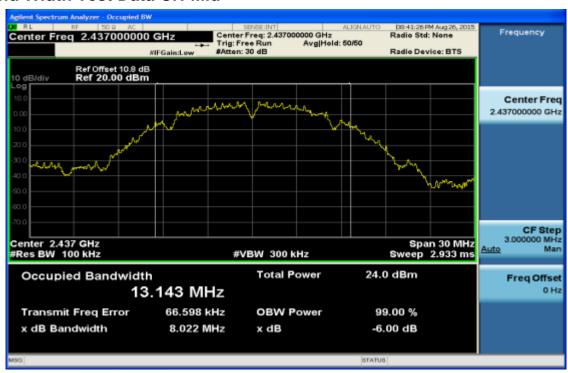
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Page: 31 of 112

802.11b 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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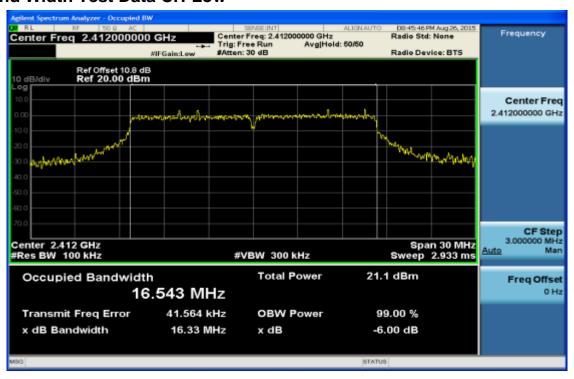
Page: 32 of 112

6dB Band Width Test Data CH-High



802.11g

6dB Band Width Test Data CH-Low



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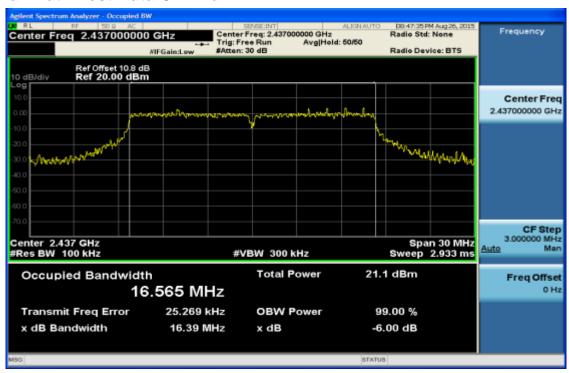
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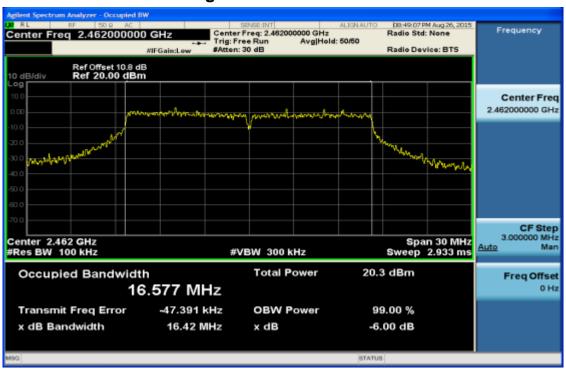
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 33 of 112

6dB Band Width Test Data CH-Mid



6dB Band Width Test Data CH-High



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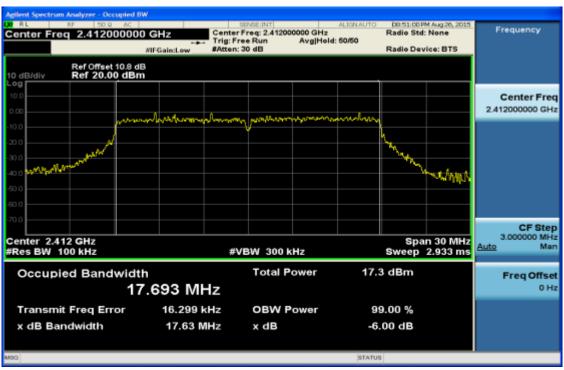
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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 34 of 112

802.11n 20M 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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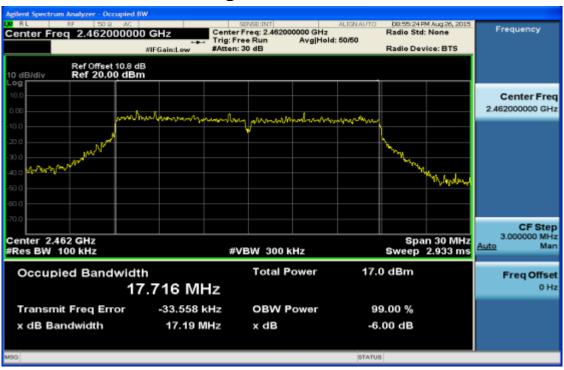
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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 35 of 112

6dB Band Width Test Data CH-High



802.11 n 40M

6dB Band Width Test Data CH-Low



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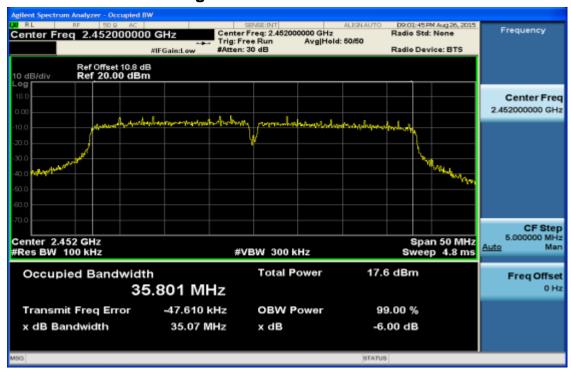
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 36 of 112

6dB Band Width Test Data CH-Mid



6dB Band Width Test Data CH-High



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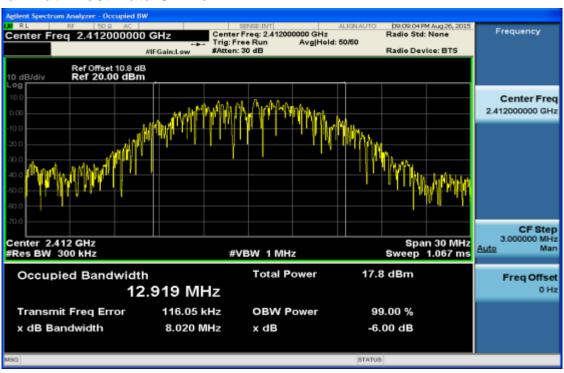
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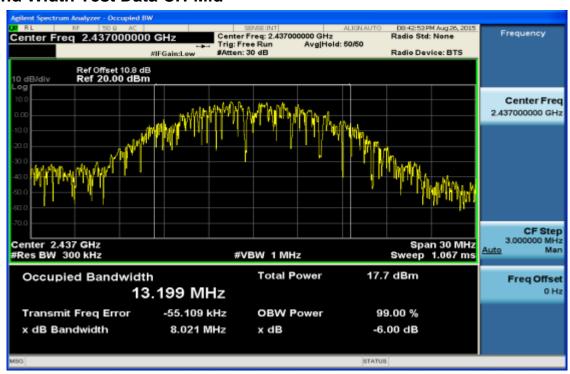
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 37 of 112

802.11b 99% Band Width Test Data CH-Low



99% Band Width Test Data CH-Mid



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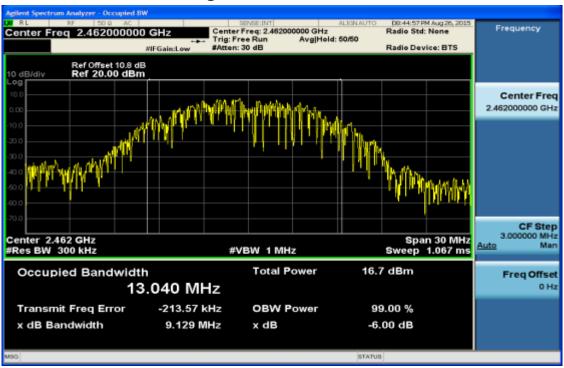
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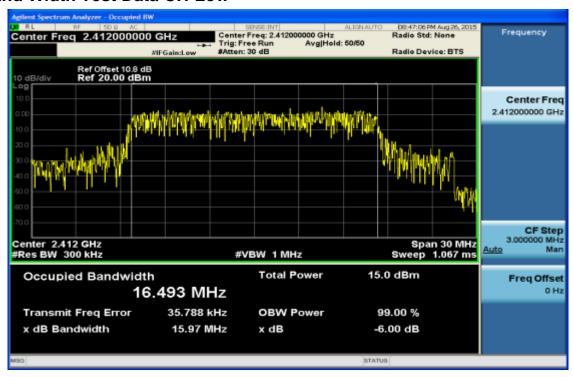
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99% Band Width Test Data CH-High



802.11g

99% Band Width Test Data CH-Low



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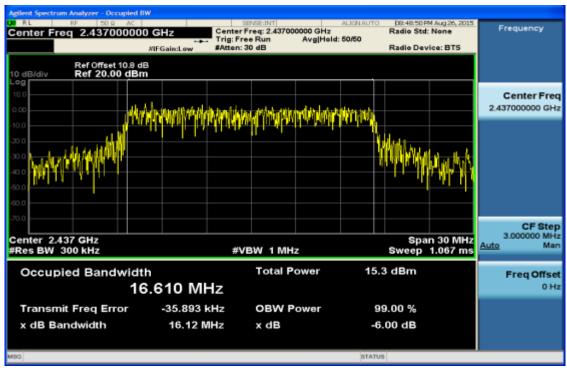
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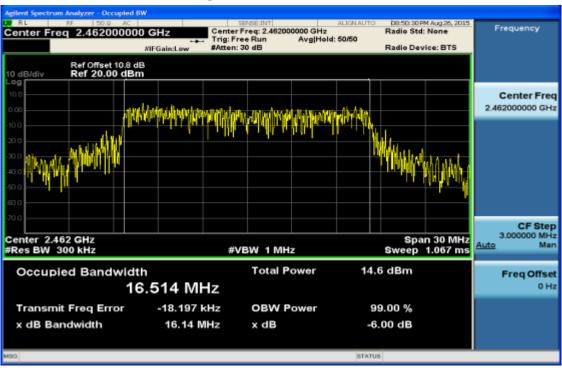
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Page: 39 of 112

99% Band Width Test Data CH-Mid



99% Band Width Test Data CH-High



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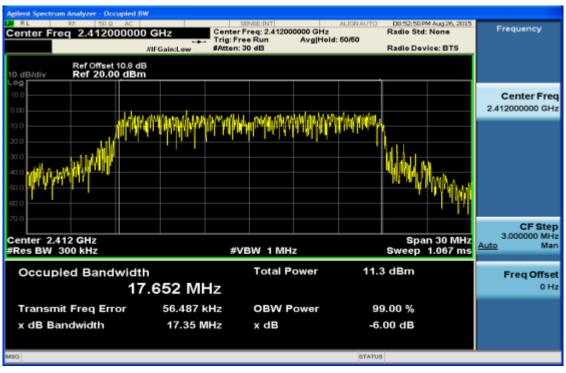
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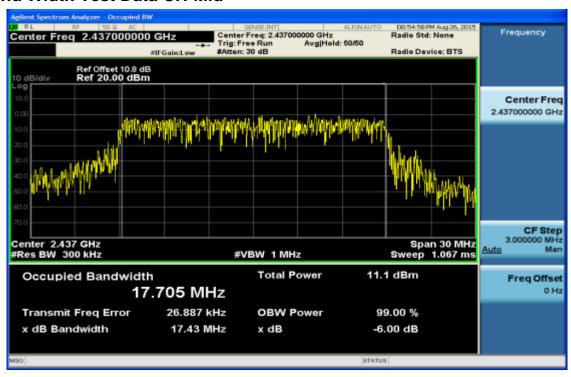
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 40 of 112

802.11n 20M 99% Band Width Test Data CH-Low



99% Band Width Test Data CH-Mid



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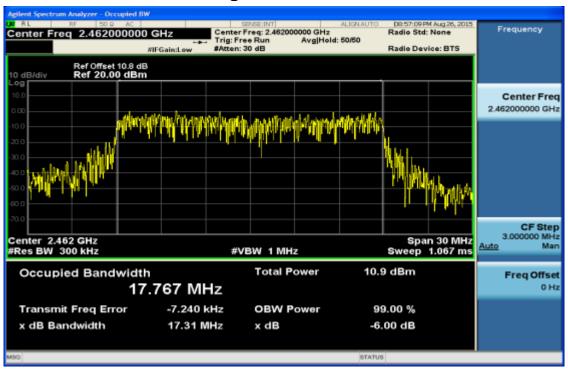
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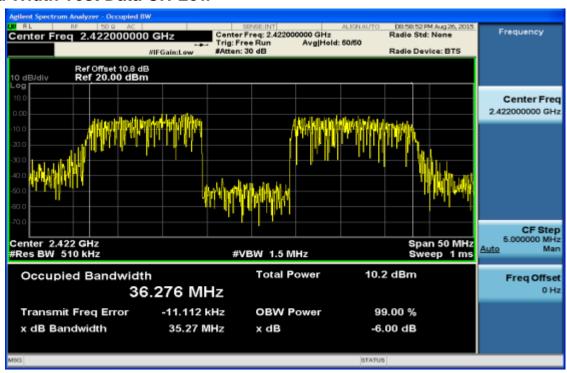
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99% Band Width Test Data CH-High



802.11 n 40M

99% Band Width Test Data CH-Low



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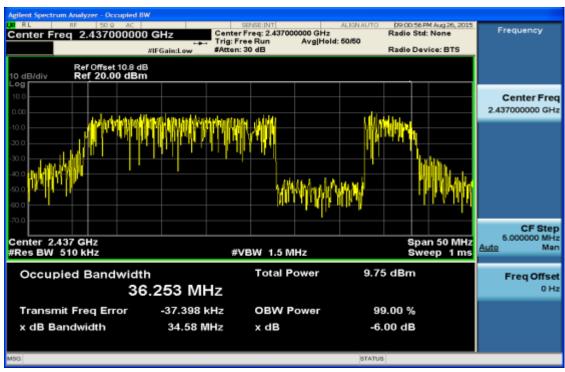
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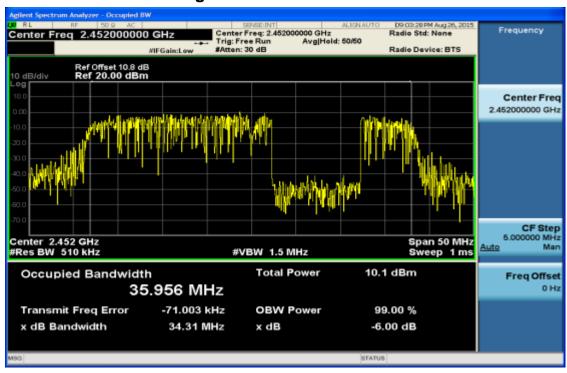
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 42 of 112

99% Band Width Test Data CH-Mid



99% Band Width Test Data CH-High



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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 43 of 112

10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

10.1 Standard Applicable

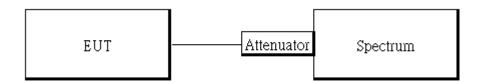
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, 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), must also comply with the radiated emission limits specified in §15.209(a).

If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

10.2 Measurement Equipment Used

Conducted Emission Test Site										
EQUIPMENT MFR MODEL SERIAL LAST C										
TYPE		NUMBER	NUMBER	CAL.						
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/29/2015	01/28/2016					
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016					
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016					

10.3 Test SET-UP



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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 44 of 112

10.3.1 Measurement Procedure

Conducted Band Edge:

- To connect Antenna Port of EUT to Spectrum.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
- 5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
- 6. Mark the highest reading of the emission as the reference level measurement.
- 7. Set DL as the limit = reading on marker 1 20dBm
- 8. Marker on frequency, 2.3999GHz and 2.4836GHz, and examine shall 100 kHz immediately outside the authorized (2400~2483.5) be attenuated by 20dB at least relative to the maximum emission of power.
- 9. Repeat above procedures until all default test channel (low, middle, and high) was complete.

Conducted Spurious Emission:

- To connect Antenna Port of EUT to Spectrum
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- 3. Set RBW = 100 kHz & VBW= 300 kHz, Detector =Peak, Sweep = Auto.
- 4. Allow trace to fully stabilize.
- 5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- 6. Repeat above procedures until all default test channel measured were complete.

10.4 Measurement Result

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 45 of 112

802.11b **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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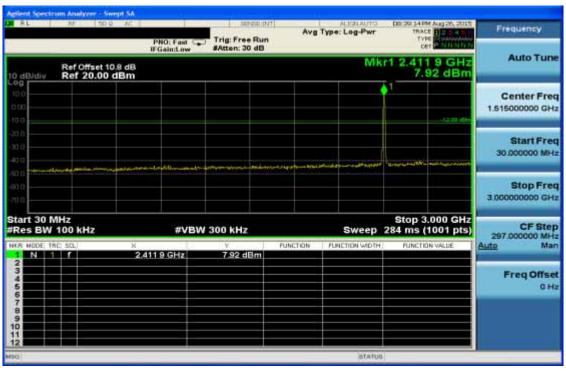
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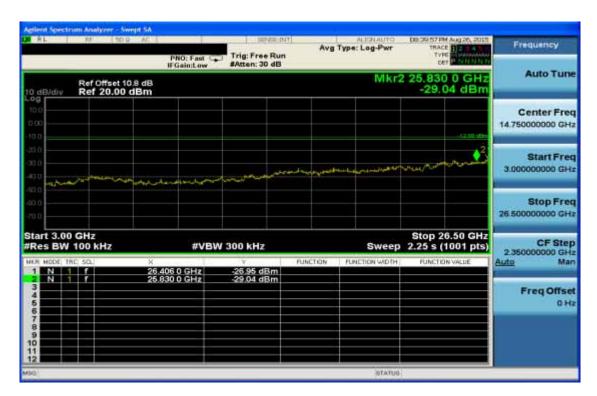


Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 46 of 112

802.11b **Spurious Emission Test Data CH-Low**





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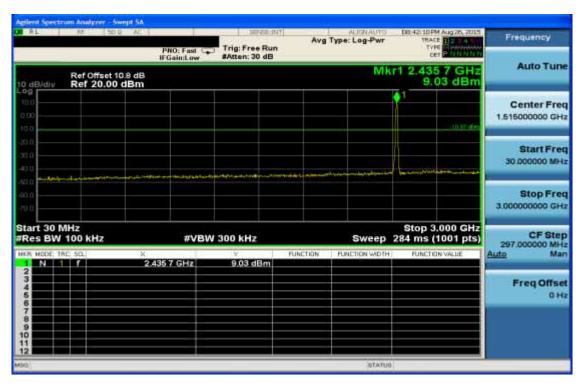
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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 47 of 112

Spurious Emission Test Data CH-Mid





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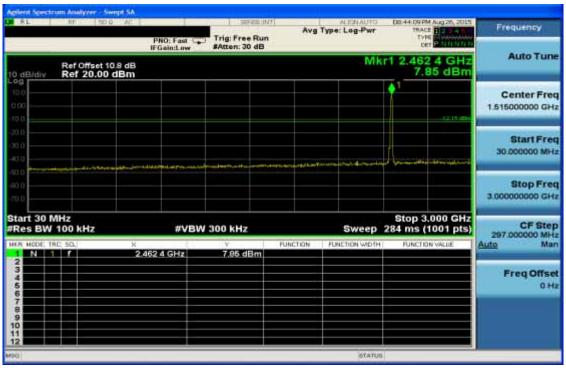
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Page: 48 of 112

Spurious Emission Test Data CH-High





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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 49 of 112

802.11g **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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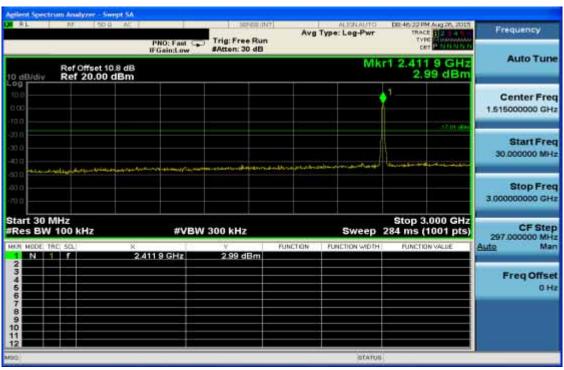
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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 50 of 112

802.11g **Spurious Emission Test Data CH-Low**





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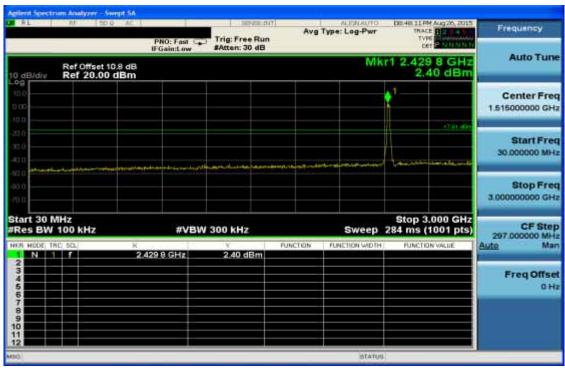
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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 51 of 112

Spurious Emission Test Data CH-Mid





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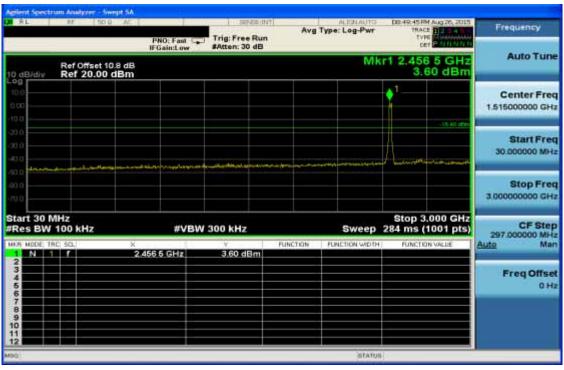
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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 52 of 112

Spurious Emission Test Data CH-High





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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 53 of 112

802.11n_HT20 **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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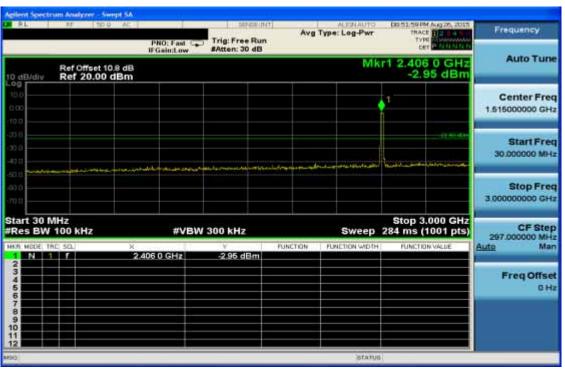
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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 54 of 112

802.11n HT20 **Spurious Emission Test Data CH-Low**





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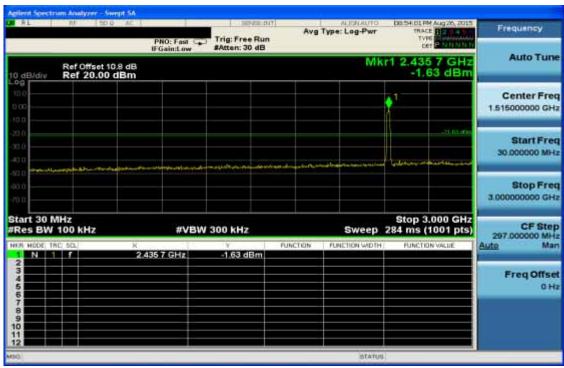
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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 55 of 112

Spurious Emission Test Data CH-Mid





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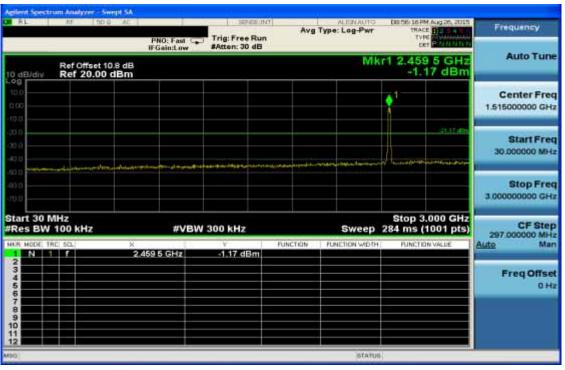
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Page: 56 of 112

Spurious Emission Test Data CH-High





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Page: 57 of 112

802.11n HT40 **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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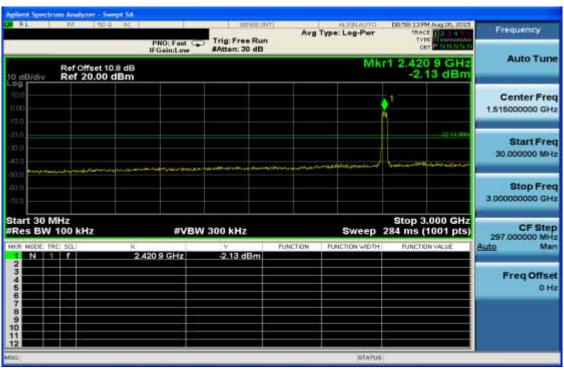
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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 58 of 112

802.11n HT40 **Spurious Emission Test Data CH-Low**





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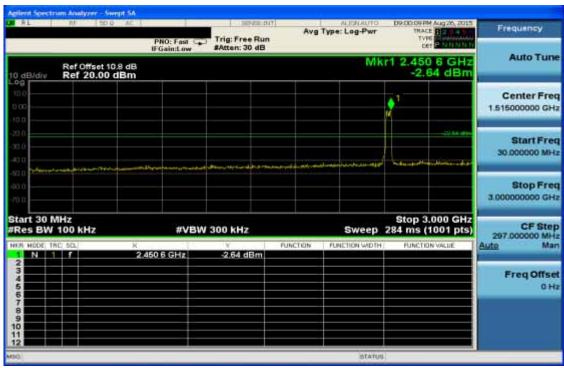
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Page: 59 of 112

Spurious Emission Test Data CH-Mid





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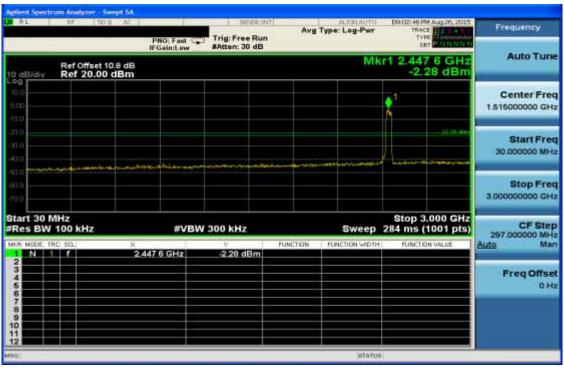
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Page: 60 of 112

Spurious Emission Test Data CH-High





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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 61 of 112

11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

11.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 limit as below.

And according to §15.33(a) (1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

- 1. The lower limit shall apply at the transition frequencies.
- 2. Emission level $(dB\mu V/m) = 20 \log Emission level (dB\mu V/m)$

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 62 of 112

11.2 Measurement Equipment Used:

		966 Chambe	er		
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
EMI Test Receiver	t Receiver R&S ESCI7 100760		100760	05/04/2015	05/03/2016
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/29/2015	01/28/2016
EXA Spectrum An-					
alyzer	Agilent	N9010A	MY50420195	12/22/2014	12/21/2015
Spectrum Analyzer	R&S	FSV-30	101398	10/07/2014	10/06/2015
Loop Antenna	ETS.LINDGREN	6502	00143303	12/9/2014	12/08/2015
Bilog Antenna	OOTTWITEDLOIL		378	12/23/2014	12/22/2015
Horn antenna	ETS.LINDGREN	3117	123995	05/05/2015	05/04/2016
Horn Antenna	Schwarzbeck	BBHA9170	184	12/25/2014	12/24/2015
Pre-Amplifier	Agilent	8447D	2944A07676	01/02/2015	01/01/2016
Pre-Amplifier	Agilent	8449B	3008A00578	01/02/2015	01/01/2016
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/02/2015	01/01/2016
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M2	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	004	01/02/2015	01/01/2016
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R
Controller	ChamPro	EM1000	060776	N.C.R	N.C.R
Low Loss Cable	Huber Suhner	966_Rx	9	01/02/2015	01/01/2016
3m Site NSA	SGS	966 chamber	N/A	07/01/2015	06/30/2016

NOTE: N.C.R refers to Not Calibrated Required.

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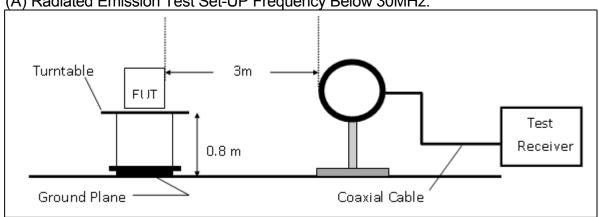


Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

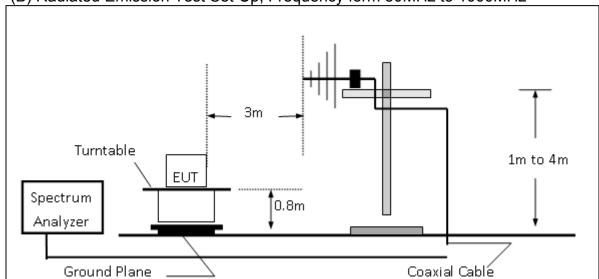
Page: 63 of 112

11.3 Test SET-UP

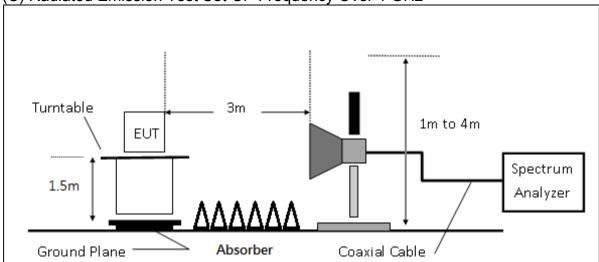
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



(C) Radiated Emission Test Set-UP Frequency Over 1 GHz



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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 64 of 112

11.3.1 Measurement Procedure

- 1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- 2. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
- 3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 5. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
- 6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
- 7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
- 8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
- 9. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- 10. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 11. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
- 12. Repeat above procedures until all default test channel measured were complete.

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 65 of 112

11.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	J	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

Actual FS(dB μ V/m) = SPA. Reading level(dB μ V) + Factor(dB)

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) - Pre Amplifier Gain(dB)

Note:

"F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

11.5 Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

11.6 Measurement Result

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 66 of 112

Radiated Band Edge Measurement Result (802.11b)

Operation Band :802.11 b **Test Date** :2015-08-27

Fundamental Frequency Temp./Humi. :2412 MHz :21 deg_C / 61 RH

Operation Mode :Band Edge LOW Engineer :Burly EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB	
2390.00	Е	Average	33.73	5.16	38.89	54.00	-15.11	
2390.00	Е	Peak	49.06	5.16	54.22	74.00	-19.78	

Operation Band :802.11 b Test Date :2015-08-27

Fundamental Frequency Temp./Humi. :21 deg_C / 61 RH :2412 MHz

Operation Mode :Band Edge LOW Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :HORIZONTAL

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dΒμV/m	dB	
2390.00	Е	Average	31.73	5.16	36.89	54.00	-17.11	
2390.00	Е	Peak	46.86	5.16	52.02	74.00	-21.98	

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 67 of 112

Operation Band :802.11 b Test Date Fundamental Frequency :2462 MHz

:2015-08-27 Temp./Humi. :21 deg C / 61 RH

Operation Mode :Band Edge HIGH Engineer :Burly EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@ 3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2483.50	Е	Average	31.08	6.01	37.09	54.00	-16.91
2483.50	Е	Peak	47.95	6.01	53.96	74.00	-20.04

:2015-08-27 **Operation Band** :802.11 b Test Date

Fundamental Frequency :2462 MHz Temp./Humi. :21 deg C / 61 RH

Operation Mode :Band Edge HIGH Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :HORIZONTAL

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2483.50	E	Average	29.50	6.01	35.51	54.00	-18.49
2483.50	Е	Peak	48.06	6.01	54.07	74.00	-19.93

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 68 of 112

Radiated Band Edge Measurement Result (802.11g)

Operation Band :802.11 g **Test Date** :2015-08-27 Fundamental Frequency :2412 MHz Temp./Humi. :21 deg_C / 61 RH

Operation Mode :Band Edge LOW Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2390.00	Е	Average	44.58	5.16	49.74	54.00	-4.26
2390.00	Е	Peak	65.59	5.16	70.75	74.00	-3.25

Operation Band :802.11 g Test Date :2015-08-27

Fundamental Frequency :2412 MHz Temp./Humi. :21 deg_C / 61 RH

Operation Mode :Band Edge LOW Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :HORIZONTAL

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2390.00	Е	Average	41.39	5.16	46.55	54.00	-7.45
2390.00	Ε	Peak	62.14	5.16	67.30	74.00	-6.70

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 69 of 112

Operation Band Fundamental Frequency

:802.11 g :2462 MHz Test Date Temp./Humi. :2015-08-27 :21 deg C / 61 RH

Operation Mode EUT Pol.

:Band Edge HIGH :E1 Plane

Engineer :Burly Measurement Antenna Pol. :VERTICAL

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2483.50	E	Average	38.52	6.01	44.53	54.00	-9.47
2483.50	Ε	Peak	65.38	6.01	71.39	74.00	-2.61

Operation Band Fundamental Frequency :802.11 g :2462 MHz :Band Edge HIGH Test Date Temp./Humi.

:2015-08-27 :21 deg C / 61 RH

Operation Mode EUT Pol.

:E1 Plane

Engineer

:Burly Measurement Antenna Pol. :HORIZONTAL

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2483.50	Е	Average	34.49	6.01	40.50	54.00	-13.50
2483.50	Е	Peak	60.17	6.01	66.18	74.00	-7.82

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 70 of 112

Radiated Band Edge Measurement Result (802.11_HT20)

Operation Band :802.11 n20 :2015-09-01 **Test Date**

Fundamental Frequency :2412 MHz Temp./Humi. :21 deg_C / 61 RH Operation Mode :Band Edge LOW Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL

	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
_	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
	2390.00	Е	Average	36.79	5.16	41.95	54.00	-12.05
	2390.00	Е	Peak	58.73	5.16	63.89	74.00	-10.11

Operation Band :802.11 n20 Test Date :2015-08-27

Fundamental Frequency Temp./Humi. :21 deg_C / 61 RH :2412 MHz

Operation Mode :Band Edge LOW Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :HORIZONTAL

	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
_	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
	2390.00	Е	Average	33.79	5.16	38.95	54.00	-15.05
	2390.00	Е	Peak	55.73	5.16	60.89	74.00	-13.11

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Page: 71 of 112

Operation Band :802.11 n20 Test Date :2015-08-27

Fundamental Frequency :2462 MHz Temp./Humi. :21 deg C / 61 RH

Operation Mode :Band Edge HIGH Engineer :Burly EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@ 3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2483.50	Е	Average	32.22	6.01	38.23	54.00	-15.77
2483.50	Е	Peak	55.53	6.01	61.54	74.00	-12.46

Operation Band :802.11 n20 Test Date :2015-08-27

Fundamental Frequency :2462 MHz Temp./Humi. :21 deg C / 61 RH

Operation Mode :Band Edge HIGH Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :HORIZONTAL

	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
_	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
	2483.50	Е	Average	30.25	6.01	36.26	54.00	-17.74
	2483.50	Е	Peak	53.59	6.01	59.60	74.00	-14.40

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 72 of 112

Radiated Band Edge Measurement Result (802.11_HT40)

Operation Band :802.11 n40 **Test Date** :2015-08-27

Fundamental Frequency :2412 MHz Temp./Humi. :21 deg_C / 61 RH

Operation Mode :Band Edge LOW Engineer :Burly EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2390.00	Е	Average	43.14	5.16	48.30	54.00	-5.70
2390.00	E	Peak	63.98	5.16	69.14	74.00	-4.86

Operation Band :802.11 n40 **Test Date** :2015-08-27

Fundamental Frequency :2412 MHz Temp./Humi. :21 deg C / 61 RH

Operation Mode :Band Edge LOW Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :HORIZONTAL

	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
_	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
	2390.00	Е	Average	38.26	5.16	43.42	54.00	-10.58
	2390.00	Е	Peak	56.94	5.16	62.10	74.00	-11.90

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 73 of 112

Operation Band :802.11 n40 Test Date :2015-08-27

Fundamental Frequency :2452 MHz Temp./Humi. :21 deg_C / 61 RH

Operation Mode :Band Edge HIGH Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL

	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
_	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
	2483.50	Е	Average	32.45	6.01	38.46	54.00	-15.54
	2483.50	Е	Peak	55.95	6.01	61.96	74.00	-12.04

Operation Band :802.11 n40 **Test Date** :2015-08-27

Fundamental Frequency :2452 MHz Temp./Humi. :21 deg C / 61 RH

Operation Mode :Band Edge HIGH Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :HORIZONTAL

	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
_	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
	2483.50	E	Average	30.41	6.01	36.42	54.00	-17.58
	2483.50	E	Peak	51.56	6.01	57.57	74.00	-16.43

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 74 of 112

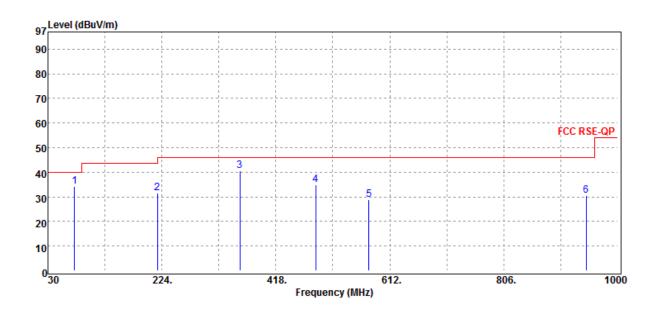
Radiated Spurious Emission Measurement Result (802.11 g)

Below 1GHz Worst-Case Data:

Operation Band :802.11 a **Test Date** :2015-08-27

Fundamental Frequency :2412 MHz Temp./Humi. :21 deg_C / 61 RH

Operation Mode :TX LOW Engineer :Burly EUT Pol. :E1 Plan Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
75.59	S	Peak	46.78	-12.60	34.18	40.00	-5.82
216.24	S	Peak	42.54	-11.13	31.41	46.00	-14.59
356.89	S	Peak	47.66	-7.07	40.59	46.00	-5.41
485.90	S	Peak	39.14	-4.37	34.77	46.00	-11.23
576.11	S	Peak	31.51	-2.49	29.02	46.00	-16.98
946.65	S	Peak	27.33	3.16	30.49	46.00	-15.51

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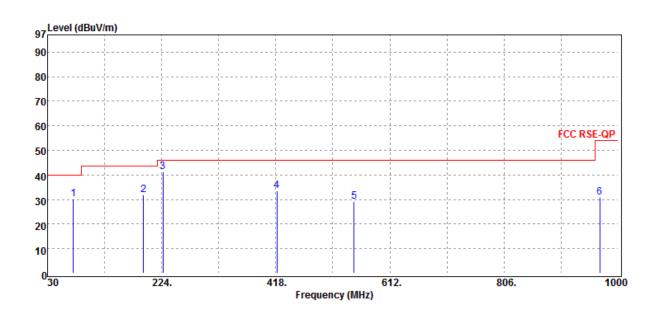
Page: 75 of 112

Operation Band :802.11 g **Fundamental Frequency** :2412 MHz **Operation Mode** :TX LOW EUT Pol. :E1 Plane

Test Date :2015-08-27 Temp./Humi. :21 deg_C / 61 RH

Engineer :Burly

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
73.65	S	Peak	42.34	-12.28	30.06	40.00	-9.94
192.96	S	Peak	43.69	-11.68	32.01	43.50	-11.49
225.94	S	Peak	52.31	-11.08	41.23	46.00	-4.77
419.94	S	Peak	39.08	-5.68	33.40	46.00	-12.60
550.89	S	Peak	33.18	-4.05	29.13	46.00	-16.87
968.96	S	Peak	27.40	3.64	31.04	54.00	-22.96

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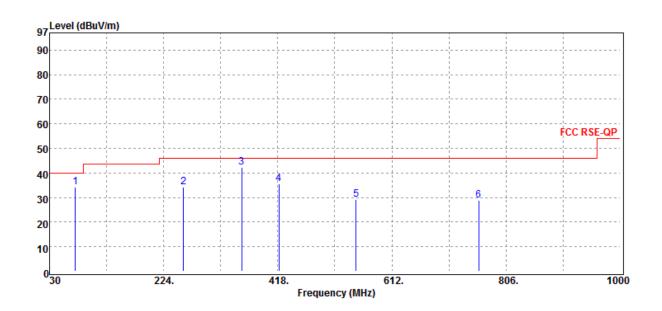
Page: 76 of 112

Operation Band Fundamental Frequency Operation Mode EUT Pol.

:802.11 g :2437 MHz :TX MID :E1 Plane

Test Date Temp./Humi. :2015-08-27 :21 deg_C / 61 RH

Engineer :Burly Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
73.65	S	Peak	46.61	-12.28	34.33	40.00	-5.67
257.95	S	Peak	43.95	-9.63	34.32	46.00	-11.68
356.89	S	Peak	49.44	-7.07	42.37	46.00	-3.63
419.94	S	Peak	41.18	-5.68	35.50	46.00	-10.50
550.89	S	Peak	33.16	-4.05	29.11	46.00	-16.89
759.44	S	Peak	27.80	1.07	28.87	46.00	-17.13

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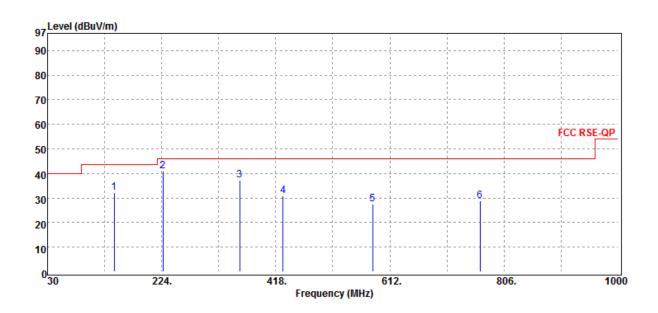
Page: 77 of 112

Operation Band :802.11 g **Fundamental Frequency** :2437 MHz **Operation Mode** :TX MID EUT Pol. :E1 Plane

Test Date Temp./Humi. :2015-08-27 :21 deg C / 61 RH

Engineer :Burly

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB	
143.49	S	Peak	41.82	-9.74	32.08	43.50	-11.42	
225.94	S	Peak	52.18	-11.08	41.10	46.00	-4.90	
356.89	S	Peak	44.28	-7.07	37.21	46.00	-8.79	
430.61	S	Peak	36.53	-5.78	30.75	46.00	-15.25	
582.90	S	Peak	29.45	-1.89	27.56	46.00	-18.44	
765.26	S	Peak	27.59	1.11	28.70	46.00	-17.30	

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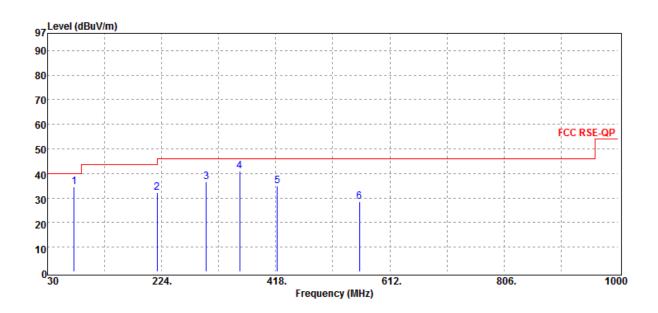
Page: 78 of 112

Operation Band :802.11 g **Fundamental Frequency** :2462 MHz **Operation Mode** :TX HIGH EUT Pol. :E1 Plane

Test Date Temp./Humi. Engineer

:2015-08-27 :21 deg_C / 61 RH

:Burly Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
75.59	S	Peak	47.31	-12.60	34.71	40.00	-5.29
216.24	S	Peak	43.31	-11.13	32.18	46.00	-13.82
299.66	S	Peak	44.71	-7.99	36.72	46.00	-9.28
356.89	S	Peak	48.15	-7.07	41.08	46.00	-4.92
420.91	S	Peak	40.43	-5.67	34.76	46.00	-11.24
560.59	S	Peak	32.21	-3.77	28.44	46.00	-17.56

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Page: 79 of 112

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

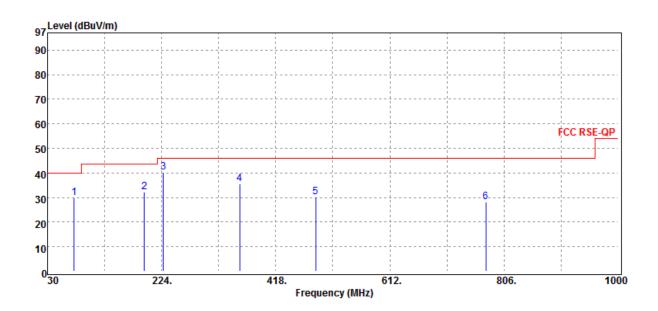
:802.11 g :2462 MHz :TX HIGH :E1 Plane

Test Date :2015-08-27 Temp./Humi.

Engineer

:21 deg C / 61 RH :Burly

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
75.59	S	Peak	42.60	-12.60	30.00	40.00	-10.00
194.90	S	Peak	43.89	-11.71	32.18	43.50	-11.32
226.91	S	Peak	51.36	-11.05	40.31	46.00	-5.69
356.89	S	Peak	42.78	-7.07	35.71	46.00	-10.29
485.90	S	Peak	34.64	-4.37	30.27	46.00	-15.73
774.96	S	Peak	27.55	0.73	28.28	46.00	-17.72

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Page: 80 of 112

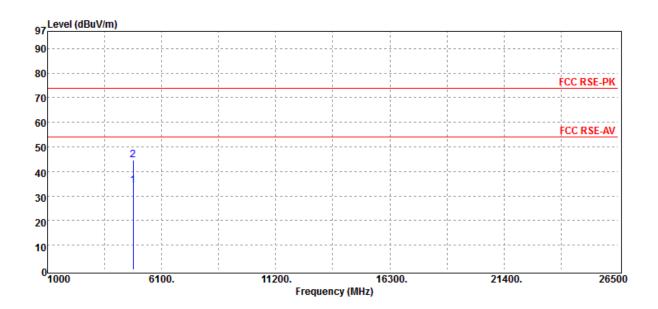
Radiated Spurious Emission Measurement Result (802.11 b)

Above 1GHz Worst-Case Data:

Operation Band :802.11 b **Test Date** :2015-08-27

Fundamental Frequency :2412 MHz Temp./Humi. :21 deg_C / 61 RH

Operation Mode :TX LOW Engineer :Burly EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
4824.00	Н	Average	24.66	9.63	34.29	54.00	-19.71	
4824.00	Н	Peak	34.97	9.63	44.60	74.00	-29.40	

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Page: 81 of 112

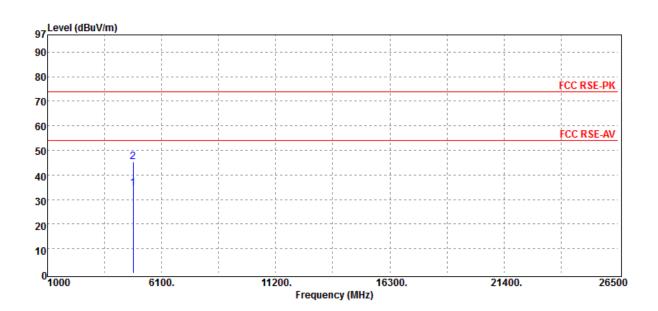
Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11 b :2412 MHz :TX LOW :E1 Plane

Test Date Temp./Humi. Engineer

:2015-08-27 :21 deg_C / 61 RH

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	_
4824.00	Н	Average	25.00	9.63	34.63	54.00	-19.37	
4824.00	Н	Peak	35.56	9.63	45.19	74.00	-28.81	

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 82 of 112

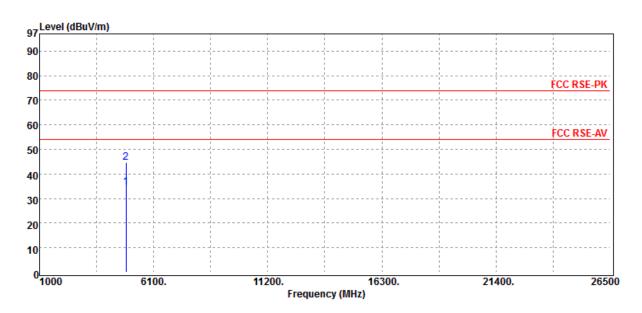
Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11 b :2437 MHz :TX MID :E1 Plane

Test Date Temp./Humi. Engineer

:2015-08-27 :21 deg_C / 61 RH

:Burly Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4874.00	Н	Average	24.56	9.85	34.41	54.00	-19.59
4874.00	Н	Peak	34.89	9.85	44.74	74.00	-29.26

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 83 of 112

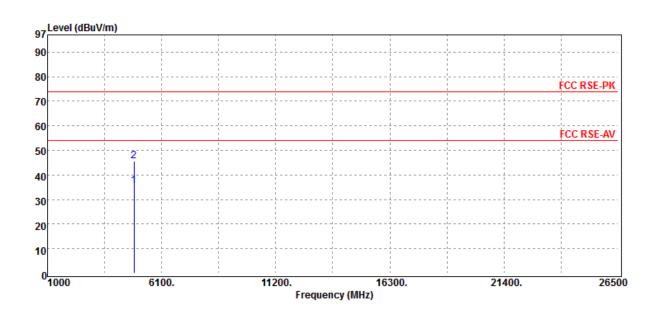
Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11 b :2437 MHz :TX MID :E1 Plane

Test Date Temp./Humi. Engineer

:2015-08-27 :21 deg_C / 61 RH

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
4874.00	Н	Average	25.73	9.85	35.58	54.00	-18.42	
4874.00	Н	Peak	35.93	9.85	45.78	74.00	-28.22	

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 84 of 112

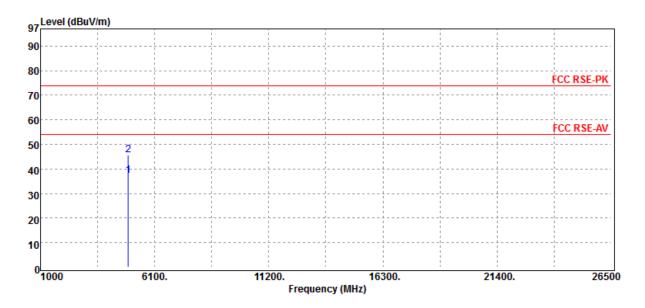
Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11 b :2462 MHz :TX HIGH :E1 Plane

Test Date Temp./Humi. Engineer

:2015-08-27 :21 deg_C / 61 RH

:Burly Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4924.00	Н	Average	27.27	9.86	37.13	54.00	-16.87
4924.00	Н	Peak	35.71	9.86	45.57	74.00	-28.43

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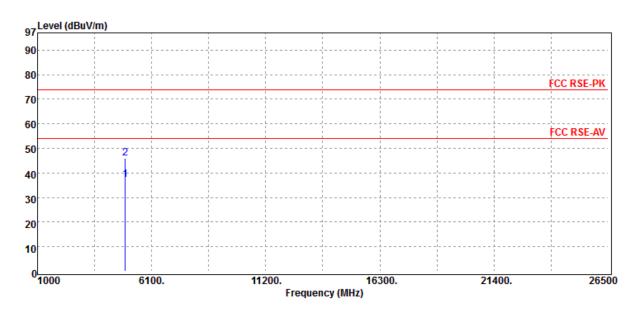
Page: 85 of 112

Operation Band :802.11 b Fundamental Frequency :2462 MHz **Operation Mode** :TX HIGH EUT Pol. :E1 Plane

Test Date :2015-08-27 Temp./Humi. :21 deg_C / 61 RH

Engineer :Burly

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4924.00	Н	Average	27.45	9.86	37.31	54.00	-16.69
4924.00	Н	Peak	36.23	9.86	46.09	74.00	-27.91

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 86 of 112

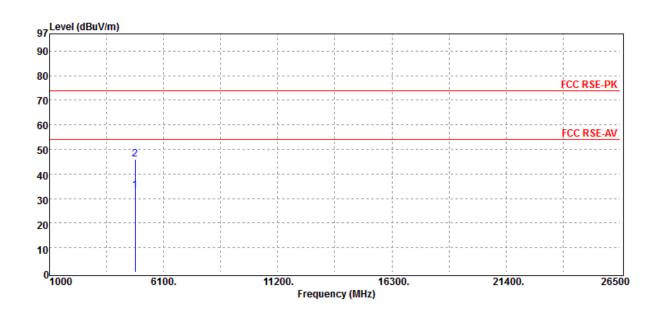
Radiated Spurious Emission Measurement Result (802.11 g)

Operation Band Test Date :802.11 g :2015-08-27

Fundamental Frequency :2412 MHz Temp./Humi. :21 deg_C / 61 RH

Operation Mode :TX LOW Engineer :Burly

EUT Pol. :VERTICAL :E1 Plane Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB	
4824.00	Н	Average	23.73	9.63	33.36	54.00	-20.64	
4824.00	Н	Peak	36.40	9.63	46.03	74.00	-27.97	

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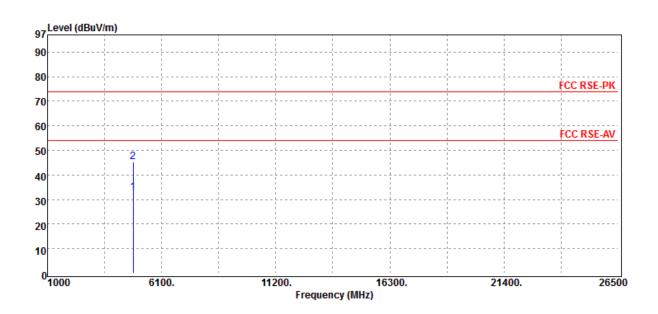
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 87 of 112

Operation Band Test Date :2015-08-27 :802.11 g Fundamental Frequency :21 deg_C / 61 RH :2412 MHz Temp./Humi.

Operation Mode :TX LOW Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
 MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB	
4824.00	Н	Average	23.28	9.63	32.91	54.00	-21.09	
4824.00	Н	Peak	35.64	9.63	45.27	74.00	-28.73	

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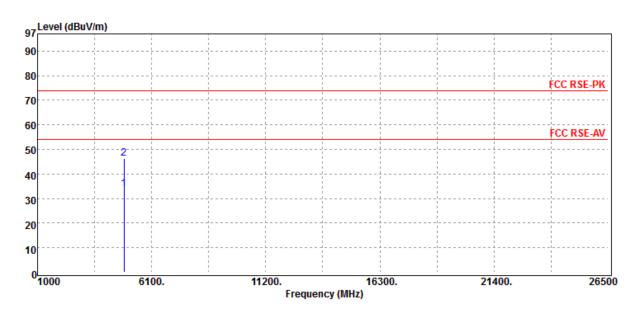
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 88 of 112

Operation Band Test Date :2015-08-27 :802.11 g Fundamental Frequency :21 deg_C / 61 RH :2437 MHz Temp./Humi.

Operation Mode :TX MID Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
4874.00	Н	Average	23.95	9.85	33.80	54.00	-20.20	
4874.00	Н	Peak	36.43	9.85	46.28	74.00	-27.72	

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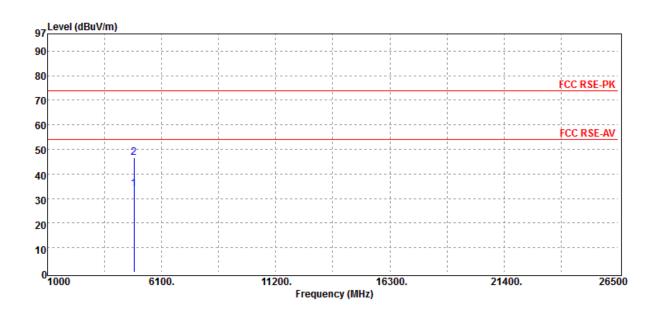
Page: 89 of 112

Operation Band :802.11 g Fundamental Frequency :2437 MHz **Operation Mode** :TX MID EUT Pol. :E1 Plane

Test Date :2015-08-27 :21 deg_C / 61 RH Temp./Humi.

Engineer :Burly

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Average	24.03	9.85	33.88	54.00	-20.12
4874.00	Н	Peak	36.83	9.85	46.68	74.00	-27.32

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 90 of 112

Operation Band :802.11 g Fundamental Frequency :2462 MHz

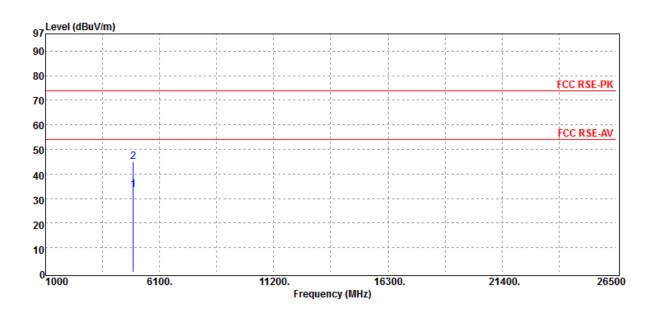
:TX HIGH

Operation Mode

EUT Pol. :E1 Plane **Test Date** :2015-08-27 :21 deg_C / 61 RH Temp./Humi.

Engineer :Burly

Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4924.00	Н	Average	23.73	9.86	33.59	54.00	-20.41
4924.00	Н	Peak	35.25	9.86	45.11	74.00	-28.89

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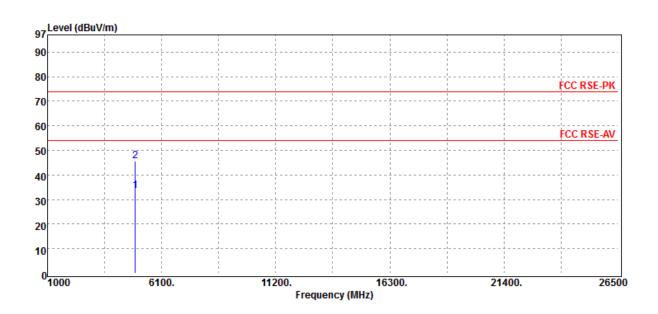
Page: 91 of 112

Operation Band :802.11 g Fundamental Frequency :2462 MHz **Operation Mode** :TX HIGH EUT Pol. :E1 Plane

Test Date Temp./Humi. :2015-08-27 :21 deg_C / 61 RH

Engineer :Burly

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4924.00	Н	Average	23.82	9.86	33.68	54.00	-20.32
4924.00	Н	Peak	35.82	9.86	45.68	74.00	-28.32

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 92 of 112

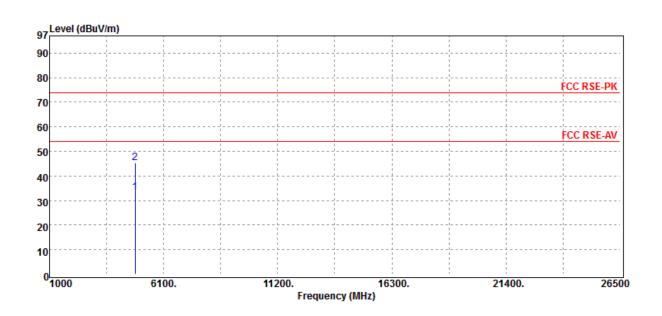
Radiated Spurious Emission Measurement Result (802.11_HT20)

Operation Band :802.11 n20M Test Date :2015-08-27

Fundamental Frequency :2412 MHz Temp./Humi. :21 deg_C / 61 RH

Operation Mode :TX LOW Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Average	23.51	9.63	33.14	54.00	-20.86
4824.00	Н	Peak	35.61	9.63	45.24	74.00	-28.76

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 93 of 112

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

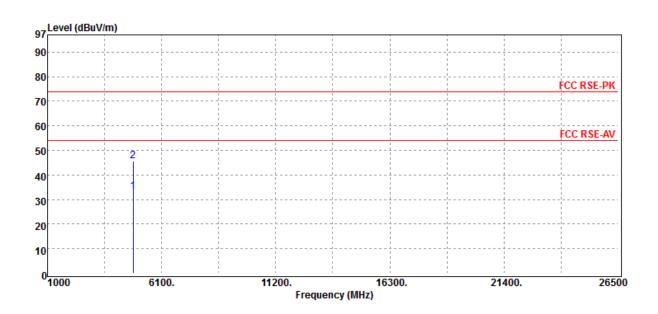
:802.11 n20M :2412 MHz :TX LOW :E1 Plane

Test Date Temp./Humi. Engineer

:2015-08-27 :21 deg_C / 61 RH

:Burly

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4824.00	Н	Average	23.50	9.63	33.13	54.00	-20.87
4824.00	Н	Peak	35.93	9.63	45.56	74.00	-28.44

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 94 of 112

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

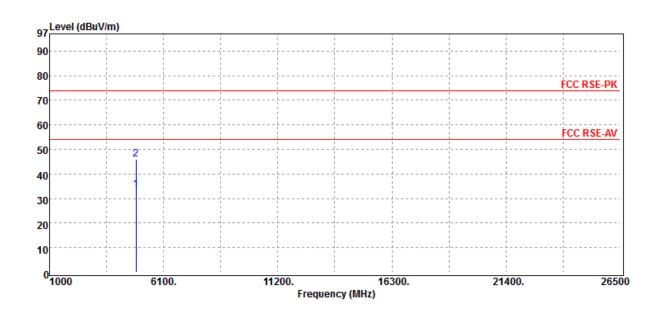
:802.11 n20M :2437 MHz :TX MID :E1 Plane

Test Date Temp./Humi. Engineer

:2015-08-27 :21 deg_C / 61 RH

:Burly

Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB	
4874.00	Н	Average	23.85	9.85	33.70	54.00	-20.30	
4874.00	Н	Peak	36.09	9.85	45.94	74.00	-28.06	

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Page: 95 of 112

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

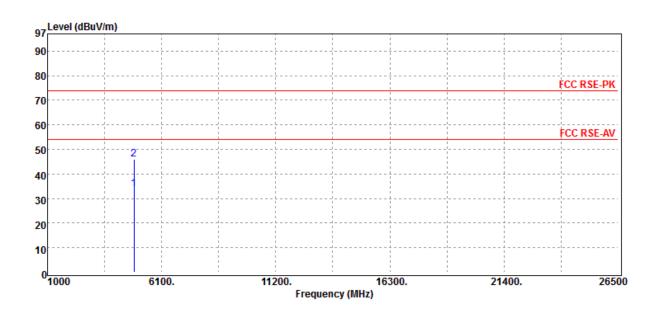
:802.11 n20M :2437 MHz :TX MID :E1 Plane

Test Date Temp./Humi. Engineer

:2015-08-27 :21 deg_C / 61 RH

:Burly

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4874.00	Н	Average	23.90	9.85	33.75	54.00	-20.25
4874.00	Н	Peak	36.20	9.85	46.05	74.00	-27.95

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 96 of 112

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11 n20M :2462 MHz :TX HIGH :E1 Plane

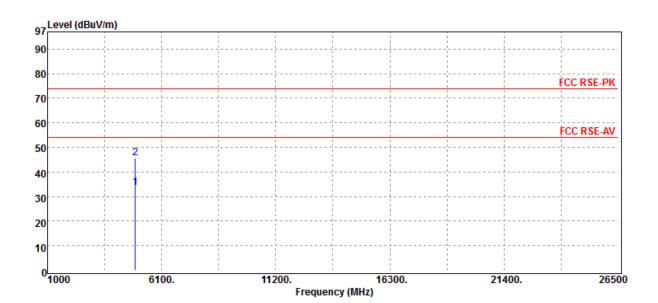
Test Date Temp./Humi. Engineer

Measurement Antenna Pol.

:2015-08-27 :21 deg_C / 61 RH

:VERTICAL

:Burly



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4924.00	Н	Average	23.54	9.86	33.40	54.00	-20.60
4924.00	Н	Peak	35.68	9.86	45.54	74.00	-28.46

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Page: 97 of 112

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

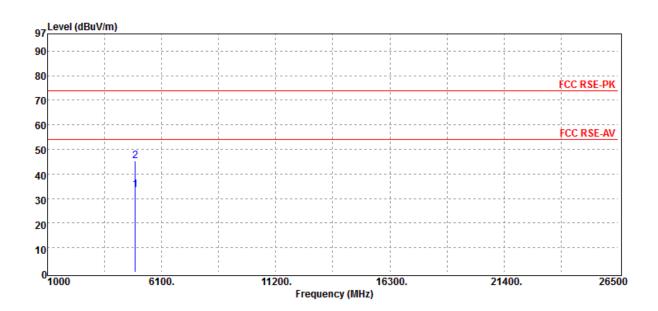
:802.11 n20M :2462 MHz :TX HIGH :E1 Plane

Test Date Temp./Humi. Engineer

:2015-08-27 :21 deg_C / 61 RH

:Burly

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
4924.00	Н	Average	23.57	9.86	33.43	54.00	-20.57
4924.00	Н	Peak	35.57	9.86	45.43	74.00	-28.57

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 98 of 112

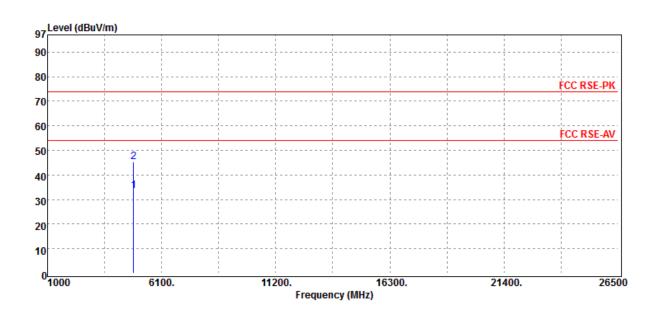
Radiated Spurious Emission Measurement Result (802.11_HT40)

Operation Band :802.11 n40M Test Date :2015-08-27

Fundamental Frequency :2422 MHz Temp./Humi. :21 deg_C / 61 RH

Operation Mode :TX LOW Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode Reading Lev			FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB	
4844.00	Н	Average	23.92	9.74	33.66	54.00	-20.34	
4844.00	Н	Peak	35.47	9.74	45.21	74.00	-28.79	

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 99 of 112

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

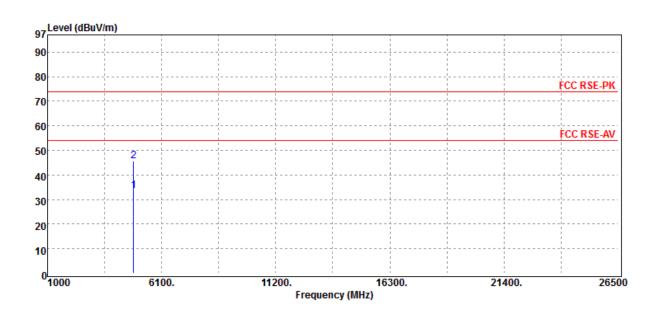
:802.11 n40M :2422 MHz :TX LOW :E1 Plane

Test Date Temp./Humi. Engineer

:2015-08-27 :21 deg_C / 61 RH

:Burly

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4844.00	Н	Average	23.92	9.74	33.66	54.00	-20.34
4844.00	Н	Peak	35.89	9.74	45.63	74.00	-28.37

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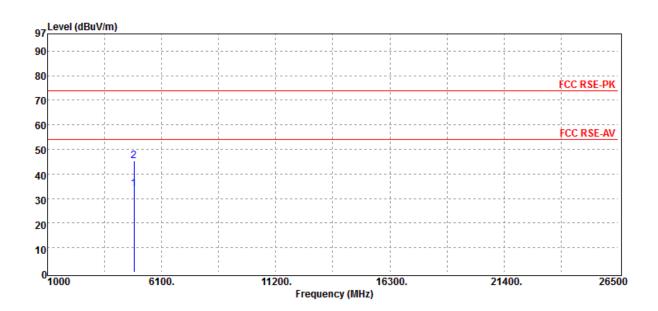
Page: 100 of 112

Operation Band :802.11 n40M **Test Date** :2015-08-27

Fundamental Frequency :21 deg_C / 61 RH :2437 MHz Temp./Humi.

Operation Mode :TX MID Engineer :Burly

:E1 Plane EUT Pol. Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode Reading Level			FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
4874.00	Н	Average	23.97	9.85	33.82	54.00	-20.18	
4874.00	Н	Peak	35.52	9.85	45.37	74.00	-28.63	

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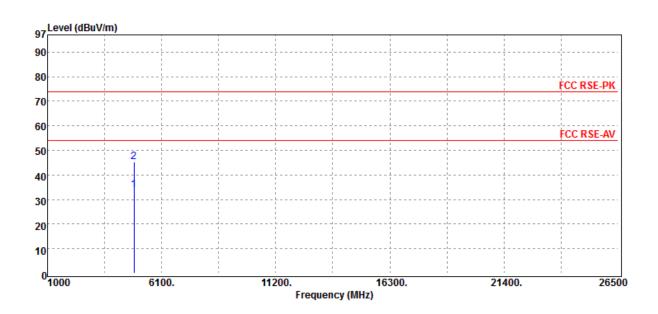
Page: 101 of 112

Operation Band :802.11 n40M **Test Date** :2015-08-27

Fundamental Frequency :21 deg_C / 61 RH :2437 MHz Temp./Humi.

Operation Mode :TX MID Engineer :Burly

:E1 Plane EUT Pol. Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode Reading Leve			FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
4874.00	Н	Average	23.98	9.85	33.83	54.00	-20.17	
4874.00	Н	Peak	35.59	9.85	45.44	74.00	-28.56	

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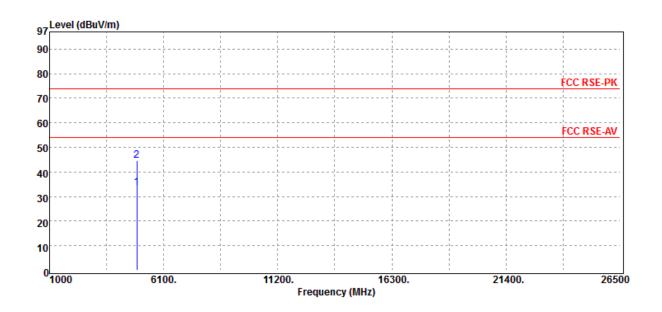
Page: 102 of 112

Operation Band :802.11 n40M **Test Date** :2015-08-27

Fundamental Frequency :21 deg_C / 61 RH :2452 MHz Temp./Humi.

Operation Mode :TX HIGH Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode Reading Leve			FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB	
4904.00	Н	Average	23.59	9.84	33.43	54.00	-20.57	
4904.00	Н	Peak	34.93	9.84	44.77	74.00	-29.23	

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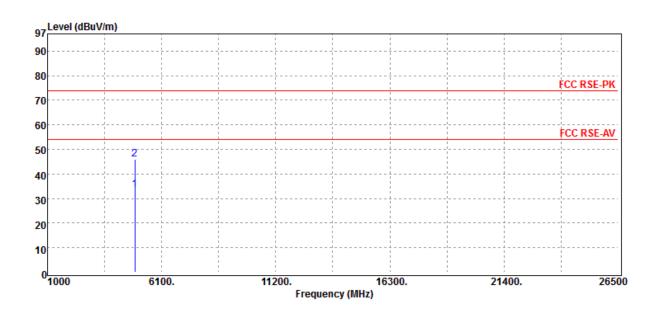
Page: 103 of 112

Operation Band :802.11 n40M **Test Date** :2015-08-27

Fundamental Frequency :21 deg_C / 61 RH :2452 MHz Temp./Humi.

Operation Mode :TX HIGH Engineer :Burly

EUT Pol. :E1 Plane Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4904.00	Н	Average	23.59	9.84	33.43	54.00	-20.57
4904.00	Н	Peak	36.10	9.84	45.94	74.00	-28.06

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 104 of 112

12 PEAK POWER SPECTRAL DENSITY

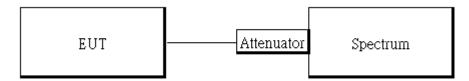
12.1 Standard Applicable

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

12.2 Measurement Equipment Used

	Conducted Emission Test Site							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
TYPE		NUMBER	NUMBER	CAL.				
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/29/2015	01/28/2016			
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016			
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016			

12.3 Test Set-up



12.4 Measurement Procedure

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- 3. Set the span to 1.5 times the DTS channel bandwidth.
- 4. Set the RBW = 3 kHz.
- 5. Set the VBW = 10 kHz.
- 6. Detector = peak.
- 7. Sweep time = auto couple.
- 8. Trace mode = max hold.
- 9. Allow trace to fully stabilize.
- 10. Use the peak marker function to determine the maximum amplitude level.
- 11.802.11n MIMO mode: offset is set following "measure and add 10 Log (N)" on spectrum to measure the PSD for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=2 for this given application.

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 105 of 112

12.5 Measurement Result

Frequency	Frequency RF Power Density Maximum Limit			
(MHz)	(dBm)	(dBm)		
	802.11	b		
2412	-4.55	8	PASS	
2437	-4.91	8	PASS	
2462	-5.74	8	PASS	
	802.11	g		
2412	-10.13	8	PASS	
2437	-10.14	8	PASS	
2462	-10.57	8	PASS	
	802.11n_H	HT20		
2412	-14.35	7.49	PASS	
2437	-14.55	7.49	PASS	
2462	-13.84	7.49	PASS	
	802.11n_F	HT40		
2422	-17.27	7.49	PASS	
2437	-17.08	7.49	PASS	
2452	-17.25	7.49	PASS	

^{*}Refer to next page for plots

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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 106 of 112

802.11b

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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Page: 107 of 112

Power Spectral Density Test Plot (CH-High)



802.11g **Power Spectral Density Test Plot (CH-Low)**



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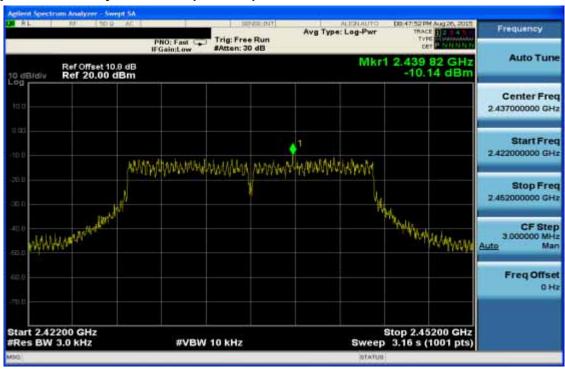
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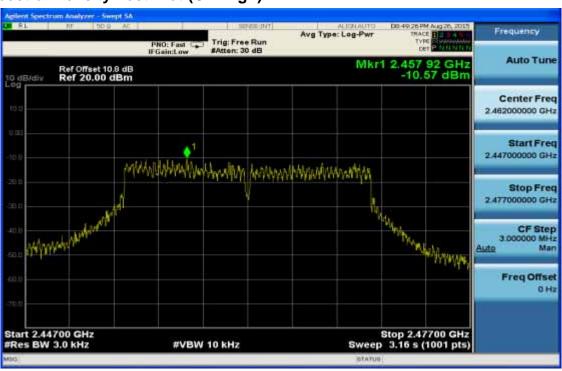
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 108 of 112

Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)



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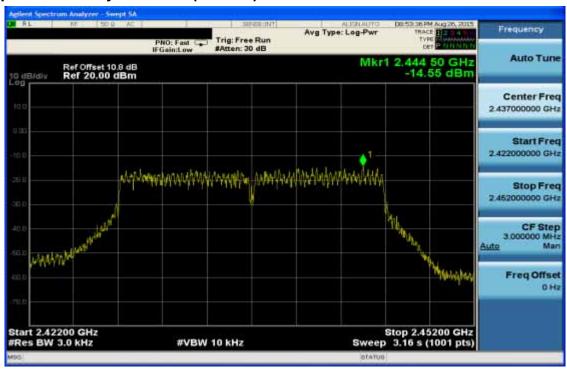
Page: 109 of 112

802.11n HT20

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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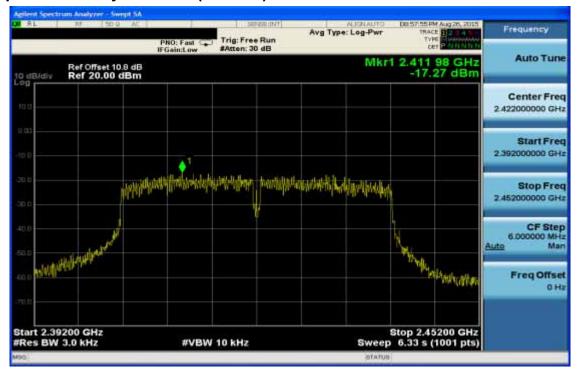
Page: 110 of 112

Power Spectral Density Test Plot (CH-High)



802.11n HT40

Power Spectral Density Test Plot (CH-Low)



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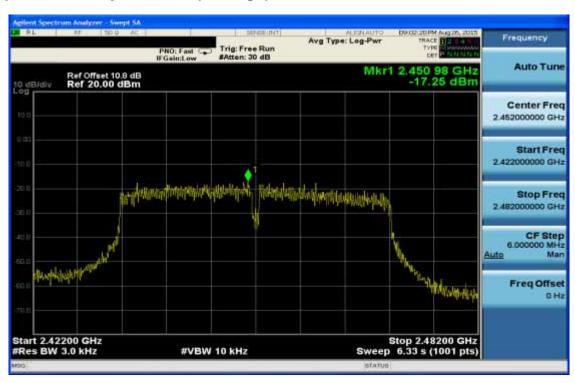
Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 111 of 112

Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)



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Report No.: ER/2015/70112 Issue Date: Sep. 18, 2015

Page: 112 of 112

13 ANTENNA REQUIREMENT

13.1 Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

If the transmitting antenna is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

According to RSS-GEN 8.3

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.

Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for the licence-exempt apparatus.

Testing shall be performed using the highest gain antenna of each combination of licence-exempt transmitter and antenna type, with the transmitter output power set at the maximum level.9 When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna manufacturer.

13.2 Antenna Connected Construction

An embedded-in antenna design is used.

The antenna connector is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.

The antenna gain is less than 6dBi. Therefore, it is not necessary to reduce maximum output power limit.

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