

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT **AND INDUSTRY CANADA RSS 210**

	OF				
Product Name:	Wireless print server				
Brand Name:	StarTech.com Ltd				
Model No.:	PM1115UW				
Model Difference:	N/A				
FCC ID:	2AA3I-PM1115UW				
IC:	11232A-PM1115UW				
Report No.:	E2/2014/10021				
Issue Date:	Apr. 02, 2014				
FCC Rule Part:	§15.247, Cat: DTS				
IC Rule Part:	RSS-210 issue 8 :2010, Annex 8				
Prepared for:	StarTech.com Ltd 45 Artisans Crescent London, Ontario CANADA N5V 5E9				
Prepared by:	SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Township, Taoyuan County, Taiwan 333				
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VERIFICATION OF COMPLIANCE

Applicant:	StarTech.com Ltd 45 Artisans Crescent London, Ontario CANADA N5V 5E9
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Brand Name:	StarTech.com Ltd
Model No.:	PM1115UW
Model Difference:	N/A
FCC ID:	2AA3I-PM1115UW
IC:	11232A-PM1115UW
File Number:	E2/2014/10021
Date of test:	Jan. 28, 2014 ~ Mar. 27, 2014
Date of EUT Received:	Jan. 28, 2014

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 C63.4:2009 and RSS-Gen. issue 3 the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.247 and IC RSS 210 issue 8: 2010 Annex 8. The test results of this report relate only to the tested sample identified in this report.

Test By:	Jazz Huang	Date	Apr. 02, 2014
Prepared By:	Jazz Huang / Sr. Engineer Judy Hin	Date	Apr. 02, 2014
Approved By:	Judy Hsu / Clerk Tim Ch ang	Date	Apr. 02, 2014

Jim Chang / Supervisor

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Version

Version No.	Date	Description
00	Apr. 02, 2014	Initial creation of document

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1 **GENERAL INFORMATION**

Product description 1.1

General:

Product Name:	Wireless print server					
Brand Name:	StarTech.com	Ltd				
Model No.:	PM1115UW	PM1115UW				
Model Difference:	N/A					
Hardware Version:	N/A					
Software Version:	N/A					
Dowor Supply	5Vdc from AC/DC Adapter					
Power Supply:	Adapter:	Model No.: AMS9-0502000FU2, Supplier: AMIGO				

WLAN 2.4GHz:

b								
Wi-Fi	Frequency Range	Channels	Rated Power Modulation Technology		Type of Emission			
11b/g	2412-2462	11	b: 15.59dBm g: 22.05dBm DSSS, OFDM		b: 14M8G1D g: 16M6D1D			
11n	HT20 2412-2462	11	n: 21.44dBm	OFDM	n: 17M7D1D			
11n	HT40 2422-2452	7	n: 21.59dBm	OFDM	n: 37M5D1D			
Antenna	Designation:		PIFA Antenna, 3.4dBi					
Modulation type:			CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM					
Transiti	on Rate:		802.11 b: 1/2/5.5/11 Mbps; 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 72.2Mbps 802.11 n_40MHz: 13.5 –135Mbps					

This report applies for WLAN, and complies with FCC rule part 15C.

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IEEE 802.11n Spec:

MCS Index					Nonna		NIDADO		Datarate(Mbps)			
	Nss	Modulation	R	NBPSC	NC.	NCBPS		NDBPS		nsGI	400nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.200	15
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.400	30
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.700	45
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.900	60
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.300	90
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.800	120
6	1	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.000	135
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.200	150

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bite per single carrier
NCBPS	Number of coded bite per symbol
NDBPS	Number of data bite per symbol
GI	Guard interval

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Related Submittal(s) / Grant (s) 1.2

This submittal(s) (test report) is intended for FCC ID: 2AA3I-PM1115UW filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules. And IC: 11232A-PM1115UW filing to comply with Industry Canada RSS-210 issue 8: 2010 Annex 8. The composite system (digital device) is compliance with Subpart B under the DoC procedure.

1.3 **Test Methodology**

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4:2009 and RSS-Gen: 2010. Radiated testing was performed at an antenna to EUT distance 3 meters.

Tested in accordance with Apr 2013 KDB558074 D01 V03 for compliance to FCC 47CFR 15.247 requirements.

1.4 **Test Facility**

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Township, Taoyuan County, Taiwan 333 which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009. FCC Registration Number is: 990257. Canada Registration Number: 4620A-4.

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 &10 meters) and FCC Registration Number: 94644.

1.5 **Special Accessories**

There are no special accessories used while test was conducted.

1.6 **Equipment Modifications**

There was no modification incorporated into the EUT.

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2 SYSTEM TEST CONFIGURATION

2.1 **EUT Configuration**

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

2.2 **EUT Exercise**

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

2.3 **Test Procedure**

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the general criterion in Section 7.1 of ANSI C63.4:2009.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz, and the measurement procedure 7.3 in ANSI 63.4:2009 is followed to carry out the test. The CISPR Quasi-Peak and Average detector mode is employed according to §15.107

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. 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. according to the requirements in Section 8 and 13 and of ANSI C63.4:2009,

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2.4 **Configuration of Tested System**

Fig. 2-1 Conducted (Antenna Port) Configuration

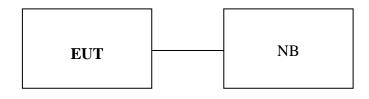


Fig. 2-2 Radiated Emission & AC Power Line Conducted Emission

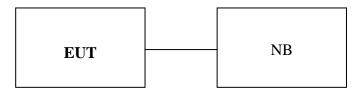


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2.	Notebook	Lenovo	L430	R9-YYG88	Shielding	Un-shielding

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SUMMARY OF TEST RESULTS 3

FCC / IC Rules	Description Of Test	Result
§15.207(a) RSS-Gen §7.2.4	AC Power Line Conducted Emission	Compliant
§15.247(b) (3) RSS-210 §A8.4(4)	Peak Output Power	Compliant
§15.247(a)(2) RSS-210 §A8.2 (a)	6dB Bandwidth	Compliant
§15.247(d) RSS-210 §A8.5	100 KHz Bandwidth Of Frequency Band Edges	Compliant
§15.247(d) RSS-210 §A8.5	Spurious Emission	Compliant
§15.247(e) RSS-210 §A8.2(b)	Peak Power Density	Compliant
§15.203 RSS-GEN §7.1.2,	Antenna Requirement	Compliant
RSS-Gen §4.6.1	99% Power Bandwidth	Compliant

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4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

802.11 b mode: Channel low (2412MHz) \cdot mid (2437MHz) and high (2462MHz) with 1Mbps lowest data rate are chosen for full testing.

802.11 g mode: Channel low (2412MHz) \cdot mid (2437MHz) and high (2462MHz) with 6Mbps lowest data rate are chosen for full testing.

 $802.11 \text{ n}_{20}\text{MHz}$ mode: Channel low (2412MHz) \cdot mid (2437MHz) and high (2462MHz) with 6.5Mbps lowest data rate are chosen for full testing.

802.11 n_40MHz mode: Channel low (2422MHz) mid (2437MHz) and high (2452MHz) with 13.5 Mbps lowest data rate are chosen for conducted power testing.

The worst case is determined by the output power that generates the highest emission. As examined in the section of output power measurement, the section 7.5, the lowest data rate at $b/g/n_HT20/n_HT40$ resulted the highest level of fundamental emission, and therefore, the lowest data rate is chosen as the worst-case to conduct the remaining of other mandatory test cases.

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

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5 **MEASUREMENT UNCERTAINTY**

Test Items	Uncertainty				
AC Power Line Conducted Emission	+/- 2.586 dB				
Peak Output Power	+/- 1.55dB (for Spectrum) +/- 1.42 dB (for Power Meter)				
6dB Bandwidth	+/- 123.36 Hz				
100 KHz Bandwidth Of Frequency Band Edges	+/- 1.55 dB				
Peak Power Density	+/- 1.55 dB				
99% Power Bandwidth	+/- 123.36 Hz				
Temperature	+/- 0.8 °C				
Humidity	+/- 4.7 %				
DC / AC Power Source	DC= +/- 1%, AC=+/- 0.2%				

Radiated Spurious Emission:

	30MHz - 180MHz: +/- 3.37dB
Magazinana ant sin a anta inter	180MHz -417MHz: +/- 3.19dB
Measurement uncertainty (Polarization : Vertical)	0.417GHz-1GHz: +/- 3.19dB
(i ofarization : vertical)	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

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

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

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6 **CONDUCTED EMISSION TEST**

6.1 **Standard Applicable:**

According to §15.207 and RSS-Gen §7.2.4, 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 t	1. The lower limit shall apply at the transition frequencies								
2 The limit descent in each second to be	h - 1	~ 15 MHz (~ 0.50 MHz							

The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

Measurement Equipment Used: 6.2

SGS Conducted Emission Test Site No.A													
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.								
ТҮРЕ		NUMBER	NUMBER	CAL.									
EMI Test Receiver	R&S	ESCI 7	100924	05/10/2013	05/09/2014								
Coaxial Cables	N/A	N30N30-1042 -150cm	N/A	02/07/2014	02/06/2015								
LISN	LISN SCHWARZB ECK		8127-648	06/17/2012	06/16/2014								
Pulse Limit	narda	PL01	1110X30602	08/14/2013	08/13/2014								
Test Software	Farad	EZ-EMC	Ver. SGS-03A1	N.C.R.	N.C.R.								

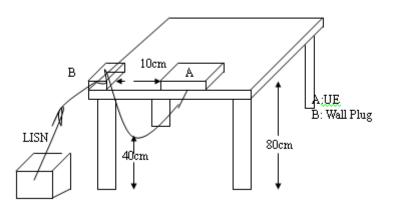
EUT Setup: 6.3

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4:2009.
- 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

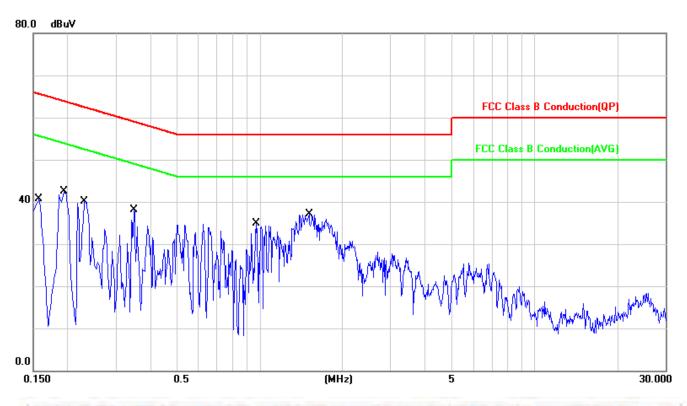
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AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	2014/03/17
Temperature:	16 °C	Humidity:	64 %	Test By:	Jazz
				Probe:	L1/N



NO.	TUF	Freq.	Reading	Inctor	Measurement	Lumit	Over	Detector	Comment
		(MHz)	dBuV	(dB)	(dBuV)	(dBuV)	(dB)		
1		0.1580	40.07	0.54	40.61	65.57	-24.96	QP	
2		0.1940	42.02	0.53	42.55	63.86	-21.31	QP	
3		0.2300	39.54	0.54	40.08	62.45	-22.37	QP	
4		0.3500	37.42	0.59	38.01	58.96	-20.95	QP	
5	117.11	0.9740	33.97	0.85	34.82	56.00	-21.18	QP	
6		1.5140	36.07	0.95	37.02	56.00	-18.98	QP	4

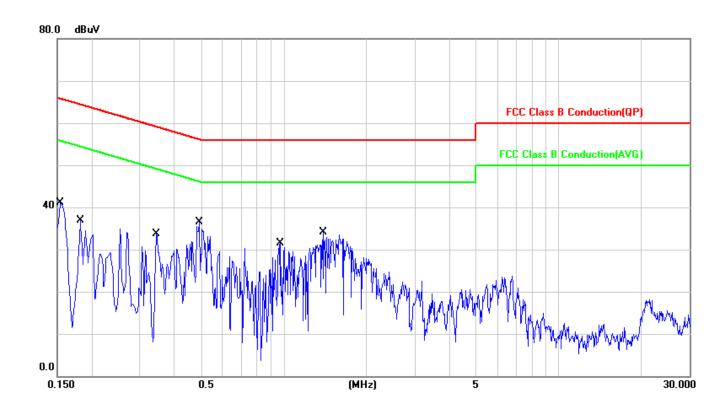
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No.	10:	Freq.	Seading	Factor	Massuremeni	Linii	Over	Deletior	Continent
100		(MHz)	dBuV	(dB)	(dBuV)	(dBuV)	(dB)		
1		0.1540	40.95	0.18	41.13	65.78	-24.65	QP	
2		0.1820	36.73	0.19	36.92	64.39	-27.47	QP	-
3		0.3460	33.37	0.24	33.61	59.06	-25.45	QP	
4		0.4940	36.21	0.33	36.54	56.10	-19.56	QP	
5		0.9740	31.05	0.53	31.58	56.00	-24.42	QP	
6		1.3980	33,53	0.62	34.15	56.00	-21.85	QP	

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7 PEAK OUTPUT POWER MEASUREMENT

7.1 Standard Applicable:

According to §15.247 (b)

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to RSS-210 issue 8,§A8.4(4), for systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W. Except as provided in Section A8.4 (5), the e.i.r.p. shall not exceed 4 W.

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmitted power delivered to all antennas and antenna elements, averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or transmitting at a reduced power level. If multiple modes of operation are implemented, the maximum conducted output power is the highest total transmit power occurring in any mode.

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.

除非另有說明,此報告結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,不可部份複製。

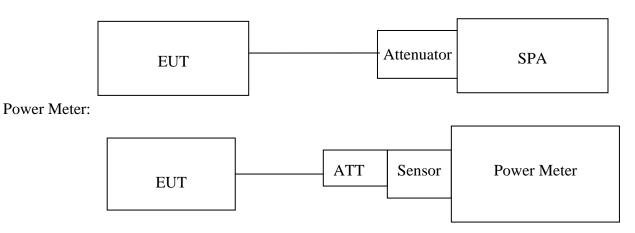


7.2 **Measurement Equipment Used:**

SGS Conducted Room											
EQUIPMENT	MFR	MODEL	LAST	CAL DUE.							
ТҮРЕ		NUMBER	NUMBER	CAL.							
Power Meter	Anritsu	ML2495A	1005007	01/13/2014	01/12/2015						
Power Sensor	Anritsu	MA2411B	917032	01/13/2014	01/12/2015						
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/30/2013	05/29/2014						
Spectrum Analyzer	Agilent	E4440A	MY45304525	03/08/2014	03/07/2015						
DC Block	Mini-Circuits	BLK-18-S+	1	02/27/2014	02/26/2015						
Low Loss Cable	HUBER+SUHNE R	SUCOFLEX 104PEA	N/A	01/03/2014	01/02/2015						
Attenuator	Mini-Circuit	BW-S10W2+	002	02/27/2014	02/26/2015						
Splitter	Agilent	11636B	N/A	02/27/2014	02/26/2015						

7.3 Test Set-up:

Spectrum:



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.



7.4 **Measurement Procedure:**

1. Place the EUT on the table and set it in transmitting mode.

2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter or spectrum. (Peak power setting on Spectrum: Channel power function, RBW = 1MHz, VBW = 3MHz, Span: 30/60MHz, Detector =peak, Sweep = Auto. Setting on spectrum is adjusted based on the mandatory procedure in 9.1.2 of the KDB558074). Power Meter is used as the auxiliary test equipment to conduct the output power measurement. 9.1.3 in KDB558074 is followed.

(Avg. power setting on Spectrum: Channel power function, RBW = 1MHz, VBW = 3MHz, Span: 30/60MHz, Detector = Avg., Trace avg = 100, Sweep = Auto, Setting on spectrum is adjusted based on the mandatory procedure in 9.2.2.4 of the KDB558074). Power Meter is used as the auxiliary test equipment to conduct the output power measurement. 9.2.3, option 3 in KDB558074 is followed.

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

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

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode (b/g/n ht20/n ht40) 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

b = 100%, g = 100%, $n_ht_20 = 100\%$, and $n_ht_40 = 100\%$, where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

Tabular results as indicates below entails the results of duty factor for all supported modes.

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.



Formula:

Duty Cycle = *Ton* / (*Ton*+*Toff*)

Test Procedure:

Set span = 0, RBW = 1MHz, VBW = 3MHz, Detector = PeakDuty Cycle:

	Duty Cycle	Duty Factor (dBm)
802.11b	1.00	0
802.11g	1.00	0
802.11n_20	1.00	0
802.11n_40	1.00	0

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.



Duty Factor:

802.11 b

	ctrum Analyzer	- Swept SA								
L <mark>XI</mark> RL	RF	50 Ω DC			SENSE:I		ALIGN AUTO		PM Mar 26, 2014 CE 1 2 3 4 5 6	Frequency
10 dB/div		et 11 dB .00 dBm	PNO: Fast IFGain:Lov		g: Free Ru tten: 30 dE	in		TY D	er P N N N N N 180.0 μs 64 dBm	Auto Tune
Log 20.0 1 10.0 0.00						·				Center Free 2.437000000 GH
-10.0 -20.0 -30.0										Start Free 2.437000000 GH
-40.0 -50.0 -60.0										Stop Fred 2.437000000 GH:
Center 2. Res BW	8 MHz	00 GHz ×		/BW 8.0	(FUNCTIO	Sweep 2	0.00 ms (Span 0 Hz (1001 pts) ^{ON VALUE}	CF Step 8.000000 MH <u>Auto</u> Mar
2 3 4 5	1 t		480.0 µs	15	.64 dBm				=	Freq Offse 0 H
6 7 8 9 10 11										
									+	
MSG							STATUS	5		

802.11 g

	ctrum Analyzer - S										- 5 -
L <mark>XI</mark> RL	RF 5	0Ω DC			SENSE:IN	IT		ALIGN AUTO e: Log-Pwr		M Mar 26, 2014	Frequency
			PNO: Fast IFGain:Low		: Free Run en: 30 dB	1		e. Log-i wi	TY	PE WWWWWW ET P NNNNN	
10 dB/div	Ref Offset Ref 30.0								Mkr1 2 18.	0.00 ms 83 dBm	Auto Tune
20.0 10.0	ماروا والمراوا مرزادة والواورات	han hala tafa hata hala ta	สดในสาราได้เรา-ให้เราะรับไป	بلواسترا المام والباسقيا	lalahan islam kalanda	ورواولورواو ^{لر} دوارد	rhatan darka sa kata s	ومرادة حرافة والمراجع الم	l dan belander betan	1 http://www.angle.com	Center Freq 2.437000000 GHz
0.00											2.437000000 GH2
-10.0											Start Freq
-20.0											2.437000000 GHz
-40.0											Stop Freq
-50.0											2.437000000 GHz
	43700000									pan 0 Hz	CE Ster
Res BW 8		0 GHZ	#VE	3W 8.0 N	ИНz			Sweep 2	0.00 ms (1001 pts)	CF Step 8.000000 MHz Auto Man
	RC SCL	Х	20.00 ms	۲ 18.	83 dBm	FUNCTION	ON FU	NCTION WIDTH	FUNCTI	DN VALUE	Auto Man
2 3											Freq Offset
4 5 6										=	0 Hz
7											
9											
11				"	1					+	
MSG								STATUS	6		

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 n_20 MHz

🎵 Agilent Spec	trum Analy	zer - Swept	SA									
RL	RF	50 Ω	DC			SENSE:I	INT	A.v. T.v.	ALIGN AUTO		M Mar 26, 2014	Frequency
				PNO: Fast IFGain:Low		: Free Ru en: 30 dE		Avgiyp	e. Log-rwi	TY		
10 dB/div	Ref 01 Ref 3	ffset 11 10.00 d	dB Bm							Mkr1 8 18.	.720 ms 41 dBm	Auto Tune
10.0	****	[↓] ₹	fe ^t elajkingtele	Longo an el code Tango	*1	ละไปประกอส์เสราร์ระดา	rfrentro feloren	₩Ŧ₩ġŀſŧĴĔĸĬĬŢġ		agestation and the	ามารู้ทำ ได้จะสูง "ใน เสริงไปแก	Center Freq 2.437000000 GHz
0.00 10.0 20.0 30.0												Start Freq 2.437000000 GHz
-40.0 -50.0 -60.0												Stop Freq 2.437000000 GHz
Center 2.4 Res BW 8		0000 G	Hz	#V	BW 8.0 N	/IHz			Sweep 2		pan 0 Hz 1001 pts)	CF Step 8.000000 MHz Auto Man
MKR MODE TR 1 N 1 2 3 4	t scl		X	8.720 ms	۲ 18.4	41 dBm	FUNC	TION FU	NCTION WIDTH	FUNCTI	ON VALUE	Freq Offset
5 6 7 8												0 HZ
9 10 11 1					II							
/ISG									STATU	5		

802.11 n_40 MHz

Di Agilent Spectrum Analyzer - Swept SA	
Avg Type. Log-F with those 12 3 4 5 6	Frequency
Ref Offset 11 dB Mkr1 3.600 ms 10 dB/div Ref 30.00 dBm	Auto Tune
	Center Freq 437000000 GHz
-10.0	Start Freq 437000000 GHz
-40.0	Stop Freq 437000000 GHz
Center 2.437000000 GHz Span 0 Hz Res BW 8 MHz #VBW 8.0 MHz Sweep 20.00 ms (1001 pts)	CF Step 8.000000 MHz
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE A 1 N 1 t 3.600 ms 14.15 dBm 14.15 dBm	-
2 3 3 3 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Freq Offset 0 Hz
MSG STATUS	

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.



7.5 Measurement Result:(* Note: The duty cycle factor is compensated back to obtain the maximum value of the measurement in average.)

802.11b

			Peak Power Output (dBm)								
СН	Frequency		Data Rate								
Сн	(MHz)	1	1 2 5.5 11								
1	2412	13.87	13.83	13.79	13.75	1 Watt = 30 dBm					
6	2437	15.59	15.50	15.42	15.33	1 Watt = 30 dBm					
11	2462	7.52	7.47	7.43	7.38	1 Watt = 30 dBm					

			Average Power Output (dBm)									
CII	Frequency		Data Rate									
СН	(MHz)	1	2	5.5	11	Required Limit						
1	2412	11.61	11.59	11.57	11.55	1 Watt = 30 dBm						
6	2437	13.43	13.32	13.22	13.11	1 Watt = 30 dBm						
11	2462	5.33	5.29	5.25	5.21	1 Watt = 30 dBm						

802.11g

					m)					
СП	Frequency				D					
CH (MHz)		6	9	12	18	24	36	48	54	Required Limit
1	2412	22.05	22.03	22.01	21.99	21.97	21.95	21.93	21.91	1 Watt = 30 dBm
6	2437	21.85	21.82	21.80	21.77	21.75	21.72	21.70	21.67	1 Watt = 30 dBm
11	2462	21.15	21.14	21.12	21.11	21.09	21.08	21.06	21.05	1 Watt = 30 dBm

					Bm)					
СН	Frequency				Deguined Limit					
Сп	(MHz)	6	9	12	18	24	36	48	54	Required Limit
1	2412	16.99	16.97	16.95	16.93	16.91	16.89	16.87	16.85	1 Watt = 30 dBm
6	2437	16.85	16.83	16.81	16.79	16.78	16.76	16.74	16.72	1 Watt = 30 dBm
11	2462	14.35	14.33	14.31	14.29	14.28	14.26	14.24	14.22	1 Watt = 30 dBm

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



802.11n 20M

			Peak Power Output(dBm)								
СН	Frequency		Required								
Сп	(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Limit	
1	2412	21.44	21.43	21.41	21.40	21.39	21.38	21.36	21.35	1 Watt = 30 dBm	
6	2437	21.21	21.19	21.16	21.14	21.12	21.10	21.07	21.05	1 Watt = 30 dBm	
11	2462	20.39	20.36	20.33	20.30	20.28	20.25	20.22	20.19	1 Watt = 30 dBm	

	_									
СН	Frequency		Required							
Сп	(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Limit
1	2412	14.80	14.78	14.76	14.74	14.72	14.70	14.68	14.66	1 Watt = 30 dBm
6	2437	14.34	14.31	14.29	14.26	14.23	14.20	14.18	14.15	1 Watt = 30 dBm
11	2462	12.74	12.72	12.70	12.68	12.65	12.63	12.61	12.59	1 Watt = 30 dBm

802.11n_40M

	Peak Power Output(dBm)									
СН	Frequency		Required							
СП	(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Limit
1	2422	21.59	21.55	21.52	21.48	21.45	21.41	21.38	21.34	1 Watt = 30 dBm
6	2437	21.40	21.36	21.33	21.29	21.26	21.22	21.19	21.15	1 Watt = 30 dBm
11	2452	20.37	20.35	20.33	20.31	20.30	20.28	20.26	20.24	1 Watt = 30 dBm

		Average Power Output(dBm)									
СП	Frequency		Required								
CH	(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Limit	
1	2422	12.29	12.27	12.24	12.22	12.19	12.17	12.14	12.12	1 Watt = 30 dBm	
6	2437	11.99	11.96	11.92	11.89	11.85	11.82	11.78	11.75	1 Watt = 30 dBm	
11	2452	9.48	9.46	9.44	9.42	9.41	9.39	9.37	9.35	1 Watt = 30 dBm	

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



8 **6dB BANDWIDTH**

8.1 **Standard Applicable:**

According to §15.247(a)(2), Systems using digital modulation techniques may operate in the 902 - 928 MHz,2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500kHz.

According to RSS 210 issue 8: 2010Annex 8.2. Systems employing digital modulation techniques (which includes direct sequence) can now be certified under RSS-210 provided they comply with the following requirements: The minimum 6 dB bandwidth shall be at least 500 kHz.

8.2 **Measurement Equipment Used:**

	S	GS Conducted R	loom	_	
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
ТҮРЕ		NUMBER	NUMBER	CAL.	
Power Meter	Anritsu	ML2495A	1005007	01/13/2014	01/12/2015
Power Sensor	Anritsu	MA2411B	917032	01/13/2014	01/12/2015
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/30/2013	05/29/2014
Spectrum Analyzer	Agilent	E4440A	MY45304525	03/08/2014	03/07/2015
DC Block	Mini-Circuits	BLK-18-S+	1	02/27/2014	02/26/2015
Low Loss Cable	HUBER+SUHNE R	SUCOFLEX 104PEA	N/A	01/03/2014	01/02/2015
Attenuator	Mini-Circuit	BW-S10W2+	002	02/27/2014	02/26/2015
Splitter	Agilent	11636B	N/A	02/27/2014	02/26/2015

8.3 **Test Set-up:**

EUT Attenuator SPA			
	EUT	Attenuator	SPA

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



8.4 **Measurement Procedure:**

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3*RBW, Span = 30M/50MHz, Detector=Peak, Sweep=auto, the setting on spectrum is adjusted based on the procedure as guide in 8.1 option 1 of KDB558074.
- 4. Mark the peak frequency and –6dB (upper and lower) frequency.
- 5. Repeat above procedures until all frequency of interest measured was complete.

8.5 **Measurement Result:**

Frequency	Bandwidth	Limit	Result
(MHz)	(kHz)	(kHz)	
2412	10090	> 500	PASS
2437	10090	> 500	PASS
2462	10080	> 500	PASS

802.11b

802.	11g
------	-----

Frequency	Bandwidth	Limit	Result
(MHz)	(kHz)	(kHz)	
2412	16420	> 500	PASS
2437	16420	> 500	PASS
2462	16440	> 500	PASS

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



802.11n_20M

Frequency	Bandwidth	Limit	Result
(MHz)	(kHz)	(kHz)	
2412	17720	> 500	PASS
2437	17720	> 500	PASS
2462	17710	> 500	PASS

802.11n 40M

Frequency	Bandwidth	Limit	Result	
(MHz)	(kHz)	(kHz)		
2422	37740	> 500	PASS	
2437	37730	> 500	PASS	
2452	37670	> 500	PASS	

* Note: Offset 11dB for 2.4G 802.11b//n_20/n_40

*Refer to next page for plots

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



802.11b 6dB Band Width Test Data CH-Low



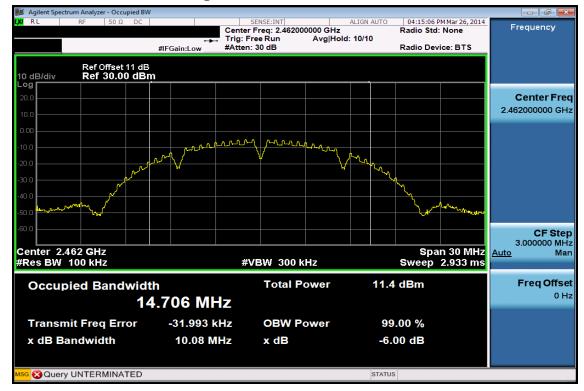
6dB Band Width Test Data CH-Mid



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



6dB Band Width Test Data CH-High



802.11g

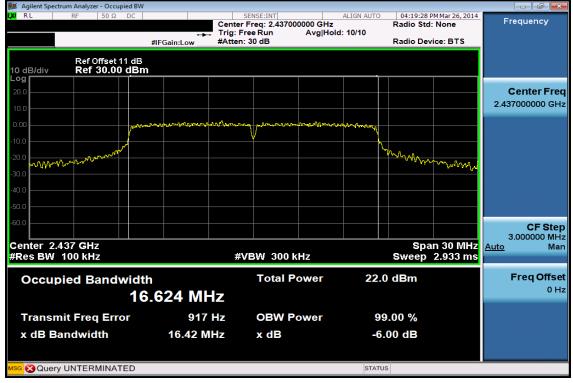
6dB Band Width Test Data CH-Low

	n Analyzer - Occup									
LXI RL	RF 50 Ω	DC		Center Free	q: 2.412000		ALIGN AUTO	04:20:56 Radio Std	PM Mar 26, 2014 : None	Frequency
		#	↔ IFGain:Low	Trig: Free F #Atten: 30		Avg Hold	i: 10/10	Radio Dev	rice: BTS	
			June							
10 dB/div	Ref Offset 1 Ref 30.00									
Log										Conton Enor
20.0										Center Freq 2.412000000 GHz
10.0										2.412000000 GH2
0.00		mmm	᠃ᡧᢧᢧ᠕ᡘᡐᠿᡏᡗᡘᡘᢛᡅ ᡊᡘ	manny	ֈՠՠՠՠՠՠ	ᠬᢦᢔᡊᡃᢔᡡᡐᠵᠺᢩᠰ	mont			
-10.0		<i>.</i>		v .				h		
-20.0	www.www.www.							www.www.	man share	
-30.0									~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
-40.0										
-50.0										
-60.0										05.04.0
										CF Step 3.000000 MHz
Center 2.41 #Res BW 10				#\/B\	V 300 kH	-			n 30 MHz 2.933 ms	<u>Auto</u> Man
#Res BW TO				#VDV	V 300 KF	12		Sweep	2.955 1115	
Occupie	ed Bandv	vidth		1	Fotal Po	wer	22.	2 dBm		Freq Offset
	16.640 MHz								0 Hz	
Trancmit	Freq Erro		4.133 k	<u>Ц</u> - (DBW Po	WOF	0	9.00 %		
	-					WGI				
x dB Ban	idwidth		16.42 M	HZ)	(dB		-6	.00 dB		
MSG 🐼 Query U	INTERMINAT	ED					STAT	us		

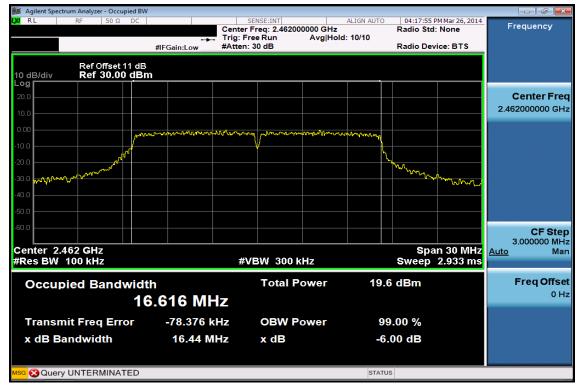
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



6dB Band Width Test Data CH-Mid



6dB Band Width Test Data CH-High



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



802.11n_20M 6dB Band Width Test Data CH-Low

🎉 Agilent Spectru			/						
LXI RL	RF 50	DΩ DC		SENSE:INT Center Freq: 2.41	2000000 GHz	ALIGN AUTO	04:29:32 Radio Sto	PM Mar 26, 2014 d: None	Frequency
			#IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Hold	d: 10/10	Radio De	vice: BTS	
	D. 607								
10 dB/div		et 11 dB .00 dBr							
Log 20.0									Center Freq
									2.412000000 GHz
10.0									
0.00		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	montermonter	man marker and	et and the second s	mmun			
-10.0		~		Y			h .,		
-20.0 -30.0 <mark>-30.0</mark>	nongen hand						March Color	Muyunya	
								~~ (v., ~~, ~	
-40.0									
-50.0									
-60.0									CF Step
Center 2.4	12 GHz						Spa	an 30 MHz	3.000000 MHz Auto Man
#Res BW 1				#VBW 30) kHz			2.933 ms	
Occupi	ied Ban	ndwidt	th	Total	Power	20.3	dBm		Freq Offset
	17.726 MHz							0 Hz	
Transmi	it Frea E	rror	726	Hz OBW	Power	99	.00 %		
x dB Ba			17.72 M				00 dB		
							oo ab		
	UNTERMI					STATU	5		
		ATED				STATU			

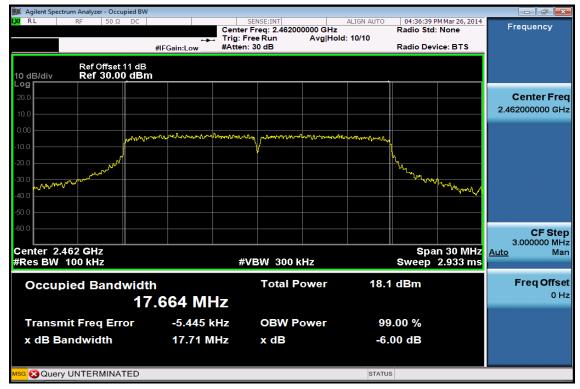
6dB Band Width Test Data CH-Mid



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

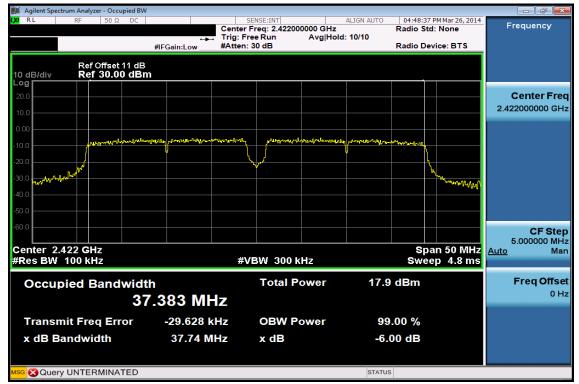


6dB Band Width Test Data CH-High



802.11n 40M

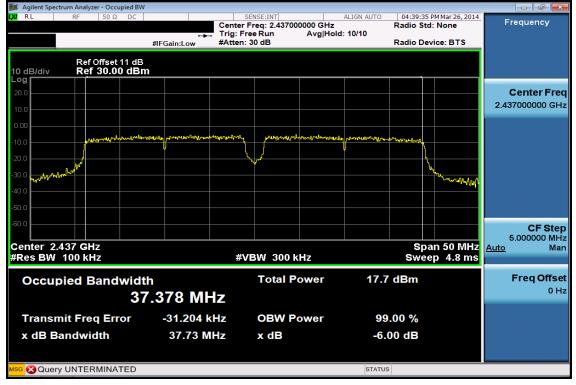
6dB Band Width Test Data CH-Low



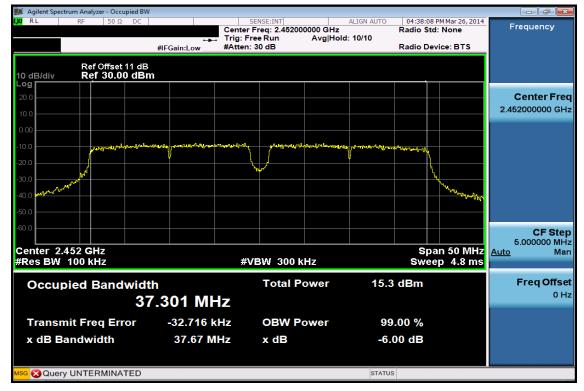
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



6dB Band Width Test Data CH-Mid



6dB Band Width Test Data CH-High



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



9 BAND EDGES MEASUREMENT

9.1 Standard Applicable:

According to \$15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, 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 in15.209(a).

According to RSS-Gen §7.2.5 and RSS-210 issue 8,§A8.5, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 5 and 6 is not required. In addition, radiated emissions which fall in the restricted bands of Table 3 must also comply with the radiated emission limits specified in Tables 5 and 6.

9.2 Measurement Equipment Used:

9.2.1 Conducted Emission at antenna port:

Refer to section 7.2 for details.

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.

除非另有說明,此報告結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,不可部份複製。



Radiated emission: 9.2.2

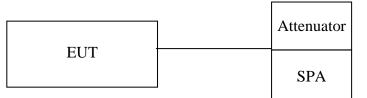
966 Chamber									
Name of Equip- ment	Manufacturer	ufacturer Model Serial Num		Calibration Date	Calibra- tion Due				
Signal Analyzer	R&S	FSV 40	101493	01/07/2014	01/06/2015				
EMI Test Receiver	R&S	ESCI 7	100950	01/11/2014	01/10/2015				
Broadband Anten- na	TESEQ	CBL 6112D	35240	01/17/2014	01/16/2015				
Horn Antenna	ETS-Lindgren	3117	00143272	01/27/2014	01/26/2015				
Horn Antenna	ETS-Lindgren	3160-09	00117911	01/22/2014	01/21/2015				
Horn Antenna	ETS-Lindgren	3160-10	00117783	01/22/2014	01/21/2015				
Pre-Amplifier	R&S	SCU-18	10203	04/29/2013	04/28/2014				
Pre-Amplifier	EM Electronics Corp.	EMC330 980096		01/24/2014	01/23/2015				
Pre-Amplifier	EM Electronics Corp.	EMC184045	980135	01/24/2014	01/23/2015				
Coaxial Cable	Huber+Suhner	SAC-C TX-30M-1GHz	TX1	04/22/2013	04/21/014				
Coaxial Cable	Huber+Suhner	SAC-C TX-1-26.5GHz	TX2	04/22/2013	04/21/014				
Coaxial Cable	Huber+Suhner	SAC-C RX-150k-30MH z	RX1	04/22/2013	04/21/2014				
Coaxial Cable	Huber+Suhner	SAC-C RX-30M-1GHz	RX2	04/22/2013	04/21/2014				
Coaxial Cable	Huber+Suhner	SAC-C RX-1-26.5GHz	RX3	04/22/2013	04/21/2014				
Filter Bank	R&S	TS8996	SCIN.EMC.1023. 12	04/22/2013	04/21/2014				
Attenuator	WOKEN	218FS-10	HY-151	01/06/2014	01/05/2015				
Controller	Chance Most	886	N/A	N.C.R.	N.C.R.				

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.



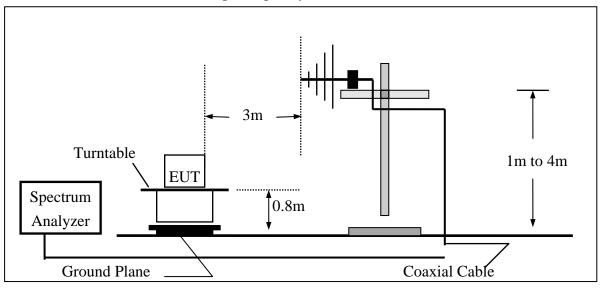
9.3 **Test SET-UP:**

9.3.1 **Conducted Emission at antenna port:**

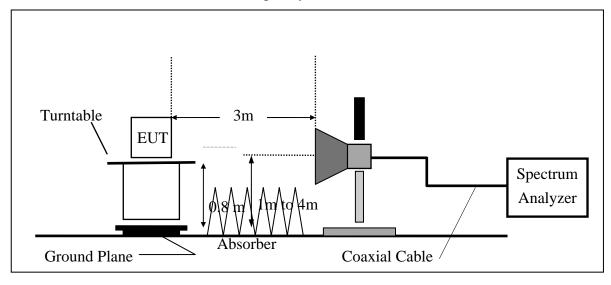


9.3.2 Radiated emission:

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



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



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9.4 **Measurement Procedure:**

Unwanted Emissions into Non-Restricted Frequency Bands, Measurement Procedure followed by 11.1 of KDB558074 D01

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
- 4. Set the spectrum analyzer as RBW, VBW=300KHz, Detector = Peak, Sweep = auto
- 5. Mark the highest reading of the emission as the reference level measurement.
- 6. Set DL as the limit = reading on marker 1 20dBm
- 7. 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.
- 8. Repeat above procedures until all default test channel (low, middle, and high) was complete.

Unwanted Emission falling into Restricted Frequency Bands, Measurement Procedure followed by 12.1 of KDB558074 D01

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 3.EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 4. 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.
- 5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 7.On spectrum, following 8.1.2, and RBW = 1MHz, VBW = 3MHz, & Marker 2390MHz, and 2483.5MHz (Peak Measurement). Average Measurement: following 8.2 with the modification span to 1MHz, &RBW = 1MHz, VBW = 3MHz and peak marker function to obtain the highest reading on 2390, and 2483.5MHz.
- 8. Repeat above procedures until all default test channel (low, middle, and high) was complete

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9.5 **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	

Measurement Result: 9.6

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

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802.11b - Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission:

(Unwanted Emissions into Restricted Frequency Bands): 802.11 b mode								
Operation Band	:802.11 b	Test Date	:2014-03-26					
Fundamental Frequency	:2412 MHz	Temp./Humi.	:15.8 deg_C / 52 RH					
Operation Mode	:Bandedge LOW	Engineer	:Aken					
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL					

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

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

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

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

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2390.00	E	Peak	43.14	3.14	46.28	74.00	-27.72
2390.00	E	Average	32.81	3.14	35.95	54.00	-18.05

Operation Band	:802.11 b	Test Date	:2014-03-26
Fundamental Frequency	:2412 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge LOW	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2390.00	E	Peak	42.59	3.14	45.72	74.00	-28.28
2390.00	E	Average	32.61	3.14	35.75	54.00	-18.25

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Operation Band	:802.11 b	Test Date	:2014-03-26
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2483.50	E	Peak	43.08	3.35	46.43	74.00	-27.57
2483.50	E	Average	32.71	3.35	36.06	54.00	-17.94

Operation Band	:802.11 b	Test Date	:2014-03-26
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2483.50	E	Peak	43.28	3.35	46.63	74.00	-27.37
2483.50	E	Average	33.43	3.35	36.78	54.00	-17.22

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802.11g - Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission:

(Unwanted Emissions into Restricted Frequency Bands): 802.11 g mode **Operation Band** :802.11 g Test Date :2014-03-26 **Fundamental Frequency** :2412 MHz Temp./Humi. :15.8 deg C / 52 RH :Bandedge LOW **Operation Mode** Engineer :Aken Measurement Antenna Pol. EUT Pol. :E1 Plan :VERTICAL

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

Factor(dB) = Antenna Factor(dB μ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

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

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

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2390.00	E	Peak	69.56	3.14	72.70	74.00	-1.30
2390.00	E	Average	48.46	3.14	51.60	54.00	-2.40

Operation Band	:802.11 g	Test Date	:2014-03-26
Fundamental Frequency	:2412 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge LOW	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2390.00	E	Peak	67.81	3.14	70.94	74.00	-3.06
2390.00	E	Average	47.24	3.14	50.38	54.00	-3.62

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Operation Band:802.Fundamental Frequency:2462	.11 g Test Dat 2 MHz Temp./H		2 RH
1 U	dedge HIGH Enginee	6–	

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2483.50	S	Peak	65.14	3.35	68.49	74.00	-5.51
2483.50	S	Average	45.35	3.35	48.70	54.00	-5.30

Operation Band	:802.11 g	Test Date	:2014-03-26
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2483.50	S	Peak	69.17	3.35	72.52	74.00	-1.48
2483.50	S	Average	48.85	3.35	52.20	54.00	-1.80

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802.11n_20M- Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission:

(Unwanted Emissions into Restricted Frequency Bands): 802.11 n_20M mode Test Date **Operation Band** :802.11 n20M :2014-03-26 **Fundamental Frequency** Temp./Humi. :2412 MHz :15.8 deg_C / 52 RH **Operation Mode** :Bandedge LOW Engineer :Aken EUT Pol. :E1 Plan Measurement Antenna Pol. :VERTICAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2390.00	E	Peak	66.89	3.14	70.03	74.00	-3.97
2390.00	E	Average	44.26	3.14	47.40	54.00	-6.60

Operation Band	:802.11 n20M	Test Date	:2014-03-26
Fundamental Frequency	:2412 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge LOW	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2390.00	E	Peak	65.05	3.14	68.19	74.00	-5.81
2390.00	E	Average	43.35	3.14	46.49	54.00	-7.51

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Operation Band	:802.11 n20M	Test Date	:2014-03-26
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2483.50	E	Peak	65.76	3.35	69.12	74.00	-4.88
2483.50	E	Average	43.31	3.35	46.66	54.00	-7.34

Operation Band	:802.11 n20M	Test Date	:2014-03-26
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2483.50	E	Peak	68.50	3.35	71.86	74.00	-2.14
2483.50	E	Average	46.14	3.35	49.49	54.00	-4.51

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802.11n_40M - Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission:

(Unwanted Emissions into Restricted Frequency Bands): 802.11 n_40M mode Test Date **Operation Band** :802.11 n40M :2014-03-26 :2422 MHz **Fundamental Frequency** Temp./Humi. :15.8 deg_C / 52 RH **Operation Mode** :Bandedge LOW Engineer :Aken EUT Pol. :E1 Plan Measurement Antenna Pol. :VERTICAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2390.00	E	Peak	69.32	3.14	72.46	74.00	-1.54
2390.00	E	Average	48.40	3.14	51.54	54.00	-2.46

Operation Band	:802.11 n40M	Test Date	:2014-03-26
Fundamental Frequency	:2422 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge LOW	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2390.00	E	Peak	67.20	3.14	70.34	74.00	-3.66
2390.00	E	Average	48.18	3.14	51.32	54.00	-2.68

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Operation Band	:802.11 n40M	Test Date	:2014-03-26
Fundamental Frequency	:2452 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2483.50	E	Peak	58.33	3.35	61.68	74.00	-12.32
2483.50	E	Average	42.68	3.35	46.03	54.00	-7.97

Operation Band	:802.11 n40M	Test Date	:2014-03-26
Fundamental Frequency	:2452 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:Bandedge HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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
2483.50	E	Peak	62.24	3.35	65.60	74.00	-8.40
2483.50	E	Average	46.10	3.35	49.45	54.00	-4.55

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10 SPURIOUS EMISSION TEST 10.1 Standard Applicable

According to §15.247(d),

Emission at antenna port:

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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Radiated Spurious Emission

Attenuation below the general limits specified in § 15.209(a) is not required. 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) (see § 15.205(c)).

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.

According to RSS-Gen §7.2.5 and RSS-210 issue 8,§A8.5, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 5 and 6 is not required. In addition, radiated emissions which fall in the restricted bands of Table 3 must also comply with the radiated emission limits specified in Tables 5 and 6 of RSS-GEN.

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10.2 Measurement Equipment Used:

10.2.1 Conducted Emission at antenna port:

Refer to section 7.2 for details.

10.2.2 Radiated emission:

Refer to section 9.2.2 for details.

10.3 Test SET-UP:

10.3.1 Conducted Emission at antenna port:

Refer to section 7.3 for details.

10.3.2 Radiated emission:

Refer to section 9.3.2 for details.

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www.tw.sas.com
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10.4 Measurement Procedure:

Radiated Emission:

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 4. 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.
- 5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 6. 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.
- 7. Repeat above procedures until all default test channel measured were complete.

Conducted Emission:

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. Set RBW = 100K & VBW = 300K on Spectrum.
- 3. Sweep the frequency to determine spurious emission as seen on spectrum from span of 30 to 3G, 3G to 8G, 8G to 13G, 13G to 18G and 18G to 26.5GHz, 18G to 40GHz (applicable if operation mode is 5GHz)
- Via Software, combine 5 spans of frequency range into one plot 4.
- Repeat above procedures until all default test channel measured were complete. 5.

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10.5 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	

10.6 Measurement Result:

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

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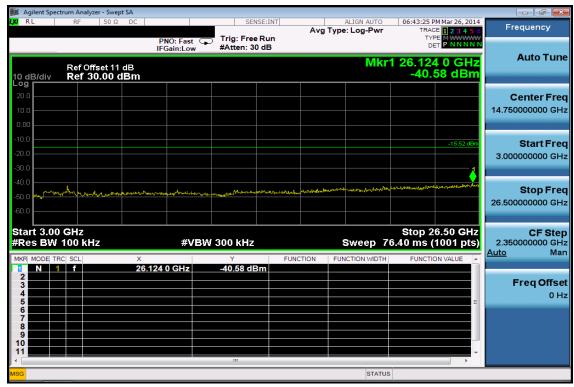
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Conducted Spurious Emission Measurement Result (802.11b) Ch Low 30MHz - 3GHz

🎉 Agilent Spe														
LXI RL	RF	50 Ω	DC			SENS	SE:INT	Ava		LIGN AUTO		PM Mar 26, 20 CE 1 2 3 4 5		Frequency
10 dB/div		offset 11 30.00 d		PNO: Fast IFGain:Low		Trig: Free #Atten: 30			.,,		۲۲ ۵ ۲ 1 2.41			Auto Tune
20.0 10.0		50.00 4									1			Center Freq 1.515000000 GHz
-10.0 -20.0 -30.0												-15.52 dE		Start Freq 30.000000 MHz
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Start 30 F #Res BW	100 k	Hz	X		BW 3	00 kHz		JNCTION		weep 9	.667 ms (5)	CF Step 297.000000 MHz Auto Man
2 3 4 5 6 7 8			2.4	1119GHz		4.48 dB							E	Freq Offset 0 Hz
9 10 11 11 MSG						III				STATUS	5		•	

Ch Low 3GHz - 26.5GHz



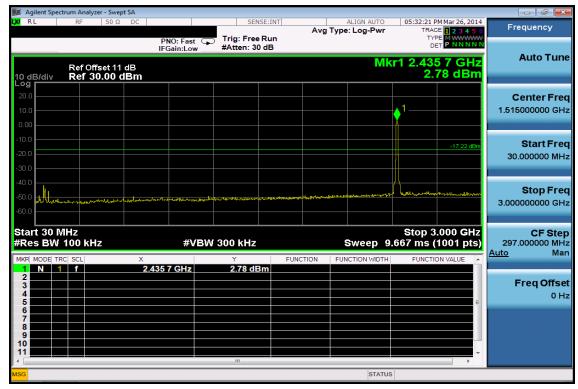
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Ch Mid 30MHz - 3GHz



Ch Mid 3GHz - 26.5GHz

	ctrum Analyzer - Swept SA						
LXIRL	RF 50 Ω DC		SENSE:I	Avg T	ALIGN AUTO ype: Log-Pwr	05:32:44 PM Mar 26, 2014 TRACE 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 11 dB Ref 30.00 dBm	PNO: Fast G	Trig: Free Ru #Atten: 30 dB		Mkr	1 26.312 0 GHz -40.93 dBm	Auto Turo
20.0 10.0 0.00							Center Freq 14.75000000 GHz
-10.0 -20.0 -30.0						-17.22 dBm	Start Freq 3.000000000 GHz
-40.0 -50.0 -60.0	and a manage started	เลาไปกับไร่ 	an particular and the second	nradiala ^{kale} nguha ^A	and an		Stop Freq 26.50000000 GHz
Start 3.00 #Res BW	100 kHz	#VBV	V 300 kHz Y -40.93 dBm	FUNCTION	Sweep 70	Stop 26.50 GHz 6.40 ms (1001 pts) FUNCTION VALUE	CF Step 2.350000000 GHz Auto Man
2 3 4 5 6 7			-40.00 dBiii				Freq Offset 0 Hz
9 9 10 11			m				
MSG					STATUS		

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.



Ch High 30MHz – 3GHz

鱦 Agilent Spectrum Analyzer - Swept SA					
Center Freq 1.515000000		SENSE:INT Ave	ALIGN AUTO g Type: Log-Pwr	06:45:33 PM Mar 26, 2014 TRACE 1 2 3 4 5 (TYPE M WWWWW	Frequency
Ref Offset 11 dB		a: 30 dB	Mk	r1 2.462 4 GHz -4.75 dBm	Auto Tune
20.0 10.0 0.00				▲ ¹	Center Freq 1.515000000 GHz
-10.0				-24.75 dBm	Start Freq 30.000000 MHz
-40.0 -50.0 -60.0	a Jagolanday, na faya daya da ana da manana da ana ana ana ana ana ana ana ana	gangang ang ang ang ang ang ang ang ang	ange and all a second	A Managhradu. And provide Same And a state	Stop Freq 3.000000000 GHz
Start 30 MHz #Res BW 100 kHz	#VBW 300 k		-	Stop 3.000 GHz .667 ms (1001 pts)	
MKR MODE TRC SCL X 1 N 1 f 2 2 3 3 3 3 4 5 6 6 6	Υ 4.462 4 GHz -4.75	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
7 8 9 10 11 11					
MSG			STATUS	\$	

Ch High 3GHz – 26.5GHz

XX R.L RF 50 Ω DC SENSE:INT ALIGN AUTO 06:45:55 PM Mar 26, 2014 Center Freq 14.750000000 GHz Trig: Free Run Avg Type: Log-Pwr TRACE 1234 5:65 Freque	ency
Ref Offset 11 dB Mkr1 26.453 0 GHz Aut 10 dB/div Ref 30.00 dBm -40.70 dBm Aut	to Tune
	e r Freq 000 GHz
-10.0 -20.0 -30.0	a rt Freq 000 GHz
-40.0 -50.0 -60.0	o p Freq 000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 76.40 ms (1001 pts) 2.350000 MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE Auto	CF Step 000 GHz Man
1 N 1 f 26.453 0 GHz -40.70 dBm 2 - - - - - Frequencies 3 - - - - - Frequencies Frequencies 4 - - - - - - - Frequencies Frequencies -	q Offset 0 Hz

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Conducted Spurious Emission Measurement Result (802.11g) Ch Low 30MHz - 3GHz

RL RF 50.9. DC Center Freq 1.515000000 G Ref 0ffset 11 dB Ref 0ffset 11 dB 10 dB/div Ref 30.00 dBm 10 dBm 20.0 10.0 10 dBm 10 dBm	HZ PNO: Fast FGain:Low	Trig: Free Ru #Atten: 30 dl	Avg un	ALIGN AUTO Type: Log-Pwr Mk	TRACE TYPE DE	1 Mar 26, 2014 1 2 3 4 5 6 M WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	Frequency
Ref Offset 11 dB 10 dB/div Ref 30.00 dBm 20 0	PNO: Fast 🕞		un		TYPI DE		
20.0					3.3	0 GHz 6 dBm	Auto Tune
0.00					1		Center Freq 1.515000000 GHz
-10.0 -20.0 -30.0						-16.64 dBm	Start Freq 30.000000 MHz
-40.0 -50.0	Magnier and an allower	لى يەرىپى مەرىيە بەر يەرىپى يەر يولىيە ئەر يولىيە ئەر يولىيە ئەر يەر يەر يەر يەر يەر يەر يەر يەر يەر ي	and a standard and a standard and a standard and a standard a standard a standard a standard a standard a stand	when and the second		ikana mana matani	Stop Freq 3.000000000 GHz
Start 30 MHz #Res BW 100 kHz MKR MODE TRC SCL X		/ 300 kHz Y	FUNCTION	Sweep 9	Stop 3. .667 ms (1 FUNCTIO		CF Step 297.000000 MHz <u>Auto</u> Man
1 N 1 f 2.40 2 3 4 4 5 5 5 6 6 7	9 0 GHz	3.36 dBm				=	Freq Offset 0 Hz
8 9 10 11 ∢ MSG				STATUS			

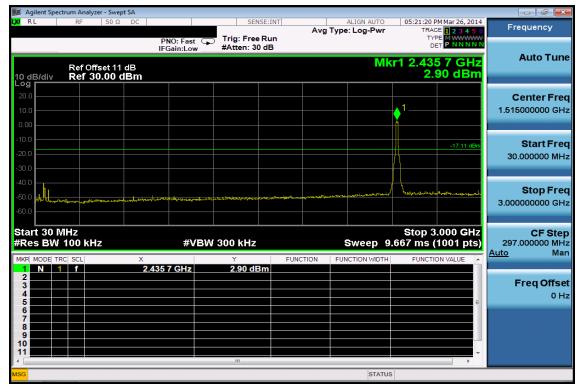
Ch Low 3GHz - 26.5GHz

🎉 Agilent Spectrum Analyzer - Swept SA							
IX RL RF 50 Ω DC Center Freq 14.750000000		SENSE:INT	Avg Tv	ALIGN AUTO	06:47:35 PM Mar 26, 2 TRACE 1 2 3 4		equency
	PNO: Fast	rig: Free Run Atten: 30 dB		_	TYPE M WWW DET P N N N	N N	Auto Tune
Ref Offset 11 dB 10 dB/div Ref 30.00 dBm				Mkr	1 26.453 0 GH -40.23 dB	iz m	Auto Tune
20.0 10.0							Center Freq 0000000 GHz
-10.0 -20.0 -30.0					-16.64 c		Start Freq
-40.0 -50.0	tor and such such such as the	da fural metamora	house the state of	ALT NAMES AND A CONTRACT OF THE DESIGN OF	ىمىيەتىلەرمەيلەر يەتىرىكى بىلەھىيەر يەتىرىكىيىرىغان بىلەر يەتىرىكى مەرىكىيە بىلەر يەتىرىكى	26.500	Stop Freq
Start 3.00 GHz #Res BW 100 kHz	#VBW 30	00 kHz	FUNCTION FI	Sweep 7	Stop 26.50 GH 6.40 ms (1001 pt FUNCTION VALUE		CF Step 0000000 GHz Man
2 3 4 5	53 0 GHz -4	40.23 dBm				Ξ	Freq Offset 0 Hz
6 7 8 9 10 11							
MSG		III		STATUS	>		

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.



Ch Mid 30MHz - 3GHz



Ch Mid 3GHz - 26.5GHz

📁 Agilent Spectrum Analyzer - Swept SA							
LXXIRL RF 50Ω DC	SENSE	Avg Type: Log-Pw		Frequency			
Ref Offset 11 dB	Ref Offset 11 dB Mkr1 26.100 5 GHz 0 dB/div Ref 30.00 dBm						
20.0 10.0 0.00				Center Freq 14.750000000 GHz			
-10.0 -20.0 -30.0			-17.11 dBm	Start Freq 3.000000000 GHz			
-40.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	un din den sin yn gegener gener fan in yn gener die de gene	ann ann an	Stop Freq 26.50000000 GHz			
Start 3.00 GHz #Res BW 100 kHz MKR MODE TRC SCL X	#VBW 300 kHz	FUNCTION FUNCTION WID	Stop 26.50 GHz 76.40 ms (1001 pts)	CF Step 2.350000000 GHz <u>Auto</u> Man			
2 3 3 4 5 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				Freq Offset 0 Hz			
8 9 10 11 11 11 11 11 11 11 11 11 11 11 11	m	STA	rus				

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.



Ch High 30MHz – 3GHz

	ctrum Analyzer - Sv								
Center F	RF 50 Freq 1.5150	Ω DC 000000 C		SENSE	Avg	ALIGN AUTO	TRA	PM Mar 26, 2014 CE 1 2 3 4 5 6	Frequency
10 dB/div Log	Ref Offset Ref 30.00	11 dB	PNO: Fast (IFGain:Low	Trig: Free R #Atten: 30 d		M	r1 2.46	5 4 GHz 30 dBm	Auto Tune
20.0 10.0 0.00							1		Center Freq 1.515000000 GHz
-10.0 -20.0 -30.0								-19.70 dBm	Start Freq 30.000000 MHz
-40.0 -50.0 -60.0	underender and	nter and the second	alal-addatestaria	and a margine of a second states and	hadacaptiven hadace ya	مىرىدەن يارىر	Reveland		Stop Freq 3.000000000 GHz
Start 30 I #Res BW	100 kHz		#VB	W 300 kHz			.667 ms	8.000 GHz (1001 pts)	CF Step 297.000000 MHz Auto Man
MKR MODE T 1 N 2 3 4 5 6 7 8 9 9 10 11 4 4		× 2.46	65 4 GHz	Υ 0.30 dBm	FUNCTION	FUNCTION WIDTH	FUNCI		Freq Offset 0 Hz
MSG						STATUS	6		

Ch High 3GHz – 26.5GHz

🎉 Agilent Spectrum An								F 🔀
LXI RL RF	50 Ω DC		SENSE:	Avg	ALIGN AUTO Type: Log-Pwr	06:49:11 PM Mar 26, 20 TRACE 1234	5 6 Frequen	су
10 dB/div Ref	Offset 11 dB 30.00 dBm	PNO: Fast IFGain:Low	Trig: Free Ru #Atten: 30 dE		Mkr	1 25.865 5 GH -40.64 dB	Auto	Tune
Log 20.0 10.0 0.00							Center 14.75000000	
-10.0 -20.0 -30.0						-19.70 d	Star 3.00000000	t Freq 00 GHz
-40.0 -50.0 2000	<u>~~~~</u>	ىرىلىر ئەركىيى مەركىيى مەركىيى مەركىيى مەركىيى	la _{ener} hinideration	rpresenting by a grant of	and and a second se	and read and a state of the second	Stop 26.50000000	Freq 00 GHz
Start 3.00 GHz #Res BW 100 I	kHz ×	#VBW	300 kHz Y -40.64 dBm	FUNCTION	Sweep 7	Stop 26.50 GH 6.40 ms (1001 pt FUNCTION VALUE		Step 00 GHz Man
2 3 4 5 6 7 8 9 10 11	20.0	55 5 GHZ	-40.04 dBm			•	Freq (Offset 0 Hz
MSG					STATUS	\$		

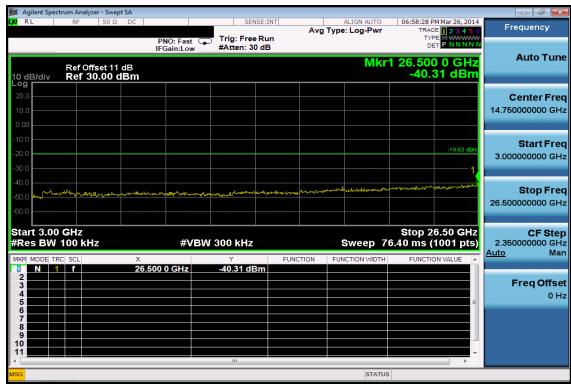
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Conducted Spurious Emission Measurement Result (802.11n_20M) Ch Low 30MHz - 3GHz

	ctrum Analyzer	- Swept SA							
LXIRL		50 Ω DC	·L1	SENS	SE:INT	ALIGN AUTO g Type: Log-Pwr		PM Mar 26, 2014 CE 1 2 3 4 5 6	Frequency
Center F	req 1.51		PNO: Fast C	Trig: Free	Run	g 1)pc. 20g 1 m	TY		
			FGain:Low	#Atten: 30	dB		_		Auto Tune
	Ref Offse	et11 dB				M	(r1 2.40	6 0 GHz	Auto Tulle
10 dB/div Log	Ref 30.	00 dBm					<u> </u>	37 dBm	
20.0									Center Freq
10.0									1.515000000 GHz
0.00							•'		
							Î		
-10.0								-19.63 dBm	Start Freq
-20.0									30.000000 MHz
-30.0							<u>/ </u>		
-40.0							/ \		Stop Freq
-50.0	والمراجع ومروحه والالارم	unger agreementations	An marked and a state	100 Jacob 10 400 Sec. 11 50 1	ماسوا ومارد ومراجع والمار ورور ورور	and the second state of the second state of	humabbatter	Multi-rendelage and a series	3.000000000 GHz
-60.0									0.00000000000000
							C (a a a a		
Start 30 M #Res BW			#\/D)	W 300 kHz		Sween (stop 3 9.667 ms (.000 GHz	CF Step 297.000000 MHz
			# V L)						Auto Man
MKR MODE T		× 2.40	6 0 GHz	Y 0.37 dB	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	
2				0.07 0.0					Freq Offset
3 4									0 Hz
5								E	0 112
6									
8									
9									
11									
MSG				III		STATU	0	•	
Mod						STATU	3		

Ch Low 3GHz - 26.5GHz



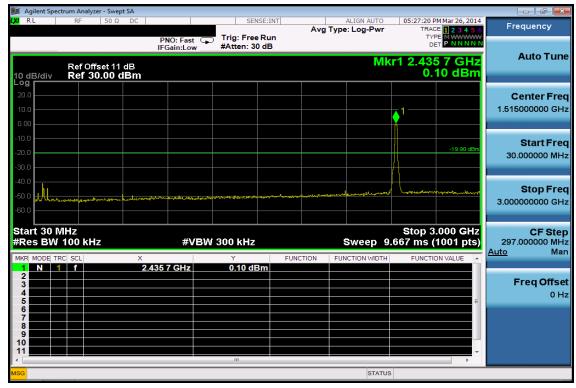
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Ch Mid 30MHz - 3GHz



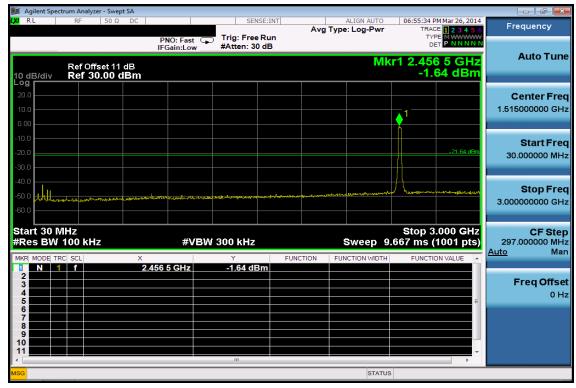
Ch Mid 3GHz - 26.5GHz

🎉 Agilent Spectrum Analyzer - Swept SA				
L <mark>X//</mark> R L RF 50 Ω DC	SENSE:	Avg Type: Log-Pwr	05:28:41 PM Mar 26, 2014 TRACE 1 2 3 4 5 6 TYPE MWWWW	Frequency
Ref Offset 11 dB	Auto Tune			
20.0 10.0 0.00				Center Freq 14.750000000 GHz
-20.0			0 dBm	Start Freq 3.000000000 GHz
-40.0 -50.0	normality of the stand of the stand of the stand	and a second	-Angle - Angle	Stop Freq 26.500000000 GHz
Start 3.00 GHz #Res BW 100 kHz	#VBW 300 kHz	Sweep 70	Stop 26.50 GHz 6.40 ms (1001 pts)	CF Step 2.350000000 GHz <u>Auto</u> Man
1 N 1 f 2! 2 3 - - - 3 - - - - 4 - - - - 6 - - - - 7 - - - - 9 - - - - - 10 - - - - - - 11 -	5.583 5 GHz -40.40 dBm			Freq Offset 0 Hz
MSG		STATUS		

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Ch High 30MHz - 3GHz



Ch High 3GHz - 26.5GHz

	ctrum Analyzer - Swe										
LXU RL	RF 50 S				SE:INT		ALIGN AUTO E: Log-Pwr	TRAC	M Mar 26, 2014		uency
		IF	NO: Fast 🕞 Gain:Low	#Atten: 30			Mkr			А	uto Tune
10 dB/div Log	Ref Offset 1 Ref 30.00							-40.8	32 dBm		
20.0 10.0											nter Freq 00000 GHz
-10.0 -20.0											Start Freq 00000 GHz
-40.0	ار میلیمی اور میلیمی اور میلیمی میلیمی اور میلیمی میلیمی اور میلیمی اور میلیمی میلیمی اور میلیمی میلیمی میلیمی میلیمی اور میلیمی میلیمی میلیمی میلیمی میلیمی میلیمی اور میلیمی میلیمی میلیمی میلیمی میلیمی میلیمی میلیمی میلیمی	nila fattana di kana di kata di alba	hale give a star by the g		an faith an that a start and a start and a start a star	م ^{ور} و المراجع ا	noonational and a second	ayul-deradarayan ayada	anter a la contra a		Stop Freq 00000 GHz
Start 3.00 #Res BW	100 kHz	×	#VBW	V 300 kHz	FUNCT		Sweep 7	6.40 ms (′	6.50 GHz 1001 pts)		CF Step 00000 GHz Man
1 N 2 3 4 5		25.395	5 GHz	-40.82 dB				, one he	=	Fr	eq Offset 0 Hz
6 7 8 9 10 11											
•				III					•		
MSG							STATUS	5			

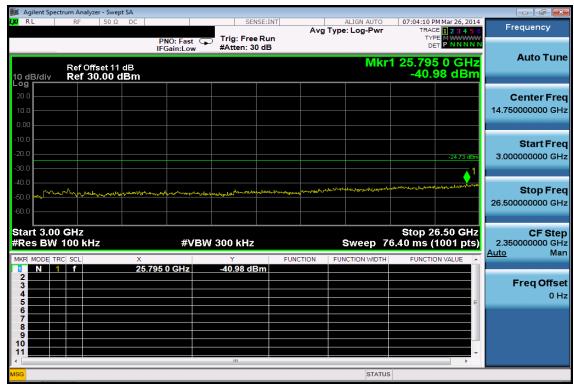
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Conducted Spurious Emission Measurement Result (802.11n_40M) Ch Low 30MHz - 3GHz

🎉 Agilent Spectrum									
LXI RL F	RF 50 Ω					ALIGN AUTO	TRA	PM Mar 26, 2014 CE 1 2 3 4 5 6	Frequency
	ef Offset 11 ef 30.00 d	۱ dB	PNO: Fast ⊂ FGain:Low	Trig: Free #Atten: 30		м	kr1 2.42		Auto Tune
20.0 10.0							1		Center Freq 1.515000000 GHz
-10.0 -20.0 -30.0								-24.73 dBm	Start Freq 30.000000 MHz
-40.0 -50.0 pt		u antina anti		ywlyget y Unathor Ngoun Angel	ay ang Jawa Katang S	an a	/ Annualue		Stop Freq 3.000000000 GHz
Start 30 MHz #Res BW 100	D kHz	× 2 42(#VB1	№ 300 kHz Y -4.73 dB	FUNCTION		9.667 ms	8.000 GHz (1001 pts)	CF Step 297.000000 MHz <u>Auto</u> Mar
2 3 4 5 6								Ξ	Freq Offset 0 Hz
7 8 9 10 11									
MSG				m		STATU	au	•	

Ch Low 3GHz - 26.5GHz



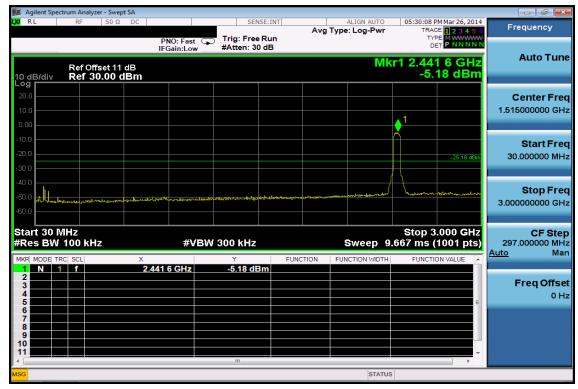
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Ch Mid 30MHz - 3GHz



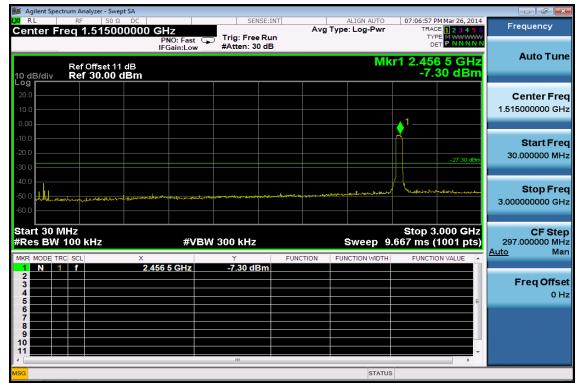
Ch Mid 3GHz - 26.5GHz

💓 Agilent Spectrum Analyzer - Swept SA			
LXX RL RF 50Ω DC	SENSE:I	Avg Type: Log-Pwr	30:46 PM Mar 26, 2014 Frequency TRACE 1 2 3 4 5 6
Ref Offset 11 dB 10 dB/div Ref 30.00 dBm	PNO: Fast Trig: Free Ru IFGain:Low #Atten: 30 dB	Mkr1 26	Auto Tune 40.86 dBm
Log 20.0 10.0 0.00			Center Freq 14.750000000 GHz
-10.0 -20.0 -30.0			Start Freq -2518 dBm 3.000000000 GHz
-40.0 -50.0 -60.0	where and a second for the second fo	neenen in de henne aan de hegene komt werde de statie	Stop Freq 26.50000000 GHz
Start 3.00 GHz #Res BW 100 kHz MKR MODE TRC SCL X I N 1 f 26.3	#VBW 300 kHz 359 0 GHz -40.86 dBm	Sweep 76.40	op 26.50 GHz ms (1001 pts) EUNCTION VALUE
2 2 3 3 4 5 5 6 6 6 7 7 8 8 9 9 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			Freq Offset 0 Hz
MSG	III	STATUS	

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.



Ch High 30MHz - 3GHz



Ch High 3GHz - 26.5GHz

	trum Analyzer - Sw	vept SA								
Center F	RF 50 req 14.750						ALIGN AUTO : Log-Pwr	TRAC	M Mar 26, 2014	Frequency
10 dB/div	Ref Offset 1 Ref 30.00	IF	NO: Fast Gain:Low	Trig: Free F #Atten: 30			Mkr	DE 1 25.60	7 0 GHz 29 dBm	Auto Tune
20.0 10.0 0.00										Center Freq 14.750000000 GHz
-10.0 -20.0 -30.0									-27.30 dBm	Start Freq 3.000000000 GHz
-40.0 -50.0	and the second	ginging below and income	and a second	and all and a feature of the second	Manguhanang Kalan Selama	n the factor of the local days	المريح والإيسارية براليسريك م	ykonensterlestoren	ar an ann an	Stop Freq 26.500000000 GHz
Start 3.00 #Res BW	100 kHz	× 25.607		V 300 kHz Y -40.29 dBr	FUNCTIO		Sweep 7	6.40 ms (6.50 GHz 1001 pts) DN VALUE	CF Step 2.350000000 GHz <u>Auto</u> Man
2 3 4 5 6 7 8 9 10 11		23.00/		-40.29 UDI						Freq Offset 0 Hz
 ✓ MSG 				III			STATUS		•	
							0			

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.



Radiated Spurious Emission Measurement Result (802.11b)

Operation Band	:802.11 b	Test Date	:2014-03-27
Fundamental Frequency	:2412 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

"---": denotes Noise Floor.

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
62.01	S	QP	60.90	-29.22	31.68	40.00	-8.32
125.06	S	QP	57.31	-21.59	35.72	43.50	-7.78
250.19	S	Peak	58.29	-20.40	37.89	46.00	-8.11
562.53	S	Peak	52.88	-12.30	40.59	46.00	-5.41
687.66	S	Peak	50.49	-11.51	38.98	46.00	-7.02
875.84	S	Peak	46.89	-9.48	37.40	46.00	-8.60
2588.00	S	Peak	42.55	3.63	46.17	74.00	-27.83
2588.00	S	Average	29.13	3.63	32.76	54.00	-21.24
4824.00	Н	Peak	52.43	0.38	52.82	74.00	-21.18
4824.00	Н	Average	51.56	0.38	51.94	54.00	-2.06
7236.00	Н	Peak					
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					
24120.00	Н	Peak					

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.

GS Taiwan Ltd.



Report No.: E2/2014/10021 Issue Date: Apr. 02, 2014 Page: 69 of 109

Operation Band	:802.11 b	Test Date	:2014-03-27
Fundamental Frequency	:2412 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MII-	E/II/E/C		-	٦Ŀ			٦ŀ
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
56.19	S	Peak	65.00	-28.24	36.76	40.00	-3.24
125.06	S	QP	59.41	-21.59	37.82	43.50	-5.68
250.19	S	QP	47.72	-20.40	27.32	46.00	-18.68
375.32	S	QP	43.63	-16.66	26.97	46.00	-19.03
625.58	S	Peak	50.97	-11.93	39.03	46.00	-6.97
875.84	S	Peak	52.01	-9.48	42.52	46.00	-3.48
1374.00	S	Peak	46.61	1.60	48.21	74.00	-25.79
1374.00	S	Average	35.32	1.60	36.92	54.00	-17.08
4824.00	S	Peak	52.97	0.38	53.35	74.00	-20.65
4824.00	S	Average	52.21	0.38	52.59	54.00	-1.41
7236.00	Н	Peak					
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					
24120.00	Н	Peak					

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	:802.11 b	Test Date	:2014-03-27
Fundamental Frequency	:2437 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

"---": denotes Noise Floor.

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
62.01	S	QP	56.26	-29.22	27.04	40.00	-12.96
125.06	S	Peak	62.08	-21.59	40.50	43.50	-3.00
375.32	S	Peak	56.84	-16.66	40.18	46.00	-5.82
562.53	S	Peak	52.80	-12.30	40.50	46.00	-5.50
625.58	S	Peak	53.66	-11.93	41.73	46.00	-4.27
812.79	S	Peak	51.02	-9.79	41.23	46.00	-4.77
1876.00	S	Peak	44.57	1.18	45.75	74.00	-28.25
1876.00	S	Average	35.93	1.18	37.11	54.00	-16.89
4874.00	Н	Peak	48.56	0.41	48.97	74.00	-25.03
4874.00	Н	Average	47.64	0.41	48.05	54.00	-5.95
7311.00	Н	Peak	43.63	4.83	48.45	74.00	-25.55
7311.00	Н	Average	37.21	4.83	42.04	54.00	-11.97
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					

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	:802.11 b	Test Date	:2014-03-27
Fundamental Frequency	:2437 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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/m	dB
	1/11/12/0	110/21/11/	dDµ V	uD		ασμνγιιι	uD
125.06	S	QP	57.11	-21.59	35.52	43.50	-7.98
250.19	S	QP	48.12	-20.40	27.72	46.00	-18.28
375.32	S	QP	42.63	-16.66	25.97	46.00	-20.03
625.58	S	Peak	50.56	-11.93	38.63	46.00	-7.37
812.79	S	QP	46.48	-9.79	36.69	46.00	-9.31
875.84	S	Peak	51.04	-9.48	41.56	46.00	-4.44
1750.00	S	Peak	43.72	3.30	47.02	74.00	-26.98
1750.00	S	Average	30.13	3.30	33.43	54.00	-20.57
4874.00	Н	Peak	51.59	0.41	52.00	74.00	-22.00
4874.00	Н	Average	50.27	0.41	50.68	54.00	-3.32
7311.00	Н	Peak					
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					

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Operation Band	:802.11 b	Test Date	:2014-03-27
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

"---": denotes Noise Floor.

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
45.52	S	QP	50.54	-24.42	26.12	40.00	-13.88
125.06	S	QP	59.11	-21.59	37.52	43.50	-5.98
250.19	S	Peak	58.08	-20.40	37.68	46.00	-8.32
562.53	S	Peak	53.35	-12.30	41.05	46.00	-4.95
625.58	S	Peak	53.87	-11.93	41.93	46.00	-4.07
812.79	S	Peak	51.60	-9.79	41.82	46.00	-4.18
2138.00	S	Peak	42.59	2.25	44.84	74.00	-29.16
2138.00	S	Average	29.56	2.25	31.81	54.00	-22.19
4924.00	Н	Peak	50.08	0.50	50.58	74.00	-23.42
4924.00	Н	Average	46.83	0.50	47.33	54.00	-6.67
7386.00	Н	Peak					
9848.00	Н	Peak					
12310.00	Н	Peak					
14772.00	Н	Peak					
17234.00	Н	Peak					
19696.00	Н	Peak					
22158.00	Н	Peak					
24620.00	Н	Peak					

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Operation Band	:802.11 b	Test Date	:2014-03-27
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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
35.82	S	Peak	55.01	-19.03	35.98	40.00	-4.02
125.06	S	Peak	59.58	-21.59	38.00	43.50	-5.50
250.19	S	QP	46.82	-20.40	26.42	46.00	-19.58
375.32	S	QP	41.63	-16.66	24.97	46.00	-21.03
625.58	S	Peak	51.21	-11.93	39.28	46.00	-6.72
812.79	S	QP	45.98	-9.79	36.19	46.00	-9.81
1374.00	S	Peak	45.86	1.60	47.46	74.00	-26.54
1374.00	S	Average	40.90	1.60	42.50	54.00	-11.50
4924.00	Н	Peak	53.13	0.50	53.63	74.00	-20.37
4924.00	Н	Average	50.73	0.50	51.23	54.00	-2.77
7386.00	Н	Peak					
9848.00	Н	Peak					
12310.00	Н	Peak					
14772.00	Н	Peak					
17234.00	Н	Peak					
19696.00	Н	Peak					
22158.00	Н	Peak					
24620.00	Н	Peak					

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Radiated Spe Operation Ban Fundamental F Operation Mod EUT Pol.	d Frequency	ssion Measure :802.11 g :2412 MHz :TX LOW :E1 Plan		(802.11g) Test Date Temp./Humi. Engineer Measurement An	tenna Pol.	:2014-03-27 :15.8 deg_C / :Aken :VERTICAL	52 RH
Actual FS(dBµV	V/m = SPA.	Reading level(dI	$B\mu V$) + Factor(dI	3)			
Factor(dB) = Ar	ntenna Factor($dB\mu V/m) + Cab$	ole Loss(dB) – Pr	e_Amplifier Gain(dB)		
Note: " F ": c	lenotes Fundai	mental Frequency	y.; "H": denotes	Harmonic Frequenc	у.		
"Е"	: denotes Band	Edge Frequency.	; "S" : denotes S	purious Frequency.			
"'	' : denotes Noi	se Floor.					
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Leve	el	FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
125.06	S	QP	60.01	-21.59	38.42	43.50	-5.08
250.19	S	Peak	59.23	-20.40	38.83	46.00	-7.17
375.32	S	Peak	56.09	-16.66	39.43	46.00	-6.57
562.53	S	Peak	54.65	-12.30	42.36	46.00	-3.64
625.58	S	Peak	53.50	-11.93	41.56	46.00	-4.44
812.79	S	QP	50.18	-9.79	40.39	46.00	-5.61
2384.00	S	Peak	45.75	3.12	48.87	74.00	-25.13
2384.00	S	Average	29.47	3.12	32.59	54.00	-21.41
4824.00	Н	Peak	53.39	0.38	53.77	74.00	-20.23
4824.00	Н	Average	43.07	0.38	43.45	54.00	-10.55
7236.00	Н	Peak	46.09	4.72	50.81	74.00	-23.19
7236.00	Н	Average	34.69	4.72	39.41	54.00	-14.59
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					
24120.00	Н	Peak					

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Operation Band	:802.11 g	Test Date	:2014-03-27
Fundamental Frequency	:2412 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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
32.91	S	Peak	51.93	-17.34	34.59	40.00	-5.41
187.14	S	QP	57.11	-24.31	32.80	43.50	-10.70
250.19	S	QP	46.62	-20.40	26.22	46.00	-19.78
375.32	S	QP	39.23	-16.66	22.57	46.00	-23.43
750.71	S	Peak	52.05	-10.71	41.34	46.00	-4.66
812.79	S	QP	52.48	-9.79	42.69	46.00	-3.31
1374.00	S	Peak	44.99	1.60	46.59	74.00	-27.41
1374.00	S	Average	40.75	1.60	42.35	54.00	-11.65
4824.00	Н	Peak	53.94	0.38	54.33	74.00	-19.67
4824.00	Н	Average	43.95	0.38	44.33	54.00	-9.67
7236.00	Н	Peak					
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					
24120.00	Н	Peak					

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Operation Band	:802.11 g	Test Date	:2014-03-27
Fundamental Frequency	:2437 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

"---": denotes Noise Floor.

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
125.06	S	QP	59.80	-21.59	38.21	43.50	-5.29
250.19	S	Peak	58.81	-20.40	38.41	46.00	-7.59
375.32	S	Peak	56.57	-16.66	39.91	46.00	-6.09
562.53	S	Peak	54.31	-12.30	42.02	46.00	-3.98
625.58	S	Peak	54.08	-11.93	42.15	46.00	-3.85
812.79	S	QP	50.48	-9.79	40.69	46.00	-5.31
2498.00	S	Peak	43.54	3.39	46.93	74.00	-27.07
2498.00	S	Average	29.53	3.39	32.92	54.00	-21.08
4874.00	Н	Peak	53.10	0.41	53.51	74.00	-20.49
4874.00	Н	Average	41.64	0.41	42.05	54.00	-11.95
7311.00	Н	Peak	48.54	4.85	53.39	74.00	-20.61
7311.00	Н	Average	35.59	4.85	40.44	54.00	-13.56
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					

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Operation Band	:802.11 g	Test Date	:2014-03-27
Fundamental Frequency	:2437 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode EUT Pol.	:TX MID	Engineer	:Aken
	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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
125.06	S	Peak	59.71	-21.59	38.12	43.50	-5.38
250.19	S	Peak	58.49	-20.40	38.10	46.00	-7.90
375.32	S	Peak	57.36	-16.66	40.70	46.00	-5.30
625.58	S	Peak	45.48	-11.93	33.54	46.00	-12.46
812.79	S	Peak	51.52	-9.79	41.73	46.00	-4.27
875.84	S	Peak	47.24	-9.48	37.75	46.00	-8.25
1374.00	S	Peak	44.91	1.60	46.51	74.00	-27.49
1374.00	S	Average	39.43	1.60	41.03	54.00	-12.97
4874.00	Н	Peak	52.69	0.41	53.09	74.00	-20.91
4874.00	Н	Average	40.57	0.41	40.98	54.00	-13.02
7311.00	Н	Peak	46.60	4.84	51.43	74.00	-22.57
7311.00	Н	Average	36.41	4.84	41.25	54.00	-12.75
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					

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Operation Band	:802.11 g	Test Date	:2014-03-27
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

"---": denotes Noise Floor.

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
125.06	S	QP	59.91	-21.59	38.32	43.50	-5.18
250.19	S	Peak	59.35	-20.40	38.95	46.00	-7.05
375.32	S	Peak	56.87	-16.66	40.21	46.00	-5.79
562.53	S	Peak	54.25	-12.30	41.95	46.00	-4.05
687.66	S	Peak	52.42	-11.51	40.90	46.00	-5.10
812.79	S	QP	50.48	-9.79	40.69	46.00	-5.31
2846.00	S	Peak	41.68	4.22	45.90	74.00	-28.10
2846.00	S	Average	27.04	4.22	31.26	54.00	-22.74
4924.00	Н	Peak	47.70	0.50	48.20	74.00	-25.80
4924.00	Н	Average	42.64	0.50	43.14	54.00	-10.86
7386.00	Н	Peak	47.77	5.04	52.81	74.00	-21.19
7386.00	Н	Average	34.44	5.04	39.48	54.00	-14.52
9848.00	Н	Peak					
12310.00	Н	Peak					
14772.00	Н	Peak					
17234.00	Н	Peak					
19696.00	Н	Peak					
22158.00	Н	Peak					
24620.00	Н	Peak					

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Operation Band	:802.11 g	Test Date	:2014-03-27
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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	60.05	-21.59	38.47	43.50	-5.03
S	QP	57.21	-24.31	32.90	43.50	-10.60
S	QP	46.25	-20.40	25.85	46.00	-20.15
S	QP	39.23	-16.66	22.57	46.00	-23.43
S	Peak	52.98	-11.51	41.46	46.00	-4.54
S	QP	52.38	-9.79	42.59	46.00	-3.41
S	Peak	45.32	3.41	48.73	74.00	-25.27
S	Average	28.80	3.41	32.21	54.00	-21.79
Н	Peak	50.05	0.50	50.55	74.00	-23.45
Н	Average	38.64	0.50	39.14	54.00	-14.86
Н	Peak	45.20	5.03	50.23	74.00	-23.77
Н	Average	33.78	5.03	38.81	54.00	-15.20
Н	Peak					
Н	Peak					
Н	Peak					
Н	Peak					
Н	Peak					
Н	Peak					
Н	Peak					
	F/H/E/S S S S S S S S S H H H H H H H H H H H	F/H/E/SMode PK/QP/AVSPeakSQPSQPSQPSQPSQPSPeakSPeakSAverageHPeakHAverageHPeak <td< td=""><td>Mode Reading Level F/H/E/S PK/QP/AV dBµV S Peak 60.05 S QP 57.21 S QP 46.25 S QP 39.23 S Peak 52.98 S QP 52.38 S Peak 45.32 S Peak 45.32 S Peak 50.05 H Peak 50.05 H Peak 45.20 H Peak 45.20 H Peak H Peak </td><td>Mode Reading Level F/H/E/S PK/QP/AV dBµV dB S Peak 60.05 -21.59 S QP 57.21 -24.31 S QP 46.25 -20.40 S QP 39.23 -16.66 S Peak 52.98 -11.51 S QP 52.38 -9.79 S Peak 45.32 3.41 S Peak 45.32 3.41 H Peak 50.05 0.50 H Peak 45.20 5.03 H Peak 45.20 5.03 H Peak - H Peak - H</td><td>Mode Reading Level FS F/H/E/S PK/QP/AV dBµV dB dBµV/m S Peak 60.05 -21.59 38.47 S QP 57.21 -24.31 32.90 S QP 46.25 -20.40 25.85 S QP 39.23 -16.66 22.57 S Peak 52.98 -11.51 41.46 S QP 52.38 -9.79 42.59 S Peak 45.32 3.41 48.73 S Peak 45.32 3.41 48.73 S Peak 50.05 0.50 50.55 H Peak 50.05 0.50 39.14 H Peak 45.20 5.03 38.81 H Peak - H Peak - H Peak - H Peak<td>ModeReading LevelFS@3m$F/H/E/S$$PK/QP/AV$$dB\mu V$$dB$$dB\mu V/m$$dB\mu V/m$SPeak$60.05$$-21.59$$38.47$$43.50SQP57.21$$-24.31$$32.90$$43.50SQP46.25$$-20.40$$25.85$$46.00SQP39.23$$-16.66$$22.57$$46.00$SPeak$52.98$$-11.51$$41.46$$46.00$SPeak$52.98$$-11.51$$41.46$$46.00$SPeak$45.32$$3.41$$32.21$$54.00$SPeak$50.05$$0.50$$50.55$$74.00$HPeak$50.05$$0.50$$50.23$$74.00$HPeak$45.20$$5.03$$50.23$$74.00$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$<!--</td--></td></td></td<>	Mode Reading Level F/H/E/S PK/QP/AV dBµV S Peak 60.05 S QP 57.21 S QP 46.25 S QP 39.23 S Peak 52.98 S QP 52.38 S Peak 45.32 S Peak 45.32 S Peak 50.05 H Peak 50.05 H Peak 45.20 H Peak 45.20 H Peak H Peak	Mode Reading Level F/H/E/S PK/QP/AV dBµV dB S Peak 60.05 -21.59 S QP 57.21 -24.31 S QP 46.25 -20.40 S QP 39.23 -16.66 S Peak 52.98 -11.51 S QP 52.38 -9.79 S Peak 45.32 3.41 S Peak 45.32 3.41 H Peak 50.05 0.50 H Peak 45.20 5.03 H Peak 45.20 5.03 H Peak - H Peak - H	Mode Reading Level FS F/H/E/S PK/QP/AV dBµV dB dBµV/m S Peak 60.05 -21.59 38.47 S QP 57.21 -24.31 32.90 S QP 46.25 -20.40 25.85 S QP 39.23 -16.66 22.57 S Peak 52.98 -11.51 41.46 S QP 52.38 -9.79 42.59 S Peak 45.32 3.41 48.73 S Peak 45.32 3.41 48.73 S Peak 50.05 0.50 50.55 H Peak 50.05 0.50 39.14 H Peak 45.20 5.03 38.81 H Peak - H Peak - H Peak - H Peak <td>ModeReading LevelFS@3m$F/H/E/S$$PK/QP/AV$$dB\mu V$$dB$$dB\mu V/m$$dB\mu V/m$SPeak$60.05$$-21.59$$38.47$$43.50SQP57.21$$-24.31$$32.90$$43.50SQP46.25$$-20.40$$25.85$$46.00SQP39.23$$-16.66$$22.57$$46.00$SPeak$52.98$$-11.51$$41.46$$46.00$SPeak$52.98$$-11.51$$41.46$$46.00$SPeak$45.32$$3.41$$32.21$$54.00$SPeak$50.05$$0.50$$50.55$$74.00$HPeak$50.05$$0.50$$50.23$$74.00$HPeak$45.20$$5.03$$50.23$$74.00$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$$$HPeak$$$$$$<!--</td--></td>	ModeReading LevelFS@3m $F/H/E/S$ $PK/QP/AV$ $dB\mu V$ dB $dB\mu V/m$ $dB\mu V/m$ SPeak 60.05 -21.59 38.47 43.50 SQP 57.21 -24.31 32.90 43.50 SQP 46.25 -20.40 25.85 46.00 SQP 39.23 -16.66 22.57 46.00 SPeak 52.98 -11.51 41.46 46.00 SPeak 52.98 -11.51 41.46 46.00 SPeak 45.32 3.41 32.21 54.00 SPeak 50.05 0.50 50.55 74.00 HPeak 50.05 0.50 50.23 74.00 HPeak 45.20 5.03 50.23 74.00 HPeak $$ $$ $$ $$ HPeak $$ $$ $$ </td

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.



Radiated Spurious Emission Measurement Result (802.11n_20M)

Operation Ban Fundamental H Operation Mod EUT Pol.	id Frequency	:802.11 n20N :2412 MHz :TX LOW :E1 Plan	נ 1 נ H	Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:2014-03-27 :15.8 deg_C / 52 RH :Aken :VERTICAL	
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 Funda	mental Frequency	y. ; "H" : denotes I	Harmonic Frequency	у.		
"Е"	: denotes Band	Edge Frequency.	; "S" : denotes Sp	ourious Frequency.			
··	" : denotes Noi	se Floor.					
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Leve	1	FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
125.06	S	Peak	62.06	-21.59	40.47	43.50	-3.03
347.19	S	Peak	58.53	-17.41	41.12	46.00	-4.88
462.62	S	Peak	57.08	-14.75	42.33	46.00	-3.67
562.53	S	Peak	53.78	-12.30	41.48	46.00	-4.52
625.58	S	Peak	54.03	-11.93	42.09	46.00	-3.91
812.79	S	Peak	47.72	-9.79	37.93	46.00	-8.07
2192.00	S	Peak	44.58	2.47	47.05	74.00	-26.95
2192.00	S	Average	26.59	2.47	29.06	54.00	-24.94
4824.00	Н	Peak	49.55	0.39	49.94	74.00	-24.06
4824.00	Н	Average	36.97	0.39	37.36	54.00	-16.64
7236.00	Н	Peak	44.51	4.71	49.23	74.00	-24.77
7236.00	Н	Average	33.11	4.71	37.83	54.00	-16.18
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					
24120.00	Н	Peak					

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Operation Band	:802.11 n20M	Test Date	:2014-03-27
Fundamental Frequency	:2412 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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
125.06	S	Peak	59.88	-21.59	38.29	43.50	-5.21
250.19	S	Peak	62.94	-20.40	42.54	46.00	-3.46
375.32	S	QP	41.83	-16.66	25.17	46.00	-20.83
625.58	S	Peak	52.82	-11.93	40.89	46.00	-5.11
812.79	S	Peak	51.87	-9.79	42.08	46.00	-3.92
875.84	S	Peak	50.26	-9.48	40.78	46.00	-5.22
1374.00	S	Peak	45.04	1.60	46.64	74.00	-27.36
1374.00	S	Average	40.67	1.60	42.27	54.00	-11.73
4824.00	Н	Peak	51.40	0.38	51.78	74.00	-22.22
4824.00	Н	Average	40.19	0.38	40.57	54.00	-13.43
7236.00	Н	Peak					
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					
24120.00	Н	Peak					

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Operation Band	:802.11 n20M	Test Date	:2014-03-27
Fundamental Frequency	:2437 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

"---": denotes Noise Floor.

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
125.06	S	Peak	61.70	-21.59	40.11	43.50	-3.39
347.19	S	Peak	57.86	-17.41	40.46	46.00	-5.54
462.62	S	Peak	56.61	-14.75	41.86	46.00	-4.14
562.53	S	Peak	54.01	-12.30	41.71	46.00	-4.29
625.58	S	Peak	54.01	-11.93	42.08	46.00	-3.92
812.79	S	Peak	48.26	-9.79	38.48	46.00	-7.52
2880.00	S	Peak	42.34	4.36	46.70	74.00	-27.30
2880.00	S	Average	30.18	4.36	34.54	54.00	-19.46
4874.00	Н	Peak	47.72	0.40	48.12	74.00	-25.88
4874.00	Н	Average	33.41	0.40	33.82	54.00	-20.19
7311.00	Н	Peak	44.78	4.84	49.61	74.00	-24.39
7311.00	Н	Average	34.79	4.84	39.63	54.00	-14.37
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					

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Operation Band	:802.11 n20M	Test Date	:2014-03-27
Fundamental Frequency	:2437 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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
125.06	S	Peak	59.68	-21.59	38.09	43.50	-5.41
250.19	S	Peak	62.79	-20.40	42.39	46.00	-3.61
375.32	S	QP	41.73	-16.66	25.07	46.00	-20.93
625.58	S	Peak	52.73	-11.93	40.79	46.00	-5.21
812.79	S	Peak	52.13	-9.79	42.34	46.00	-3.66
875.84	S	Peak	50.66	-9.48	41.17	46.00	-4.83
1626.00	S	Peak	44.22	2.39	46.61	74.00	-27.39
1626.00	S	Average	37.70	2.39	40.09	54.00	-13.91
4874.00	Н	Peak	46.34	0.40	46.75	74.00	-27.25
4874.00	Н	Average	34.83	0.40	35.24	54.00	-18.77
7311.00	Н	Peak					
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					

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	:802.11 n20M	Test Date	:2014-03-27
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

"---": denotes Noise Floor.

MHz F/H/ 125.06 S 308.39 S 385.99 S	Peak Peak	Reading Level dBµV 62.01 57.12	dB -21.59	FS <u>dBµV/m</u> 40.42	@3m dBµV/m 43.50	dB
125.06 S 308.39 S	Peak Peak	62.01	-21.59			
308.39 S	Peak			40.42	42.50	
308.39 S	Peak			40.42	12 50	
		57.12			45.50	-3.08
385.99 S	Peak		-18.64	38.48	46.00	-7.52
		61.09	-16.38	44.71	46.00	-1.29
385.99 S	QP	47.53	-16.38	31.15	46.00	-14.85
562.53 S	Peak	53.95	-12.30	41.66	46.00	-4.34
625.58 S	Peak	53.85	-11.93	41.91	46.00	-4.09
772.05 S	Peak	50.23	-10.34	39.89	46.00	-6.11
1624.00 S	Peak	46.07	-0.63	45.45	74.00	-28.55
1624.00 S	Average	39.18	-0.63	38.55	54.00	-15.45
4924.00 H	Peak	46.43	0.50	46.93	74.00	-27.07
4924.00 H	Average	40.46	0.50	40.96	54.00	-13.04
7386.00 H	Peak	44.82	5.03	49.85	74.00	-24.15
7386.00 H	Average	32.25	5.03	37.28	54.00	-16.73
9848.00 H	Peak					
12310.00 H	Peak					
14772.00 H	Peak					
17234.00 H	Peak					
19696.00 H	Peak					
22158.00 H	Peak					
24620.00 H	Peak					

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	:802.11 n20M	Test Date	:2014-03-27
Fundamental Frequency	:2462 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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
125.06	S	Peak	59.70	-21.59	38.11	43.50	-5.39
250.19	S	Peak	62.91	-20.40	42.51	46.00	-3.49
308.39	S	QP	48.39	-18.64	29.25	46.00	-16.75
616.85	S	Peak	54.23	-12.40	41.83	46.00	-4.17
750.71	S	Peak	51.01	-10.71	40.30	46.00	-5.70
812.79	S	Peak	52.24	-9.79	42.46	46.00	-3.54
1374.00	S	Peak	45.65	1.60	47.26	74.00	-26.74
1374.00	S	Average	40.36	1.60	41.96	54.00	-12.04
4924.00	Н	Peak	47.04	0.50	47.54	74.00	-26.46
4924.00	Н	Average	35.46	0.50	35.96	54.00	-18.04
7386.00	Н	Peak					
9848.00	Н	Peak					
12310.00	Н	Peak					
14772.00	Н	Peak					
17234.00	Н	Peak					
19696.00	Н	Peak					
22158.00	Н	Peak					
24620.00	Н	Peak					

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.



Radiated Spurious Emission Measurement Result (802.11n_40M)

Operation Band	:802.11 n40M	Test Date	:2014-03-27
Fundamental Frequency	:2422 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

"---": denotes Noise Floor.

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/m	dB
	1,11,11,11,15		p	4.D	p /	p /	uD
125.06	S	Peak	61.96	-21.59	40.38	43.50	-3.12
347.19	S	Peak	58.54	-17.41	41.14	46.00	-4.86
385.99	S	QP	45.93	-16.38	29.55	46.00	-16.45
462.62	S	Peak	57.29	-14.75	42.54	46.00	-3.46
625.58	S	Peak	54.50	-11.93	42.57	46.00	-3.43
875.84	S	Peak	47.09	-9.48	37.61	46.00	-8.39
2366.00	S	Peak	44.84	3.06	47.90	74.00	-26.10
2366.00	S	Average	32.13	3.06	35.19	54.00	-18.81
4844.00	Н	Peak	45.56	0.39	45.95	74.00	-28.05
4844.00	S	Average	39.94	0.39	40.33	54.00	-13.67
7266.00	Н	Peak					
9688.00	Н	Peak					
12110.00	Н	Peak					
14532.00	Н	Peak					
16954.00	Н	Peak					
19376.00	Н	Peak					
21798.00	Н	Peak					
24220.00	Н	Peak					

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	:802.11 n40M	Test Date	:2014-03-27
Fundamental Frequency	:2422 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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
125.06	S	Peak	60.20	-21.59	38.61	43.50	-4.89
250.19	S	Peak	63.37	-20.40	42.97	46.00	-3.03
375.32	S	QP	40.53	-16.66	23.87	46.00	-22.13
625.58	S	Peak	54.82	-11.93	42.89	46.00	-3.11
875.84	S	Peak	51.15	-9.48	41.67	46.00	-4.33
1374.00	S	Peak	46.11	1.60	47.71	74.00	-26.29
1374.00	S	Average	40.22	1.60	41.82	54.00	-12.18
4844.00	Н	Peak	46.93	0.39	47.32	74.00	-26.68
4844.00	Н	Average	35.87	0.39	36.26	54.00	-17.74
7266.00	Н	Peak					
9688.00	Н	Peak					
12110.00	Н	Peak					
14532.00	Н	Peak					
16954.00	Н	Peak					
19376.00	Н	Peak					
21798.00	Н	Peak					
24220.00	Н	Peak					

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	:802.11 n40M	Test Date	:2014-03-27
Fundamental Frequency	:2437 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

"---": denotes Noise Floor.

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
125.06	S	QP	54.87	-21.59	33.28	43.50	-10.22
347.19	S	Peak	59.11	-17.41	41.70	46.00	-4.30
385.99	S	QP	47.63	-16.38	31.25	46.00	-14.75
462.62	S	Peak	57.48	-14.75	42.73	46.00	-3.27
625.58	S	Peak	53.39	-11.93	41.46	46.00	-4.54
875.84	S	Peak	47.57	-9.48	38.08	46.00	-7.92
1624.00	S	Peak	45.20	-0.63	44.57	74.00	-29.43
1624.00	S	Average	40.24	-0.63	39.61	54.00	-14.39
4874.00	Н	Peak	45.12	0.40	45.52	74.00	-28.48
4874.00	Н	Average	32.46	0.40	32.86	54.00	-21.14
7311.00	Н	Peak					
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					

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	:802.11 n40M	Test Date	:2014-03-27
Fundamental Frequency	:2437 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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
125.06	S	Peak	60.34	-21.59	38.75	43.50	-4.75
250.19	S	Peak	62.87	-20.40	42.47	46.00	-3.53
375.32	S	QP	40.53	-16.66	23.87	46.00	-22.13
625.58	S	Peak	54.62	-11.93	42.68	46.00	-3.32
812.79	S	Peak	50.97	-9.79	41.18	46.00	-4.82
875.84	S	Peak	51.33	-9.48	41.85	46.00	-4.15
1624.00	S	Peak	45.54	2.37	47.91	74.00	-26.09
1624.00	S	Average	39.92	2.37	42.29	54.00	-11.71
4874.00	Н	Peak	44.10	0.40	44.50	74.00	-29.50
4874.00	Н	Average	34.26	0.41	34.67	54.00	-19.33
7311.00	Н	Peak					
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					

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Operation Band	:802.11 n40M	Test Date	:2014-03-27
Fundamental Frequency	:2452 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

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.

"---": denotes Noise Floor.

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
125.06	S	QP	57.71	-21.59	36.12	43.50	-7.38
250.19	S	Peak	58.02	-20.40	37.62	46.00	-8.38
385.99	S	QP	46.63	-16.38	30.25	46.00	-15.75
562.53	S	Peak	53.47	-12.30	41.18	46.00	-4.82
625.58	S	Peak	53.25	-11.93	41.31	46.00	-4.69
772.05	S	Peak	51.74	-10.34	41.40	46.00	-4.60
2126.00	S	Peak	43.96	2.20	46.15	74.00	-27.85
2126.00	S	Average	30.08	2.20	32.28	54.00	-21.72
4904.00	Н	Peak	44.58	0.44	45.02	74.00	-28.98
4904.00	Н	Average	40.62	0.44	41.06	54.00	-12.94
7356.00	Н	Peak					
9808.00	Н	Peak					
12260.00	Н	Peak					
14712.00	Н	Peak					
17164.00	Н	Peak					
19616.00	Н	Peak					
22068.00	Н	Peak					
24520.00	Н	Peak					

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Operation Band	:802.11 n40M	Test Date	:2014-03-27
Fundamental Frequency	:2452 MHz	Temp./Humi.	:15.8 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Aken
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

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.

"---": denotes Noise Floor.

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
62.01	S	Peak	63.38	-29.22	34.16	40.00	-5.84
125.06	S	Peak	60.11	-21.59	38.53	43.50	-4.97
250.19	S	Peak	62.82	-20.40	42.42	46.00	-3.58
375.32	S	QP	40.23	-16.66	23.57	46.00	-22.43
625.58	S	Peak	54.76	-11.93	42.83	46.00	-3.17
812.79	S	Peak	52.24	-9.79	42.46	46.00	-3.54
1624.00	S	Peak	44.74	2.37	47.11	74.00	-26.89
1624.00	S	Average	39.88	2.37	42.25	54.00	-11.75
4904.00	Н	Peak	42.01	0.43	42.44	74.00	-31.56
4904.00	Н	Average	32.10	0.43	32.53	54.00	-21.47
7356.00	Н	Peak					
9808.00	Н	Peak					
12260.00	Н	Peak					
14712.00	Н	Peak					
17164.00	Н	Peak					
19616.00	Н	Peak					
22068.00	Н	Peak					
24520.00	Н	Peak					

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11 PEAK POWER SPECTRAL DENSITY

11.1 Standard Applicable:

According to \$15.247(e) For digitally modulated systems, 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. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

According to RSS-210 issue 8, §A8.2(b) The transmitter power spectral density (into the antenna) shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

11.2 Measurement Equipment Used:

Refer to section 7.2 for details.

11.3 Test Set-up:

Refer to section 7.3 for details. (Spectrum Option)

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11.4 Measurement Procedure (following the measurement procedure 10.2 of KDB558074):

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. Set the span to 1.5 times the DTS channel bandwidth.
- 3. Set the RBW \geq 3 kHz.
- 4. Set the VBW \geq 3 x RBW.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

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.



11.5 Measurement Result:

802.11b

Frequency	RF Power Density	Maximum Limit
MHz	Reading (dBm)	(dBm)
2412	-18.742	8
2437	-17.509	8
2462	-25.618	8

802.11g

Frequency	RF Power Density	Maximum Limit
MHz	Reading (dBm)	(dBm)
2412	-11.905	8
2437	-12.329	8
2462	-14.743	8

802.11n 20M

Frequency	equency RF Power Density Maximum Limi	
MHz	Reading (dBm)	(dBm)
2412	-13.792	8
2437	-13.384	8
2462	-15.695	8

802.11n 40M

Frequency	RF Power Density	Maximum Limit
MHz	Reading (dBm)	(dBm)
2422	-18.013	8
2437	-20.577	8
2452	-21.310	8

* Note: Offset 11dB for 2.4G 802.11b/g/11n_20/n_40.

*Refer to next page for plots

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



Power Spectral Density Test Plot (CH-Mid)



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

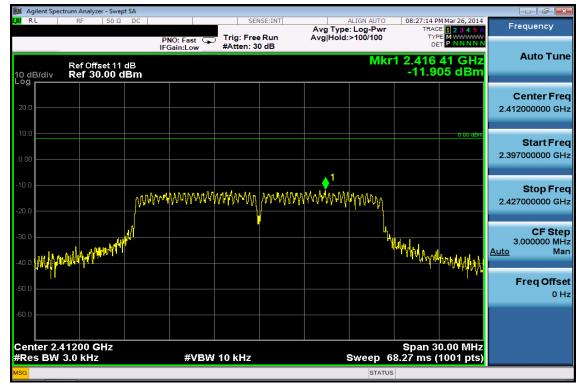


Power Spectral Density Test Plot (CH-High)



802.11g

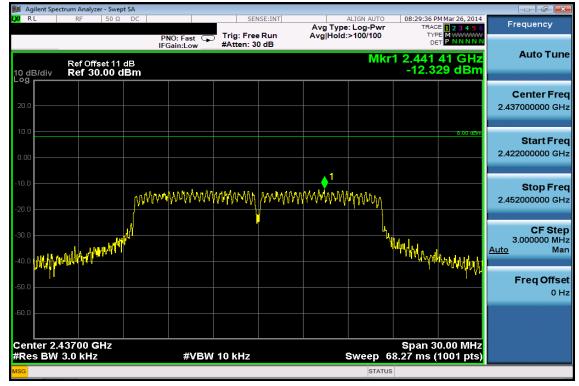
Power Spectral Density Test Plot (CH-Low)



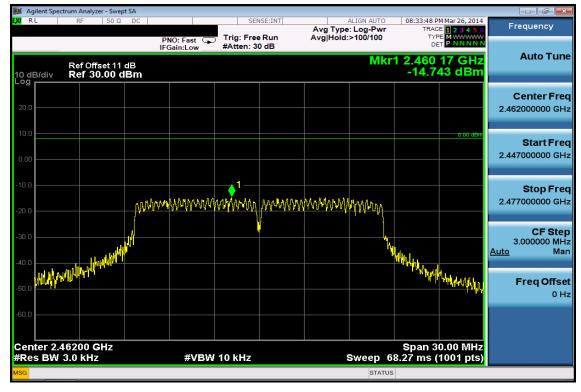
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Power Spectral Density Test Plot (CH-Mid)



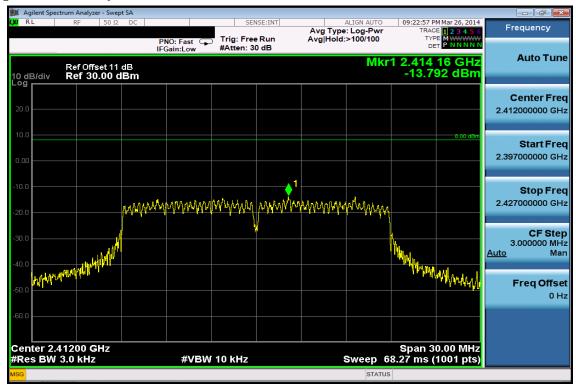
Power Spectral Density Test Plot (CH-High)



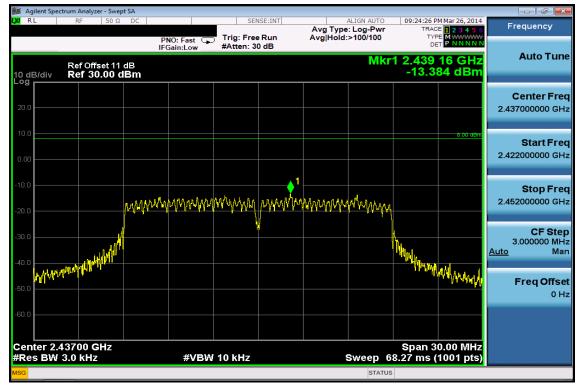
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



802.11n 20M Power Spectral Density Test Plot (CH-Low)



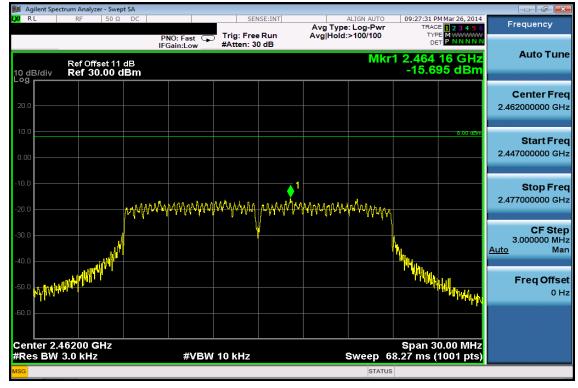
Power Spectral Density Test Plot (CH-Mid)



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Power Spectral Density Test Plot (CH-High)



802.11n 40M

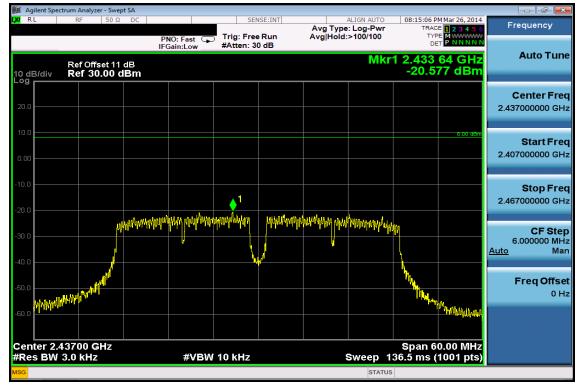
Power Spectral Density Test Plot (CH-Low)



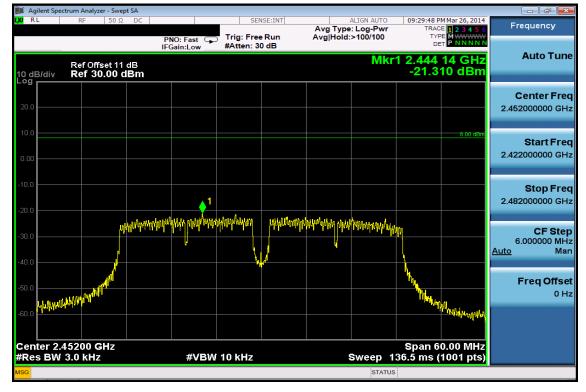
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Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)



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12 ANTENNA REQUIREMENT

12.1 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.

According to RSS-GEN 7.1.2, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.

When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in RSS-210 or RSS-310 for devices of RF output powers of 10 milliwatts or less. For devices of output powers greater than 10 milliwatts, except devices subject to RSS-210 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands) or RSS-210 Annex 9 (Local Area Network Devices), the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.

12.2 Antenna Connected Construction:

The directional gains of antenna used for transmitting is 3.4dBi for 2.4GHz. In addition, the antenna connector is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.

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13 99% BANDWIDTH MEASUREMENT

13.1 Standard Applicable:

RSS-Gen §4.6.1, the transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

The span between the two recorded frequencies is the occupied bandwidth.

13.2 Measurement Equipment Used:

Refer to section 7.2 for details.

13.3 Test Set-up:

Refer to section 7.3 for details. (Spectrum analyzer)

13.4 Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. 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=1% of the Span, VBW = 3 times RBW, Span= 30 MHz /50MHz.
- 4. Turn on the 99% bandwidth function, max reading..
- 5. Repeat above procedures until all frequency measured were complete.

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13.5 Measurement Result:

802.11b

Frequency	99%Bandwidth	
MHz	(MHz)	
2412	14.802	
2437	14.738	
2462	14.753	

802.11g

Frequency	99%Bandwidth (MHz)	
MHz		
2412	16.604	
2437	16.501	
2462	16.553	

802.11n_20M

Frequency	99%Bandwidth	
MHz	(MHz)	
2412	17.650	
2437	17.664	
2462	17.612	

802.11n 40M

Frequency	99%Bandwidth	
MHz	(MHz)	
2422	37.331	
2437	37.397	
2452	37.468	

Note: Refer to next page for plots.

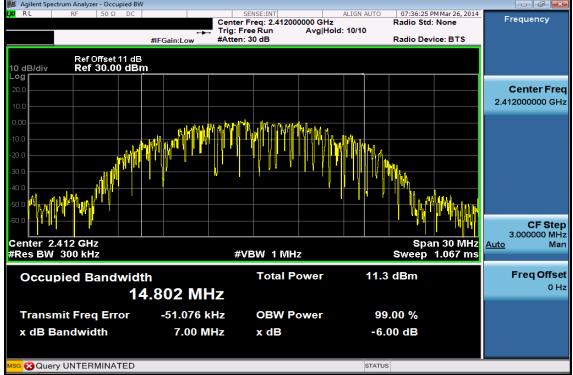
Note: "->" reveals the bandwidth measurement in 99%.

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.

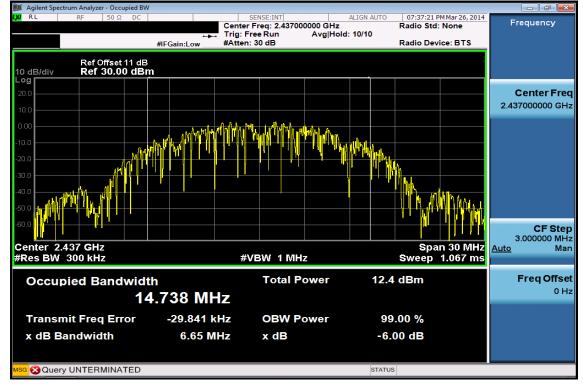
	. 5 . 1		
台灣檢驗科技股份有限公司	t (886-2) 2299-3279	f (886-2) 2298-0488	www.tw.sgs.com



802.11b 99% Band Width Test Data CH-Low



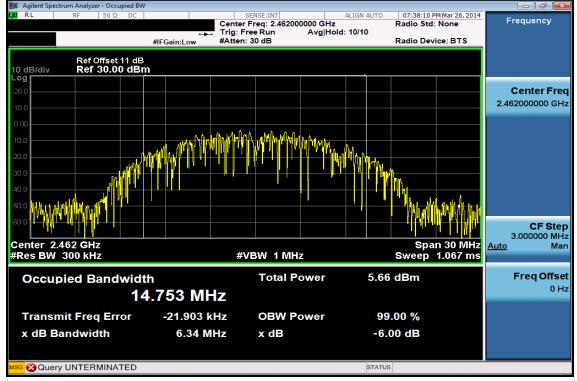
99% Band Width Test Data CH-Mid



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

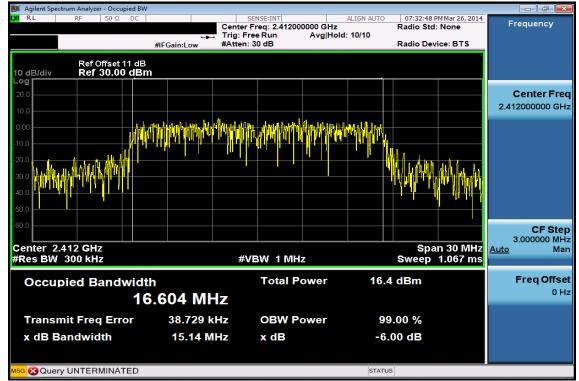


99% Band Width Test Data CH-High



802.11g

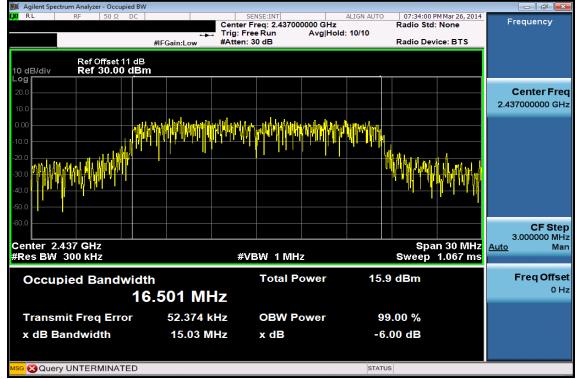
99% Band Width Test Data CH-Low



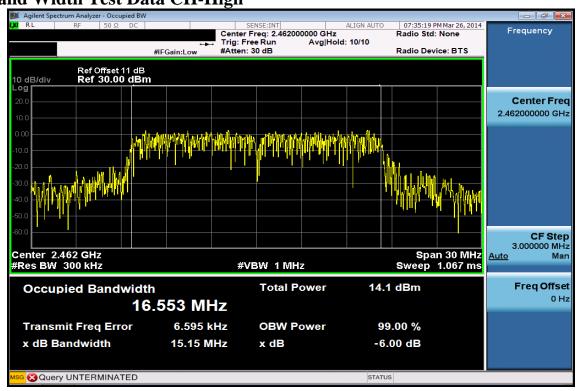
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



99% Band Width Test Data CH-Mid



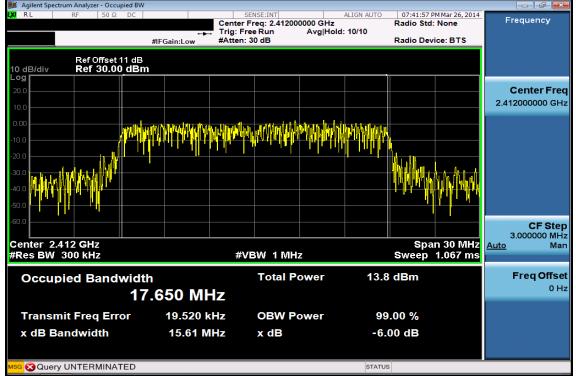
99% Band Width Test Data CH-High



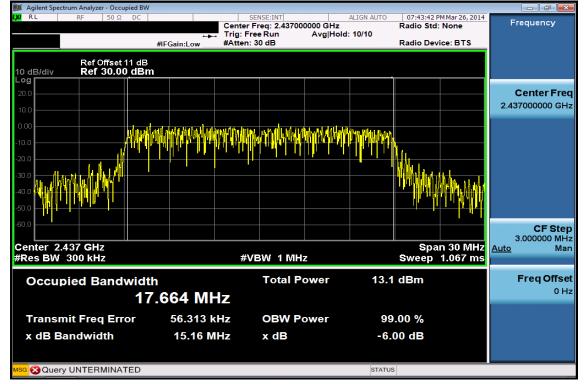
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



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



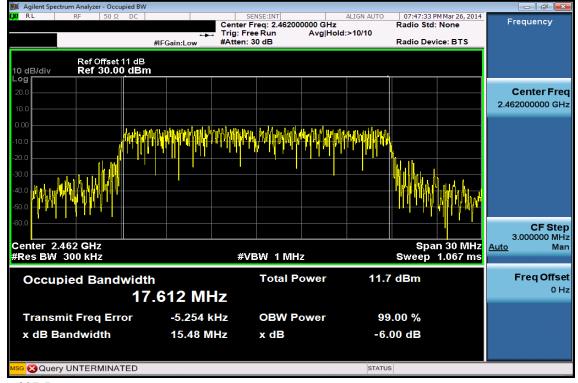
99% Band Width Test Data CH-Mid



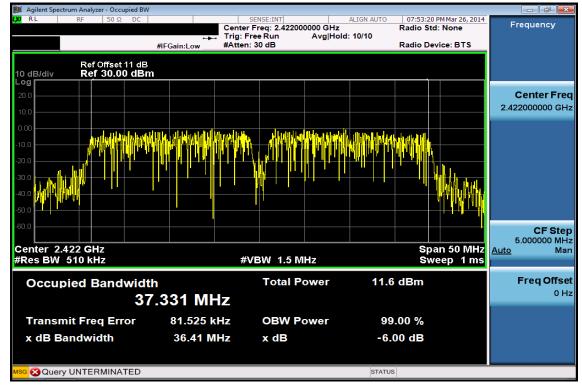
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



99% Band Width Test Data CH-High



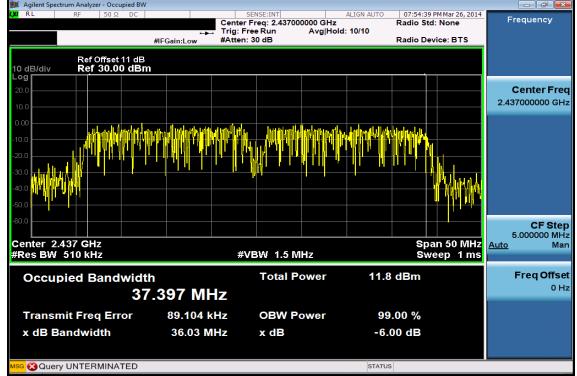
802.11n 40M 99% Band Width Test Data CH-Low



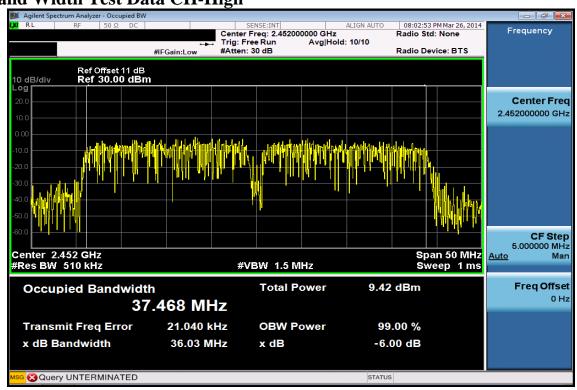
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



99% Band Width Test Data CH-Mid



99% Band Width Test Data CH-High



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