

Report No.: ER/2015/60014 **Issue Date: Jun. 22, 2015**

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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

Product Name: PDA Phone

Sony **Brand Name:**

PM-0874-BV **Type No.:**

Model Difference: N/A

FCC ID: PY7-PM0874

Report No.: ER/2015/60014

Issue Date: Jun. 22, 2015

FCC Rule Part: §15.247, Cat: DTS

Sony Mobile Communications AB Prepared for:

Nya Vattentornet 22188 Lund/Sweden

SGS Taiwan Ltd.

Electronics & Communication Laboratory

Prepared by: No.134, Wu Kung Road, New Taipei Industrial

Park, Wuku District, New Taipei City, Taiwan

24803





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VERIFICATION OF COMPLIANCE

Applicant: Sony Mobile Communications AB

Nya Vattentornet 22188 Lund/Sweden

PDA Phone **Product Name:**

Brand Name: Sony

PM-0874-BV Type No.:

Model Difference: N/A

FCC ID: PY7-PM0874

Report Number: ER/2015/60014

Date of test: Apr. 22, 2015 ~ Jun. 05, 2015

Date of EUT Received: Apr. 22, 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 C63.10:2009 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	Jun. 22, 2015
Prepared By:	Marcus Tseng / Engineer Tiffany Kao	Date	Jun. 22, 2015
Approved By:	Jim Chang / Asst. Manager	Date	Jun. 22, 2015

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Revision History

Report Number	Revision	Description	Issue Date
ER/2015/60014 Rev.00		Initial creation of document	Jun. 22, 2015

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GENERAL INFORMATION

Product description

General:

Jeneral:			
Product Name:	PDA Phon	e	
Brand Name:	Sony		
Type No.:	PM-0874-BV		
Model Difference:	N/A		
Data Cable (USB):		: EC450, Supplier: K-one 1242-6715.3, Length: 100 cm	
Simple Hands-Free (SHF-White):	Model No. Type No.:	: MH410c, Supplier: Foster Electric AG-1100	
Car Charger:	Model No.: AN400, Supplier: Salcomp Type No.: CAA-0003013		
BT PHF:	Type No.:	: MW600, Supplier: BALDA DDA-0002029.Bcoupling with Simple Hands Free b.: MH755, Supplier: BALDA, Type No.: AG-0502)	
Product SW/HW version:	30.0.A.0.2	0 / A	
Radio SW/HW version:	30.0.A.0.2	0 / A	
Test SW Version:	WIFI Tool	for MT6630	
RF power setting in TEST SW:	N/A		
	3.8Vdc		
	Battery:	Model No.: AGPB016-A001, Supplier: Sony Type No.: N/A	
Power Supply:	Adapter:	 M odel No.: EP800, Supplier: Phihong Type No.: AC-0300-US Model No.: EP800, Supplier: Salcomp Type No.: AC-0030-US 	

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WLAN 2.4GHz:

Wi-Fi	Frequency Range	Channels	Rated Power	Modulation Technology	
11b/g	2412-2462	11	b: 19.59dBm g: 22.96dBm	DSSS, OFDM	
11n	HT20 2412-2462	11	HT20: 21.96dBm	OFDM	
11n	HT40 2422-2452	7	HT40: 22.13dBm	OFDM	
Antenna Designation:		PIFA Antenna, Gain: -3.80dBi			
Modulation type:		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM			
Transition Rate:		802.11 b: up to 11 Mbps; 802.11 g: up to 54 Mbps 802.11 n_20MHz: up to 72.2Mbps 802.11 n_40MHz: up to 135Mbps			

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Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is PDA Phone supporting, GSM / WCDMA / LTE, Wi-Fi 802 11abon Bluetooth with GPS and NFC features and below is details of information

	Product Feature				
Product Name:	PDA Phone				
Brand Name:	Sony				
Type No.:	PM-0874-BV				
Model Difference:	N/A				
FCC ID	PY7-PM0874				
GSM Operating Band(s)	GSM 850 / 1900MHz				
GPRS / EGPRS Multi Slot Class	Class 12				
WCDMA Operating Band(s)	FDD Band II / V				
WCDMA Rel. Version	Release 8				
LTE Operating Band(s)	FCC Band 5 / 7				
LTE Rel. Version	Release 9 / Category 4				
Wi-Fi Specification	802.11a/b/g/n				
Bluetooth Version	V4.0 dual mode +HS				
NFC Specification	NFC				

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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1.3 **Test Methodology of Applied Standards**

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 DTS Meas. Guidance V03r03

ANSI C63.10:2009

Note:

- All test items have been performed and record as per the above standards. 1.
- The composite system is compliance with FCC Subpart B is authorized under the certi-2. fication procedure.
- The EUT was placed 0.8m height for frequency above 1GHz in accordance with ANSI C63. 10:2009

Test Facility 1.4

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

FCC Registration Numbers are: 990257 (Wugu)

Canada Registration Number: 4620A-5.

Special Accessories 1.5

There are no special accessories used while test was conducted.

Equipment Modifications 1.6

There was no modification incorporated into the EUT.

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SYSTEM TEST CONFIGURATION

2.1 **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 §15.107. 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 0.8 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.

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 0.7 dB and 10 dB attenuator.

Offset = RF cable loss (dB)+ attenuation factor(dB) =0.7+10=10.7(dB)

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2.5 **Configuration of Tested System**

Fig. 2-1 Radiated Emission

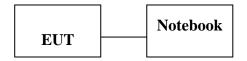


Fig. 2-2 Conducted (Antenna Port) Configuration

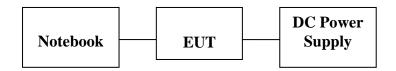


Fig. 2-3 AC Power Line Conducted Emission

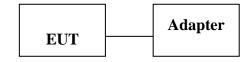


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	WIFI Tool for MT6630	N/A	N/A	N/A	N/A
2.	DC Power Supply	HP	E3640A	KR93300208	N/A	N/A
3.	Notebook	Lenovo	L420	LR-7HXZA	shielded	Un-shielded

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SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207(a)	AC Power Line Conducted Emission	Compliant
§15.247(b) (3)	Peak Output Power	Compliant
§15.247(a)(2)	6dB Bandwidth	Compliant
§15.247(d)	Conducted Band Edge and Spurious Emission	Compliant
§15.247(d)	Radiated Band Edge and Spurious Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.203 §15.247(b)	Antenna Requirement	Compliant

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DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz Band

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

L	0 Vided 101 802:110, 802:11g and 802:1111_11120							
	CHANNEL	FREQUENCY	CHANNEL	FREQUENCY				
1		2412 MHz	7	2442 MHz				
	2	2417 MHz	8	2447 MHz				
	3	2422 MHz	9	2452 MHz				
	4	2427 MHz	10	2457 MHz				
	5	2432 MHz	11	2462 MHz				
	6	2437 MHz						

9 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		

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:

ENTED ENTED TO TEST.								
	RADIATED EMISSION TEST (BELOW 1 GHz)							
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT			
802.11g	1 to 11	1,6,11	OFDM	6	MAIN			

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	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	6.5	MAIN					
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	13.5	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 E2 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	6.5	MAIN				
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	13.5	MAIN				

Note: Type no, PM-0874-BV, and Type no PM-0873-BV share the equivalently identical enclosure, material of coating, I/O function, PCB board, display, and power source. In addition, PM-0874-BV, and Type no.PM-0873-BV implement the same Bluetooth/WLAN chipset/module with the same antenna that operates with the same transmitted power level. Hence, this given test report contains the identical test results that inherent from PM-0873-BV.

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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				
Management	180MHz -417MHz: +/- 3.19dB				
Measurement uncertainty (Polarization : Vertical)	0.417GHz-1GHz: +/- 3.19dB				
(1 ofurization : Vertical)	1GHz - 18GHz: +/- 4.04dB				
	18GHz - 40GHz: +/- 4.04dB				
	30MHz - 167MHz: +/- 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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CONDUCTED EMISSION TEST

6.1 **Standard Applicable**

According to §15.207, 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 DUE.					
TYPE		NUMBER	NUMBER	CAL.						
EMI Test Receiver	R&S	ESCI7	100760	05/04/2015	05/03/2016					
LISN	SCHWARZBECK	NSLK 8127	8127-649	05/15/2015	05/14/2016					
LISN	FCC	FCC-LISN-50/250- 25-2-01	04034	03/13/2015	03/12/2016					
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2014	11/25/2015					

EUT Setup 6.3

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI 63.10:2009.
- 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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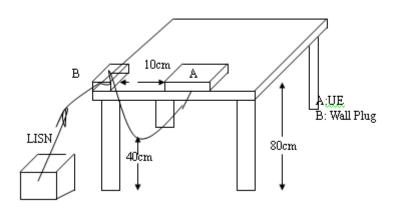
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6.4 Test SET-UP (Block Diagram of Configuration)



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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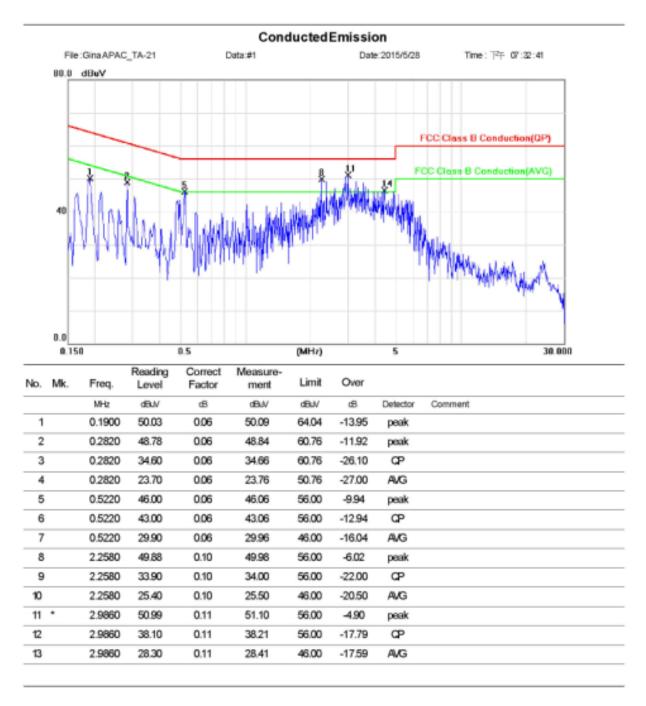


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AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	May 28, 2015
Temperature:	24	Humidity:	66 %	Test By:	Marcus
Model No.:	Adapter: EP800, Supplier: Phihong			Phase:	L1



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No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dВ	dBuV	dBul/	ďΒ	Detector	Comment
14		4.4300	46.33	0.15	46.48	56.00	-9.52	peak	
15		4.4300	35.60	0.15	35.75	56.00	-20.25	œ	
16		4.4300	24.80	0.15	24.95	46.00	-21.05	AVG	

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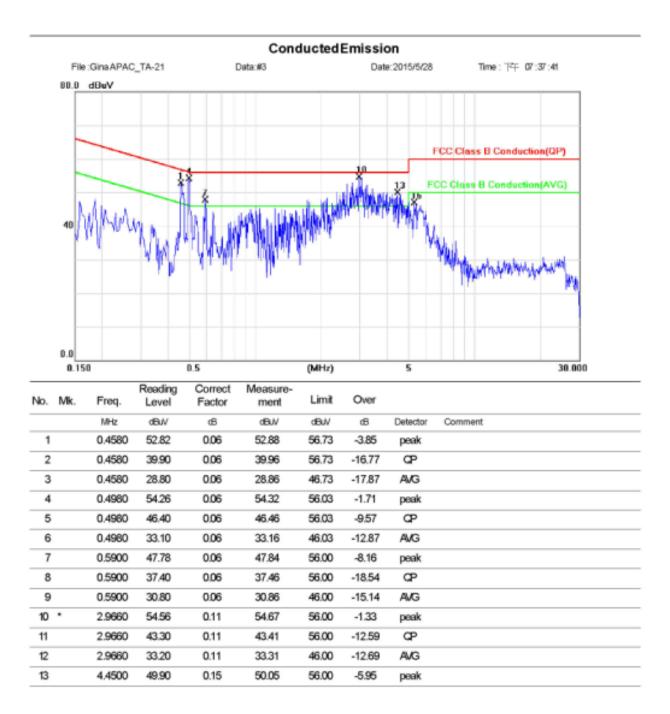
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Operation Mode:	Operation mode			Test Date:	May 28, 2015
Temperature:	24	Humidity:	66 %	Test By:	Marcus
Model No.:	Adapter: EP800, Supplier: Phihong			Phase:	N



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		MHz	dBut/	dВ	dBuV	dBuV	dВ	Detector	Comment
14		4.4500	39.20	0.15	39.35	56.00	-16.65	œ	
15		4.4500	28.80	0.15	28.95	46.00	-17.05	AVG	
16		5.3300	46.99	0.16	47.15	60.00	-12.85	peak	
17		5.3300	35.20	0.16	35.36	60.00	-24.64	œ	
18		5.3300	24.60	0.16	24.76	50.00	-25.24	AVG	

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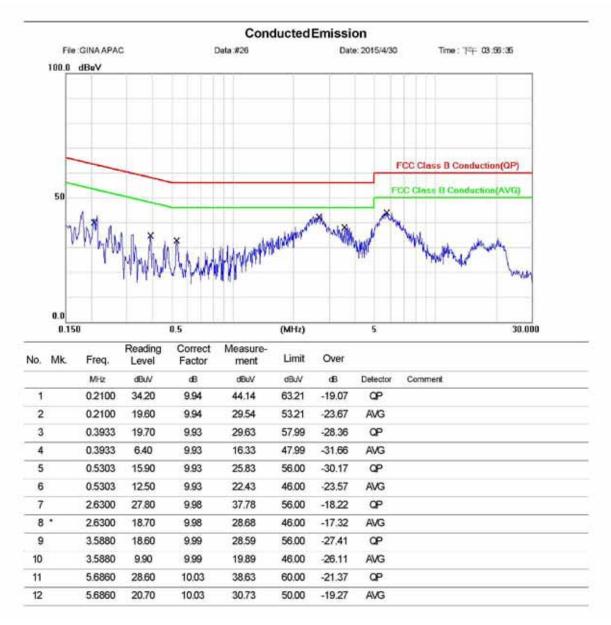
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Operation Mode:	Operation mode			Test Date:	Apr. 30, 2015
Temperature:	24	Humidity:	66 %	Test By:	Tin
Model No.:	Adapter: EP800, Supplier: Salcomp			Phase:	L1



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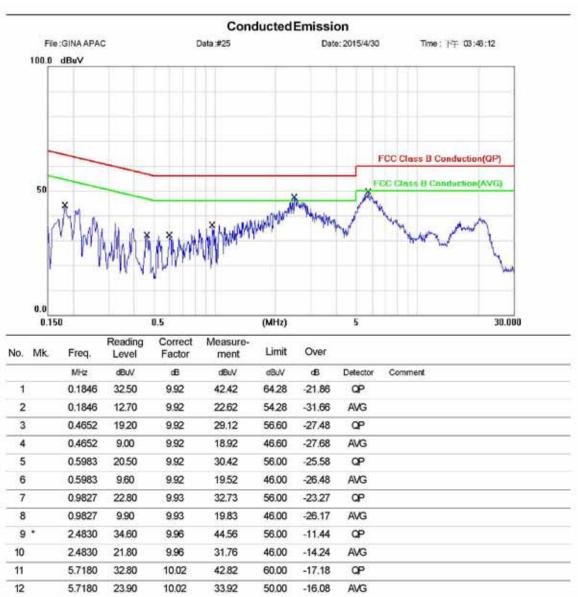
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Operation Mode:	Operation mode			Test Date:	Apr. 30, 2015
Temperature:	24	Humidity:	66 %	Test By:	Tin
Model No.:	Adapter: EP800, Supplier: Salcomp			Phase:	N



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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 Fator (dB)
802.11b	99%	0.04
802.11g	99%	0.04
802.11n_20	99%	0.04
802.11n_40	99%	0.04

Duty Cycle Factor: $10 * \log (1/0.99) = 0.04$ Duty Cycle Factor: $10 * \log (1/0.99) = 0.04$ Duty Cycle Factor: $10 * \log (1/0.99) = 0.04$ Duty Cycle Factor: $10 * \log (1/0.99) = 0.04$

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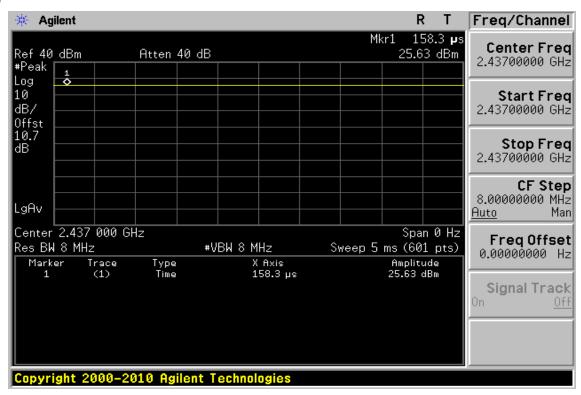


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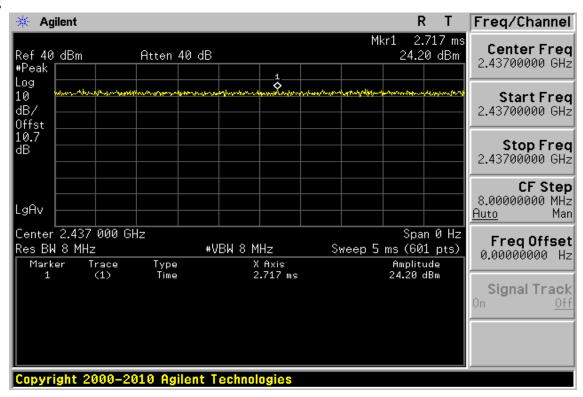
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DUTY CYCLE TEST SIGNAL Measurement Result

802.11 b



802.11 g



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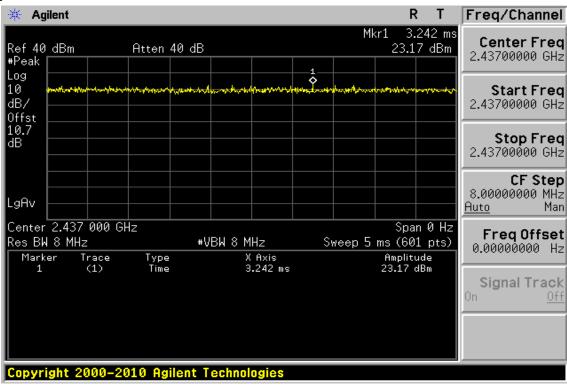
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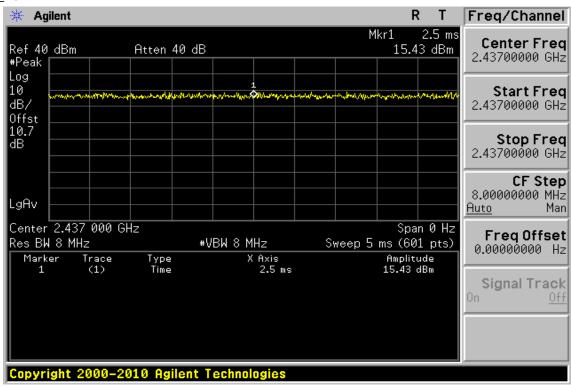
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802.11 n 20 MHz



802.11 n 40 MHz



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PEAK OUTPUT POWER MEASUREMENT

8.1 **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.

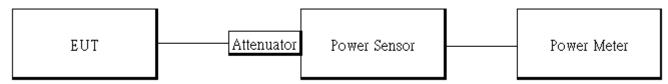
In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

8.2 **Measurement Equipment Used**

1 1								
	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:



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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.
- 5. Repeat above procedures until all frequency of interest measured was complete.

8.5 **Measurement Result**

802.11b

СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit
1	2412	1	18.52	71.12	1 Watt = 30 dBm
6	2437	1	19.52	89.54	1 Watt = 30 dBm
11	2462	1	19.59	90.99	1 Watt = 30 dBm

СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
1	2412	1	16.98	49.89	1 Watt = 30 dBm
6	2437	1	16.96	49.66	1 Watt = 30 dBm
11	2462	1	16.88	48.75	1 Watt = 30 dBm

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802.11g

СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit
1	2412	6	22.30	169.82	1 Watt = 30 dBm
6	2437	6	22.96	197.70	1 Watt = 30 dBm
11	2462	6	22.73	187.50	1 Watt = 30 dBm

СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
1	2412	6	13.99	25.06	1 Watt = 30 dBm
6	2437	6	13.96	24.89	1 Watt = 30 dBm
11	2462	6	13.79	23.93	1 Watt = 30 dBm

802.11n_HT20

СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit
1	2412	MCS0	21.56	143.22	1 Watt = 30 dBm
6	2437	MCS0	21.49	140.93	1 Watt = 30 dBm
11	2462	MCS0	21.96	157.04	1 Watt = 30 dBm

СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
1	2412	MCS0	10.74	11.86	1 Watt = 30 dBm
6	2437	MCS0	10.69	11.72	1 Watt = 30 dBm
11	2462	MCS0	10.94	12.42	1 Watt = 30 dBm

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802.11n_HT40

СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit
3	2422	MCS0	22.13	163.31	1 Watt = 30 dBm
6	2437	MCS0	21.83	152.41	1 Watt = 30 dBm
9	2452	MCS0	21.49	140.93	1 Watt = 30 dBm

СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
3	2422	MCS0	10.98	12.53	1 Watt = 30 dBm
6	2437	MCS0	10.99	12.56	1 Watt = 30 dBm
9	2452	MCS0	10.97	12.50	1 Watt = 30 dBm

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

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6dB BANDWIDTH

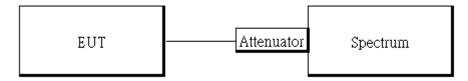
Standard Applicable

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 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	

Test Set-up



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.
- 3. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3*RBW, Span = 30M/50MHz, Detector=Peak, Sweep=auto.
- 4. Mark the peak frequency and –6dB (upper and lower) frequency.
- 5. Repeat above procedures until all frequency of interest measured was complete.

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9.5 **Measurement Result**

Frequency	Bandwidth	Limit	Result			
(MHz)	(kHz)	(kHz)	Result			
	802	.11b				
2412	9076	> 500	PASS			
2437	8594	> 500	PASS			
2462	8627	> 500	PASS			
	802.	.11g				
2412	15723	> 500	PASS			
2437	15419	> 500	PASS			
2462	16374	> 500	PASS			
	802.11r	_HT20				
2412	16788	> 500	PASS			
2437	16909	> 500	PASS			
2462	17004	> 500	PASS			
802.11n_HT40						
2422	35803	> 500	PASS			
2437	24360	> 500	PASS			
2452	36522	> 500	PASS			

^{*} Note: The arrow "->" reveals X decibel level

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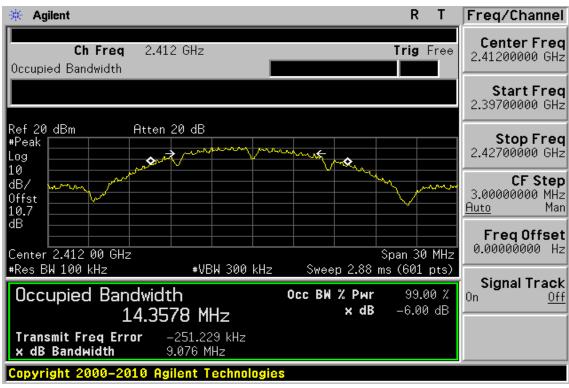
^{*}Refer to next page for plots



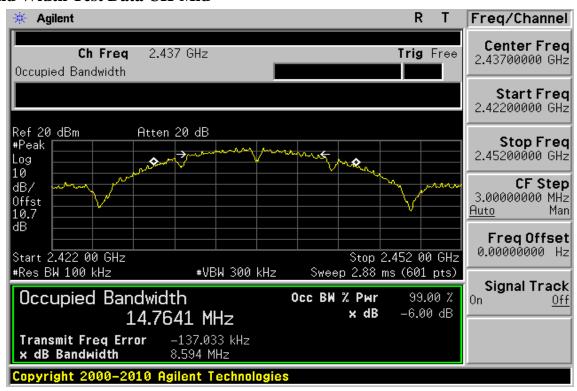
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802.11b 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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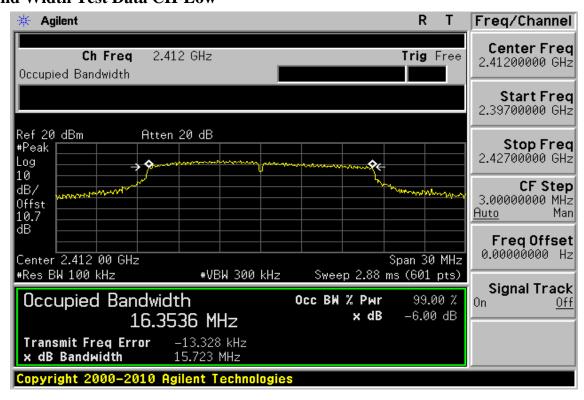
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6dB Band Width Test Data CH-High



802.11g

6dB Band Width Test Data CH-Low



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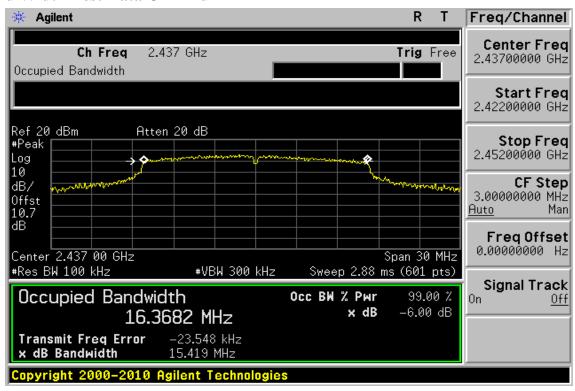
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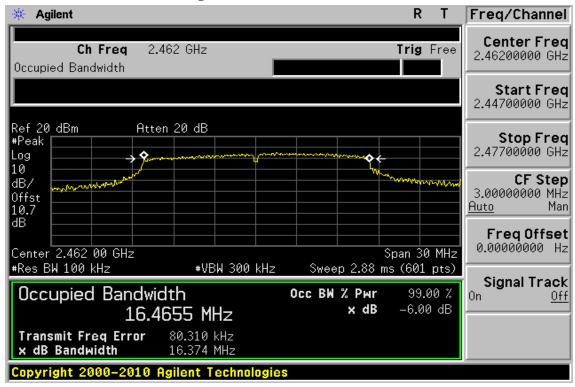
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6dB Band Width Test Data CH-Mid



6dB Band Width Test Data CH-High



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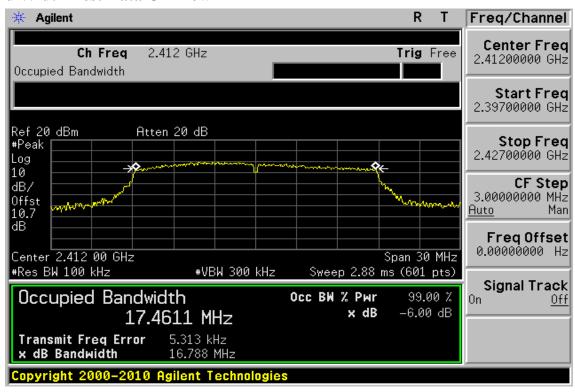
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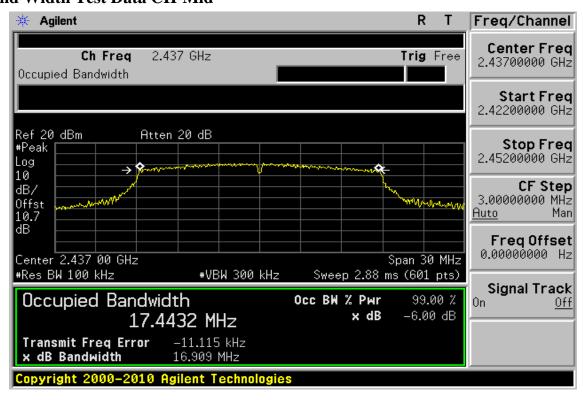
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802.11n 20M

6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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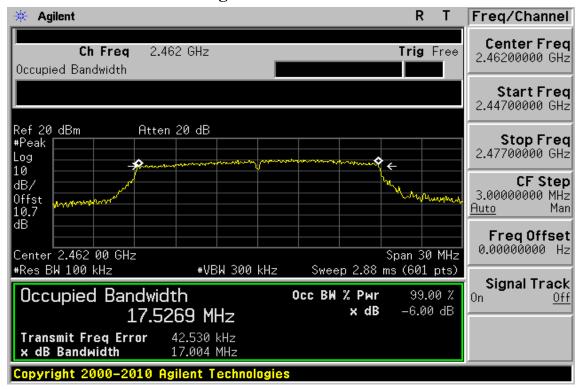
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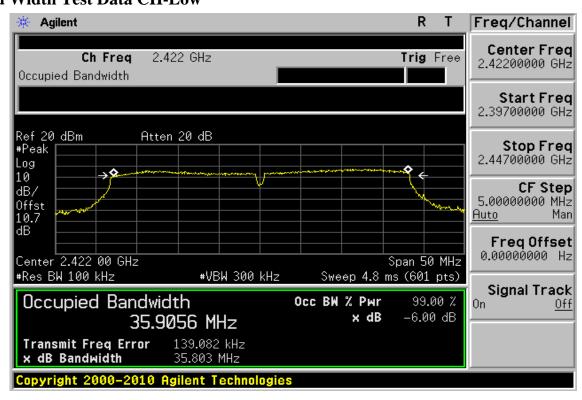
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6dB Band Width Test Data CH-High



802.11 n 40M

6dB Band Width Test Data CH-Low



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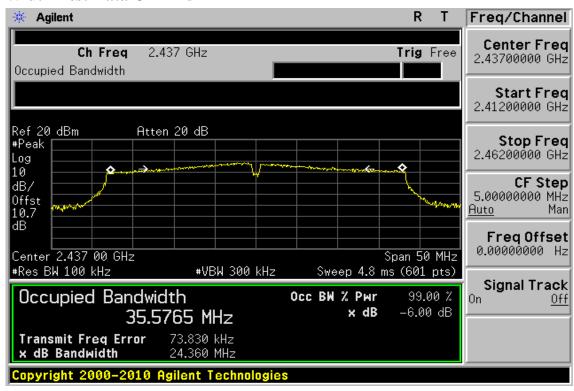
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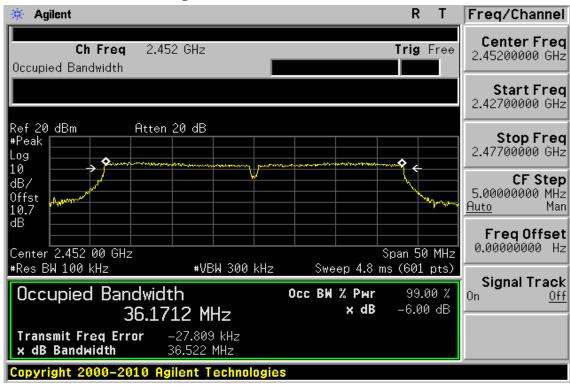
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6dB Band Width Test Data CH-Mid



6dB Band Width Test Data CH-High



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10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

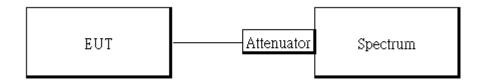
10.1 Standard Applicable

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).

10.2 Measurement Equipment Used

	Conducted Emission Test Site									
EQUIPMENT	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					

10.3 Test SET-UP



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10.3.1 Measurement Procedure

Conducted Band Edge:

- 1. 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, VBW=300KHz, 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:

- 1. 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 = $100K \& VBW \ge 300K$, 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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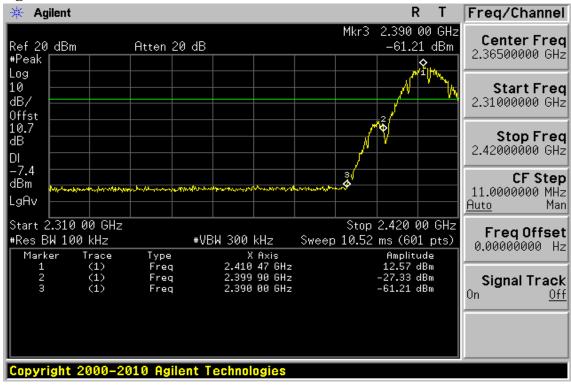
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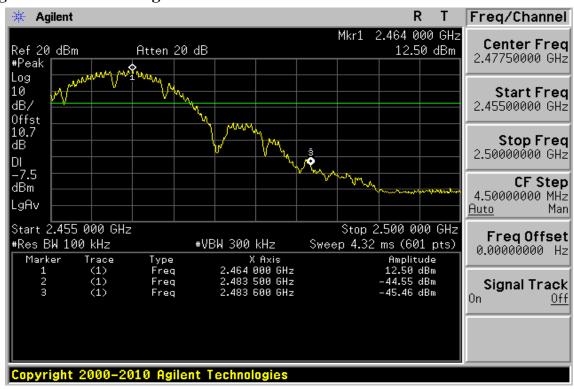
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802.11b **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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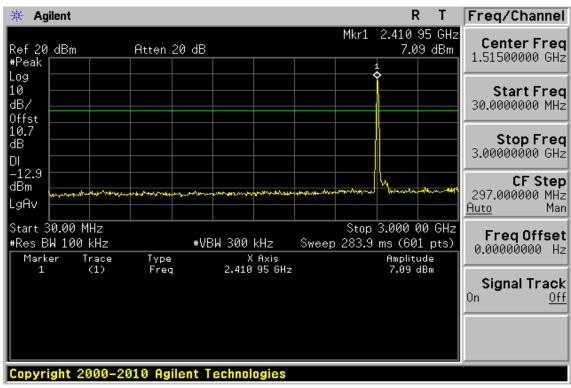
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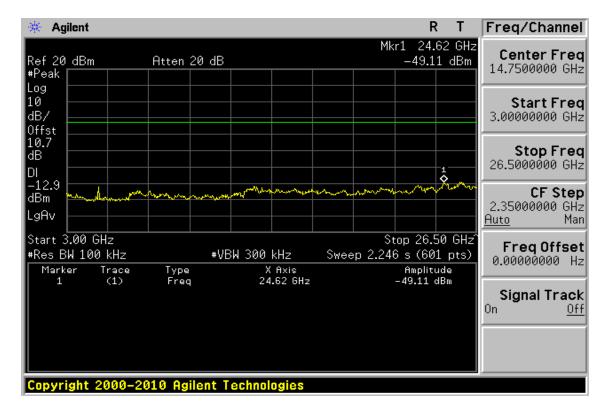


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802.11b **Spurious Emission Test Data CH-Low**





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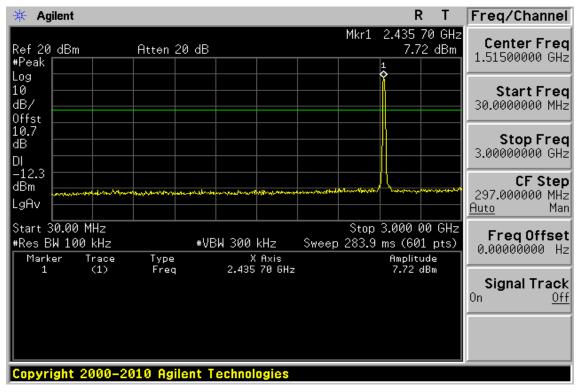
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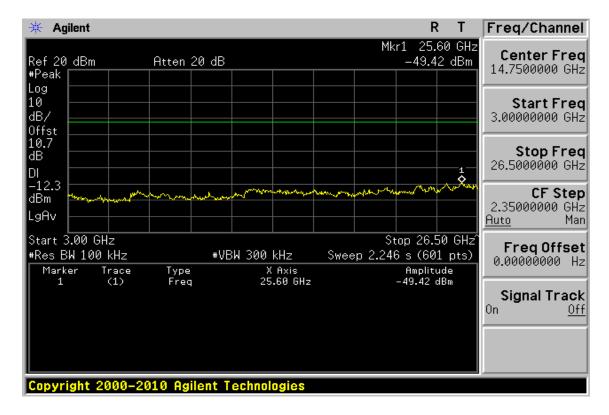
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Spurious Emission Test Data CH-Mid





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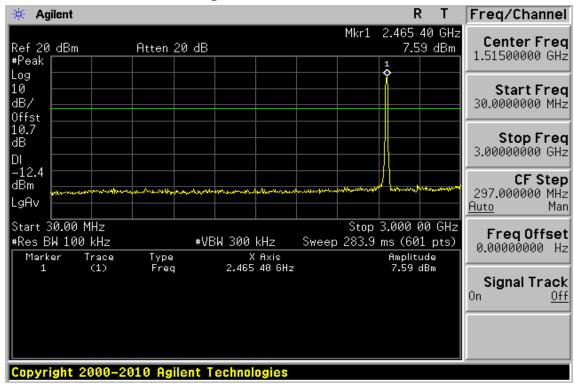
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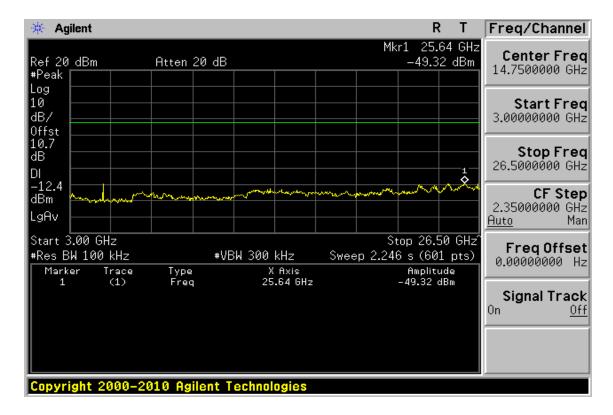
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Spurious Emission Test Data CH-High





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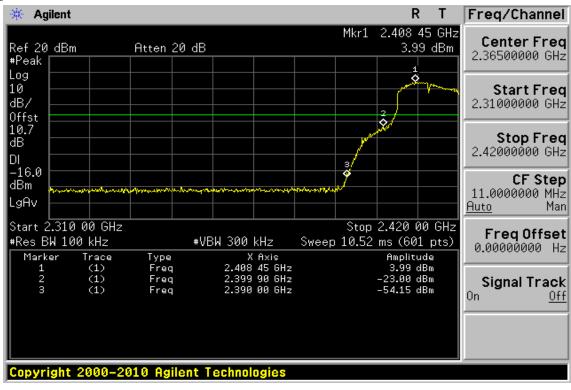
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802.11g **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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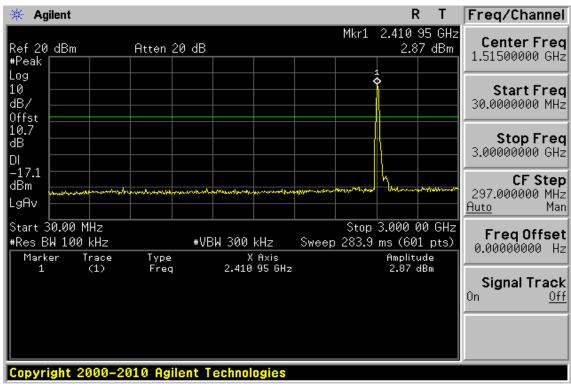
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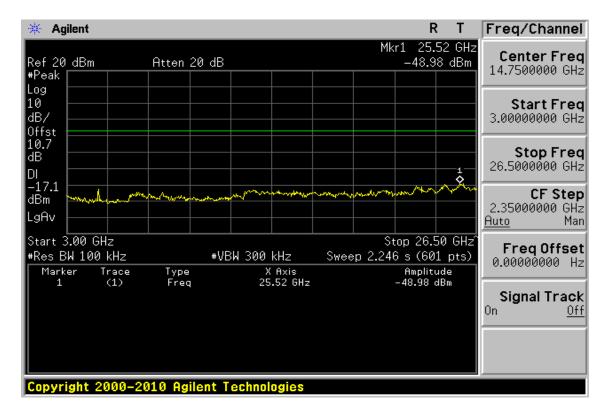


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802.11g **Spurious Emission Test Data CH-Low**





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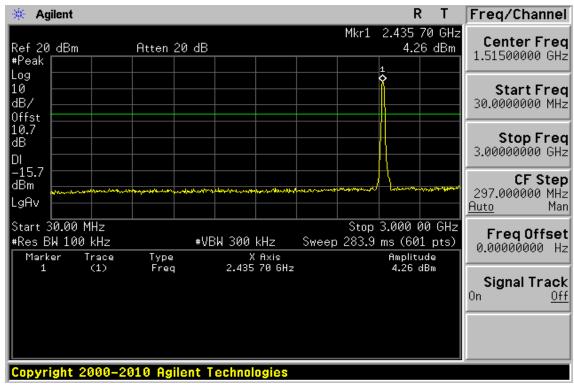
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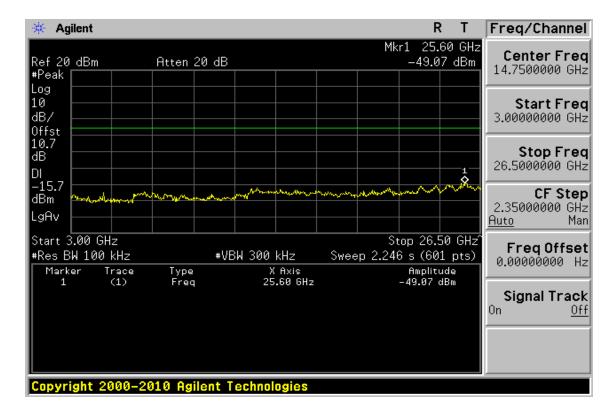
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Spurious Emission Test Data CH-Mid





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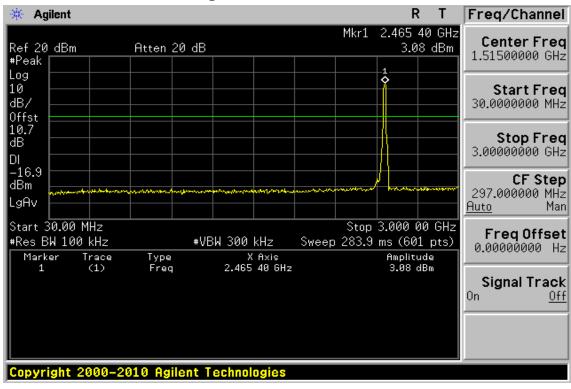
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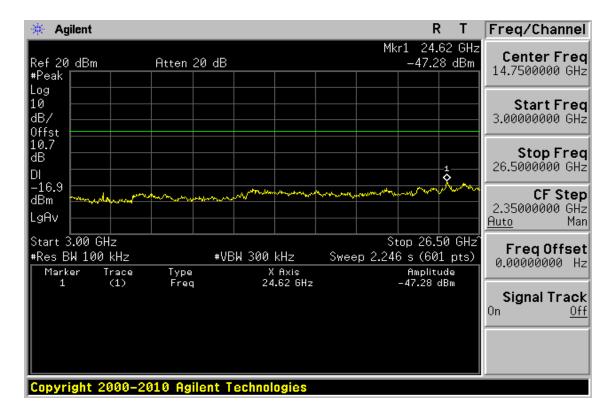


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Spurious Emission Test Data CH-High





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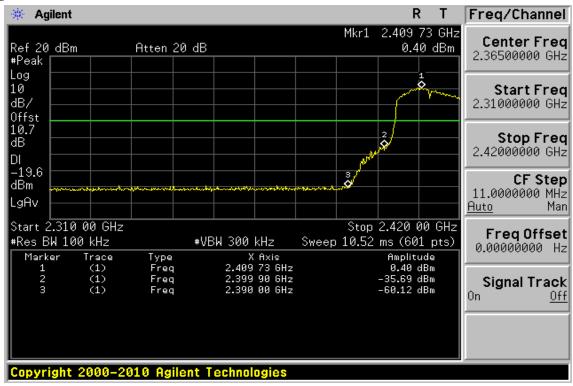
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802.11n_HT20 **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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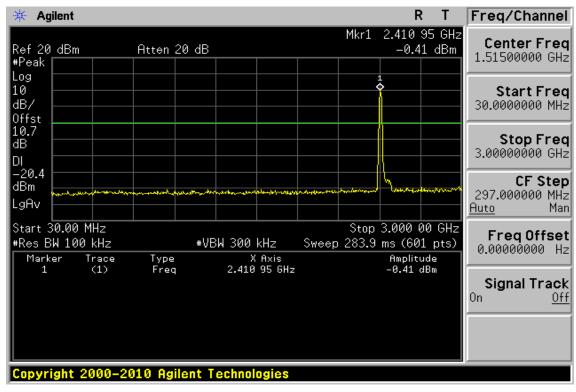


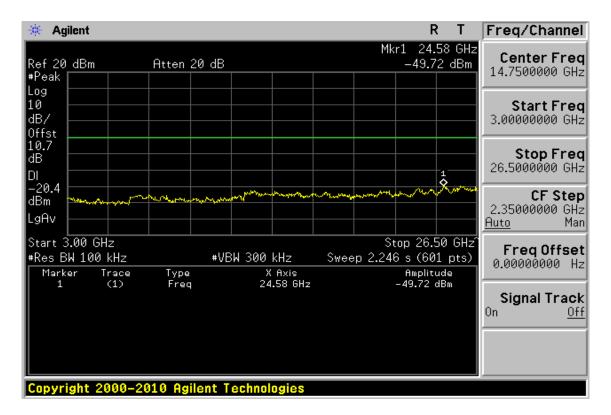
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802.11n HT20

Spurious Emission Test Data CH-Low





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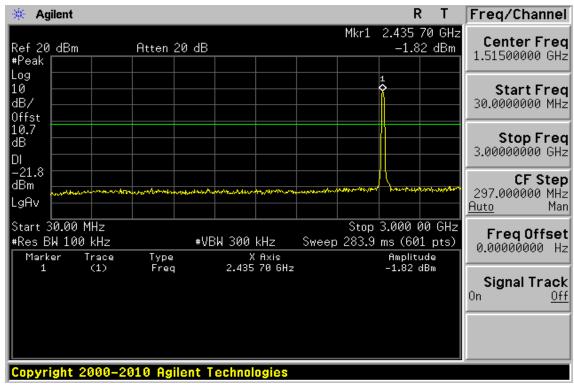
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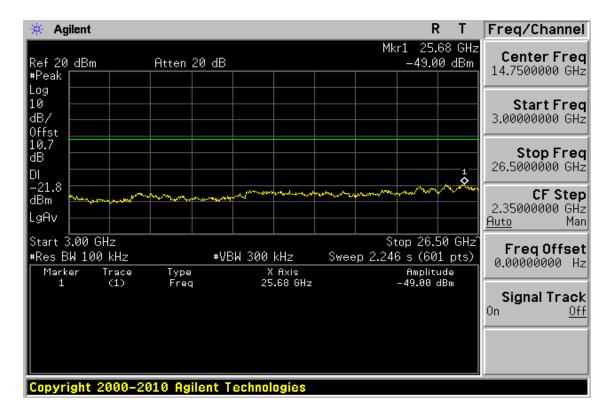
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Spurious Emission Test Data CH-Mid





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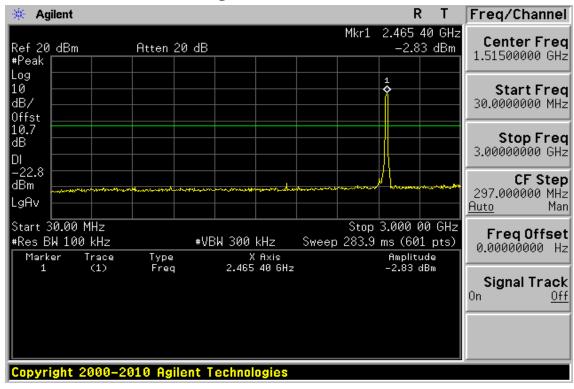
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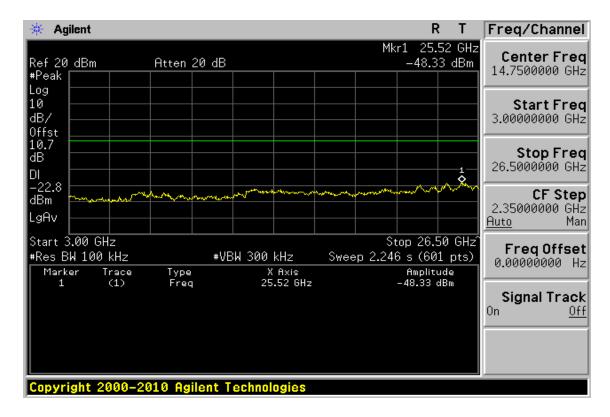


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Spurious Emission Test Data CH-High





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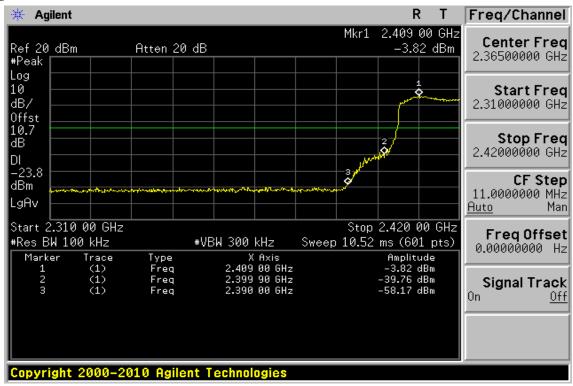


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802.11n HT40

Band Edges Test Data CH-Low



Band Edges Test Data CH-High



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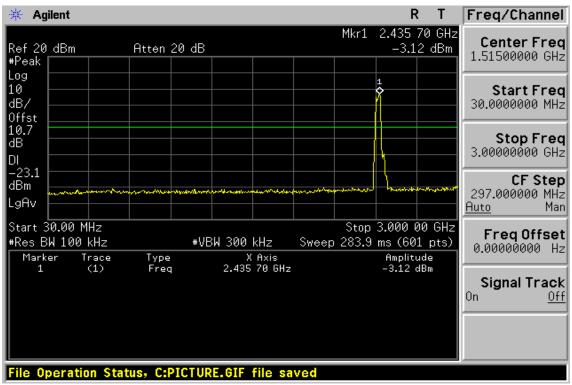


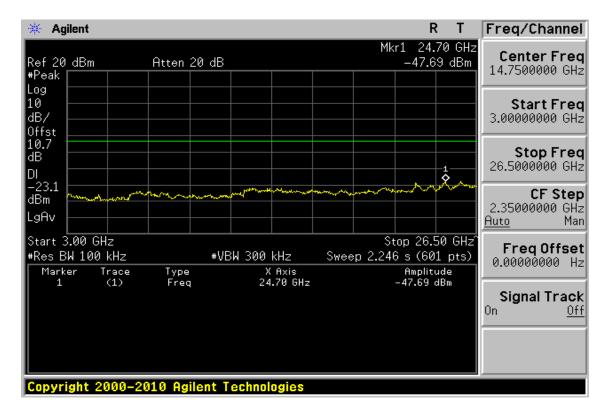
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802.11n HT40

Spurious Emission Test Data CH-Low





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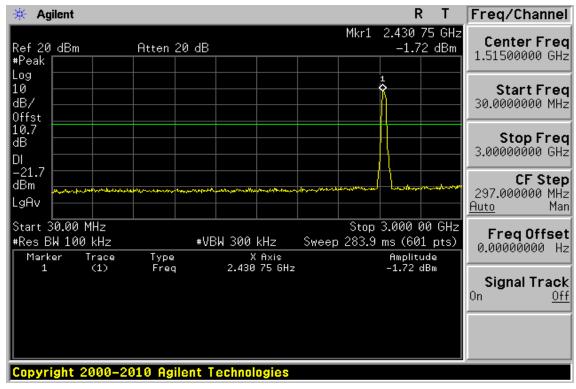
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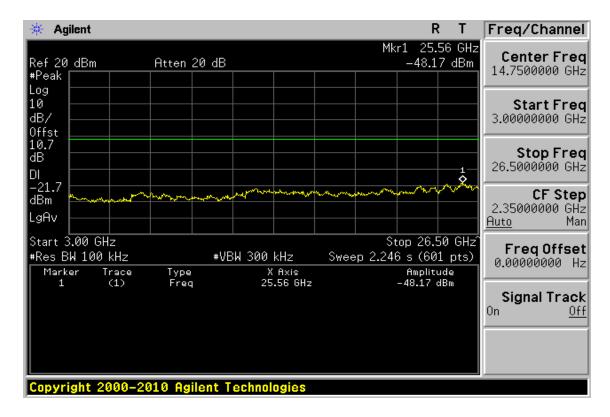


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Spurious Emission Test Data CH-Mid





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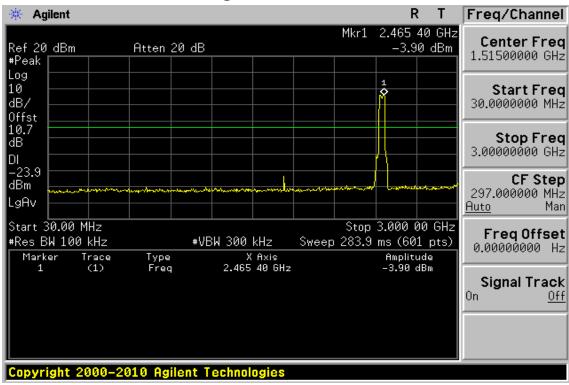
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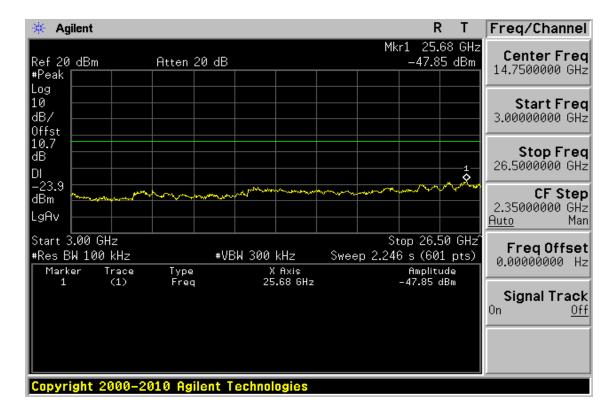


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Spurious Emission Test Data CH-High





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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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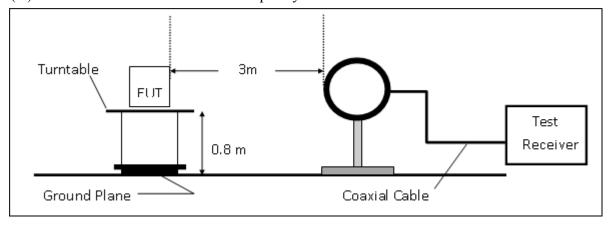
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11.2 Measurement Equipment Used:

• •	966 Chamber								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
EMI Test Receiver	R&S	ESCI7	100760	05/04/2015	05/03/2016				
EXA Spectrum Analyzer	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	00148045	07/03/2014	07/02/2015				
Bilog Antenna	SCHWAZBECK	VULB9168	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	HD	MA240-N	240/657	N.C.R	N.C.R				
Controller	HD	HD100	N/A	N.C.R	N.C.R				
Low Loss Cable	Huber Suhner	966_Rx	9	01/02/2015	01/01/2016				

11.3 Test SET-UP

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



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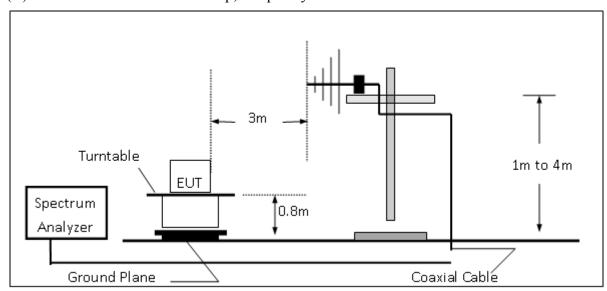
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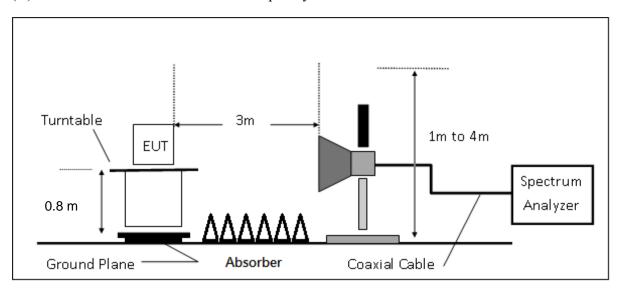
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(B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



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



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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 0.8m 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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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	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

Actual FS($dB\mu V/m$) = SPA. Reading level($dB\mu V$) + Factor(dB)

Factor(dB) = Antenna Factor(dB μ V/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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:21 deg_C / 61 RH

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Radiated Band Edge Measurement Result (802.11b)

:2412 MHz

Operation Band :802.11 b Test Date :2015-05-26 Fundamental Frequency

Temp./Humi.

Operation Mode :Band Edge LOW Engineer :Curry

EUT Pol. :VERTICAL :E2 Plan 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
	2390.00	E	Average	30.16	5.16	35.32	54.00	-18.68
	2390.00	E	Peak	43.64	5.16	48.80	74.00	-25.20

Test Date :2015-05-26 Operation Band :802.11 b

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

Operation Mode :Band Edge LOW Engineer :Curry

EUT Pol. :E2 Plan :HORIZONTAL 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
2390.00	E	Average	30.27	5.16	35.43	54.00	-18.57
2390.00	E	Peak	44.01	5.16	49.17	74.00	-24.83

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Operation Band :802.11 b Test Date :2015-05-26

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

Operation Mode :Band Edge HIGH Engineer :Curry EUT Pol. :E2 Plan :VERTICAL 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
	2483.50	E	Average	30.29	6.01	36.30	54.00	-17.70
	2483.50	E	Peak	43.80	6.01	49.81	74.00	-24.19

Operation Band :802.11 b Test Date :2015-05-26

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

Operation Mode :Band Edge HIGH Engineer :Curry

EUT Pol. :E2 Plan :HORIZONTAL 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
2483.50	E	Average	33.14	6.01	39.15	54.00	-14.85
2483.50	E	Peak	48.22	6.01	54.23	74.00	-19.77

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:21 deg_C / 61 RH

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Radiated Band Edge Measurement Result (802.11g)

Operation Band :802.11 g Test Date :2015-05-26 :2412 MHz Fundamental Frequency

Temp./Humi.

Operation Mode :Band Edge LOW Engineer :Curry

EUT Pol. :VERTICAL :E2 Plan 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
2390.00	E	Average	30.85	5.16	36.01	54.00	-17.99
2390.00	E	Peak	48.35	5.16	53.51	74.00	-20.49

:2015-05-26 Operation Band :802.11 g Test Date

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

Operation Mode :Band Edge LOW Engineer :Curry

EUT Pol. :E2 Plan :HORIZONTAL Measurement Antenna Pol.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	dBμV/m	dBμV/m	dB
2390.00	E	Average	32.84	5.16	38.00	54.00	-16.00
2390.00	Е	Peak	53.80	5.16	58.96	74.00	-15.04

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Operation Band :802.11 g Test Date :2015-05-26

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

Operation Mode :Band Edge HIGH Engineer :Curry EUT Pol. :E2 Plan :VERTICAL 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
	2483.50	E	Average	32.97	6.01	38.98	54.00	-15.02
	2483.50	E	Peak	56.83	6.01	62.84	74.00	-11.16

Operation Band :802.11 g Test Date :2015-05-26

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

Operation Mode :Band Edge HIGH Engineer :Curry

EUT Pol. :E2 Plan :HORIZONTAL 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
2483.50	E	Average	39.15	6.01	45.16	54.00	-8.84
2483.50	E	Peak	65.46	6.01	71.47	74.00	-2.53

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Radiated Band Edge Measurement Result (802.11_HT20)

Operation Band :802.11 n20M :2015-05-26 Test Date

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

Operation Mode :Band Edge LOW Engineer :Curry EUT Pol. :E2 Plan :VERTICAL Measurement Antenna Pol.

Freq. Note Detector Spectrum Factor Actual Limit Margin FS Mode Reading Level @3m $dB\mu V$ dBµV/m dBµV/m PK/QP/AV MHz F/H/E/S dΒ dB Е 2390.00 30.02 5.16 35.18 54.00 -18.82 Average 2390.00 Е Peak 43.98 5.16 49.14 74.00 -24.86

:2015-05-26 **Operation Band** :802.11 n20M Test Date

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

Operation Mode :Band Edge LOW Engineer :Curry

EUT Pol. :E2 Plan :HORIZONTAL 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	
2390.00	E	Average	30.17	5.16	35.33	54.00	-18.67	
2390.00	E	Peak	44.32	5.16	49.48	74.00	-24.52	

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:VERTICAL

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Measurement Antenna Pol.

Operation Band :802.11 n20M Test Date :2015-05-26

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

Operation Mode :Band Edge HIGH Engineer :Curry EUT Pol.

:E2 Plan

Note Spectrum Factor Actual Limit Margin Freq. Detector Mode Reading Level FS @3m PK/QP/AV $dB\mu V$ dΒ dBµV/m $dB\mu V/m$ MHz F/H/E/S dΒ 2483.50 Е 6.01 37.62 54.00 -16.38 31.61 Average 2483.50 Е Peak 53.18 6.01 59.19 74.00 -14.81

Operation Band :802.11 n20M Test Date :2015-05-26

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

Operation Mode :Band Edge HIGH Engineer :Curry

EUT Pol. :E2 Plan :HORIZONTAL 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	
	2483.50	E	Average	36.20	6.01	42.21	54.00	-11.79	
	2483.50	E	Peak	61.96	6.01	67.97	74.00	-6.03	

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Radiated Band Edge Measurement Result (802.11_HT40)

Operation Band :802.11 n40M Test Date :2015-05-26

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

Operation Mode Engineer :Band Edge LOW :Curry

EUT Pol. :E2 Plan :VERTICAL 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
2390.00	E	Average	30.11	5.16	35.27	54.00	-18.73
2390.00	E	Peak	43.53	5.16	48.69	74.00	-25.31

Operation Band :802.11 n40M Test Date :2015-05-26

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

Operation Mode :Band Edge LOW Engineer :Curry

EUT Pol. :E2 Plan :HORIZONTAL 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
2390.00	E	Average	30.93	5.16	36.09	54.00	-17.91
2390.00	E	Peak	49.84	5.16	55.00	74.00	-19.00

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Operation Band :802.11 n40M Test Date :2015-05-26

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

Operation Mode :Band Edge HIGH Engineer :Curry

EUT Pol. :VERTICAL :E2 Plan 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
2483.50	E	Average	33.35	6.01	39.36	54.00	-14.64
2483.50	E	Peak	54.87	6.01	60.88	74.00	-13.12

Operation Band :802.11 n40M Test Date :2015-05-26

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

Operation Mode :Band Edge HIGH Engineer :Curry

EUT Pol. :E2 Plan :HORIZONTAL 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
2483.50	E	Average	38.98	6.01	44.99	54.00	-9.01
2483.50	E	Peak	63.28	6.01	69.29	74.00	-4.71

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Radiated Spurious Emission Measurement Result

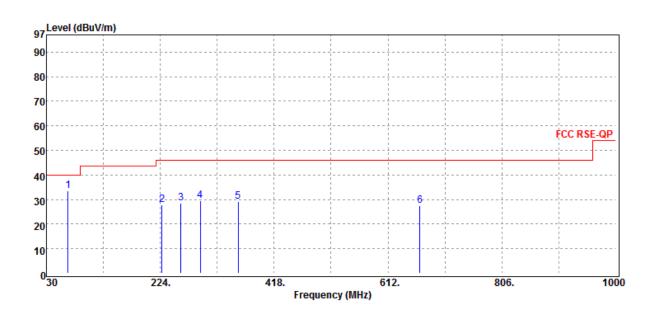
Below 1GHz Worst-Case Data:

Operation Band :802.11 g Fundamental Frequency :2412 MHz :TX LOW Operation Mode EUT Pol. :E2 Plan

Test Date :2015-05-26 Temp./Humi. :21 deg C / 61 RH

Engineer :Curry

:VERTICAL 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	_
	66.86	S	Peak	44.66	-11.21	33.45	40.00	-6.55	
	226.91	S	Peak	38.83	-11.05	27.78	46.00	-18.22	
	258.92	S	Peak	38.09	-9.60	28.49	46.00	-17.51	
	291.90	S	Peak	37.86	-8.17	29.69	46.00	-16.31	
	356.89	S	Peak	36.21	-7.07	29.14	46.00	-16.86	
	666.32	S	Peak	28.86	-1.20	27.66	46.00	-18.34	

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Operation Band Fundamental Frequency Operation Mode EUT Pol.

:802.11 g :2412 MHz :TX LOW

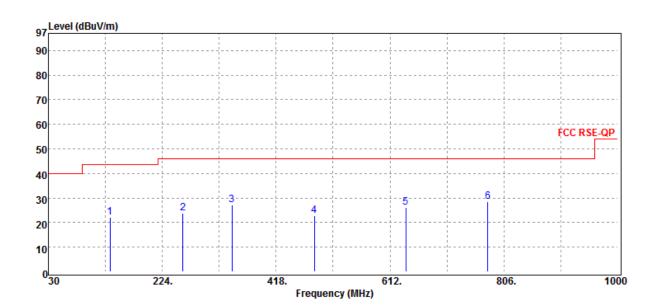
:E2 Plan

Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg C / 61 RH

:Curry

:HORIZONTAL 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
134.76	S	Peak	32.33	-10.25	22.08	43.50	-21.42
258.92	S	Peak	33.31	-9.60	23.71	46.00	-22.29
342.34	S	Peak	34.58	-7.41	27.17	46.00	-18.83
482.99	S	Peak	27.38	-4.46	22.92	46.00	-23.08
639.16	S	Peak	28.24	-1.95	26.29	46.00	-19.71
778.84	S	Peak	28.01	0.45	28.46	46.00	-17.54

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Operation Band Fundamental Frequency Operation Mode EUT Pol.

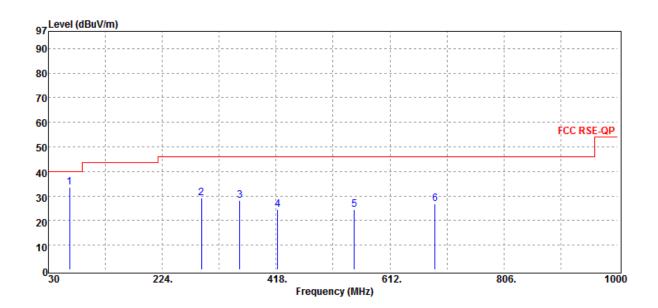
:802.11 g :2437 MHz :TX MID :E2 Plan

Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg C / 61 RH

:Curry

:VERTICAL 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
65.89	S	Peak	44.48	-11.07	33.41	40.00	-6.59
290.93	S	Peak	37.47	-8.18	29.29	46.00	-16.71
355.92	S	Peak	35.15	-7.08	28.07	46.00	-17.93
420.91	S	Peak	30.14	-5.67	24.47	46.00	-21.53
550.89	S	Peak	28.61	-4.05	24.56	46.00	-21.44
688.63	S	Peak	27.70	-0.84	26.86	46.00	-19.14

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Operation Band Fundamental Frequency Operation Mode EUT Pol. :E2 Plan

:802.11 g :2437 MHz :TX MID

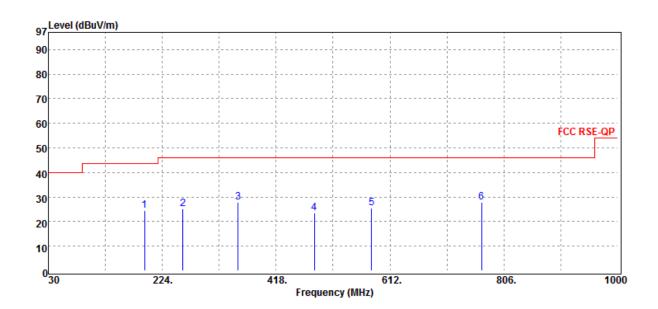
Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg C / 61 RH

:Curry

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
193.93	S	Peak	36.29	-11.69	24.60	43.50	-18.90
258.92	S	Peak	34.67	-9.60	25.07	46.00	-20.93
353.01	S	Peak	35.00	-7.11	27.89	46.00	-18.11
482.99	S	Peak	28.02	-4.46	23.56	46.00	-22.44
580.96	S	Peak	27.51	-2.04	25.47	46.00	-20.53
768.17	S	Peak	26.98	1.03	28.01	46.00	-17.99

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Operation Band Fundamental Frequency Operation Mode EUT Pol.

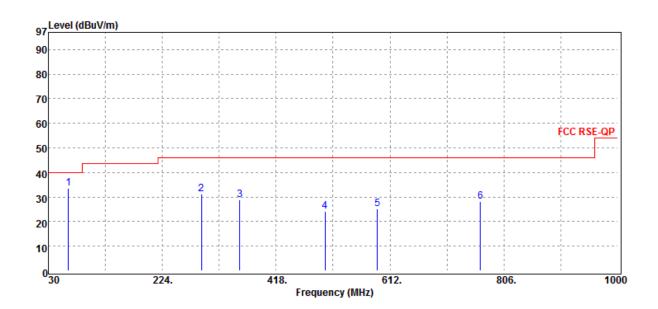
:802.11 g :2462 MHz :TX HIGH :E2 Plan

Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg C / 61 RH

:Curry

:VERTICAL 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
63.95	S	Peak	44.20	-10.79	33.41	40.00	-6.59
290.93	S	Peak	39.51	-8.18	31.33	46.00	-14.67
355.92	S	Peak	36.07	-7.08	28.99	46.00	-17.01
501.42	S	Peak	28.67	-4.34	24.33	46.00	-21.67
590.66	S	Peak	26.61	-1.53	25.08	46.00	-20.92
766.23	S	Peak	27.19	1.09	28.28	46.00	-17.72

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Operation Band Fundamental Frequency Operation Mode EUT Pol.

:802.11 g :2462 MHz :TX HIGH

:E2 Plan

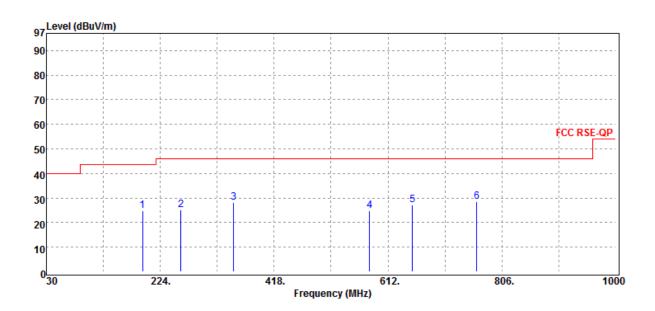
Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg C / 61 RH

:Curry

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
193.93	S	Peak	36.47	-11.69	24.78	43.50	-18.72
258.92	S	Peak	34.87	-9.60	25.27	46.00	-20.73
349.13	S	Peak	35.30	-7.20	28.10	46.00	-17.90
580.96	S	Peak	26.98	-2.04	24.94	46.00	-21.06
653.71	S	Peak	28.34	-1.23	27.11	46.00	-18.89
763.32	S	Peak	27.37	1.14	28.51	46.00	-17.49

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Report No.: ER/2015/60014 **Issue Date: Jun. 22, 2015**

:2015-05-26

:21 deg C / 61 RH

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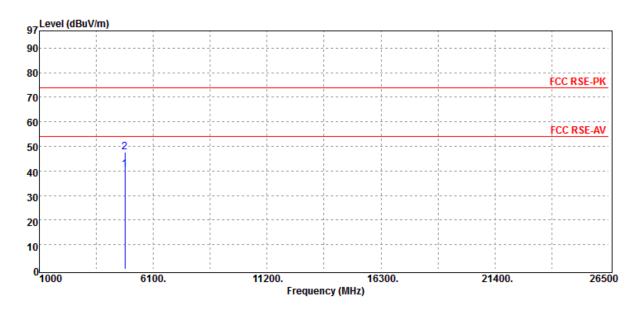
Radiated Spurious Emission Measurement Result

Above 1GHz Worst-Case Data:

Operation Band :802.11 b Test Date Fundamental Frequency :2412 MHz Temp./Humi.

Operation Mode :TX LOW Engineer :Curry

EUT Pol. :E2 Plan :VERTICAL 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	31.00	9.63	40.63	54.00	-13.37	
	4824.00	Н	Peak	38.10	9.63	47.73	74.00	-26.27	

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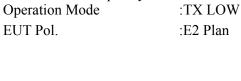
Operation Band Fundamental Frequency

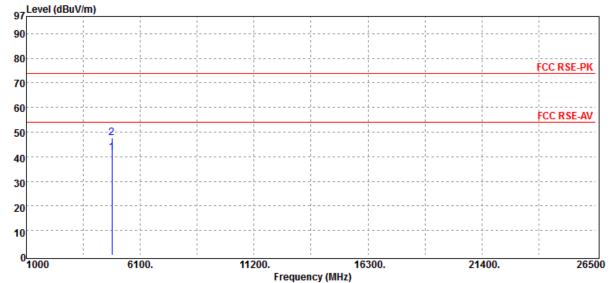
:802.11 b :2412 MHz :TX LOW

Test Date Temp./Humi. :2015-05-26

:21 deg_C / 61 RH Engineer :Curry

:HORIZONTAL Measurement Antenna Pol.





Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4824.00	Н	Average	31.87	9.63	41.50	54.00	-12.50
4824.00	Н	Peak	37.94	9.63	47.57	74.00	-26.43

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Report No.: ER/2015/60014 **Issue Date: Jun. 22, 2015**

:2015-05-26

:Curry

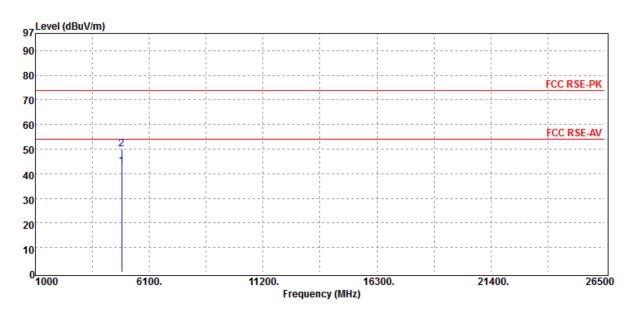
:21 deg_C / 61 RH

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Operation Band :802.11 b Test Date Fundamental Frequency :2437 MHz Temp./Humi.

Operation Mode :TX MID Engineer

:VERTICAL EUT Pol. :E2 Plan Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	$dB\mu V/m$	dBμV/m	dB
4874.00	Н	Average	33.01	9.85	42.86	54.00	-11.14
4874.00	Н	Peak	40.15	9.85	50.00	74.00	-24.00

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Report No.: ER/2015/60014 **Issue Date: Jun. 22, 2015**

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11 b :2437 MHz :TX MID

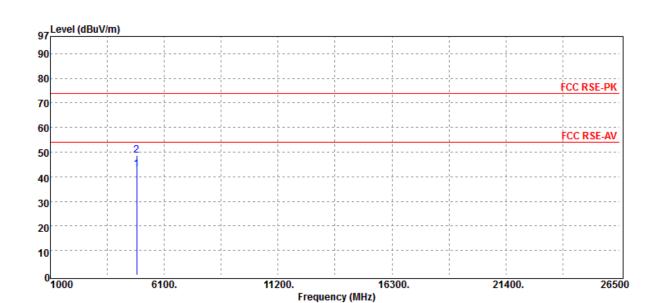
:E2 Plan

Test Date Temp./Humi. Engineer

:2015-05-26

:21 deg_C / 61 RH :Curry

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4874.00	Н	Average	33.17	9.85	43.02	54.00	-10.98
4874.00	Н	Peak	38.97	9.85	48.82	74.00	-25.18

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11 b :2462 MHz :TX HIGH :E2 Plan

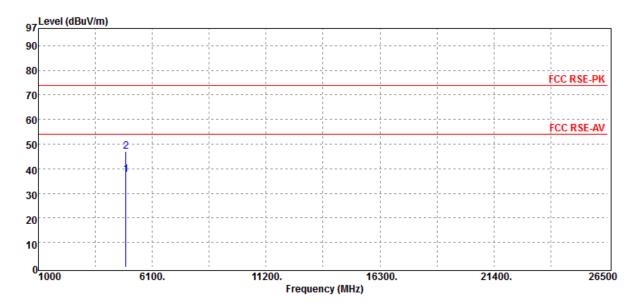
Test Date Temp./Humi. Engineer

:2015-05-26

:21 deg_C / 61 RH :Curry

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	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4924.00	Н	Average	27.85	9.86	37.71	54.00	-16.29
4924.00	Н	Peak	37.05	9.86	46.91	74.00	-27.09

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11 b :2462 MHz :TX HIGH :E2 Plan

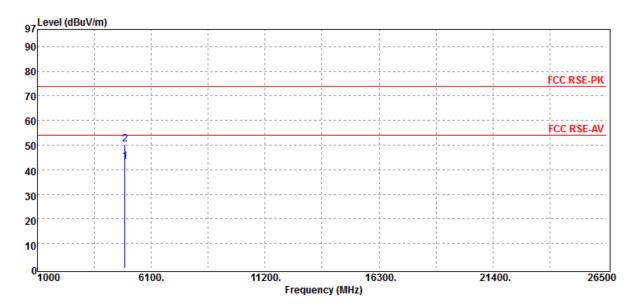
Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg_C / 61 RH

:Curry

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	${ m d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4924.00	Н	Average	33.31	9.86	43.17	54.00	-10.83
4924.00	Н	Peak	40.49	9.86	50.35	74.00	-23.65

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Report No.: ER/2015/60014 **Issue Date: Jun. 22, 2015**

:2015-05-26

:21 deg C / 61 RH

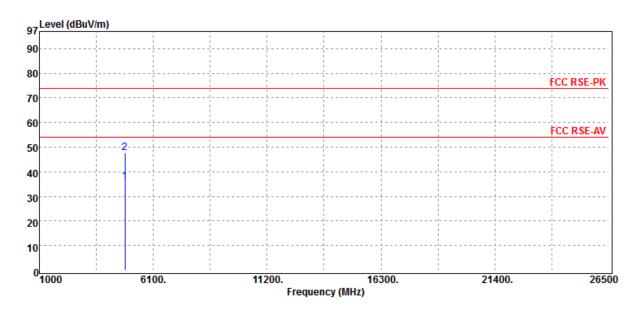
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Radiated Spurious Emission Measurement Result (802.11 g)

Operation Band :802.11 g Test Date Fundamental Frequency :2412 MHz Temp./Humi.

Operation Mode :TX LOW Engineer :Curry

EUT Pol. :E2 Plan :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB	
4824.00	Н	Average	26.43	9.63	36.06	54.00	-17.94	
4824.00	Н	Peak	37.98	9.63	47.61	74.00	-26.39	
	MHz 4824.00	MHz F/H/E/S 4824.00 H	Mode MHz F/H/E/S PK/QP/AV 4824.00 H Average	MHz F/H/E/S PK/QP/AV dBμV 4824.00 H Average 26.43	Mode Reading Level MHz F/H/E/S PK/QP/AV dBμV dB 4824.00 H Average 26.43 9.63	Mode Reading Level FS MHz F/H/E/S PK/QP/AV dBμV dB dBμV/m 4824.00 H Average 26.43 9.63 36.06	Mode MHz Reading Level PK/QP/AV FS @3m MHz F/H/E/S PK/QP/AV dBμV dB dBμV/m dBμV/m 4824.00 H Average 26.43 9.63 36.06 54.00	Mode MHz Reading Level FS @3m MHz F/H/E/S PK/QP/AV dBμV dB dBμV/m dBμV/m dBμV/m dB 4824.00 H Average 26.43 9.63 36.06 54.00 -17.94

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Report No.: ER/2015/60014 **Issue Date: Jun. 22, 2015**

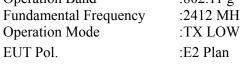
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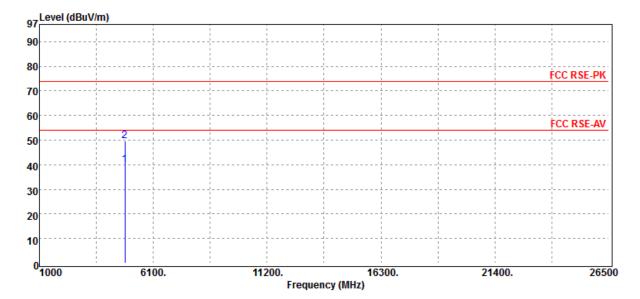
Operation Band Fundamental Frequency :802.11 g :2412 MHz :TX LOW

Test Date Temp./Humi. :2015-05-26 :21 deg_C / 61 RH

Engineer :Curry

:HORIZONTAL Measurement Antenna Pol.





Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4824.00	Н	Average	30.27	9.63	39.90	54.00	-14.10
4824.00	Н	Peak	40.02	9.63	49.65	74.00	-24.35

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Operation Band Fundamental Frequency Operation Mode

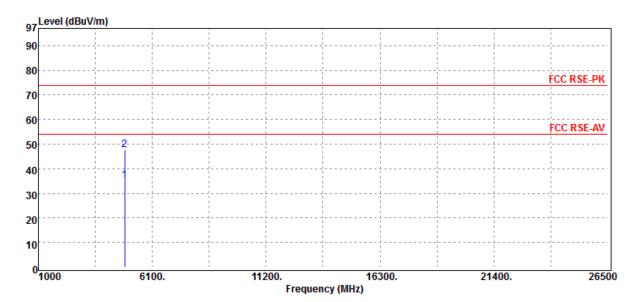
EUT Pol.

:802.11 g :2437 MHz :TX MID :E2 Plan

Test Date Temp./Humi. :2015-05-26 :21 deg_C / 61 RH

Engineer :Curry

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4874.00	Н	Average	25.35	9.85	35.20	54.00	-18.80
4874.00	Н	Peak	37.65	9.85	47.50	74.00	-26.50

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11 g :2437 MHz :TX MID :E2 Plan

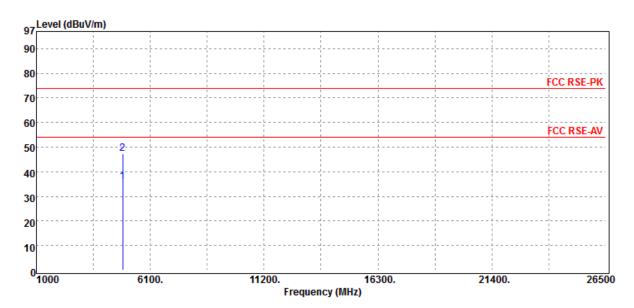
Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg_C / 61 RH

:Curry

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	${ m d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4874.00	Н	Average	26.10	9.85	35.95	54.00	-18.05
4874.00	Н	Peak	37.44	9.85	47.29	74.00	-26.71

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Operation Band Fundamental Frequency Operation Mode

0 1000

EUT Pol.

:802.11 g :2462 MHz :TX HIGH :E2 Plan

6100.

Test Date Temp./Humi. Engineer

:2015-05-26

:VERTICAL

26500

:21 deg_C / 61 RH :Curry

Measurement Antenna Pol.

21400.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4924.00	Н	Average	26.08	9.86	35.94	54.00	-18.06
4924.00	Н	Peak	38.10	9.86	47.96	74.00	-26.04

Frequency (MHz)

16300.

11200.

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Operation Band Fundamental Frequency Operation Mode

:802.11 g :2462 MHz :TX HIGH

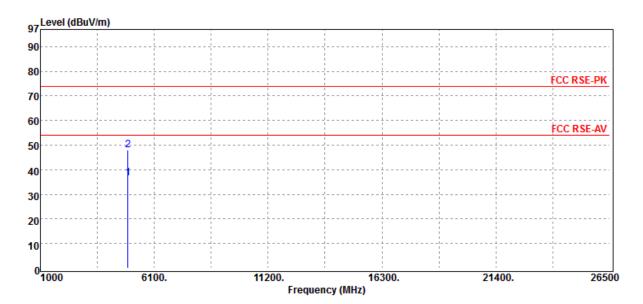
Test Date Temp./Humi. Engineer

:2015-05-26

:21 deg_C / 61 RH :Curry

EUT Pol. :E2 Plan

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4924.00	Н	Average	26.56	9.86	36.42	54.00	-17.58
4924.00	Н	Peak	38.04	9.86	47.90	74.00	-26.10

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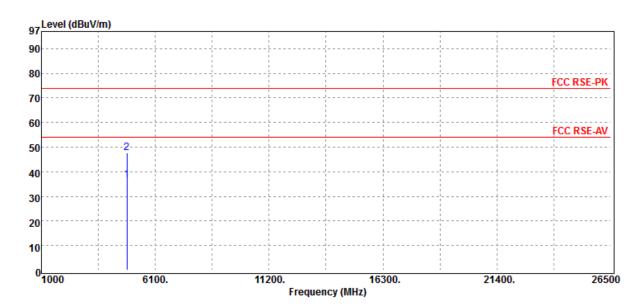
Radiated Spurious Emission Measurement Result (802.11_HT20)

:2015-05-26 Operation Band :802.11 n20M Test Date

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

Operation Mode :TX LOW Engineer :Curry

EUT Pol. :E2 Plan :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4824.00	Н	Average	26.95	9.63	36.58	54.00	-17.42
4824.00	Н	Peak	38.13	9.63	47.76	74.00	-26.24
	MHz 4824.00	MHz F/H/E/S 4824.00 H	MHz F/H/E/S PK/QP/AV 4824.00 H Average	MHz F/H/E/S PK/QP/AV dBμV 4824.00 H Average 26.95	MHz F/H/E/S PK/QP/AV dBμV dB 4824.00 H Average 26.95 9.63	Mode Reading Level FS MHz F/H/E/S PK/QP/AV dBμV dB dBμV/m 4824.00 H Average 26.95 9.63 36.58	MHz Mode PK/QP/AV Reading Level dBμV FS @3m dBμV/m 4824.00 H Average 26.95 9.63 36.58 54.00

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11 n20M :2412 MHz :TX LOW :E2 Plan

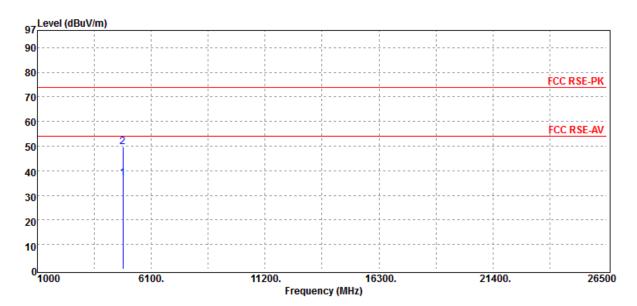
Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg_C / 61 RH

:Curry

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	$\mathrm{d} B \mu V$	dB	$dB\mu V/m$	dBμV/m	dB
4824.00	Н	Average	27.25	9.63	36.88	54.00	-17.12
4824.00	Н	Peak	40.19	9.63	49.82	74.00	-24.18

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Report No.: ER/2015/60014 **Issue Date: Jun. 22, 2015**

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

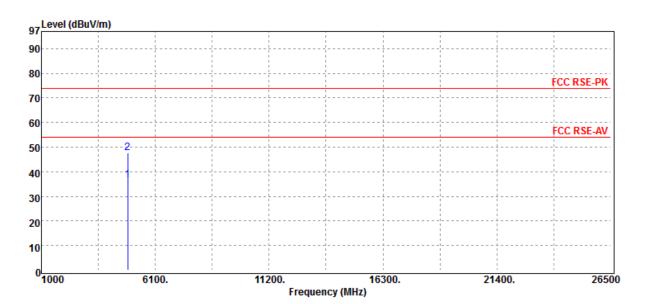
:802.11 n20M :2437 MHz :TX MID :E2 Plan

Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg_C / 61 RH

:Curry

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4874.00	Н	Average	26.68	9.85	36.53	54.00	-17.47
4874.00	Н	Peak	37.69	9.85	47.54	74.00	-26.46

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

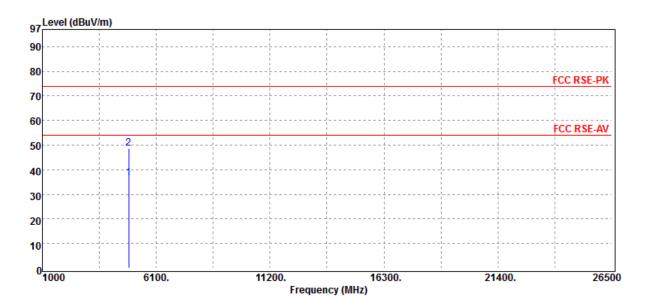
:802.11 n20M :2437 MHz :TX MID :E2 Plan

Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg_C / 61 RH

:Curry

:HORIZONTAL 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
4874.00	Н	Average	26.81	9.85	36.66	54.00	-17.34
4874.00	Н	Peak	38.75	9.85	48.60	74.00	-25.40

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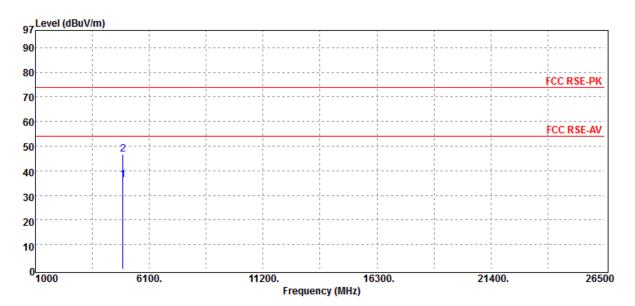
Operation Band Fundamental Frequency

:802.11 n20M :2462 MHz Operation Mode :TX HIGH EUT Pol. ·E2 Plan

Test Date Temp./Humi. :2015-05-26 :21 deg_C / 61 RH

Engineer :Curry

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4924.00	Н	Average	26.37	9.86	36.23	54.00	-17.77
4924.00	Н	Peak	36.92	9.86	46.78	74.00	-27.22

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

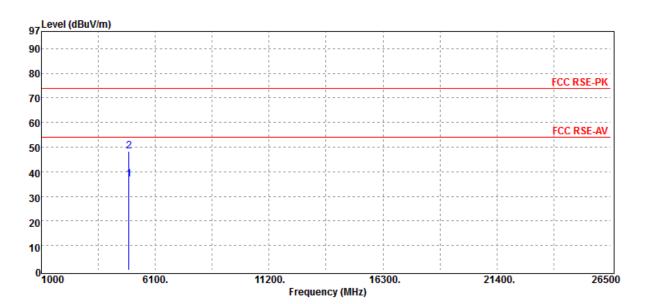
:802.11 n20M :2462 MHz :TX HIGH ·E2 Plan

Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg_C / 61 RH

:Curry

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4924.00	Н	Average	26.92	9.86	36.78	54.00	-17.22
4924.00	Н	Peak	38.53	9.86	48.39	74.00	-25.61

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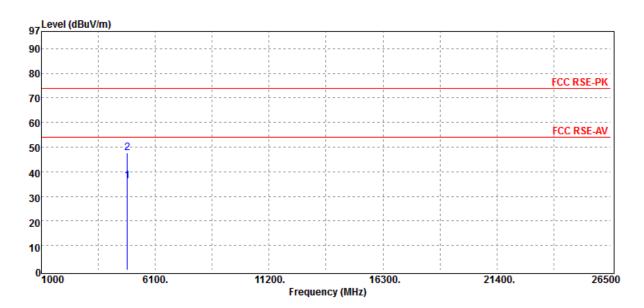
Radiated Spurious Emission Measurement Result (802.11_HT40)

:2015-05-26 Operation Band :802.11 n40M Test Date

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

Operation Mode :TX LOW Engineer :Curry

EUT Pol. :E2 Plan :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4844.00	Н	Average	26.68	9.74	36.42	54.00	-17.58
4844.00	Н	Peak	37.84	9.74	47.58	74.00	-26.42
	4844.00	MHz F/H/E/S 4844.00 H	Mode MHz F/H/E/S PK/QP/AV 4844.00 H Average	MHz F/H/E/S PK/QP/AV dBμV 4844.00 H Average 26.68	MHz F/H/E/S PK/QP/AV dBμV dB 4844.00 H Average 26.68 9.74	MHz Mode F/H/E/S Reading Level PK/QP/AV FS dBμV FS dBμV/m 4844.00 H Average 26.68 9.74 36.42	MHz Mode PK/QP/AV Reading Level dBμV FS @3m MHz F/H/E/S PK/QP/AV dBμV dB dBμV/m dBμV/m 4844.00 H Average 26.68 9.74 36.42 54.00

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

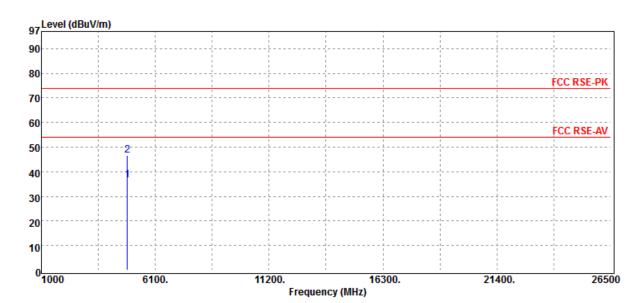
:802.11 n40M :2422 MHz :TX LOW :E2 Plan

Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg_C / 61 RH

:Curry

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4844.00	Н	Average	26.91	9.74	36.65	54.00	-17.35
4844.00	Н	Peak	36.99	9.74	46.73	74.00	-27.27

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Operation Band Fundamental Frequency Operation Mode

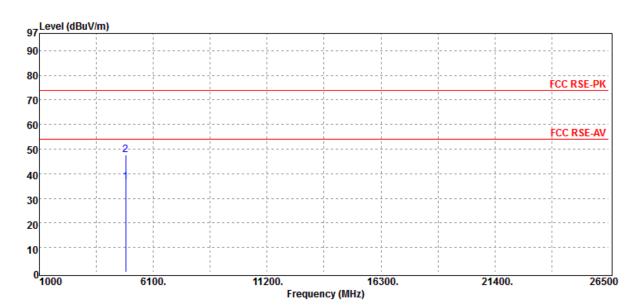
EUT Pol.

:802.11 n40M :2437 MHz :TX MID :E2 Plan

Test Date Temp./Humi. :2015-05-26

:21 deg_C / 61 RH Engineer :Curry

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	$\mathrm{d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4874.00	Н	Average	26.83	9.85	36.68	54.00	-17.32
4874.00	Н	Peak	37.65	9.85	47.50	74.00	-26.50

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11 n40M :2437 MHz :TX MID :E2 Plan

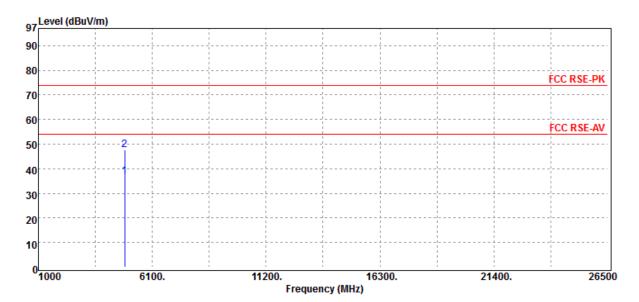
Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg_C / 61 RH

:Curry

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	27.10	9.85	36.95	54.00	-17.05
4874.00	Н	Peak	37.95	9.85	47.80	74.00	-26.20

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

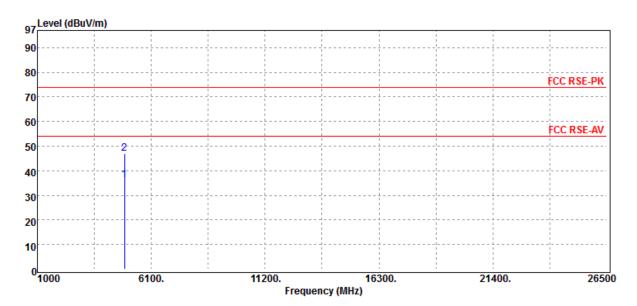
:802.11 n40M :2452 MHz :TX HIGH :E2 Plan

Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg_C / 61 RH

:Curry

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	dBμV/m	dBμV/m	dB
4904.00	Н	Average	26.51	9.84	36.35	54.00	-17.65
4904.00	Н	Peak	37.13	9.84	46.97	74.00	-27.03

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11 n40M :2452 MHz :TX HIGH ·E2 Plan

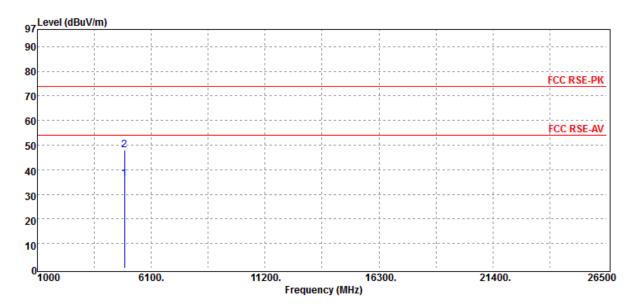
Test Date Temp./Humi. Engineer

:2015-05-26 :21 deg_C / 61 RH

:Curry

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	$\mathrm{d} B \mu V$	dB	dBμV/m	dBµV/m	dB
4904.00	Н	Average	26.52	9.84	36.36	54.00	-17.64
4904.00	Н	Peak	38.10	9.84	47.94	74.00	-26.06

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12 PEAK POWER SPECTRAL DENSITY

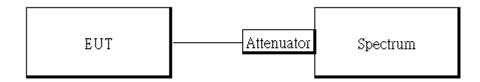
12.1 Standard Applicable

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

Troubur oment Equipment open							
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 \geq 3 kHz.
- 5. Set the VBW \geq 3 x RBW.
- 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. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

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12.5 Measurement Result

Frequency	uency RF Power Density Maximum Limit							
(MHz)	(dBm)	(dBm)						
802.11b								
2412	-1.89	8	PASS					
2437	-0.98	8	PASS					
2462	-0.50	8	PASS					
	802.11	g						
2412	-7.62	8	PASS					
2437	-6.29	8	PASS					
2462	-7.37	8	PASS					
802.11n_HT20								
2412	-11.60	8	PASS					
2437	-9.09	8	PASS					
2462	-9.57	8	PASS					
802.11n_HT40								
2422	-13.71	8	PASS					
2437	-11.86	8	PASS					
2452	-14.69	8	PASS					

^{*}Refer to next page for plots

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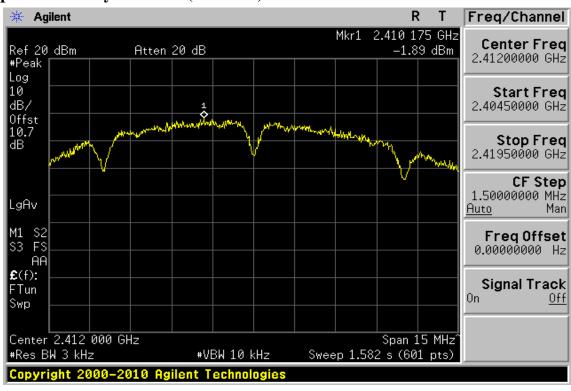
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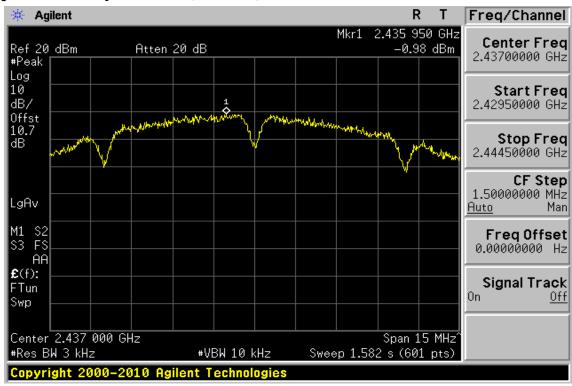
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802.11b **Power Spectral Density Test Plot (CH-Low)**



Power Spectral Density Test Plot (CH-Mid)



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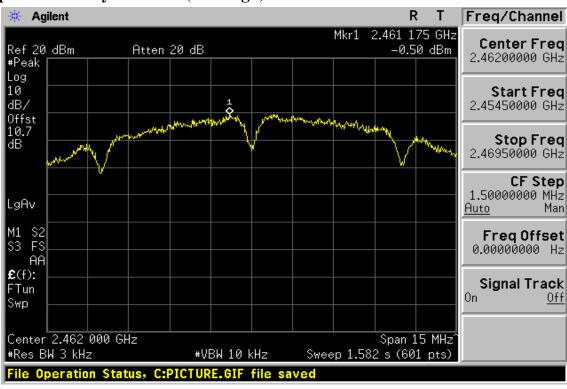
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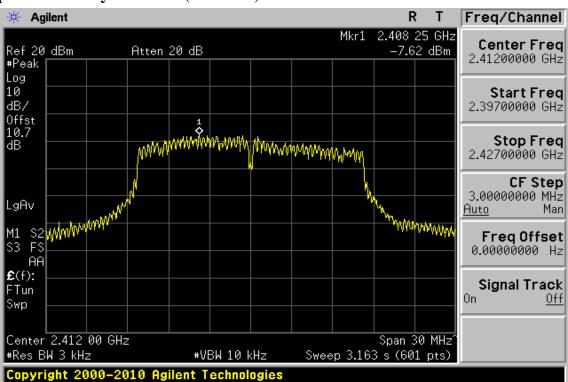
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Power Spectral Density Test Plot (CH-High)



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



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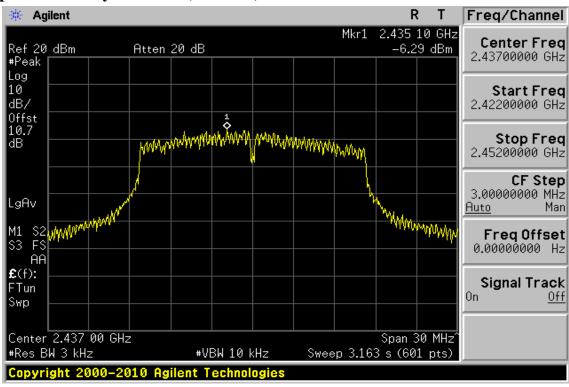
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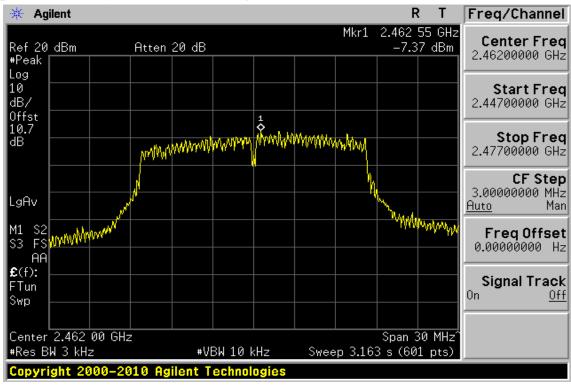
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Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)



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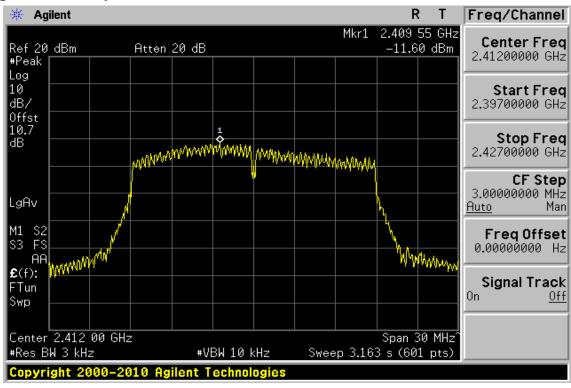
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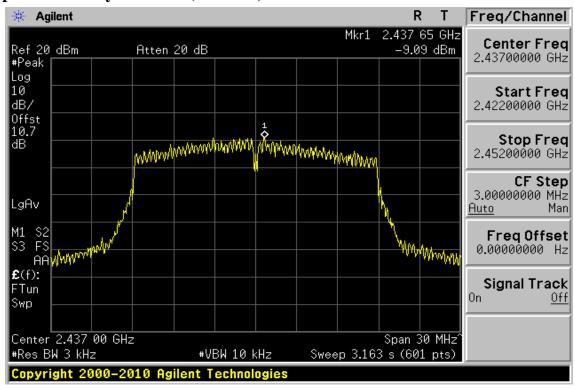
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802.11n HT20

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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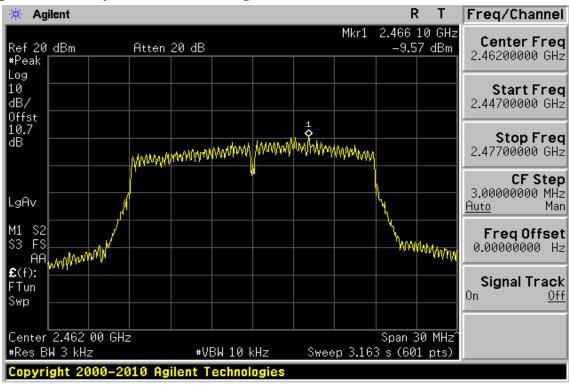
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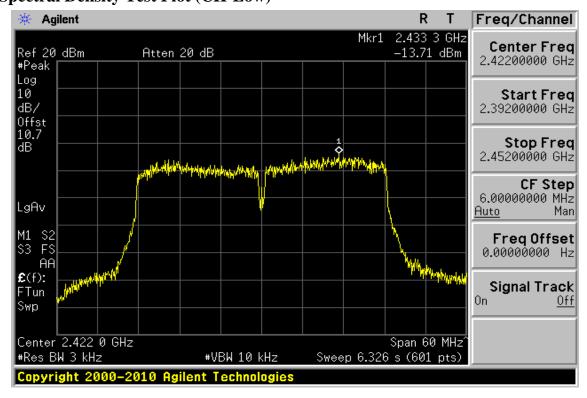
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Power Spectral Density Test Plot (CH-High)



802.11n HT40

Power Spectral Density Test Plot (CH-Low)



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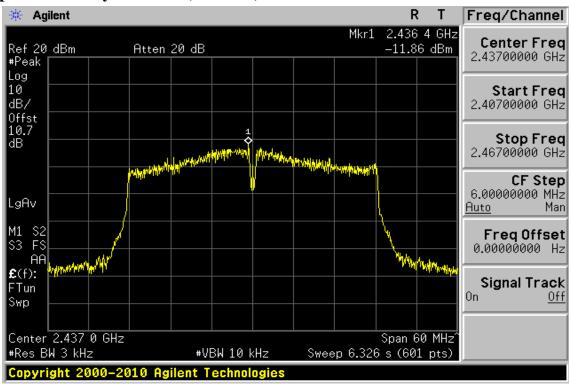
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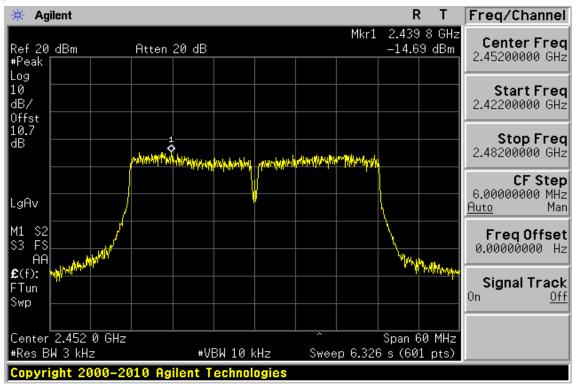
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Power Spectral Density Test Plot (CH-Mid)



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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.

In case of point-to-point operation, the power shall be reduced by the one dB for every 3 dB that the directional gain of antenna exceeds 6dBi.

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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