

Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

OF

Product Name: Mobile Phone

Brand Name: Sony

Marketing Name: C2104

Model No.: PM-0300-BV

Model Difference: N/A

FCC ID: **PY7PM-0300**

IC: 4170B-PM0300

Report No.: EH/2012/B0007

Issue Date: Mar. 19, 2013

FCC Rule Part: §15.247, Cat: DTS

IC Rule Part: RSS-210 issue 8 :2010, Annex 8

Prepared for: Sony Mobile Communications AB

Nya Vattentornet 22188 Lund/SWEDEN

SGS Taiwan Ltd.

Electronics & Communication Laboratory

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

Park, Wuku District, New Taipei City, Taiwan

24803



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VERIFICATION OF COMPLIANCE

Applicant: Sony Mobile Communications AB

Nya Vattentornet 22188 Lund/SWEDEN

Product Name: Mobile Phone

Brand Name: Sony

Marketing Name: C2104

Model No.: PM-0300-BV

Model Difference: N/A

FCC ID: PY7PM-0300

IC: 4170B-PM0300

File Number: EH/2012/B0007

Date of test: Nov. 06, 2012 ~ Dec. 06, 2012

Date of EUT Received: Nov. 06, 2012

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 & ANSI 63.10:2009 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:	Marcus Iseng	Date	Apr. 05, 2013	
Prepared By:	Marcus Tseng / Engineer Cherry Cherr	Date	Apr. 05, 2013	
Approved By:	Cherry Chen / Clerk Jim Chang / Supervisor	Date	Apr. 05, 2013	

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Version

Version No.	Date	Description
00	Dec. 06, 2012	Initial creation of document
01	Mar 19, 2013	Revise the description of test procedure, reformat the test item to more readable, and viewable. Remove description not relevant to the respective regulatory provision.
02	Apr 04, 2013	Add the measurement uncertainty with +- indicating how value uncertainty is based on the section of uncertainty on page 17.
04	Apr 05, 2013	Rephrase the description on section 1.1 to reflect specific ruling band being performed on this report on page 10. Change the format of the tabular data on 135~136.

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GENERAL INFORMATION

Product description 1.1 .

General:

Product Name:	Mobile Phone				
Brand Name:	Sony				
Marketing Name:	C2104	•			
Model No.:	PM-0300-B	V			
Model Difference:	N/A				
Data Cable (USB):	Model No.: EC450, Supplier: K-one Type No.: AI-0700				
Simple Hands-Free (SHF):	Model No.: MH410c, Supplier: Foster Electric Type No.: AG-1100				
Car Charger:	Model No.: AN400, Supplier: Salcomp Type No.: CAA-0003013				
Hardware Version:	A				
Software Version:	15.0.A.1.1				
	3.7Vdc from Li-Polymer battery				
Power Supply:	Battery:	Model No.: BA900, Supplier: Sony Type No.: AB-0500			
	Adapter: Model No.: EP800, Supplier: Salcomp Type No.: CAA-0002016-US				

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Bluetooth_BR+EDR:

Bluetooth Version:	$V2.1 + EDR (GFSK + \pi/4DQPSK + 8DPSK)$					
Channel number:	79 channels					
Modulation type:	Frequency Hopping Spread Spectrum					
Transmit Power:	9.75dBm					
Frequency Range:	2.402GHz – 2.480GHz					
Dwell Time:	<= 0.4s					
Antenna Designation:	PIFA Antenna, Gain: 0.02dBi					
Type of Emission:	891KF7D (GFSK) / 1M18G7D (π/4DQPSK) /1M18G7D (8DPSK)					

Bluetooth Low Energy:

Frequency Range:	2402 – 2480MHz
Bluetooth Version:	V4.0 Dual mode
Channel number:	40 channels
Modulation type:	GFSK
Transmit Power:	1.45 dBm (Peak)
Antenna Designation:	PIFA Antenna, Gain: 0.02dBi
Type of Emission:	1M09F7D

NFC:

Operating Frequency	13.56MHz
Transmit Power	< 123dBuV/m at 3m.
Number of Channels	1
Antenna Type	Loop Antenna
Modulation Type	ASK, BPSK
Type of Emission:	23K0F1D

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GSM / WCDMA:

	Operating Frequency		Rated Power
	GSM/GPRS 850, Class 12	824.2 MHz- 848.8 MHz	33 dBm
	EDGE 850, Class 12	824.2 MHz- 848.8 MHz	27 dBm
Cellular Phone Stan-	GSM/GPRS 1900, Class 12	1850.2MHz – 1909.8MHz	30 dBm
dards	EDGE 1900, Class 12	1850.2MHz – 1909.8MHz	26 dBm
Frequency Range and Power.	WCDMA/HSUPA/HSDPA /HSPA+ Band II	1852.4MHz – 1907.6MHz	24 dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band IV 1712.4MHz - 1752.6MHz		24 dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band V	1.820.41VIHZ 840.01 VIHZ	
Type of Emission:	GSM 850: 249KGXW, GSM 19 GPRS 850: 250KGXW, GPRS EDGE 850: 243KG7W, EDGE WCDMA Band II: 4M19F9W, WCDMA Band V: 4M20F9W HSDPA Band II: 4M24F9W, H HSDPA Band V: 4M22F9W HSUPA Band II: 4M24F9W, H HSUPA Band V: 4M25F9W	1900: 247KGXW 1900: 251KG7W WCDMA Band IV: 4M19F9W, SDPA Band IV: 4M24F9W,	
IMEI:	004402146156595		

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WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Avg)	Rated Power (EIRP)	Modulation Technology	Type of Emission	
	5150~5250	4	15.95dBm	16.21dBm		17M7D1D	
11a	5250~5350	4	15.87dBm	16.90dBm	OFDM	17M6D1D	
	5470~5725	11	15.97dBm	19.37dBm		17M9D1D	
	HT20 5150~5250	4	HT20: 15.97dBm	HT20: 16.23dBm		18M5D1D	
11n	HT20 5250~5350	4	HT20: 15.92dBm	HT20: 16.95dBm	OFDM	18M5D1D	
	HT20 5470~5725	11	HT20: 15.98dBm	HT20: 19.38dBm		18M5D1D	
	HT40 5150~5250	2	HT40: 15.77dBm	HT40: 16.03dBm		36M2D1D	
11n	HT40 5250~5350	2	HT40: 15.78dBm	HT40: 16.81dBm	OFDM	36M3D1D	
	HT40 5470~5725	5	HT40: 15.93dBm	HT40: 19.33dBm		36M4D1D	
Antenna Designation		PIFA Antenna, 5GHz Gain: 0.26 dBi (5150MHz-5250MHz) 5GHz Gain: 1.03 dBi (5250MHz-5350MHz) 5GHz Gain: 3.40 dBi (5470MHz-5725MHz)					
Modulation type		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM					
Transition	Rate:	802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 72.2Mbps 802.11 n_40MHz: 13.5 – 150Mbps					

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WLAN 2.4GHz+5.7GHz:

Wi-Fi	Frequency Range	Channels	Rated Power	Rated Power Modulation Technology			
11b/g	2412-2462	11	b: 20.36dBm g: 19.19dBm	DSSS, OFDM	b: 15M3G1D g: 17M2D1D		
11n	HT20 2412-2462	11	HT20: 19.13dBm	OFDM	n: 18M0D1D		
11a	5725-5850	5	a: 19.38 dBm		a: 17M9D1D		
11n (5GHz)	HT20 5725-5850	5	HT20: 19.26 dBm	OFDM	n_20HT:18M4D1D		
11n (5GHz)	HT40 5725-5850	2	HT40: 19.50 dBm		n_40HT:36M8D1D		
Antenna Designation:		PIFA Antenna, 2.4GHz Gain: 0.02dBi 5GHz Gain: 3.11 dBi (5725MHz-5850MHz)					
Modulation type:		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM					
Transition Rate:		802.11 a: 6/9/12/18/24/36/48/54 Mbps 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 – 150Mbps					

The 2.4G max antenna gain is 0.02dBi which was choosing for Radiated Spurious Emission test. The 5G max antenna gain is 3.11 dBi which was choosing for Radiated Spurious Emission test. The EUT is in compliance with FCC \$15.247 at which the frequency band of 2400~2483.5, and 5725~5850MHz has been tested.

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IEEE 802.11n Spec:

MCS					NICE	n n c	NITS	n n c		Datarat	e(Mbps)	
Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		800nsGI		400nsGI	
			-2		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
8	2	BPSK	1/2	1	104	216	52	108	13.0	27.0	14.444	30
9	2	QPSK	1/2	2	208	432	104	216	26.0	54.0	28.889	60
10	2	QPSK	3/4	2	208	432	156	324	39.0	81.0	43.333	90
11	2	16-QAM	1/2	4	416	864	208	432	52.0	108.0	57.778	120
12	2	16-QAM	3/4	4	416	864	312	648	78.0	162.0	86.667	180
13	2	64-QAM	2/3	6	624	1296	416	864	104.0	216.0	115.556	240
14	2	64-QAM	3/4	6	624	1296	468	972	117.0	243.0	130.000	270
15	2	64-QAM	5/6	6	624	1296	520	1080	130.0	270.0	144.444	300

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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1.2 **Related Submittal(s) / Grant (s)**

This submittal(s) (test report) is intended for FCC ID: PY7PM-0300 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules. And IC: 4170B-PM0300 filing to comply with Industry Canada RSS-210 issue 8: 2010 Annex 8. The composite system (digital device) is compliance with Subpart B is authorized under a DoC procedure.

1.3 **Test Methodology**

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4:2009 and ANSI 63.10:2009 and RSS-Gen: 2010. Radiated testing was performed at an antenna to EUT distance 3 meters.

Tested in accordance with Oct 2012 KDB558074 D01 V02 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.134, Wu Kung Road, Wuku Industrial Zone, Taipei County, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009. & ANSI C63.10:2009. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-04.

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**

Not available for this EUT intended for grant.

1.6 **Equipment Modifications**

There was no modification incorporated into the EUT.

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SYSTEM TEST CONFIGURATION

2.1 **EUT Configuration**

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

2.2 **EUT Exercise**

An engineering test mode 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 requirements in Section 7.3.1 of ANSI C63.4:2009 & ANSI 63.10:2009.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

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 of ANSI C63.4:2009 & ANSI 63.10:2009.

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Configuration of Tested System

Fig. 2-1 Conducted / Radiated Emission Configuration

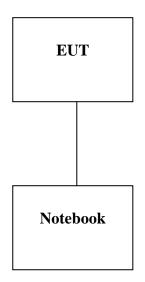


Table 2-1 Equipment Used in Tested System

Item		Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
	1.	Notebook	IBM	T60	L3DK794	Un-shielded	Un-shielded
	2.	WLAN Test Software	QRCT	2.4.83.0	N/A	N/A	N/A

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SUMMARY OF TEST RESULTS 3

FCC 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) mid (2437MHz) and high (2462MHz) with 1Mbps lowest data rate are chosen for full testing.

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

802.11 n_20MHz mode: Channel low (2412MHz) • mid (2437MHz) and high (2462MHz) with 6.5Mbps lowest data rate are chosen for full testing.

802.11 a mode: Channel low (5745MHz) mid (5785MHz) and high (5825MHz) with 6Mbps lowest data rate are chosen for full testing.

802.11 n (5GHz) _20MHz: Lowest (5745MHz), Mid (5785MHz) and high (5825MHz) with 6.5 Mbps lowest data rate are chosen for full testing.

802.11 n (5GHz) _40MHz: Lowest (5755MHz) and high (5795MHz) with 13.5 Mbps lowest data rate are chosen for full 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 a/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 E2 position was reported.

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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
Maccomment un containte	180MHz -417MHz: +/- 3.19dB
Measurement uncertainty (Polarization : Vertical)	0.417GHz-1GHz: +/- 3.19dB
(1 oranization : Vertical)	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB
	30MHz - 167MHz: +/- 4.22dB
Measurement uncertainty	167MHz -500MHz: +/- 3.44dB
(Polarization : Horizontal)	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

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

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CONDUCTED EMISSION TEST

6.1 **Standard Applicable:**

According to §15.207 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 transition frequencies
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

6.2 **Measurement Equipment Used:**

Conducted Emission Test Site									
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
EMI Test Receiver	R&S	ESCI7	100759	05/20/2011	05/19/2013				
EMI Receiver	R&S	ESCS 30	828985/004	09/23/2012	09/22/2013				
LISN	Rolf-Heine	NNB-2/16Z	99012	03/23/2012	03/22/2013				
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	03/23/2012	03/22/2013				
Coaxial Cables	N/A	WK CE Cable	N/A	01/05/2012	01/04/2013				

6.3 **EUT Setup:**

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4:2009 & ANSI 63.10:2009.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

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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 frequency measured were complete.

Measurement Result: 6.5

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

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

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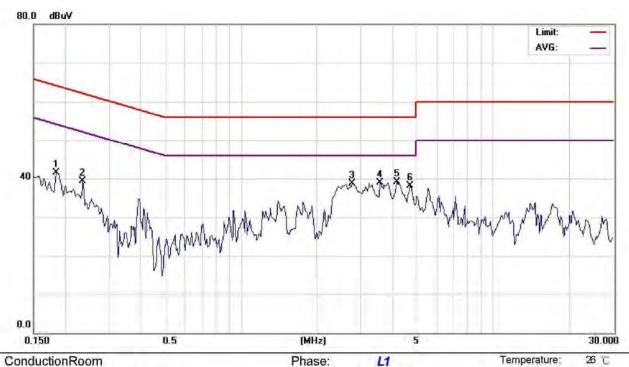


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AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	Nov. 19, 2012
Temperature:	26 ℃	Humidity:	60 %	Test By:	Marcus



Power:

Distance:

Site ConductionRoom

Limit: FCC Class B Conduction(QP)

EUT: MobilePhone M/N: PM-0300-BV

Mode: Operationmode

Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dВ	dBuV	dBuV	dΒ	Detector	Comment	
1	0.1852	41.36	0.22	41.58	64.25	-22.67	peak		
2	0.2360	39.14	0.21	39.35	62.24	-22.89	peak		
3	2.7678	38.41	0.27	38.68	56.00	-17.32	peak		
4	3.5811	38.70	0.29	38.99	56.00	-17.01	peak		
5 *	4.1793	38.79	0.30	39.09	56.00	-16.91	peak		
6	4.7032	37.82	0.32	38.14	56.00	-17.86	peak		

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AC 120V/60Hz

Humidity:

60%

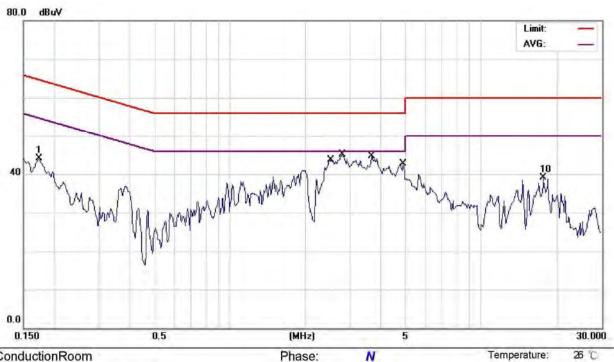


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Humidity:

60%

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Power:

Distance:

AC 120V/60Hz

Site ConductionRoom

Limit: FCC Class B Conduction(QP)

EUT: MobilePhone M/N: PM-0300-BV

Mode: Operationmode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dΒ	dBuV	dBuV	dВ	Detector	Comment	
1		0.1735	43.84	0.33	44.17	64.79	-20.62	peak		
2		2.5271	37.60	0.34	37.94	56.00	-18.06	QP		
3	*	2.5271	28.29	0.34	28.63	46.00	-17.37	AVG		
4		2.7958	37.50	0.34	37.84	56.00	-18.16	QP		
5		2.7958	27.72	0.34	28.06	46.00	-17.94	AVG		
6		3.6607	35.22	0.35	35.57	56.00	-20.43	QP		
7		3.6607	26.66	0.35	27.01	46.00	-18.99	AVG		
8		4.9004	32.96	0.37	33.33	56.00	-22.67	QP		
9		4.9004	23.54	0.37	23.91	46.00	-22.09	AVG		
10		17.7896	38.33	0.69	39.02	60.00	-20.98	peak		

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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.

- (1) Fixed point-to-point operation:
- (i) Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.
- (ii) Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

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.

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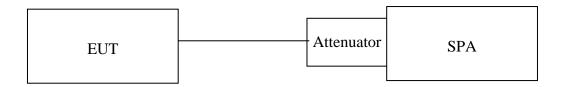
As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signalling alphabet when the 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.

Measurement Equipment Used

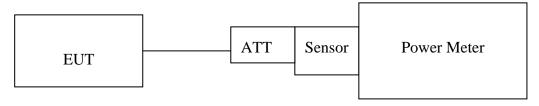
7.2 Weasurement Equipment Oseu:									
Conducted Emission Test Site									
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
Power Sensor	Anritsu	ML2495A	1005007	02/08/2012	02/07/2014				
Power Meter	Anritsu	MA2411B	917032	02/08/2012	02/07/2014				
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/15/2011	04/14/2013				
Spectrum Analyzer	Agilent	E4440A	MY45304525	03/17/2012	03/16/2014				
DC Block	Mini-Circuits	BLK-18-S+	1	02/28/2012	02/27/2013				
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2012	01/04/2013				
Attenuator Mini-Circuit		BW-S10W2+	002	02/28/2012	02/27/2013				
Splitter	Agilent	11636B	N/A	02/28/2012	02/27/2013				

7.3 **Test Set-up:**

Spectrum:



Power Meter:



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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 8.1.2 Option2 of the KDB558074). Power Meter is used as the auxiliary test equipment to conduct the output power measurement. 8.1.3 option 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 8.2.1 Option 1 of the KDB558074). Power Meter is used as the auxiliary test equipment to conduct the output power measurement. 8.2.3 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 measured was complete.

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7.5 **Measurement Result:**

802.11b

CII	Frequency (MHz)		Dogwined Limit			
СН		1	2	5.5	11	Required Limit
1	2412	20.36	20.34	20.32	20.30	1 Watt = 30 dBm
6	2437	20.25	20.22	20.20	20.21	1 Watt = 30 dBm
11	2462	20.32	20.30	20.29	20.28	1 Watt = 30 dBm

			Average Power Output (dBm)											
СН	Frequency		Data	Rate		Required Limit								
CH	(MHz)	1	Kequirea Liiiit											
1	2412	17.79	17.66	17.62	17.58	1 Watt = 30 dBm								
6	2437	17.57	17.47	17.49	17.46	1 Watt = 30 dBm								
11	2462	17.67	17.62	17.61	17.59	1 Watt = 30 dBm								

802.11g

00202			Peak Power Output(dBm)												
СН	Frequency				Dogwinad Limit										
Сп	(MHz)	6	9	12	18	24	36	48	54	Required Limit					
1	2412	14.72	14.70	14.68	14.69	14.59	14.53	14.51	14.50	1 Watt = 30 dBm					
6	2437	19.19	19.16	19.12	19.09	19.07	19.01	19.01	19.05	1 Watt = 30 dBm					
11	2462	18.48	18.23	18.13	18.12	18.11	18.02	17.99	18.02	1 Watt = 30 dBm					

			Average Power Output(dBm)											
СН	Frequency				Deguined Limit									
Сп	(MHz)	6	9	12	18	24	36	48	54	Required Limit				
1	2412	11.14	11.13	11.13	11.08	11.07	11.06	11.00	10.97	1 Watt = 30 dBm				
6	2437	15.67	15.63	15.65	15.62	15.61	15.59	15.55	15.56	1 Watt = 30 dBm				
11	2462	14.88	14.64	14.54	14.43	14.31	14.29	14.24	14.18	1 Watt = 30 dBm				

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802.11n_20M

			Peak Power Output(dBm)												
СН	Frequency		Required												
Сп	(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Limit					
1	2412	14.67	14.56	14.43	14.38	14.32	14.33	14.31	14.36	1 Watt = 30 dBm					
6	2437	19.13	19.02	18.96	18.88	18.85	18.82	18.75	18.73	1 Watt = 30 dBm					
11	2462	16.53	16.43	16.50	16.48	16.47	16.43	16.41	16.39	1 Watt = 30 dBm					

			Average Power Output(dBm)												
CII	Frequency		Required												
СН	(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Limit					
1	2412	11.02	10.68	10.70	10.63	10.64	10.59	10.58	10.54	1 Watt = 30 dBm					
6	2437	15.60	15.22	15.32	15.33	15.38	15.22	15.20	15.20	1 Watt = 30 dBm					
11	2462	12.88	12.82	12.85	12.85	12.86	12.81	12.80	12.79	1 Watt = 30 dBm					

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802.11a

CII	Frequency		D . 11							
СН	(MHz)	6	9	12	18	24	36	48	54	Required Limit
149	5745	19.34	19.32	19.29	19.22	19.14	19.11	19.07	19.02	1 Watt = 30 dBm
157	5785	19.22	19.21	19.19	19.17	19.13	19.11	19.08	19.01	1 Watt = 30 dBm
165	5825	19.38	19.34	19.28	19.16	19.12	19.08	19.06	18.98	1 Watt = 30 dBm

			Average Power Output(dBm)											
CII	Frequency		D 11											
СН	(MHz)	6	9	12	18	24	36	48	54	Required Limit				
149	5745	15.74	15.62	15.50	15.48	15.47	15.45	15.43	15.40	1 Watt = 30 dBm				
157	5785	15.95	15.86	15.75	15.71	15.67	15.64	15.63	15.62	1 Watt = 30 dBm				
165	5825	15.89	15.78	15.65	15.64	15.62	15.59	15.58	15.55	1 Watt = 30 dBm				

802.11n(5GHz) 20M

	02.1111(3G11Z	<u></u> UIVI	VIVI											
			Peak Power Output(dBm)											
CII	Frequency			D 1 11 14										
СН	(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Required Limit				
149	5745	19.13	19.10	19.09	19.09	19.07	19.05	18.95	18.89	1 Watt = 30 dBm				
157	5785	19.26	19.25	19.22	19.18	19.11	19.06	19.02	18.97	1 Watt = 30 dBm				
165	5825	19.22	19.19	19.16	19.11	19.05	18.99	18.94	18.91	1 Watt = 30 dBm				

)						
CII	Frequency									
СН	(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Required Limit
149	5745	15.72	15.67	15.54	15.52	15.49	15.47	15.45	15.42	1 Watt = 30 dBm
157	5785	15.89	15.72	15.70	15.65	15.62	15.58	15.56	15.57	1 Watt = 30 dBm
165	5825	15.89	15.67	15.66	15.64	15.65	15.64	15.63	15.64	1 Watt = 30 dBm

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802.11n(5GHz) 40M

CII	Frequency		D ' 11' '							
СН	(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Required Limit
151	5755	19.50	19.32	19.28	19.22	19.19	19.17	19.12	19.08	1 Watt = 30 dBm
159	5795	19.43	19.27	19.26	19.23	19.19	19.15	19.06	19.01	1 Watt = 30 dBm

			Average Power Output(dBm)										
CII	Frequency		D										
СН	(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Required Limit			
151	5755	15.87	15.71	15.68	15.66	15.65	15.63	16.59	15.58	1 Watt = 30 dBm			
159	5795	15.96	15.92	15.87	15.83	15.81	15.81	15.79	15.75	1 Watt = 30 dBm			

^{*} Note: Offset 10.9dB for 2.4G 802.11b/g/n_20;

Offset 11.6 dB for 5G 802.11a/n_20/n_40.

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^{*}Refer to next page for plots



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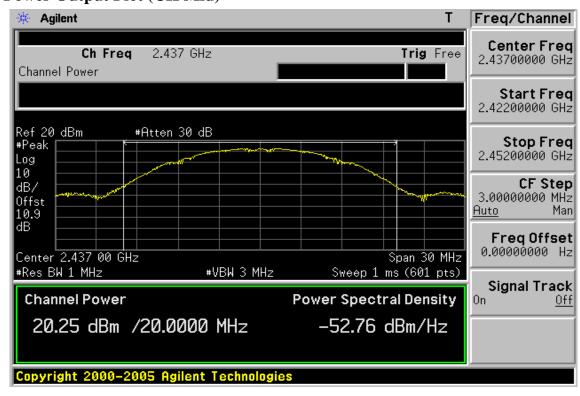
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802.11b, 1Mbps

Peak Power Output Plot (CH Low)



Peak Power Output Plot (CH Mid)



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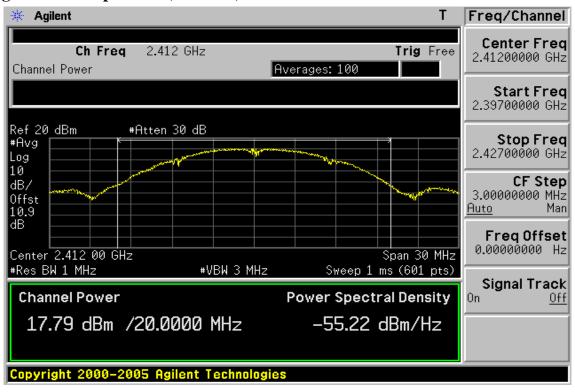
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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)

台灣檢驗科技股份有限公司



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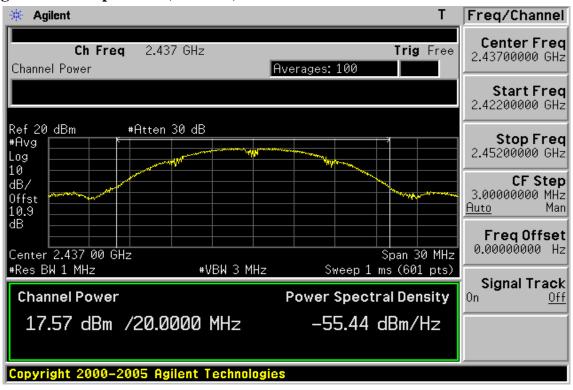
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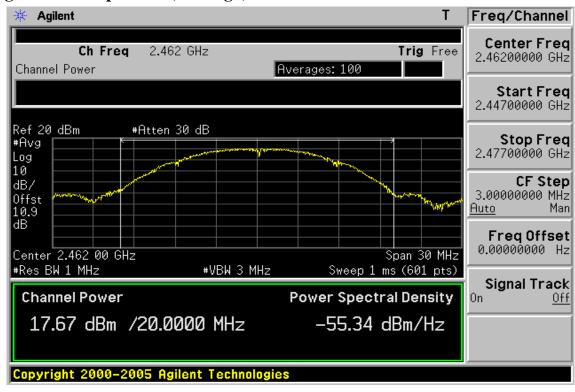
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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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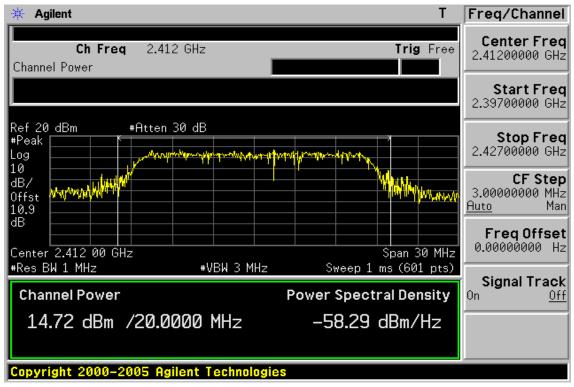


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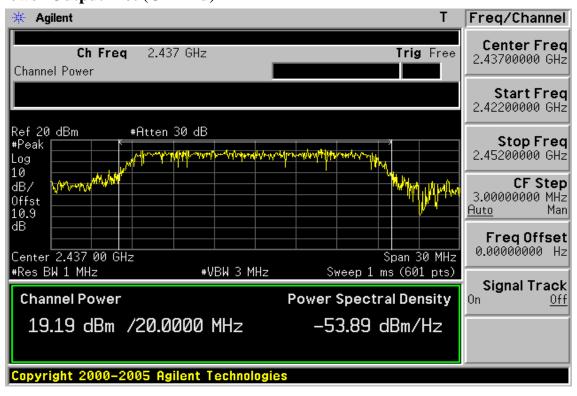
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802.11g, 6Mbps

Peak Power Output Plot (CH Low)



Peak Power Output Plot (CH Mid)



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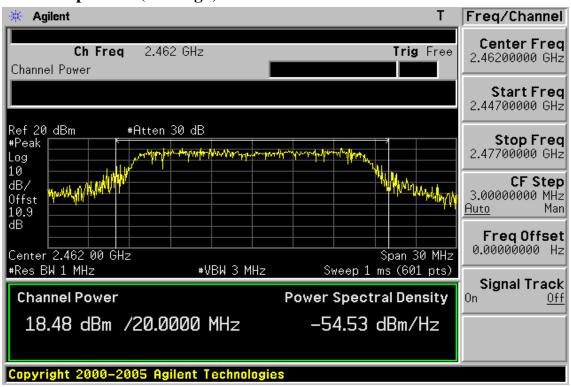
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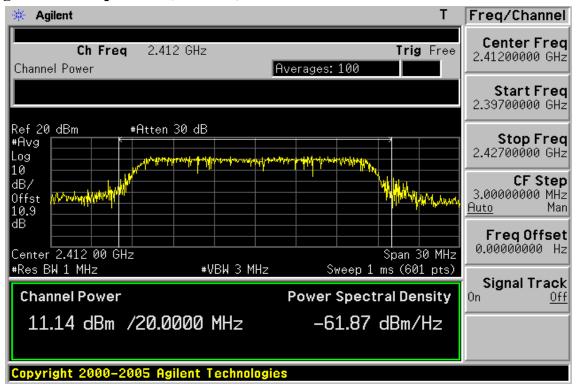
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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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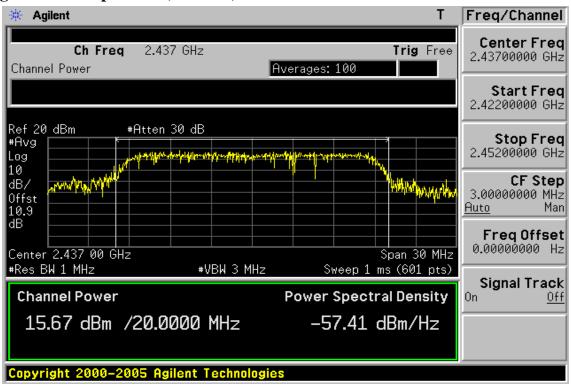
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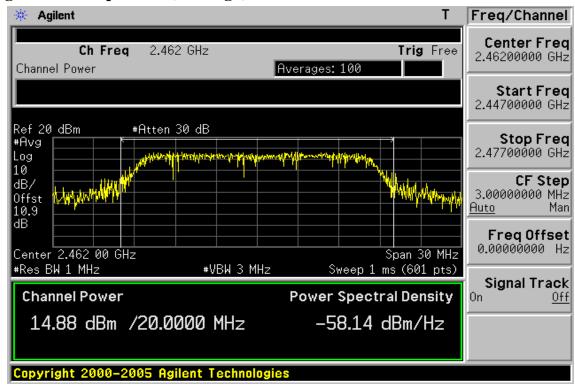
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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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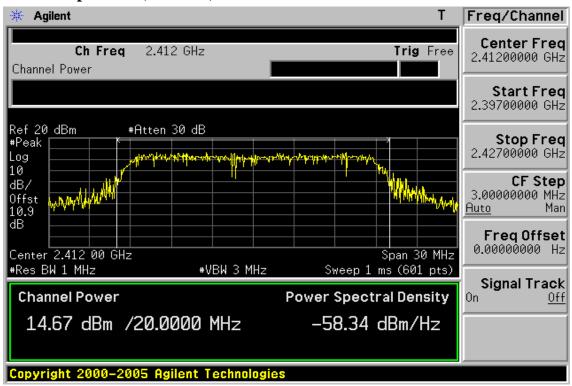


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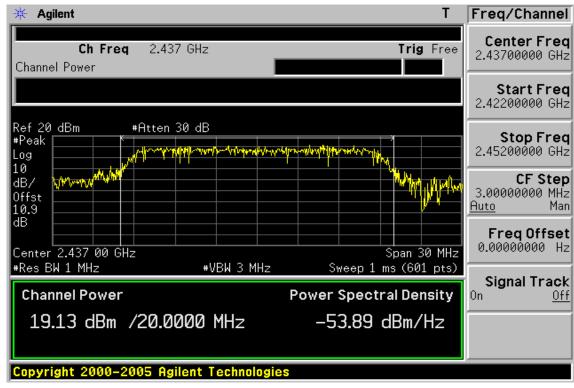
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802.11n_20M, 6.5Mbps

Peak Power Output Plot (CH Low)



Peak Power Output Plot (CH Mid)



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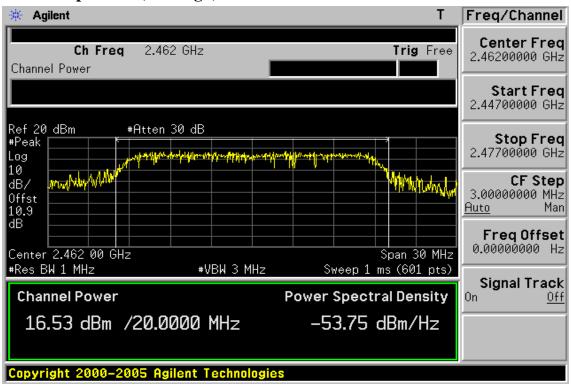
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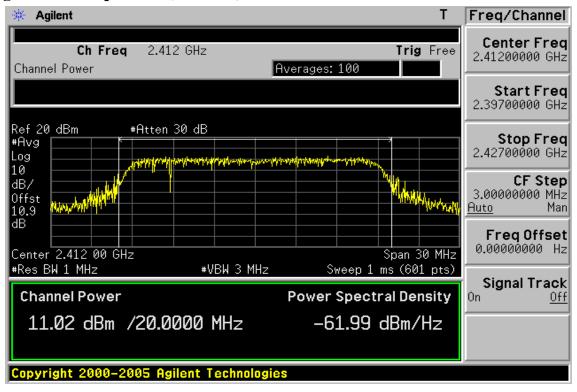
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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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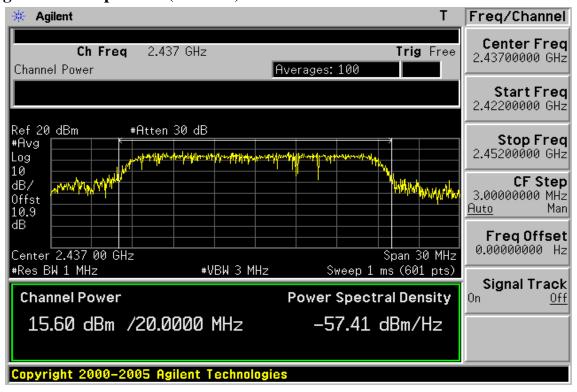
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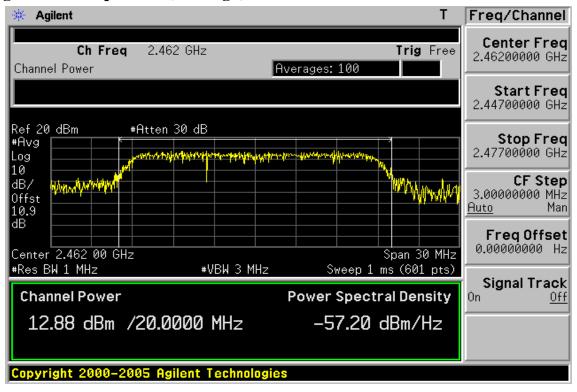
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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)

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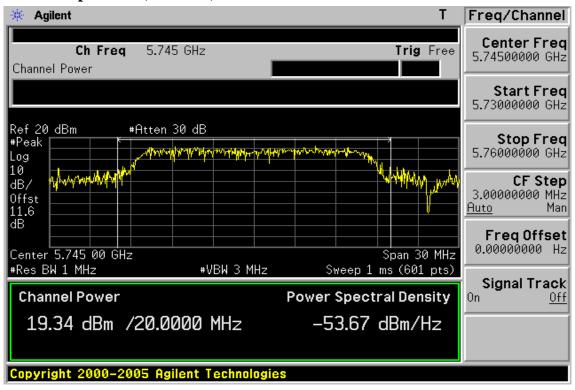


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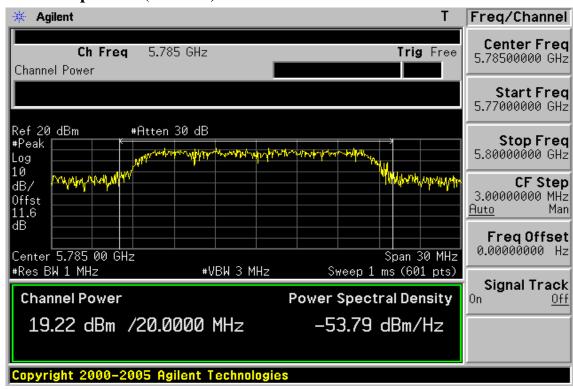
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802.11a, 6Mbps

Peak Power Output Plot (CH Low)



Peak Power Output Plot (CH Mid)



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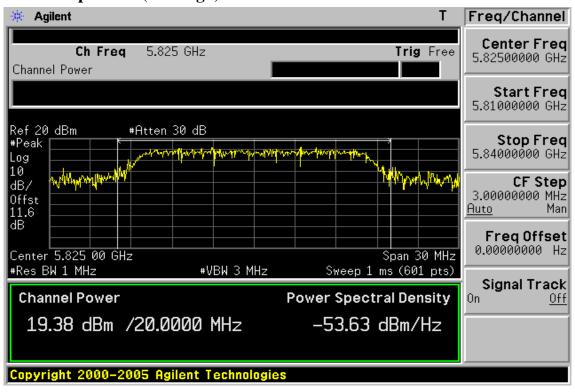
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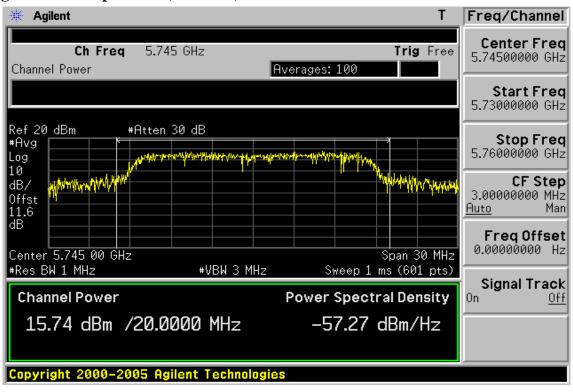
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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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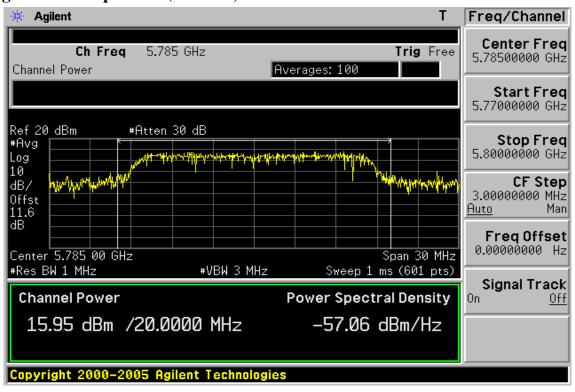
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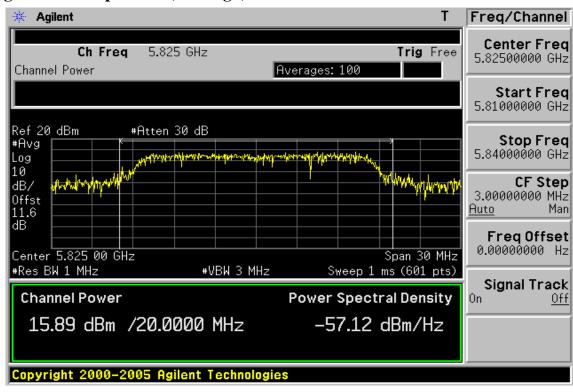
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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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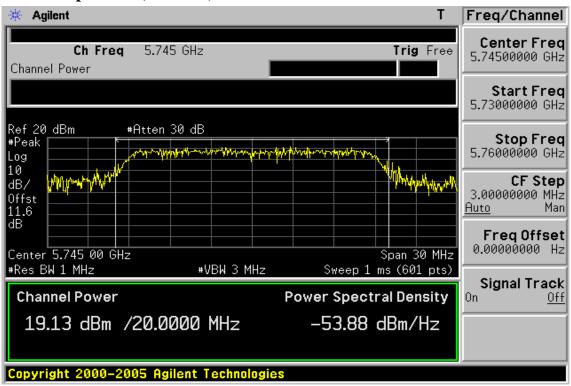
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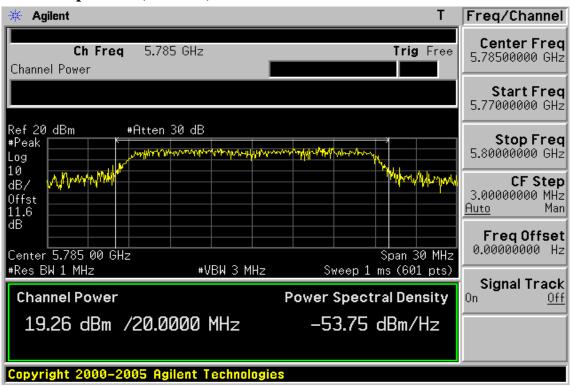
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802.11n(5GHz)_20M, 6.5Mbps **Peak Power Output Plot (CH Low)**



Peak Power Output Plot (CH Mid)



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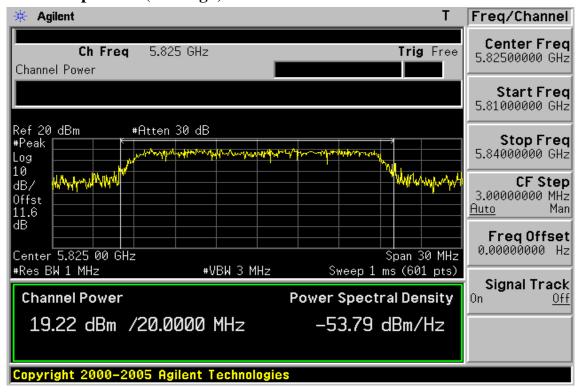
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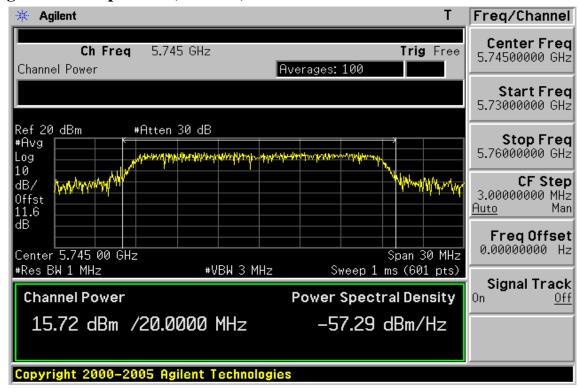
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Peak Power Output Plot (CH High)



Average Power Output Plot (CH Low)



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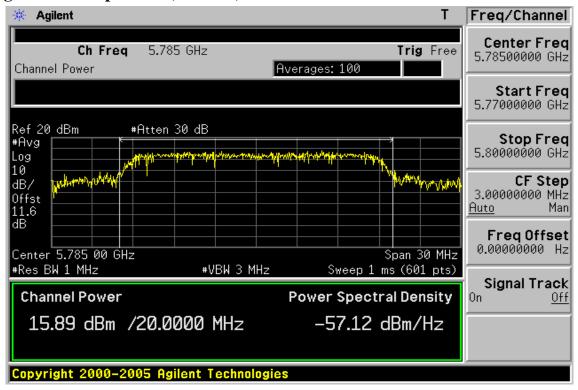
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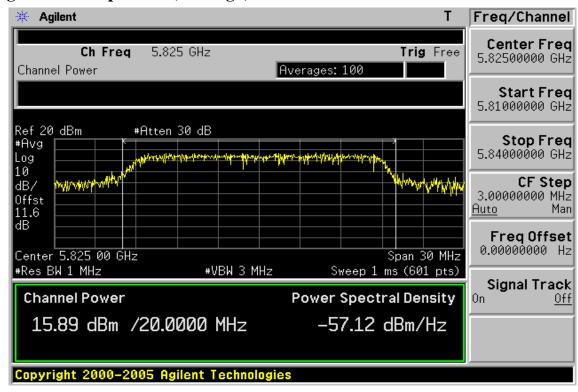
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Average Power Output Plot (CH Mid)



Average Power Output Plot (CH High)



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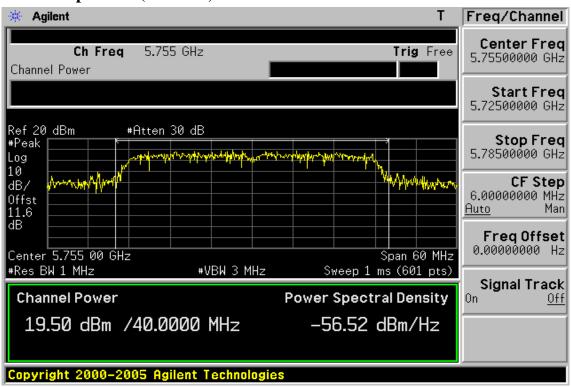
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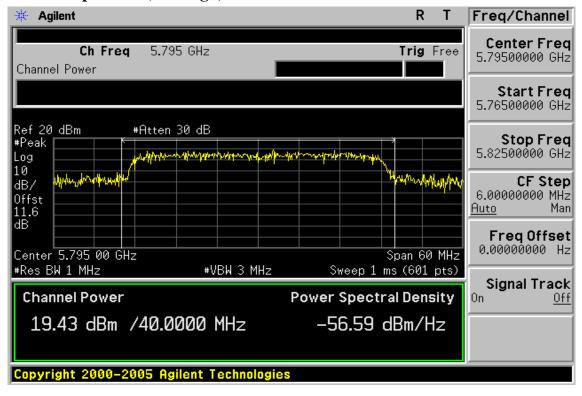
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802.11n(5GHz)_40M,13.5Mbps **Peak Power Output Plot (CH Low)**



Peak Power Output Plot (CH High)



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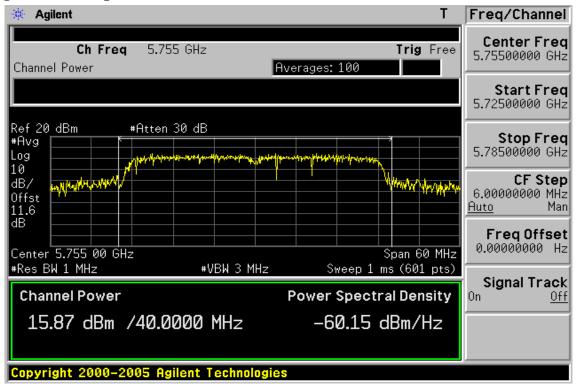
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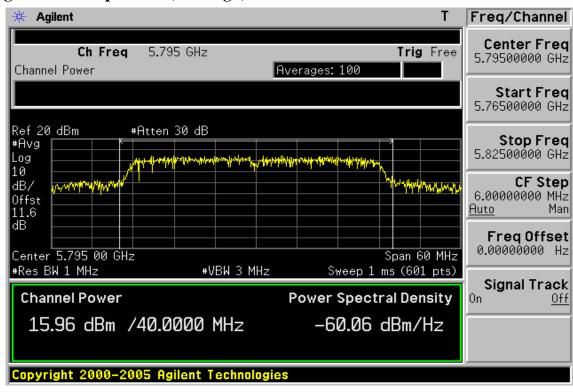
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Average Power Output Plot (CH Low)



Average Power Output Plot (CH High)



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6dB BANDWIDTH

8.1 **Standard Applicable:**

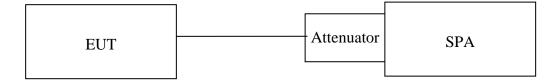
According to §15.247(a)(2), Systems using digital modulation techniques may operate in the 902 - 928 MHz,2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500kHz.

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:**

Conducted Emission Test Site								
EQUIPMENT TYPE	VIRK		SERIAL NUMBER	LAST CAL.	CAL DUE.			
Power Sensor	Anritsu	ML2495A	1005007	02/08/2012	02/07/2014			
Power Meter	Anritsu	MA2411B	917032	02/08/2012	02/07/2014			
Spectrum Analyzer	Agilent	E4446A MY51100003		04/15/2011	04/14/2013			
Spectrum Analyzer	Agilent	E4440A	MY45304525	03/17/2012	03/16/2014			
DC Block	Mini-Circuits	BLK-18-S+	1	02/28/2012	02/27/2013			
Low Loss Cable	ow Loss Cable HUBER+SUHNER		N/A	01/05/2012	01/04/2013			
Attenuator	Mini-Circuit	BW-S10W2+	002	02/28/2012	02/27/2013			
Splitter	Agilent	11636B	N/A	02/28/2012	02/27/2013			

8.3 **Test Set-up:**



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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, Sweep=auto, the setting on spectrum is adjusted based on the procedure as guide in 7.1 option 1 of KDB558074.
- 4. Mark the peak frequency and –6dB (upper and lower) frequency.
- 5. Repeat above procedures until all frequency measured was complete.

8.5 **Measurement Result:**

802.11b

Frequency	Bandwidth	Bandwidth	Result
(MHz)	(MHz)	(KHz)	
2412	9.067	> 500	PASS
2437	8.091	> 500	PASS
2462	8.117	> 500	PASS

802.11g

Frequency	Bandwidth	Bandwidth	Result
(MHz)	(MHz)	(KHz)	
2412	16.441	> 500	PASS
2437	16.423	> 500	PASS
2462	16.449	> 500	PASS

802.11n_20M

Frequency	Bandwidth	Bandwidth	Result
(MHz)	(MHz)	(KHz)	
2412	17.645	> 500	PASS
2437	17.638	> 500	PASS
2462	17.648	> 500	PASS

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802.11a

Frequency	Bandwidth	Bandwidth	Result
(MHz)	(MHz)	(KHz)	
5745	16.424	> 500	PASS
5785	16.394	> 500	PASS
5825	16.410	> 500	PASS

802.11n (5GHz)_20M

Frequency (MHz)	Bandwidth (MHz)	Bandwidth (KHz)	Result
5745	17.608	> 500	PASS
5785	17.603	> 500	PASS
5825	17.600	> 500	PASS

802.11n (5GHz)_40M

Frequency	Bandwidth	Bandwidth	Result
(MHz)	(MHz)	(KHz)	
5755	35.180	> 500	PASS
5795	35.024	> 500	PASS

^{*} Note: Offset 10.9dB for 2.4G 802.11b/g/n_20; Offset 11.6 dB for 5G 802.11a/n_20/n_40.

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^{*}Refer to next page for plots



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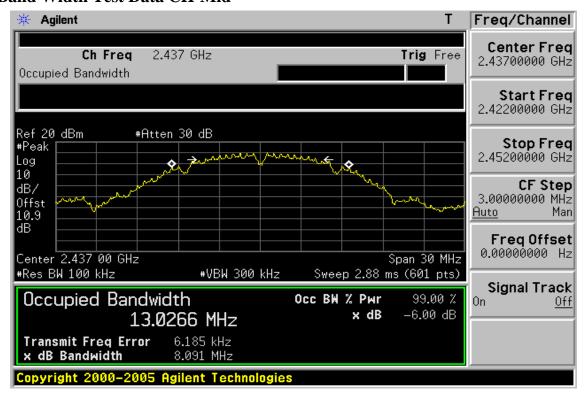
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802.11b

6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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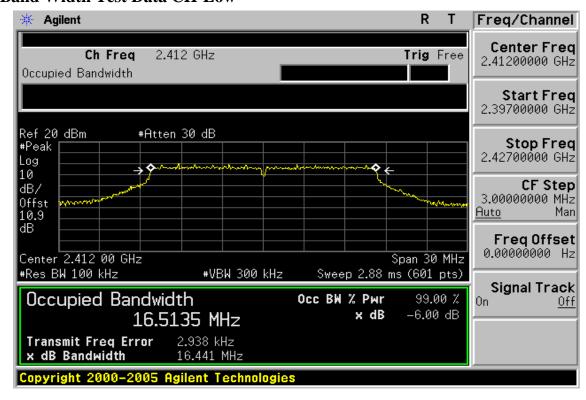
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6dB Band Width Test Data CH-High



802.11g

6dB Band Width Test Data CH-Low



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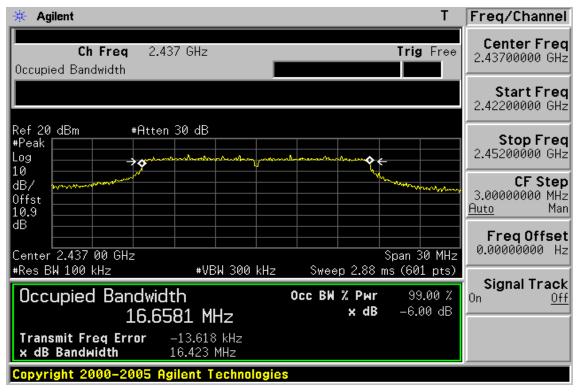
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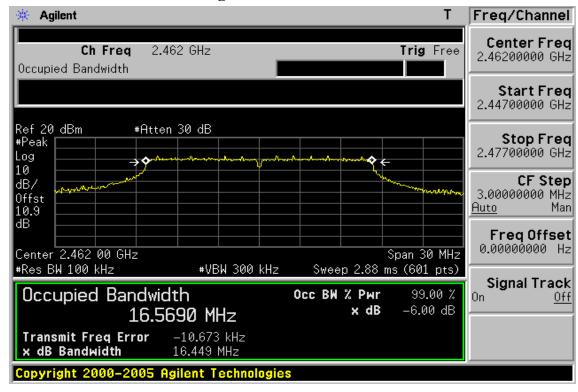
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6dB Band Width Test Data CH-Mid



6dB Band Width Test Data CH-High



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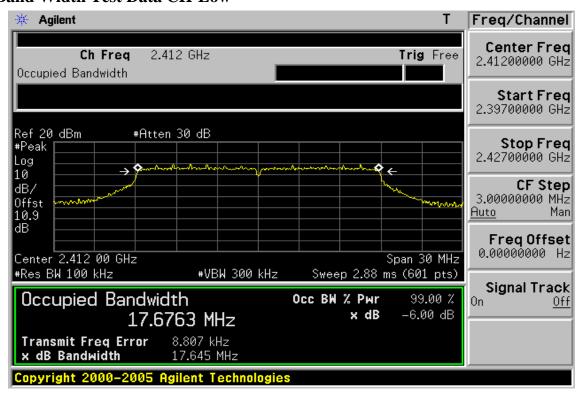


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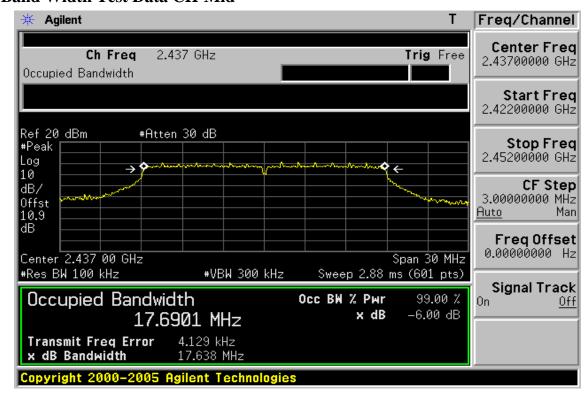
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802.11n 20M

6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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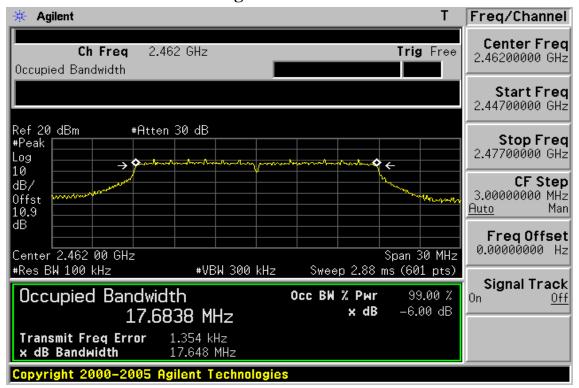
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6dB Band Width Test Data CH-High



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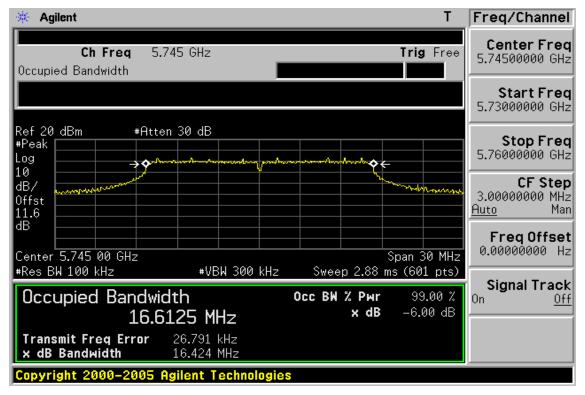


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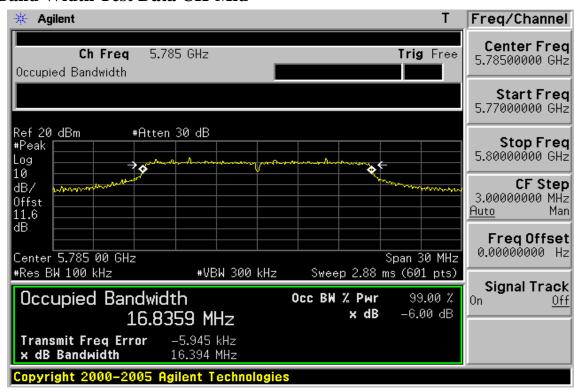
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802.11a

6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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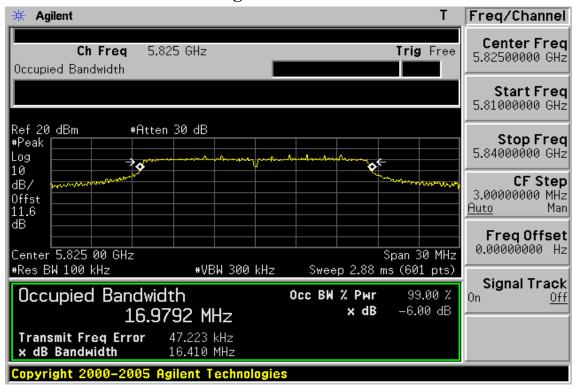
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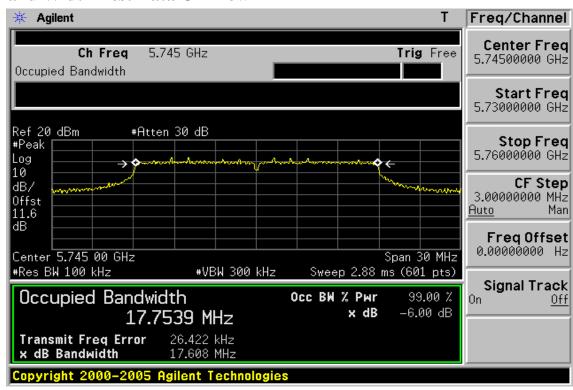
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6dB Band Width Test Data CH-High



802.11n (5GHz)_20M

6dB Band Width Test Data CH-Low



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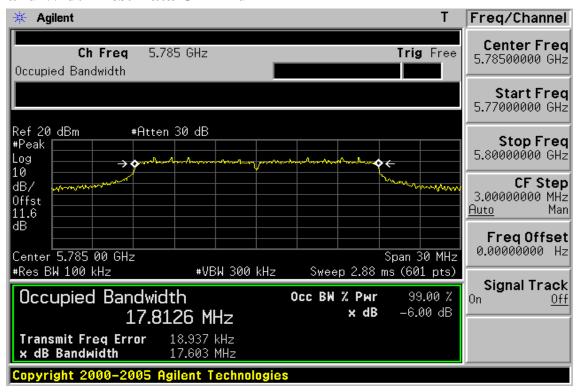
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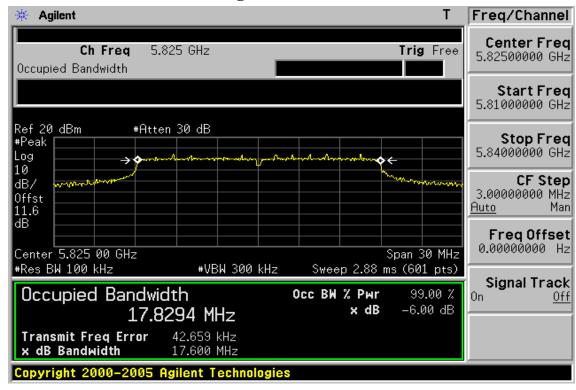
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6dB Band Width Test Data CH-Mid



6dB Band Width Test Data CH-High



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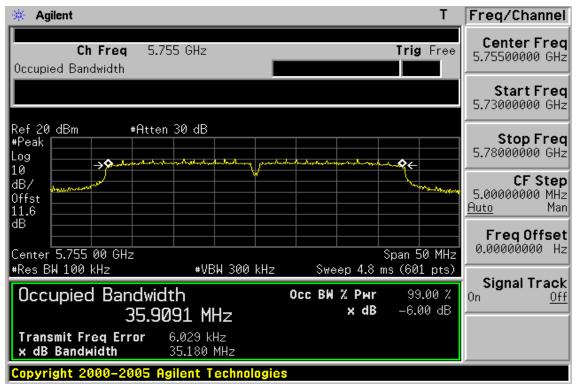


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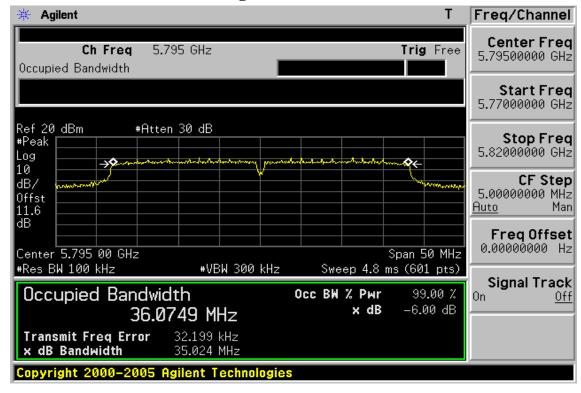
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802.11n (5GHz) 40M

6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-High



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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 100KHz 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 in 15.209(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.

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9.2.2 Radiated emission:

966 Chamber								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
TYPE		NUMBER	NUMBER	CAL.				
EMI Test Receiver	R&S	ESCI7	100759	05/20/2011	05/19/2013			
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/15/2011	04/14/2013			
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	02/15/2011	02/14/2013			
Spectrum Analyzer	R&S	FSV-30	101398	10/18/2011	10/17/2013			
Bilog Antenna	SCHWAZBECK	VULB9168	378	01/10/2012	01/09/2014			
Horn antenna	ETS.LINDGREN	3117	123995	05/19/2011	05/18/2013			
Horn Antenna	Schwarzbeck	BBHA9170	185	07/11/2011	07/10/2013			
Pre-Amplifier	Agilent	8447D	2944A07676	01/04/2012	01/03/2013			
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/04/2012	01/03/2013			
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M2	02/28/2012	02/27/2013			
Attenuator	Mini-Circuit	BW-S10W2+	004	02/28/2012	02/27/2013			
Turn Table	HD	DT420	N/A	N.C.R	N.C.R			
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R			
Controller	HD	HD100	N/A	N.C.R	N.C.R			
Low Loss Cable	Huber Suhner	966_Rx	9	01/04/2012	01/03/2013			
3m Site NSA	SGS	966 chamber	N/A	07/15/2012	07/14/2013			

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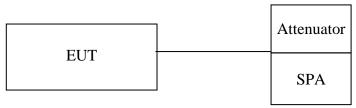


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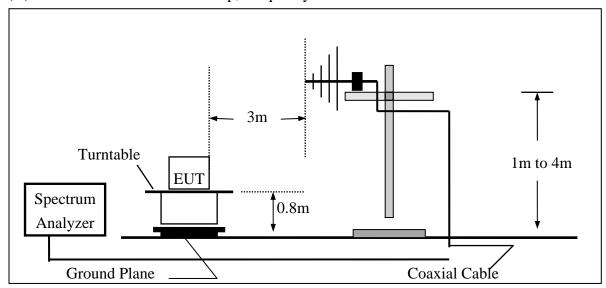
9.3 **Test SET-UP:**

9.3.1 Conducted Emission at antenna port:

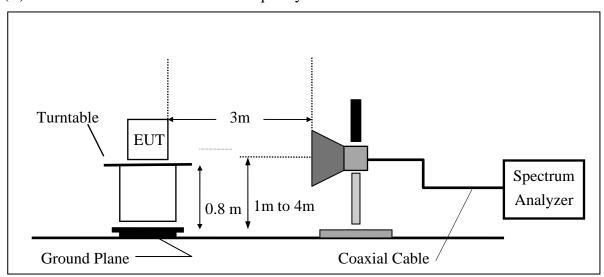


9.3.2 Radiated emission:

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



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



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Measurement Procedure:

Unwanted Emissions into Non-Restricted Frequency Bands, Measurement Procedure followed by 10.1 of KDB558074

- 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=100KHz, 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 10.1

of KDB558074:

- 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, & Marker 2390MHz, and 2483.5MHz (Peak Measurement). Average Measurement: following 8.2 with the modification span to 1MHz, &RBW = 1MHz 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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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	

9.6 Measurement Result:

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

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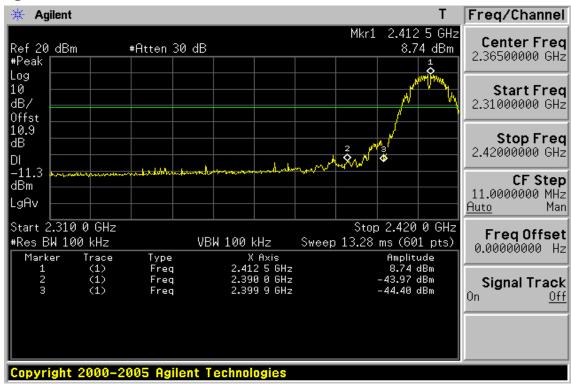
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802.11b - Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission

(Unwanted Emissions into Restricted Frequency Bands): 802.11 b mode

Operation Band :802.11b :2012-12-06 Test Date Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :BANDEDGE LOW Engineer :Marcus EUT Pol. :E2 Plan Measurement Antenna Pol. :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)

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
2390.00	E	Average	50.79	2.12	52.91	54.00	-1.09
2390.00	E	Peak	58.37	2.12	60.49	74.00	-13.51
O D	1	002 111	T	. D .		2012 12 06	

Operation Band :802.11b Test Date :2012-12-06 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg C/57RH

Operation Mode :BANDEDGE LOW Engineer :Marcus

EUT Pol. :E2 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	dΒμV	dB	dBμV/m	dBμV/m	dB
2390.00	E	Average	50.15	2.74	52.89	54.00	-1.11
2390.00	E	Peak	57.76	2.74	60.50	74.00	-13.50

For measurement plot of radiation revealing the compliance of 15,209, please refer to Appendix I.

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 :802.11b Test Date :2012-12-06 Fundamental Frequency :2462 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :BANDEDGE HIGH Engineer :Marcus :E2 Plan EUT Pol. Measurement Antenna Pol. :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)

"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 Lev	rel	FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.50	E	Average	47.46	2.53	49.99	54.00	-4.01
2483.50	E	Peak	55.77	2.53	58.30	74.00	-15.70
Operation Band		:802.11b		Test Date		:2012-12-06	:7DU
Fundamental Frequency :2462 MHz Operation Mode :BANDEDGE HIGH			Temp./Humi. Engineer		:22.7deg_C/57RH :Marcus		
Operation Mode :BANDEDGE HIGH EUT Pol. :E2 Plan		\mathcal{E}		:HORIZONT	`AL		

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	dΒμV	dB	dBμV/m	dBμV/m	dB	
	2483.50	E	Average	47.63	3.56	51.19	54.00	-2.81	
	2483.50	E	Peak	56.08	3.56	59.64	74.00	-14.36	

For measurement plot of radiation revealing the compliance of 15.209, please refer to Appendix I.

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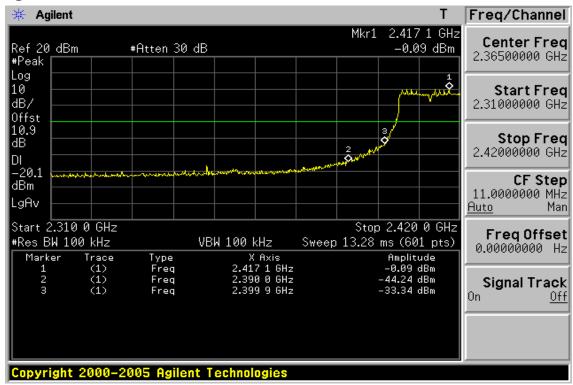
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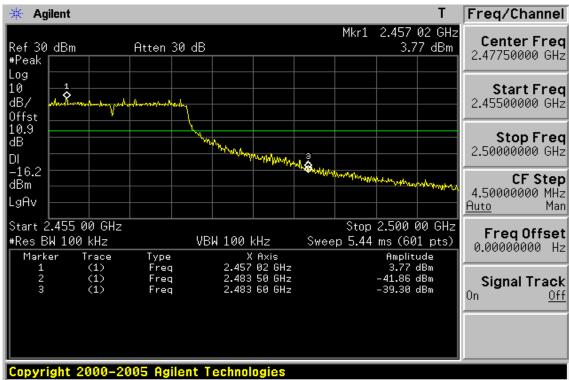
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802.11g - Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission:

(Unwanted Emissions into Restricted Frequency Bands): 802.11 g mode

Test Date **Operation Band** :802.11g :2012-12-06 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg C/57RH

Operation Mode :BANDEDGE LOW Engineer :Marcus EUT Pol. :E2 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	dΒμV	dB	dBμV/m	dBμV/m	dB
2390.00	E	Average	49.43	2.12	51.55	54.00	-2.45
2390.00	E	Peak	66.03	2.12	68.15	74.00	-5.85

Operation Band Test Date :802.11g :2012-12-06 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg C/57RH

Operation Mode :BANDEDGE LOW Engineer :Marcus

EUT Pol. :E2 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	dΒμV	dB	dBμV/m	dBμV/m	dB
2390.00	E	Average	49.12	2.74	51.86	54.00	-2.14
2390.00	Е	Peak	61.99	2.74	64.73	74.00	-9.27

For measurement plot of radiation revealing the compliance of 15,209, please refer to Appendix I.

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Operation Band :802.11g Test Date :2012-12-06 Fundamental Frequency :2462 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :BANDEDGE HIGH Engineer :Marcus EUT Pol. :E2 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.

"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 Lev	rel	FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.50	E	Average	50.28	2.53	52.81	54.00	-1.19
2483.50	E	Peak	67.26	2.53	69.79	74.00	-4.21
Operation Band Fundamental Frequency		:802.11g :2462 MHz		Test Date Temp./Humi.		:2012-12-06 :22.7deg_C/5	57RH
Operation Mo	ode	:BANDEDC		Engineer		:Marcus	
EUT Pol.		:E2 Plan		Measurement A	ntenna Pol.	:HORIZONT	TAL .

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	dΒμV	dB	dBμV/m	dBμV/m	dB	_
	2483.50	E	Average	49.18	3.56	52.74	54.00	-1.26	
	2483.50	E	Peak	63.83	3.56	67.39	74.00	-6.61	

For measurement plot of radiation revealing the compliance of 15.209, please refer to Appendix I.

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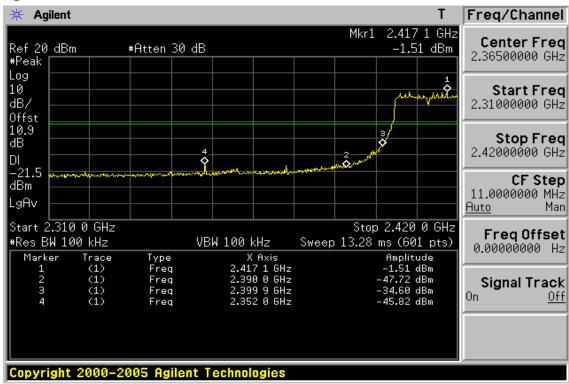
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802.11n_20M- Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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Radiated Emission: 802.11 n_20M mode

(Unwanted Emissions into Restricted Frequency Bands): 802.11 n_20M mode

Test Date **Operation Band** :802.11n 20M :2012-12-06 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg C/57RH

Operation Mode :BANDEDGE LOW Engineer :Marcus EUT Pol. :E2 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	dΒμV	dB	dBμV/m	dBμV/m	dB
2390.00	E	Average	50.25	2.12	52.37	54.00	-1.63
2390.00	E	Peak	65.04	2.12	67.16	74.00	-6.84

Operation Band Test Date :802.11n 20M :2012-11-28 Fundamental Frequency Temp./Humi. :22.7deg C/57RH :2412 MHz

Operation Mode :BANDEDGE LOW Engineer :Marcus

EUT Pol. :E2 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	dΒμV	dB	dBμV/m	dBμV/m	dB
2390.00	E	Average	50.22	2.74	52.96	54.00	-1.04
2390.00	Е	Peak	64.25	2.74	66.99	74.00	-7.01

For measurement plot of radiation revealing the compliance of 15.209, please refer to Appendix I.

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Operation Band :802.11n Test Date :2012-12-06 Fundamental Frequency :2462 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :BANDEDGE HIGH Engineer :Marcus EUT Pol. :E2 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.

"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 Lev	rel	FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.50	E	Average	49.72	2.53	52.25	54.00	-1.75
2483.50	E	Peak	66.23	2.53	68.76	74.00	-5.24
Operation Band Fundamental Frequency		:802.11n :2462 MHz		Test Date Temp./Humi.		:2012-12-06 :22.7deg_C/5	57RH
Operation Mo		:BANDEDC	E HIGH	Engineer		:Marcus	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
EUT Pol.		:E2 Plan		Measurement A	ntenna Pol.	:HORIZONT	TAL .

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	dΒμV	dB	dBμV/m	dBμV/m	dB	
	2483.50	E	Average	49.33	3.56	52.89	54.00	-1.11	
	2483.50	E	Peak	64.78	3.56	68.34	74.00	-5.66	

For measurement plot of radiation revealing the compliance of 15.209, please refer to Appendix I.

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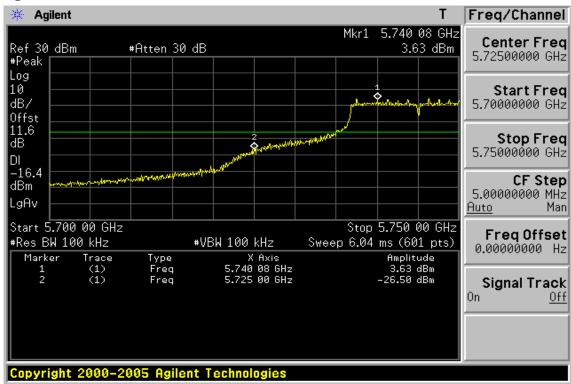
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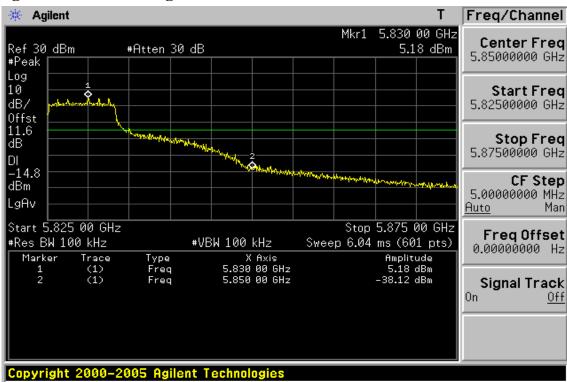
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802.11a - Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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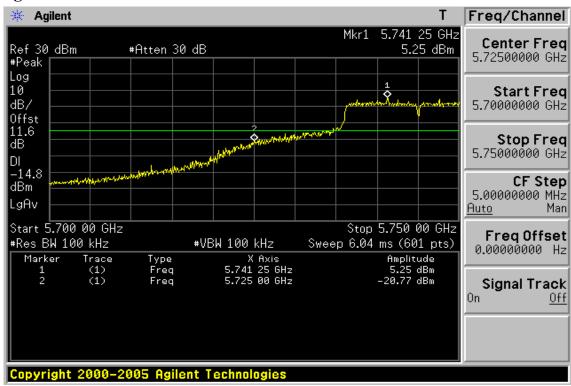
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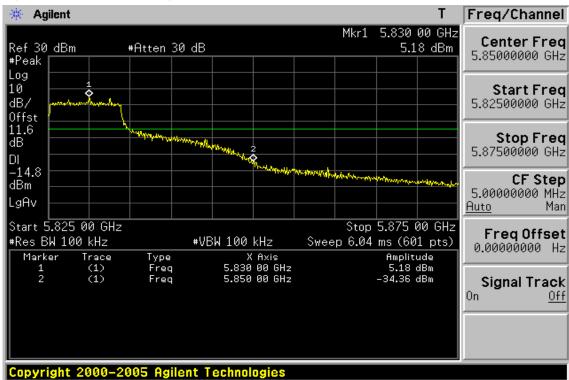
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802.11n(5GHz)_20M - Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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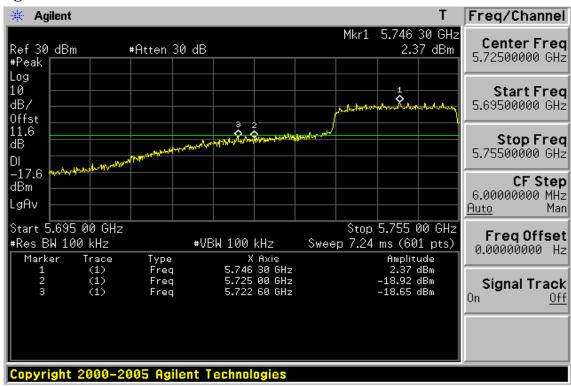
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802.11n_40M - Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



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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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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.
- 7. Repeat above procedures until all frequency measured were complete.

Conducted Emission:

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. Set RBW = 100K & VBW = 300K on Spectrum.
- Sweep the frequency to determine spurious emission as seen on spectrum from span of 30 to 3G, 3. 3G to 8G, 8G to 13G, 13G to 18G and 18G to 26.5GHz
- Via Software, combine 5 spans of frequency range into one plot 4.

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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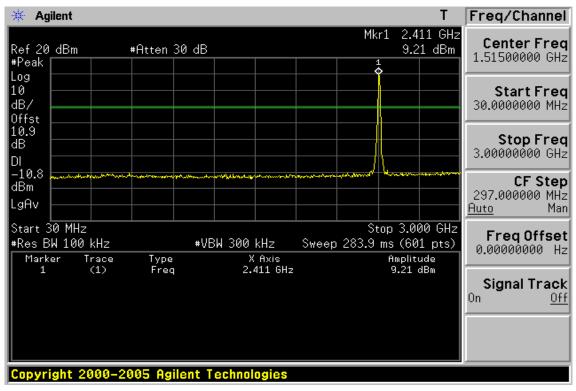


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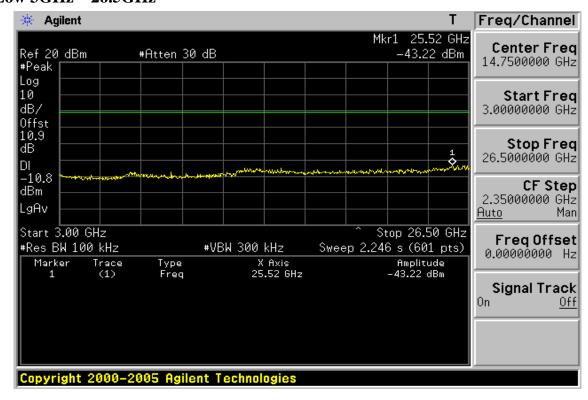
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Conducted Spurious Emission Measurement Result (802.11b)

Ch Low 30MHz - 3GHz



Ch Low 3GHz - 26.5GHz



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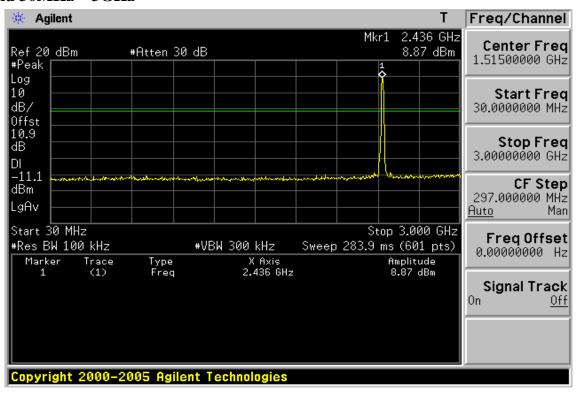
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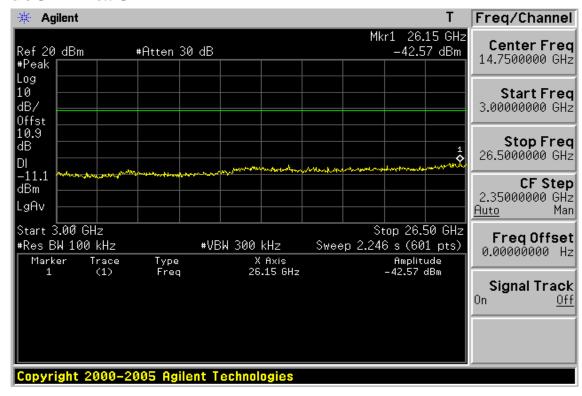
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Ch Mid 30MHz - 3GHz



Ch Mid 3GHz – 26.5GHz



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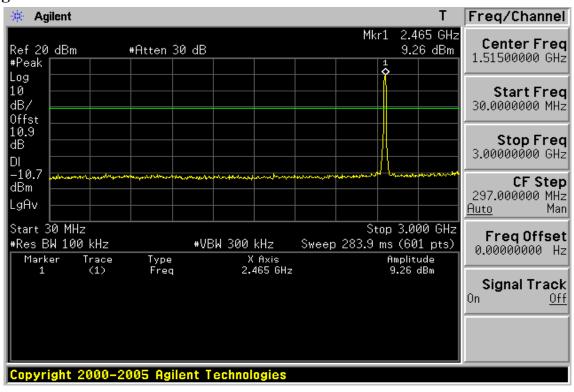
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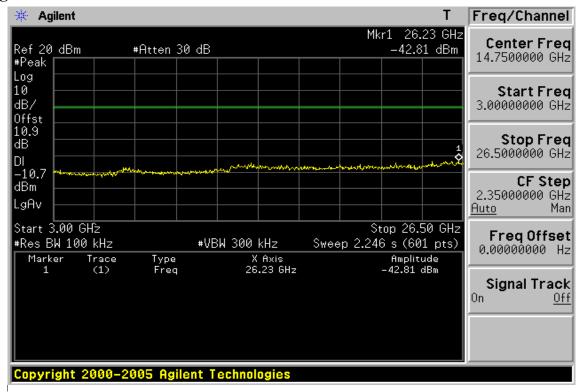
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Ch High 30MHz – 3GHz



Ch High 3GHz – 26.5GHz



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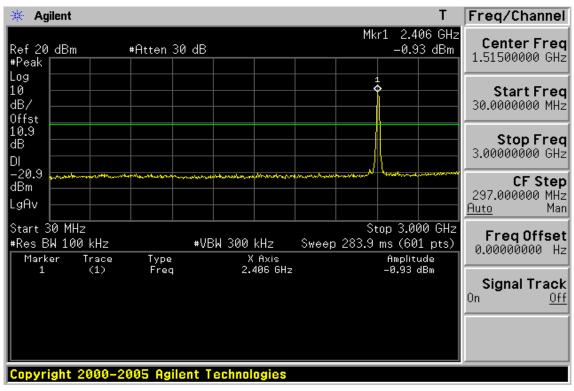


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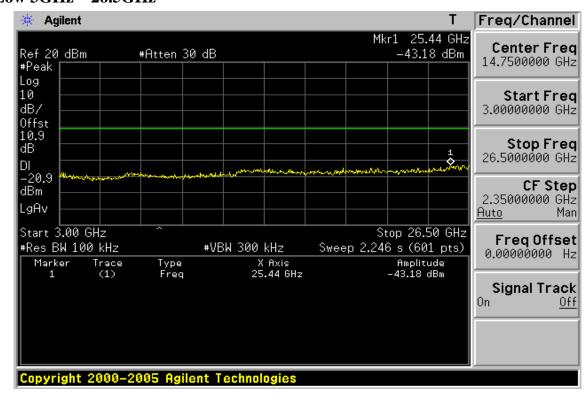
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Conducted Spurious Emission Measurement Result (802.11g)

Ch Low 30MHz - 3GHz



Ch Low 3GHz - 26.5GHz



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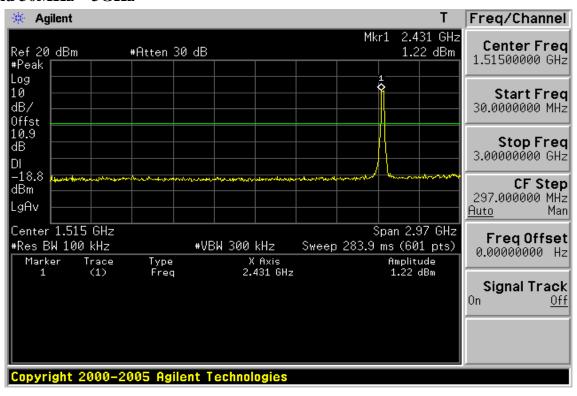
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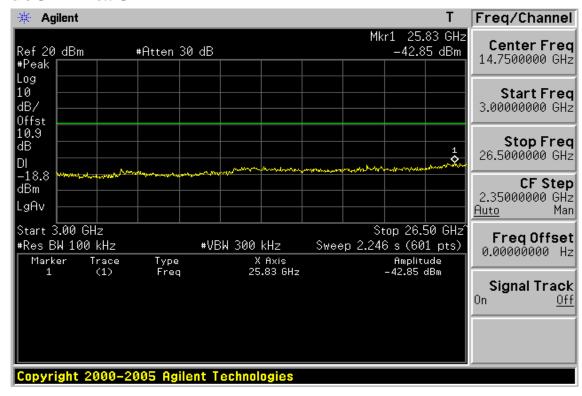
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Ch Mid 30MHz - 3GHz



Ch Mid 3GHz – 26.5GHz



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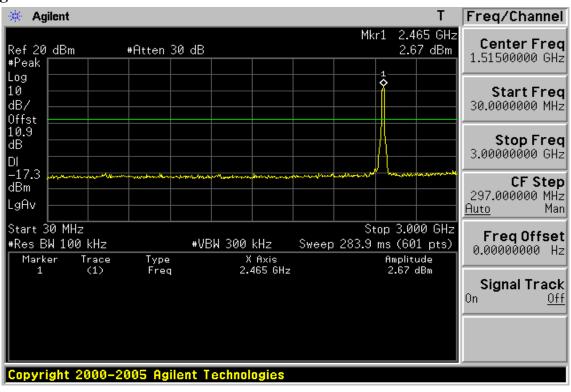
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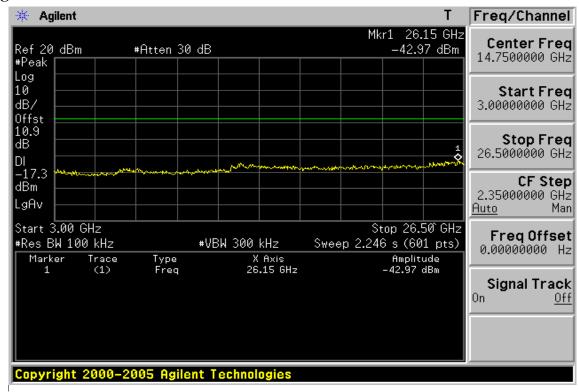
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Ch High 30MHz – 3GHz



Ch High 3GHz – 26.5GHz



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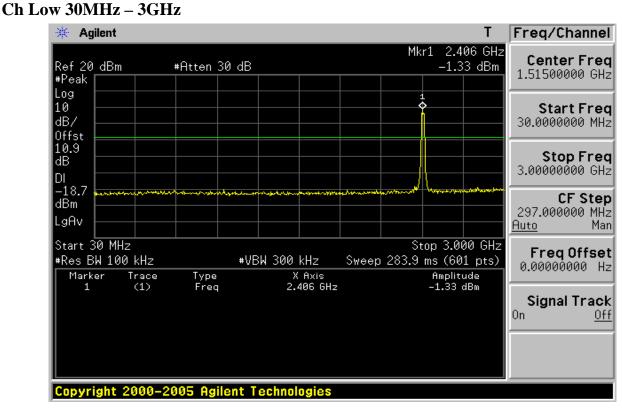
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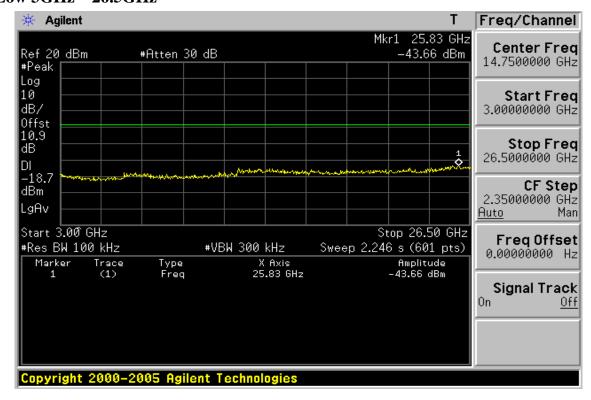
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Conducted Spurious Emission Measurement Result (802.11n_20M)



Ch Low 3GHz - 26.5GHz



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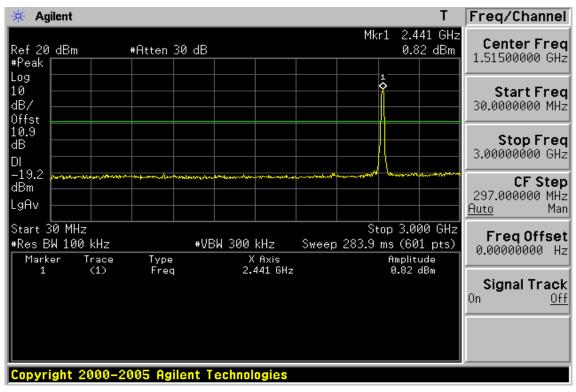
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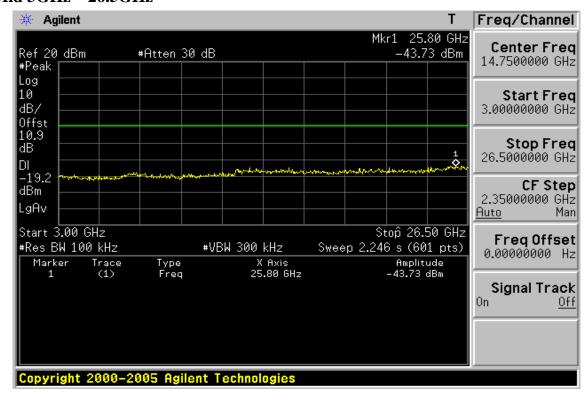
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Ch Mid 30MHz - 3GHz



Ch Mid 3GHz – 26.5GHz



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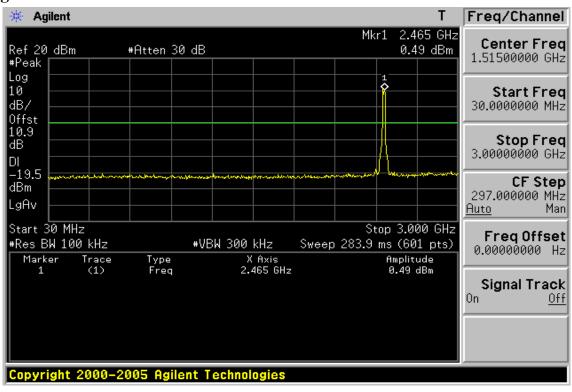
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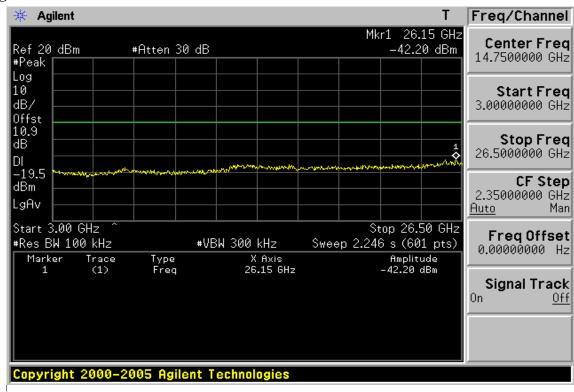
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Ch High 30MHz – 3GHz



Ch High 3GHz – 26.5GHz



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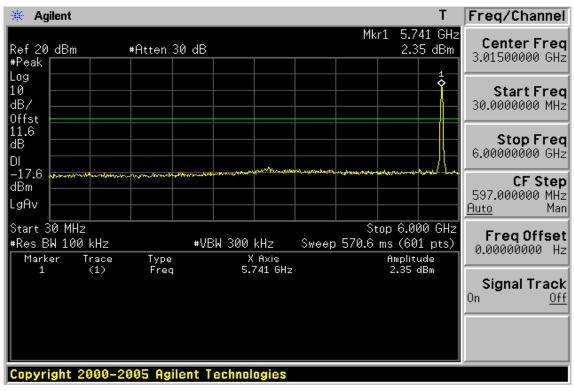


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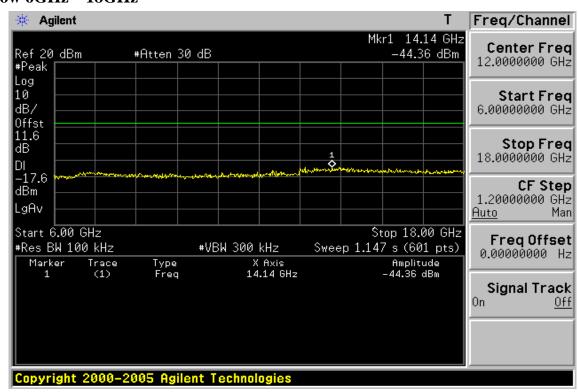
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Conducted Spurious Emission Measurement Result (802.11a)

Ch Low 30MHz - 6GHz



Ch Low 6GHz - 18GHz



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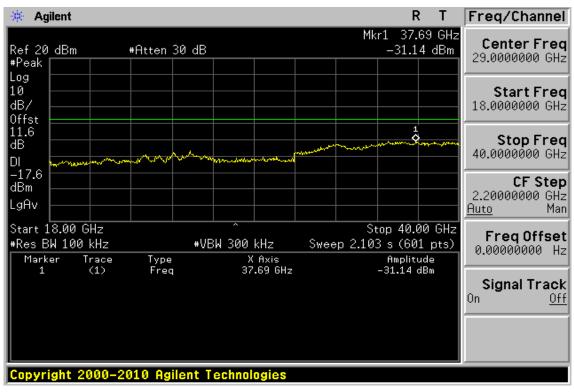
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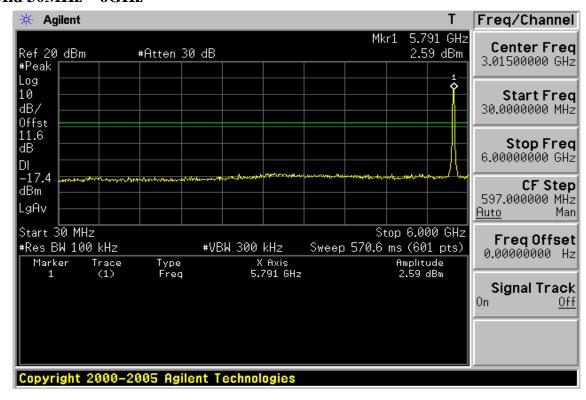
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Ch Low 18GHz - 40GHz



Ch Mid 30MHz - 6GHz



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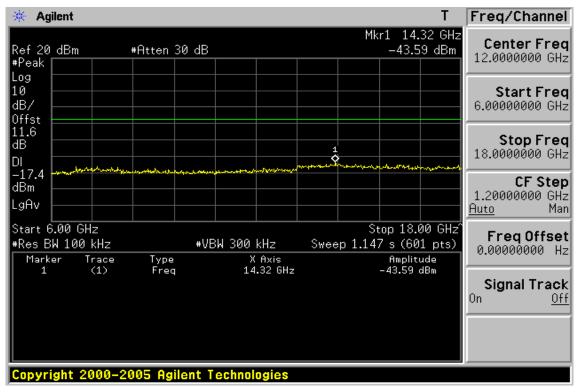
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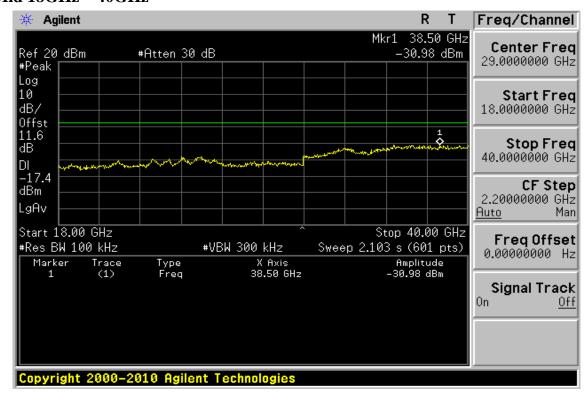
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Ch Mid 6GHz – 18GHz



Ch Mid 18GHz – 40GHz



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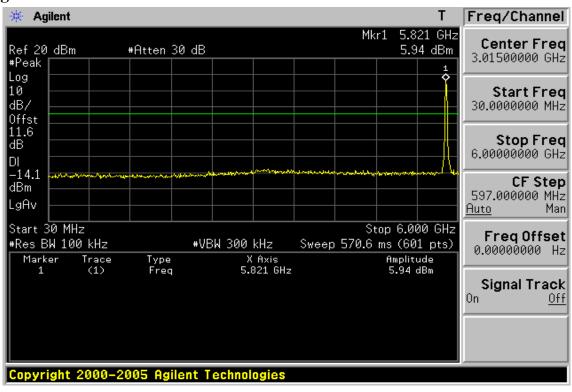
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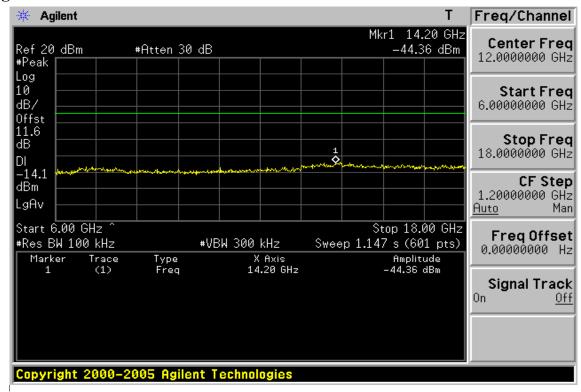
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Ch High 30MHz - 6GHz



Ch High 6GHz – 18GHz



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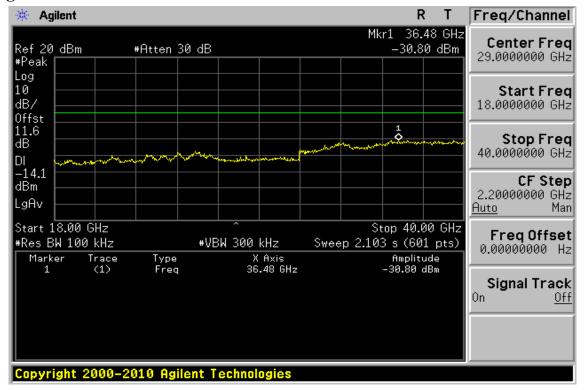
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Ch High 18GHz – 40GHz



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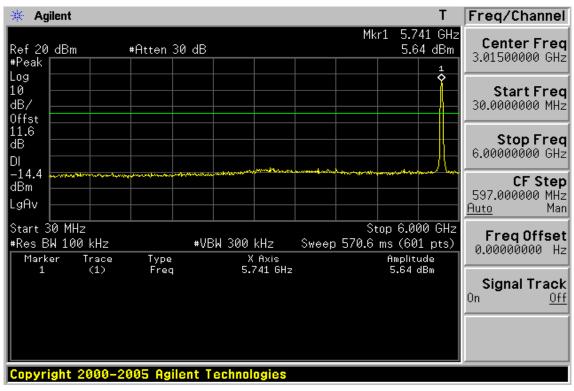
t (886-2) 2299-3279



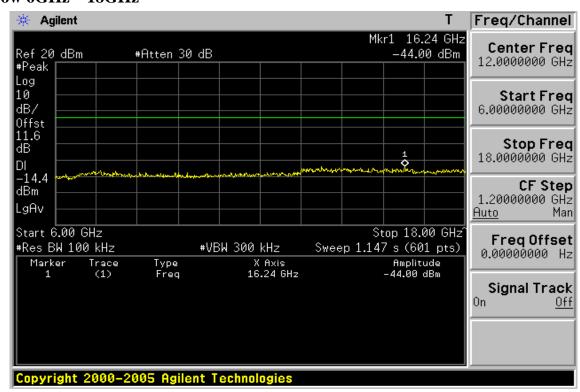
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Conducted Spurious Emission Measurement Result (802.11n(5GHz)_20M) Ch Low 30MHz - 6GHz



Ch Low 6GHz - 18GHz



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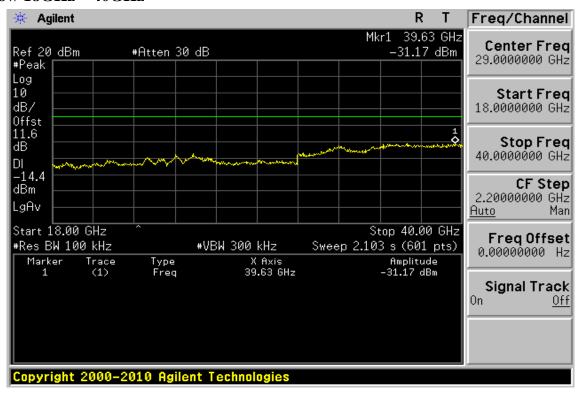
t (886-2) 2299-3279



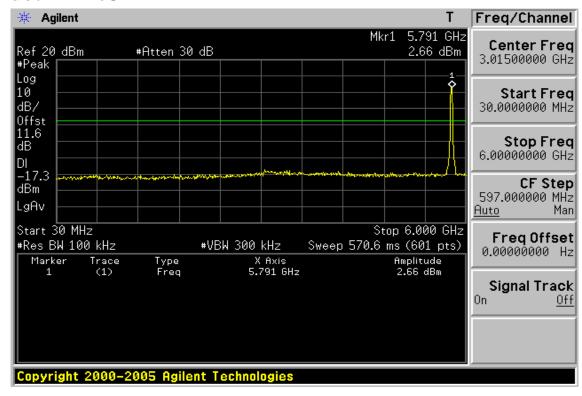
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Ch Low 18GHz - 40GHz



Ch Mid 30MHz - 6GHz



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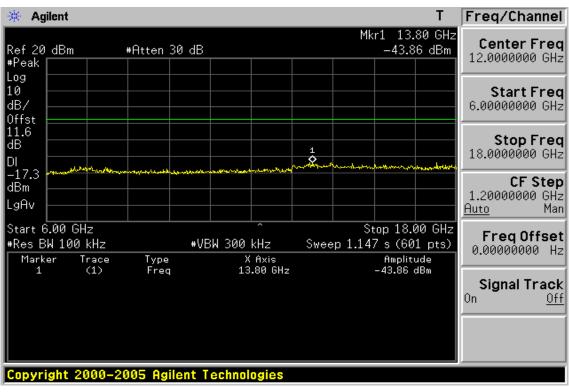
www.tw.sqs.com



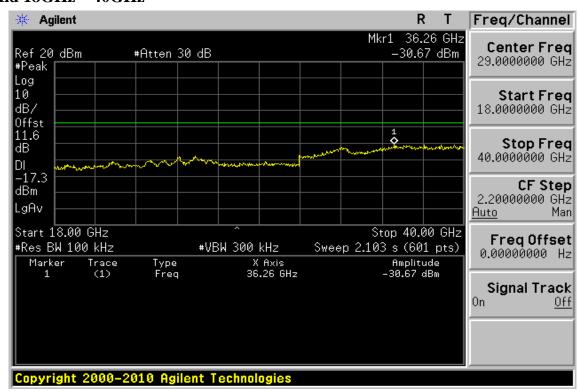
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Ch Mid 6GHz – 18GHz



Ch Mid 18GHz – 40GHz



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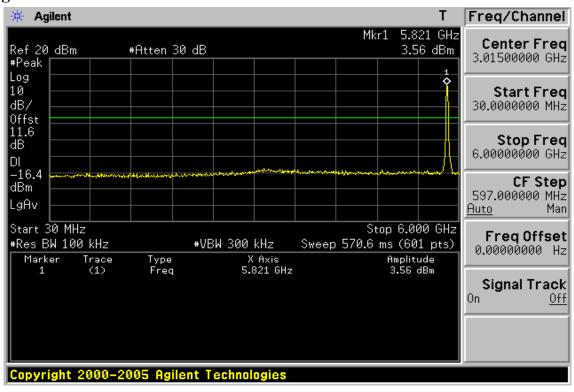
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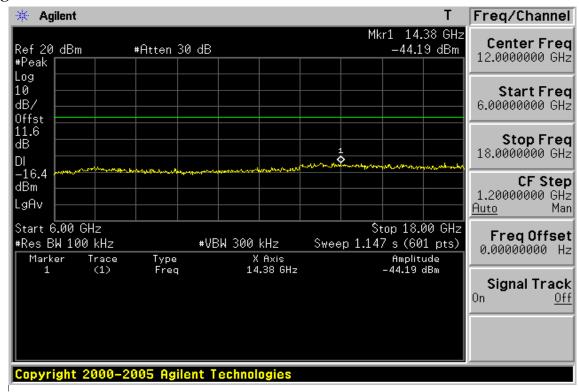
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Ch High 30MHz - 6GHz



Ch High 6GHz – 18GHz



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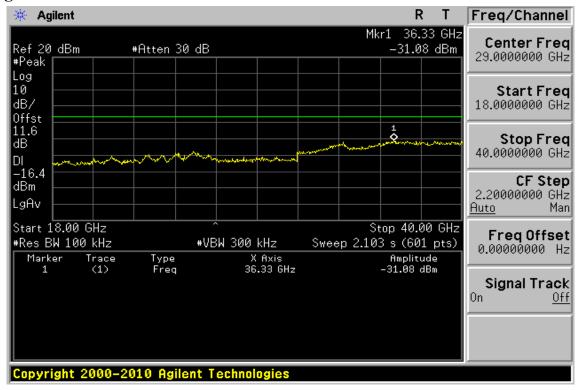
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Ch High 18GHz – 40GHz



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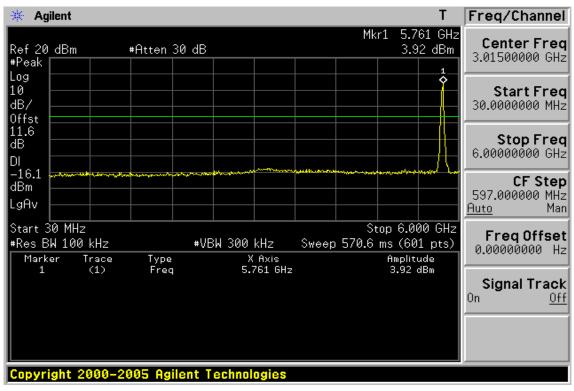
t (886-2) 2299-3279



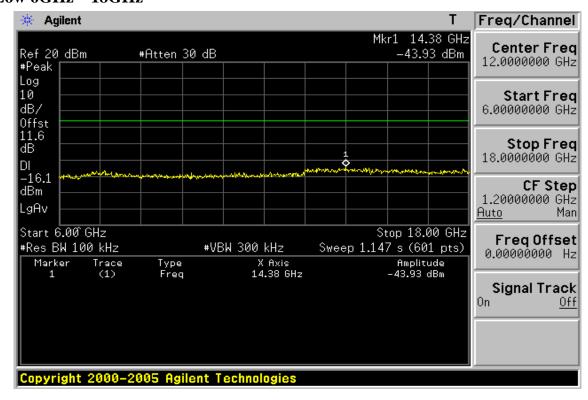
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Conducted Spurious Emission Measurement Result (802.11n(5GHz)_40M) Ch Low 30MHz - 6GHz



Ch Low 6GHz - 18GHz



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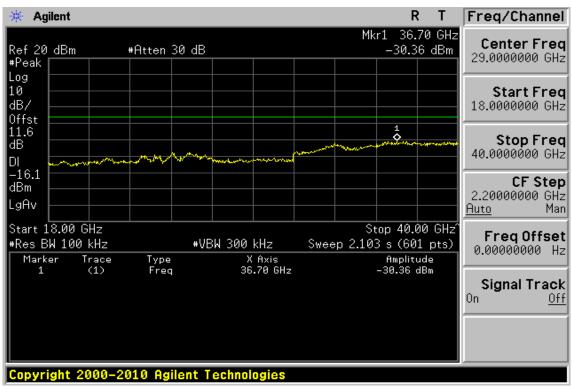
t (886-2) 2299-3279



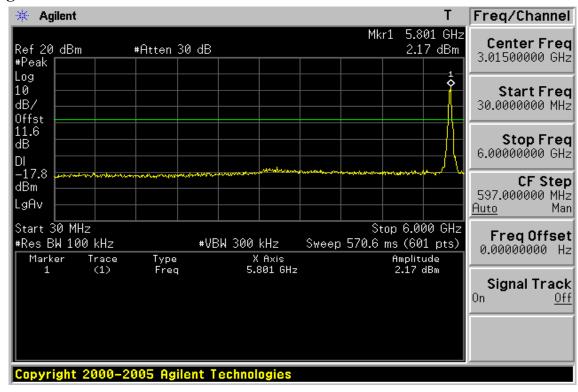
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Ch Low 18GHz - 40GHz



Ch High 30MHz - 6GHz



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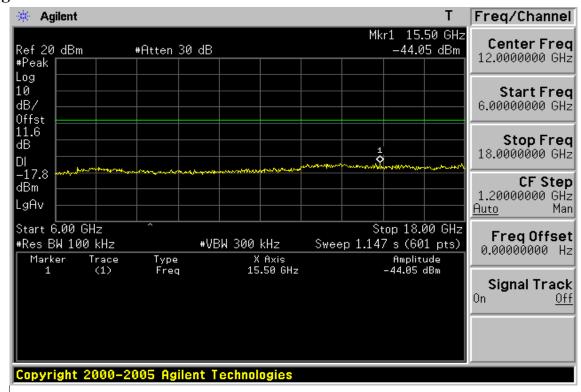
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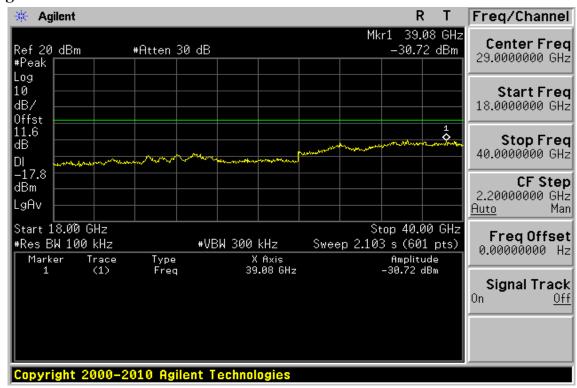
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Ch High 6GHz – 18GHz



Ch High 18GHz – 40GHz



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Radiated Spurious Emission Measurement Result (802.11b)

Operation Band :802.11b Test Date :2012-11-28 Fundamental Frequency Temp./Humi. :2412 MHz :22.7deg C/57RH

Operation Mode :TX LOW Engineer :Marcus EUT Pol. :E2 Plan :VERTICAL Measurement Antenna Pol.

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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	31.21	-14.33	16.88	40.00	-23.12
154.16	S	Peak	28.05	-12.30	15.75	43.50	-27.75
343.31	S	Peak	27.69	-11.76	15.93	46.00	-30.07
514.03	S	Peak	27.70	-9.32	18.38	46.00	-27.62
700.27	S	Peak	27.59	-5.75	21.84	46.00	-24.16
918.52	S	Peak	26.39	-2.44	23.95	46.00	-22.05
4824.00	Н	Average	35.85	7.07	42.92	54.00	-11.08
4824.00	Н	Peak	39.85	7.07	46.92	74.00	-27.08
7236.00	Н						
9648.00	Н						
12060.00	Н						
14472.00	Н						
16884.00	Н						
19296.00	Н						
21708.00	Н						
24120.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 :802.11b Test Date :2012-11-28 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
44.55	S	Peak	27.25	-13.76	13.49	40.00	-26.51
159.98	S	Peak	27.03	-12.26	14.77	43.50	-28.73
286.08	S	Peak	28.11	-12.89	15.22	46.00	-30.78
440.31	S	Peak	27.67	-10.20	17.47	46.00	-28.53
590.66	S	Peak	28.28	-7.75	20.53	46.00	-25.47
772.05	S	Peak	28.35	-4.57	23.78	46.00	-22.22
4824.00	Н	Average	38.51	7.08	45.59	54.00	-8.41
4824.00	Н	Peak	41.67	7.08	48.75	74.00	-25.25
7236.00	Н						
9648.00	Н						
12060.00	Н						
14472.00	Н						
16884.00	Н						
19296.00	Н						
21708.00	Н						
24120.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 :802.11b Test Date :2012-11-28 Fundamental Frequency :2437 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	32.02	-14.33	17.69	40.00	-22.31
114.39	S	Peak	32.23	-15.22	17.01	43.50	-26.49
286.08	S	Peak	28.05	-12.89	15.16	46.00	-30.84
428.67	S	Peak	27.34	-10.46	16.88	46.00	-29.12
621.70	S	Peak	28.17	-7.09	21.08	46.00	-24.92
836.07	S	Peak	28.60	-3.82	24.78	46.00	-21.22
4874.00	Н	Average	37.84	7.14	44.98	54.00	-9.02
4874.00	Н	Peak	39.97	7.14	47.11	74.00	-26.89
7311.00	Н						
9748.00	Н						
12185.00	Н						
14622.00	Н						
17059.00	Н						
19496.00	Н						
21933.00	Н						
24370.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 :802.11b Test Date :2012-11-28 Fundamental Frequency :2437 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
50.37	S	Peak	27.98	-13.93	14.05	40.00	-25.95
157.07	S	Peak	26.62	-12.29	14.33	43.50	-29.17
254.07	S	Peak	27.67	-13.89	13.78	46.00	-32.22
488.81	S	Peak	28.47	-9.72	18.75	46.00	-27.25
675.05	S	Peak	27.82	-6.11	21.71	46.00	-24.29
886.51	S	Peak	27.67	-3.07	24.60	46.00	-21.40
4874.00	Н	Average	40.18	7.09	47.27	54.00	-6.73
4874.00	Н	Peak	42.95	7.09	50.04	74.00	-23.96
7311.00	Н						
9748.00	Н						
12185.00	Н						
14622.00	Н						
17059.00	Н						
19496.00	Н						
21933.00	Н						
24370.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 :802.11b Test Date :2012-11-28 Fundamental Frequency :2462 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	33.00	-14.33	18.67	40.00	-21.33
114.39	S	Peak	32.26	-15.22	17.04	43.50	-26.46
286.08	S	Peak	27.69	-12.89	14.80	46.00	-31.20
458.74	S	Peak	28.44	-9.98	18.46	46.00	-27.54
650.80	S	Peak	28.39	-6.57	21.82	46.00	-24.18
837.04	S	Peak	28.01	-3.82	24.19	46.00	-21.81
4924.00	Н	Average	38.97	7.18	46.15	54.00	-7.85
4924.00	Н	Peak	40.94	7.18	48.12	74.00	-25.88
7386.00	Н						
9848.00	Н						
12310.00	Н						
14772.00	Н						
17234.00	Н						
19696.00	Н						
22158.00	Н						
24620.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 :802.11b Test Date :2012-11-28 Fundamental Frequency :2462 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
42.61	S	Peak	27.53	-13.63	13.90	40.00	-26.10
153.19	S	Peak	27.72	-12.32	15.40	43.50	-28.10
320.03	S	Peak	27.55	-12.09	15.46	46.00	-30.54
513.06	S	Peak	28.39	-9.34	19.05	46.00	-26.95
656.62	S	Peak	28.77	-6.46	22.31	46.00	-23.69
869.05	S	Peak	28.10	-3.40	24.70	46.00	-21.30
4924.00	Н	Average	39.45	7.07	46.52	54.00	-7.48
4924.00	Н	Peak	42.35	7.07	49.42	74.00	-24.58
7386.00	Н						
9848.00	Н						
12310.00	Н						
14772.00	Н						
17234.00	Н						
19696.00	Н						
22158.00	Н						
24620.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Radiated Spurious Emission Measurement Result (802.11g)

Operation Band :802.11g Test Date :2012-11-28 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	31.82	-14.33	17.49	40.00	-22.51
114.39	S	Peak	32.29	-15.22	17.07	43.50	-26.43
286.08	S	Peak	27.77	-12.89	14.88	46.00	-31.12
502.39	S	Peak	28.70	-9.54	19.16	46.00	-26.84
736.16	S	Peak	28.06	-5.19	22.87	46.00	-23.13
881.66	S	Peak	28.24	-3.17	25.07	46.00	-20.93
4824.00	Н	Average	26.65	7.07	33.72	54.00	-20.28
4824.00	Н	Peak	37.22	7.07	44.29	74.00	-29.71
7236.00	Н						
9648.00	Н						
12060.00	Н						
14472.00	Н						
16884.00	Н						
19296.00	Н						
21708.00	Н						
24120.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 Test Date :802.11g :2012-11-28 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
59.10	S	Peak	27.85	-14.51	13.34	40.00	-26.66
148.34	S	Peak	28.01	-12.45	15.56	43.50	-27.94
328.76	S	Peak	27.51	-11.94	15.57	46.00	-30.43
508.21	S	Peak	27.84	-9.43	18.41	46.00	-27.59
715.79	S	Peak	27.93	-5.50	22.43	46.00	-23.57
903.00	S	Peak	26.86	-2.75	24.11	46.00	-21.89
4824.00	Н	Average	27.25	7.08	34.33	54.00	-19.67
4824.00	Н	Peak	40.33	7.08	47.41	74.00	-26.59
7236.00	Н						
9648.00	Н						
12060.00	Н						
14472.00	Н						
16884.00	Н						
19296.00	Н						
21708.00	Н						
24120.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 Test Date :802.11g :2012-11-28 Fundamental Frequency :2437 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.00	S	Peak	32.61	-14.37	18.24	40.00	-21.76
114.39	S	Peak	32.49	-15.22	17.27	43.50	-26.23
393.75	S	Peak	28.11	-11.13	16.98	46.00	-29.02
542.16	S	Peak	28.27	-8.74	19.53	46.00	-26.47
667.29	S	Peak	28.36	-6.25	22.11	46.00	-23.89
870.99	S	Peak	28.22	-3.36	24.86	46.00	-21.14
4874.00	Н	Average	27.93	7.14	35.07	54.00	-18.93
4874.00	Н	Peak	36.87	7.14	44.01	74.00	-29.99
7311.00	Н						
9748.00	Н						
12185.00	Н						
14622.00	Н						
17059.00	Н						
19496.00	H						
21933.00	H						
24370.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 Test Date :802.11g :2012-11-28 Fundamental Frequency :2437 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
48.43	S	Peak	28.17	-13.88	14.29	40.00	-25.71
151.25	S	Peak	27.70	-12.34	15.36	43.50	-28.14
351.07	S	Peak	26.84	-11.68	15.16	46.00	-30.84
537.31	S	Peak	29.05	-8.84	20.21	46.00	-25.79
693.48	S	Peak	27.51	-5.84	21.67	46.00	-24.33
873.90	S	Peak	27.43	-3.31	24.12	46.00	-21.88
4874.00	Н	Average	28.34	7.09	35.43	54.00	-18.57
4874.00	Н	Peak	37.59	7.09	44.68	74.00	-29.32
7311.00	Н						
9748.00	Н						
12185.00	Н						
14622.00	Н						
17059.00	Н						
19496.00	Н						
21933.00	Н						
24370.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band :802.11g Test Date :2012-11-28 Fundamental Frequency :2462 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	32.15	-14.33	17.82	40.00	-22.18
114.39	S	Peak	32.79	-15.22	17.57	43.50	-25.93
286.08	S	Peak	28.70	-12.89	15.81	46.00	-30.19
452.92	S	Peak	28.59	-10.01	18.58	46.00	-27.42
682.81	S	Peak	27.95	-5.98	21.97	46.00	-24.03
835.10	S	Peak	28.71	-3.84	24.87	46.00	-21.13
4924.00	Н	Average	27.72	7.19	34.91	54.00	-19.09
4924.00	Н	Peak	38.37	7.19	45.56	74.00	-28.44
7386.00	Н						
9848.00	Н						
12310.00	Н						
14772.00	Н						
17234.00	Н						
19696.00	Н						
22158.00	Н						
24620.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 :802.11g Test Date :2012-11-28 Fundamental Frequency :2462 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
41.64	S	Peak	28.26	-13.56	14.70	40.00	-25.30
144.46	S	Peak	27.34	-12.74	14.60	43.50	-28.90
329.73	S	Peak	27.99	-11.92	16.07	46.00	-29.93
495.60	S	Peak	28.27	-9.63	18.64	46.00	-27.36
676.02	S	Peak	27.98	-6.10	21.88	46.00	-24.12
827.34	S	Peak	27.60	-3.90	23.70	46.00	-22.30
4924.00	Н	Average	28.69	7.08	35.77	54.00	-18.23
4924.00	Н	Peak	39.07	7.08	46.15	74.00	-27.85
7386.00	Н						
9848.00	Н						
12310.00	Н						
14772.00	Н						
17234.00	Н						
19696.00	Н						
22158.00	Н						
24620.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Radiated Spurious Emission Measurement Result (802.11n_20M)

Operation Band Test Date :802.11n 20M :2012-11-28 Fundamental Frequency Temp./Humi. :2412 MHz :22.7deg C/57RH

Operation Mode :TX LOW Engineer :Marcus EUT Pol. :E2 Plan :VERTICAL Measurement Antenna Pol.

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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	30.92	-14.33	16.59	40.00	-23.41
114.39	S	Peak	32.86	-15.22	17.64	43.50	-25.86
295.78	S	Peak	27.25	-12.66	14.59	46.00	-31.41
455.83	S	Peak	28.09	-9.99	18.10	46.00	-27.90
630.43	S	Peak	28.07	-6.92	21.15	46.00	-24.85
885.54	S	Peak	27.28	-3.09	24.19	46.00	-21.81
4824.00	Н	Average	27.53	7.07	34.60	54.00	-19.40
4824.00	Н	Peak	37.62	7.07	44.69	74.00	-29.31
7236.00	Н						
9648.00	Н						
12060.00	Н						
14472.00	Н						
16884.00	Н						
19296.00	Н						
21708.00	Н						
24120.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band Test Date :802.11n 20M :2012-11-28 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
37.76	S	Peak	27.71	-13.72	13.99	40.00	-26.01
159.01	S	Peak	27.44	-12.28	15.16	43.50	-28.34
338.46	S	Peak	27.70	-11.83	15.87	46.00	-30.13
517.91	S	Peak	27.84	-9.25	18.59	46.00	-27.41
700.27	S	Peak	28.45	-5.75	22.70	46.00	-23.30
922.40	S	Peak	27.99	-2.37	25.62	46.00	-20.38
4824.00	Н	Average	28.12	7.08	35.20	54.00	-18.80
4824.00	Н	Peak	38.39	7.08	45.47	74.00	-28.53
7236.00	Н						
9648.00	Н						
12060.00	Н						
14472.00	Н						
16884.00	Н						
19296.00	Н						
21708.00	Н						
24120.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band Test Date :802.11n 20M :2012-11-28 Fundamental Frequency :2437 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	31.57	-14.33	17.24	40.00	-22.76
114.39	S	Peak	32.92	-15.22	17.70	43.50	-25.80
291.90	S	Peak	27.04	-12.76	14.28	46.00	-31.72
458.74	S	Peak	27.50	-9.98	17.52	46.00	-28.48
629.46	S	Peak	27.85	-6.94	20.91	46.00	-25.09
875.84	S	Peak	27.81	-3.29	24.52	46.00	-21.48
4874.00	Н	Average	28.59	7.14	35.73	54.00	-18.27
4874.00	Н	Peak	36.82	7.14	43.96	74.00	-30.04
7311.00	Н						
9748.00	Н						
12185.00	Н						
14622.00	Н						
17059.00	Н						
19496.00	Н						
21933.00	Н						
24370.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 Test Date :802.11n 20M :2012-11-28 Fundamental Frequency :2437 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
35.82	S	Peak	27.28	-13.99	13.29	40.00	-26.71
163.86	S	Peak	28.31	-12.61	15.70	43.50	-27.80
285.11	S	Peak	27.27	-12.92	14.35	46.00	-31.65
462.62	S	Peak	28.43	-9.94	18.49	46.00	-27.51
632.37	S	Peak	28.47	-6.90	21.57	46.00	-24.43
864.20	S	Peak	28.21	-3.47	24.74	46.00	-21.26
4874.00	Н	Average	27.41	7.09	34.50	54.00	-19.50
4874.00	Н	Peak	37.56	7.09	44.65	74.00	-29.35
7311.00	Н						
9748.00	Н						
12185.00	Н						
14622.00	Н						
17059.00	Н						
19496.00	Н						
21933.00	Н						
24370.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band Test Date :802.11n 20M :2012-11-28 Fundamental Frequency :2462 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	31.45	-14.33	17.12	40.00	-22.88
114.39	S	Peak	33.41	-15.22	18.19	43.50	-25.31
286.08	S	Peak	27.92	-12.89	15.03	46.00	-30.97
495.60	S	Peak	28.60	-9.63	18.97	46.00	-27.03
666.32	S	Peak	28.51	-6.27	22.24	46.00	-23.76
926.28	S	Peak	28.10	-2.31	25.79	46.00	-20.21
4924.00	Н	Average	27.11	7.19	34.30	54.00	-19.70
4924.00	Н	Peak	37.94	7.19	45.13	74.00	-28.87
7386.00	Н						
9848.00	Н						
12310.00	Н						
14772.00	Н						
17234.00	Н						
19696.00	Н						
22158.00	Н						
24620.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 Test Date :802.11n 20M :2012-11-28 Fundamental Frequency :2462 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
50.37	S	Peak	27.33	-13.93	13.40	40.00	-26.60
153.19	S	Peak	26.95	-12.32	14.63	43.50	-28.87
357.86	S	Peak	27.90	-11.58	16.32	46.00	-29.68
476.20	S	Peak	28.54	-9.84	18.70	46.00	-27.30
672.14	S	Peak	27.90	-6.16	21.74	46.00	-24.26
909.79	S	Peak	27.95	-2.62	25.33	46.00	-20.67
4924.00	Н	Average	28.07	7.08	35.15	54.00	-18.85
4924.00	Н	Peak	37.66	7.08	44.74	74.00	-29.26
7386.00	Н						
9848.00	Н						
12310.00	Н						
14772.00	Н						
17234.00	Н						
19696.00	Н						
22158.00	Н						
24620.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Radiated Spurious Emission Measurement Result (802.11a)

Operation Band :802.11a Test Date :2012-11-28 Fundamental Frequency :5745 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	31.23	-14.33	16.90	40.00	-23.10
114.39	S	Peak	33.18	-15.22	17.96	43.50	-25.54
286.08	S	Peak	27.64	-12.89	14.75	46.00	-31.25
448.07	S	Peak	28.35	-10.06	18.29	46.00	-27.71
664.38	S	Peak	28.75	-6.30	22.45	46.00	-23.55
885.54	S	Peak	27.63	-3.09	24.54	46.00	-21.46
11490.00	H	Peak	19.80	17.60	37.40	74.00	-36.60
17235.00	H						
22980.00	H						
28725.00	Н						
34470.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 :802.11a Test Date :2012-11-28 Fundamental Frequency :5745 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
39.70	S	Peak	26.74	-13.47	13.27	40.00	-26.73
132.82	S	Peak	28.23	-13.67	14.56	43.50	-28.94
309.36	S	Peak	27.73	-12.35	15.38	46.00	-30.62
450.98	S	Peak	28.54	-10.01	18.53	46.00	-27.47
633.34	S	Peak	27.71	-6.89	20.82	46.00	-25.18
908.82	S	Peak	28.00	-2.63	25.37	46.00	-20.63
11490.00	Н	Peak	18.86	17.40	36.26	74.00	-37.74
17235.00	Н						
22980.00	Н						
28725.00	Н						
34470.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band :802.11a Test Date :2012-11-28

Fundamental Frequency :5785 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.00	S	Peak	31.21	-14.37	16.84	40.00	-23.16
114.39	S	Peak	33.07	-15.22	17.85	43.50	-25.65
357.86	S	Peak	28.34	-11.58	16.76	46.00	-29.24
554.77	S	Peak	28.67	-8.50	20.17	46.00	-25.83
755.56	S	Peak	28.36	-4.88	23.48	46.00	-22.52
935.01	S	Peak	27.46	-2.24	25.22	46.00	-20.78
11570.00	Н	Peak	18.42	17.69	36.11	74.00	-37.89
17355.00	Н						
23140.00	Н						
28925.00	Н						
34710.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band :802.11a Test Date :2012-11-28 Fundamental Frequency :5785 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
40.67	S	Peak	26.83	-13.48	13.35	40.00	-26.65
141.55	S	Peak	27.46	-12.98	14.48	43.50	-29.02
350.10	S	Peak	27.63	-11.69	15.94	46.00	-30.06
548.95	S	Peak	29.12	-8.60	20.52	46.00	-25.48
733.25	S	Peak	27.64	-5.24	22.40	46.00	-23.60
918.52	S	Peak	27.07	-2.44	24.63	46.00	-21.37
11570.00	Н	Peak	19.24	17.49	36.73	74.00	-37.27
17355.00	Н						
23140.00	Н						
28925.00	Н						
34710.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band :802.11a Test Date :2012-11-28 Fundamental Frequency :5825 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
42.61	S	Peak	28.09	-13.63	14.46	40.00	-25.54
114.39	S	Peak	32.71	-15.22	17.49	43.50	-26.01
286.08	S	Peak	27.51	-12.89	14.62	46.00	-31.38
420.91	S	Peak	28.52	-10.63	17.89	46.00	-28.11
647.89	S	Peak	28.50	-6.64	21.86	46.00	-24.14
790.48	S	Peak	28.63	-4.32	24.31	46.00	-21.69
11650.00	Н	Peak	20.08	17.78	37.86	74.00	-36.14
17475.00	Н						
23300.00	Н						
29125.00	Н						
34950.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band :802.11a Test Date :2012-11-28 Fundamental Frequency :5825 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
58.13	S	Peak	27.48	-14.45	13.03	40.00	-26.97
150.28	S	Peak	28.09	-12.35	15.74	43.50	-27.76
319.06	S	Peak	26.46	-12.13	14.33	46.00	-31.67
457.77	S	Peak	28.03	-9.99	18.04	46.00	-27.96
665.35	S	Peak	28.54	-6.28	22.26	46.00	-23.74
899.12	S	Peak	27.25	-2.83	24.42	46.00	-21.58
11650.00	Н	Peak	18.79	17.58	36.37	74.00	-37.63
17475.00	Н						
23300.00	Н						
29125.00	Н						
34950.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Radiated Spurious Emission Measurement Result (802.11n(5GHz)_20M)

Operation Band :802.11n 20M Test Date :2012-11-28 Fundamental Frequency :5745 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
31.94	S	Peak	31.66	-14.30	17.36	40.00	-22.64
114.39	S	Peak	32.33	-15.22	17.11	43.50	-26.39
315.18	S	Peak	28.15	-12.20	15.95	46.00	-30.05
455.83	S	Peak	28.64	-9.99	18.65	46.00	-27.35
645.95	S	Peak	28.60	-6.66	21.94	46.00	-24.06
833.16	S	Peak	28.18	-3.85	24.33	46.00	-21.67
11490.00	Н	Peak	19.57	17.60	37.17	74.00	-36.83
17235.00	Н						
22980.00	Н						
28725.00	Н						
34470.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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 Test Date :802.11n 20M :2012-11-28

Fundamental Frequency :5745 MHz Temp./Humi. :22.7deg_C/57RH Operation Mode :TX LOW Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
42.61	S	Peak	27.41	-13.63	13.78	40.00	-26.22
153.19	S	Peak	27.10	-12.32	14.78	43.50	-28.72
286.08	S	Peak	27.54	-12.89	14.65	46.00	-31.35
491.72	S	Peak	27.70	-9.69	18.01	46.00	-27.99
662.44	S	Peak	28.33	-6.34	21.99	46.00	-24.01
832.19	S	Peak	28.32	-3.86	24.46	46.00	-21.54
11490.00	Н	Peak	19.04	17.40	36.44	74.00	-37.56
17235.00	Н						
22980.00	Н						
28725.00	Н						
34470.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band Test Date :802.11n 20M :2012-11-28 Fundamental Frequency :5785 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.00	S	Peak	32.91	-14.37	18.54	40.00	-21.46
114.39	S	Peak	31.82	-15.22	16.60	43.50	-26.90
286.08	S	Peak	28.03	-12.89	15.14	46.00	-30.86
457.77	S	Peak	28.78	-9.99	18.79	46.00	-27.21
655.65	S	Peak	28.57	-6.47	22.10	46.00	-23.90
870.02	S	Peak	28.00	-3.39	24.61	46.00	-21.39
11570.00	H	Peak	19.60	17.69	37.29	74.00	-36.71
17355.00	H						
23140.00	H						
28925.00	H						
34710.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band Test Date :802.11n 20M :2012-11-28 Fundamental Frequency :5785 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
41.64	S	Peak	28.30	-13.56	14.74	40.00	-25.26
143.49	S	Peak	27.47	-12.82	14.65	43.50	-28.85
285.11	S	Peak	28.28	-12.92	15.36	46.00	-30.64
417.03	S	Peak	27.61	-10.70	16.91	46.00	-29.09
627.52	S	Peak	28.28	-6.97	21.31	46.00	-24.69
843.83	S	Peak	27.95	-3.74	24.21	46.00	-21.79
11570.00	H	Peak	18.49	17.49	35.98	74.00	-38.02
17355.00	Н						
23140.00	Н						
28925.00	Н						
34710.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band Test Date :802.11n 20M :2012-11-28

Fundamental Frequency :5825 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	31.46	-14.33	17.13	40.00	-22.87
114.39	S	Peak	32.34	-15.22	17.12	43.50	-26.38
286.08	S	Peak	27.59	-12.89	14.70	46.00	-31.30
454.86	S	Peak	29.69	-9.99	19.70	46.00	-26.30
644.01	S	Peak	28.57	-6.70	21.87	46.00	-24.13
798.24	S	Peak	28.75	-4.22	24.53	46.00	-21.47
11650.00	Н	Peak	21.38	17.78	39.16	74.00	-34.84
17475.00	Н						
23300.00	Н						
29125.00	Н						
34950.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band Test Date :802.11n 20M :2012-11-28 Fundamental Frequency :5825 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
41.64	S	Peak	26.60	-13.56	13.04	40.00	-26.96
154.16	S	Peak	27.56	-12.30	15.26	43.50	-28.24
321.97	S	Peak	26.72	-12.04	14.68	46.00	-31.32
516.94	S	Peak	27.72	-9.26	18.46	46.00	-27.54
714.82	S	Peak	27.83	-5.51	22.32	46.00	-23.68
917.55	S	Peak	28.70	-2.47	26.23	46.00	-19.77
11650.00	Н	Peak	18.17	17.58	35.75	74.00	-38.25
17475.00	Н						
23300.00	Н						
29125.00	Н						
34950.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Radiated Spurious Emission Measurement Result (802.11n(5GHz)_40M)

Operation Band :802.11n 40M Test Date :2012-11-28 Fundamental Frequency :5755 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.97	S	Peak	31.24	-14.33	16.91	40.00	-23.09
114.39	S	Peak	32.62	-15.22	17.40	43.50	-26.10
286.08	S	Peak	29.11	-12.89	16.22	46.00	-29.78
501.42	S	Peak	28.48	-9.55	18.93	46.00	-27.07
699.30	S	Peak	27.84	-5.76	22.08	46.00	-23.92
831.22	S	Peak	28.86	-3.87	24.99	46.00	-21.01
11510.00	Н	Peak	19.64	17.67	37.31	74.00	-36.69
17265.00	Н						
23020.00	Н						
28775.00	Н						
34530.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band Test Date :802.11n 40M :2012-11-28 Fundamental Frequency :5755 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
44.55	S	Peak	26.71	-13.76	12.95	40.00	-27.05
157.07	S	Peak	27.11	-12.29	14.82	43.50	-28.68
286.08	S	Peak	27.46	-12.89	14.57	46.00	-31.43
511.12	S	Peak	28.20	-9.38	18.82	46.00	-27.18
710.94	S	Peak	28.10	-5.57	22.53	46.00	-23.47
894.27	S	Peak	27.81	-2.93	24.88	46.00	-21.12
11510.00	Н	Peak	19.51	17.47	36.98	74.00	-37.02
17265.00	Н						
23020.00	Н						
28775.00	Н						
34530.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band Test Date :802.11n 40M :2012-11-28

Fundamental Frequency :5795 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
30.00	S	Peak	31.45	-14.37	17.08	40.00	-22.92
114.39	S	Peak	32.18	-15.22	16.96	43.50	-26.54
343.31	S	Peak	28.58	-11.76	16.82	46.00	-29.18
493.66	S	Peak	27.66	-9.66	18.00	46.00	-28.00
662.44	S	Peak	28.10	-6.34	21.76	46.00	-24.24
918.52	S	Peak	27.96	-2.44	25.52	46.00	-20.48
11590.00	Н	Peak	21.54	17.69	39.23	74.00	-34.77
17385.00	Н						
23180.00	Н						
28975.00	Н						
34770.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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Operation Band Test Date :802.11n 40M :2012-11-28 Fundamental Frequency :5795 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus

EUT Pol. :E2 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.

"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	dΒμV	dB	dBμV/m	dBμV/m	dB
40.67	S	Peak	27.66	-13.48	14.18	40.00	-25.82
165.80	S	Peak	27.07	-12.77	14.30	43.50	-29.20
330.70	S	Peak	26.72	-11.92	14.80	46.00	-31.20
563.50	S	Peak	28.18	-8.31	19.87	46.00	-26.13
679.90	S	Peak	28.23	-6.04	22.19	46.00	-23.81
880.69	S	Peak	28.02	-3.19	24.83	46.00	-21.17
11590.00	Н	Peak	20.04	17.49	37.53	74.00	-36.47
17385.00	Н						
23180.00	Н						
28975.00	Н						
34770.00	Н						

For measurement plot of radiation, please refer to Appendix I.

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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 8 dBm 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.

11.4 Measurement Procedure (following the measurement procedure 9.1 option1 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 > 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.

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11.5 Measurement Result:

802.11b

Frequency	RF Power Density	Maximum Limit
MHz	Reading (dBm)	(dBm)
2412	-3.53	8
2437	-4.22	8
2462	-4.14	8

802.11g

Frequency	RF Power Density	Maximum Limit	
MHz	Reading (dBm)	(dBm)	
2412	-13.74	8	
2437	-8.82	8	
2462	-9.46	8	

802.11n_20M

Frequency	RF Power Density	Maximum Limit	
MHz	Reading (dBm)	(dBm)	
2412	-14.22	8	
2437	-13.04	8	
2462	-13.47	8	

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802.11a

Frequency	RF Power Density	Maximum Limit	
MHz	Reading (dBm)	(dBm)	
5745	-15.35	8	
5785	-14.81	8	
5825	-12.96	8	

802.11n(5GHz)_20M

Frequency		RF Power Density	Maximum Limit
	MHz	Reading (dBm)	(dBm)
	5745	-14.92	8
	5785	-15.43	8
	5825	-13.33	8

802.11n(5GHz)_40M

Frequency	RF Power Density	RF Power Density	
MHz	Reading (dBm)	Level (dBm)	
5755	-18.02	-18.02	
5795	-17.15	-17.15	

^{*} Note: Offset 10.9dB for 2.4G 802.11b/g/n_20; Offset 11.6 dB for 5G 802.11a/n_20/n_40.

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^{*}Refer to next page for plots

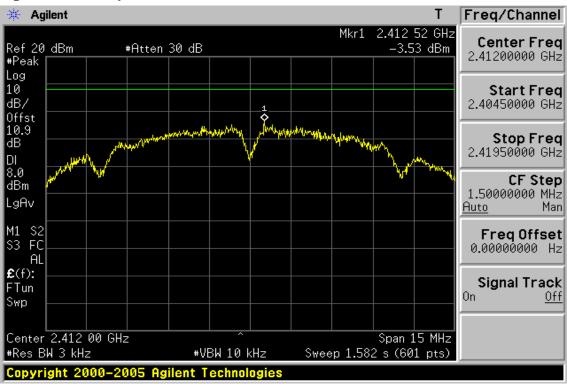


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802.11b

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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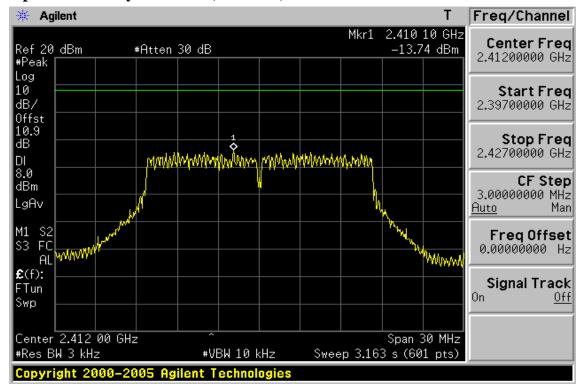
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Power Spectral Density Test Plot (CH-High)



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



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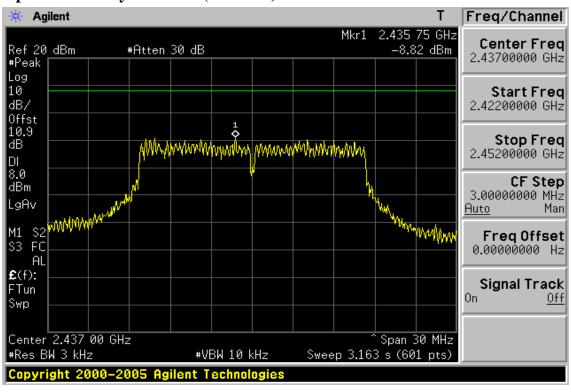
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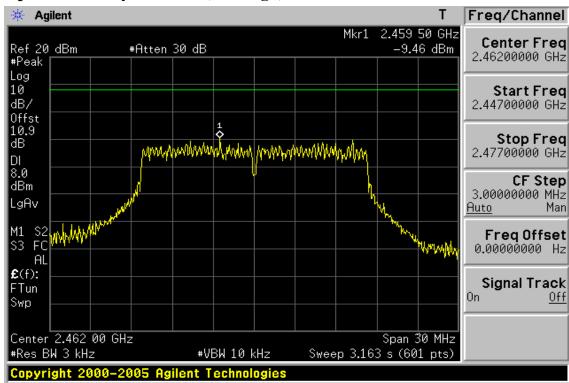
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Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)



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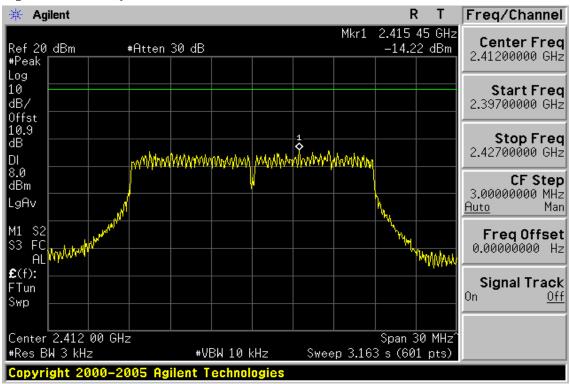


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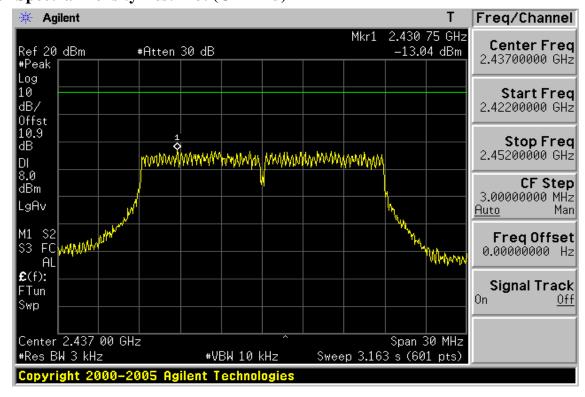
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802.11n 20M

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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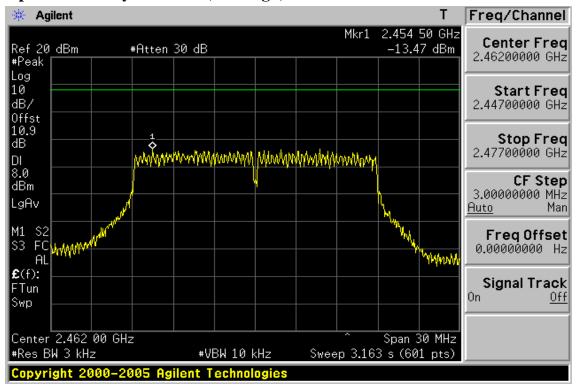
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Power Spectral Density Test Plot (CH-High)



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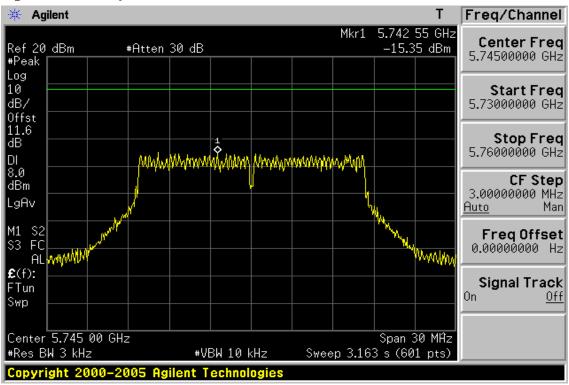


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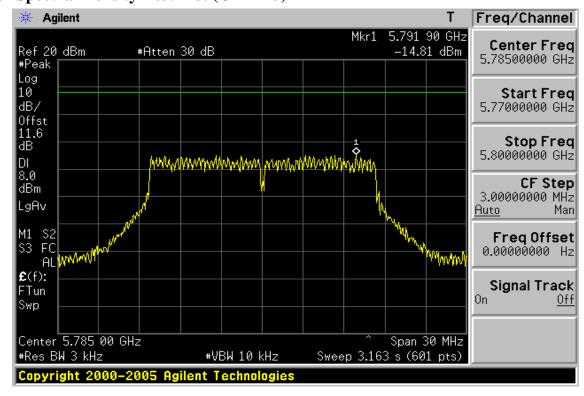
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802.11a

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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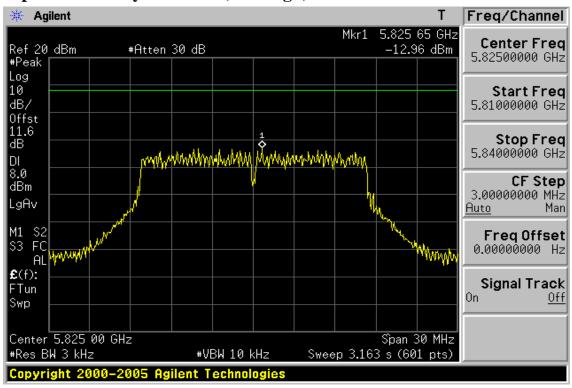
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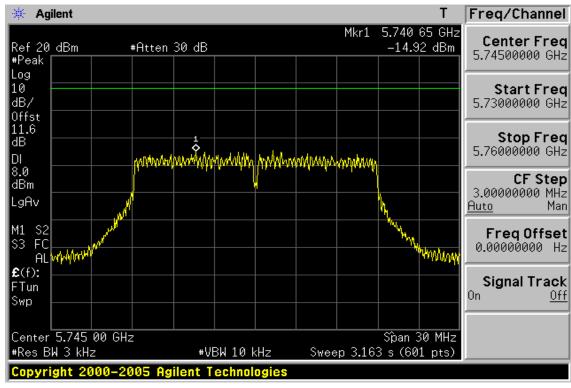
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Power Spectral Density Test Plot (CH-High)



802.11n (5GHz) 20M

Power Spectral Density Test Plot (CH-Low)



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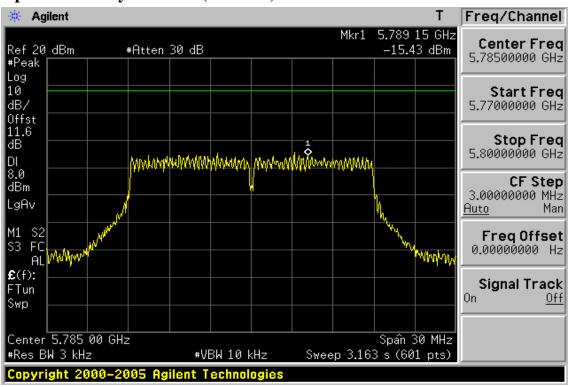
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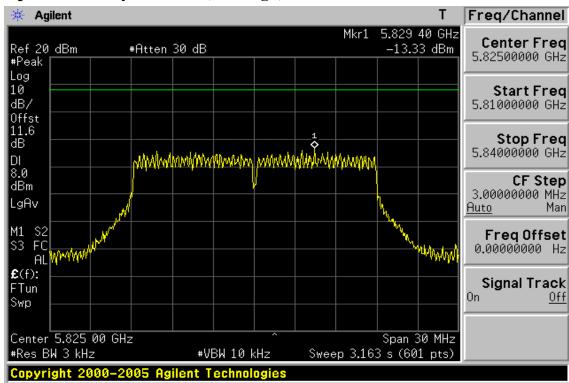
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Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)



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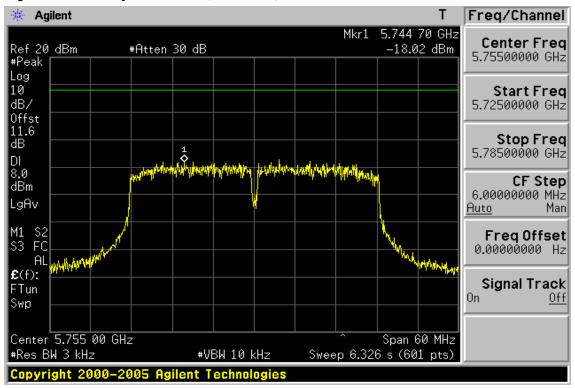


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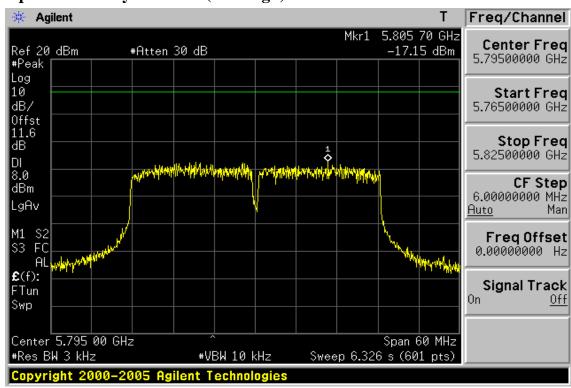
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802.11n (5GHz) 40M

Power Spectral Density Test Plot (CH-Low)



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 0.02dBi for 2.4GHz, 3.11dBi for 5725-5850 MHz and 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.

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	15.2889
2437	13.0685
2462	13.0372

802.11g

Frequency	99%Bandwidth
MHz	(MHz)
2412	16.9353
2437	17.2369
2462	17.0427

802.11n 20M

Frequency MHz	99%Bandwidth (MHz)
2412	17.9687
2437	17.9943
2462	18.0003

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802.11a

Frequency MHz	99%Bandwidth (MHz)
5745	17.1895
5785	17.8739
5825	17.6443

802.11n(5GHz)_20M

Frequency	99%Bandwidth
MHz	(MHz)
5745	18.1671
5785	18.4833
5825	18.4626

802.11n(5GHz)_40M

Frequency	99%Bandwidth
MHz	(MHz)
5755	36.3328
5795	36.4777

Note: Refer to next page for plots.

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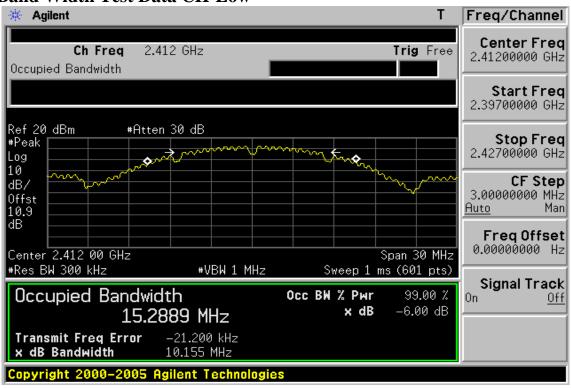
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802.11b 99% Band Width Test Data CH-Low



99% Band Width Test Data CH-Mid



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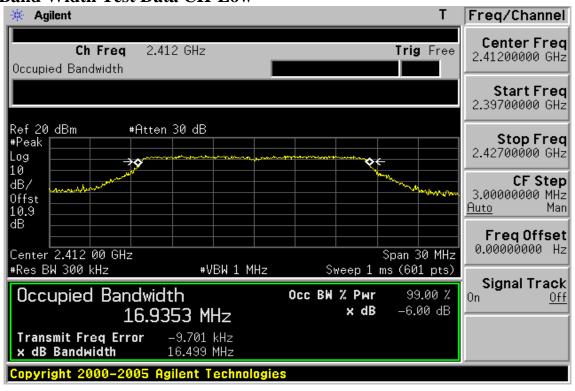
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99% Band Width Test Data CH-High



802.11g 99% Band Width Test Data CH-Low



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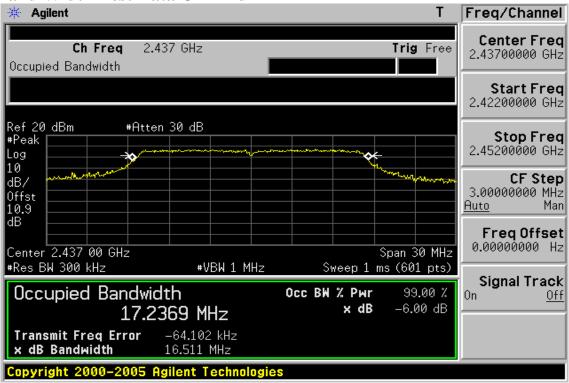
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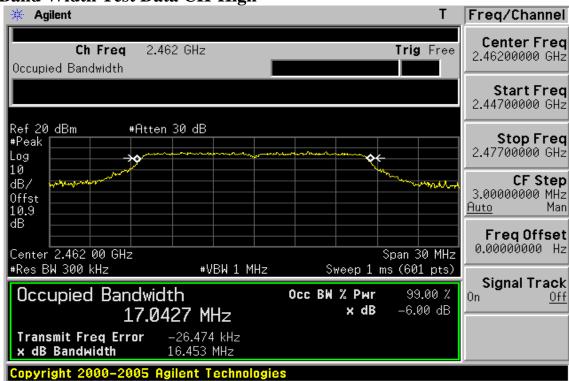
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99% Band Width Test Data CH-Mid



99% Band Width Test Data CH-High



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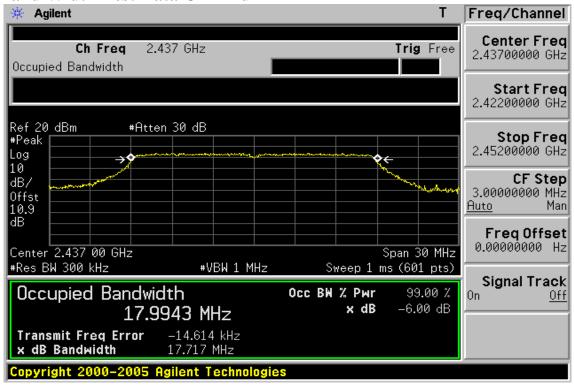
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802.11n 20M 99% Band Width Test Data CH-Low



99% Band Width Test Data CH-Mid



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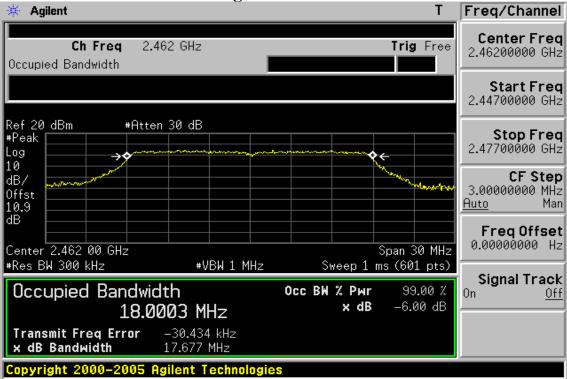
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99% Band Width Test Data CH-High



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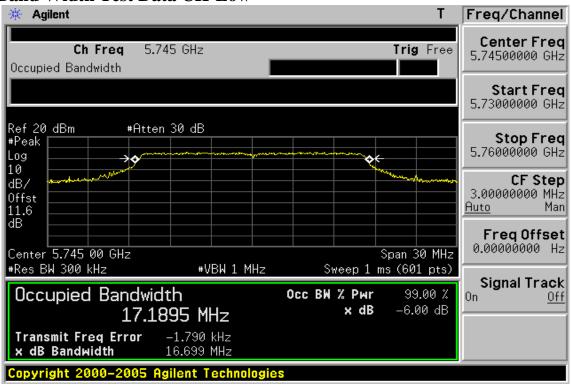
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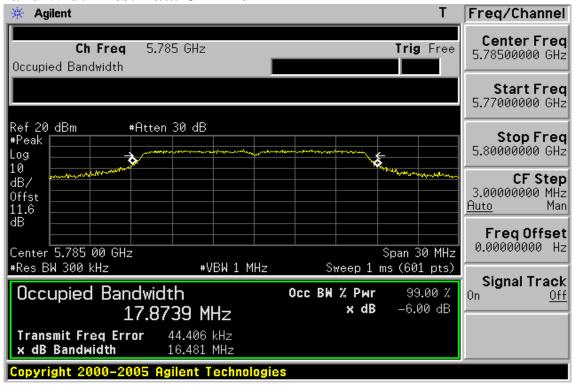
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802.11a 99% Band Width Test Data CH-Low



99% Band Width Test Data CH-Mid



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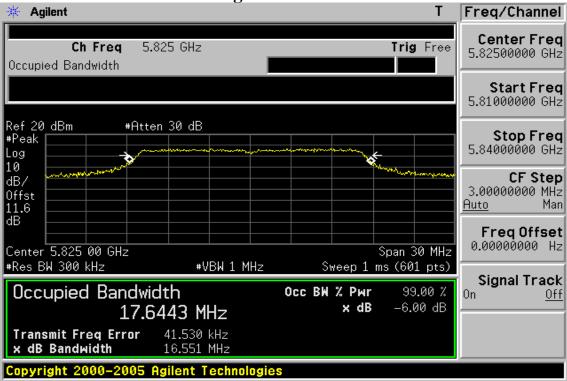
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Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

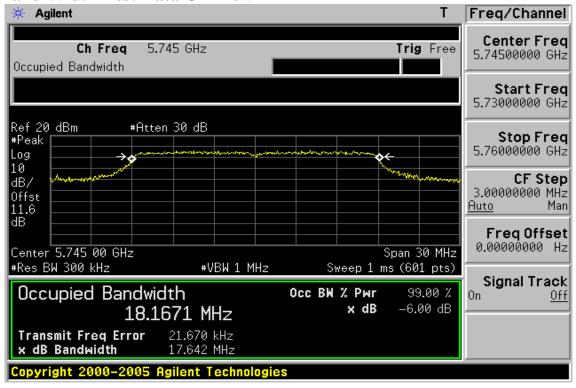
Page: 156 of 250

99% Band Width Test Data CH-High



802.11n(5GHz)_20M

99% Band Width Test Data CH-Low



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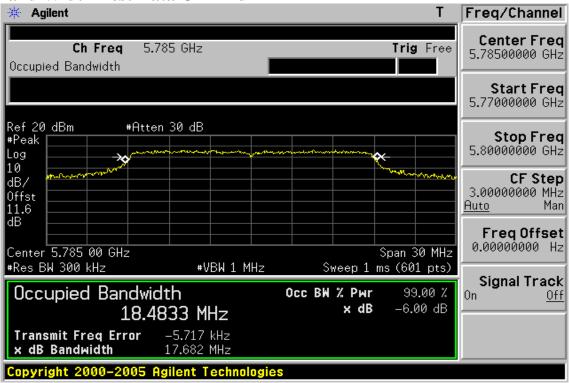
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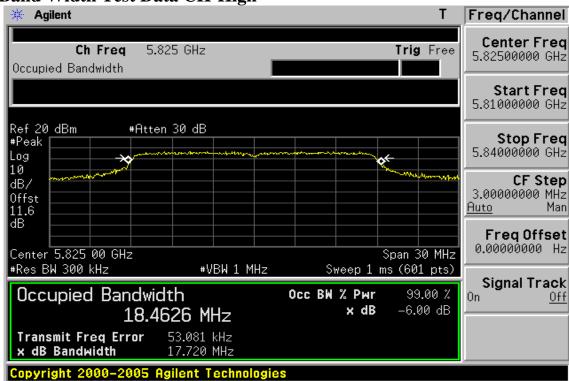
Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

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99% Band Width Test Data CH-Mid



99% Band Width Test Data CH-High



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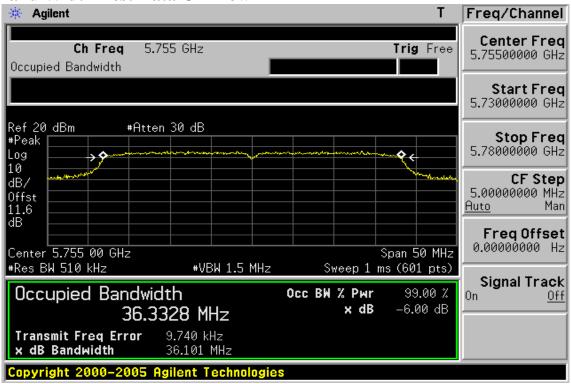
台灣檢驗科技股份有限公司



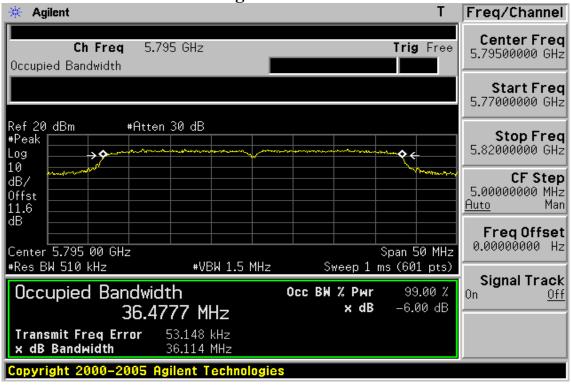
Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

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802.11n(5GHz) 40M 99% Band Width Test Data CH-Low



99% Band Width Test Data CH-High



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APPENDIX 1 MEASUREMENT PLOT OF RADIATED SPURIOUS **EMISSION**

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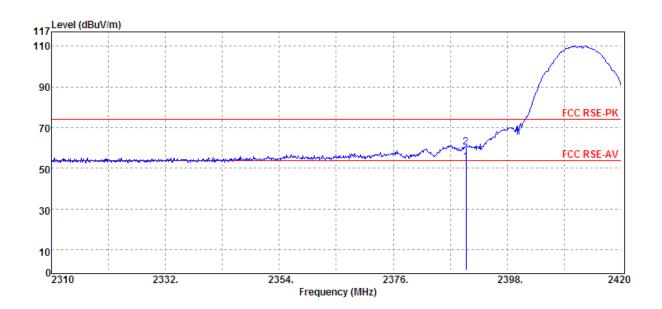
Band Edges Radiated Emission:

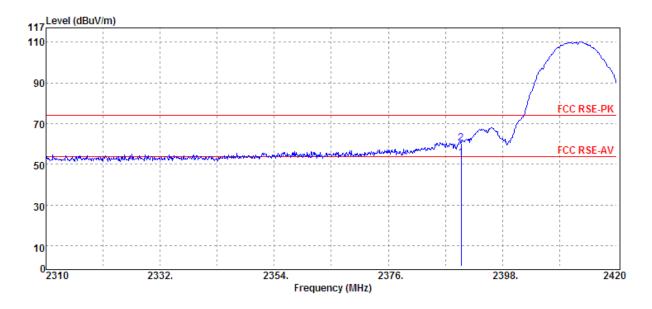
Note: The emission that surpasses the limit of peak represents the fundamental emission of the operation that does not accounts to be conformed to the limit of the interest.

802.11b

Operation Band :802.11b Test Date :2012-12-06 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :BANDEDGE LOW Engineer :Marcus EUT Pol. :E2 Plan Measurement Antenna Pol. :Ver. / Hor.





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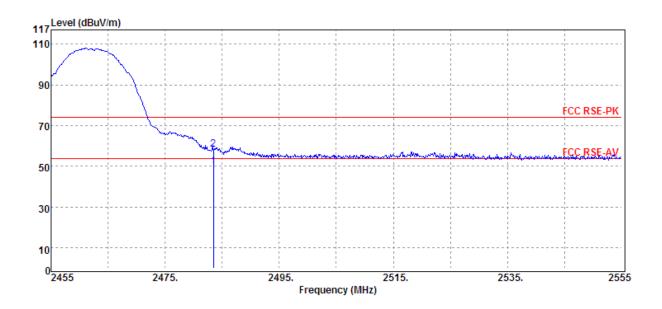
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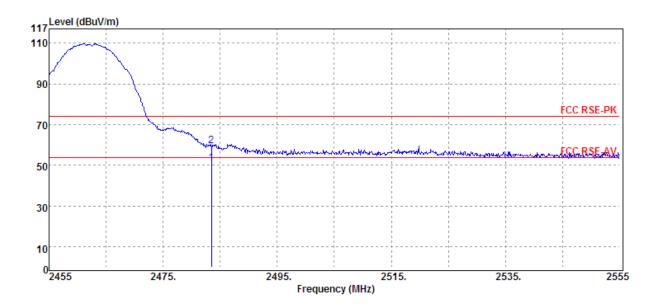
Operation Band Fundamental Frequency Operation Mode EUT Pol.

:802.11b :2462 MHz Test Date Temp./Humi.

:2012-12-06 :22.7deg_C/57RH

:BANDEDGE HIGH Engineer :Marcus :E2 Plan Measurement Antenna Pol. :Ver. / Hor.





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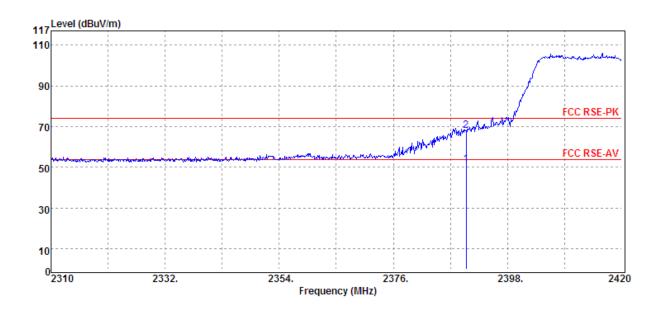
Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

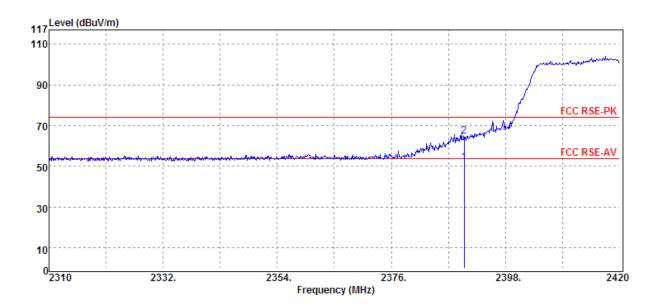
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802.11g

Operation Band :802.11g Test Date :2012-12-06 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :BANDEDGE LOW Engineer :Marcus EUT Pol. :E2 Plan Measurement Antenna Pol. :Ver. / Hor.





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Operation Band Fundamental Frequency Operation Mode EUT Pol.

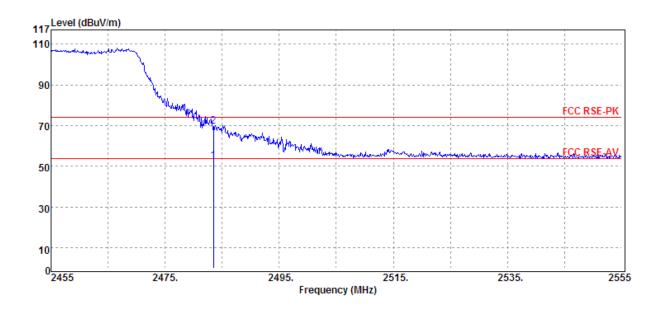
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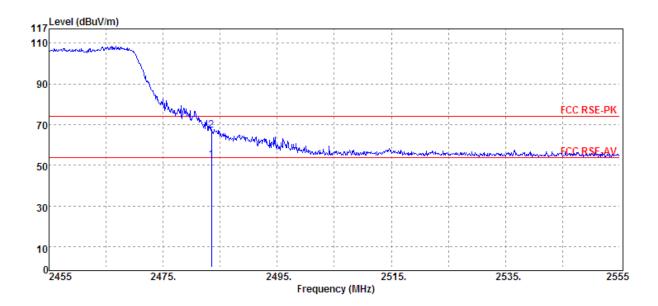
:E2 Plan

Test Date Temp./Humi. Engineer

:2012-12-06 :22.7deg_C/57RH

:Marcus Measurement Antenna Pol. :Ver. / Hor.





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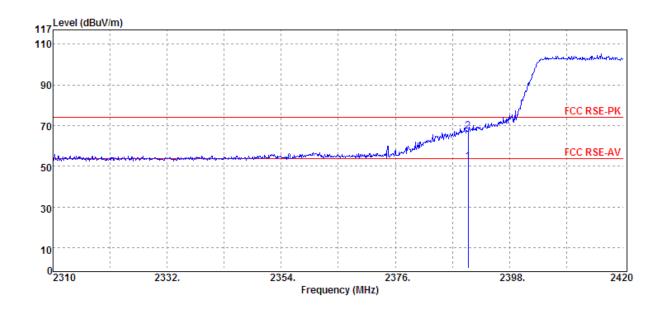
Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

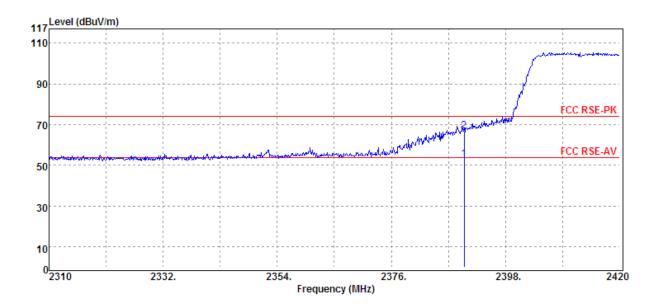
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11n_20 (2.4GHz)

Operation Band :802.11n 20M Test Date :2012-12-06 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg_C/57RH Operation Mode :BANDEDGE LOW Engineer :Marcus

EUT Pol. :E2 Plan Measurement Antenna Pol. :Ver. / Hor.





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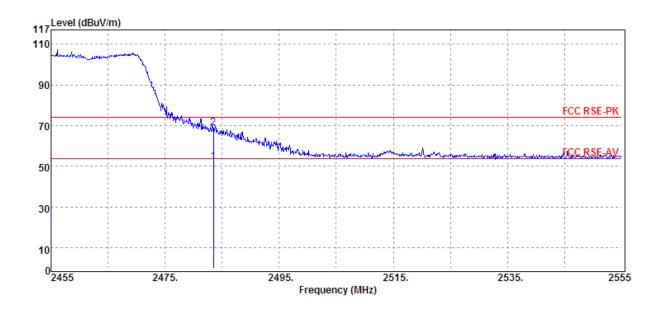
Operation Band Fundamental Frequency Operation Mode EUT Pol.

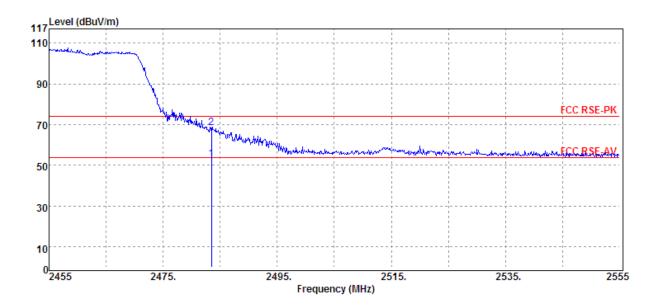
:802.11 n 20M :2462 MHz :BANDEDGE HIGH

:E2 Plan

Test Date :2012-12-06 Temp./Humi. :22.7deg_C/57RH Engineer :Marcus

Measurement Antenna Pol. :Ver. / Hor.





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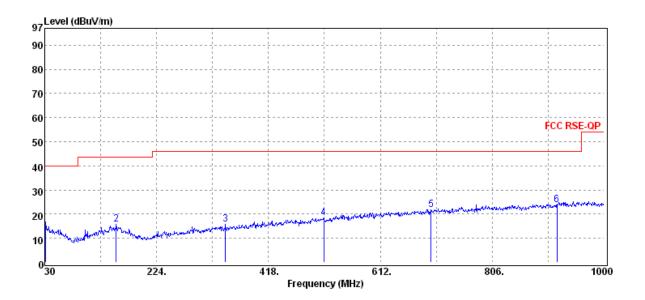
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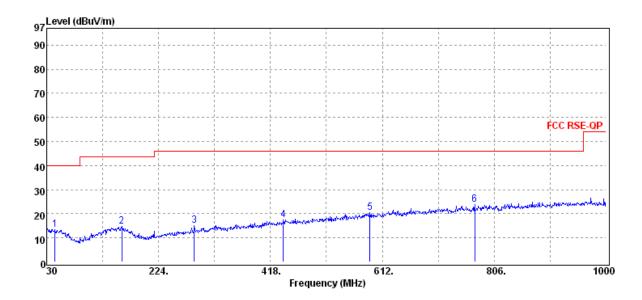
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Radiated Spurious Emission Measurement photos Result (below 1GHz)

Operation Band Test Date :802.11b :2012-11-28 Fundamental Frequency Temp./Humi. :2412 MHz :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus EUT Pol. :E2 Measurement Antenna Pol. :Ver. / Hor.





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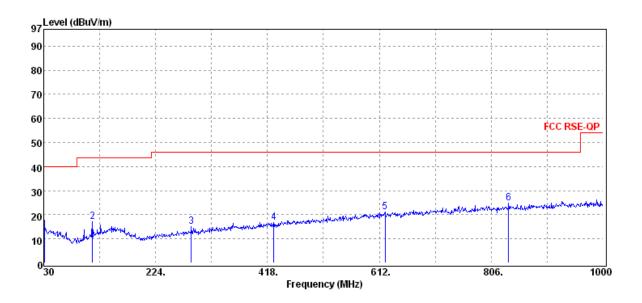
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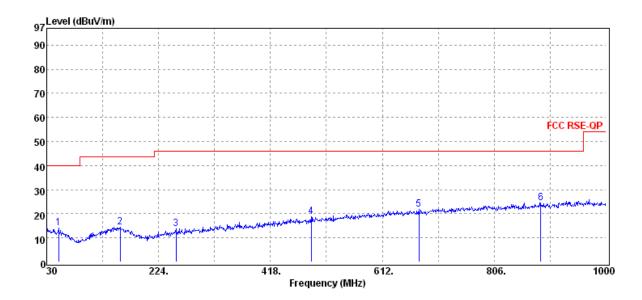
:2012-11-28

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Operation Band :802.11b Test Date Fundamental Frequency :2437 MHz

Temp./Humi. :22.7deg_C/57RH Operation Mode :TX MID Engineer :Marcus EUT Pol. :E2 Measurement Antenna Pol. :Ver. / Hor.





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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11b :2462 MHz :TX HIGH

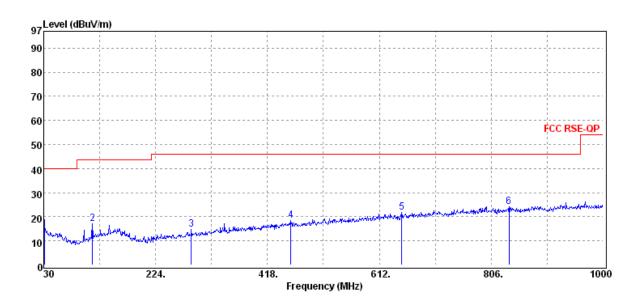
:E2

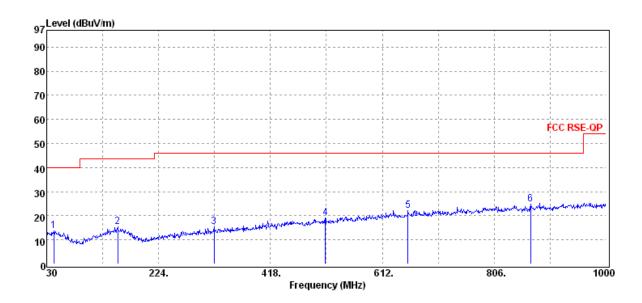
Test Date Temp./Humi.

:22.7deg_C/57RH :Marcus

:2012-11-28

Engineer Measurement Antenna Pol. :Ver. / Hor.





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EUT Pol.

FCC ID: PY7PM-0300 IC: 4170B-PM0300

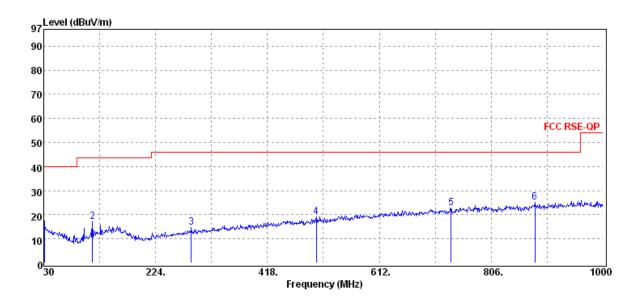
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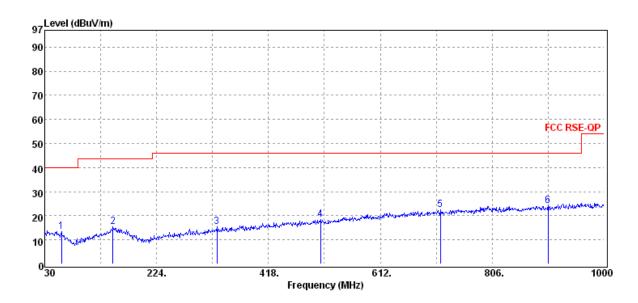
:2012-11-28

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Operation Band :802.11g Test Date Fundamental Frequency :2412 MHz Operation Mode

Temp./Humi. :22.7deg_C/57RH :TX LOW Engineer :Marcus :E2 Measurement Antenna Pol. :Ver. / Hor.





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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

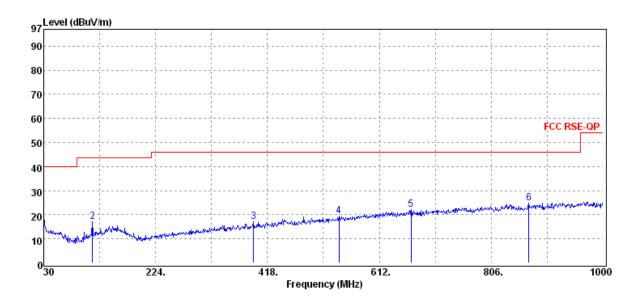
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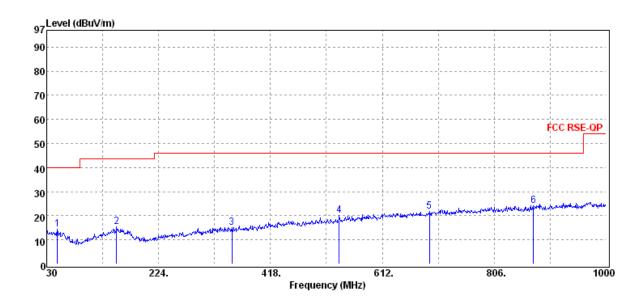
Test Date Temp./Humi. Engineer

:22.7deg_C/57RH :Marcus

:2012-11-28

Measurement Antenna Pol. :Ver. / Hor.





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Operation Band Fundamental Frequency Operation Mode

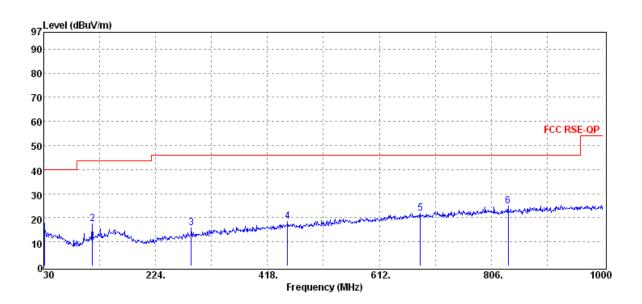
EUT Pol.

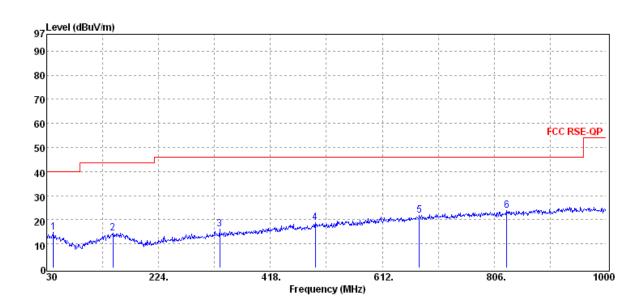
:802.11g :2462 MHz :TX HIGH :E2

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :Ver. / Hor.





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Operation Band Fundamental Frequency Operation Mode

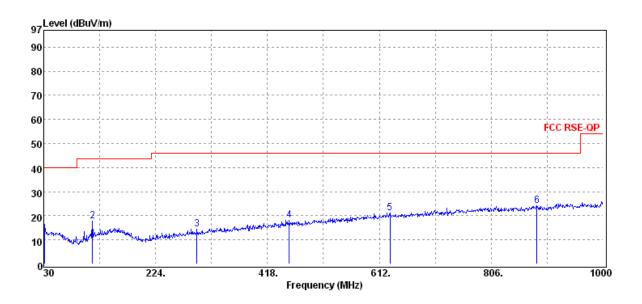
EUT Pol.

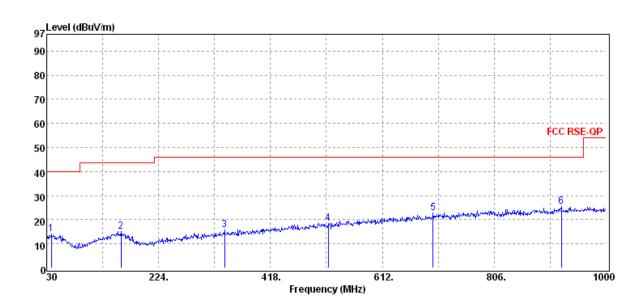
:802.11n 20M :2412 MHz :TX LOW :E2

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :Ver. / Hor.





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Operation Band :802.11n 20M Fundamental Frequency Operation Mode

EUT Pol.

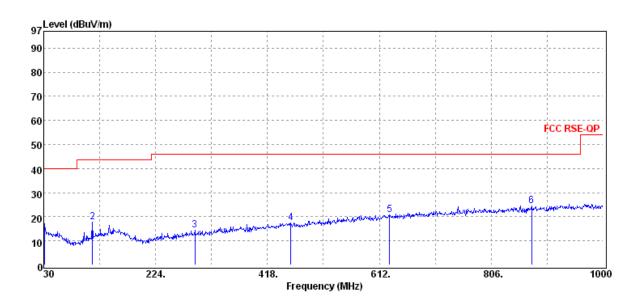
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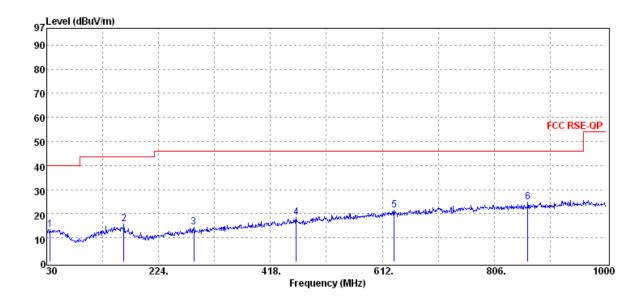
:E2

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :Ver. / Hor.





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Operation Band Fundamental Frequency Operation Mode EUT Pol.

:802.11n 20M :2462 MHz :TX HIGH :E2

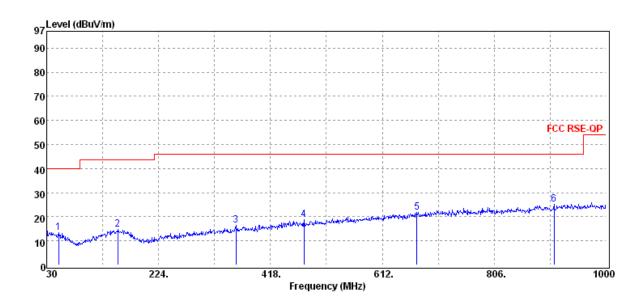
Test Date Temp./Humi. Engineer

Measurement Antenna Pol.

:22.7deg_C/57RH :Marcus :Ver. / Hor.

:2012-11-28

Level (dBuV/m) 90 80 70 60 50 40 30 20 10 418. 224. 612. 806. 1000 Frequency (MHz)



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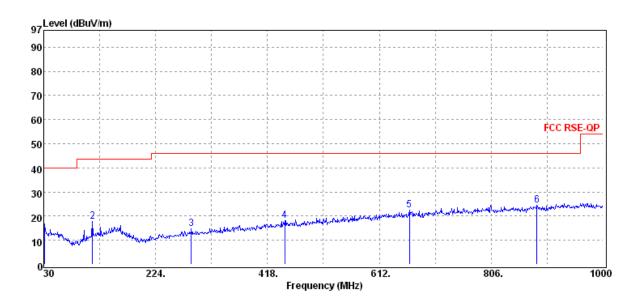


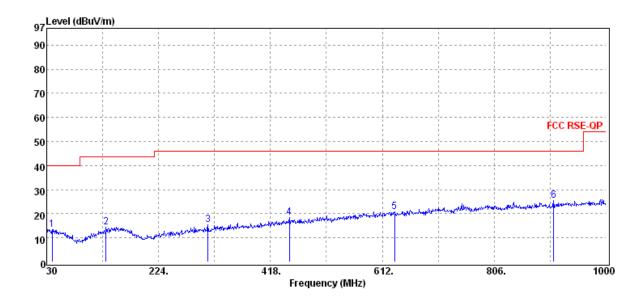
Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

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Operation Band :802.11a Test Date :2012-11-28 Fundamental Frequency :5745 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus EUT Pol. :E2 Plan Measurement Antenna Pol. :Ver. / Hor.





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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11a :5785 MHz :TX MID :E2 Plan

Test Date Temp./Humi. Engineer

Measurement Antenna Pol.

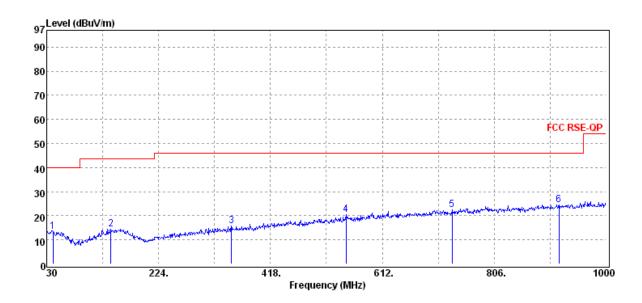
:22.7deg_C/57RH :Marcus

:2012-11-28

:Ver. / Hor.

Level (dBuV/m) 90 80 70 60 50 40 30 20 10 0 30 1000 224. 418. 612. 806.

Frequency (MHz)



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Operation Band Fundamental Frequency Operation Mode

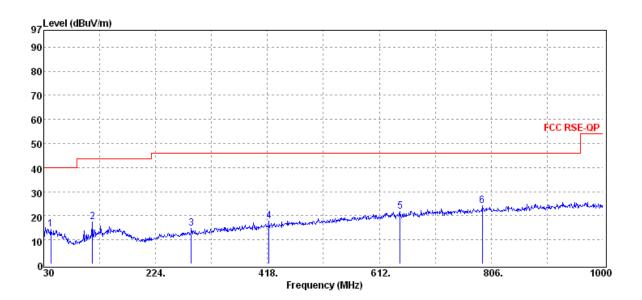
EUT Pol.

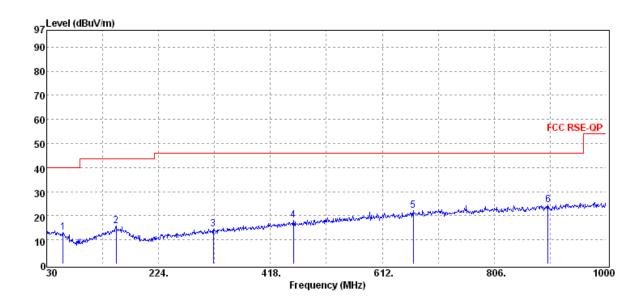
:802.11a :5825 MHz :TX HIGH :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :Ver. / Hor.





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Operation Band Fundamental Frequency Operation Mode

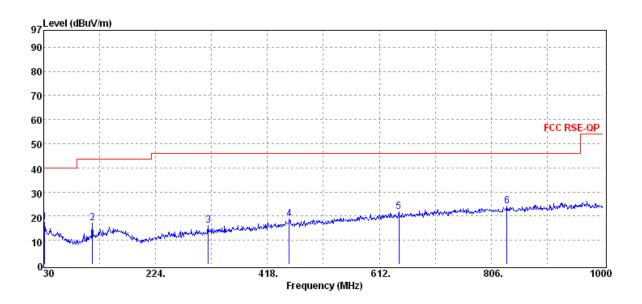
EUT Pol.

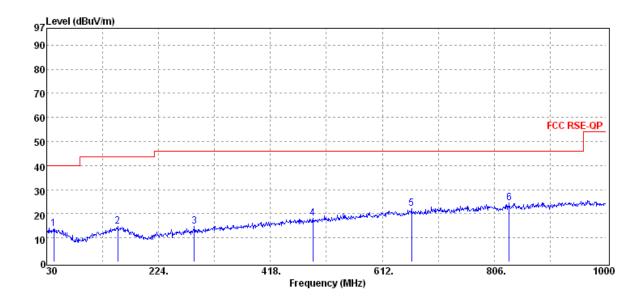
:802.11n 20M :5745 MHz :TX LOW :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH :Marcus

Engineer Measurement Antenna Pol. :Ver. / Hor.





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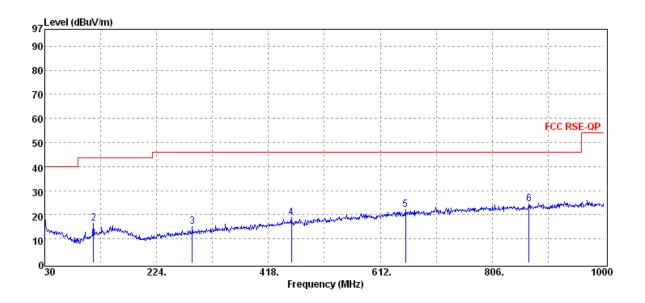
Operation Band Fundamental Frequency Operation Mode

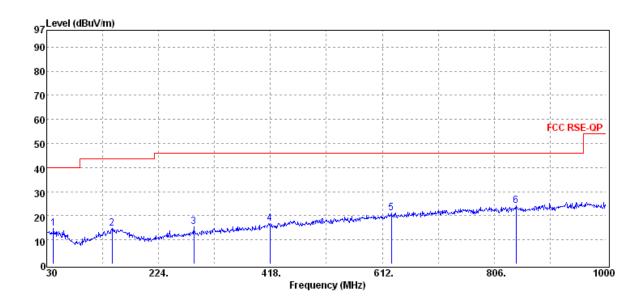
EUT Pol.

:802.11n 20M :5785 MHz :TX MID :E2 Plan

Test Date :2012-11-28 Temp./Humi. :22.7deg_C/57RH Engineer :Marcus

Measurement Antenna Pol. :Ver. /Hor.





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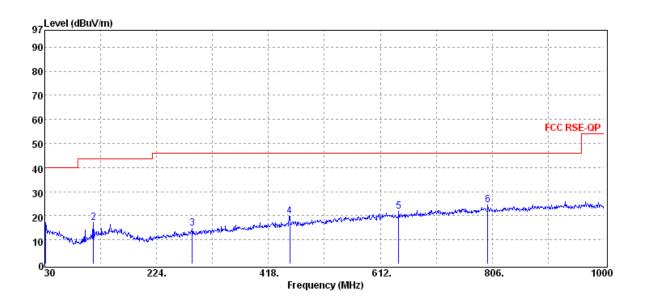
Operation Band Fundamental Frequency Operation Mode EUT Pol.

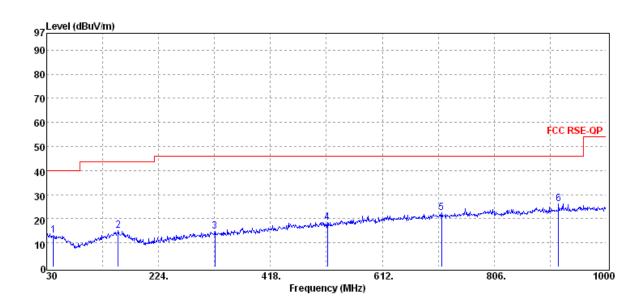
:802.11n 20M :5825 MHz :TX HIGH :E2

Test Date Temp./Humi. Engineer

:2012-11-28 :22.7deg_C/57RH :Marcus

Measurement Antenna Pol. :Ver. / Hor.





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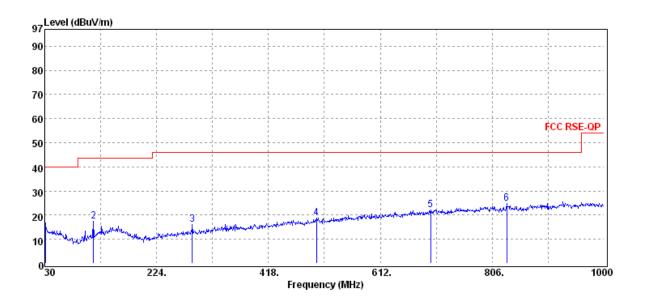
Operation Band Fundamental Frequency Operation Mode

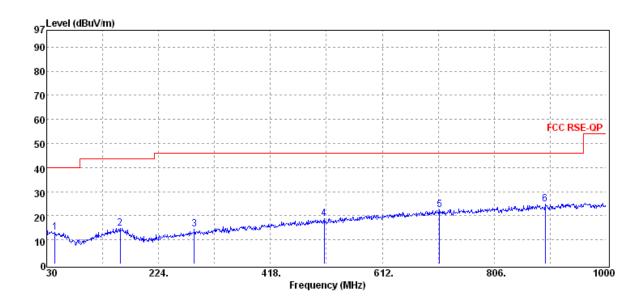
EUT Pol.

:802.11n 40M :5755 MHz :TX LOW :E2

Test Date :2012-11-28 Temp./Humi. :22.7deg_C/57RH Engineer

:Marcus Measurement Antenna Pol. :Ver. / Hor.





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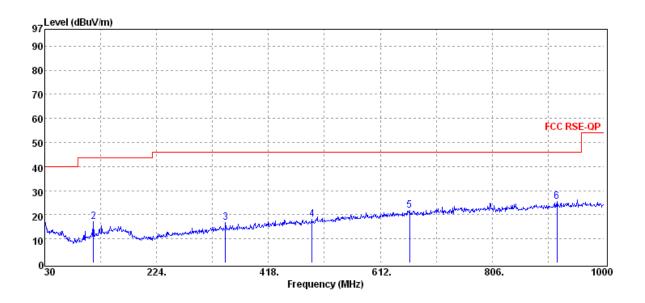
Operation Band Fundamental Frequency Operation Mode EUT Pol.

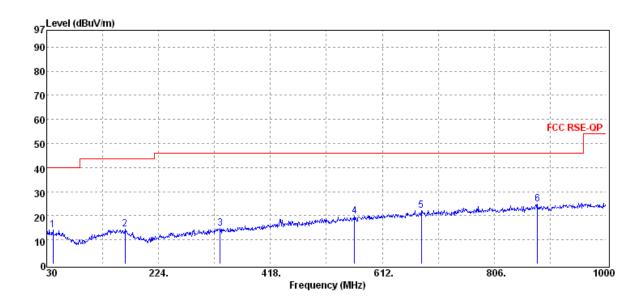
:802.11n 40M :5795 MHz :TX HIGH :E2

Test Date Temp./Humi. Engineer

:2012-11-28 :22.7deg_C/57RH

:Marcus Measurement Antenna Pol. :Ver. / Hor.





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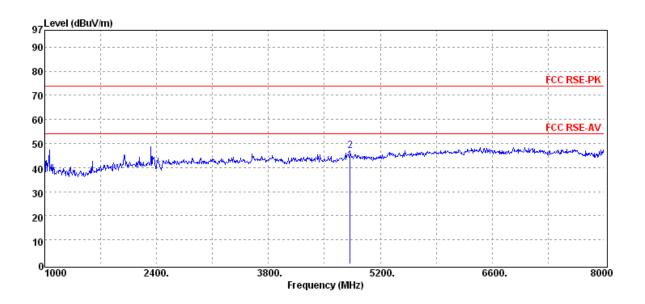
Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

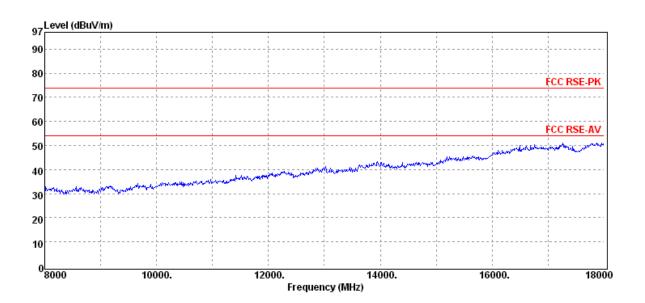
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Radiated Spurious Emission Measurement photos Result (above 1GHz)

Operation Band :802.11b Test Date :2012-11-28 :2412 MHz Fundamental Frequency Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL





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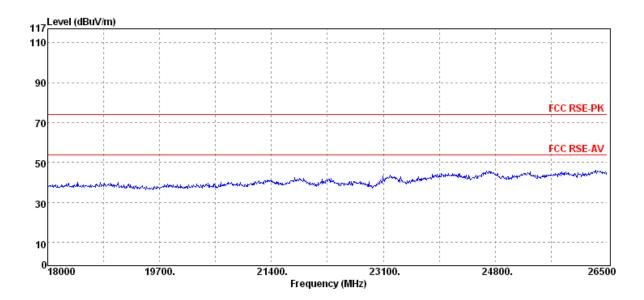
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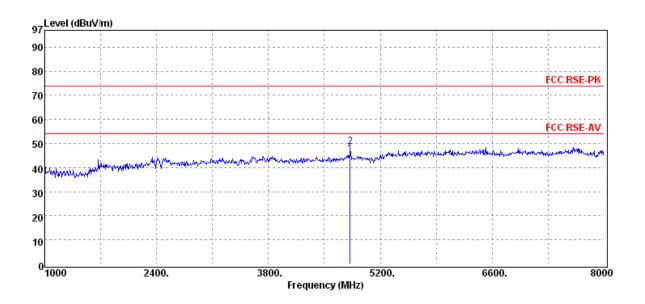
Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

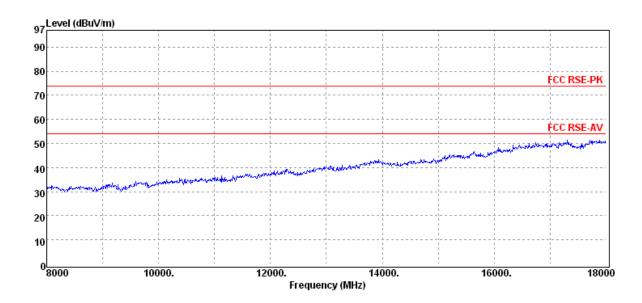
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Operation Band :802.11b **Test Date** :2012-11-28 Fundamental Frequency :2412 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX LOW Engineer :Marcus

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





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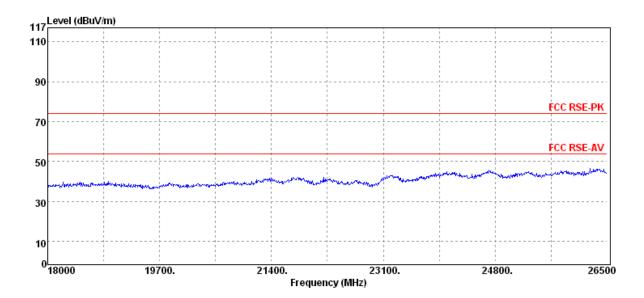
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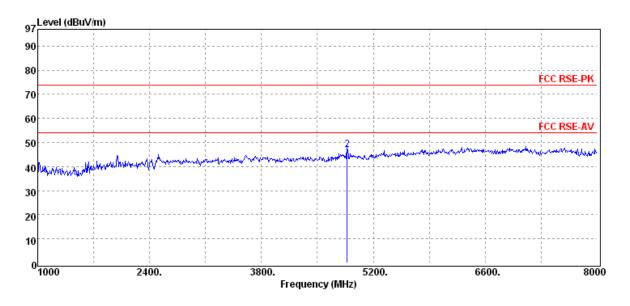
Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

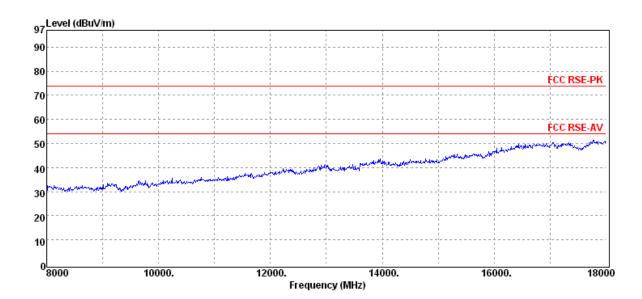
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Operation Band :802.11b Test Date :2012-11-28

Fundamental Frequency :2437 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL





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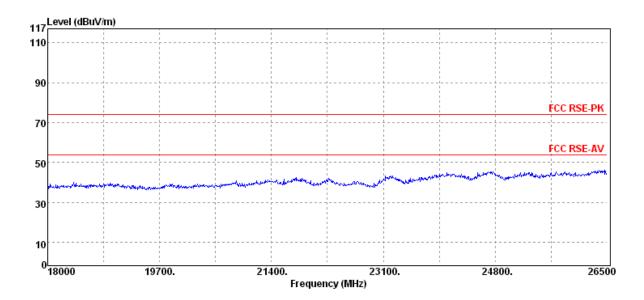
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:2012-11-28

:Marcus

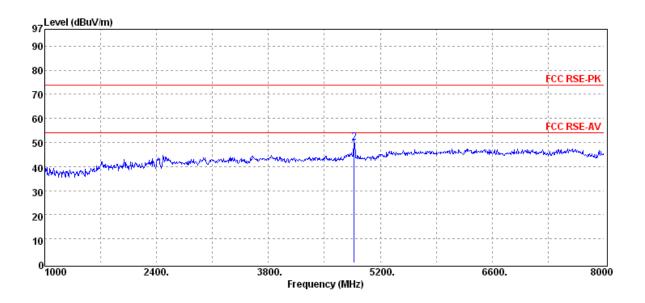
:22.7deg_C/57RH

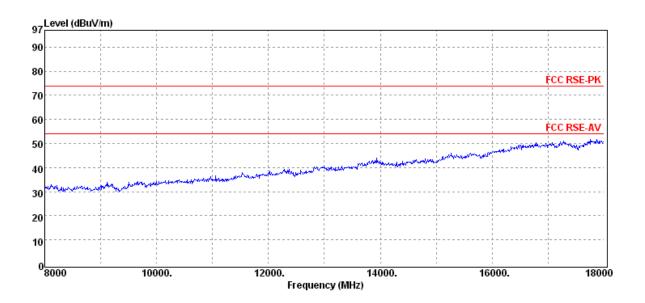
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Operation Band :802.11b Test Date Fundamental Frequency :2437 MHz Operation Mode

Temp./Humi. :TX MID Engineer

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





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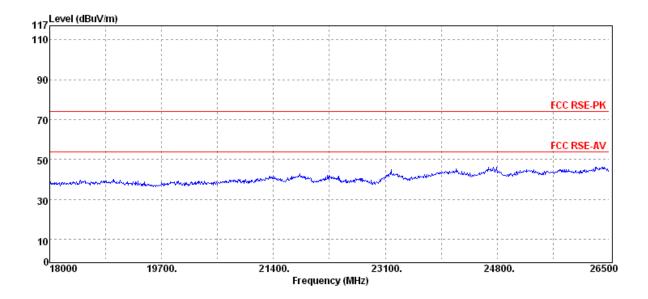
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Operation Band Fundamental Frequency Operation Mode

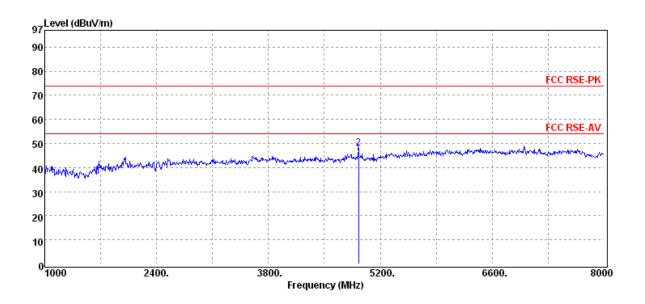
EUT Pol.

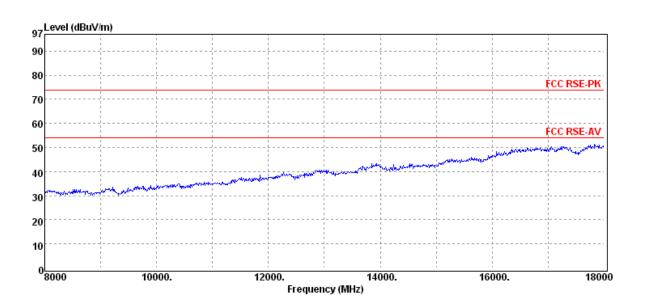
:802.11b :2462 MHz :TX HIGH :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :VERTICAL





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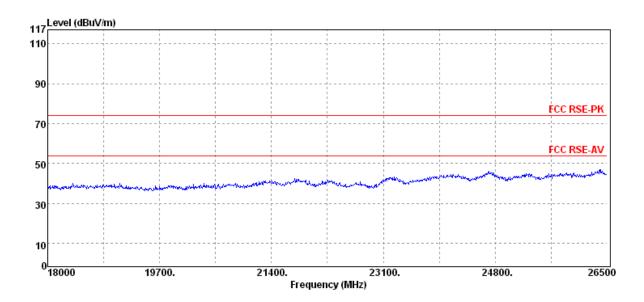
Ships of the testing ships the testing ships the sample(s) testing and testing and testing the sample ships only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11b :2462 MHz :TX HIGH

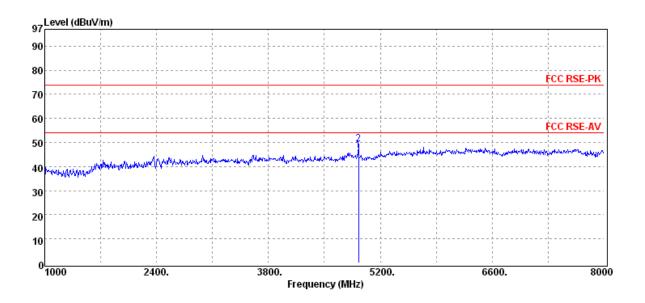
:E2 Plan

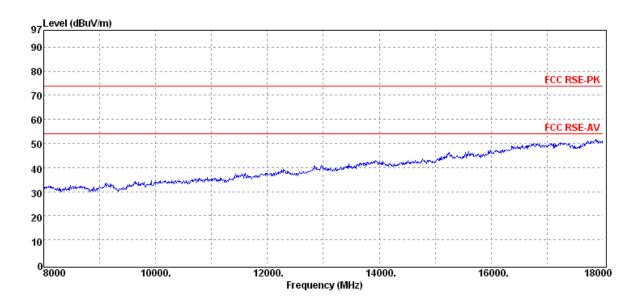
Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus

Measurement Antenna Pol. :HORIZONTAL





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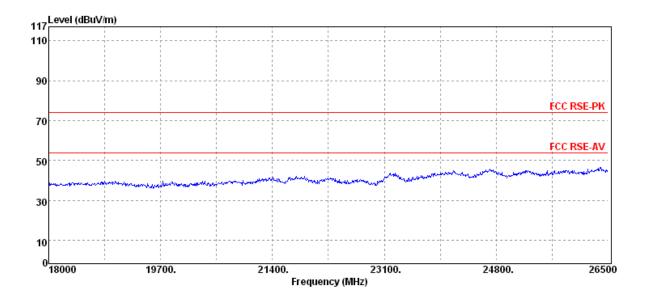
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Operation Band Fundamental Frequency Operation Mode

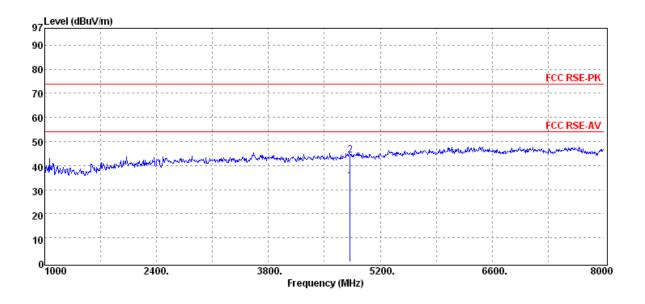
EUT Pol.

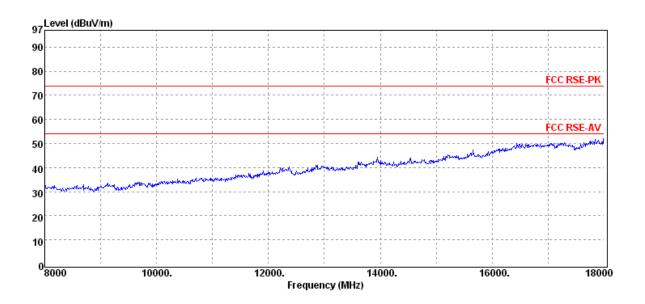
:802.11g :2412 MHz :TX LOW :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :VERTICAL





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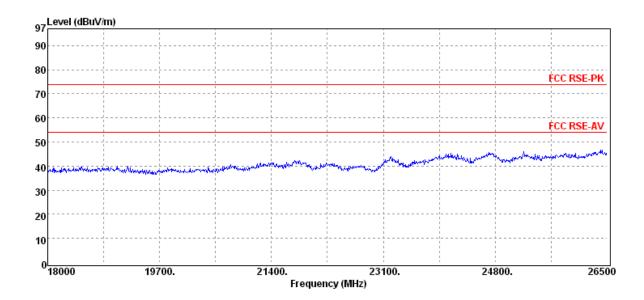
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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11g :2412 MHz :TX LOW

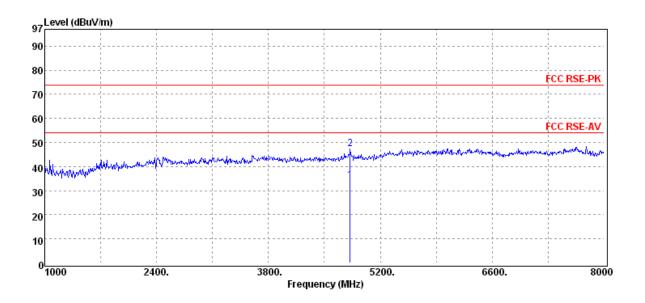
:E2 Plan

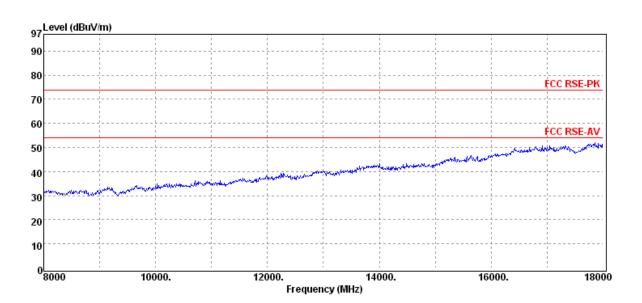
Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus

Measurement Antenna Pol. :HORIZONTAL





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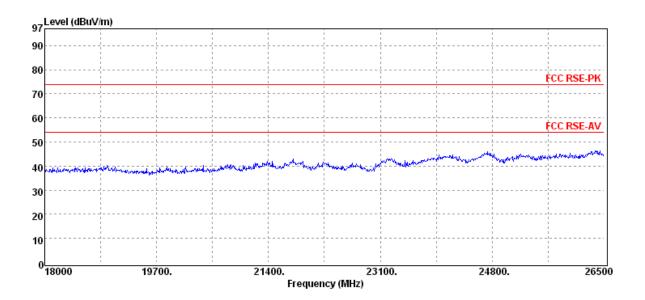
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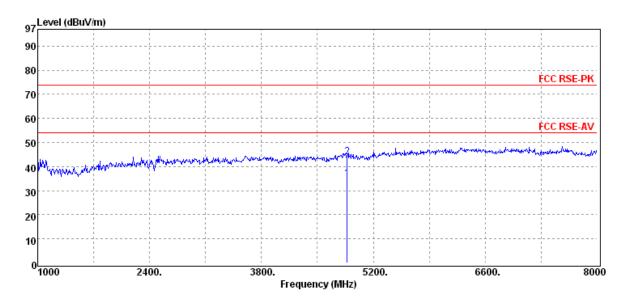
Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

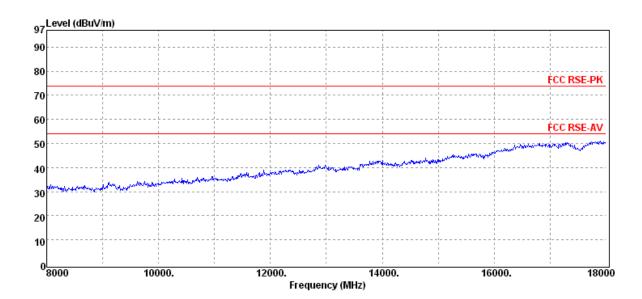
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Operation Band :802.11g Test Date :2012-11-28

Fundamental Frequency :2437 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL





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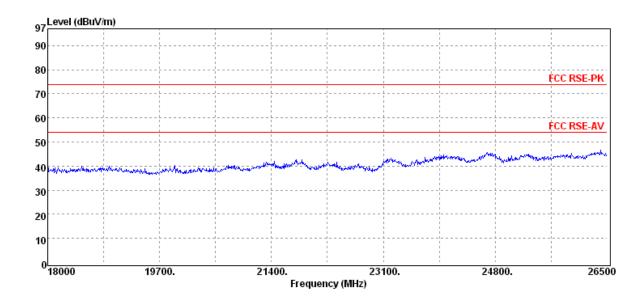
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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11g :2437 MHz :TX MID

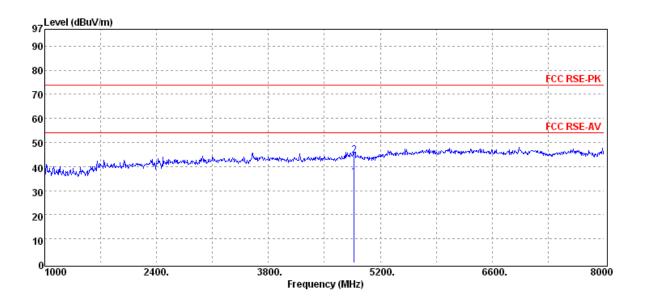
:E2 Plan

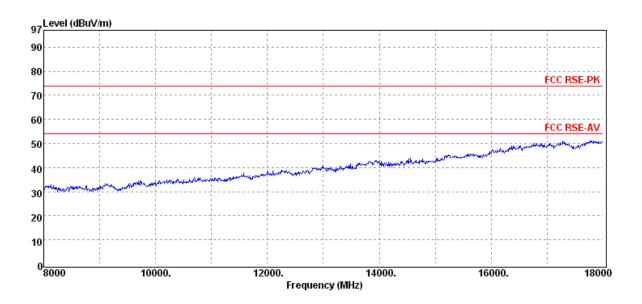
Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus

Measurement Antenna Pol. :HORIZONTAL





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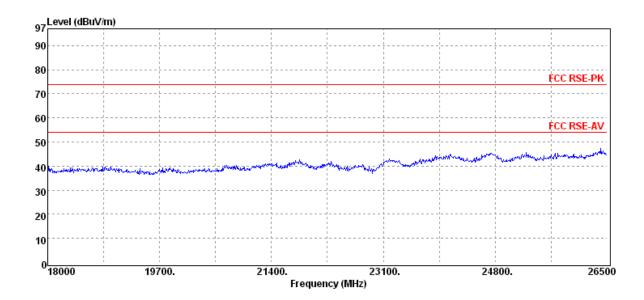
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Operation Band Fundamental Frequency Operation Mode

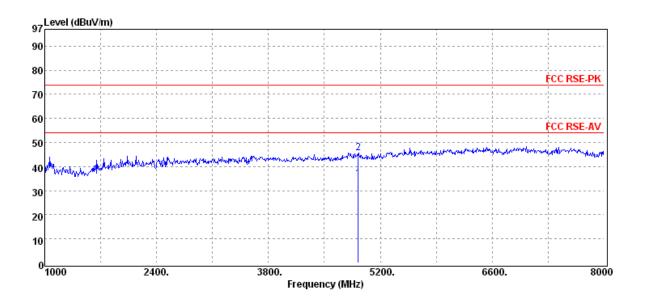
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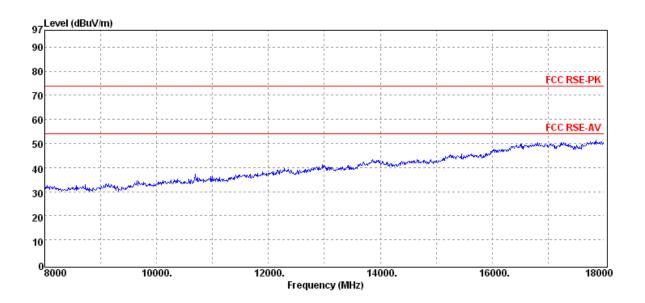
:802.11g :2462 MHz :TX HIGH :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :VERTICAL





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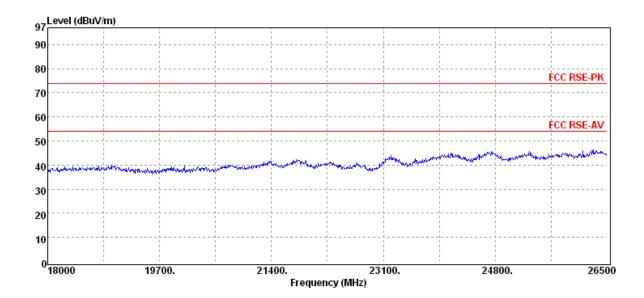
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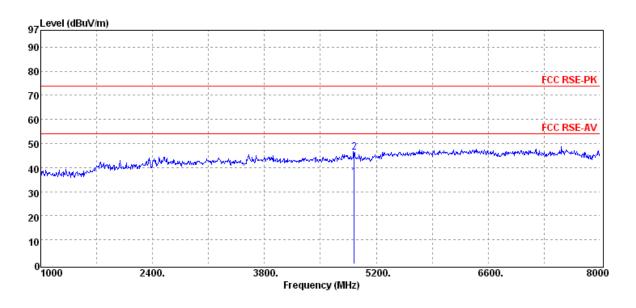
Report No.: EH/2012/B0007 Issue Date: Apr. 05, 2013

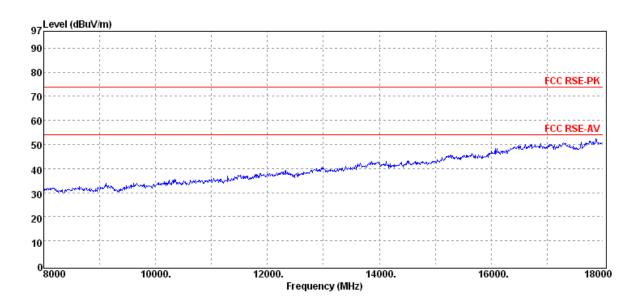
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Operation Band :802.11g Test Date :2012-11-28 Fundamental Frequency :2462 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX HIGH Engineer :Marcus

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





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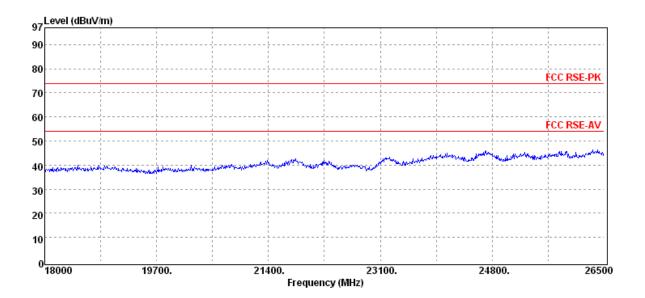
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Operation Band Fundamental Frequency Operation Mode

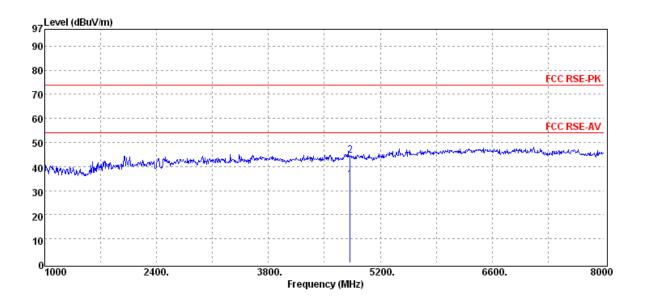
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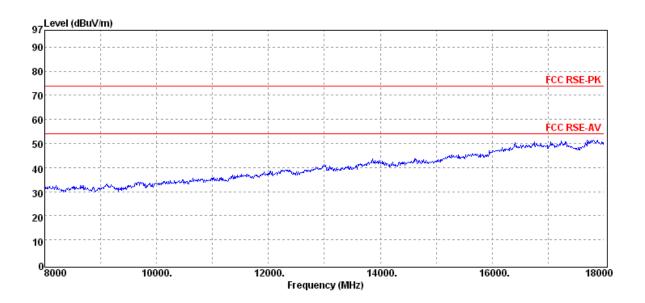
:802.11n 20M :2412 MHz :TX LOW :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :VERTICAL





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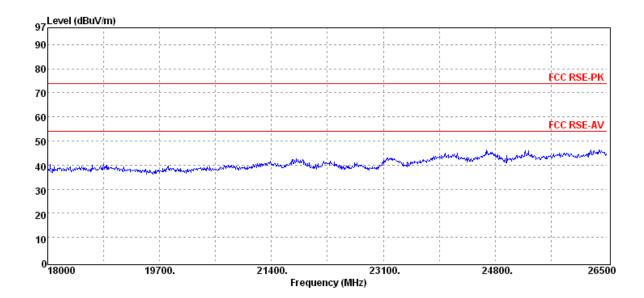
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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

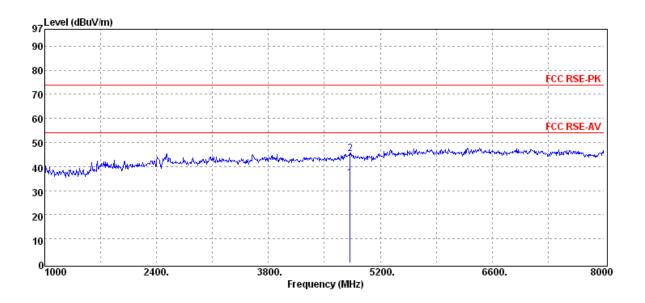
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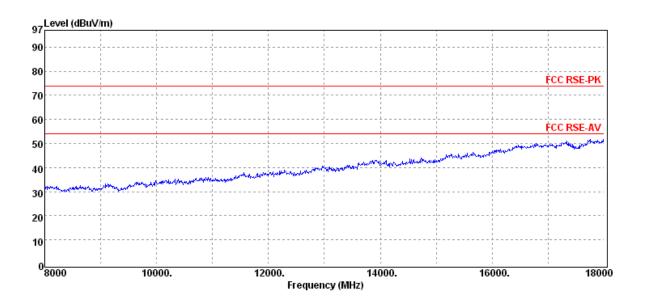
Test Date Temp./Humi. Engineer

:2012-11-28 :22.7deg_C/57RH

:Marcus

Measurement Antenna Pol. :HORIZONTAL





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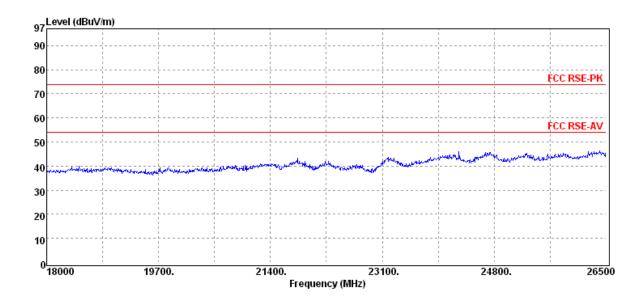
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Operation Band Fundamental Frequency Operation Mode

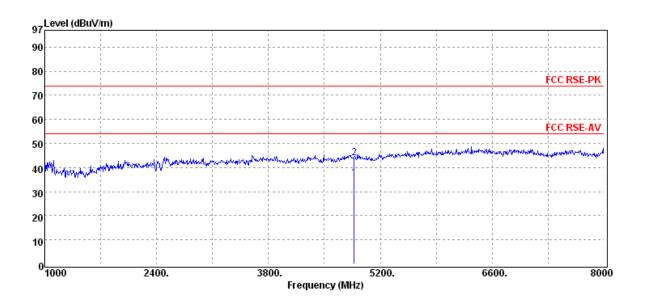
EUT Pol.

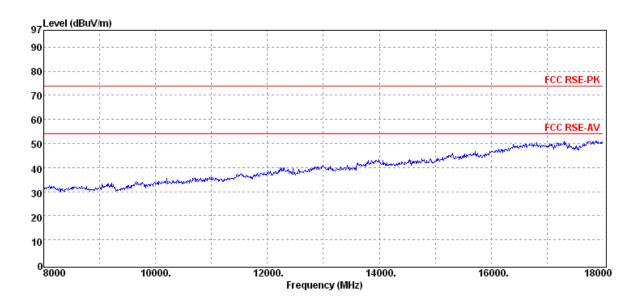
:802.11n 20M :2437 MHz :TX MID :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :VERTICAL





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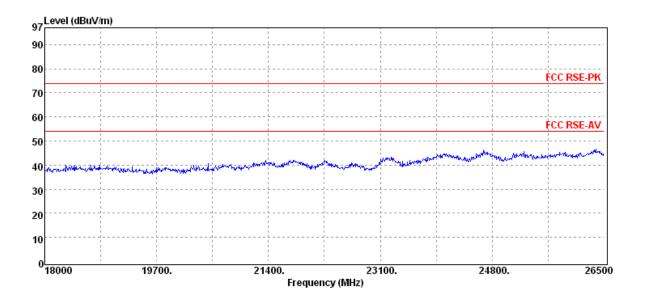
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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

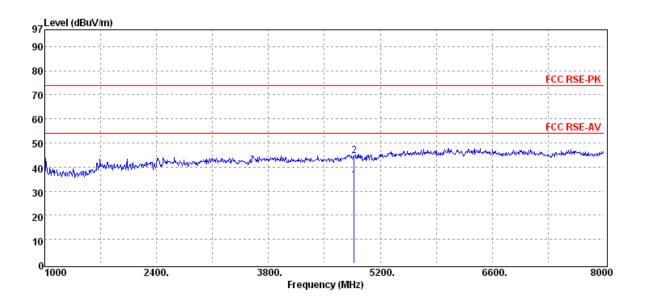
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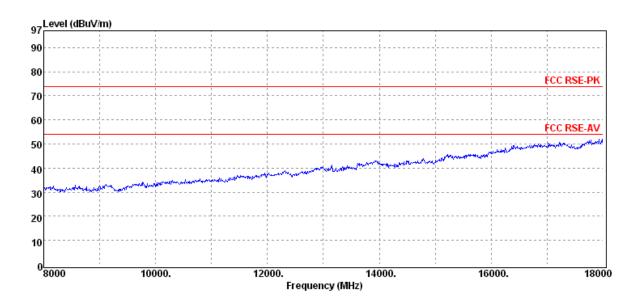
Test Date Temp./Humi. Engineer

:2012-11-28 :22.7deg_C/57RH

:Marcus

Measurement Antenna Pol. :HORIZONTAL





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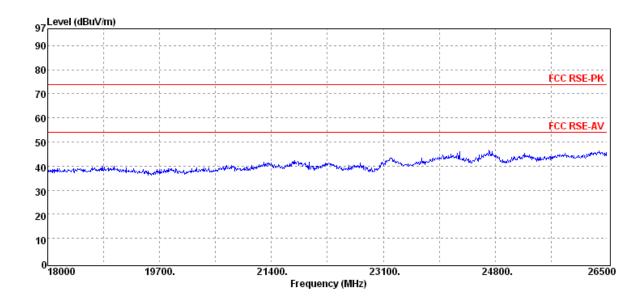
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Operation Band Fundamental Frequency Operation Mode EUT Pol.

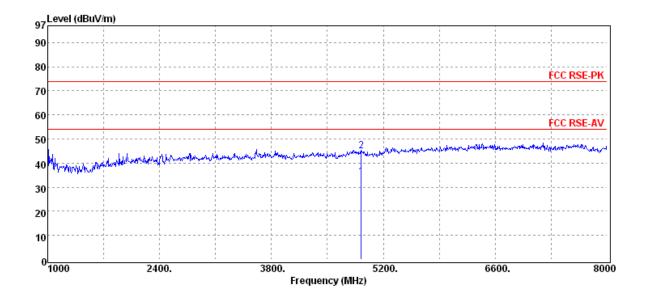
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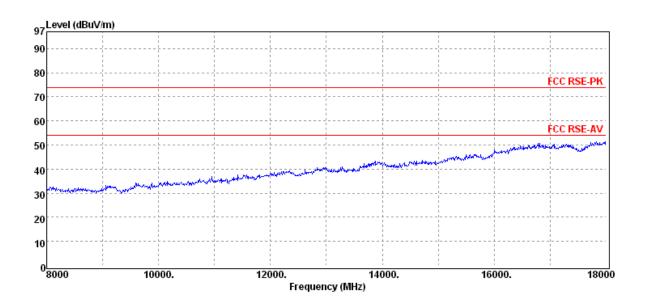
Test Date Temp./Humi. Engineer

Measurement Antenna Pol.

:22.7deg_C/57RH :Marcus :VERTICAL

:2012-11-28

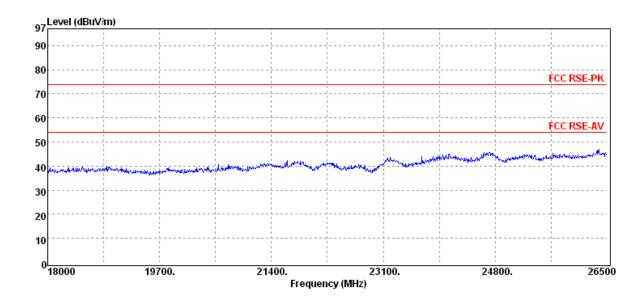






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Operation Band Fundamental Frequency Operation Mode EUT Pol.

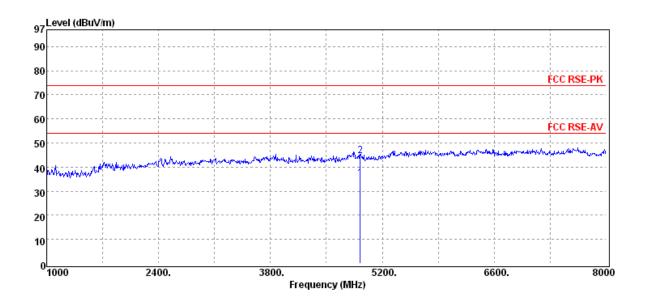
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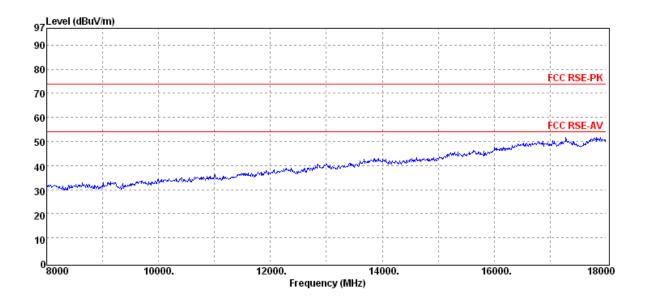
Test Date Temp./Humi. Engineer

:2012-11-28 :22.7deg_C/57RH

:Marcus

Measurement Antenna Pol. :HORIZONTAL

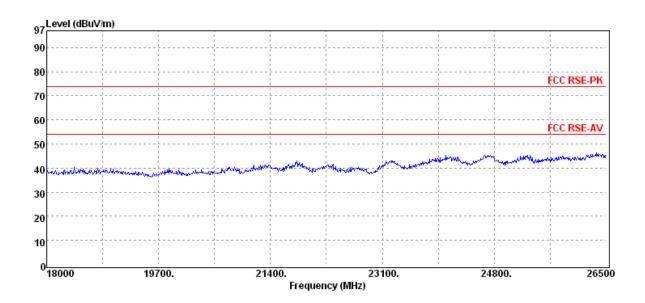






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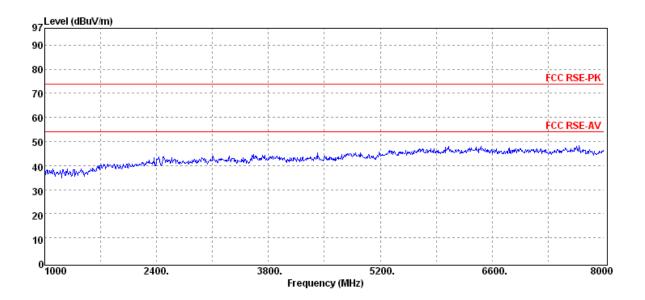
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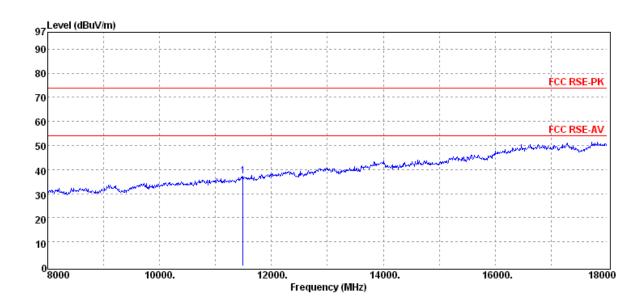
Operation Band Fundamental Frequency Operation Mode EUT Pol.

:802.11a :5745 MHz :TX LOW :E2 Plan

Test Date :2012-11-28 Temp./Humi. :22.7deg_C/57RH Engineer :Marcus

Measurement Antenna Pol. :VERTICAL



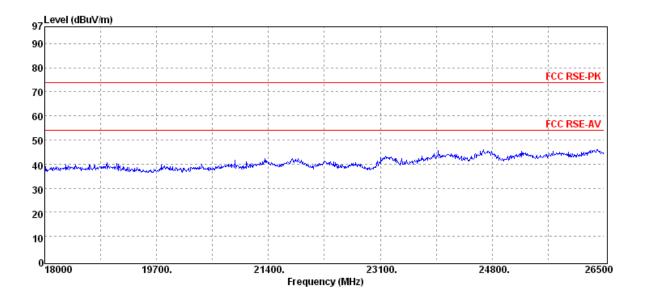


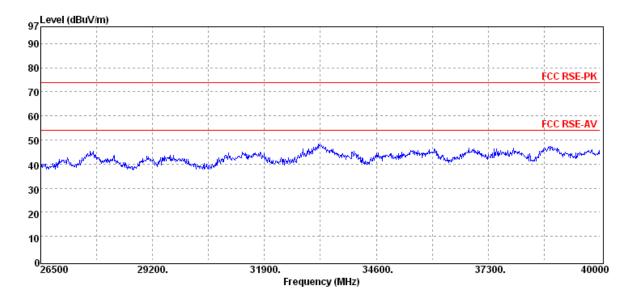
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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

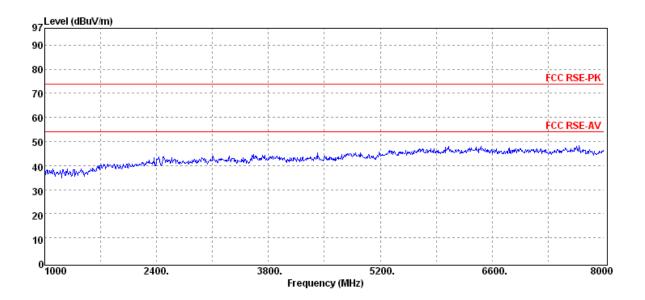
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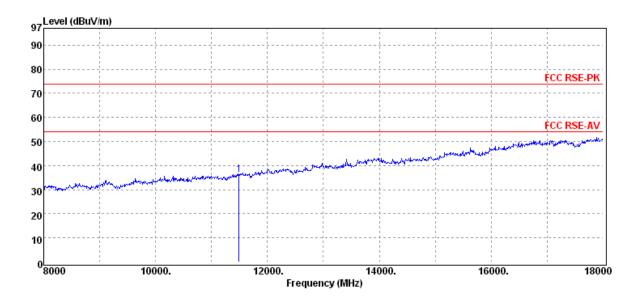
Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus

Measurement Antenna Pol. :HORIZONTAL





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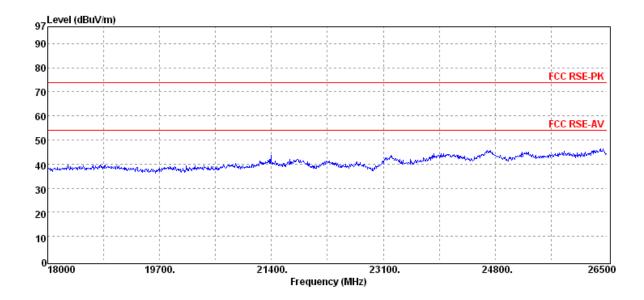
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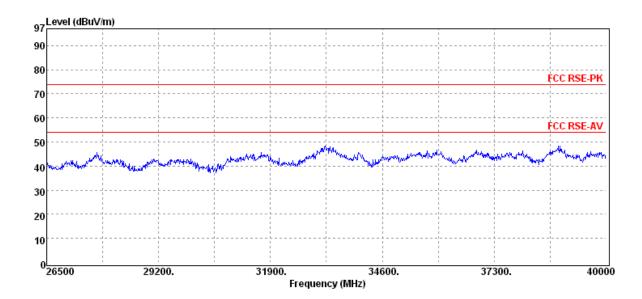
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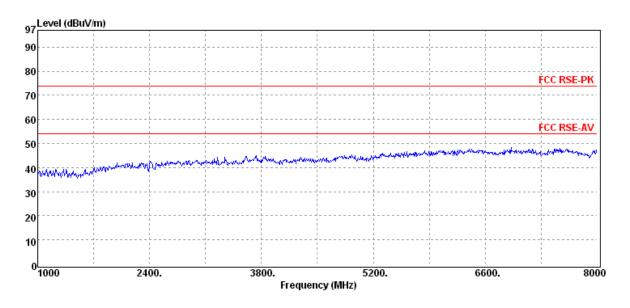


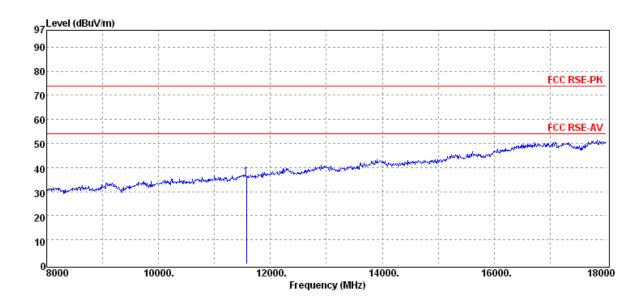
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Operation Band :802.11a Test Date :2012-11-28 Fundamental Frequency :5785 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL





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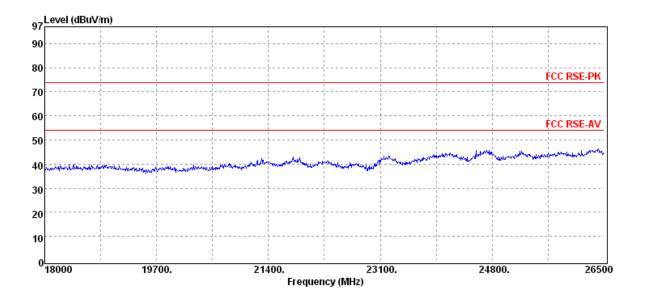
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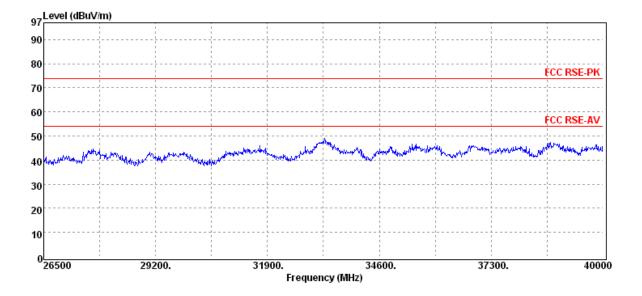
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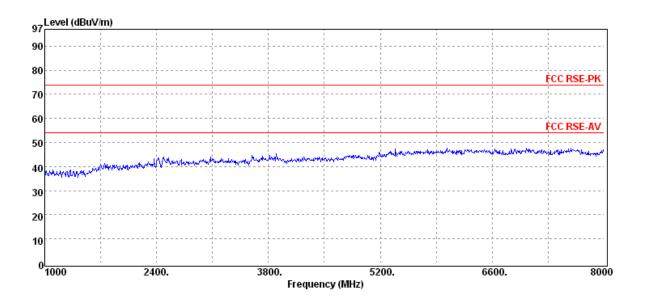
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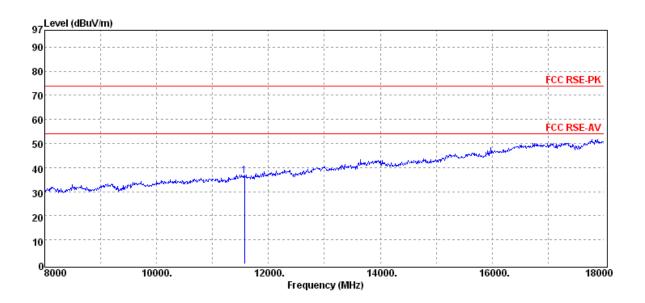
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Operation Band :802.11a Test Date :2012-11-28 Fundamental Frequency :5785 MHz Temp./Humi. :22.7deg_C/57RH

Operation Mode :TX MID Engineer :Marcus

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



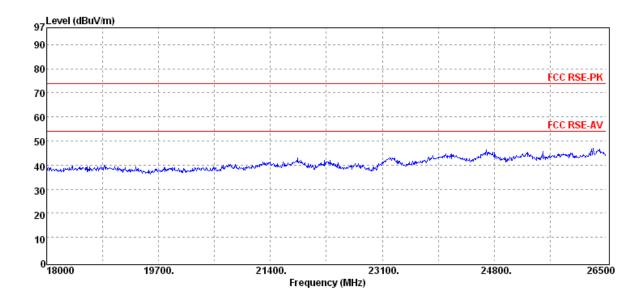


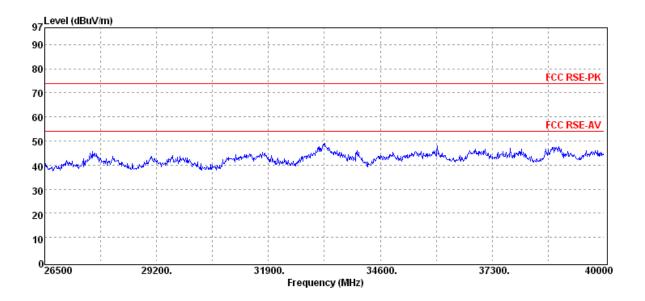
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Operation Band Fundamental Frequency Operation Mode

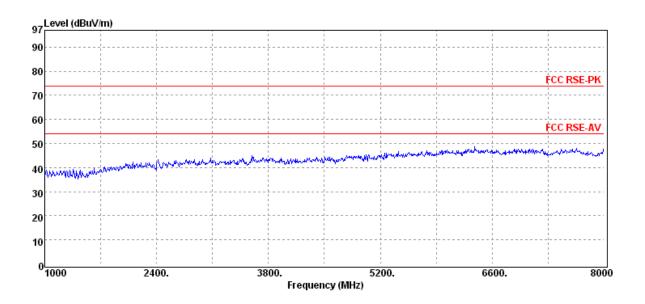
EUT Pol.

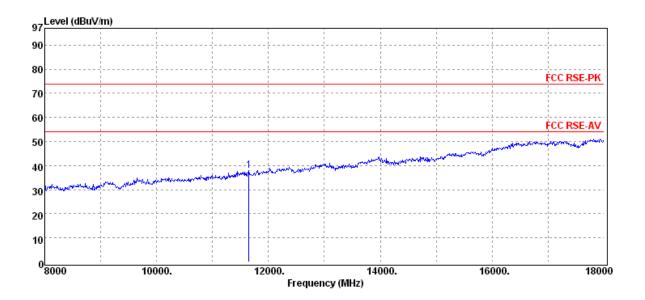
:802.11a :5825 MHz :TX HIGH :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :VERTICAL



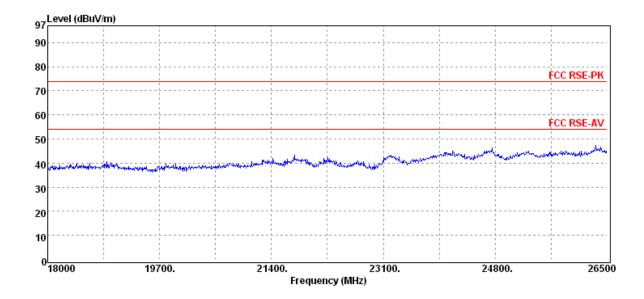


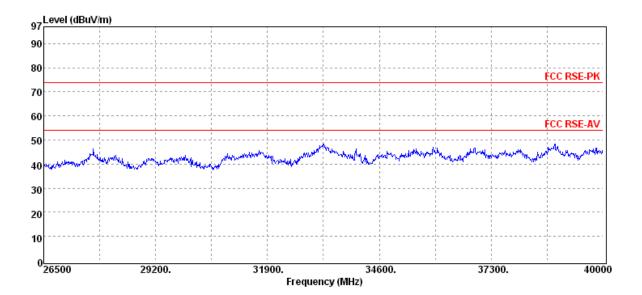
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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11a :5825 MHz :TX HIGH

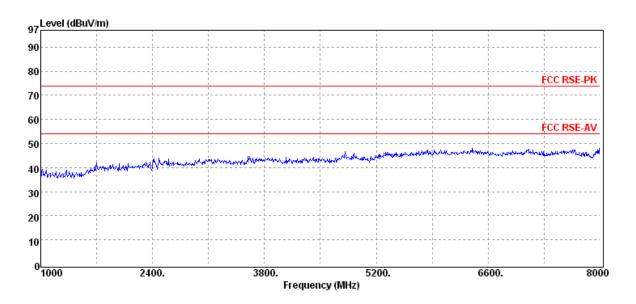
:E2 Plan

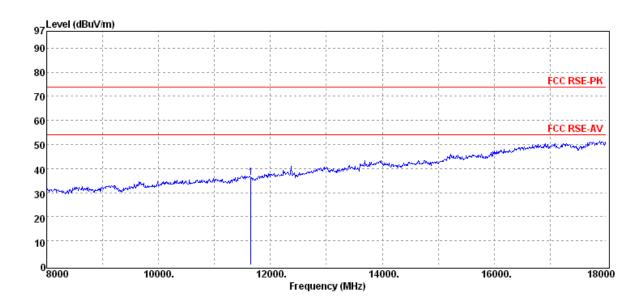
Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus

Measurement Antenna Pol. :HORIZONTAL





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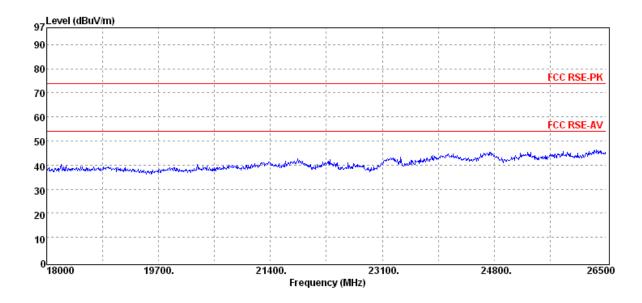
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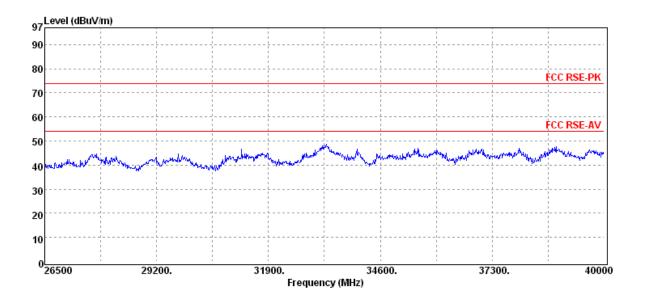
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Operation Band Fundamental Frequency Operation Mode

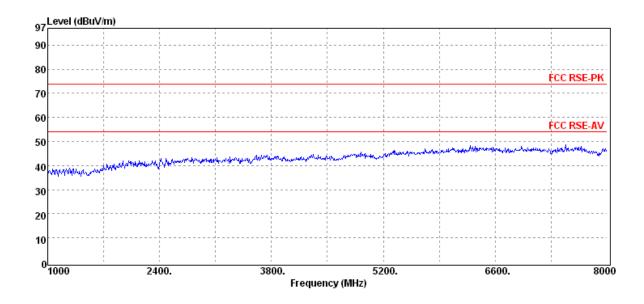
EUT Pol.

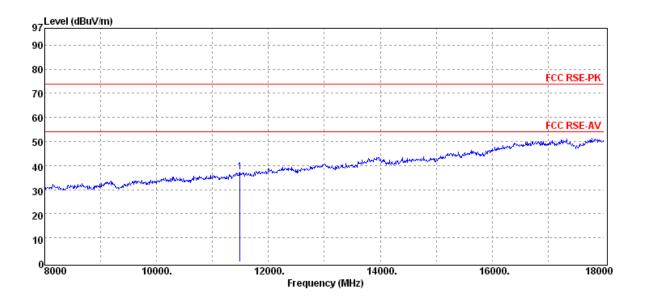
:802.11n20M :5745 MHz :TX LOW :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :VERTICAL



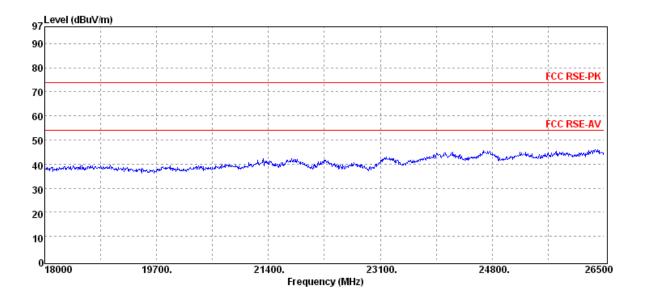


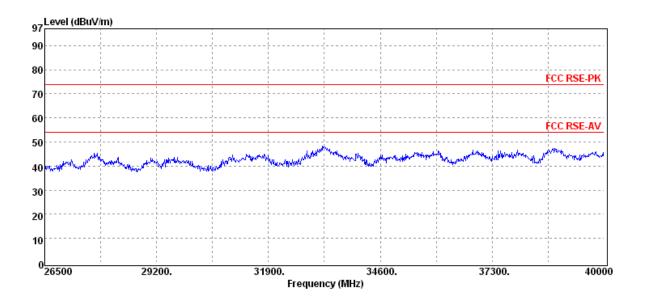
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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

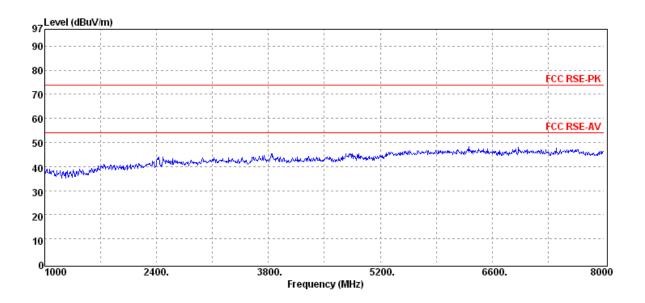
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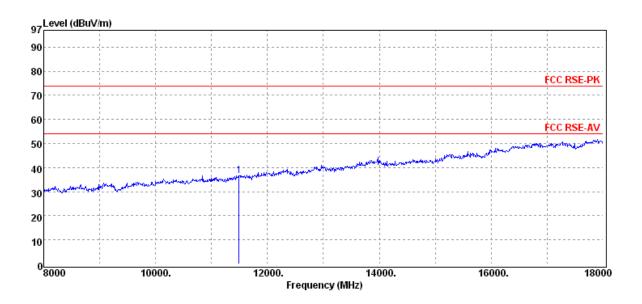
Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus

Measurement Antenna Pol. :HORIZONTAL





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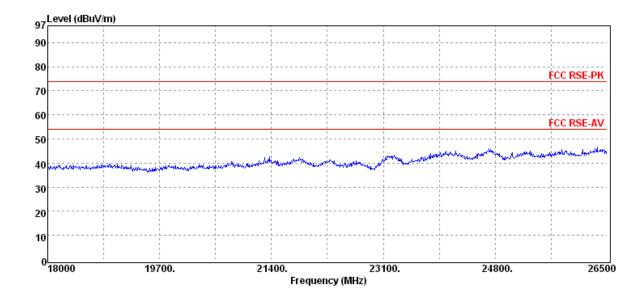
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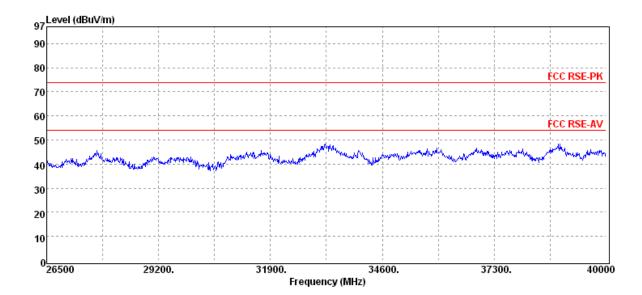
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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

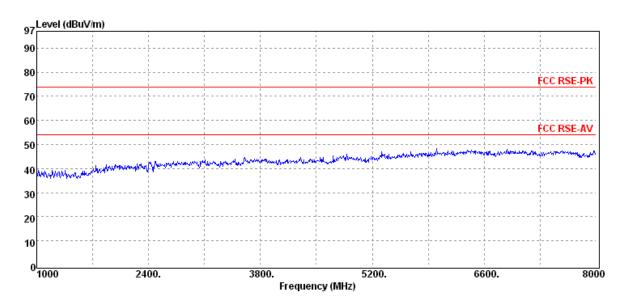
:802.11n20M :5785 MHz :TX MID

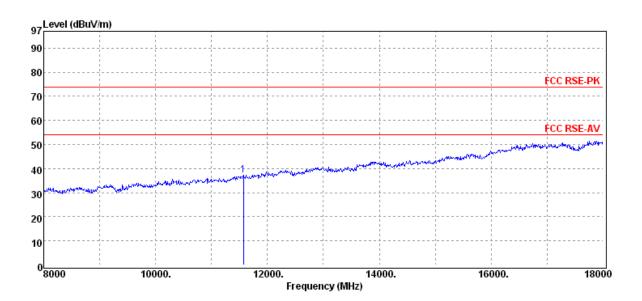
:E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :VERTICAL



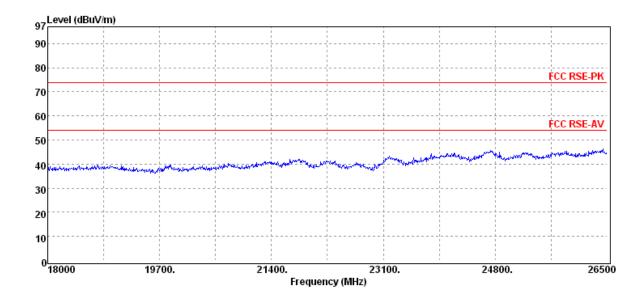


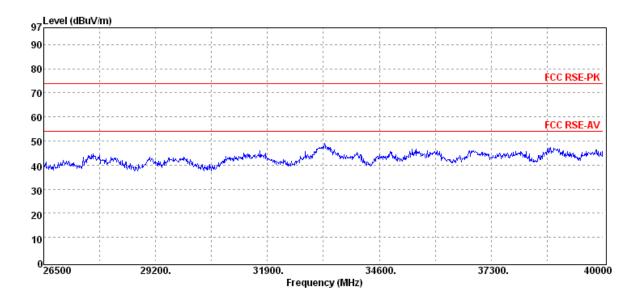
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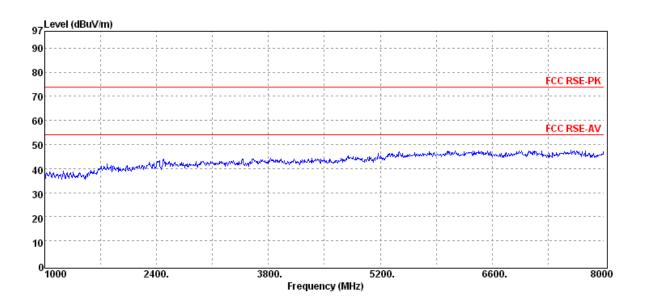
Operation Band Fundamental Frequency Operation Mode

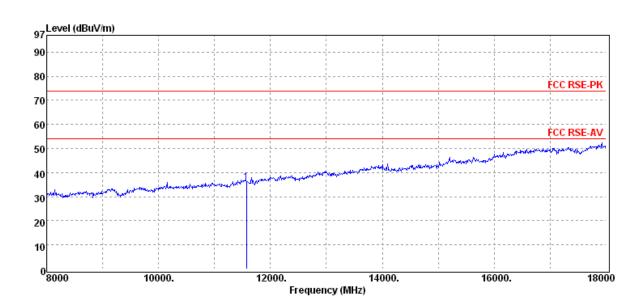
EUT Pol.

:802.11n20M :5785 MHz :TX MID :E2 Plan

Test Date :2012-11-28 Temp./Humi. :22.7deg_C/57RH Engineer :Marcus

Measurement Antenna Pol. :HORIZONTAL



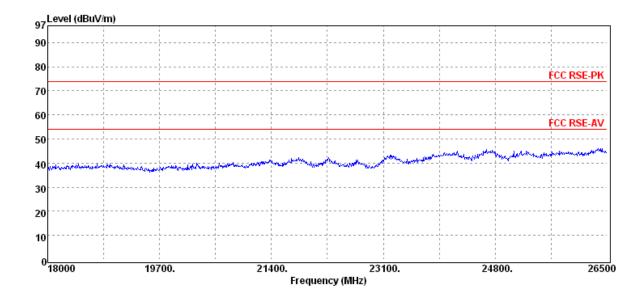


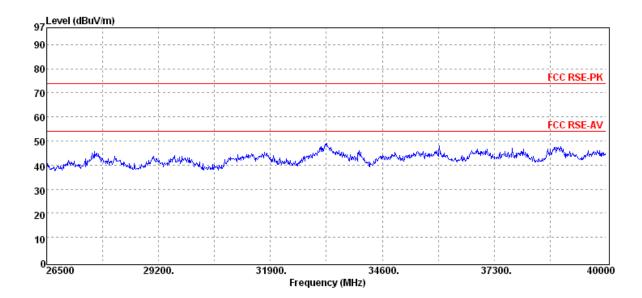
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Operation Band Fundamental Frequency Operation Mode

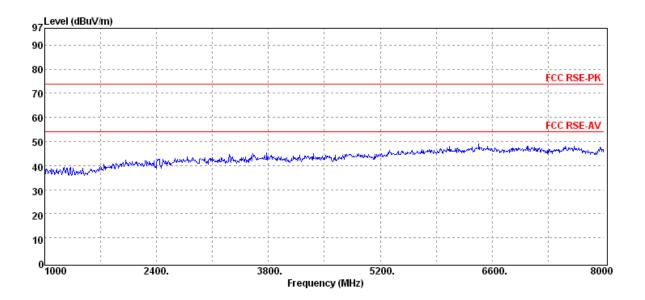
EUT Pol.

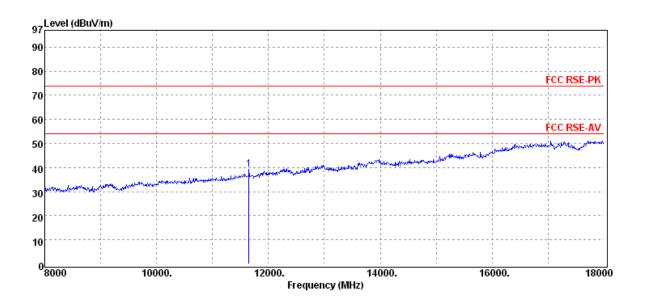
:802.11n20M :5825 MHz :TX HIGH :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :VERTICAL



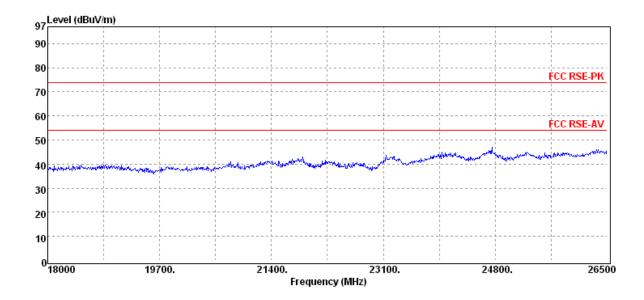


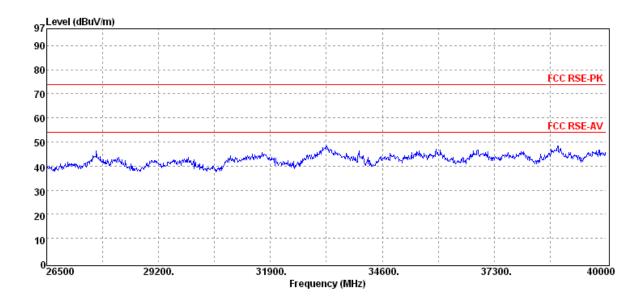
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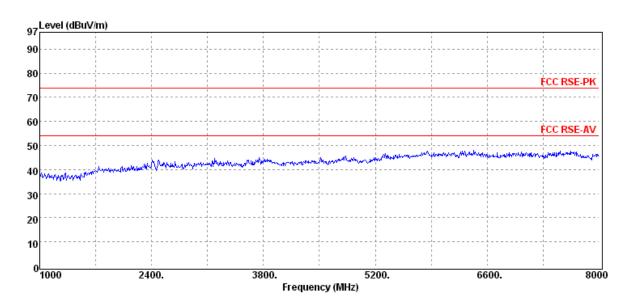
Operation Band :802.11n20M Fundamental Frequency

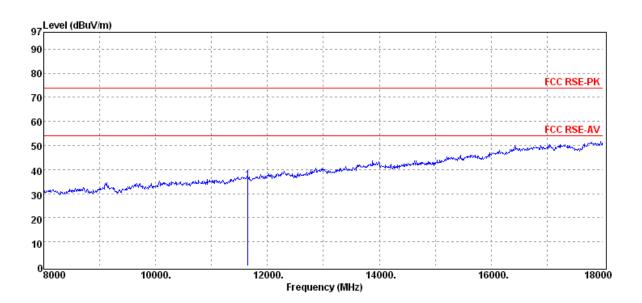
:5825 MHz Operation Mode :TX HIGH EUT Pol. :E2 Plan

Test Date :2012-11-28 Temp./Humi. :22.7deg_C/57RH

Engineer :Marcus

Measurement Antenna Pol. :HORIZONTAL



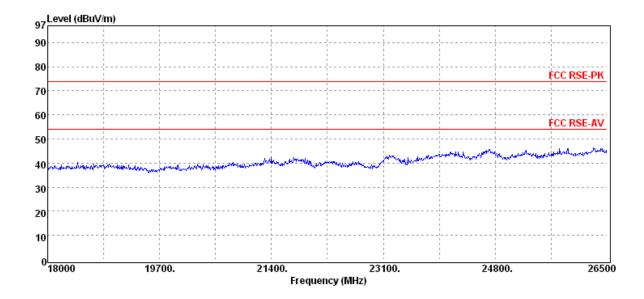


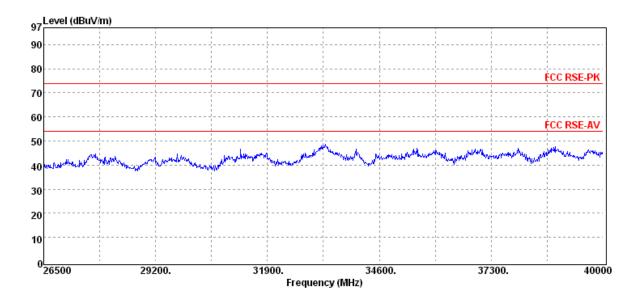
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Operation Band Fundamental Frequency Operation Mode

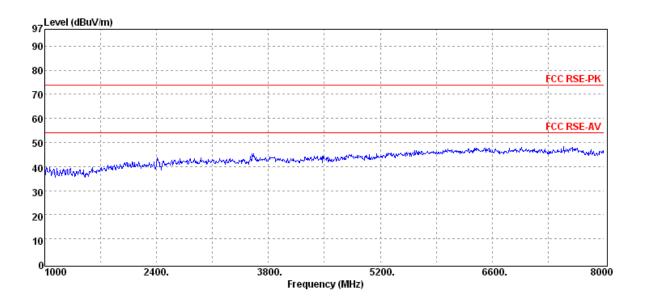
EUT Pol.

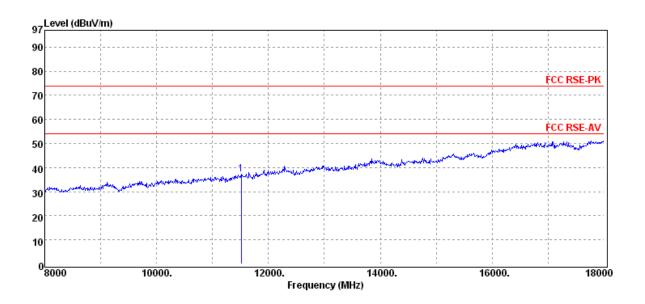
:802.11n40M :5755 MHz :TX LOW :E2 Plan

Test Date Temp./Humi.

:2012-11-28 :22.7deg_C/57RH

Engineer :Marcus Measurement Antenna Pol. :VERTICAL





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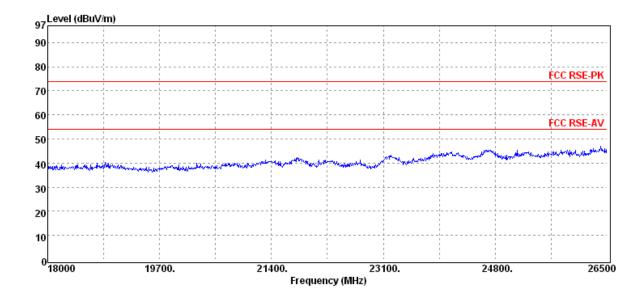
台灣檢驗科技股份有限公司

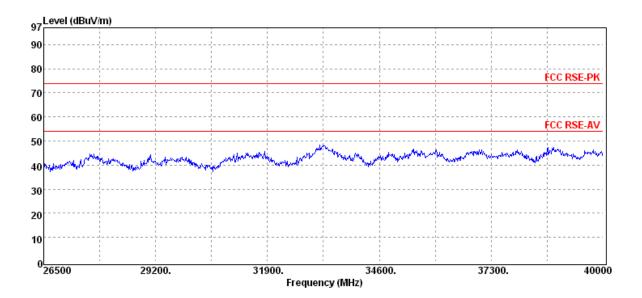
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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

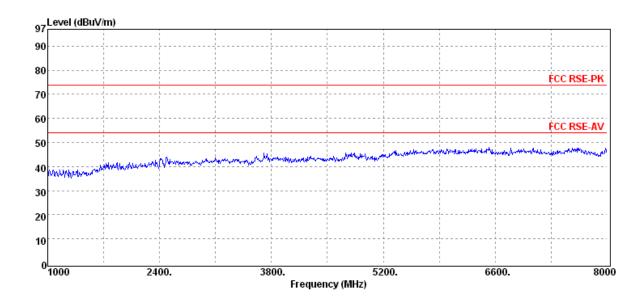
:802.11n40M :5755 MHz :TX LOW :E2 Plan

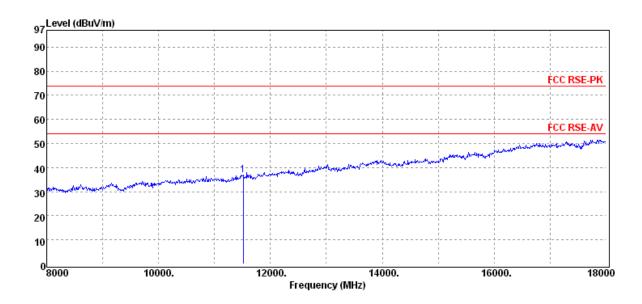
Test Date Temp./Humi. Engineer

:2012-11-28 :22.7deg_C/57RH

:Marcus

Measurement Antenna Pol. :HORIZONTAL



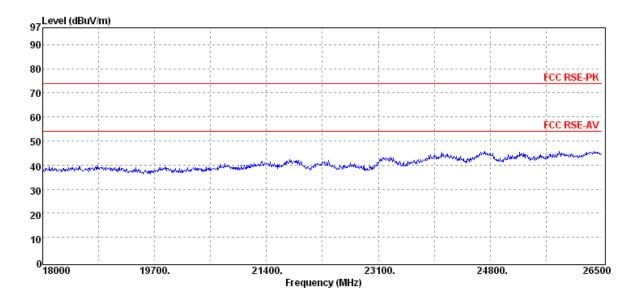


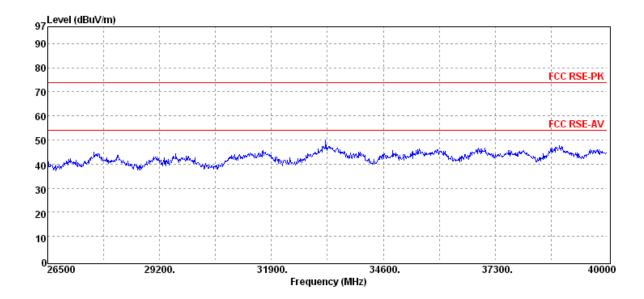
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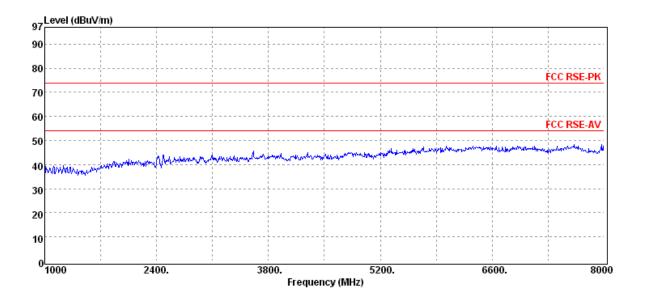
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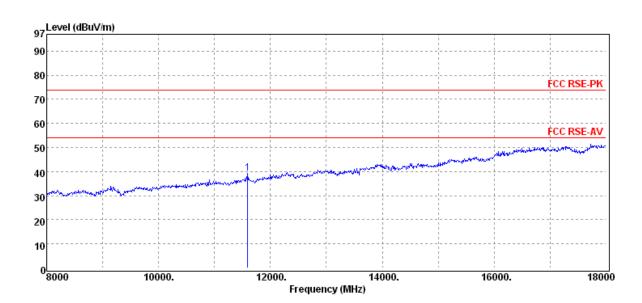
Operation Band Fundamental Frequency Operation Mode

EUT Pol.

:802.11n40M :5795 MHz :TX HIGH :E2 Plan

Test Date :2012-11-28 Temp./Humi. :22.7deg_C/57RH Engineer :Marcus Measurement Antenna Pol. :VERTICAL





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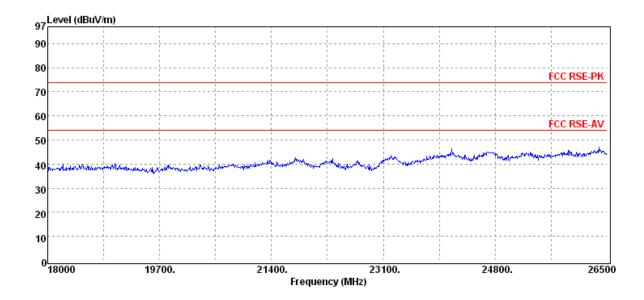
台灣檢驗科技股份有限公司

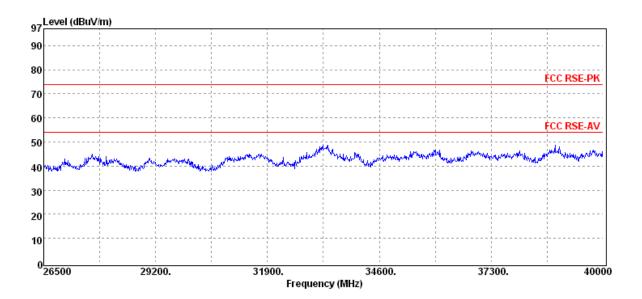
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Operation Band Fundamental Frequency Operation Mode

EUT Pol.

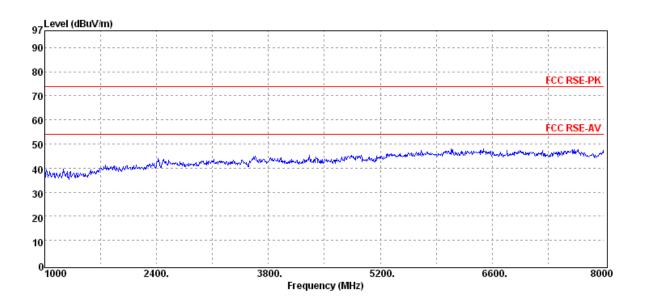
:802.11n40M :5795 MHz :TX HIGH :E2 Plan

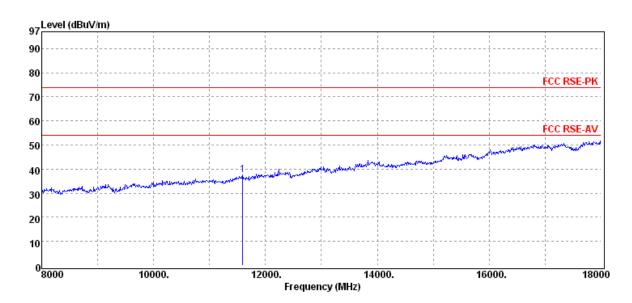
Test Date Temp./Humi. Engineer

:2012-11-28 :22.7deg_C/57RH

:Marcus

Measurement Antenna Pol. :HORIZONTAL





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