

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

OF

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

	OF		
Product Name:	Low Power Wi-Fi Module		
Brand Name:	LITE-ON		
Model No.:	MW0100R		
Model Difference:	N/A		
FCC ID:	PPQ-MW0100R		
IC:	4491A-MW0100R		
Report No.:	E2/2015/B0047		
Issue Date:	Dec. 09, 2015		
FCC Rule Part:	§15.247, Cat: DTS		
IC Rule Part:	RSS-247 issue 1 :2015		
	Lite-On Technology Corp.		
Prepared for:	Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei City 23585, Taiwan, R.O.C		
	SGS Taiwan Ltd.		
Prepared by:	Electronics & Communication Laboratory		
	No.2, Keji 1st Rd., Guishan Dist., Taoyuan City, Taiwan 333		
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VERIFICATION OF COMPLIANCE

Applicant:	Lite-On Technology Corp. Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei City 23585, Taiwan, R.O.C
Product Name:	Low Power Wi-Fi Module
Brand Name:	LITE-ON
Model No.:	MW0100R
Model Difference:	N/A
FCC ID:	PPQ-MW0100R
IC:	4491A-MW0100R
Report Number:	E2/2015/B0047
Date of test:	Nov. 13, 2015 ~ Dec. 09, 2015
Date of EUT Received:	Nov. 13, 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:	Aken Huang	Date:	Dec. 09, 2015
Prepared By:	Aken Huang / Engineer Karen Huang	Date:	Dec. 09, 2015
Approved By:	Karen Huang / Clerk	Date:	Dec. 09, 2015

Jim Chang / Asst. Manager

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Revision History

Report Number	Revision	Description	Issue Date
E2/2015/B0047 Rev.00 Initial creation of document		Dec. 09, 2015	

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GENERAL INFORMATION 1

Product description 1.1

General:

Product Name:	Low Power Wi-Fi Module
Brand Name:	LITE-ON
Model No.:	MW0100R
Model Difference:	N/A
Product SW/HW version:	5.04 / V02
Radio SW/HW version:	5.04 / V02
Test SW Version:	N/A
RF power setting in TEST SW:	N/A
Power Supply:	5Vdc from Test Kit

WLAN 2.4GHz:

Wi-Fi	Frequency Range	Channels	Rated Power / (EIRP)	Type of Emission	Modulation Technology	
11b/g	2412-2462	11	b: 20.48dBm b: 20.48dBm (EIRP) g: 24.51dBm g: 18.52dBm (EIRP)	b: 14M9G1D g:16M6D1D	DSSS, OFDM	
11n	HT20 2412-2462	11	HT20: 23.71dBm HT20: 17.51dBm(EIRP)	HT20:17M7D1D	OFDM	
Antenna	Designation:	PCB PIFA Antenna, Gain:2.55dBi				
Modulation type:		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM				
Transitio	n Rate:	802.11 g	up to 11 Mbps; up to 54 Mbps _20MHz: up to 72.2Mbps			

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1.2 Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is Low Power Wi-Fi Module supporting, Wi-Fi feature, and below is details of information.

Product Feature			
Product Name: Low Power Wi-Fi Module			
Brand Name:	LITE-ON		
Model No.:	MW0100R		
Model Difference:	N/A		
FCC ID:	PPQ-MW0100R		
IC :	4491A-MW0100R		
Wi-Fi Specification	802.11b/g/n		

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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Test Methodology of Applied Standards 1.3

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:

- 1. 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 2. DoC procedure.

Test Facility 1.4

SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333. (TAF code 0513)

FCC Registration Numbers are: 628985

Canada Registration Number: 4620A-5.

1.5 Special Accessories

There are no special accessories used while test was conducted.

1.6 **Equipment Modifications**

There was no modification incorporated into the EUT.

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SYSTEM TEST CONFIGURATION 2

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.

Test Procedure 2.3

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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2.4 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 0.4dB and 10dB attenuator.

offset

= RF cable loss (dB)+ attenuation factor(dB)=10.4(dB)

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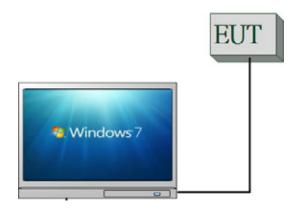
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2.5 Configuration of Tested System

Fig. 2-1 Radiated & Conducted Emission



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	L430	R9-YYG88	Shielded	Un-shielded

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SUMMARY OF TEST RESULTS 3

FCC Rules / IC Rules	Description Of Test	Result
§15.207(a) RSS-Gen §8.8	AC Power Line Conducted Emission	N/A
§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



DESCRIPTION OF TEST MODES 4

4.1 Operated in 2400 ~ 2483.5MHz Band

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

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		

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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				

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MEASUREMENT UNCERTAINTY 5

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			
	180MHz -417MHz: +/- 3.19dB			
Measurement uncertainty (Polarization : Vertical)	0.417GHz-1GHz: +/- 3.19dB			
	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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6 CONDUCTED EMISSION TEST

6.1 Standard Applicable

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

	Limits							
Frequency range	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	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

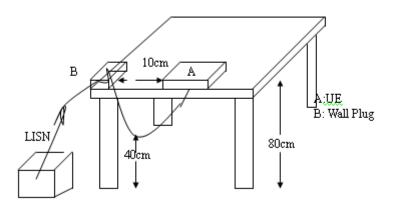
Conducted Emission Test Site									
EQUIPMENT MFR		MODEL	SERIAL	LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
EMI Test Receiver	R&S	ESCI 7	100950	12/12/2014	12/11/2015				
Coaxial Cables	N/A	N30N30-1042-150c m	N/A	01/06/2015	01/07/2016				
LISN	Schwarzbeck	NSLK 8127	8127-648	06/09/2015	06/08/2016				
LISN	Rolf-Heine	NNB-2/16Z	99012	03/04/2015	03/03/2016				
Test Software	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.				

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.



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

6.6 **Measurement Result**

N/A, EUT powered by DC power supply.

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DUTY CYCLE OF TEST SIGNAL 7

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:

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

Duty Cycle:

	Duty Cycle (%)	Duty Factor (dB)
802.11b	100.00	0.00
802.11g	100.00	0.00
802.11n_20	100.00	0.00

Duty Cycle Factor: 10 * log (1/Duty cycle) $10 * \log(1/1)=0$

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7.1 DUTY CYCLE TEST SIGNAL Measurement Result

802.11 b

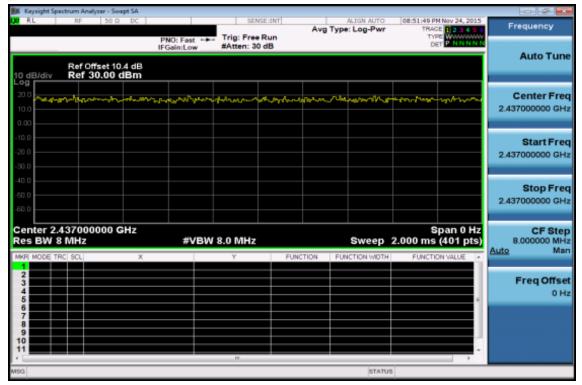
🎒 Keysight Spe	ctrum Analy	zer - Swept SA								
Center Fi	rea 2.4	3700000	00 GHz		VSE:INT		ALIGN AUTO	08:45:39 PM TRACE	123456	Frequency
10 dB/div	Ref Off	set 10.4 dE 0.00 dBm	PNO: Fas IFGain:Lo	t Trig: Free w #Atten: 30				DET	PNNNN	Auto Tune
20.0										Center Freq 2.437000000 GHz
-10.0 -20.0 -30.0										Start Freq 2.437000000 GHz
-40.0 -50.0 -60.0										Stop Freq 2.437000000 GHz
Center 2.4 Res BW 8	MHz	000 GHz		VBW 8.0 MHz	FUNCT	ION FUR	Sweep	Sp 2.080 ms (FUNCTION		CF Step 8.000000 MHz <u>Auto</u> Man
1 3 4 5 6 7 8 9 9 9 10 11				17						Freq Offset 0 Hz
MSG							STATUS	3		

802.11 g

	rum Analyzer - Swept SA						- 2
RL	RF 50 Ω DC		SENSE:INT	Avg Typ	e: Log-Pwr	08:49:56 PM Nov 24, 2015 TRACE 1 2 3 4 5	Frequency
	Ref Offset 10.4 dB	PNO: Fast IFGain:Low	Trig: Free Run #Atten: 30 dB				Auto Tu
	Ref 30.00 dBm						
0.0 0.0	n Marina and Andrewson	H-enno	Marran and a start of the second s	ryn Ywsaywiller	w	mon man man w	Center Fr 2.437000000 G
0.0							Start Fr 2.437000000 0
0.0 0.0 0.0							Stop Fr 2,437000000 (
	37000000 GHz					Span 0 Hz	CFSt
es BW 8		#VBW	8.0 MHz			FUNCTION VALUE	8.000000 N Auto N
2 3 4 5	SCL X			FUNCTION FU	NCTION WIDTH	FUNCTION VALUE	Freq Off
6							
1							



802.11 n 20 MHz



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PEAK OUTPUT POWER MEASUREMENT 8

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.

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8.2 Measurement Equipment Used

Conducted Emission Test Site									
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
Power Meter	Anritsu	ML2496A	1326001	06/23/2015	06/22/2016				
Power Sensor	Anritsu	MA2411B	1315048	06/23/2015	06/22/2016				
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	04/14/2015	04/13/2016				
DC Block	PASTERNACK	PE8210	RF29	12/19/2014	12/18/2015				
Splitter	RF-LAMBAD	RFLT2W1G18 G	RF35	12/19/2014	12/18/2015				
Attenuator	WOKEN	218FS-10	RF23	12/19/2014	12/18/2015				

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.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



8.5 Measurement Result

802.1	1b Main					
СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit	RESULT
1	2412	1	20.32	107.65	1 Watt = 30.00 dBm	PASS
6	2437	1	20.21	104.95	1 Watt = 30.00 dBm	PASS
11	2462	1	20.48	111.69	1 Watt = 30.00 dBm	PASS
802.1	1b Main					
СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit	RESULT
1	2412	1	17.79	60.12	1 Watt = 30.00 dBm	PASS
6	2437	1	17.71	59.02	1 Watt = 30.00 dBm	PASS
11	2462	1	17.93	62.09	1 Watt = 30.00 dBm	PASS

802.1	1g Main					
СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit	RESULT
1	2412	6	24.39	274.79	1 Watt = 30.00 dBm	PASS
6	2437	6	24.42	276.69	1 Watt = 30.00 dBm	PASS
11	2462	6	24.51	282.49	1 Watt = 30.00 dBm	PASS
802.1	1g Main					
СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit	RESULT
1	2412	6	15.71	37.24	1 Watt = 30.00 dBm	PASS
6	2437	6	15.73	37.41	1 Watt = 30.00 dBm	PASS
11	2462	6	15.97	39.54	1 Watt = 30.00 dBm	PASS



802.1	802.11n_20M Main					
СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit	RESULT
1	2412	MCS0	23.55	226.46	1 Watt = 30.00 dBm	PASS
6	2437	MCS0	23.57	227.51	1 Watt = 30.00 dBm	PASS
11	2462	MCS0	23.71	234.96	1 Watt = 30.00 dBm	PASS
802.1	1n_20M Ma	in				
СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit	RESULT
1	2412	MCS0	14.7	29.51	1 Watt = 30.00 dBm	PASS
6	2437	MCS0	14.75	29.85	1 Watt = 30.00 dBm	PASS
11	2462	MCS0	14.96	31.33	1 Watt = 30.00 dBm	PASS

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

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EIRP Measurement:

802.11b

	Avg. Output Power				REQUIRED		
СН	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	LIMIT (dBm)	RESULT
1	2412	17.79	60.117	2.55	20.34	36	PASS
6	2437	17.71	59.020	2.55	20.26	36	PASS
11	2462	17.93	62.087	2.55	20.48	36	PASS

802.11g

		Avg. Output Power				REQUIRED	
СН	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	LIMIT (dBm)	RESULT
1	2412	15.71	37.239	2.55	18.26	36	PASS
6	2437	15.73	37.411	2.55	18.28	36	PASS
11	2462	15.97	39.537	2.55	18.52	36	PASS

802.11n_20M

		Avg. Output Power				REQUIRED	
СН	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	LIMIT (dBm)	RESULT
1	2412	14.70	29.512	2.55	17.25	36	PASS
6	2437	14.75	29.854	2.55	17.30	36	PASS
11	2462	14.96	31.333	2.55	17.51	36	PASS

* Note: EIRP = Average Power + Gain



9 6dB & 99% BANDWIDTH MEASUREMENT

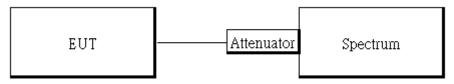
9.1 Standard Applicable

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 DUE.		
ТҮРЕ		NUMBER	NUMBER	CAL.			
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	04/14/2015	04/13/2016		
DC Block	PASTERNACK	PE8210	RF29	12/19/2014	12/18/2015		
Attenuator	WOKEN	218FS-10	RF23	12/19/2014	12/18/2015		

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.



9.5 **Measurement Result**

6dB Bandwidth

802.11b				
Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result	
2412	10040	> 500	PASS	
2437	9080	> 500	PASS	
2462	9540	> 500	PASS	

802.11q

Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
2412	16560	> 500	PASS
2437	16550	> 500	PASS
2462	16560	> 500	PASS

802.11n 20M

Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
2412	17730	> 500	PASS
2437	17730	> 500	PASS
2462	17800	> 500	PASS



99% Bandwidth

802.11b			
Frequency (MHz)	99%Bandwidth (MHz)		
2412	14.851		
2437	14.115		
2462	14.076		

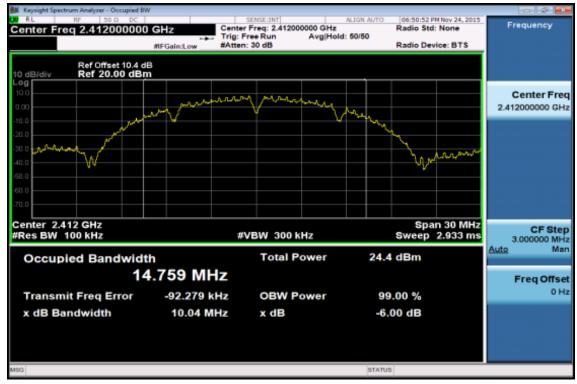
802.11g		
	99%Bandwidth	
(MHz)	(MHz)	
2412	16.605	
2437	16.487	
2462	16.434	

802.11n_20M	
	99%Bandwidth
(MHz)	(MHz)
2412	17.692
2437	17.625
2462	17.641

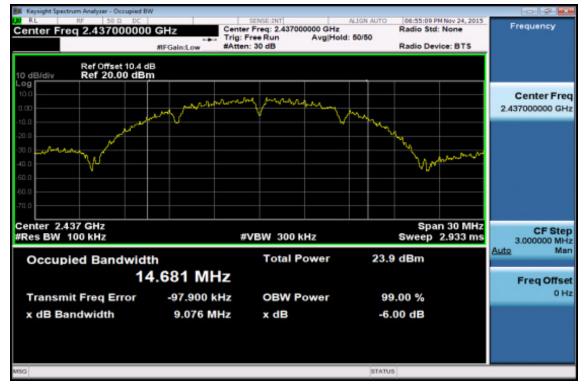
*Refer to next page for plots



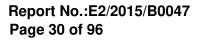
802.11b 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid

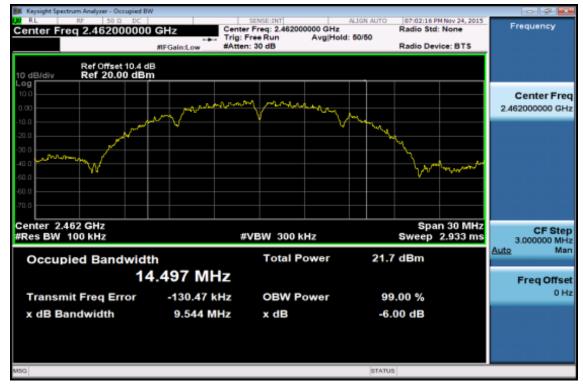


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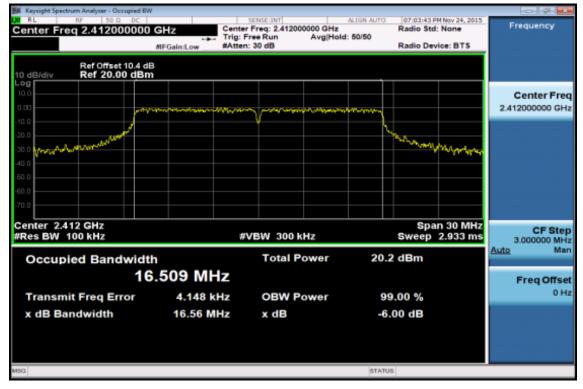




6dB Band Width Test Data CH-High



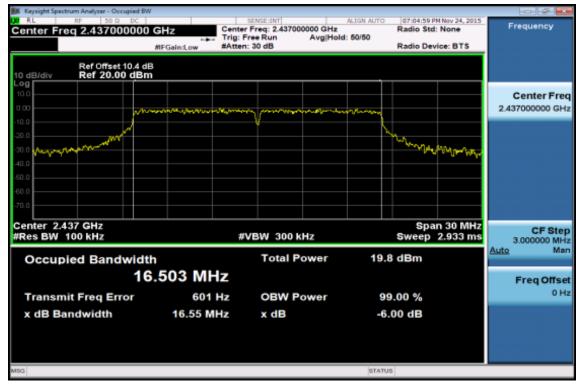
802.11a 6dB Band Width Test Data CH-Low



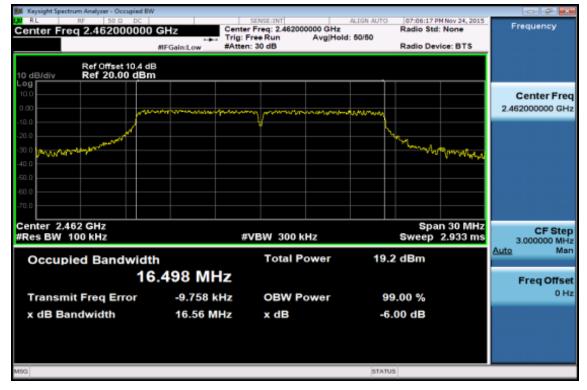
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6dB Band Width Test Data CH-Mid



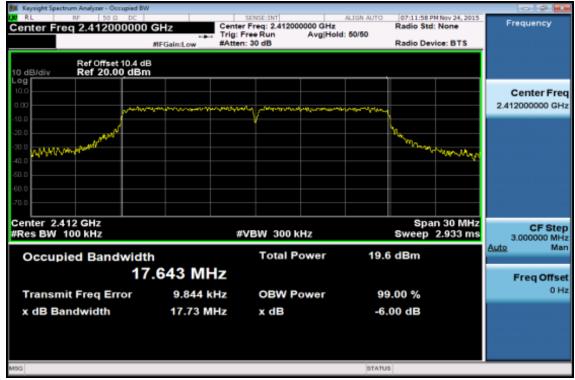
6dB Band Width Test Data CH-High



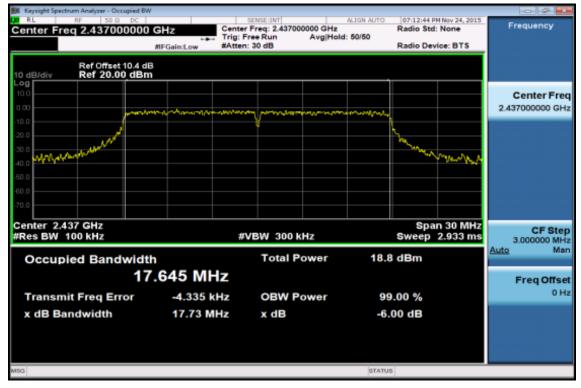
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



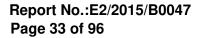
802.11n 20M 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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6dB Band Width Test Data CH-High



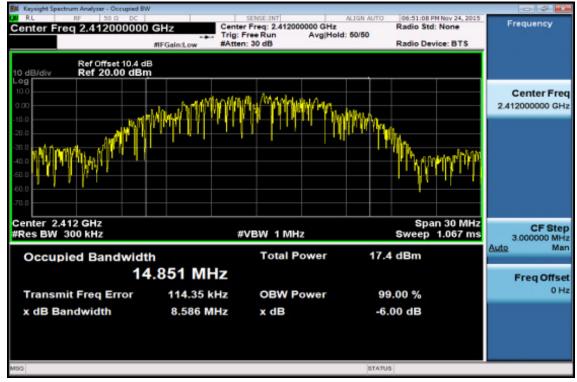
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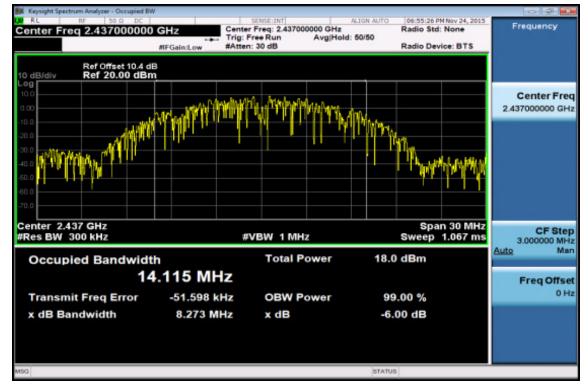
SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



802.11b 99% Band Width Test Data CH-Low



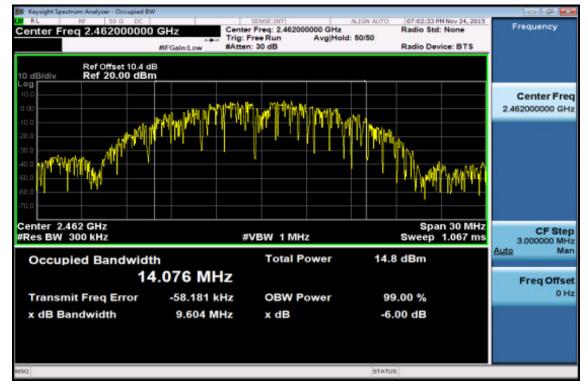
99% Band Width Test Data CH-Mid



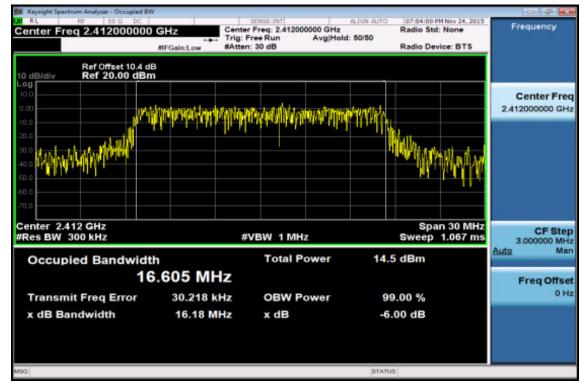
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



99% Band Width Test Data CH-High



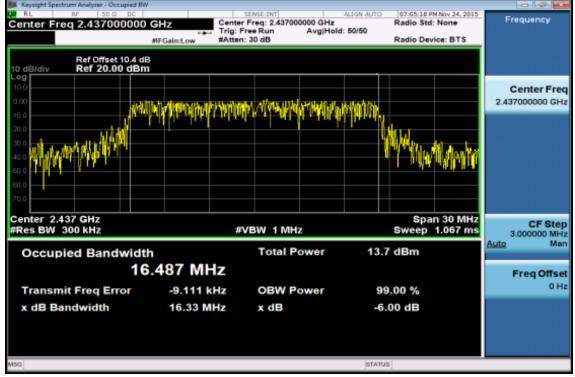
802.11q 99% Band Width Test Data CH-Low



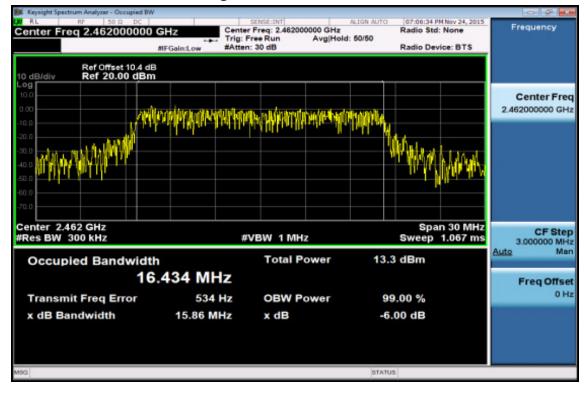
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99% Band Width Test Data CH-Mid



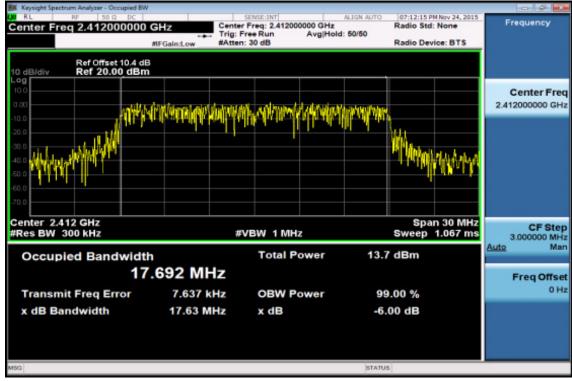
99% Band Width Test Data CH-High



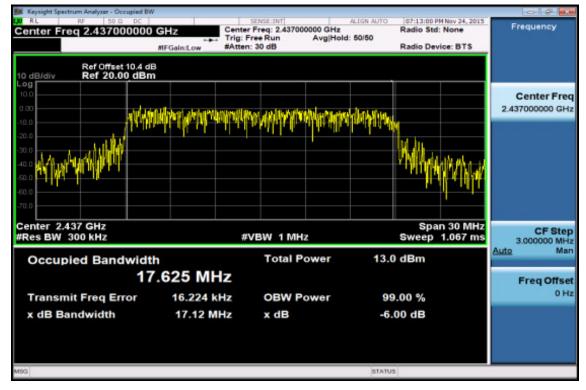
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802.11n 20M 99% Band Width Test Data CH-Low



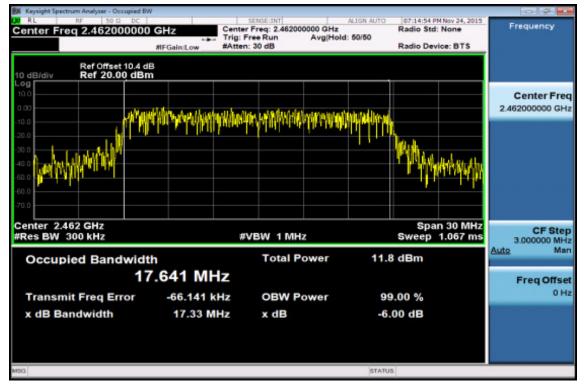
99% Band Width Test Data CH-Mid



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99% Band Width Test Data CH-High



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10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT 10.1 Standard Applicable

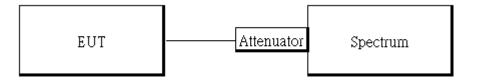
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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).

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	CAL DUE.			
TYPE		NUMBER	NUMBER	CAL.				
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	04/14/2015	04/13/2016			
DC Block	PASTERNACK	PE8210	RF29	12/19/2014	12/18/2015			
Attenuator	WOKEN	218FS-10	RF23	12/19/2014	12/18/2015			

10.3 Test SET-UP



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



Band Edges Test Data CH-High

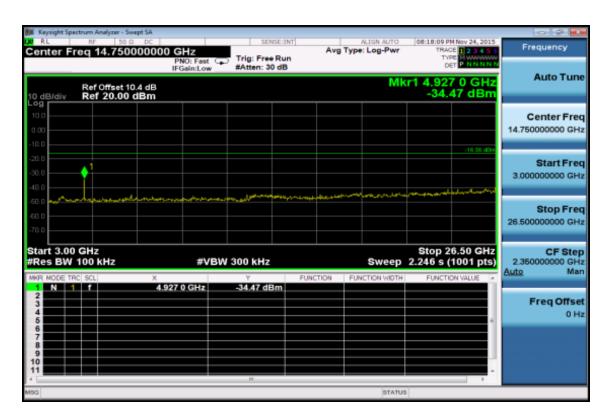


Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



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

Keysight Spectrum Analyzer - Swept SA				
Center Freq 1.515000000		Avg Type: Log-Pwr	08:15:41 PM Nov 24, 2015 TRACE 1 2 3 4 5 0 Type	Frequency
Ref Offset 10.4 dB	PND: Fast Trig: Free Run IFGain:Low #Atten: 30 dB		r1 2.411 9 GHz 5.99 dBm	Auto Tun
0.00 10.0			-14 // day	Center Fre 1.515000000 GH
0.0				Start Fre 30.000000 Mi
50. 0 10. 0 70. 0 70. 0	an Jaho yang dipakan yang barang kanang k			Stop Fre 3.000000000 Gi
tart 30 MHz Res BW 100 kHz KRI MODE TRCI SCLI X	#VBW 300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	CF Sto 297.000000 M Auto M
2 3 4 5	111 9 GHz 5.99 dBm			Freq Offs 01
6 7 8 9 9 0 0				
10	17	STATU	3	

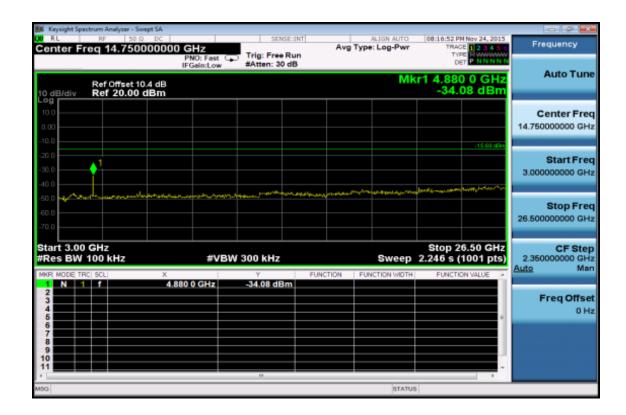


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Spurious Emission Test Data CH-Mid

Keysight Spectrum Analyzer - Swep							
Center Freq 1.515000	0000 GHz	SENSE:INT		LIGN AUTO	TRAC	Nov 24, 2015	Frequency
Ref Offset 10.4 10 dB/div Ref 20.00 dl		Trig: Free Run #Atten: 30 dB		Mk	r1 2.438	PNNNN	Auto Tune
10.0 0.00 -10.0					•1		Center Freq 1.515000000 GHz
-20.0						-15.69 dBm	Start Free 30.000000 MHz
-50.0 -60.0 -70.0	ىدە ئەلەر بەسلەر لەرد ^ر امىلەر بەر بەر بەر بەر بەر بەر بەر بەر بەر ب	ilaj - roch in al gestivelore, - Presi	nenter en	and an and the second) hophineteres	warky Jakow Wed	Stop Free 3.000000000 GH2
Start 30 MHz #Res BW 100 kHz MKR MODE TRC SCL	х			Sweep 28	Stop 3. 83.9 ms (1 FUNCTIO		CF Step 297.000000 MH: <u>Auto</u> Mar
1 N 1 f 2 3 4 5	2.438 7 GHz	4.31 dBm					Freq Offse 0 H:
7 8 9 10 11							
4					_		

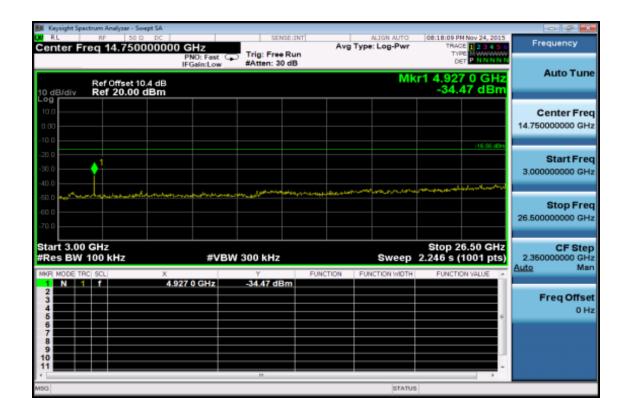


Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Spurious Emission Test Data CH-High

	m Analyzer - Swept S							
enter Free	n 1.5150000		Trig: Free Run	Avg T	ype: Log-Pwr	TRAC	E 2 3 4 5 6	Frequency
	Ref Offset 10.4 d Ref 20.00 dBr	IFGain:Low	#Atten: 30 dB		Mk	r1 2.462	PNNNN	Auto Tun
0.0						•1		Center Fre 1.515000000 GF
0.0							-16.56 dBn	Start Fre 30.000000 MF
50.0 50.0 70.0		ana harkiteka yanapilapita		99349349999 (1999)	na an a	af hustonningi	-1944, in 1944, in 1	Stop Fre 3.000000000 GH
tart 30 MH Res BW 10	00 kHz	х	W 300 kHz Y	FUNCTION	Sweep 2	Stop 3. 83.9 ms (1 FUNCTIO		CF Ste 297.000000 Mi <u>Auto</u> Mi
1 N 1 2 3 4 5 6 7 8 9		2.462 4 GHz	3.44 dBm					Freq Offs 01
1			17					



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



Band Edges Test Data CH-High

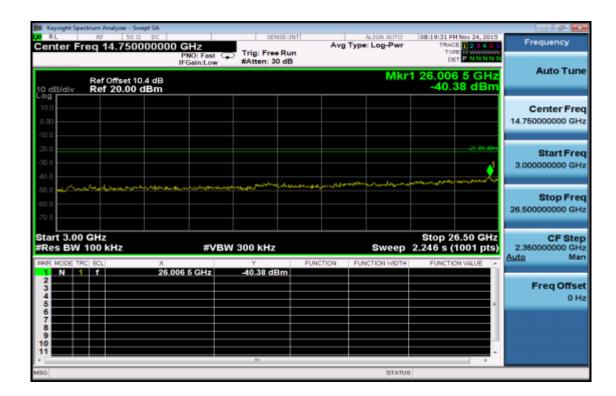


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802.11g **Spurious Emission Test Data CH-Low**

	trum Analyzer - Swept SA							
Center Fre	eq 1.51500000		SENSE:	Avg	ALIGN AUTO Type: Log-Pwr	08:19:09 PM N TRACE	123456	Frequency
10 dB/div Log	Ref Offset 10.4 dE Ref 20.00 dBm		Trig: Free Ru #Atten: 30 dB		Mk	r1 2.414	9 GHz 9 dBm	Auto Tune
10.0 0.00 -10.0						1		Center Free 1.515000000 GHz
-20.0 -30.0 -40.0							-21.03.05%	Start Free 30.000000 MH
-50.0 -60.0 -70.0	and a state field a large a d. Year back	ىلىنى ۋە بىغ غۇ <mark>ي يىلىلارىكى بىرى</mark>		*******	para-deserved and a second		an- _{a-da} dagi Afr	Stop Free 3.000000000 GH
Start 30 M #Res BW 1	100 kHz	#VB	W 300 kHz Y	FUNCTION	Sweep 2	Stop 3.0 83.9 ms (10 FUNCTION	001 pts)	CF Step 297.000000 MH Auto Mar
1 N 1 2 3 4 5 6 7 7 8 9 9		2.414 9 GHz	-1.89 dBm					Freq Offse 0 H
10 11 MISG			19		STATUS	5	•	

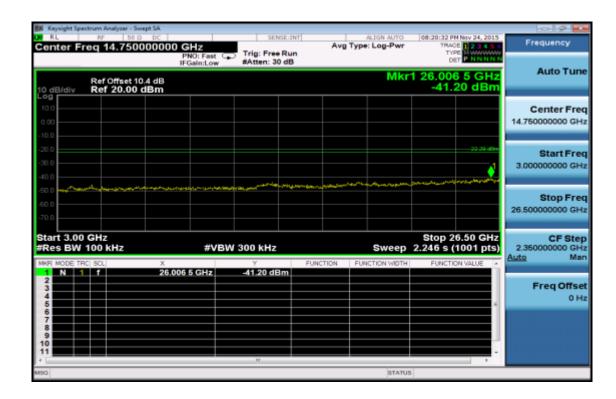


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Spurious Emission Test Data CH-Mid

Keysight Spectrum Analyzer - Swept SA							
enter Freq 1.515000000		Trig: Free Run		Type: Log-Pwr	08:20:12 PM No TRACE		Frequency
Ref Offset 10.4 dB 0 dB/div Ref 20.00 dBm	PNO: Fast G	#Atten: 30 dB		Mk	r1 2.435 7 -2.29	GHz	Auto Tun
10.0 10.0 10.0					•1 ∥		Center Fre 1.515000000 GH
0.0						-00-09-dBm	Start Fre 30.000000 Mi
0.0 0.0 0.0	and the second second	ensilnuunstelajothille	93638 A	nan ar a baile an	hanower and	ماهرمورو	Stop Fre 3.000000000 Gi
tart 30 MHz Res BW 100 kHz	#VBV	V 300 kHz	FUNCTION	Sweep 2	Stop 3.00 83.9 ms (100	01 pts)	CF Ste 297.000000 Mi <u>Auto</u> M
	435 7 GHz	-2.29 dBm					Freq Offs 01
6 7 8 9 0							
		17					



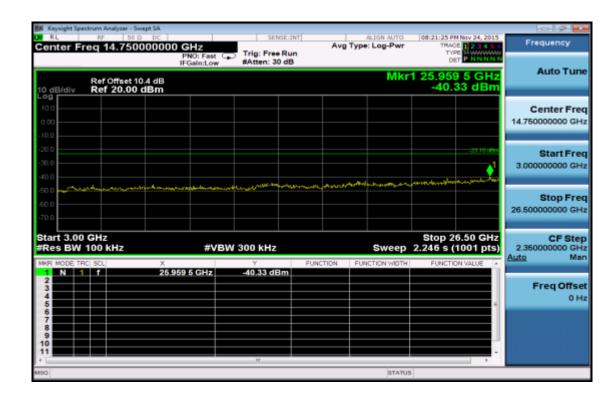
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Spurious Emission Test Data CH-High

Keysight Spectrum Analyzer - Swept SA					
enter Freq 1.515000000		SENSE:INT	Avg Type: Log-Pwr	08:21:07 PM Nov 24, 2015 TRACE 1 2 3 4 5 6 Type	Frequency
Ref Offset 10.4 dB		Atten: 30 dB	Mk	r1 2.456 5 GHz -3.09 dBm	Auto Tun
10.0 10.0				∲ ¹	Center Fre 1.515000000 GF
20.0				-23.10.084	Start Fre 30.000000 MF
50.0 50.0 70.0	n	page weeks and a second and a se	a farin a garaga a farin a Birley Alaria, sina a A	el - Terreter-selendenger, indase	Stop Fre 3.000000000 GH
tart 30 MHz Res BW 100 kHz	#VBW 3		Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts) FUNCTION VALUE	CF Ste 297.000000 Mi <u>Auto</u> M
1 N 1 f 2. 2 3 4 5	456 5 GHz	-3.09 dBm			Freq Offs 01
6 7 8 9 0					



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802.11n HT20 **Band Edges Test Data CH-Low**





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Band Edges Test Data CH-High



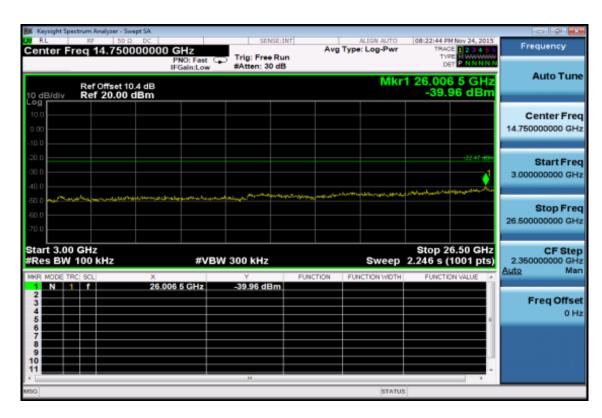
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802.11n HT20 **Spurious Emission Test Data CH-Low**

Keysight Spectrum Analyzer - Swept SA				
Center Freq 1.515000000	GHz	Avg Type: Log-Pwr	08:22:23 PM Nov 24, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 10.4 dB	PN0: Fast Trig: Free Run IFGain:Low #Atten: 30 dB	Mk	r1 2.403 0 GHz -2.47 dBm	Auto Tune
10.0 -10.0			1	Center Freq 1.515000000 GHz
-20.0			-22.47.48%	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0	and a start and a start a start and a start a s	angandy opportunity and and a second with	Network and a particular	Stop Freq 3.000000000 GHz
Start 30 MHz #Res BW 100 kHz MKR MODE TRC SCL X	#VBW 300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts) FUNCTION VALUE	CF Step 297.000000 MHz Auto Man
1 N 1 f 2.4 3 4 5 6	403 0 GHz -2.47 dBm			Freq Offset 0 Hz
7 8 9 10 11	19			
M90		STATUS		

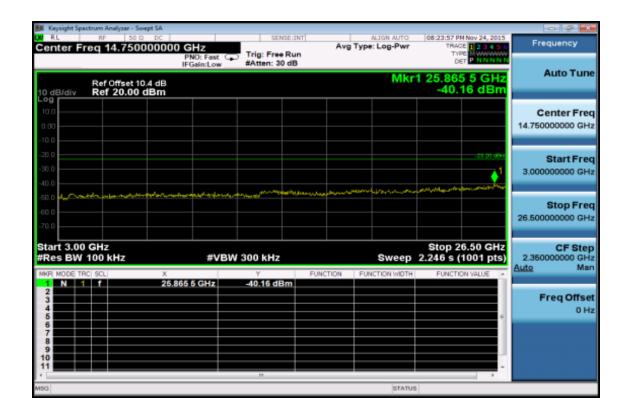


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Spurious Emission Test Data CH-Mid

	ectrum Analyzer - Swept SA							
Center Fi	req 1.515000000		Trig: Free Ru	Avg	Type: Log-Pwr	TRACE	Nov 24, 2015	Frequency
10 dB/div	Ref Offset 10.4 dB Ref 20.00 dBm	PN0: Fast C IFGain:Low	#Atten: 30 dB		Mk	DE	PNNNNN	Auto Tun
10.0 0.00						1		Center Free 1.515000000 GH
-20.0							-20 20 4 84	Start Free 30.000000 MH
-50.0 -60.0		de ferder ac splassees helf, op st	and a second	presentation of the second	and an	1 million	919-10p-24-2804-4	Stop Fre 3.000000000 GH
Start 30 M #Res BW	100 kHz	#VB	W 300 kHz	FUNCTION	Sweep 2	Stop 3. 83.9 ms (1		CF Ste 297.000000 MH Auto Ma
1 N 1 2 3 4 5 6		2.432 7 GHz	-3.20 dBm				+	Freq Offse 0 H
7 8 9 10 11			10					
453					STATUS	5		

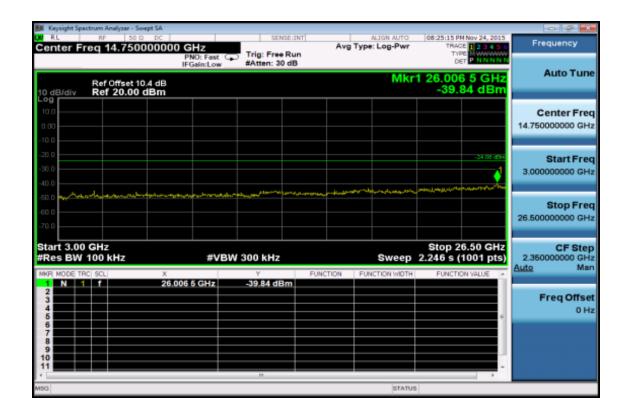


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Spurious Emission Test Data CH-High

Keysight Spectrum Analyzer - Swept SA				
Center Freq 1.515000000	GHz	ALIGN AUTO Avg Type: Log-Pwr	08:24:49 PM Nov 24, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 10.4 dB	PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB	Mk	r1 2.453 5 GHz -4.08 dBm	Auto Tune
10.0			↑ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Center Freq 1.515000000 GHz
-20.0			-24 03 dBn	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0	yetdaal o _{generatio} n oo	apharene en	d land more than a start and the	Stop Free 3.00000000 GHz
Start 30 MHz #Res BW 100 kHz MKR MODE TRC SCL X	#VBW 300 kHz	Sweep 28	Stop 3.000 GHz 3.9 ms (1001 pts)	CF Step 297.000000 MHz Auto Man
2 3 4 5 6 7 8	453 5 GHz -4.08 dBm		÷	Freq Offset 0 Hz
9 10 11 4	,	STATUS	, ·	



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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.

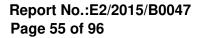
Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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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11.2 Measurement Equipment Used:

		966 Chambe	r		
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
EMI Test Receiver	R&S	ESU 40	100363	04/09/2015	04/08/2016
Loop Antenna	ETS-Lindgren	6502	00143303	12/09/2014	12/08/2015
Broadband Antenna	TESEQ	CBL 6112D	35240	12/05/2014	12/04/2015
Horn Antenna	ETS-Lindgren	3117	00143272	12/08/2014	12/07/2015
Horn Antenna	Schwarzbeck	BBHA9170	185	07/25/2015	07/24/2016
Pre Amplifier	EMC Instruments	EMC330	980096	12/19/2014	12/18/2015
Pre Amplifier	EMC Instruments	EMC0011830	980199	12/19/2014	12/18/2015
Pre Amplifier	R&S	SCU-18	10204	12/19/2014	12/18/2015
Pre Amplifier	R&S	SCU-26	100780	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	RG 214/U	966Rx 9K-30M	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	RG 214/U SUCOFLEX 104	966Rx 30M-3G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Rx 1G-18G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	mini 141-12 SUCOFLEX 104	966Rx 18G-40G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Tx 30M-18G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	966Tx 18G-40G	12/19/2014	12/18/2015
Attenuator	WOKEN	218FS-10	RF27	12/19/2014	12/18/2015
Site NSA	SGS	966 Chamber C	SAC-C	03/04/2015	03/03/2016
Site VSWR	SGS	966 Chamber C	SAC-C	03/04/2015	03/03/2016
DC Power Supply	HOLA	DP-3003	D7070035	05/04/2015	05/03/2016
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Test Software	World-Pallas	Dr. E	V 3.0 Lite	N.C.R.	N.C.R.

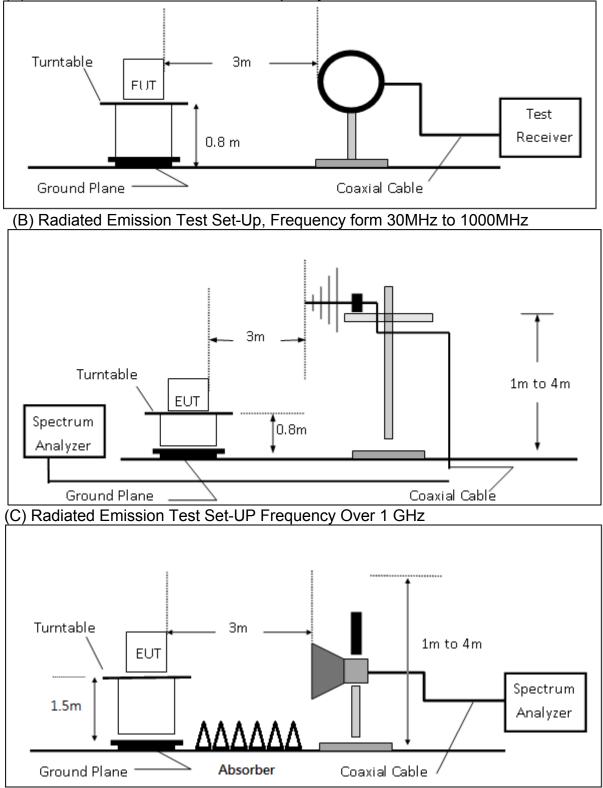
NOTE: N.C.R refers to Not Calibrated Required.

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11.3 Test SET-UP

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



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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 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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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	0	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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Radiated Band Edge Measurement Result (802.11b)

Operation Fundamer Operation EUT Pol. :	ital Frequen Band :	802.11 cy : 2412 M BE CH H	/IHz Temp I Low Test I	Date : . / Humi. : Engineer : urement Anten	2015/11/25 24.2 deg/ 62 RH Vito Vertical		
Freq.	Note	Detector Mode	Spectum Reading Lev	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Peak	58.49	-6.84	51.65	74	-22.35
2390.00	Е	Average	58.49	-6.84	51.65	54	-2.35
Operation Fundamer Operation EUT Pol. :	ital Frequen Band :	802.11 cy : 2412 M BE CH H	/IHz Temp I Low Test I	Date : . / Humi. : Engineer : urement Anten	na Pol. :	2015/11/25 24.2 deg/ 6 Vito Horizontal	
Freq.	Note	Detector Mode	Spectum Reading Lev	Factor /el	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	E	Peak	57.96	-6.84	51.12	74	-22.88
2390.00	E	Average	45.17	-6.84	38.32	54	-15.68



Operation N Fundament Operation E	al Frequenc	•	1Hz Temp.//	Γest Date : Γemp. / Humi. : Γest Engineer :			2015/11/25 24.2 deg/ 62 RH Vito	
EUT Pol. :	Danu .	H	CH High Test Engineer : Measurement Antenna Pol. :			Vertical		
Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2483.50	E	Peak	55.75	-6.38	49.37	74	-24.63	
2483.50	E	Average	43.33	-6.38	36.95	54	-17.05	

Operation Mode : Fundamental Frequency : Operation Band : EUT Pol. :		802.11 y : 2462 M BE CH H	IHz Temp./ High Test Eng	Test Date : Temp. / Humi. : Test Engineer : Measurement Antenna Pol. :			2015/11/25 24.2 deg/ 62 RH Vito Horizontal	
Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2483.50	E	Peak	56.91	-6.38	50.52	74	-23.48	
2483.50	E	Average	44.80	-6.38	38.42	54	-15.58	



Radiated Band Edge Measurement Result (802.11g)

Operation Fundamen Operation EUT Pol. :	ital Frequen Band :	802.11 cy : 2412 N BE CH H	/Hz Temp. Low Test E	Test Date : Temp. / Humi. : Test Engineer : Measurement Antenna Pol. :			5 62 RH
Freq.	Note	Detector Mode	Spectum Reading Leve	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	E	Peak	68.03	-6.84	61.19	74	-12.81
2390.00	E	Average	49.01	-6.84	42.17	54	-11.83
Operation Fundamen Operation EUT Pol. :	ital Frequen Band :	802.11 cy : 2412 M BE CH H	∬Hz Temp. I Low Test E	ate : / Humi. : ngineer : rement Anteni	na Pol. :	2015/11/25 24.2 deg/ 6 Vito Horizontal	
Freq.	Note	Detector Mode	Spectum Reading Leve	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Peak	68.70	-6.84	61.86	74	-12.14
2390.00	E	Average	50.07	-6.84	43.23	54	-10.77



Operation N		802.11	•	Test Date :			2015/11/25	
Fundamental Frequency :		y: 2462 N	IHZ I E	emp. / Humi			24.2 deg/ 62 RH	
Operation Band :		BE CH	High Te	Test Engineer :			Vito	
EUT Pol. :		Н	Measurement Antenna Pol.:			Vertical		
Freq.	Note	Detector Mode	Spectu Reading I		ctor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµ∖	/ (dB	dBµV/m	dBµV/m	dB
2483.50	E	Peak	68.03	3 -6	6.38	61.65	74	-12.35
2483.50	E	Average	48.56	6 -6	6.38	42.18	54	-11.82

Operation N Fundament Operation E EUT Pol. :	al Frequenc	802.11 y : 2462 M BE CH H	IHz Temp./ High Test En	Test Date : Temp. / Humi. : Test Engineer : Measurement Antenna Pol. :			2015/11/25 24.2 deg/ 62 RH Vito Horizontal	
Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2483.50	E	Peak	68.60	-6.38	62.22	74	-11.78	
2483.50	Е	Average	49.24	-6.38	42.86	54	-11.14	



Radiated Band Edge Measurement Result (802.11_HT20)

Operation Mode :			802.11	802.11n20 Test Date			2015/11/25	
	Fundament	al Frequenc	y: 2412 M	1Hz Temp. / H	Temp. / Humi. :		24.2 deg/ 62 RH	
	Operation E	Band:	BE CH	Low Test Eng	ineer :		Vito	
	EUT Pol. :		Н	Measure	ment Anter	nna Pol. :	Vertical	
	Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
	MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	2390.00	Е	Peak	72.62	-6.84	65.77	74	-8.23
	2390.00	Е	Average	50.20	-6.84	43.36	54	-10.64
	Operation Mode : 802.11n2 Fundamental Frequency : 2412 MH						2015/11/2	
	Operation E		BECH				24.2 deg/ 62 RH Vito	
	EUT Pol. :		H	0	ment Anter	nna Pol. :	Horizontal	
	Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
	MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	2390.00	Е	Peak	72.58	-6.84	65.74	74	-8.26
	2390.00	Е	Average	50.88	-6.84	44.04	54	-9.96



2483.50

Е

Average

-13.19

54

Operation N Fundament Operation E EUT Pol. :	al Frequenc	802.11 y : 2462 M BE CH H	1Hz Temp./I High Test Eng	Humi. :	nna Pol. :	2015/11/2 24.2 deg/ Vito Vertical	
Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	E	Peak	67.83	-6.38	61.45	74	-12.55
2483.50	E	Average	46.81	-6.38	40.43	54	-13.57
Operation N Fundament Operation E EUT Pol. : Freq.	al Frequenc	902.11 y : 2462 M BE CH H Detector Mode	1Hz Temp./I High Test Eng	Humi. :	nna Pol. : Actual FS	2015/11/2 24.2 deg/ Vito Horizontal Limit @3m	62 RH
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
(
2483.50	E	Peak	68.04	-6.38	61.66	74	-12.34

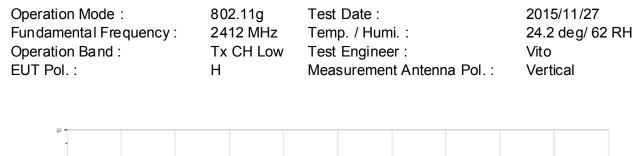
47.19

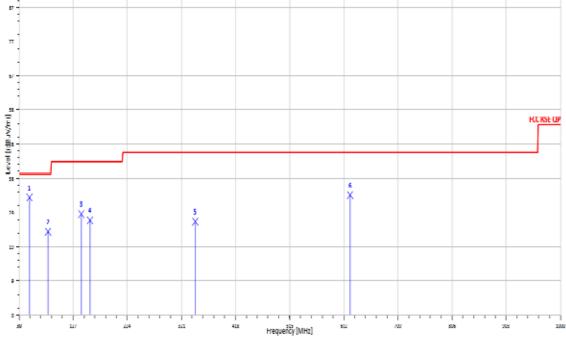
-6.38

40.81



Radiated Spurious Emission Measurement Result (802.11 g) **Below 1GHz Worst-Case Data:**





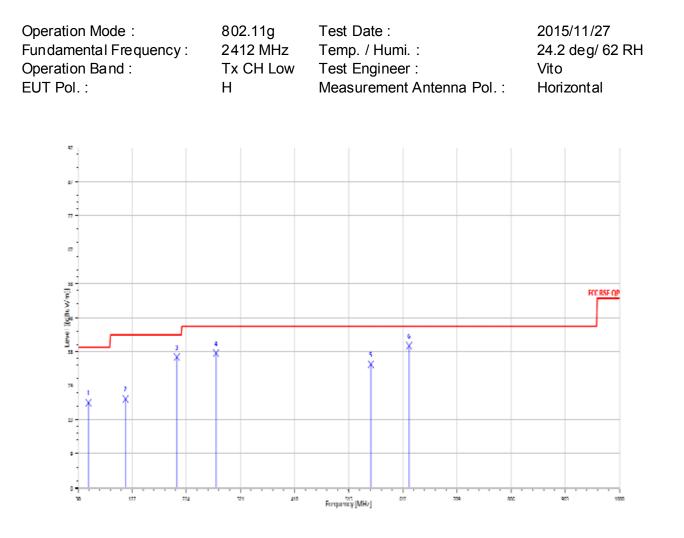
Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
48.43	S	Peak	56.94	-23.54	33.41	40	-6.59
82.38	S	Peak	51.52	-27.81	23.70	40	-16.30
141.55	S	Peak	51.62	-22.89	28.72	43.5	-14.78
157.07	S	Peak	49.04	-22.14	26.90	43.5	-16.60
346.22	S	Peak	46.88	-20.32	26.56	46	-19.44
623.64	S	Peak	48.89	-14.75	34.13	46	-11.87

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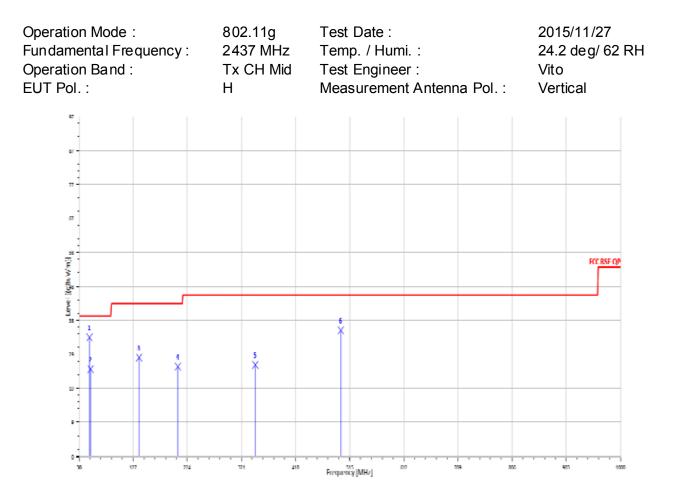


Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
48.43	S	Peak	47.71	-23.54	24.18	40	-15.82
115.36	S	Peak	50.39	-25.13	25.26	43.5	-18.24
207.51	S	Peak	62.40	-25.18	37.21	43.5	-6.29
277.35	S	Peak	60.36	-21.99	38.36	46	-7.64
554.77	S	Peak	51.41	-16.25	35.16	46	-10.84
623.64	S	Peak	55.19	-14.75	40.44	46	-5.56

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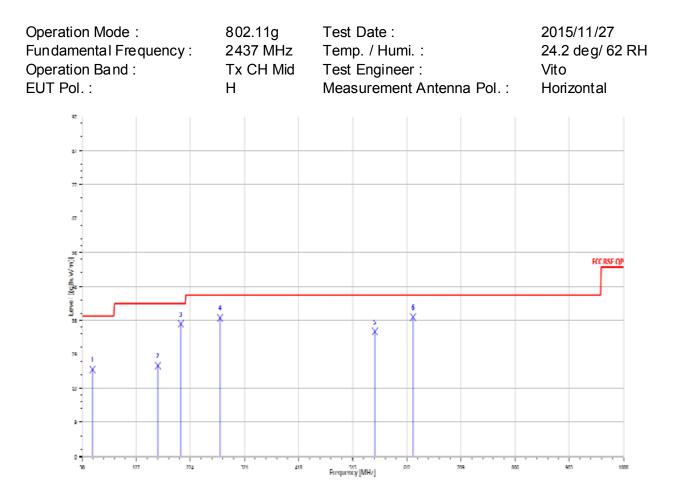
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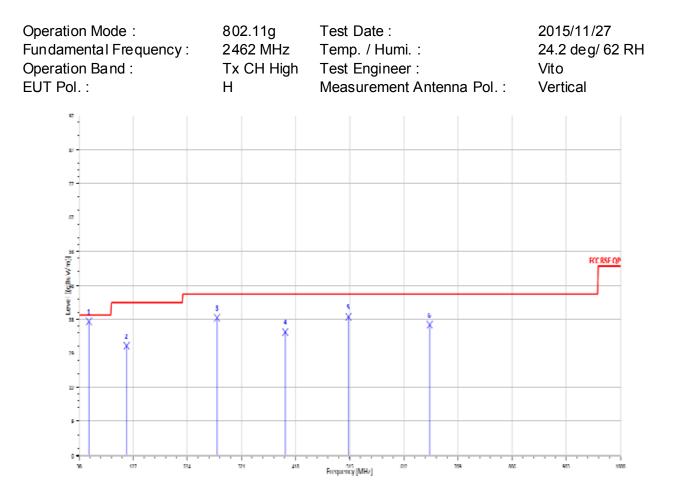
Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
48.43	S	Peak	57.44	-23.54	33.90	40	-6.10
50.37	S	Peak	48.63	-23.77	24.86	40	-15.14
137.67	S	Peak	51.55	-23.40	28.15	43.5	-15.35
207.51	S	Peak	50.75	-25.18	25.57	43.5	-17.93
346.22	S	Peak	46.37	-20.32	26.05	46	-19.95
499.48	S	Peak	53.30	-17.36	35.94	46	-10.06





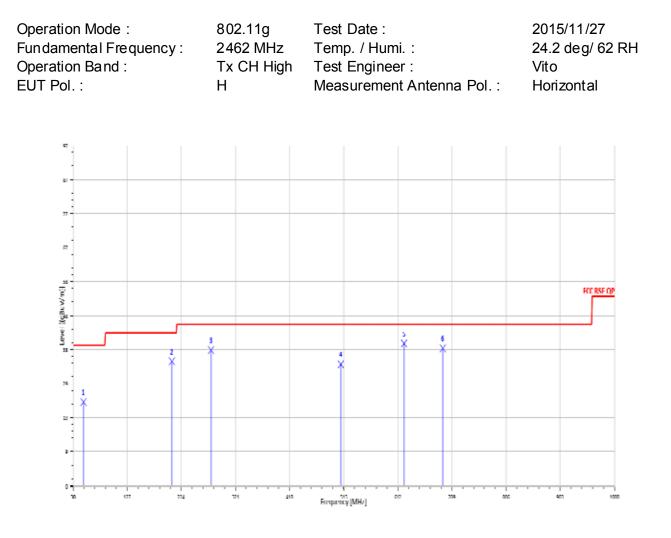
Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
48.43	S	Peak	48.28	-23.54	24.75	40	-15.25
165.80	S	Peak	48.71	-22.88	25.84	43.5	-17.66
207.51	S	Peak	62.97	-25.18	37.79	43.5	-5.71
277.35	S	Peak	61.48	-21.99	39.48	46	-6.52
554.77	S	Peak	51.83	-16.25	35.58	46	-10.42
623.64	S	Peak	54.46	-14.75	39.71	46	-6.29





Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
47.46	S	Peak	61.58	-23.41	38.17	40	-1.83
115.36	S	Peak	56.32	-25.13	31.19	43.5	-12.31
277.35	S	Peak	61.22	-21.99	39.23	46	-6.77
399.57	S	Peak	53.85	-18.73	35.12	46	-10.88
513.06	S	Peak	56.25	-16.75	39.49	46	-6.51
658.56	S	Peak	50.80	-13.60	37.20	46	-8.80



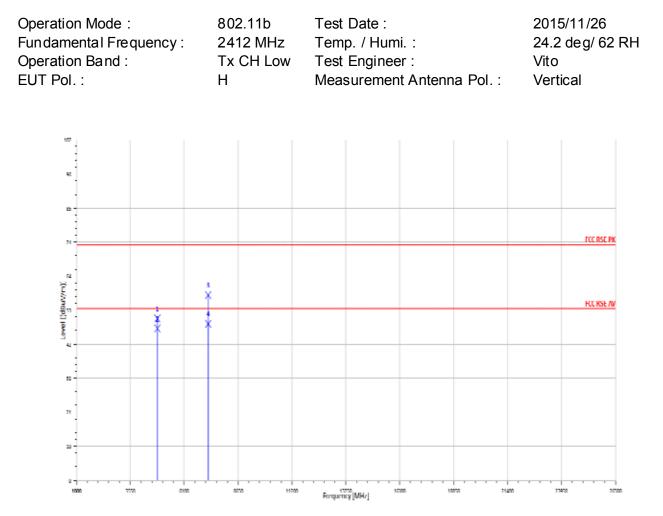


Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
48.43	S	Peak	47.37	-23.54	23.84	40	-16.16
207.51	S	Peak	60.63	-25.18	35.44	43.5	-8.06
277.35	S	Peak	60.65	-21.99	38.66	46	-7.34
510.15	S	Peak	51.48	-16.91	34.58	46	-11.42
623.64	S	Peak	55.28	-14.75	40.52	46	-5.48
692.51	S	Peak	52.50	-13.35	39.15	46	-6.85

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Radiated Spurious Emission Measurement Result (802.11 b) Above 1GHz Worst-Case Data:

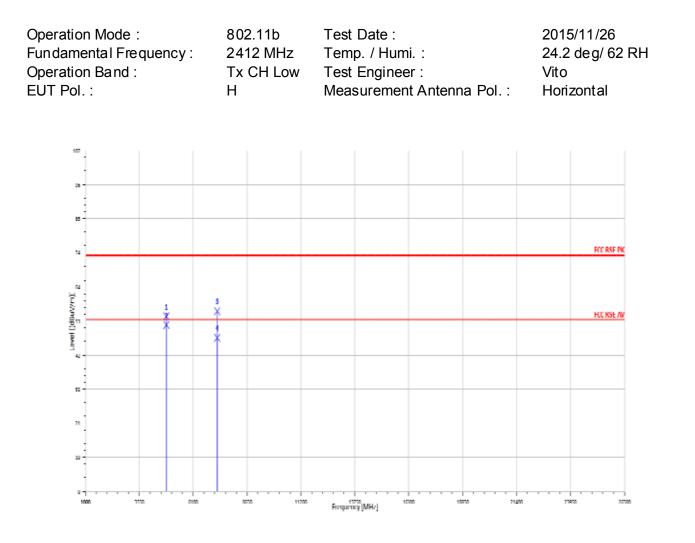


Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Peak	51.91	-1.04	50.87	74	-23.13
4824.00	Н	Average	48.79	-1.04	47.75	54	-6.25
7236.00	Н	Peak	52.60	5.63	58.23	74	-15.77
7236.00	Н	Average	43.57	5.63	49.20	54	-4.80

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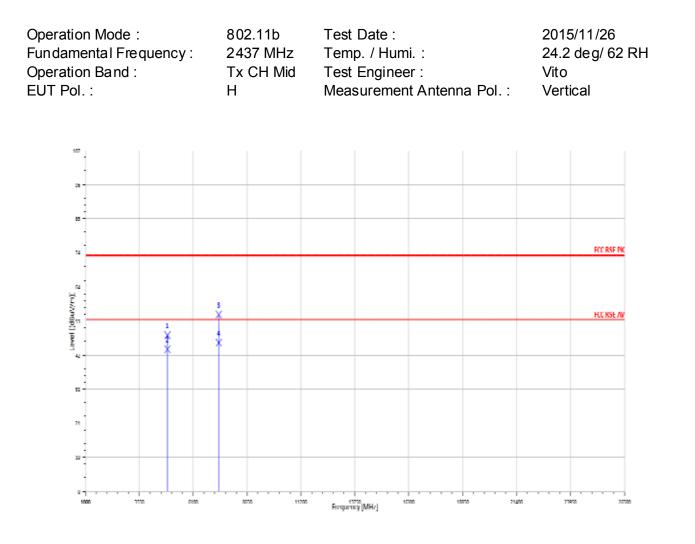




Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Peak	56.04	-1.04	55.00	74	-19.00
4824.00	Н	Average	53.35	-1.04	52.31	54	-1.69
7236.00	Н	Peak	51.03	5.63	56.66	74	-17.34
7236.00	Н	Average	42.64	5.63	48.27	54	-5.73

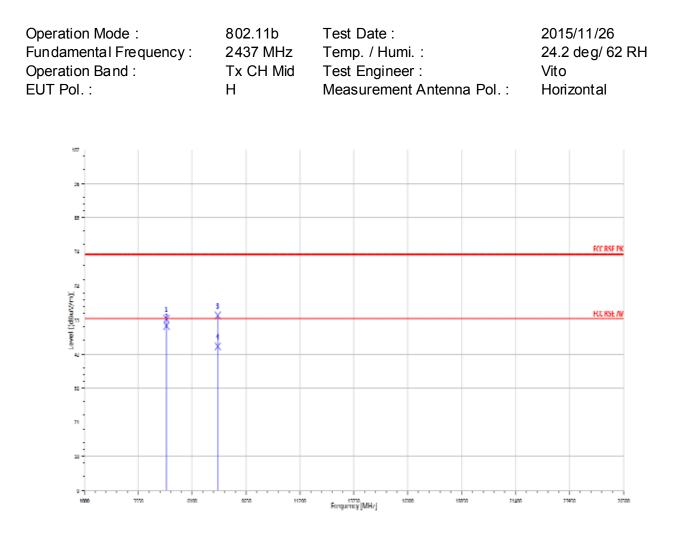
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Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Peak	49.81	-0.75	49.06	74	-24.94
4874.00	Н	Average	45.40	-0.75	44.65	54	-9.35
7311.00	Н	Peak	49.45	6.10	55.55	74	-18.45
7311.00	Н	Average	40.62	6.10	46.72	54	-7.28

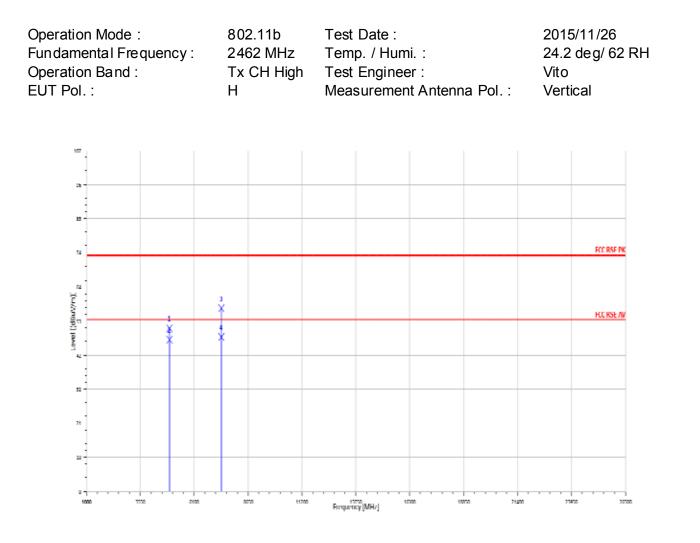




Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Peak	54.63	-0.75	53.88	74	-20.12
4874.00	Н	Average	52.46	-0.75	51.71	54	-2.29
7311.00	Н	Peak	48.89	6.10	54.99	74	-19.01
7311.00	Н	Average	39.15	6.10	45.25	54	-8.75

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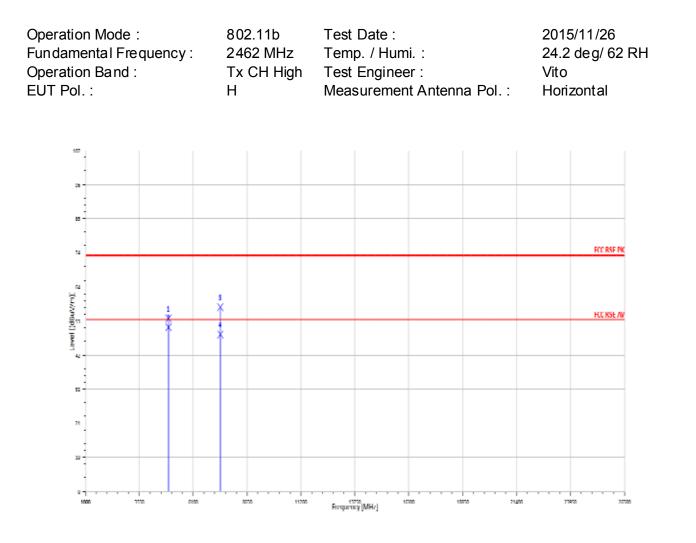




Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Н	Peak	51.84	-0.62	51.22	74	-22.78
4924.00	Н	Average	48.29	-0.62	47.67	54	-6.33
7386.00	Н	Peak	51.38	6.18	57.56	74	-16.44
7386.00	Н	Average	42.32	6.18	48.50	54	-5.50

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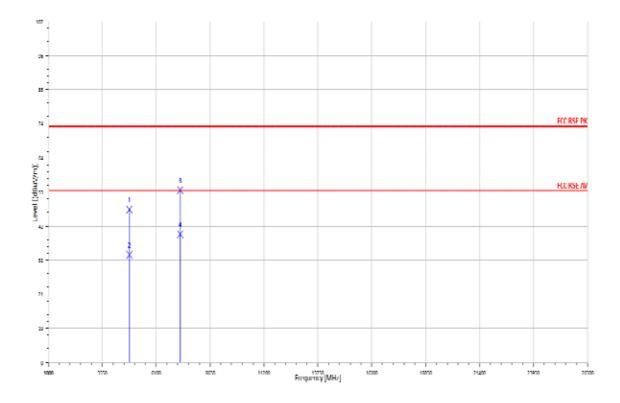
Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Н	Peak	54.97	-0.62	54.35	74	-19.65
4924.00	Н	Average	52.21	-0.62	51.59	54	-2.41
7386.00	Н	Peak	51.73	6.18	57.91	74	-16.09
7386.00	Н	Average	43.17	6.18	49.35	54	-4.65

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Radiated Spurious Emission Measurement Result (802.11 g)

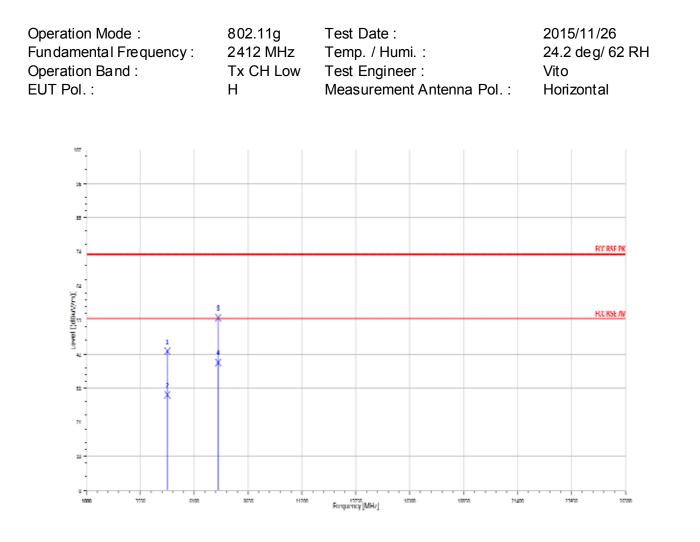
Operation Mode :	802.11g	Test Date :	2015/11/26
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	24.2 deg/ 62 RH
Operation Band :	Tx CH Low	Test Engineer :	Vito
EUT Pol. :	Н	Measurement Antenna Pol.:	Vertical



Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Peak	49.07	-1.04	48.03	74	-25.97
4824.00	Н	Average	34.85	-1.04	33.81	54	-20.19
7236.00	Н	Peak	48.55	5.63	54.18	74	-19.82
7236.00	Н	Average	34.64	5.63	40.27	54	-13.73

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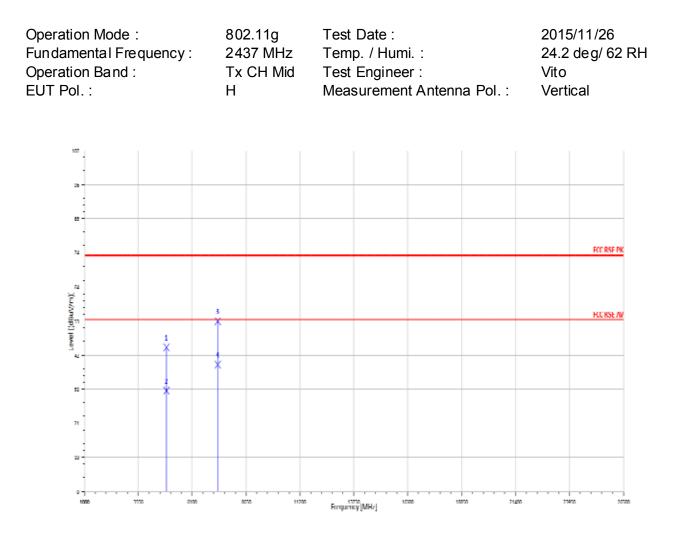




Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Peak	44.78	-1.04	43.74	74	-30.26
4824.00	Н	Average	31.06	-1.04	30.02	54	-23.98
7236.00	Н	Peak	48.65	5.63	54.28	74	-19.72
7236.00	Н	Average	34.52	5.63	40.15	54	-13.85

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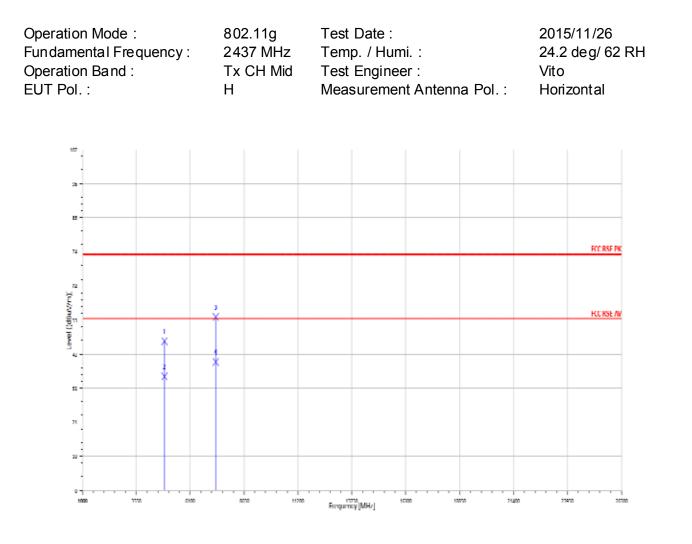




Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Peak	46.00	-0.75	45.25	74	-28.75
4874.00	Н	Average	32.36	-0.75	31.61	54	-22.39
7311.00	Н	Peak	47.40	6.10	53.50	74	-20.50
7311.00	Н	Average	33.73	6.10	39.83	54	-14.17

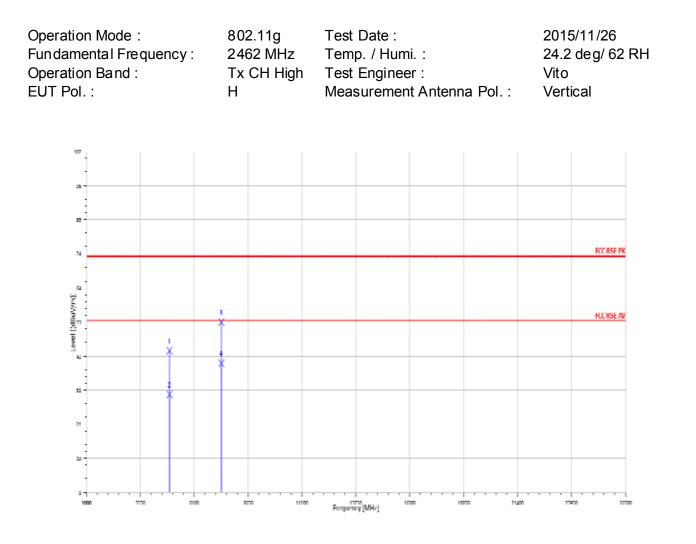
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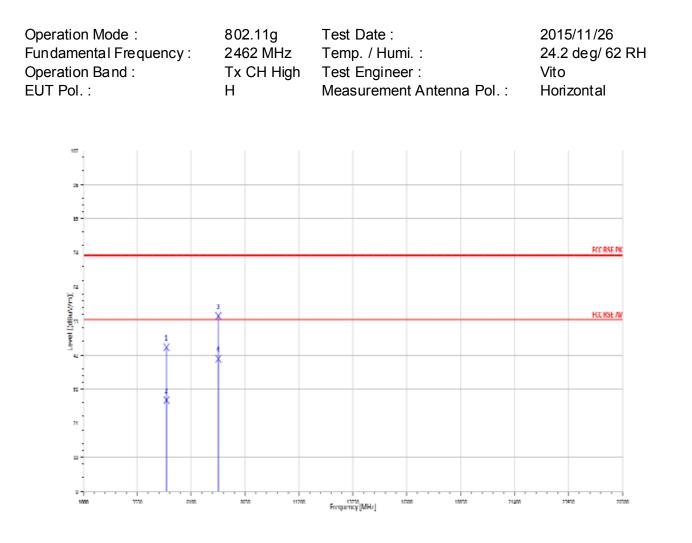
Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Peak	47.64	-0.75	46.89	74	-27.11
4874.00	Н	Average	36.53	-0.75	35.78	54	-18.22
7311.00	Н	Peak	48.37	6.10	54.47	74	-19.53
7311.00	Н	Average	34.26	6.10	40.36	54	-13.64





Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Н	Peak	45.16	-0.62	44.54	74	-29.46
4924.00	Н	Average	31.35	-0.62	30.73	54	-23.27
7386.00	Н	Peak	47.39	6.18	53.57	74	-20.43
7386.00	Н	Average	34.36	6.18	40.54	54	-13.46





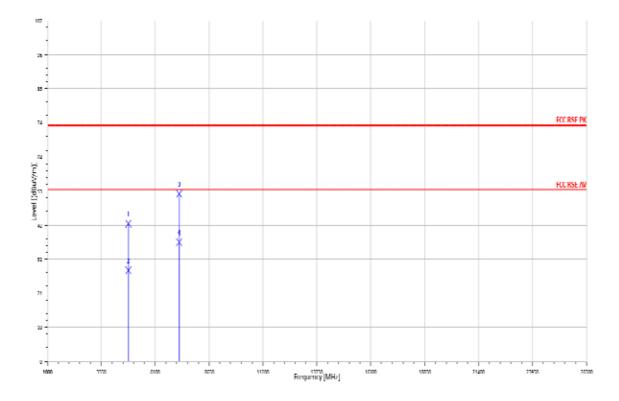
Freq.	Note	Detector Mode	Spectum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Н	Peak	45.89	-0.62	45.27	74	-28.73
4924.00	Н	Average	29.28	-0.62	28.66	54	-25.34
7386.00	Н	Peak	48.96	6.18	55.14	74	-18.86
7386.00	Н	Average	35.47	6.18	41.65	54	-12.35

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Radiated Spurious Emission Measurement Result (802.11_HT20)

Operation Mode :	802.11n20	Test Date :	2015/11/27
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	24.2 deg/ 62 RH
Operation Band :	Tx CH Low	Test Engineer :	Vito
EUT Pol. :	Н	Measurement Antenna Pol. :	Vertical



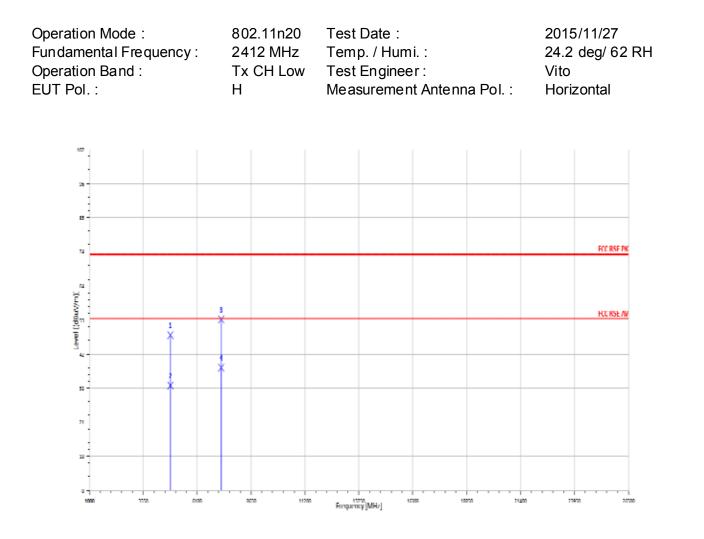
Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Peak	44.32	-1.04	43.28	74	-30.72
4824.00	Н	Average	29.62	-1.04	28.58	54	-25.42
7236.00	Н	Peak	47.04	5.63	52.67	74	-21.33
7236.00	Н	Average	31.81	5.63	37.44	54	-16.56

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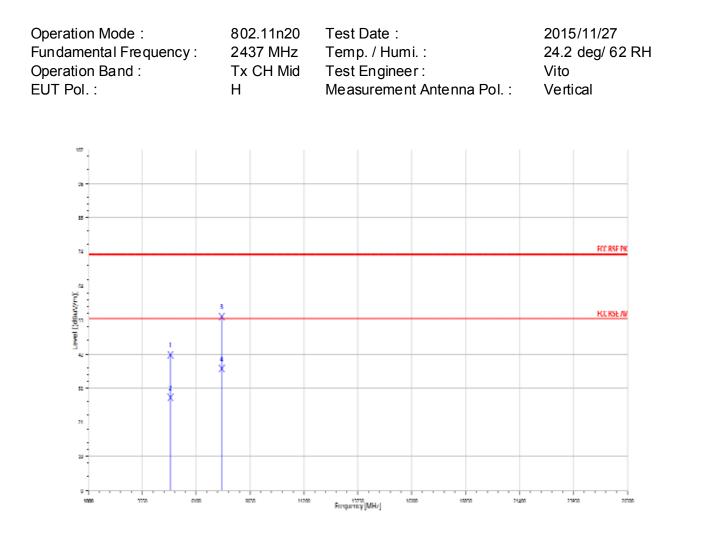




Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Peak	49.85	-1.04	48.81	74	-25.19
4824.00	Н	Average	34.00	-1.04	32.96	54	-21.04
7236.00	Н	Peak	48.13	5.63	53.76	74	-20.24
7236.00	Н	Average	32.93	5.63	38.56	54	-15.44

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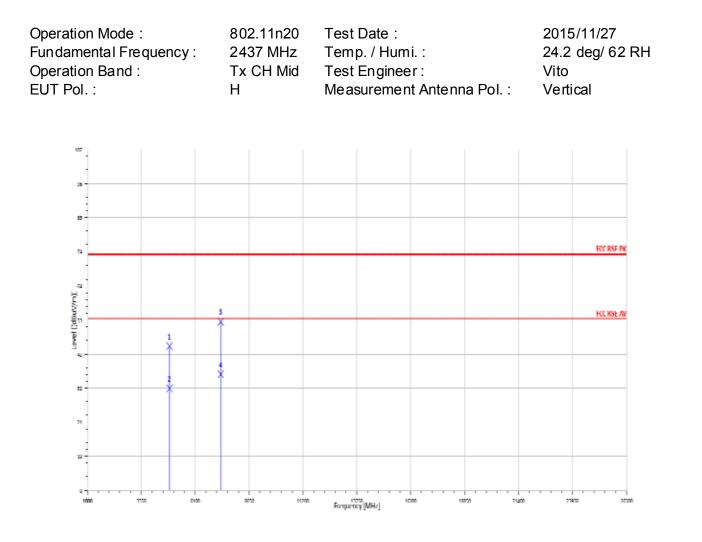




Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Peak	43.37	-0.75	42.62	74	-31.38
4874.00	Н	Average	29.92	-0.75	29.17	54	-24.83
7311.00	Н	Peak	48.51	6.10	54.61	74	-19.39
7311.00	Н	Average	32.17	6.10	38.27	54	-15.73

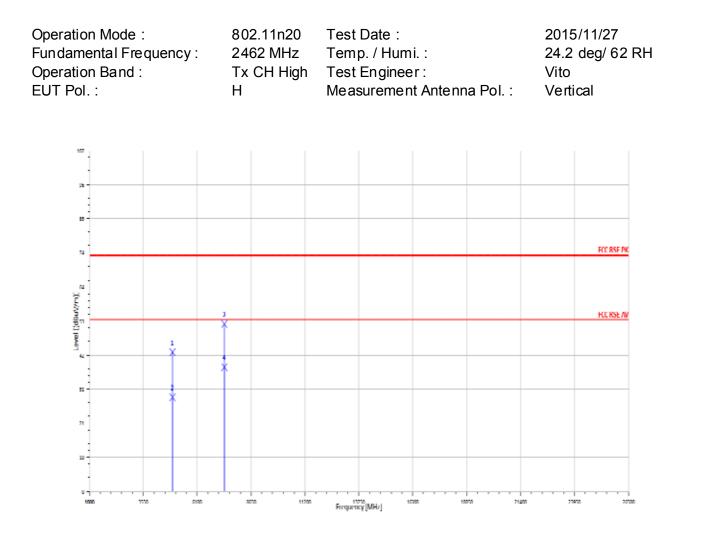
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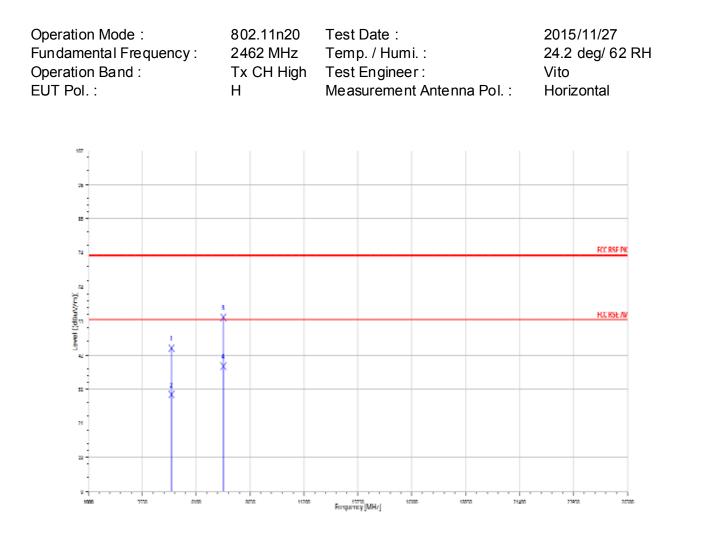
Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Peak	43.37	-0.75	42.62	74	-31.38
4874.00	Н	Average	29.92	-0.75	29.17	54	-24.83
7311.00	Н	Peak	48.51	6.10	54.61	74	-19.39
7311.00	Н	Average	32.17	6.10	38.27	54	-15.73





Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Н	Peak	44.36	-0.62	43.74	74	-30.26
4924.00	Н	Average	30.18	-0.62	29.56	54	-24.44
7386.00	Н	Peak	46.43	6.18	52.61	74	-21.39
7386.00	Н	Average	32.87	6.18	39.05	54	-14.95





Freq.	Note	Detector	Spectum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Н	Peak	45.63	-0.62	45.01	74	-28.99
4924.00	Н	Average	31.06	-0.62	30.44	54	-23.56
7386.00	Н	Peak	48.54	6.18	54.72	74	-19.28
7386.00	Н	Average	33.15	6.18	39.33	54	-14.67



12 PEAK POWER SPECTRAL DENSITY

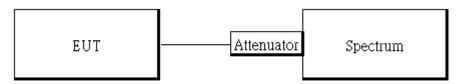
12.1 Standard Applicable

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 C					CAL DUE.			
ТҮРЕ		NUMBER	NUMBER	CAL.				
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	04/14/2015	04/13/2016			
DC Block	PASTERNACK	PE8210	RF29	12/19/2014	12/18/2015			
Attenuator	WOKEN	218FS-10	RF23	12/19/2014	12/18/2015			

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.
- 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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12.5 Measurement Result

802.11b

Frequency (MHz)	RF Power Density (dBm)	Maximum Limit (dBm)	Result	
2412	-13.61	8	PASS	
2437	-15.23	8	PASS	
2462	-16.20	8	PASS	

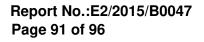
802.11g

Frequency (MHz)	RF Power Density (dBm)	Maximum Limit (dBm)	Result
2412	-15.59	8	PASS
2437	-16.23	8	PASS
2462 -17.04		8	PASS

802.11n 20M

Frequency (MHz)	RF Power	Maximum		
	Density	Limit	Result	
	(dBm)	(dBm)		
2412	-15.47	8	PASS	
2437	-16.28	8	PASS	
2462	-16.77	8	PASS	

*Refer to next page for plots





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



Power Spectral Density Test Plot (CH-Mid)



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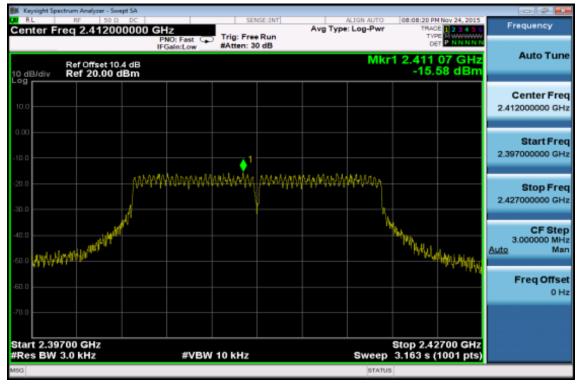


Power Spectral Density Test Plot (CH-High)



802.11g

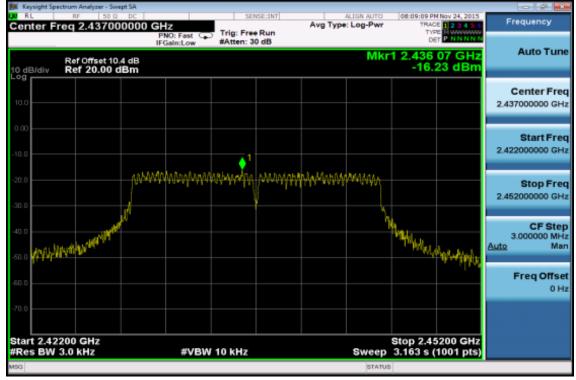
Power Spectral Density Test Plot (CH-Low)



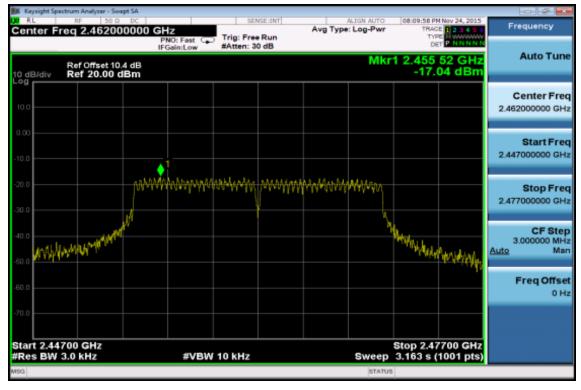
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Power Spectral Density Test Plot (CH-Mid)



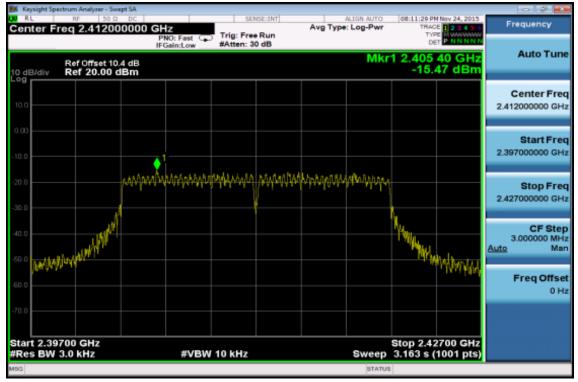
Power Spectral Density Test Plot (CH-High)



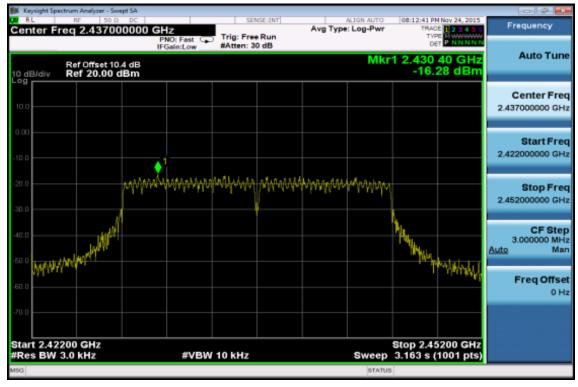
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802.11n HT20 Power Spectral Density Test Plot (CH-Low)



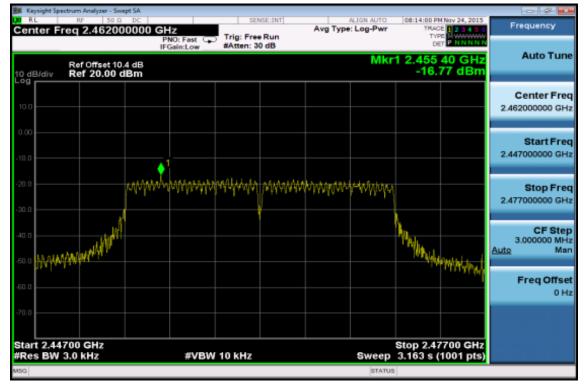
Power Spectral Density Test Plot (CH-Mid)



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Power Spectral Density Test Plot (CH-High)



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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.

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.

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.

~ End of Report ~

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