

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

	OF
Product Name:	7-inch Rugged Tablet
Brand Name:	Pioneerpos
Marketing Name:	DASH 7'' Robust Tablet PC
Model No.:	DASH7E1
Model Difference:	N/A
FCC ID:	CPOD7E1-LTE
Report No.:	ER/2015/40016
Issue Date:	Jul. 09, 2015
FCC Rule Part:	§15.247, Cat: DTS
Prepared for:	Pioneer POS Solution, Inc. 238 Benton Ct., City of Industry, CA 91789
Prepared by:	SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803
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FCC ID: CPOD7E1-LTE

Report No.: ER/2015/40016 Issue Date: Jul. 09, 2015 Page: 2 of 114

VERIFICATION OF COMPLIANCE

Applicant:	Pioneer POS Solution, Inc. 238 Benton Ct., City of Industry, CA 91789
Product Name:	7-inch Rugged Tablet
Brand Name:	Pioneerpos
Marketing Name:	DASH 7" Robust Tablet PC
Model No.:	DASH7E1
Model Difference:	N/A
FCC ID:	CPOD7E1-LTE
Report Number:	ER/2015/40016
Date of test:	Apr. 02, 2015 ~ Jul. 03, 2015
Date of EUT Received:	Apr. 02, 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 Tseng	Date	Jul. 09, 2015
-	Marcus Tseng / Engineer		
Prepared By:	Tiffany Kao	Date	Jul. 09, 2015
	Tiffany Kao / Clerk Jim Chang Jim Chang / Asst. Manager	Date	Jul. 09, 2015

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Revision History

Report Number	Revision	Description	Issue Date
ER/2015/40016	Rev.00	Initial creation of document	Jul. 09, 2015

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FCC ID: CPOD7E1-LTE

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GENERAL INFORMATION 1

Product description 1.1

General:

Product Name:	7-inch Rugged Tablet		
Brand Name:	Pioneerpos	5	
Marketing Name:	DASH 7"	Robust Tablet PC	
Model No.:	DASH7E1		
Model Difference:	N/A		
Product SW/HW version:	20150128 / A0.3_0_0		
Radio SW/HW version:	N/A		
Test SW Version:	N/A		
RF power setting in TEST SW:	N/A		
	7.4Vdc from Rechargeable Li-ion Battery or 12V from AC/DC Adapter		
Power Supply:	Battery: Model No.: J1067, Supplier: JHT		
	Adapter:Model No.: LTE-24E-S2-2, Supplier: Li Tone Electronics Co., Ltd		

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WLAN 2.4GHz:

Wi-Fi	Frequency Range	Channels	Rated Power	Modulation Technology	
11b/g	2412-2462	11	b: 15.56dBm g: 19.12dBm	DSSS, OFDM	
11n	HT20 2412-2462	11	HT20: 19.81dBm (MIMO Chain 0+1)	OFDM	
11n	HT40 2422-2452	7	HT40: 18.80dBm (MIMO Chain 0+1)	OFDM	
Antenna Des	Antenna Designation:		PIFA Antenna, Main: Gain: 4.92dBi Aux: Gain: 0.87dBi		
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 144Mbps 802.11 n_40MHz: up to 300Mbps			

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Product Feature of Equipment Under Test 1.2

The equipment under Test (Hereafter Called: EUT) is 7" Rugged Tablet supporting, GPRS / WCDMA / CDMA / LTE,

Wi-Fi 802.11abgn, Bluetooth with GPS and NFC features, and below is details of information.

Product Feature			
Product Name:	7-inch Rugged Tablet		
Brand Name:	Pioneerpos		
Marketing Name:	DASH 7" Robust Tablet PC		
Model No.:	DASH7E1		
Model Difference:	N/A		
FCC ID	CPOD7E1-LTE		
GPRS Operating Band(s)	GPRS 850/1900MHz		
GPRS / EGPRS Multi Slot Class	GPRS Class 10 / Class 12		
CDMA / EVDO	BC0 / BC1 / BC10		
WCDMA Operating Band(s)	FDD Band II / IV / V		
WCDMA Rel. Version	Rel.8		
LTE Operating Band(s)	FCC Band 2 / 4 / 5 / 13 / 17 / 25		
LTE Rel. Version	Rel.9		
Wi-Fi Specification	802.11a/b/g/n		
Bluetooth Version	V4.0 dual mode +EDR		
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.
- 3. 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

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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2 SYSTEM TEST CONFIGURATION

EUT Configuration 2.1

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.

EUT Exercise 2.2

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 Ouasi-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 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.

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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 1.1dB and 10dB attenuator.

Single mode offset = RF cable loss (dB)+ attenuation factor(dB) = 11.1(dB)

N20 MIMO mode offset

= RF cable loss (dB)+ attenuation factor(dB)+ 10 log(NANT) dB+ duty factor=14.1(dB)

N40 MIMO mode offset

= RF cable loss (dB)+ attenuation factor(dB)+ 10 log(NANT) dB+ duty factor=14.1(dB)

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Configuration of Tested System 2.5

Fig. 2-1 Radiated Emission & Conducted (Antenna Port) Configuration

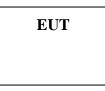


Fig. 2-2 AC Power Line Conducted Emission

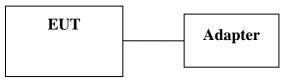


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A

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SUMMARY OF TEST RESULTS 3

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 4

Operated in 2400 ~ 2483.5MHz Band 4.1

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		

7 channels are provided for 802.11n HT40

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

4.2 The Worst Test Modes and Channel Details

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

RADIA I ED ENII55I	ION IESI:								
RADIATED EMISSION TEST (BELOW 1 GHz)									
MODE	MODE AVAILABLE TESTED CHANNEL TESTED CHANNEL CHANNEL CHANNEL MODULATION RATE (Mbps)								
802.11g	802.11g 1 to 11 1,6,11 OFDM 6 MAIN								
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 8	MIMO				

BADIATED EMISSION TEST

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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	MCS 8	MIMO	
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 8	MIMO	

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 H position was reported.

ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST							
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT		
802.11b	1 to 11	1, 6, 11	DSSS	1	MAIN		
802.11g	1 to 11	1, 6, 11	OFDM	6	MAIN		
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS 8	MIMO		
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 8	MIMO		

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5 **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
Magnumentangenteinter	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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CONDUCTED EMISSION TEST 6

Standard Applicable 6.1

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	ne logarithm of the frequency in the ra	ange 0.15 MHz to 0.50 MHz.			

Measurement Equipment Used 6.2

Conducted Emission Test Site								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
ТҮРЕ		NUMBER	NUMBER	CAL.				
EMI Test Receiver	R&S	ESCI7	100760	05/04/2014	05/03/2015			
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			

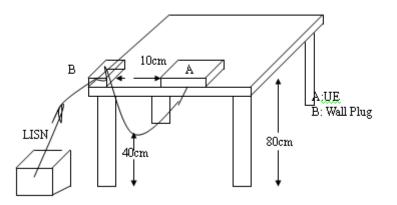
6.3 EUT Setup

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



6.5 **Measurement Procedure**

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

Measurement Result 6.6

Note: Refer to next page for measurement data and plots. Note2: The * reveals the worst-case results that closet to the limit

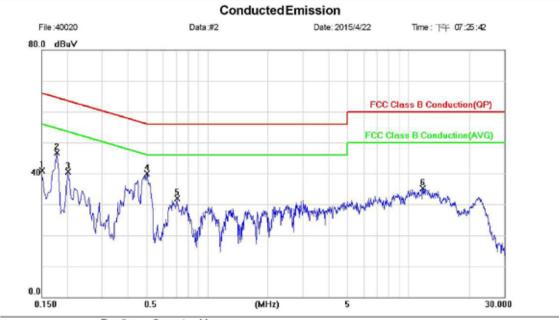
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AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	Apr. 22, 2015
Temperature:	24	Humidity:	66 %	Test By:	Marcus
		·		Phase:	L1

Site ConductionRoom	Phase:	L1	Temperature: 24 °C
Limit: FCC Class B Conduction(QP)	Power:	AC 120V/60Hz	Humidity: 66%
Mode: Operation			
Note: Adapter:LTE24E-S2-2			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1		0.1500	40.84	0.05	40.89	66.00	-25.11	peak		
2		0.1780	46.69	0.06	46.75	64.58	-17.83	peak		
3		0.2020	40.51	0.06	40.57	63.53	-22.96	peak		
4	•	0.5020	39.79	0.08	39.87	56.00	-16.13	peak		
5		0.7060	31.80	0.09	31.89	56.00	-24.11	peak		
6		11.7460	34.79	0.38	35.17	60.00	-24.83	peak		

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0.150

FCC ID: CPOD7E1-LTE

Operation Mode:	Operation mode			Test Date:	Apr. 22, 2015
Temperature:	24	Humidity:	66 %	Test By:	Marcus
				Phase:	Ν

Power:	AC 120V/60Hz	Humidity: 66%
ConductedEm	nission	
41	Date: 2015/4/22	Time: 下午 07:24:39
		ConductedEmission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1		0.1580	44.67	0.05	44.72	65.57	-20.85	peak		
2		0.1740	45.55	0.05	45.60	64.77	-19.17	peak		
3		0.2060	41.01	0.06	41.07	63.37	-22.30	peak		
4		0.2140	39.17	0.06	39.23	63.05	-23.82	peak		
5	*	0.4900	37.61	0.07	37.68	56.17	-18.49	peak		
6		10.5420	33.70	0.35	34.05	60.00	-25.95	peak		

(MHz)

5

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0.5

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30.000



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:

- Set span = Zero1.
- 2. RBW = 8MHz
- 3. VBW = 8MHz,
- 4. Detector = Peak

Duty Cycle:

	Duty Cycle	Duty Factor (dB)
802.11b	99%	0.04
802.11g	95.69%	0.19
802.11n_20	90.74%	0.42
802.11n_40	82.78%	0.82

Duty Cycle Factor: $10 * \log (1/0.99) = 0.04$ Duty Cycle Factor: $10 * \log (1/0.9569) = 0.19$

Duty Cycle Factor: $10 * \log (1/0.9074) = 0.42$

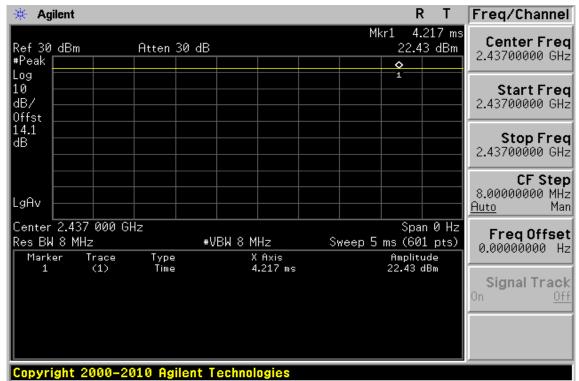
Duty Cycle Factor: $10 * \log (1/0.8278) = 0.82$

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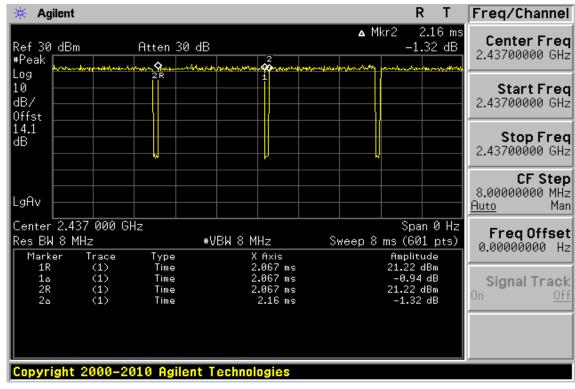


7.1 DUTY CYCLE TEST SIGNAL Measurement Result

802.11 b



802.11 g

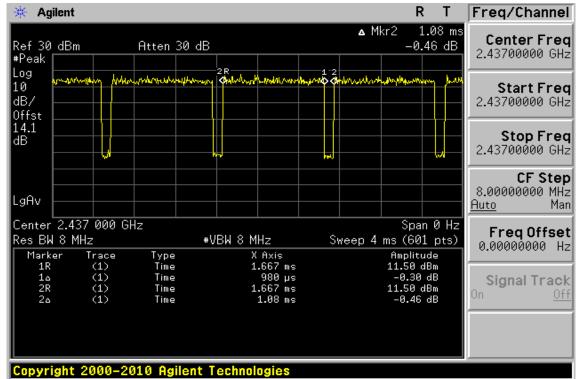


Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

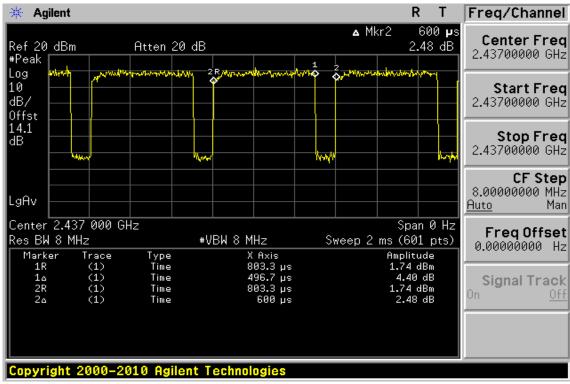
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802.11 n 20 MHz



802.11 n 40 MHz



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8 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.

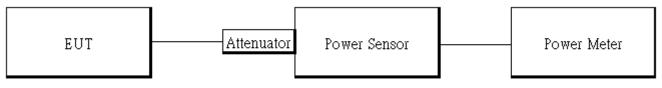
Note: The antenna gain is granter than 6dBi in MIMO mode the limit reduce as below: Directional gain = gain of antenna element + 10 log (# of TX antenna elements) Effective Legacy Gain (dBi) = 4.92+3.01=7.93dBi Limit: 30dBm - (7.93- 6dBi) = 28.07dBm

8.2 Measurement Equipment Used

	Conducted Emission Test Site									
EQUIPMENT MFR		MODEL	SERIAL	LAST	CAL DUE.					
ТҮРЕ		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. 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.
- 6. 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	13.93	24.72	1 Watt = 30 dBm
6	2437	1	13.64	23.12	1 Watt = 30 dBm
11	2462	1	15.56	35.97	1 Watt = 30 dBm

СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
1	2412	1	13.50	22.39	1 Watt = 30 dBm
6	2437	1	13.00	19.95	1 Watt = 30 dBm
11	2462	1	12.62	18.28	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	16.02	39.99	1 Watt = 30 dBm
6	2437	6	19.12	81.66	1 Watt = 30 dBm
11	2462	6	15.35	34.28	1 Watt = 30 dBm

СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
1	2412	6	6.77	4.75	1 Watt = 30 dBm
6	2437	6	12.60	18.20	1 Watt = 30 dBm
11	2462	6	5.83	3.83	1 Watt = 30 dBm

802.11n HT20 (MIMO)

	Encourses	DATA	Peak Outout Power (dBm)		TOTAL	TOTAL	REQUIRED	
СН	Frequency (MHz)	RATE	CHAIN 0	CHAIN 1	POWER (dBm)	POWER (mW)	LIMIT (dBm)	RESULT
1	2412	MCS8	15.11	17.66	19.58	90.778	28.07 dBm	PASS
6	2437	MCS8	14.98	17.28	19.29	84.934	28.07 dBm	PASS
11	2462	MCS8	14.52	18.29	19.81	95.767	28.07 dBm	PASS

	Frequency	ПАТА	Avg. Outout Power (dBm)		TOTAL	TOTAL	REQUIRED	
СН	Frequency (MHz)	DATA RATE	CHAIN 0	CHAIN 1	POWER (dBm)	POWER (mW)	LIMIT (dBm)	RESULT
1	2412	MCS8	7.09	5.81	9.51	8.927	28.07 dBm	PASS
6	2437	MCS8	7.45	5.25	9.50	8.909	28.07 dBm	PASS
11	2462	MCS8	7.66	4.81	9.48	8.861	28.07 dBm	PASS

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802.11n_HT40	(MIMO)
--------------	--------

СН	Frequency (MHz)	DATA RATE	Peak Outout Power (dBm)		TOTAL	TOTAL	REQUIRED	
			CHAIN 0	CHAIN 1	POWER (dBm)	POWER (mW)	LIMIT (dBm)	RESULT
3	2422	MCS8	12.84	15.06	17.10	51.294	28.07 dBm	PASS
6	2437	MCS8	13.88	17.11	18.80	75.839	28.07 dBm	PASS
9	2452	MCS8	12.66	16.18	17.78	59.946	28.07 dBm	PASS

	CH Frequency (MHz)	DATA RATE	Avg. Outout Power (dBm)		TOTAL	TOTAL	REQUIRED	
СН			CHAIN 0	CHAIN 1	POWER (dBm)	POWER (mW)	LIMIT (dBm)	RESULT
3	2422	MCS8	5.29	3.59	7.53	5.666	28.07 dBm	PASS
6	2437	MCS8	7.11	4.83	9.13	8.181	28.07 dBm	PASS
9	2452	MCS8	6.15	2.88	7.83	6.062	28.07 dBm	PASS

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

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9 **6dB BANDWIDTH**

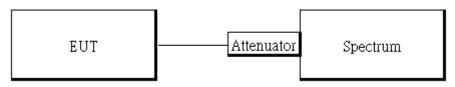
9.1 **Standard Applicable**

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	Agilent	E4446A	MY51100003	01/29/2015	01/28/2016		
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016		
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016		

9.3 **Test Set-up**



Measurement Procedure 9.4

- 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 = 30MHz/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)						
802.11b								
2412	8578	> 500	PASS					
2437	2437 8622		PASS					
2462	8151	> 500	PASS					
802.11g								
2412	15442	> 500	PASS					
2437	2437 15660		PASS					
2462	15762	> 500	PASS					
	802.11n_H	T20 (Main)						
2412	15455	> 500	PASS					
2437	14488	> 500	PASS					
2462	15341	> 500	PASS					
	802.11n_HT20 (Aux)							
2412	15740	> 500	PASS					
2437	15171	> 500	PASS					
2462	14157	> 500	PASS					
802.11n_HT40 (Main)								
2422	36150	> 500	PASS					
2437	2437 36028		PASS					
2452	2452 36165		PASS					
802.11n_HT40 (Aux)								
2422	36073	> 500	PASS					
2437	36180	> 500	PASS					
2452	36175	> 500	PASS					

* Note: The arrow "->" reveals X decibel level *Refer to next page for plots

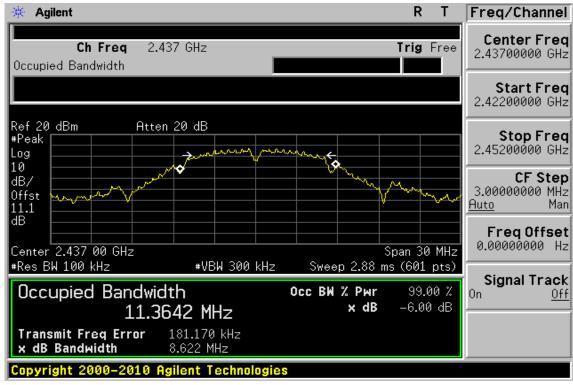
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802.11b 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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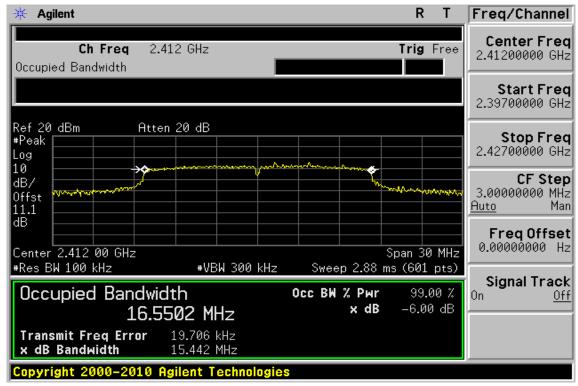


6dB Band Width Test Data CH-High



802.11g

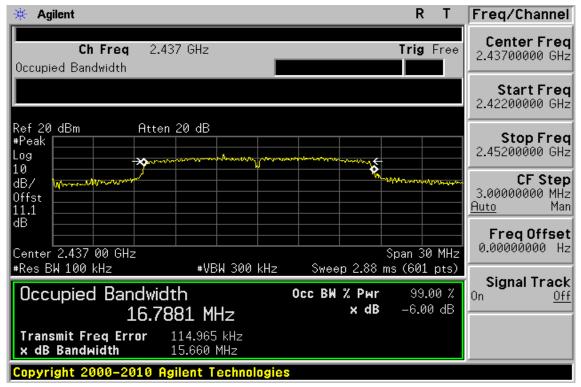
6dB Band Width Test Data CH-Low



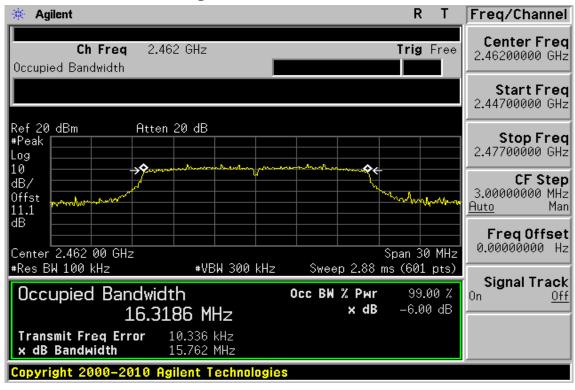
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6dB Band Width Test Data CH-Mid



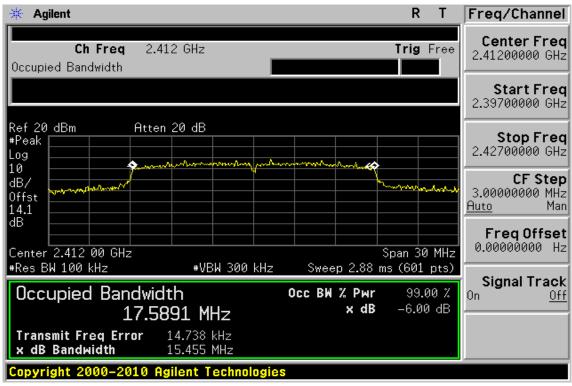
6dB Band Width Test Data CH-High



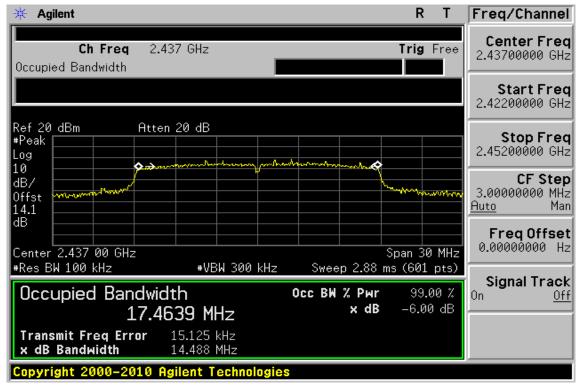
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802.11n 20M (Main) 6dB Band Width Test Data CH-Low



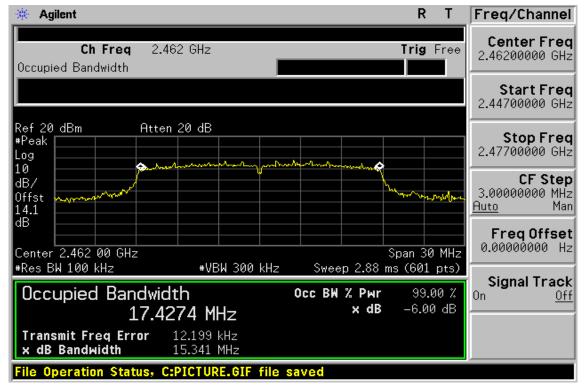
6dB Band Width Test Data CH-Mid



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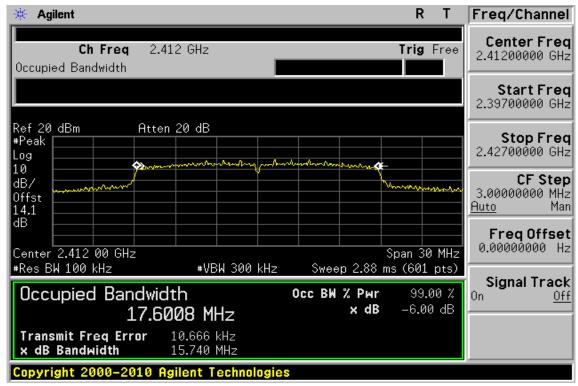


6dB Band Width Test Data CH-High



802.11n 20M (Aux)

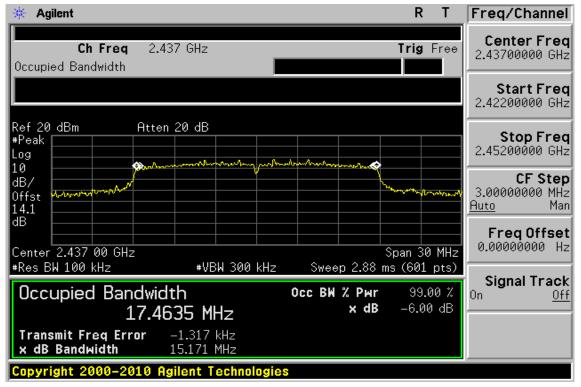
6dB Band Width Test Data CH-Low



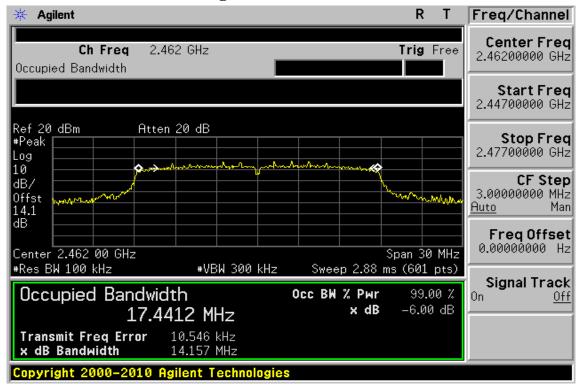
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6dB Band Width Test Data CH-Mid



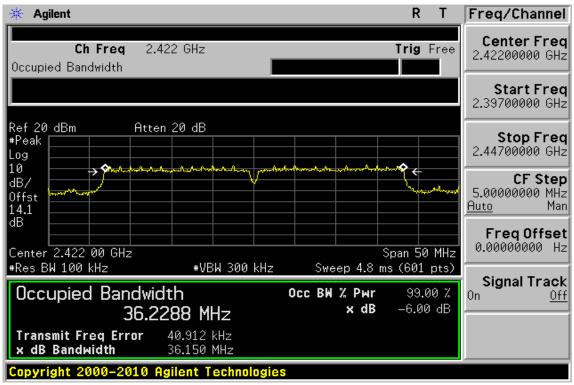
6dB Band Width Test Data CH-High



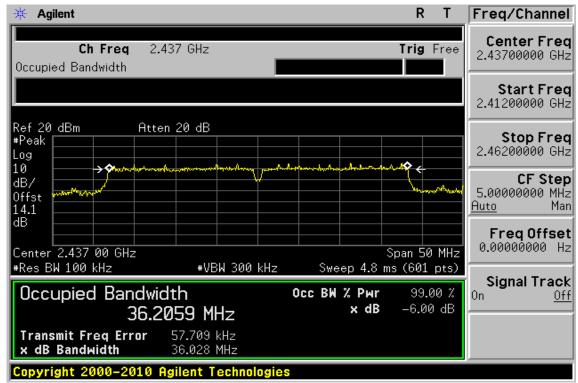
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802.11 n 40M (Main) 6dB Band Width Test Data CH-Low



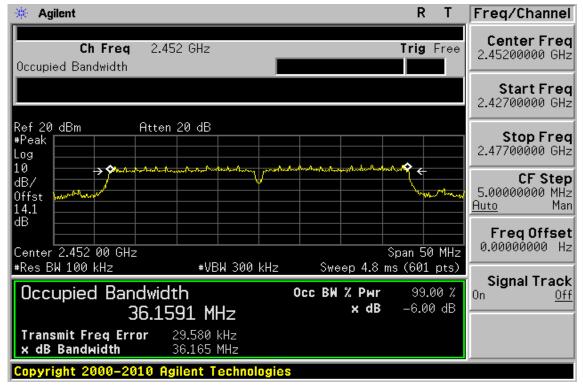
6dB Band Width Test Data CH-Mid



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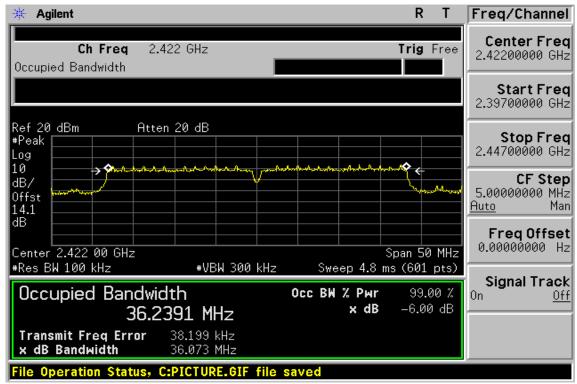


6dB Band Width Test Data CH-High



802.11 n 40M (Aux)

6dB Band Width Test Data CH-Low

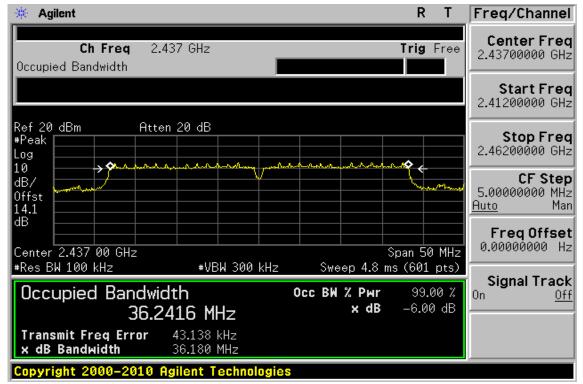


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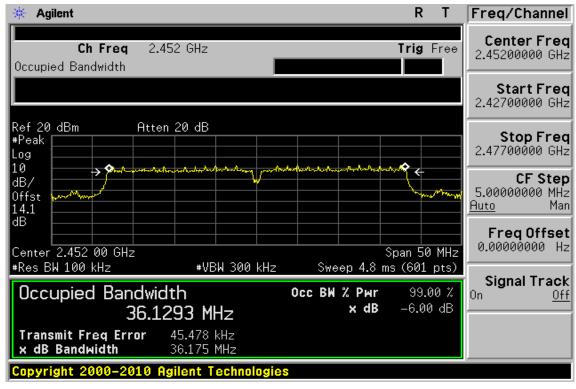
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6dB Band Width Test Data CH-Mid



6dB Band Width Test Data CH-High



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10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

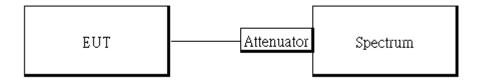
10.1 Standard Applicable

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	MFR	SERIAL	LAST	CAL DUE.				
ТҮРЕ		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=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
- 6. Mark the highest reading of the emission as the reference level measurement.
- 7. Set DL as the limit = reading on marker 1 20 dBm
- 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.
- 802.11n MIMO mode: offset is set following "measure and add 10 Log (N)" on spectrum to measure 9. for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=2 for this given application.
- 10. 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 = 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. 802.11n MIMO mode: offset is set following "measure and add 10 Log (N)" on spectrum to measure for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=2 for this given application.
- 7. Repeat above procedures until all default test channel measured were complete.

10.4 Measurement Result

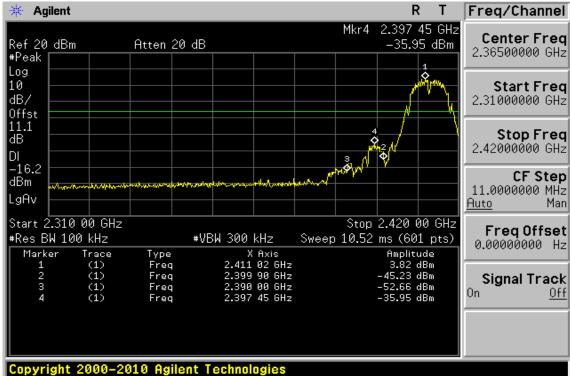
Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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







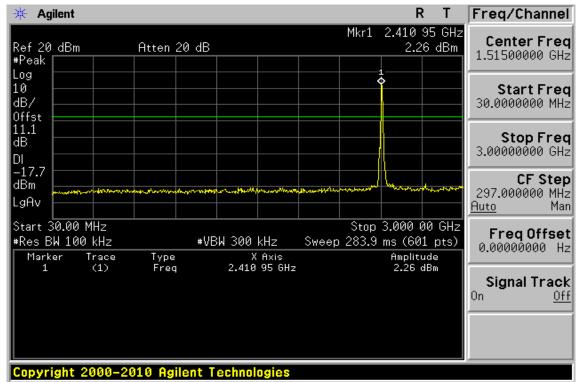
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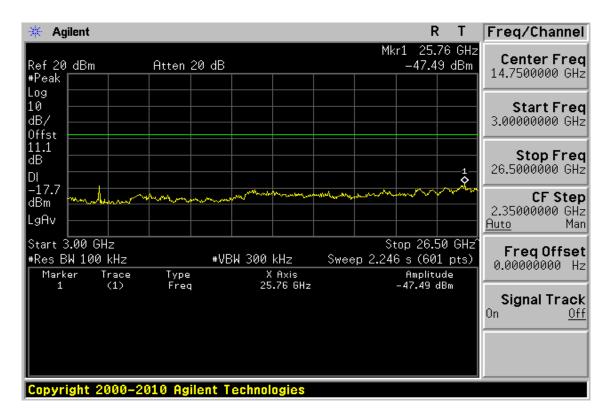
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802.11b

Spurious Emission Test Data CH-Low

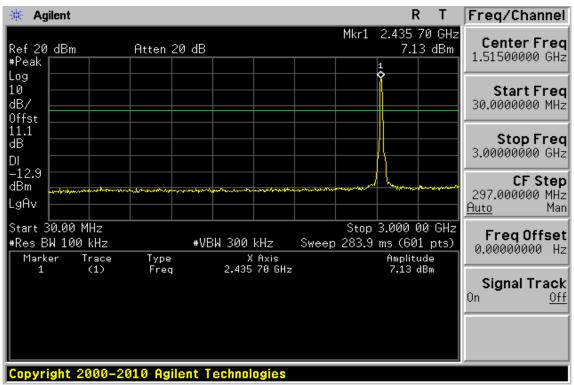


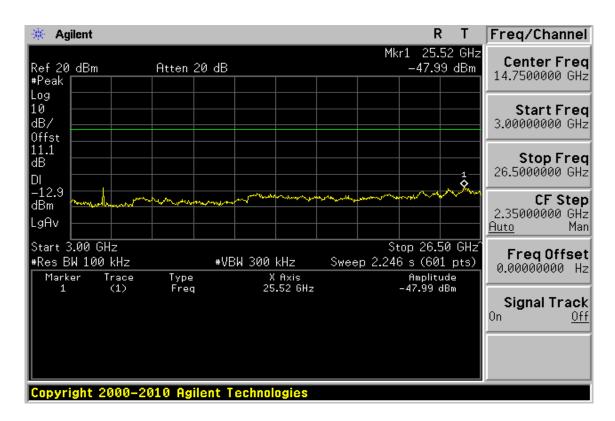


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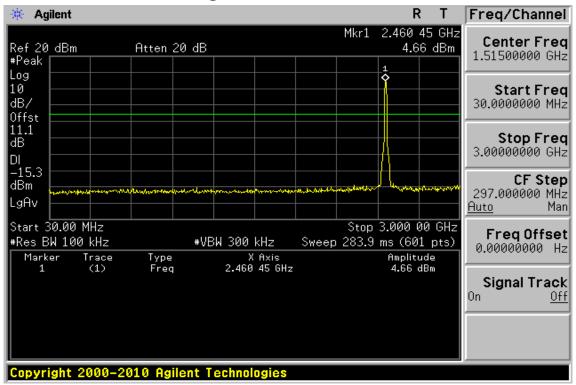
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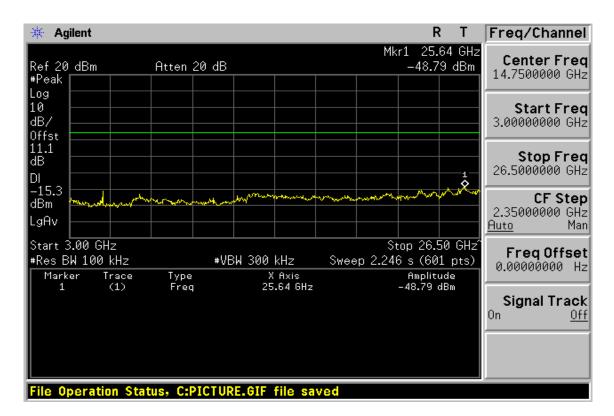
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Spurious Emission Test Data CH-High

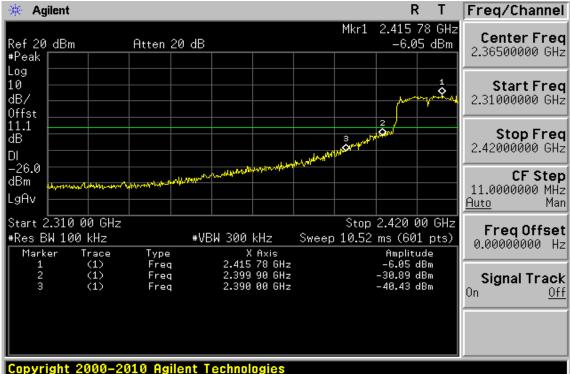




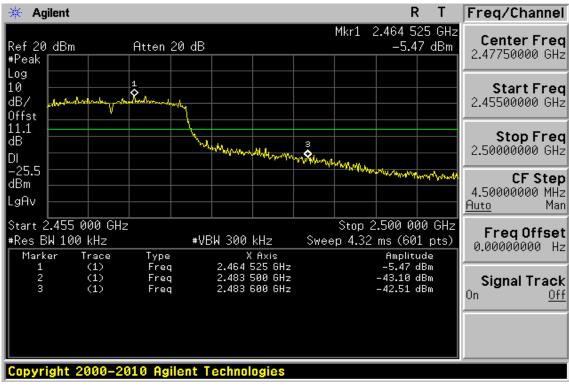
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802.11g **Band Edges Test Data CH-Low**







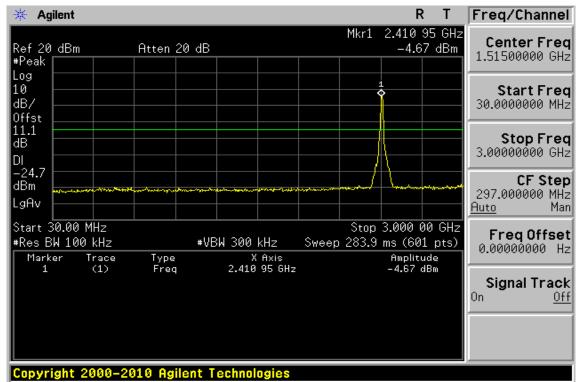
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

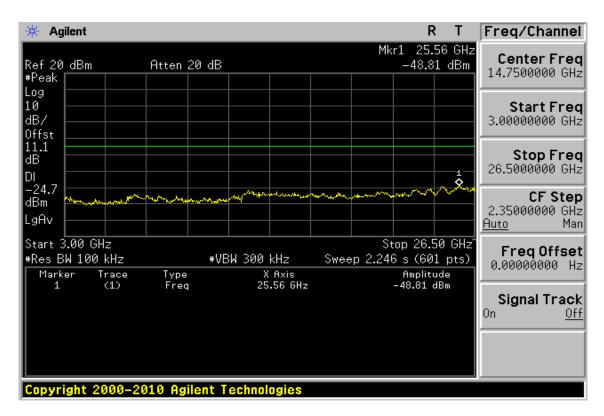
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802.11g **Spurious Emission Test Data CH-Low**





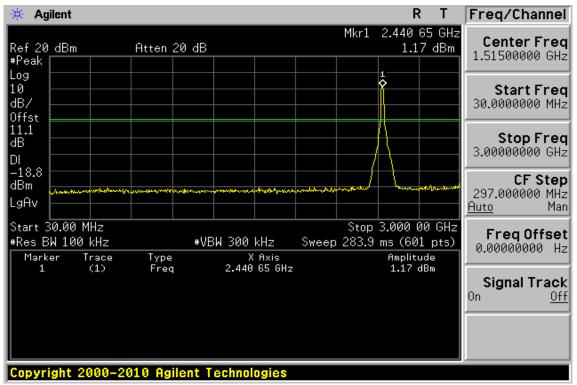
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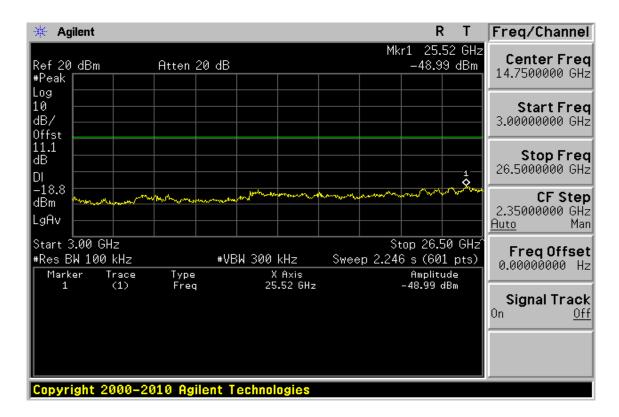
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Spurious Emission Test Data CH-Mid

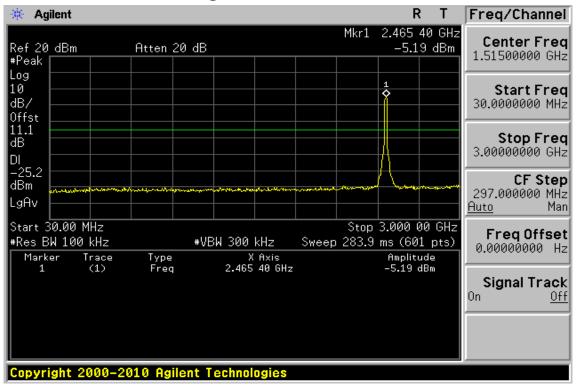


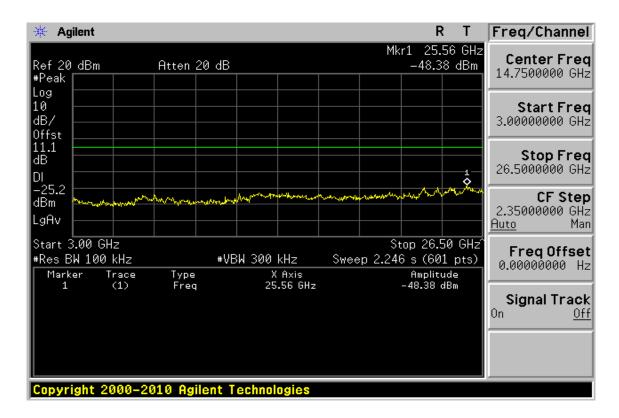


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Spurious Emission Test Data CH-High

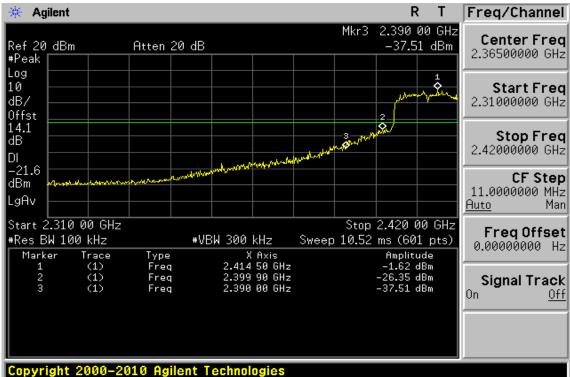




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802.11n_HT20 (MIMO) **Band Edges Test Data CH-Low**







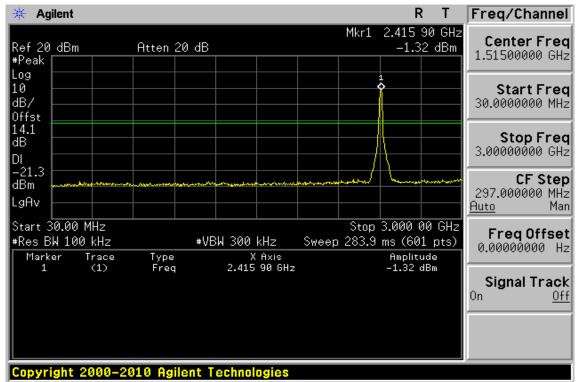
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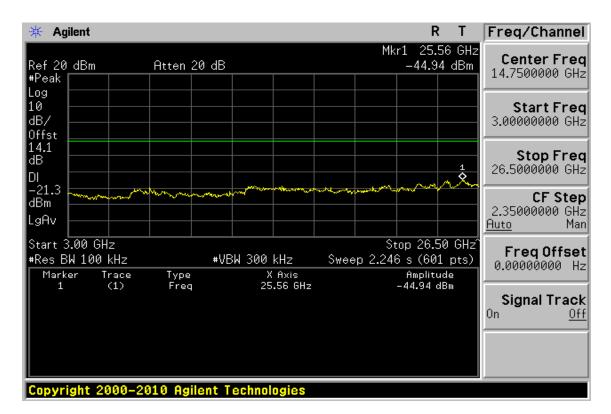
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802.11n HT20 (MIMO)

Spurious Emission Test Data CH-Low

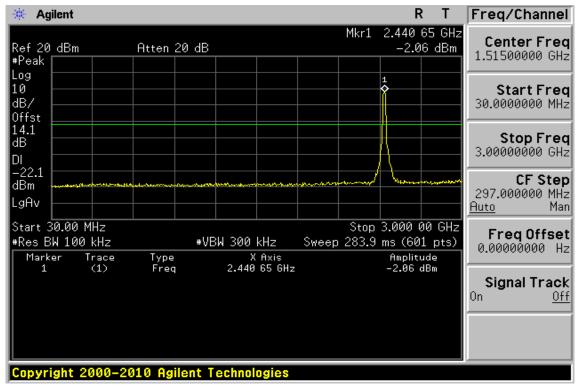


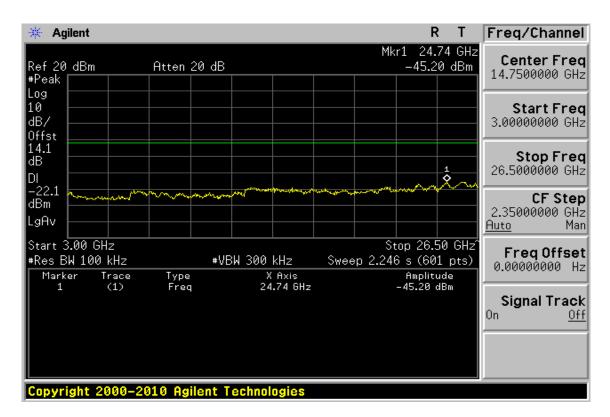


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Spurious Emission Test Data CH-Mid

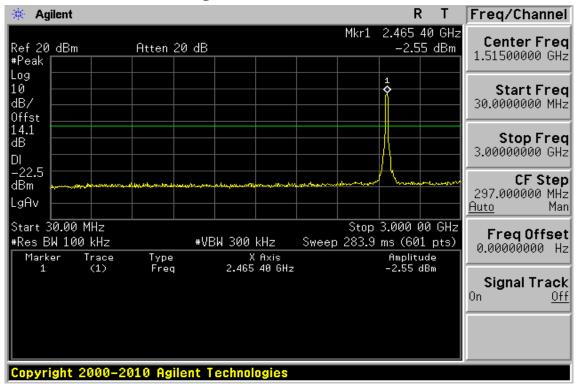


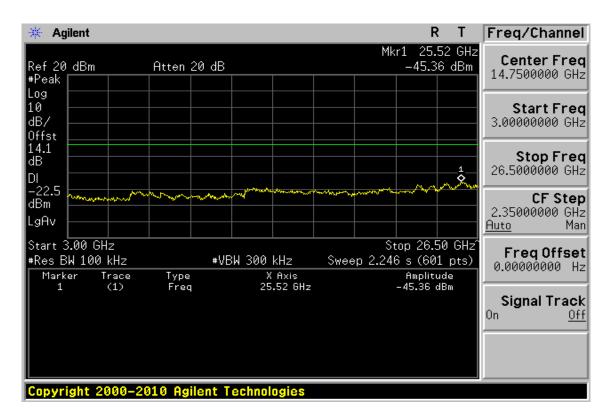


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Spurious Emission Test Data CH-High

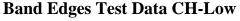


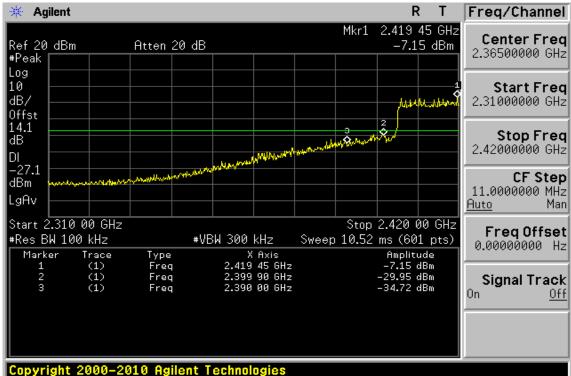


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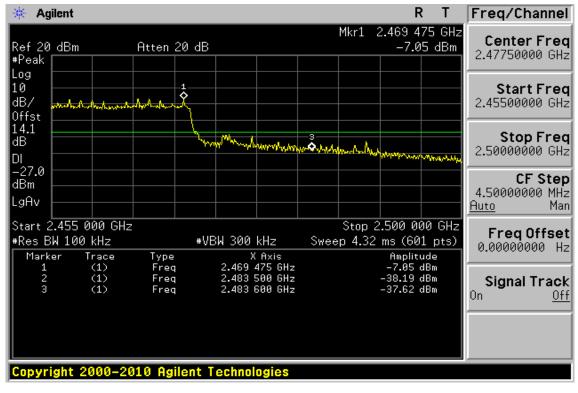


802.11n HT40 (MIMO)









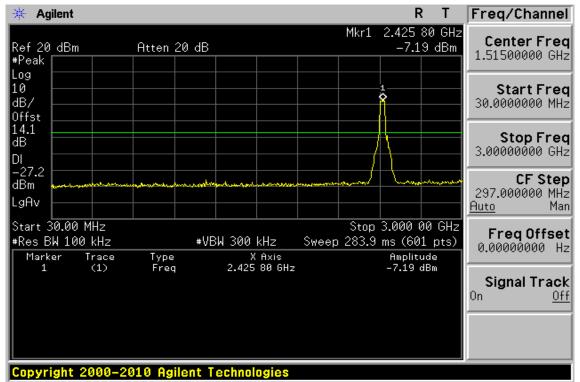
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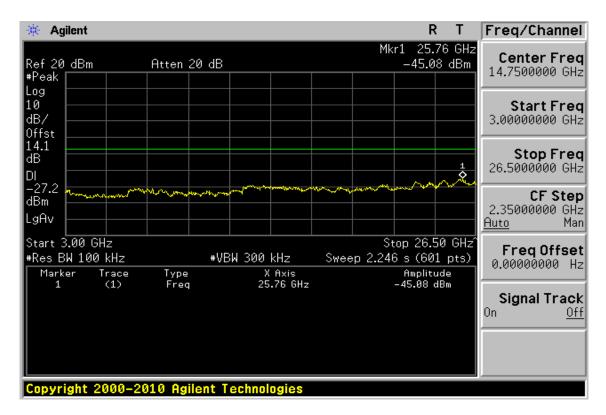
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802.11n HT40 (MIMO)

Spurious Emission Test Data CH-Low

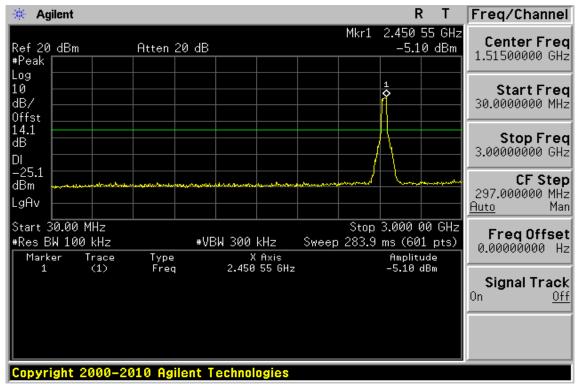


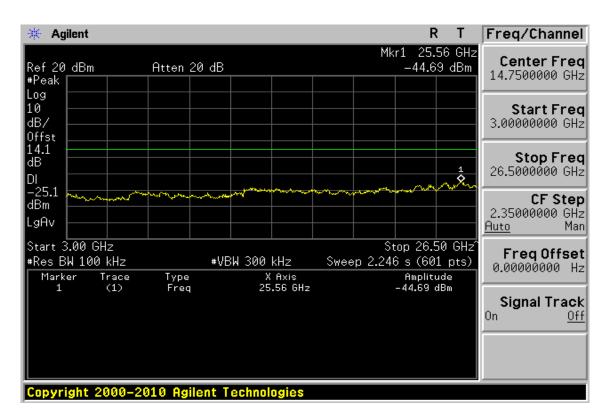


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Spurious Emission Test Data CH-Mid

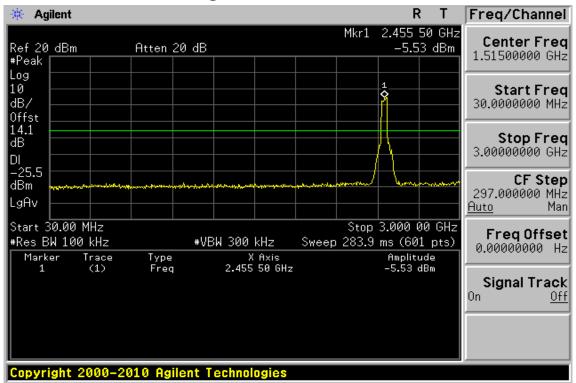


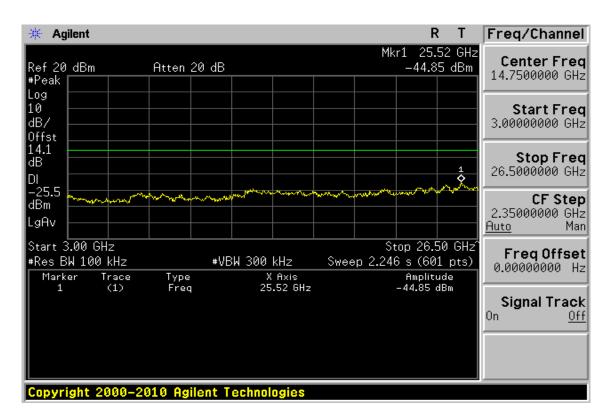


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Spurious Emission Test Data CH-High





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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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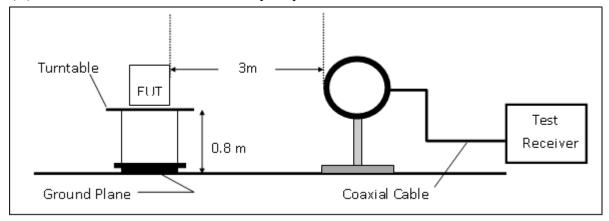


11.2 Measurement Equipment Used:

	9	66 Chamber			
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
ТҮРЕ		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

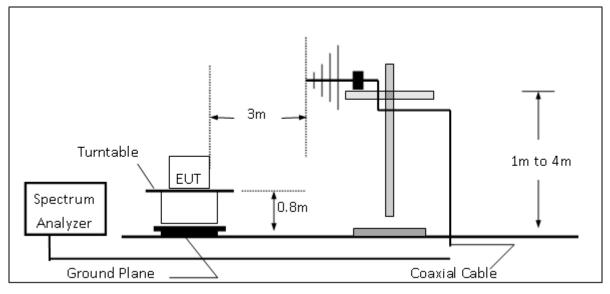
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



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.

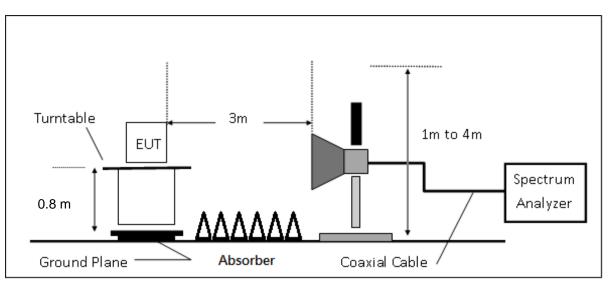
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(B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz

(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 \ge 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)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre Amplifier Gain(dB)$

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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Radiated Band Edge Measurement Result (802.11b)

Operation Band:802.11 bFundamental Frequency:2412 MHzOperation Mode:Band Edge LOWEUT Pol.:H Plan		Test Date Temp./Humi. Engineer Measurement Antenna Pol.			:2015-06-23 :21 deg_C / 61 RH :Curry :VERTICAL	
Freq. Note	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/n	n dB
2390.00 E	Average	33.26	4.80	38.06	54.00	-15.94
2390.00 E	Peak	44.41	4.80	49.21	74.00	-24.79
Operation Band Fundamental Frequency Operation Mode EUT Pol.	:802.11 b :2412 MHz :Band Edge L0 :H Plan	OW	Engine	/Humi.	a Pol.	:2015-06-23 :21 deg_C / 61 RH :Curry :HORIZONTAL
Freq. Note	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV∕n	n dB
2390.00 E	Average	39.07	4.80	43.87	54.00	-10.13
2390.00 E	Peak	49.75	4.80	54.55	74.00	-19.45



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Operation Band:802.11 bFundamental Frequency:2462 MHzOperation Mode:Band Edge HIGHEUT Pol.:H Plan		Test Date Temp./Humi. Engineer Measurement Antenna Pol.			:2015-06-23 :21 deg_C / 61 RH :Curry :VERTICAL		
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level	15	FS	@3m	15
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/n	n dB
2483.50	Е	Average	47.85	5.64	53.49	54.00	-0.51
2483.50	Е	Peak	53.77	5.64	59.41	74.00	-14.59
Operation Bar Fundamental I Operation Mo EUT Pol.	Frequency	:802.11 b :2462 MHz :Band Edge I :H Plan	HIGH	Engin	./Humi.	na Pol.	:2015-06-23 :21 deg_C / 61 RH :Curry :HORIZONTAL
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV∕n	n dB
2483.50	Е	Average	47.50	5.64	53.14	54.00	-0.86
2483.50	E	Peak	53.04	5.64	58.68	74.00	-15.32

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Radiated Band Edge Measurement Result (802.11g)

Operation Band:802.11 gFundamental Frequency:2412 MHzOperation Mode:Band Edge LOWEUT Pol.:H Plan			Test Date Temp./Humi. Engineer Measurement Antenna Pol.			:2015-06-23 :21 deg_C / 61 RH :Curry :VERTICAL	
Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/n	n dB
2390.00	Е	Average	33.89	4.80	38.69	54.00	-15.31
2390.00	Е	Peak	61.62	4.80	66.42	74.00	-7.58
Operation Ban Fundamental F Operation Mod EUT Pol.	Frequency	:802.11 g :2412 MHz :Band Edge I :H Plan	LOW	Engin	./Humi.	na Pol.	:2015-06-23 :21 deg_C / 61 RH :Curry :HORIZONTAL
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV∕n	n dB
2390.00	Е	Average	38.61	4.80	43.41	54.00	-10.59
2390.00	E	Peak	67.62	4.80	72.42	74.00	-1.58

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Operation Band:802.11 gFundamental Frequency:2462 MHzOperation Mode:Band Edge HIGHEUT Pol.:H Plan		Test Date Temp./Humi. Engineer Measurement Antenna Pol.			:2015-06-23 :21 deg_C / 61 RH :Curry :VERTICAL		
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV∕n	n dB
2483.50	Е	Average	34.39	5.64	40.03	54.00	-13.97
2483.50	Е	Peak	60.99	5.64	66.63	74.00	-7.37
Operation Ban Fundamental I Operation Mod EUT Pol.	Frequency	:802.11 g :2462 MHz :Band Edge I :H Plan	HIGH	Engin	./Humi.	na Pol.	:2015-06-23 :21 deg_C / 61 RH :Curry :HORIZONTAL
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV∕n	n dB
2483.50	Е	Average	37.05	5.64	42.69	54.00	-11.31
2483.50	Е	Peak	67.06	5.64	72.70	74.00	-1.30

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2390.00

2390.00

Е

E

FCC ID: CPOD7E1-LTE

-9.91

-0.74

54.00

74.00

Radiated Ba	and Edge M	easurement R	Result (802.11_H'	Г20) (МІМ	l O)		
Operation Band :802.11 n20M		Test Date			:2015-06-23		
Fundamental	Fundamental Frequency :2412 MHz		Temp	./Humi.		:21 deg C / 61 RH	
Operation Mo	de	:Band Edge I	LOW	Engir	neer		:Curry
EUT Pol.		:H Plan		Meas	urement Antenr	na Pol.	:VERTICAL
Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
N /TT			•	ID		-	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV∕n	n dB
2390.00	Е	Average	37.94	4.80	42.74	54.00	-11.26
2390.00	Е	Peak	68.02	4.80	72.82	74.00	-1.18
Operation Bar Fundamental I Operation Mo EUT Pol.	Frequency	:802.11 n20N :2412 MHz :Band Edge I :H Plan		Engir	./Humi.	na Pol.	:2015-06-23 :21 deg_C / 61 RH :Curry :HORIZONTAL
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV∕n	n dB

39.29

68.46

Padjated Band Edge Measurement Posult (802 11 HT20) (MIMO)

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.

Average

Peak

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4.80

4.80

44.09

73.26



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Operation Band:802.11 n20MFundamental Frequency:2462 MHzOperation Mode:Band Edge HIGHEUT Pol.:H Plan		Test Date Temp./Humi. Engineer Measurement Antenna Pol.			:2015-06-23 :21 deg_C / 61 RH :Curry :VERTICAL		
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/n	n dB
2483.50	Е	Average	38.16	5.64	43.80	54.00	-10.20
2483.50	Е	Peak	66.26	5.64	71.90	74.00	-2.10
Operation Bar Fundamental I Operation Mo EUT Pol.	Frequency	:802.11 n20N :2462 MHz :Band Edge I :H Plan		Engin	./Humi.	na Pol.	:2015-06-23 :21 deg_C / 61 RH :Curry :HORIZONTAL
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/n	n dB
2483.50	Е	Average	38.23	5.64	43.87	54.00	-10.13
2483.50	Е	Peak	67.62	5.64	73.26	74.00	-0.74

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2390.00

2390.00

Е

Е

FCC ID: CPOD7E1-LTE

Radiated Ba	nd Edge M	easurement R	Result (802.11_H [*]	Г40) (МІМ	(O)		
Operation Band :802.11 n40M			Test Date			:2015-06-23	
Fundamental I	Frequency	:2422 MHz		Temp	./Humi.		:21 deg_C / 61 RH
Operation Mo	de	:Band Edge I	LOW	Engir	neer		:Curry
EUT Pol.		:H Plan		Meas	urement Antenr	na Pol.	:VERTICAL
Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
) (II			•	ID			
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/n	n dB
2390.00	Е	Average	40.32	4.80	45.12	54.00	-8.88
2390.00	Е	Peak	68.59	4.80	73.39	74.00	-0.61
Operation Bar Fundamental I Operation Mo EUT Pol.	Frequency	:802.11 n40N :2422 MHz :Band Edge I :H Plan		Engir	./Humi.	na Pol.	:2015-06-23 :21 deg_C / 61 RH :Curry :HORIZONTAL
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV∕n	n dB

4.80

4.80

48.87

67.63

54.00

74.00

-5.13

-6.37

JD 14 (003 11 $\mathbf{HT}(\mathbf{A})$ 4

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Average

Peak

44.07

62.83

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Freq. Note Detector Spectrum Factor Actual Limit Margin	
Mode Reading Level FS @3m	
	-
2483.50 E Average 40.58 5.64 46.22 54.00 -7.78	
2483.50 E Peak 67.00 5.64 72.64 74.00 -1.36	
2487.80 S Average 39.30 5.70 45.00 54.00 -9.00	
2487.80 S Peak 67.23 5.70 72.93 74.00 -1.07	
Operation Band:802.11 n40MTest Date:2015-06-23Fundamental Frequency:2452 MHzTemp./Humi.:21 deg_C / 61 FOperation Mode:Band Edge HIGHEngineer:CurryEUT Pol.:H PlanMeasurement Antenna Pol.:HORIZONTAL	
Freq. Note Detector Spectrum Factor Actual Limit Margin	
Mode Reading Level FS @3m	
$\label{eq:mhz} MHz \qquad F/H/E/S \qquad PK/QP/AV \qquad dB\mu V \qquad dB \qquad dB\mu V/m \qquad dB\mu V/m \qquad dB$	_
2483.50 E Average 43.20 5.64 48.84 54.00 -5.16	
2483.50 E Peak 65.70 5.64 71.34 74.00 -2.66	

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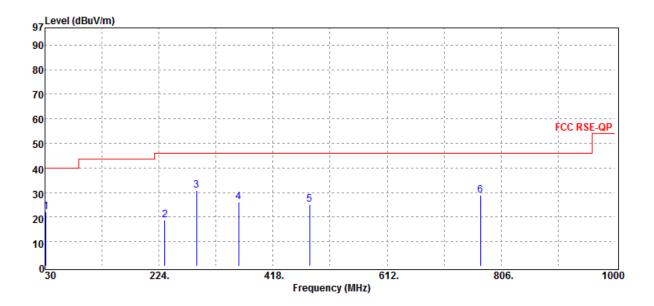


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Radiated Spurious Emission Measurement Result (802.11 g)

Below 1GHz Worst-Case Data:

Operation Band	:802.11 g	Test Date	:2015-06-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plan	Measurement Antenna Pol.	:VERTICAL



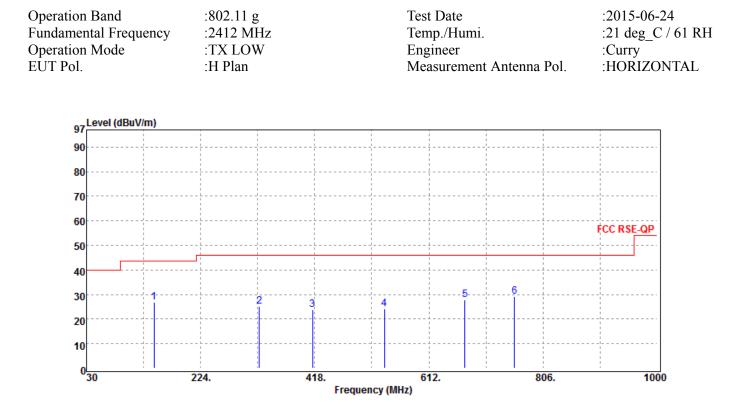
	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
_	MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	31.94	S	Peak	32.26	-10.22	22.04	40.00	-17.96
	233.70	S	Peak	29.42	-10.69	18.73	46.00	-27.27
	288.02	S	Peak	39.20	-8.24	30.96	46.00	-15.04
	359.80	S	Peak	33.16	-7.03	26.13	46.00	-19.87
	480.08	S	Peak	29.65	-4.59	25.06	46.00	-20.94
	771.08	S	Peak	27.88	0.90	28.78	46.00	-17.22

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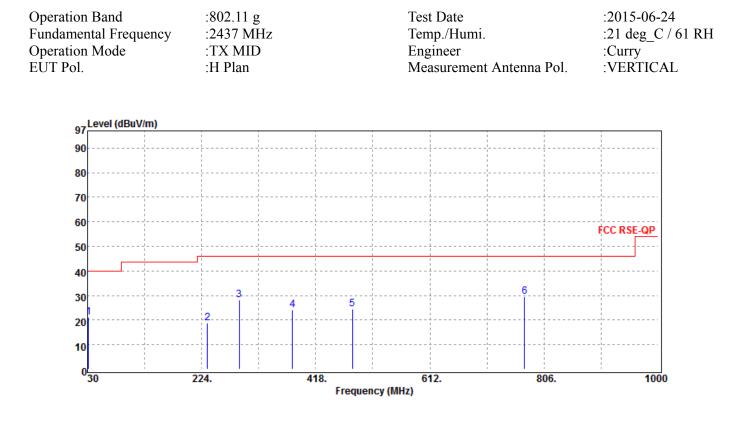
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
144.46	S	Peak	36.42	-9.69	26.73	43.50	-16.77
323.91	S	Peak	32.72	-7.67	25.05	46.00	-20.95
414.12	S	Peak	29.50	-5.75	23.75	46.00	-22.25
536.34	S	Peak	28.03	-3.99	24.04	46.00	-21.96
673.11	S	Peak	28.95	-1.14	27.81	46.00	-18.19
757.50	S	Peak	28.18	0.97	29.15	46.00	-16.85

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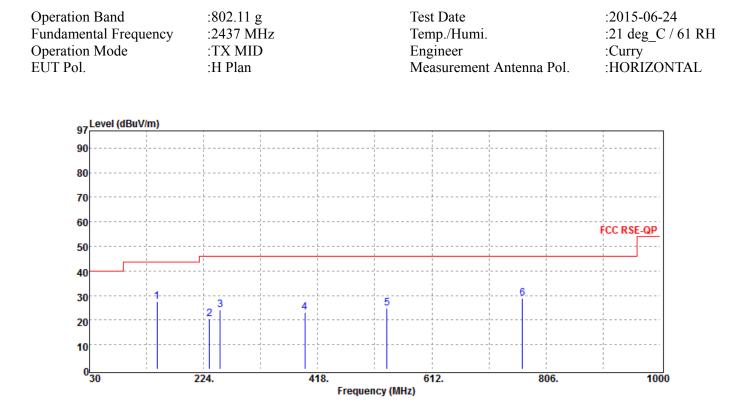
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
31.94	S	Peak	31.41	-10.22	21.19	40.00	-18.81
233.70	S	Peak	29.45	-10.69	18.76	46.00	-27.24
288.02	S	Peak	36.34	-8.24	28.10	46.00	-17.90
378.23	S	Peak	30.62	-6.49	24.13	46.00	-21.87
480.08	S	Peak	29.06	-4.59	24.47	46.00	-21.53
773.02	S	Peak	28.72	0.82	29.54	46.00	-16.46

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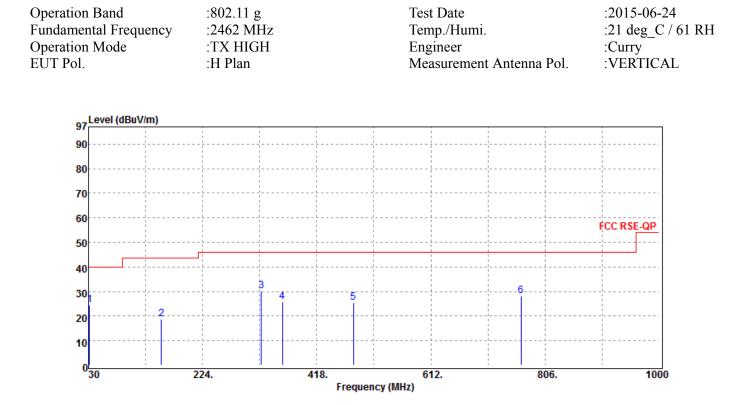


	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
_	MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	144.46	S	Peak	37.07	-9.69	27.38	43.50	-16.12
	233.70	S	Peak	31.11	-10.69	20.42	46.00	-25.58
	252.13	S	Peak	33.79	-9.79	24.00	46.00	-22.00
	395.69	S	Peak	29.19	-6.07	23.12	46.00	-22.88
	535.37	S	Peak	28.75	-3.99	24.76	46.00	-21.24
	766.23	S	Peak	27.88	1.09	28.97	46.00	-17.03

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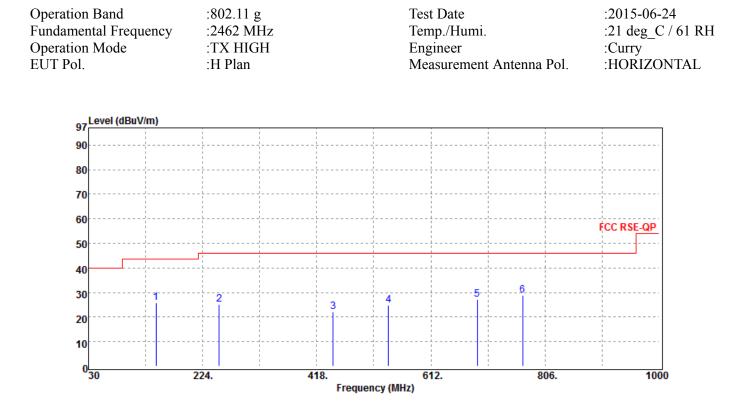


	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
_	MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	31.94	S	Peak	34.81	-10.22	24.59	40.00	-15.41
	154.16	S	Peak	27.87	-9.07	18.80	43.50	-24.70
	323.91	S	Peak	37.79	-7.67	30.12	46.00	-15.88
	359.80	S	Peak	32.87	-7.03	25.84	46.00	-20.16
	480.08	S	Peak	29.96	-4.59	25.37	46.00	-20.63
	765.26	S	Peak	27.23	1.11	28.34	46.00	-17.66

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Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
144.46	S	Peak	35.44	-9.69	25.75	43.50	-17.75
252.13	S	Peak	34.81	-9.79	25.02	46.00	-20.98
446.13	S	Peak	27.76	-5.75	22.01	46.00	-23.99
540.22	S	Peak	28.93	-4.01	24.92	46.00	-21.08
690.57	S	Peak	27.91	-0.83	27.08	46.00	-18.92
768.17	S	Peak	27.72	1.03	28.75	46.00	-17.25

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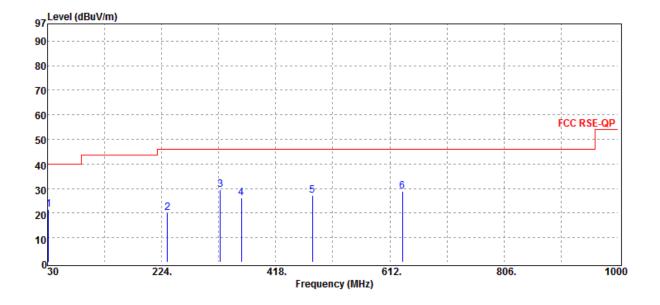
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Radiated Spurious Emission Measurement Result (802.11_HT40) (MIMO)

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

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

Test Date Temp./Humi. Engineer Measurement Antenna Pol. :2015-06-24 :21 deg C / 61 RH :Curry :VERTICAL



Note	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
S	Peak	31.81	-10.22	21.59	40.00	-18.41
S	Peak	30.73	-10.69	20.04	46.00	-25.96
S	Peak	37.05	-7.67	29.38	46.00	-16.62
S	Peak	33.31	-7.03	26.28	46.00	-19.72
S	Peak	31.84	-4.59	27.25	46.00	-18.75
S	Peak	31.34	-2.44	28.90	46.00	-17.10
	F/H/E/S S S S S S S	ModeF/H/E/SModePK/QP/AVSPeakSPeakSPeakSPeakSPeakSPeak	F/H/E/SModeReading LevelF/H/E/SPK/QP/AVdBµVSPeak31.81SPeak30.73SPeak37.05SPeak33.31SPeak31.84	Mode Reading Level F/H/E/S PK/QP/AV dBµV dB S Peak 31.81 -10.22 S Peak 30.73 -10.69 S Peak 37.05 -7.67 S Peak 33.31 -7.03 S Peak 31.84 -4.59	Mode Reading Level FS F/H/E/S PK/QP/AV dBµV dB dBµV/m S Peak 31.81 -10.22 21.59 S Peak 30.73 -10.69 20.04 S Peak 37.05 -7.67 29.38 S Peak 33.31 -7.03 26.28 S Peak 31.84 -4.59 27.25	F/H/E/SModeReading LevelFS@3mF/H/E/SPK/QP/AVdBµVdBdBµV/mdBµV/mSPeak31.81-10.2221.5940.00SPeak30.73-10.6920.0446.00SPeak37.05-7.6729.3846.00SPeak33.31-7.0326.2846.00SPeak31.84-4.5927.2546.00

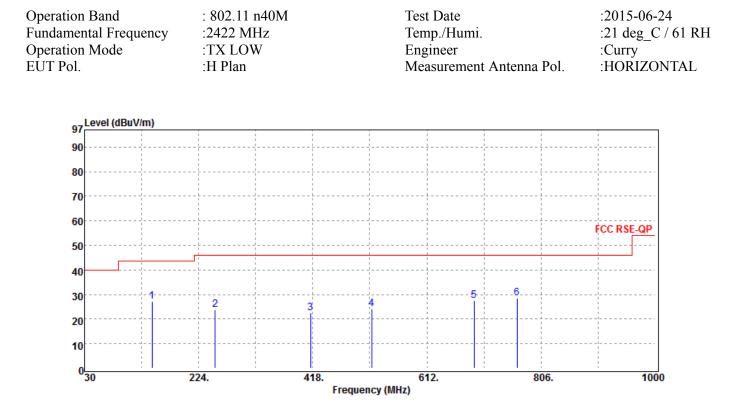
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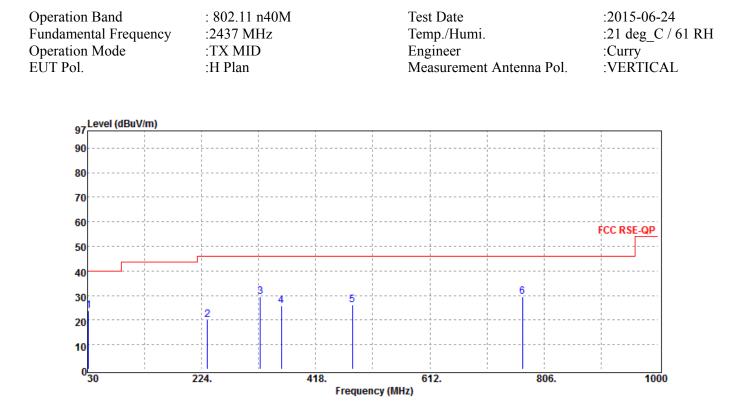


	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
_	MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	144.46	S	Peak	36.96	-9.69	27.27	43.50	-16.23
	252.13	S	Peak	33.54	-9.79	23.75	46.00	-22.25
	414.12	S	Peak	28.29	-5.75	22.54	46.00	-23.46
	517.91	S	Peak	28.65	-4.47	24.18	46.00	-21.82
	692.51	S	Peak	28.20	-0.81	27.39	46.00	-18.61
	765.26	S	Peak	27.55	1.11	28.66	46.00	-17.34

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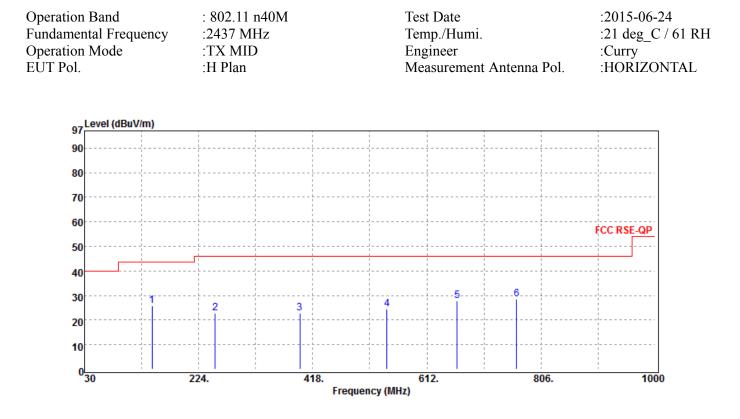


Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
31.94	S	Peak	33.91	-10.22	23.69	40.00	-16.31
233.70	S	Peak	30.87	-10.69	20.18	46.00	-25.82
323.91	S	Peak	37.13	-7.67	29.46	46.00	-16.54
359.80	S	Peak	32.73	-7.03	25.70	46.00	-20.30
480.08	S	Peak	30.73	-4.59	26.14	46.00	-19.86
769.14	S	Peak	28.51	0.99	29.50	46.00	-16.50
323.91 359.80 480.08	S S S	Peak Peak Peak	37.13 32.73 30.73	-7.67 -7.03 -4.59	29.46 25.70 26.14	46.00 46.00 46.00	-16.54 -20.30 -19.86

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.



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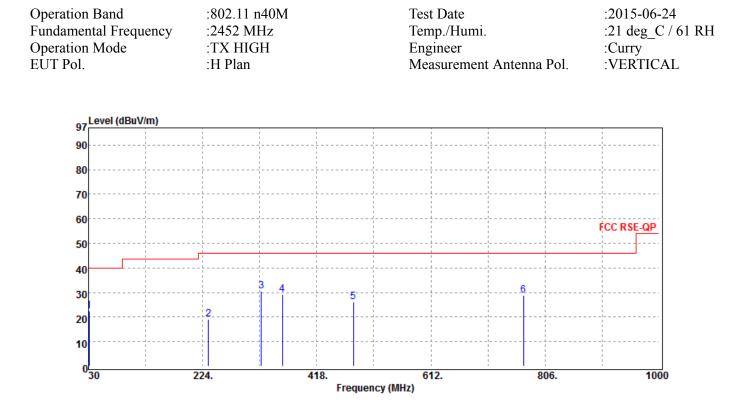


Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
144.46	S	Peak	35.66	-9.69	25.97	43.50	-17.53
252.13	S	Peak	32.54	-9.79	22.75	46.00	-23.25
395.69	S	Peak	29.02	-6.07	22.95	46.00	-23.05
544.10	S	Peak	28.54	-4.01	24.53	46.00	-21.47
663.41	S	Peak	29.04	-1.16	27.88	46.00	-18.12
764.29	S	Peak	27.54	1.13	28.67	46.00	-17.33

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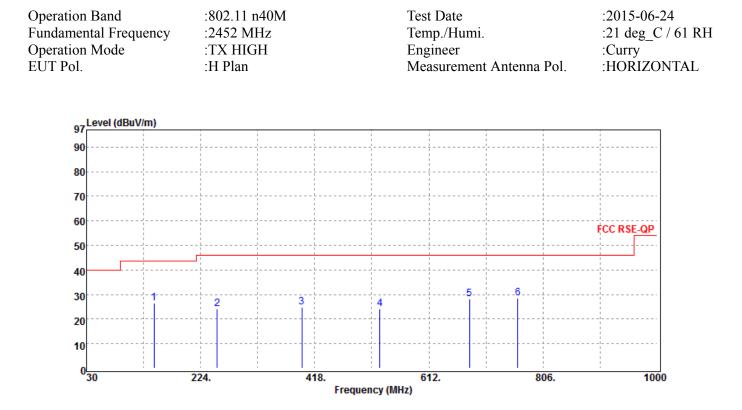


Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
30.97	S	Peak	32.73	-10.24	22.49	40.00	-17.51
233.70	S	Peak	29.97	-10.69	19.28	46.00	-26.72
323.91	S	Peak	38.13	-7.67	30.46	46.00	-15.54
359.80	S	Peak	36.31	-7.03	29.28	46.00	-16.72
480.08	S	Peak	30.69	-4.59	26.10	46.00	-19.90
769.14	S	Peak	27.91	0.99	28.90	46.00	-17.10

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Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
144.46	S	Peak	36.15	-9.69	26.46	43.50	-17.04
252.13	S	Peak	34.10	-9.79	24.31	46.00	-21.69
395.69	S	Peak	30.91	-6.07	24.84	46.00	-21.16
528.58	S	Peak	28.28	-4.14	24.14	46.00	-21.86
680.87	S	Peak	29.28	-1.07	28.21	46.00	-17.79
763.32	S	Peak	27.52	1.14	28.66	46.00	-17.34

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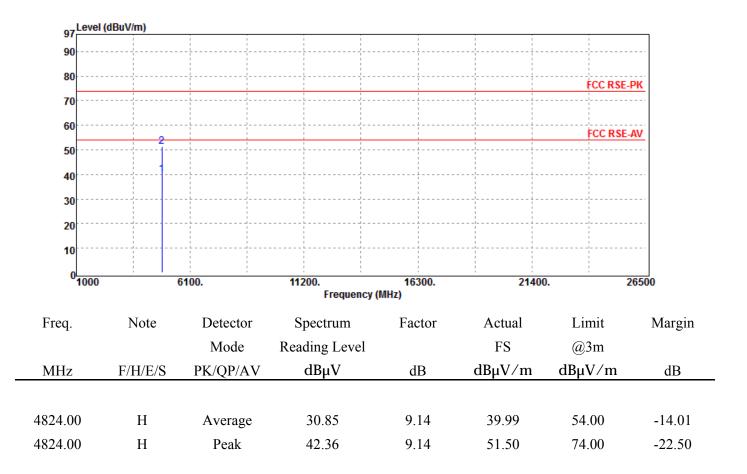


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Radiated Spurious Emission Measurement Result (802.11 b)

Above 1GHz Worst-Case Data:

Operation Band	:802.11 b	Test Date	:2015-06-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plan	Measurement Antenna Pol.	:VERTICAL



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FCC ID: CPOD7E1-LTE

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Operation Band Fundamental Frequency Operation Mode EUT Pol.		:802.11 b :2412 MHz :TX LOW :H Plan		Test Date Temp./Hui Engineer Measurem	mi. ent Antenna Po	:21 deg_ :Curry	:2015-06-24 :21 deg_C / 61 RH :Curry :HORIZONTAL	
97	dBuV/m)							
90								
80						FCC RSE-P		
70								
60						FCC RSE-AV		
50	2							
40								
30								
20						 		
10						 		
0 <mark></mark>	6	5100.	11200. Frequency (I	16300. MHz)	21400	. 26	500	
Freq.	Note	Detector	Spectrum	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	Average	29.09	9.14	38.23	54.00	-15.77	
4824.00	Н	Peak	41.29	9.14	50.43	74.00	-23.57	

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. 除非另有说明,此報告结果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部分複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction form exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. <u>SCGS Taiwan Ltd.</u> No.134. WuKungRoad NewTaipeiflustrialPark WukuDistrict NewTaipeifCity.Taiwan24803/新 the 5. Big M the 5. Big M



FCC ID: CPOD7E1-LTE

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Operation Band Fundamental Frequency Operation Mode EUT Pol.		:802.11 b :2437 MHz :TX MID :H Plan		Test Date Temp./Hur Engineer Measurem	mi. ent Antenna Po	:21 deg_ :Curry	:2015-06-24 :21 deg_C / 61 RH :Curry :VERTICAL	
97	dBuV/m)							
90								
80						FCC RSE-PI	č	
70				 				
60						FCC RSE-A	ï	
50	2					 		
40		·				 		
30								
20							- ·	
10								
0 <mark></mark> 1000	6	100.	11200. Frequency (I	16300. MHz)	21400	. 26	500	
Freq.	Note	Detector	Spectrum	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	Average	30.31	9.40	39.71	54.00	-14.29	
4874.00	Н	Peak	41.77	9.40	51.17	74.00	-22.83	

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.



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Operation Band Fundamental F Operation Mod EUT Pol.	requency	:802.11 b :2437 MHz :TX MID :H Plan	IHz Temp./Humi.		:Curry	C / 61 RH	
97	dBuV/m)						_
90							
80						FCC RSE-PK	
70							-
60						FCC RSE-AV	<u>e</u>
50							
40	1						
30							
20							
10							
0 <mark>-</mark> 1000	6	5100.	11200. Frequency (I	16300. MHz)	21400	. 265	00
Freq.	Note	Detector	Spectrum	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	Average	29.29	9.40	38.69	54.00	-15.31
4874.00	Н	Peak	41.86	9.40	51.26	74.00	-22.74

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.



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Operation Ban Fundamental F Operation Mod EUT Pol.	requency	:802.11 b :2462 MHz :TX HIGH :H Plan		Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Curry	C / 61 RH
97	(dBuV/m)						_
90							
80					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FCC RSE-PI	
70							
60						FCC RSE-A	<u>í</u>
50	2						
40							
30							
20							
10							
0 <mark>1000</mark>	(5100.	11200. Frequency (I	16300. MHz)	21400	. 26	500
Freq.	Note	Detector	Spectrum	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	Average	27.55	9.32	36.87	54.00	-17.13
4924.00	Н	Peak	40.46	9.32	49.78	74.00	-24.22

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.



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Operation Ban Fundamental F Operation Moc EUT Pol.	requency	:802.11 b :2462 MHz :TX HIGH :H Plan	Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Curry	6-24 _C / 61 RH ZONTAL	
97 Level	(dBuV/m)						
90							
80						FCC RSE-P	ĸ
70							
60						FCC RSE-A	V
50	2						
40							
30							
20							
10							
0 ¹ 1000		5100.	11200. Frequency (I	16300. MHz)	21400). 26	5500
Freq.	Note	Detector	Spectrum	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	Average	28.61	9.32	37.93	54.00	-16.07
4924.00	Н	Peak	40.19	9.32	49.51	74.00	-24.49



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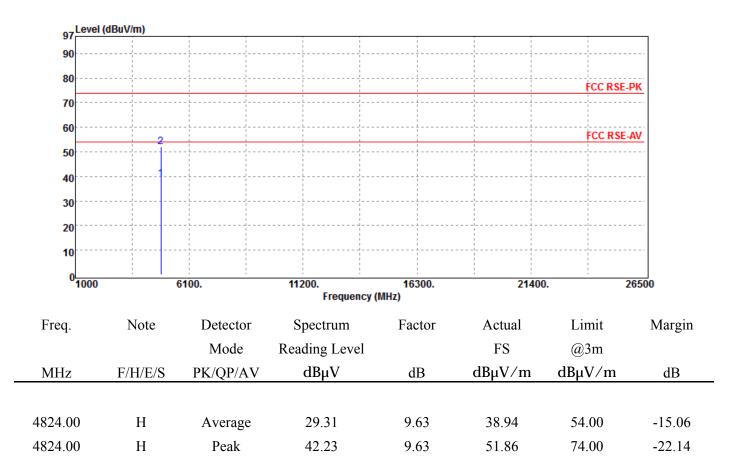
Radiated Spurious Emission Measurement Result (802.11 g)

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

:802.11 g :2412 MHz :TX LOW :H Plan

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2015-06-24 :21 deg C / 61 RH :Curry :VERTICAL



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.



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Operation Band Fundamental F Operation Mod EUT Pol.	requency	:802.11 g :2412 MHz :TX LOW :H Plan		Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Curry	C / 61 RH
97	dBuV/m)						_
90							
80						FCC RSE-PK	
70							
60						FCC RSE-AV	
50	2						
40							
30							
20							
10							
0 <mark> </mark> 1000	6	5100.	11200. Frequency (I	16300. MHz)	21400	. 265	500
Freq.	Note	Detector	Spectrum	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	Average	29.54	9.63	39.17	54.00	-14.83
4824.00	Н	Peak	38.50	9.63	48.13	74.00	-25.87

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FCC ID: CPOD7E1-LTE

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Operation Band Fundamental F Operation Mod EUT Pol.	requency	:802.11 g :2437 MHz :TX MID :H Plan		Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Curry	_C / 61 RH
97	dBuV/m)						_
90				· · · · · · · · · · · · · · · · · · ·			
80						FCC RSE-P	ĸ
70							
60						FCC RSE-A	v
50	2			· · · · · · · · · · · · · · · · · · ·		 	
40						 	
30							
20							
10							
0 <mark>1000</mark>		5100.	11200. Frequency	16300. (MHz)	21400	. 26	500
Freq.	Note	Detector	Spectrum	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	Average	27.61	9.85	37.46	54.00	-16.54
4874.00	Н	Peak	40.87	9.85	50.72	74.00	-23.28

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.



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Operation Ban Fundamental F Operation Mod EUT Pol.	requency	:802.11 g :2437 MHz :TX MID :H Plan		Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Curry	06-24 _C / 61 RH ZONTAL
97 Level	(dBuV/m)						
90				·			
80				·		FCC RSE-F	ĸ
70	 			 			
60						FCC RSE-	W
50	2			·			
40							
30				·			
20				 		 	
10							
0 1000	: 1	5100.	11200. Frequency (I	16300. MHz)	21400). 2	5500
Freq.	Note	Detector	Spectrum	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	Average	27.84	9.85	37.69	54.00	-16.31
4874.00	Н	Peak	38.11	9.85	47.96	74.00	-26.04

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.



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Operation Band Fundamental F Operation Mod EUT Pol.	requency	:802.11 g :2462 MHz :TX HIGH :H Plan		Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Curry	_C / 61 RH
97	(dBuV/m)						
90							
80				 		FCC RSE-P	ĸ
70							
60						FCC RSE-A	V
50	2			 			
40							
30							
20							
10							
0 <mark>1000</mark>	(5100.	11200. Frequency (16300. MHz)	21400). 26	5500
Freq.	Note	Detector	Spectrum	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	Average	25.67	9.86	35.53	54.00	-18.47
4924.00	Н	Peak	38.18	9.86	48.04	74.00	-25.96

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.



:802.11 g

Operation Band

FCC ID: CPOD7E1-LTE

Test Date

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:2015-06-24

Fundamental Fre Operation Mode EUT Pol.	ndamental Frequency eration Mode		Temp./Humi. Engineer Measurement Anten			:21 deg :Curry Antenna Pol. :HORIZ	
97 Level (dE	BuV/m)						
90				·	·		
80				·	·	FCC RSE-	PK
70					·		
<mark>60</mark>				·	·	FCC RSE	-AV
50	2			 			
40					·	 	
30				·	·		
20				 			
10					·	 	
0		6100.	11200. Frequency (I	16300. MHz)	21400). :	26500
Freq.	Note	Detector	Spectrum	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	Average	25.87	9.86	35.73	54.00	-18.27
4924.00	Н	Peak	37.44	9.86	47.30	74.00	-26.70



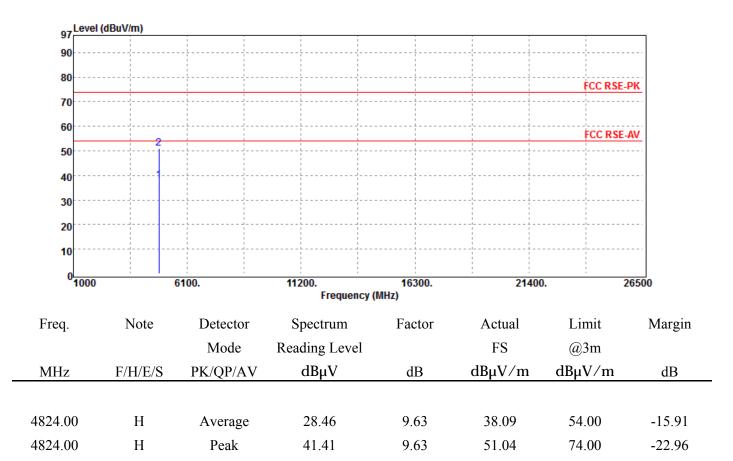
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Radiated Spurious Emission Measurement Result (802.11_HT20) (MIMO)

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

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

Test Date Temp./Humi. Engineer Measurement Antenna Pol. :2015-06-24 :21 deg C / 61 RH :Curry :VERTICAL



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.



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Operation Band Fundamental F Operation Mod EUT Pol.	requency	:802.11 n20N :2412 MHz :TX LOW :H Plan	Л	Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Curry	6-24 _C / 61 RH CONTAL
97	(dBuV/m)						_
90				·			
80				·		FCC RSE-P	ĸ
70							
60				·		FCC RSE-A	v
50	2						
40							
30			JJJJJJ	·			
20				·			
10							
01000	(6100.	11200. Frequency (16300. MHz)	21400	. 26	500
Freq.	Note	Detector	Spectrum	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	Average	28.34	9.63	37.97	54.00	-16.03
4824.00	Н	Peak	38.90	9.63	48.53	74.00	-25.47



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Operation Ban Fundamental F Operation Moc EUT Pol.	requency	:802.11 n20N :2437 MHz :TX MID :H Plan	437 MHzTemp./Humi.YX MIDEngineer		:Curry	_C / 61 RH	
97 Level	(dBuV/m)						
90							
80						FCC RSE-P	ĸ
70							
60					· · · · · · · · · · · · · · · · · · ·	FCC RSE-A	V
50	z						
40							
30							
20							
10							
0 ^L 1000		5100.	11200. Frequency (I	16300. MHz)	21400). 26	5500
Freq.	Note	Detector	Spectrum	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	Average	27.88	9.85	37.73	54.00	-16.27
4874.00	Н	Peak	40.58	9.85	50.43	74.00	-23.57

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.



FCC ID: CPOD7E1-LTE

Test Date

:802.11 n20M

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:2015-06-24

Fundamental F Dperation Mod EUT Pol.	lamental Frequency : ration Mode :		Temp./Humi. Engineer Measurement Antenna Pol.			:Curry	:21 deg_C / 61 RH :Curry :HORIZONTAL	
97 Level ((dBuV/m)							
90								
80					·	FCC RSE-	DK	
70					·			
60						FCC RSE-	AV	
50	2			·				
40								
30								
20						 		
10						 		
0 <mark></mark>		6100.	11200. Frequency (I	16300. MHz)	21400). 2	6500	
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
I		Mode	Reading Level		FS	@3m	0	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
4874.00	Н	Average	27.45	9.85	37.30	54.00	-16.70	
4874.00	Н	Peak	38.31	9.85	48.16	74.00	-25.84	

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.



FCC ID: CPOD7E1-LTE

Test Date

:802.11 n20M

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:2015-06-24

Fundamental F Operation Mod EUT Pol.	requency	:2462 MHz :TX HIGH :H Plan		Temp./Humi. Engineer Measurement Antenna Pol.		:Curry	_C / 61 RH
97	(dBuV/m)						
90							
80				 		FCC RSE-F	ĸ
70				 			
60						FCC RSE-	N.
50	2						
40				·			
30				·			
20						 	
10				 		 	
0 <mark></mark> 1000	<u> </u>	6100.	11200. Frequency (16300. MHz)	21400). 20	6500
Freq.	Note	Detector	Spectrum	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	Average	25.32	9.86	35.18	54.00	-18.82
4924.00	Н	Peak	37.72	9.86	47.58	74.00	-26.42



FCC ID: CPOD7E1-LTE

Test Date

:802.11 n20M

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:2015-06-24

Fundamental F Operation Mod EUT Pol.		:2462 MHz :TX HIGH :H Plan	-	Temp./Hu Engineer Measuren	imi. nent Antenna Po	:Curry	g_C / 61 RH
97	(dBuV/m)						
90					·		
80						FCC RSE-	DK
70					1 1 1 	CC NJL-	
60		L				FCC RSE-	A)/
50	2					FUC K3E-	<u>AV</u>
40							
30		L					
20							
10							
0		6100.	11200.	16300.	21400		.6500
1000			Frequency (I		21400	. 2	.0500
Freq.	Note	Detector	Spectrum	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	Average	25.29	9.86	35.15	54.00	-18.85
4924.00	Н	Peak	38.60	9.86	48.46	74.00	-25.54

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.



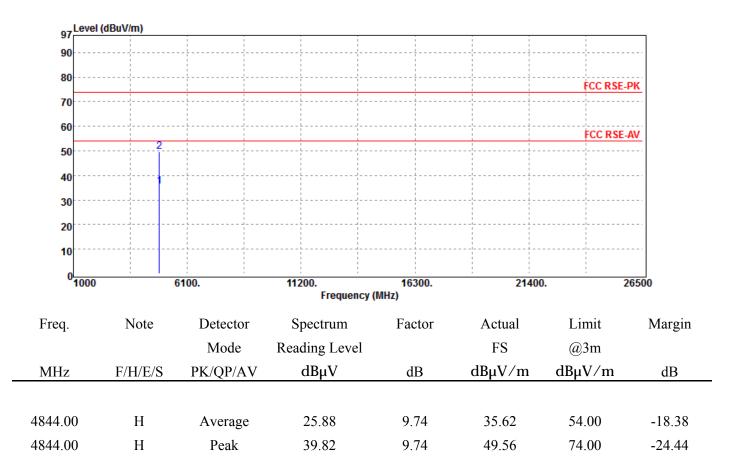
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Radiated Spurious Emission Measurement Result (802.11_HT40) (MIMO)

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

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

Test Date Temp./Humi. Engineer Measurement Antenna Pol. :2015-06-24 :21 deg C / 61 RH :Curry :VERTICAL



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.



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Operation Ban Fundamental F Operation Mod EUT Pol.	Frequency	:802.11 n40N :2422 MHz :TX LOW :H Plan	Л	Test Date Temp./Hu Engineer Measurem	mi. nent Antenna Po	:Curry	6-24 _C / 61 RH CONTAL
97	(dBuV/m)						
90							
80					· · · · · · · · · · · · · · · · · · ·	FCC RSE-P	ĸ
70							
60						FCC RSE-A	v
50	2						
40						 	
30							
20							
10							
0 ¹ 1000		6100.	11200. Frequency (I	16300. MHz)	21400). 26	500
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4844.00	Н	Average	25.92	9.74	35.66	54.00	-18.34
4844.00	Н	Peak	37.49	9.74	47.23	74.00	-26.77



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Operation Ban Fundamental F Operation Mod EUT Pol.	Frequency	:802.11 n40N :2437 MHz :TX MID :H Plan	И	Test Date Temp./Hu Engineer Measurem	mi. nent Antenna Po	:Curry	_C / 61 RH
97	(dBuV/m)						
90				·			
80					· · · · · · · · · · · · · · · · · · ·	FCC RSE-P	ĸ
70				·			
60				·		FCC RSE-A	v
50	2			·			
40				 			
30				·			
20							
10				·			
0 ¹ 1000		6100.	11200. Frequency (16300. MHz)	21400). 26	500
Freq.	Note	Detector	Spectrum	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	Average	26.41	9.85	36.26	54.00	-17.74
4874.00	H H	Average Peak	38.03	9.85 9.85	36.26 47.88	54.00 74.00	-17.74
48/4.00	п	Реак	38.03	9.00	4/.00	/4.00	-20.12



FCC ID: CPOD7E1-LTE

Test Date

:802.11 n40M

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:2015-06-24

Fundamental F Operation Mod EUT Pol.	Frequency	:2437 MHz :TX MID :H Plan	1	Temp./Hu Engineer Measuren	ımi. nent Antenna Po	:Curry	g_C / 61 RH
97	(dBuV/m)		iii	i		i	
90	·						
80						FCC RSE-	PK
70	·						
60						FCC RSE-	AV
50	2						
40					· · · · · · · · · · · · · · · · · · ·		
30							
20							
10							
0		2400	44000	40200	24.40		
1000	•	6100.	11200. Frequency (I	16300. MHz)	21400). 2	6500
Freq.	Note	Detector	Spectrum	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	Average	26.53	9.85	36.38	54.00	-17.62
4874.00	Н	Peak	37.91	9.85	47.76	74.00	-26.24

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.



FCC ID: CPOD7E1-LTE

Test Date

:802.11 n40M

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:2015-06-24

Fundamental F Operation Mod EUT Pol.	requency	:2452 MHz :TX HIGH :H Plan		Temp./Hu Engineer Measurem	mi. nent Antenna Pc	:Curry	_C / 61 RH ICAL
97	(dBuV/m)						
90				·			
80				·		FCC RSE-F	ĸ
70				·			
60						FCC RSE-4	W
50	2						
40							
30							
20				·			
10				·			
0 <mark></mark>		6100.	11200. Frequency (I	16300. MHz)	21400). 20	5500
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4904.00	Н	Average	25.66	9.84	35.50	54.00	-18.50
4904.00	Н	Peak	36.94	9.84	46.78	74.00	-27.22



FCC ID: CPOD7E1-LTE

Test Date

:802.11 n40M

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:2015-06-24

Fundamental F Operation Mod EUT Pol.		:2452 MHz :TX HIGH :H Plan	-	Temp./Hu Engineer Measuren	mi. nent Antenna Po	:Curry	g_C / 61 RH
97	(dBuV/m)						
90					·		
80						FCC RSE-	DK
70						(CC NGL-	
60							
50	2			 		FCC RSE	<u>AV</u>
40							
30							
				1		 	
20							
10				I I I		 	
0 ^L 1000		6100.	11200. Frequency (I	16300. MHz)	21400). :	26500
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4904.00	Н	Average	25.74	9.84	35.58	54.00	-18.42
4904.00	Н	Peak	37.24	9.84	47.08	74.00	-26.92

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12 PEAK POWER SPECTRAL DENSITY

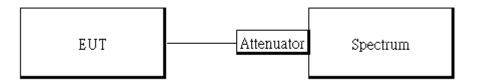
12.1 Standard Applicable

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

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

12.3 Test Set-up



12.4 Measurement Procedure

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- 3. Set the span to 1.5 times the DTS channel bandwidth.
- 4. Set the RBW = 3 kHz.
- 5. Set the VBW = 10 kHz.
- 6. Detector = peak.
- 7. Sweep time = auto couple.
- 8. Trace mode = max hold.
- 9. Allow trace to fully stabilize.
- 10. Use the peak marker function to determine the maximum amplitude level.
- 11. 802.11n MIMO mode: offset is set following "measure and add 10 Log (N)" on spectrum to measure the PSD for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=2 for this given application.

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Note: The highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The single transmitting mode is only reported measurement that produces higher value of outcome.

Note: The antenna gain is granter than 6 dBi in MIMO mode the limit reduce as below: Directional gain = gain of antenna element + $10 \log (\# \text{ of TX antenna elements})$ Effective Legacy Gain (dBi) = 4.92+3.01=7.93dBi Limit: 8dBm - (7.93 - 6dBi) = 6.07dBm

12.5 Measurement Result

Frequency	RF Power Density	Maximum Limit	Result					
(MHz)	(dBm)	(dBm)						
802.11b								
2412	-9.84	8	PASS					
2437	-6.96	8	PASS					
2462	-8.25	8	PASS					
	802.11	g						
2412	-17.54	8	PASS					
2437	-10.45	8	PASS					
2462	-20.78	8	PASS					
	802.11n_HT20	(MIMO)						
2412	-14.33	6.07	PASS					
2437	-15.68	6.07	PASS					
2462	-16.69	6.07	PASS					
	802.11n_HT40	(MIMO)						
2422	-21.24	6.07	PASS					
2437	-19.39	6.07	PASS					
2452	-21.12	6.07	PASS					

*Refer to next page for plots

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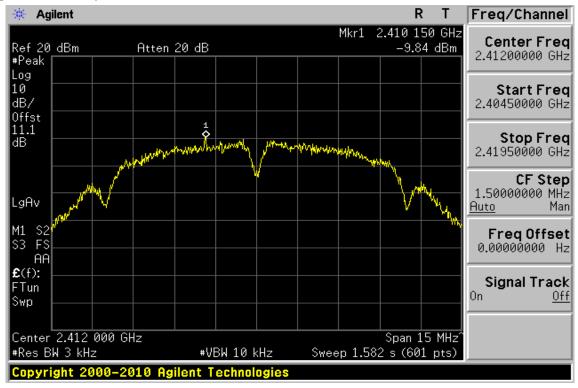
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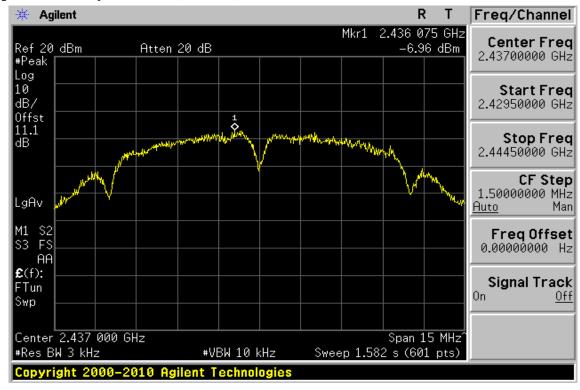


802.11b

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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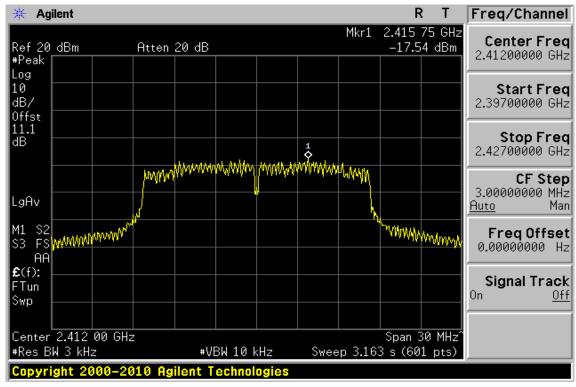


Freq/Channel 🔆 Agilent R Т Mkr1 2.460 175 GHz Center Freq -8.25 dBm Ref 20 dBm Atten 20 dB 2.46200000 GHz #Peak Log 10 Start Freq dB/ 2.45450000 GHz Offst \$ 11.1 Stop Freq dB MAN 2.46950000 GHz **CF Step** 1.50000000 MHz LgAv Auto Man M1 S3 S2 Freq Offset FS 0.00000000 Hz AΑ £(f): Signal Track FTun 0n Off Swp Center 2.462 000 GHz Span 15 MHz Sweep 1.582 s (601 pts) #Res BW 3 kHz #VBW 10 kHz Copyright 2000-2010 Agilent Technologies

Power Spectral Density Test Plot (CH-High)

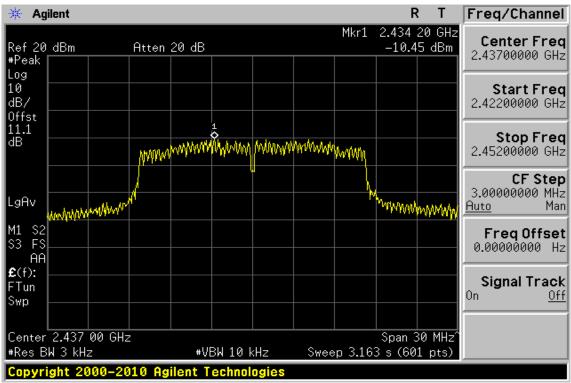
802.11g

Power Spectral Density Test Plot (CH-Low)



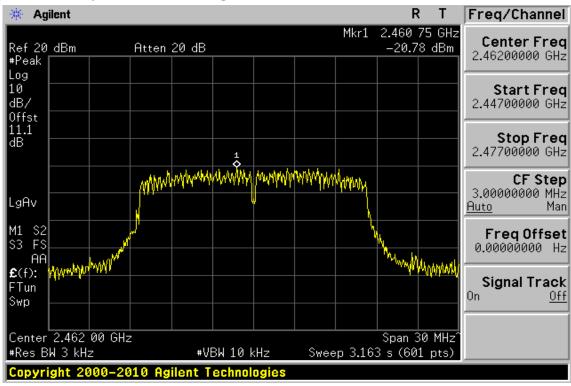
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Power Spectral Density Test Plot (CH-Mid)

Power Spectral Density Test Plot (CH-High)

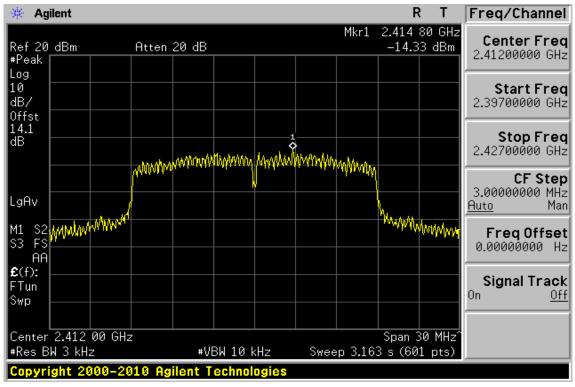


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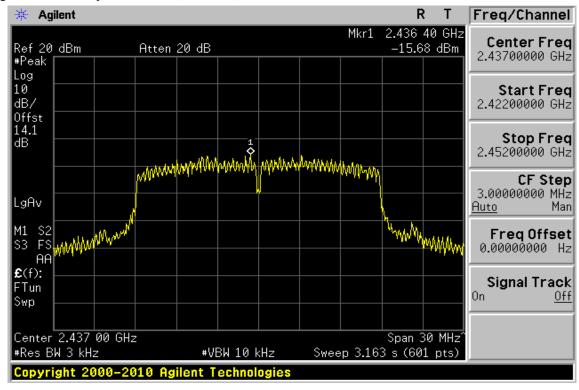


802.11n HT20 (MIMO)

Power Spectral Density Test Plot (CH-Low)



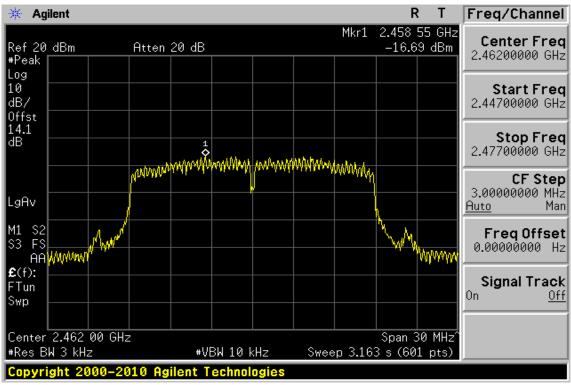
Power Spectral Density Test Plot (CH-Mid)



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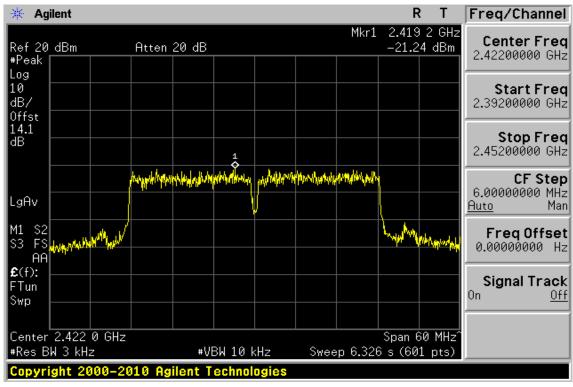




Power Spectral Density Test Plot (CH-High)

802.11n HT40 (MIMO)

Power Spectral Density Test Plot (CH-Low)



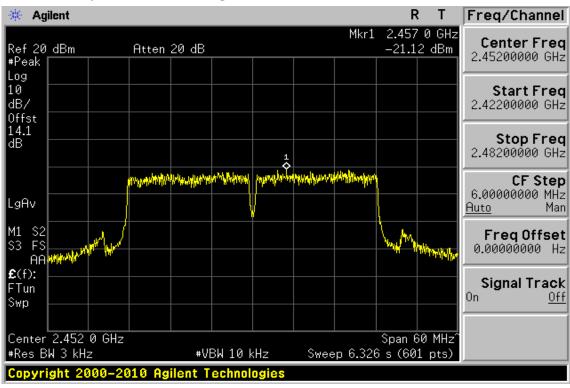
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Freq/Channel 🔆 Agilent R Т Mkr1 2.441 9 GHz Center Freq -19.39 dBm Ref 20 dBm Atten 20 dB 2.43700000 GHz #Peak Log 10 Start Freq dB/ 2.40700000 GHz Offst 14.1 Stop Freq dB 2.46700000 GHz Ŷ sh-aliffat **Yilli**te **CF** Step ካጠጥ 6.00000000 MHz LgAv Auto Man Μ1 S2 Freq Offset A. Oak AN INT S3 FS 0.00000000 Hz AΑ £(f): Signal Track FTun 0n Off Swp Center 2.437 0 GHz Span 60 MHz Sweep 6.326 s (601 pts) #Res BW 3 kHz #VBW 10 kHz Copyright 2000-2010 Agilent Technologies

Power Spectral Density Test Plot (CH-Mid)

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.

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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