

Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 1 of 76

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

Product Name: TG03-KDDI

Brand Name: Fujitsu Toshiba Mobile Communications

Limited

Model Name: CDMA TSI04

Model Different: N/A

FCC ID: YUW-TSI04

Report No.: EH/2010/A0012

Issue Date: Nov. 01, 2010

FCC Rule Part: §15.247, Cat: DTS

Prepared for: Fujitsu Toshiba Mobile Communications

Limited

1-1, Kamiodanaka 4, Nakahara, Kawasaki,

211-8588, JAPAN

Prepared by: SGS Taiwan Ltd.

Electronics & Communication Laboratory

No. 134, Wu Kung Rd., Wuku Industrial

Zone, Taipei County, Taiwan





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Page: 2 of 76

VERIFICATION OF COMPLIANCE

Fujitsu Toshiba Mobile Communications Limited **Applicant:**

1-1, Kamiodanaka 4, Nakahara, Kawasaki, 211-8588, JAPAN

Equipment Under Test: TG03-KDDI

Brand Name: Fujitsu Toshiba Mobile Communications Limited

CDMA TSI04 Model No.:

Model Difference: N/A

FCC ID: YUW-TSI04

EH/2010/A0012 File Number:

Date of test: Oct. 15, 2010 ~ Oct. 30, 2010

Date of EUT Received: Oct. 15, 2010

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 (2003) and 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.

The test results of this report relate only to the tested sample identified in this report.

Test By:	Sky Wang	Date	Nov. 01, 2010
-	Sky Wang / Asst. Supervisor	- <u>-</u>	
Prepared By:	Gigi yeh	Date	Nov. 01, 2010
-	Gigi Yeh / Clerk		
Approved By:	Almo Hsieh	Date	Nov. 01, 2010
	Arno Hsieh / Asst. Supervisor	_	

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 3 of 76

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00	Nov. 01, 2010	Initial creation of document

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 4 of 76

Table of Contents

1	GEN	NEKAL INFORMATION	
	1.1	Related Submittal(s) / Grant (s)	8
	1.2	Test Methodology	8
	1.3	Test Facility	8
	1.4	Special Accessories	8
	1.5	Equipment Modifications	8
2	SYS	TEM TEST CONFIGURATION	9
	2.1	EUT Configuration	9
	2.2	EUT Exercise	9
	2.3	Test Procedure	9
	2.4	Configuration of Tested System	10
3	SUM	IMARY OF TEST RESULTS	11
4	DES	CRIPTION OF TEST MODES	11
5	CON	NDUCTED EMISSION TEST	12
	5.1	Standard Applicable:	12
	5.2	Measurement Equipment Used:	12
	5.3	EUT Setup:	12
	5.4	Measurement Procedure:	13
	5.5	Measurement Result:	13
6	PEA	K OUTPUT POWER MEASUREMENT	16
	6.1	Standard Applicable:	
	6.2	Measurement Equipment Used:	17
	6.3	Test Set-up:	17
	6.4	Measurement Procedure:	17
	6.5	Measurement Result:	18
7	6dB	Bandwidth	20
	7.1	Standard Applicable:	20
	7.2	Measurement Equipment Used:	20
	7.3	Test Set-up:	20
	7.4	Measurement Procedure:	20
	7.5	Measurement Result:	21
8	100K	KHz BANDWIDTH OF BAND EDGES MEASUREMENT	26
	8.1	Standard Applicable:	
	8.2	Measurement Equipment Used:	26
	8.3	Test SET-UP:	27
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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 5 of 76

	8.4	Measurement Procedure:	28
	8.5	Field Strength Calculation:	28
	8.6	Measurement Result:	28
9	SPUE	RIOUS RADIATED EMISSION TEST	38
	9.1	Standard Applicable	38
	9.2	Measurement Equipment Used:	38
	9.3	Test SET-UP:	38
	9.4	Measurement Procedure:	38
	9.5	Field Strength Calculation	39
	9.6	Measurement Result:	39
10	Peak	Power Spectral Density	67
	10.1	Standard Applicable:	
	10.2	Measurement Equipment Used:	70
	10.3	Test Set-up:	70
	10.4	Measurement Procedure:	70
	10.5	Measurement Result:	71
11	ANT	ENNA REQUIREMENT	76
	11.1	Standard Applicable:	
	11.2	Antenna Connected Construction:	76

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 6 of 76

1 GENERAL INFORMATION

General:

General.			
Product Name	TG03-KDDI		
Brand Name	Fujitsu Toshiba Mobile Communications Limited		
Model Name	CDMA TSI04		
USB Cable	Model No.: HPC1579-010810(Type B), Supplier: Hoshiden		
Power Supply	Battery: Model No.: UF424261F-HMN,, Supplier: Sanyo		

CDMA:

DUT Standards	CDMA2000		Frequency Range		Maximum Rated EIRP Power	
And Power:	C 11 1	TX:	824.70-848.31 MHz	26.41	ID.	
	Cellular	RX:	869.70-893.31 MHz	26.41 dBm	dВm	
Type of Emission		CDMA2000 Cellular: 1M28F1W				
Hardware Version		CS				
Software Version		T.B.D.				
Antenna Type		PIFA Type				

Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
CDMA2000 Cellular	3.9Vdc	540

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 7 of 76

WLAN: 802.11 b/g:

Frequency Range:	2412 – 2462 MHz
Channel number:	11 channels
Output Power:	⊠802.11 b: 15.45dBm (Peak) ⊠802.11 g: 22.11dBm (Peak)
Modulation Technology:	⊠DSSS, ⊠OFDM
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM. 16QAM, QPSK, BPSK for OFDM
Transition Rate:	802.11 b: 1/2/5.5/11 Mbps; 802.11 g: 6/9/12/18/24/36/48/54 Mbps
Antenna Designation:	Chip Antenna, 1.15dBi.

Bluetooth:

Bluetooth Version:	$V2.1 + EDR (GFSK + \pi/4DQPSK + 8DPSK)$
Channel number:	79 channels
Modulation type:	Frequency Hopping Spread Spectrum
Transmit Power:	7.31 dBm (Peak)
Frequency Range:	2.402GHz – 2.480GHz
Dwell Time:	<= 0.4s
Operating Mode:	Point-to-Point
Antenna Designation:	Chip Antenna, 1.15dBi.

The EUT is compliance with Bluetooth 2.1 + EDR Standard.

This report applies for WLAN.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 8 of 76

1.1 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID:** <u>YUW-TSI04</u> filing to comply with Section 15.247 of the FCC Part 15, Subpart E Rules.

1.2 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

Tested in accordance with Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

1.3 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 Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-4.

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

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 9 of 76

SYSTEM TEST CONFIGURATION

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**

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

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 and 13 of ANSI C63.4-2003. 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 C63.4-2003.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 10 of 76

2.4 Configuration of Tested System

Fig. 2-1 AC Power line and Radiated Emission Configuration

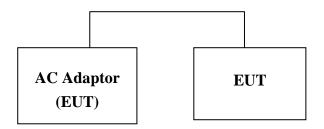


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Adaptor	AU by KDDI	HS-YHA	N/A	N/A	Un-shielded

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Page: 11 of 76

SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207(a)	AC Power Line Conducted Emission	Compliant
§15.247(b) (3),(4)(c)	Peak Output Power	Compliant
§15.247(a)(2)	6dB Bandwidth	Compliant
	100 KHz Bandwidth Of	~
§15.247(d)	Frequency Band Edges	Compliant
§15.247(d)	Spurious Emission	Compliant
§15.247(e)	Peak Power Density	Compliant
§15.203	Antenna Requirement	Compliant

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 highest data rate are chosen for full testing.

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

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

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 12 of 76

CONDUCTED EMISSION TEST

Standard Applicable:

According to §15.207, frequency range within 150KHz to 30MHz shall not exceed the Limit table as below.

Frequency range	Lir dB(mits (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

Measurement Equipment Used: 5.2

1.4										
Conducted Emission Test Site										
EQUIPMENT	QUIPMENT MFR		SERIAL	LAST	CAL DUE.					
TYPE		NUMBER	NUMBER	CAL.						
EMI Test Receiver	R&S	ESCS30	828985/004	09/15/2010	09/14/2011					
LISN	Rolf-Heine	NNB-2/16Z	99012	02/02/2010	02/01/2011					
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	02/02/2010	02/01/2011					
Coaxial Cables	N/A	WK CE Cable	N/A	11/28/2009	11/27/2010					

5.3 **EUT Setup:**

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4-2003.
- 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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^{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.



Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 13 of 76

5.4 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.

5.5 Measurement Result:

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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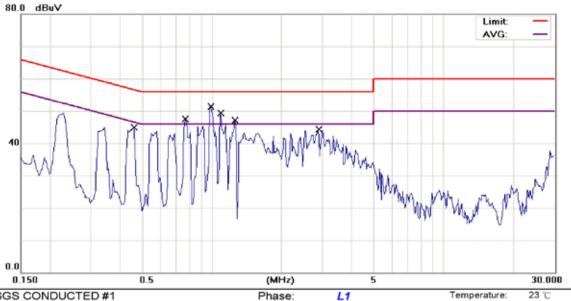


Report No.: EH/2010/A0012 **Issue Date: Nov. 01, 2010**

Page: 14 of 76

AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Normal mode			Test Date:	Oct. 28, 2010
Temperature:	23	Humidity:	56%	Test By:	Sky



Site SGS CONDUCTED #1

Limit: FCC Class B Conduction(QP)

EUT: TG03-KDDI M/N: CDMA TSI04 Note: BT + WLAN mode

Power:	AC 120V/60Hz	Humidity:	56 %
Distance:		Air Pressure:	hpa

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.4588	42.42	0.12	42.54	56.71	-14.17	QP	
2		0.4588	32.74	0.12	32.86	46.71	-13.85	AVG	
3		0.7756	46.41	0.12	46.53	56.00	-9.47	QP	
4		0.7756	30.63	0.12	30.75	46.00	-15.25	AVG	
5	*	0.9878	48.94	0.12	49.06	56.00	-6.94	QP	
6		0.9878	30.09	0.12	30.21	46.00	-15.79	AVG	
7		1.0906	46.63	0.12	46.75	56.00	-9.25	QP	
8		1.0906	25.62	0.12	25.74	46.00	-20.26	AVG	
9		1.2607	44.45	0.13	44.58	56.00	-11.42	QP	
10		1.2607	26.79	0.13	26.92	46.00	-19.08	AVG	
11		2.8847	41.78	0.18	41.96	56.00	-14.04	QP	
12		2.8847	23.55	0.18	23.73	46.00	-22.27	AVG	

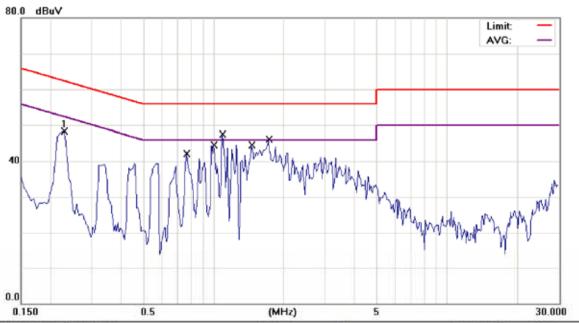
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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 15 of 76



Site SGS CONDUCTED #1

Limit: FCC Class B Conduction(QP)

EUT: TG03-KDDI M/N: CDMA TSI04 Note: BT + WLAN mode

Phase:	N	remperature.	23 C
Power:	AC 120V/60Hz	Humidity:	56 %
Distance	e.	Air Pressure	hpa

No. Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.2300	48.25	0.13	48.38	62.45	-14.07	peak	
2	0.7758	41.80	0.13	41.93	56.00	-14.07	QP	
3	0.7758	25.36	0.13	25.49	46.00	-20.51	AVG	
4	0.9880	44.52	0.13	44.65	56.00	-11.35	QP	
5	0.9880	27.12	0.13	27.25	46.00	-18.75	AVG	
6 *	1.0900	44.70	0.13	44.83	56.00	-11.17	QP	
7	1.0900	24.48	0.13	24.61	46.00	-21.39	AVG	
8	1.4593	42.21	0.14	42.35	56.00	-13.65	QP	
9	1.4593	24.26	0.14	24.40	46.00	-21.60	AVG	
10	1.7306	44.45	0.15	44.60	56.00	-11.40	QP	
11	1.7306	26.01	0.15	26.16	46.00	-19.84	AVG	

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Report No.: EH/2010/A0012 **Issue Date: Nov. 01, 2010**

Page: 16 of 76

PEAK OUTPUT POWER MEASUREMENT

Standard Applicable:

According to \$15.247(a)(2), (b)

- (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
- (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi
- (c) Operation with directional antenna gains greater than 6 dBi.
- (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.

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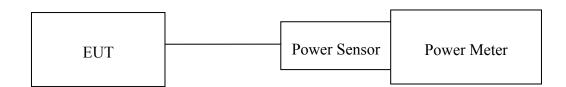
Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 17 of 76

Measurement Equipment Used:

Conducted Emission Test Site										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.					
TYPE		NUMBER	NUMBER	CAL.						
Power Sensor	Anritsu	MA2411B	917032	01/21/2010	01/20/2012					
Power Meter	Anritsu	ML2495A	1005007	02/17/2010	02/16/2012					
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2010	04/18/2012					
Spectrum Analyzer	Agilent	E4440A	MY45304525	01/25/2010	01/24/2011					
DC Block	Agilent	BLK-18	155452	07/05/2010	07/04/2011					
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2010	01/04/2011					
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2010	07/04/2011					
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2010	07/04/2011					
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2010	07/04/2011					
Splitter	Agilent	11636B	N/A	07/05/2010	07/04/2011					

Test Set-up:



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
- 3. Record the max. reading.
- 4. Repeat above procedures until all frequency measured were complete.
- * Please be noted that the unit to be shown on the following tables is dBm.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 18 of 76

6.5 Measurement Result:

802.11b

002	Cable loss = 0		Pea					
СН	Frequency (MHz)		Required Limit					
		1	2	5.5	11	. Kequirea Liinit		
1	2412	15.45	15.4	15.34	15.3	1 Watt = 30 dBm		
6	2437	15.31	15.24	15.20	15.17	1 Watt = 30 dBm		
11	2462	15.41	15.39	15.4	15.39	1 Watt = 30 dBm		

802.11b

	Cable loss = 0		Avo	erage Pov	ver Outp	ut
СН	Frequency (MHz)		Data	D : 17: "		
		1	2	5.5	11	Required Limit
1	2412	12.67	12.62	12.55	12.44	1 Watt = 30 dBm
6	2437	12.32	12.25	12.13	12.11	1 Watt = 30 dBm
11	2462	12.70	12.64	12.63	12.54	1 Watt = 30 dBm

802.11g

δU	2.11g									
Cab	le loss = 0	Peak Power Output								
СН	Frequency (MHz)		Data Rate							
	(17112)	6	9	12	18	24	36	48	54	Required Limit
1	2412	22.08	21.35	22.18	21.97	22.06	22.01	21.99	22.07	1 Watt = 30 dBm
6	2437	21.55	20.78	21.52	21.28	21.54	21.41	21.50	21.53	1 Watt = 30 dBm
11	2462	22.11	21.39	22.08	21.92	22.09	21.89	22.1	21.84	1 Watt = 30 dBm

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 19 of 76

802.11g

Cab	$\frac{1}{1000} = 0$	Average Power Output								
СН	Frequency (MHz)		Data Rate							
	(141112)	6	9	12	18	24	36	48	54	Required Limit
1	2412	11.93	11.88	11.86	11.73	11.52	11.23	11.13	10.96	1 Watt = 30 dBm
6	2437	11.56	11.47	11.38	11.22	11.14	10.69	10.65	10.50	1 Watt = 30 dBm
11	2462	11.98	11.92	11.83	11.74	11.54	11.27	11.10	10.91	1 Watt = 30 dBm

*Note: Offset 0.5dB

Note: Refer to next page for plots.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 20 of 76

7 6dB Bandwidth

7.1 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.

7.2 Measurement Equipment Used:

Refer to section 6.2 for details.

7.3 Test Set-up:

Refer to section 6.3 for details.

7.4 Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2.Remove the antenna from the EUT and then connect a low loss RF cable from the 3.antenna port to the spectrum analyzer.
- 3.Set the spectrum analyzer as RBW=100KHz, VBW = 3*RBW, Span= 50MHz, Sweep=auto
- 4. Mark the peak frequency and –6dB (upper and lower) frequency.
- 5. Repeat above procedures until all frequency measured were complete.

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Page: 21 of 76

7.5 Measurement Result:

802,11b

0021110			
Frequency (MHz)	Bandwidth (MHz)	Bandwidth (KHz)	Result
2412	12.590	> 500	PASS
2437	12.598	> 500	PASS
2462	12.563	> 500	PASS

^{*}Offset 0.5 dB

802.11g

0021115			
Frequency (MHz)	Bandwidth (MHz)	Bandwidth (KHz)	Result
2412	16.457	> 500	PASS
2437	16.593	> 500	PASS
2462	16.605	> 500	PASS

^{*}Offset 0.5 dB

Note: Refer to next page for plots.

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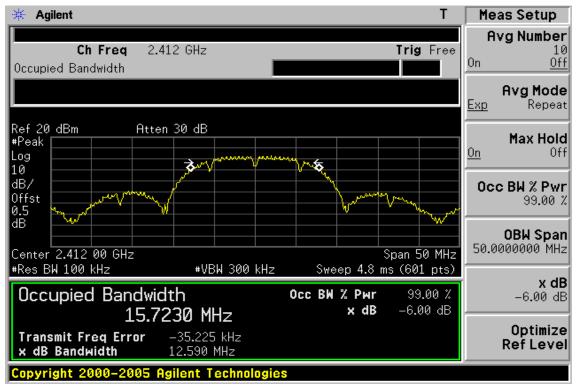


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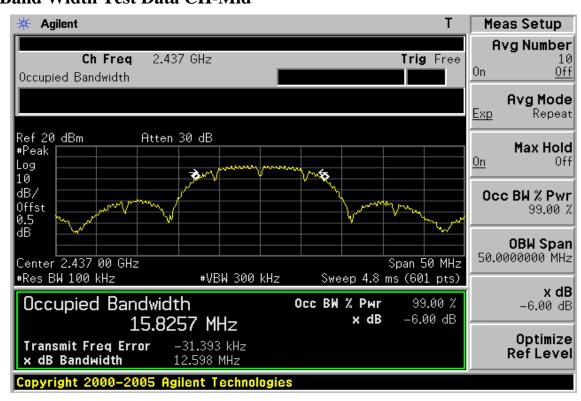
Page: 22 of 76

802.11b

6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 23 of 76

6dB Band Width Test Data CH-High



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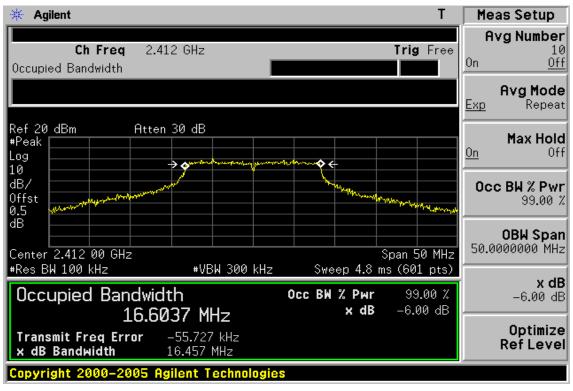
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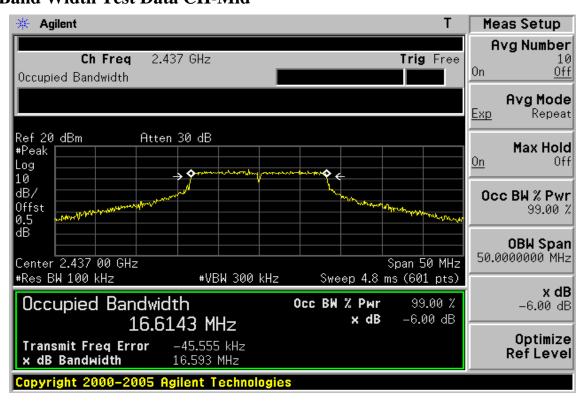
Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 24 of 76

802.11g 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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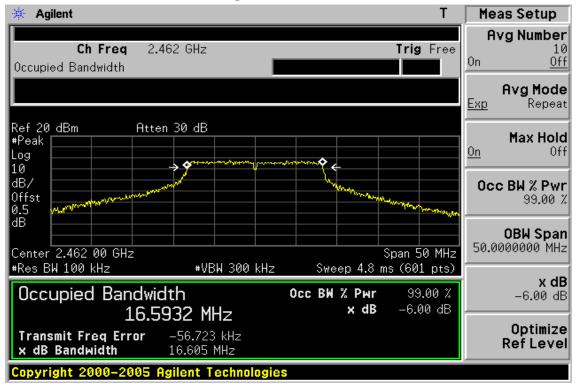
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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 25 of 76

6dB Band Width Test Data CH-High



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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 26 of 76

100KHz BANDWIDTH OF BAND EDGES MEASUREMENT

Standard Applicable:

According to §15.247(c), 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).

8.2 **Measurement Equipment Used:**

Conducted Emission at antenna port:

Refer to section 6.2 for details.

8.2.2 Radiated emission:

	90	66 Chamber			
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2010	02/11/2011
Bilog Antenna	SCHWAZBECK	VULB9160	3136	11/19/2009	11/18/2010
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	03/09/2009	03/08/2011
Pre-Amplifier	Agilent	8447D	1937A02834	11/28/2009	11/28/2010
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2010	01/04/2011
Radio Communication Analyzer	R & S	CMU200	111787	10/31/2010	10/30/2012
DC Block	Agilent	BLK-18	155452	07/05/2010	07/04/2011
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	SUCOFLEX 104PEA-10M	10m	01/05/2010	01/04/2011
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2010	01/04/2011
3m Site	SGS	966 chamber	N/A	11/08/2009	11/09/2010

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 27 of 76

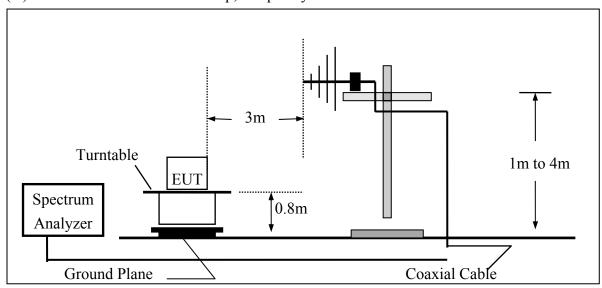
8.3 **Test SET-UP:**

8.3.1 **Conducted Emission at antenna port:**

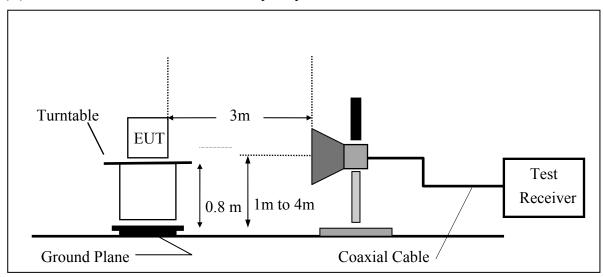
Refer to section 6.3 for details.

8.3.2 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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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 28 of 76

8.4 **Measurement Procedure:**

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set center frequency of spectrum analyzer = operating frequency.
- 4. Set the spectrum analyzer as RBW, VBW=100KHz, Span=25MHz, Sweep = auto
- 5. Mark Peak, 2.390GHz and 2.4835GHz and record the max. level.
- 6. Repeat above procedures until all frequency measured were complete.

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	

8.6 Measurement Result:

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

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 29 of 76

802.11b Band Edges Test Data CH-Low



Band Edges Test Data CH-High



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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 30 of 76

Radiated Emission: 802.11 b mode

TX CH Low Oct. 29, 2010 Operation Mode Test Date

Fundamental Frequency 2412 MHz Test By Sky **Tmperature** Pol Ver. 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	ıal FS	Peak	\mathbf{AV}		
Freq. (MHz)	Reading (dBuV)	Reading (dBnV)			AV) (d Bu V/m)	Limit	Limit	O	Remark
(MITIZ)	(ubu v)	(ubuv)	CF(ub)	(ubu v/m) (u bu v/m)	(ubuv/m)	(u Du V/II	(ub)	
2390.00	45.10		-1.40	43.70		74.00	54.00	-10.30	Peak
Operation	Mode	TX C	H Low			Test	Date	Oct. 29, 20	10
Fundamen	tal Frequer	ncy 2412	MHz			Test	By	Sky	
Temperatu	re	25				Pol		Hor.	
Humidity		65 %							
	D 1	A T 7		A . 4	. 1.150	D 1	A T 7		

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2390.00	45.60		-1.40	44.20		74.00	54.00	-9.80	Peak

Remark:

- Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 31 of 76

Radiated Emission: 802.11 b mode

Operation Mode TX CH High Test Date Oct. 29, 2010

Fundamental Frequency 2462 MHz Test By Sky
Temperature 25 Pol Ver.

Humidity 65 %

	Peak	\mathbf{AV}		Actu	ıal FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m) (d Bu V/m)	(dBuV/m)	(d Bu V/n	n) (dB)	
2483.50	44.60		-1.00	43.60		74.00	54.00	-10.40	Peak
Operation Fundamen			CH High MHz			Test Test		Oct. 29, 20 Sky)10
Temperatu		25				Pol	3	Hor.	
Humidity		65 %							
	Peak	$\mathbf{A}\mathbf{V}$		Acti	ıal FS	Peak	ΑV		

		Peak	\mathbf{AV}		Actu	ıal FS	Peak	\mathbf{AV}		
	Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m) (d Bu V/m)	(dBuV/m)(d Bu V/m)	(dB)	
24	483.50	45.70		-1.00	44.70		74.00	54.00	-9.30	Peak

Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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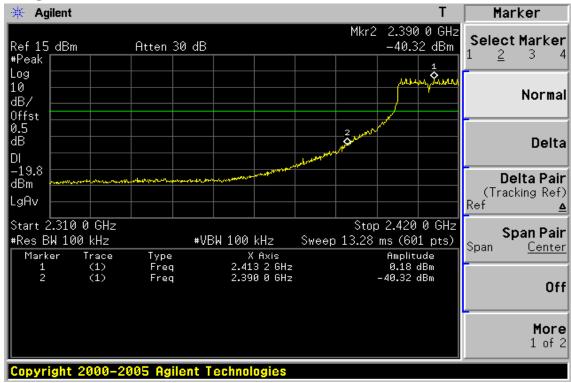
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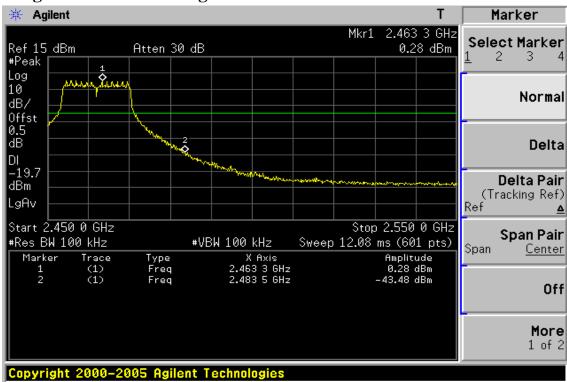
Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 32 of 76

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



Band Edges Test Data CH-High



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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 33 of 76

Radiated Emission: 802.11 g mode

Operation Mode TX CH Low Test Date Oct. 29, 2010

Fundamental Frequency 2412 MHz Test By Sky Tmperature 25 Pol Ver.

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	O	Reading			AV	Limit	Limit	U	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m) (d Bu V/m)	(dBuV/m)	(d Bu V/n	n) (dB)	
2390.00	45.60		-1.40	44.20		74.00	54.00	-9.80	Peak
Operation	Mode	TX C	H Low			Test	t Date	Oct. 29, 20)10
Fundamen	tal Frequer	ncy 2412	MHz			Test	t By	Sky	
Temperatu	re	25				Pol	-	Hor.	
Humidity		65 %							
•									

		Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
	Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
	(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2	2390.00	44.10		-1.40	42.70		74.00	54.00	-11.30	Peak

Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 34 of 76

Radiated Emission: 802.11 g mode

Operation Mode TX CH High Test Date Oct. 29, 2010

Fundamental Frequency 2462 MHz Test By Sky Temperature 25 Pol Ver.

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)			AV) (d Bu V/m)	Limit (dBuV/m)	Limi t (d Bu V/n	O	Remark
2483.50	35.30		-1.00	34.30		74.00	54.00	-19.70	Peak
Operation Fundament Temperatu Humidity	tal Frequer		TH High MHz			Test Test Pol		Oct. 29, 20 Sky Hor.	010

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m) (dB)	
2483.50	41.90		-1.00	40.90		74.00	54.00	-13.10	Peak

Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz- 40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 35 of 76

Band Edges Test Data CH-Low (Co-Location)



Band Edges Test Data CH-High



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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 36 of 76

Radiated Emission: (Co-Location)

Operation Mode TX CH Low Test Date Oct. 29, 2010

Fundamental Frequency 2412 MHz +2402 MHz Test By Sky Temperature 25 Pol Ver.

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant/CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	(dB)	
2390.00	44.50		-1.40	43.10		74.00	54.00	-10.90	Peak

Operation Mode TX CH Low Test Date Oct. 29, 2010

Fundamental Frequency 2412 MHz +2402 MHz Test By Sky Temperature 25 Pol Hor.

Humidity 65 %

	Peak	\mathbf{AV}		Ac tu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant/CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m) (dB)	
2390.00	48.20		-1.40	46.80		74.00	54.00	-7.20	Peak

Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column_o
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 37 of 76

Radiated Emission: (Co-Location)

TX CH High Operation Mode Test Date Oct. 28, 2010

Fundamental Frequency 2462 MHz +2480 MHz Test By Sky Temperature Pol Ver. 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant/CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	(dB)	
2483.50	44.50		-1.00	43.50		74.00	54.00	-10.50	Peak
Operation	Mode	TX C	H High			Test	Date	Oct. 28, 20)10
Fundamen	tal Freque	ncy 2462	MHz +24	80 MHz		Test	By	Sky	
Temperatu	ire	25				Pol		Hor.	
Humidity		65 %							

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant/CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2483.50	46.30		-1.00	45.30		74.00	54.00	-8.70	Peak

Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 38 of 76

SPURIOUS RADIATED EMISSION TEST

Standard Applicable

According to §15.247(c), all other emissions outside these bands shall not exceed the general radiated emission limits specified in §15.209(a). 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.

9.2 **Measurement Equipment Used:**

9.2.1 Conducted Emission at antenna port:

Refer to section 6.2 for details.

9.2.2 Radiated emission:

Refer to section 8.2 for details.

9.3 Test SET-UP:

9.3.1 Conducted Emission at antenna port:

Refer to section 6.3 for details.

9.3.2 Radiated emission:

Refer to section 8.3 for details.

Measurement Procedure:

- 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.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 39 of 76

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

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

Measurement Result:

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

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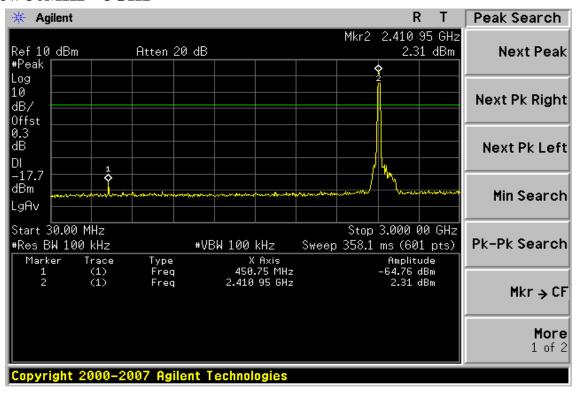
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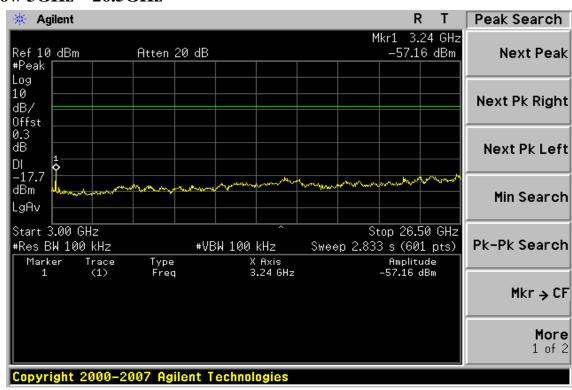
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Page: 40 of 76

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



Ch Low 3GHz - 26.5GHz



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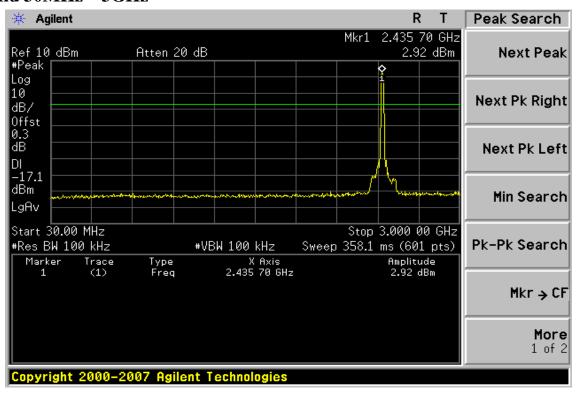
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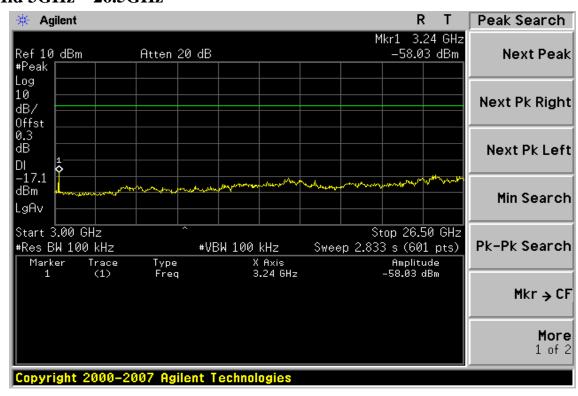
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Page: 41 of 76

Ch Mid 30MHz - 3GHz



Ch Mid 3GHz - 26.5GHz



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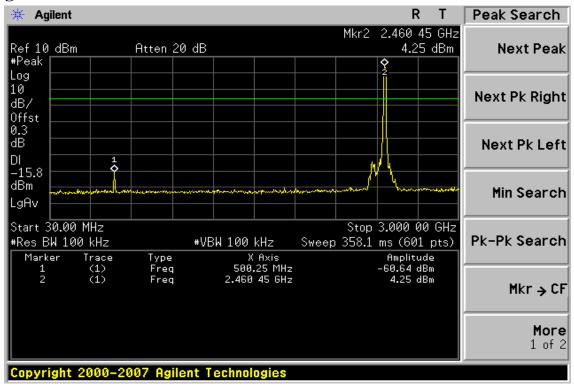
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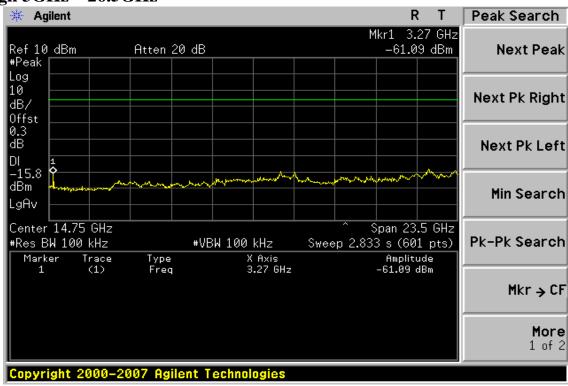
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Page: 42 of 76

Ch High 30MHz – 3GHz



Ch High 3GHz – 26.5GHz



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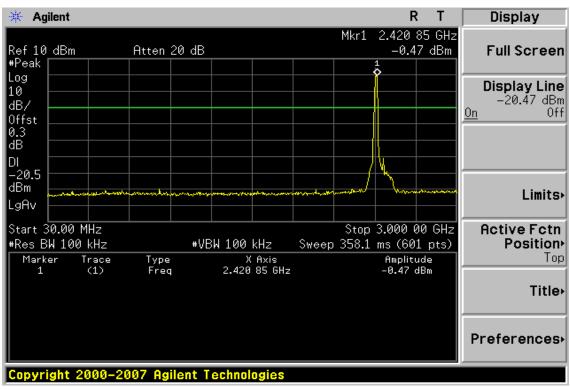
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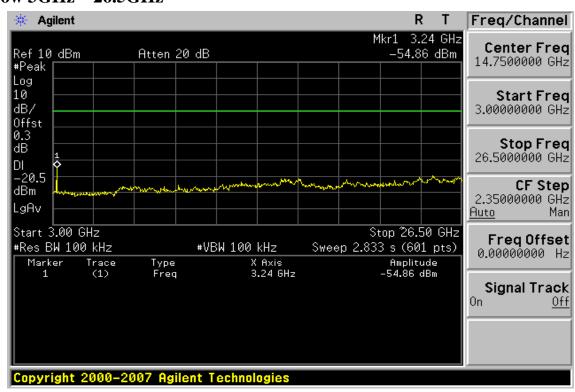
Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 43 of 76

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



Ch Low 3GHz – 26.5GHz



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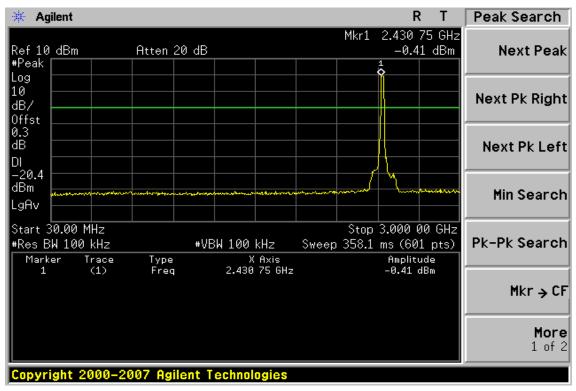
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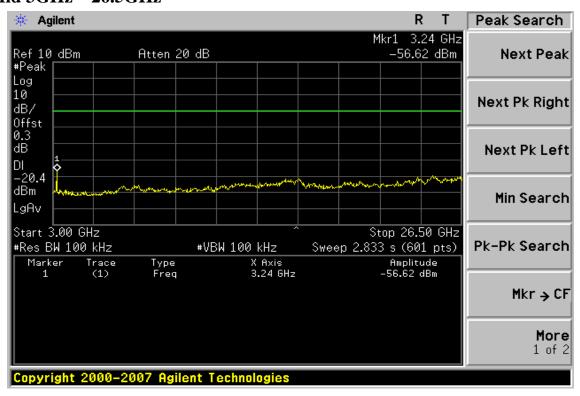
Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 44 of 76

Ch Mid 30MHz - 3GHz



Ch Mid 3GHz - 26.5GHz



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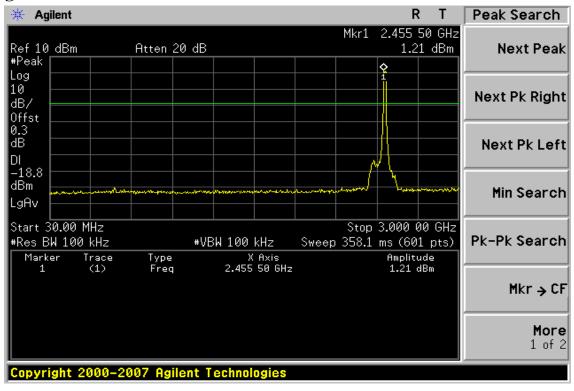
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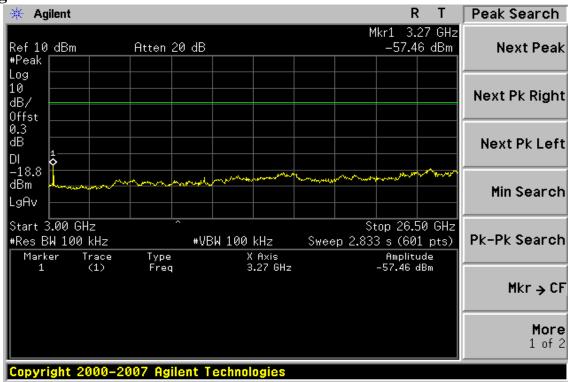
Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 45 of 76

Ch High 30MHz – 3GHz



Ch High 3GHz – 26.5GHz



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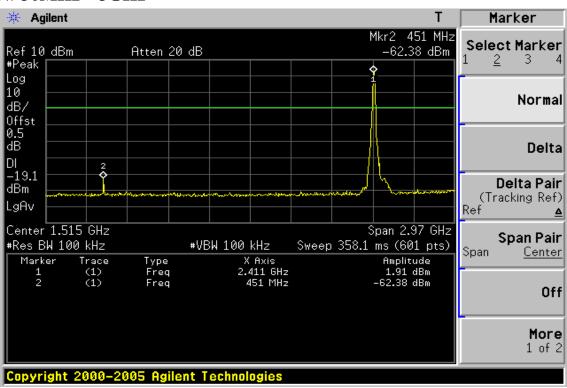
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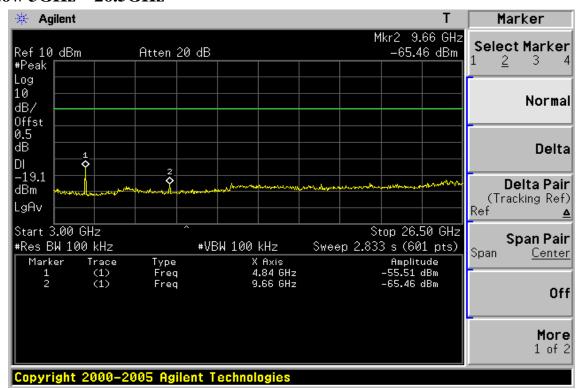
Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 46 of 76

Conducted Spurious Emission Measurement Result (Co-Location) Ch Low 30MHz - 3GHz



Ch Low 3GHz – 26.5GHz



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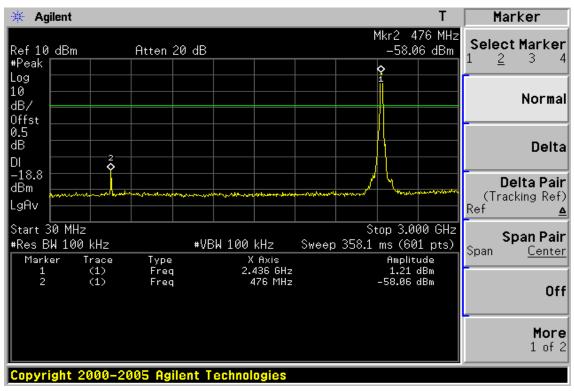
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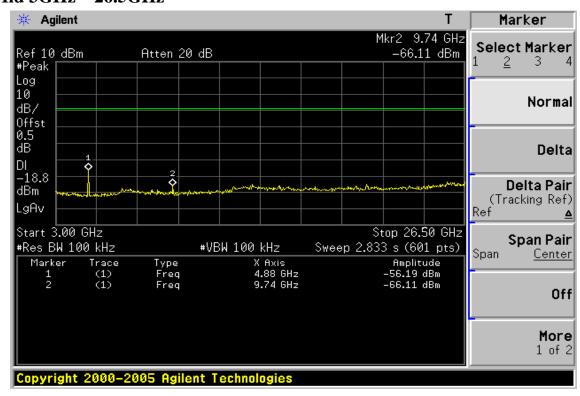
Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 47 of 76

Ch Mid 30MHz - 3GHz



Ch Mid 3GHz – 26.5GHz



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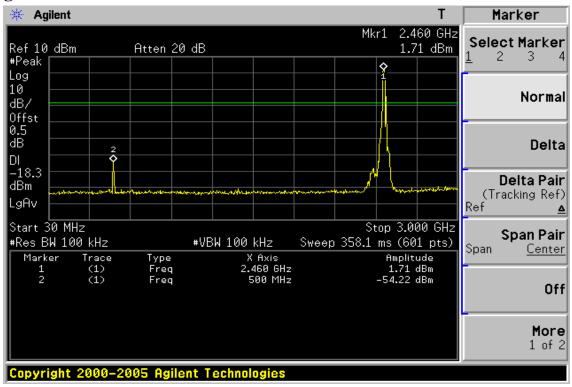
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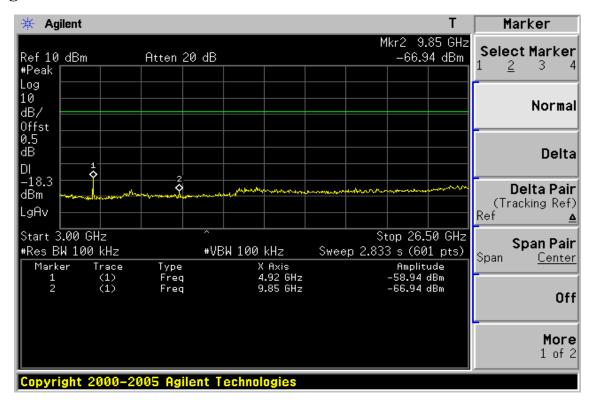
Report No.: EH/2010/A0012 **Issue Date: Nov. 01, 2010**

Page: 48 of 76

Ch High 30MHz - 3GHz



Ch High 3GHz – 26.5GHz



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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 49 of 76

Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b)

Operation Mode 802.11b TX CH Low Test Date Oct. 28, 2010

Fundamental Frequency 2412MHz Test By Sky
Temperature 25 Pol Ver./Hor

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
56.19	V	Peak	46.20	-14.60	31.60	40.00	-8.40
90.14	V	Peak	52.80	-17.60	35.20	43.50	-8.30
104.69	V	Peak	47.60	-16.70	30.90	43.50	-12.60
376.29	V	Peak	35.10	-10.90	24.20	46.00	-21.80
512.09	V	Peak	33.70	-8.40	25.30	46.00	-20.70
652.74	V	Peak	32.60	-4.90	27.70	46.00	-18.30
41.64	Н	Peak	44.30	-13.80	30.50	40.00	-9.50
58.13	Н	Peak	40.60	-14.70	25.90	40.00	-14.10
92.08	Н	Peak	42.30	-17.40	24.90	43.50	-18.60
135.73	Н	Peak	35.60	-14.00	21.60	43.50	-21.90
429.64	Н	Peak	31.90	-9.10	22.80	46.00	-23.20
708.03	Н	Peak	32.10	- 4.90	27.20	46.00	-18.80

Remark:

- 1 Measuring frequencies from 30 MHz to the 1GHz_o
- 2 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- 3 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 50 of 76

Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b)

Operation Mode 802.11b TX CH Mid **Test Date** Oct. 28, 2010

Fundamental Frequency 2437MHz Test By Sky Ver./Hor Temperature Pol 25

65 % Humidity

	Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
_	(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
	56.19	V	Peak	46.50	-14.60	31.90	40.00	-8.10
	90.14	V	Peak	53.30	-17.60	35.70	43.50	-7.80
	104.69	V	Peak	47.40	-16.70	30.70	43.50	-12.80
	381.14	V	Peak	35.20	-10.80	24.40	46.00	-21.60
	557.68	V	Peak	33.00	-7.40	25.60	46.00	-20.40
	623.64	V	Peak	32.90	-5.50	27.40	46.00	-18.60
	36.79	Н	Peak	44.50	-14.40	30.10	40.00	-9.90
	101.78	Н	Peak	43.50	-16.90	26.60	43.50	-16.90
	150.28	Н	Peak	33.00	-12.80	20.20	43.50	-23.30
	439.34	Н	Peak	32.00	8.80	40.80	46.00	-5.20
	613.94	Н	Peak	32.40	-5.70	26.70	46.00	-19.30
	667.29	Н	Peak	32.50	-5.00	27.50	46.00	-18.50

Remark:

- 1 Measuring frequencies from 30 MHz to the 1GHz_o
- 2 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- 3 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 51 of 76

Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b)

Operation Mode 802.11b TX CH High **Test Date** Oct. 28, 2010

Fundamental Frequency 2462MHz Test By Sky Ver./Hor Temperature Pol 25

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
56.19	V	Peak	45.00	-14.60	30.40	40.00	-9.60
90.14	V	Peak	52.10	-17.60	34.50	43.50	-9.00
104.69	V	Peak	48.60	-16.70	31.90	43.50	-11.60
383.08	V	Peak	33.70	-10.50	23.20	46.00	-22.80
470.38	V	Peak	32.90	-8.60	24.30	46.00	-21.70
657.59	V	Peak	32.80	-5.00	27.80	46.00	-18.20
41.64	Н	Peak	43.70	-13.80	29.90	40.00	-10.10
90.14	Н	Peak	43.40	-17.60	25.80	43.50	-17.70
101.78	Н	Peak	42.10	-16.90	25.20	43.50	-18.30
135.73	Н	Peak	33.00	-14.00	19.00	43.50	-24.50
431.58	Н	Peak	32.40	-9.10	23.30	46.00	-22.70
633.34	Н	Peak	31.20	-5.30	25.90	46.00	-20.10

Remark:

- 1 Measuring frequencies from 30 MHz to the 1GHz_o
- 2 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- 3 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 52 of 76

Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g)

Operation Mode 802.11g TX CH Low Test Date Oct. 28, 2010

Fundamental Frequency 2412MHz Test By Sky
Temperature 25 Pol Ver./Hor

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
58.13	V	Peak	43.60	-14.70	28.90	40.00	-11.10
90.14	V	Peak	51.00	-17.60	33.40	43.50	-10.10
104.69	V	Peak	44.50	-16.70	27.80	43.50	-15.70
376.29	V	Peak	33.60	-10.90	22.70	46.00	-23.30
475.23	V	Peak	31.80	-8.50	23.30	46.00	-22.70
643.04	V	Peak	31.00	-5.10	25.90	46.00	-20.10
41.64	Н	Peak	44.00	-13.80	30.20	40.00	-9.80
58.13	Н	Peak	40.60	-14.70	25.90	40.00	-14.10
101.78	Н	Peak	42.50	-16.90	25.60	43.50	-17.90
158.04	Н	Peak	37.60	-13.40	24.20	43.50	-19.30
465.53	Н	Peak	32.70	-8.50	24.20	46.00	-21.80
606.18	Н	Peak	31.70	-5.90	25.80	46.00	-20.20

Remark:

- 1 Measuring frequencies from 30 MHz to the 1GHz_o
- 2 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- 3 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 53 of 76

Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g)

Operation Mode 802.11g TX CH Mid **Test Date** Oct. 28, 2010

Fundamental Frequency 2437MHz Test By Sky Ver./Hor Temperature Pol 25

65 % Humidity

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
58.13	V	Peak	44.20	-14.70	29.50	40.00	-10.50
90.14	V	Peak	50.50	-17.60	32.90	43.50	-10.60
162.89	V	Peak	36.40	-13.60	22.80	43.50	-20.70
381.14	V	Peak	33.20	-10.80	22.40	46.00	-23.60
555.74	V	Peak	31.90	-7.50	24.40	46.00	-21.60
681.84	V	Peak	32.20	-5.00	27.20	46.00	-18.80
41.64	Н	Peak	44.20	-13.80	30.40	40.00	-9.60
58.13	Н	Peak	40.60	-14.70	25.90	40.00	-14.10
101.78	Н	Peak	43.20	-16.90	26.30	43.50	-17.20
133.79	Н	Peak	35.70	-14.10	21.60	43.50	-21.90
385.99	Н	Peak	33.20	-10.50	22.70	46.00	-23.30
649.83	Н	Peak	33.50	-5.00	28.50	46.00	-17.50

Remark:

- 1 Measuring frequencies from 30 MHz to the 1GHz_o
- 2 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- 3 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 54 of 76

Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g)

Operation Mode 802.11g TX CH High **Test Date** Oct. 28, 2010

Fundamental Frequency 2462MHz Test By Sky Ver./Hor Temperature Pol 25

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
31.94	V	Peak	46.60	-14.90	31.70	40.00	-8.30
56.19	V	Peak	43.80	-14.60	29.20	40.00	-10.80
90.14	V	Peak	51.20	-17.60	33.60	43.50	-9.90
153.19	V	Peak	31.50	-13.00	18.50	43.50	-25.00
465.53	V	Peak	32.50	-8.50	24.00	46.00	-22.00
640.13	V	Peak	32.60	-5.20	27.40	46.00	-18.60
41.64	Н	Peak	44.50	-13.80	30.70	40.00	-9.30
56.19	Н	Peak	40.30	-14.60	25.70	40.00	-14.30
101.78	Н	Peak	42.50	-16.90	25.60	43.50	-17.90
138.64	Н	Peak	34.30	-13.80	20.50	43.50	-23.00
478.14	Н	Peak	32.20	-8.50	23.70	46.00	-22.30
654.68	Н	Peak	32.30	-4.90	27.40	46.00	-18.60

Remark:

- 1 Measuring frequencies from 30 MHz to the 1GHz_o
- 2 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- 3 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 55 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)

Operation Mode 802.11b TX CH Low Test Date Oct. 28, 2010

Fundamental Frequency 2412MHz Test By Sky Temperature 25 Pol Ver.

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4824.0	46.80	46.00	6.00	52.80	52.00	74.00	54.00	-2.00	AV
7236.0						74.00	54.00		
9648.0						74.00	54.00		
12060.0						74.00	54.00		
14472.0						74.00	54.00		
16884.0						74.00	54.00		
19296.0						74.00	54.00		
21708.0						74.00	54.00		
24120.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 56 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)

Operation Mode 802.11b TX CH Low **Test Date** Oct. 28, 2010

Fundamental Frequency 2412MHz Test By Sky Temperature Pol Hor 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4824.0	44.10		6.00	50.10		74.00	54.00	-3.90	Peak
7236.0						74.00	54.00		
9648.0						74.00	54.00		
12060.0						74.00	54.00		
14472.0						74.00	54.00		
16884.0						74.00	54.00		
19296.0						74.00	54.00		
21708.0						74.00	54.00		
24120.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 57 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)

Operation Mode 802.11b TX CH Mid Test Date Oct. 28, 2010

Fundamental Frequency 2437MHz Test By Sky Temperature Pol Ver 25

65 % Humidity

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4874.0	47.60	46.70	6.20	53.80	52.90	74.00	54.00	-1.10	AV
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		
14622.0						74.00	54.00		
17059.0						74.00	54.00		
19496.0						74.00	54.00		
21933.0						74.00	54.00		
24370.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 58 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)

Operation Mode 802.11b TX CH Mid Test Date Oct. 28, 2010

Fundamental Frequency 2437MHz Test By Sky Temperature 25 Pol Hor

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4874.0	45.20		6.20	51.40		74.00	54.00	-2.60	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		
14622.0						74.00	54.00		
17059.0						74.00	54.00		
19496.0						74.00	54.00		
21933.0						74.00	54.00		
24370.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 59 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)

Operation Mode 802.11b TX CH High **Test Date** Oct. 28, 2010

Fundamental Frequency 2462MHz Test By Sky Temperature Pol Ver 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4924.0	47.60	47.20	6.20	53.80	53.40	74.00	54.00	-0.60	AV
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		
14772.0						74.00	54.00		
17234.0						74.00	54.00		
19696.0						74.00	54.00		
22158.0						74.00	54.00		
24620.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 60 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b)

Operation Mode 802.11b TX CH High Test Date Oct. 28, 2010

Fundamental Frequency 2462MHz Test By Sky Temperature 25 Pol Hor

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4924.0	45.20		6.20	51.40		74.00	54.00	-2.60	Peak
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		
14772.0						74.00	54.00		
17234.0						74.00	54.00		
19696.0						74.00	54.00		
22158.0						74.00	54.00		
24620.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 61 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)

Operation Mode 802.11g TX CH Low **Test Date** Oct. 28, 2010

Fundamental Frequency 2412MHz Test By Sky Temperature Pol Ver. 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4824.0	36.00		6.00	42.00		74.00	54.00	-12.00	Peak
7236.0						74.00	54.00		
9648.0						74.00	54.00		
12060.0						74.00	54.00		
14472.0						74.00	54.00		
16884.0						74.00	54.00		
19296.0						74.00	54.00		
21708.0						74.00	54.00		
24120.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 62 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)

Operation Mode 802.11g TX CH Low **Test Date** Oct. 28, 2010

Fundamental Frequency 2412MHz Test By Sky Temperature Pol Hor 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4824.0	33.90		6.00	39.90		74.00	54.00	-14.10	Peak
7236.0						74.00	54.00		
9648.0						74.00	54.00		
12060.0						74.00	54.00		
14472.0						74.00	54.00		
16884.0						74.00	54.00		
19296.0						74.00	54.00		
21708.0						74.00	54.00		
24120.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 63 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)

Operation Mode 802.11g TX CH Mid **Test Date** Oct. 28, 2010

Fundamental Frequency 2437MHz Test By Sky Temperature Pol Ver 25

65 % Humidity

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4874.0	39.60		6.20	45.80		74.00	54.00	-8.20	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		
14622.0						74.00	54.00		
17059.0						74.00	54.00		
19496.0						74.00	54.00		
21933.0						74.00	54.00		
24370.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 64 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)

Operation Mode 802.11g TX CH Mid **Test Date** Oct. 28, 2010

Fundamental Frequency 2437MHz Test By Sky Temperature Pol Hor 25

65 % Humidity

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4874.0	36.30		6.17	42.47		74.00	54.00	-11.53	Peak
7311.0						74.00	54.00		
9748.0						74.00	54.00		
12185.0						74.00	54.00		
14622.0						74.00	54.00		
17059.0						74.00	54.00		
19496.0						74.00	54.00		
21933.0						74.00	54.00		
24370.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 65 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)

Operation Mode 802.11g TX CH High Test Date Oct. 28, 2010

Fundamental Frequency 2462MHz Test By Sky Temperature 25 Pol Ver

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4924.0	36.90		6.30	43.20		74.00	54.00	-10.80	Peak
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		
14772.0						74.00	54.00		
17234.0						74.00	54.00		
19696.0						74.00	54.00		
22158.0						74.00	54.00		
24620.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 66 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g)

Operation Mode 802.11g TX CH High **Test Date** Oct. 28, 2010

Fundamental Frequency 2462MHz Test By Sky Temperature Pol Hor 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4924.0	34.80		6.30	41.10		74.00	54.00	-12.90	Peak
7386.0						74.00	54.00		
9848.0						74.00	54.00		
12310.0						74.00	54.00		
14772.0						74.00	54.00		
17234.0						74.00	54.00		
19696.0						74.00	54.00		
22158.0						74.00	54.00		
24620.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
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- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 67 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b) (Co-Location)

Operation Mode 802.11b TX CH Low Test Date Oct. 28, 2010

Fundamental Frequency 2412MHz +2402 MHz Test By Sky Temperature 25 Pol Ver.

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4824.0									

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b) (Co-Location)

Operation Mode 802.11b TX CH Low Test Date Oct. 28, 2010

Fundamental Frequency 2412MHz +2402 MHz Test By Sky Temperature 25 Pol Hor

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms
- 5 Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 68 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b) (Co-Location)

Operation Mode 802.11b TX CH Mid Test Date Oct. 28, 2010

Fundamental Frequency 2437MHz +2442 MHz Test By Sky Temperature 25 Pol Ver

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b) (Co-Location)

Operation Mode 802.11b TX CH Mid Test Date Oct. 28, 2010

Fundamental Frequency 2437MHz +2442 MHz Test By Sky Temperature 25 Pol Hor

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms
- 5 Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 69 of 76

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b) (Co-Location)

Operation Mode 802.11b TX CH High Test Date Oct. 28, 2010

Fundamental Frequency 2462MHz +2480MHz Test By Sky Temperature 25 Pol Ver

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4924.0	46.90		6.20	53.10		74.00	54.00	-0.90	Peak
4958.5	45.50		6.30	51.80		74.00	54.00	-2.20	Peak

Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b) (Co-Location)

Operation Mode 802.11b TX CH High Test Date Oct. 28, 2010 Fundamental Frequency 2462MHz +2480 MHz Test By Sky

Temperature 25 rest By Sky Pol Hor

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
4924.0	43.80		6.20	50.00		74.00	54.00	-4.00	Peak
4958.5	41.40		6.30	47.70		74.00	54.00	-6.30	Peak

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 70 of 76

10 Peak Power Spectral Density

10.1 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.

10.2 Measurement Equipment Used:

Refer to section 6.2 for details.

10.3 Test Set-up:

Refer to section 6.3 for details.

10.4 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 = 3KHz, VBW = 10KHz, Span = 300KHz, Sweep=100s
- 4. Record the max. reading.
- 5. Repeat above procedures until all frequency measured were complete.

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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 71 of 76

10.5 Measurement Result:

802.11b

Frequency MHz	RF Power Density Reading (dBm)	RF Power Density Level (dBm)	Maximum Limit (dBm)
2412	-13.06	-13.06	8
2437	-13.12	-13.12	8
2462	-12.48	-12.48	8

^{*}Offset 0.3 dB

802.11g

Frequency MHz	RF Power Density Reading (dBm)	RF Power Density Level (dBm)	Maximum Limit (dBm)
2412	-13.74	-13.74	8
2437	-14.30	-14.30	8
2462	-13.25	-13.25	8

^{*}Offset 0.3 dB

Note: Refer to next page for plots.

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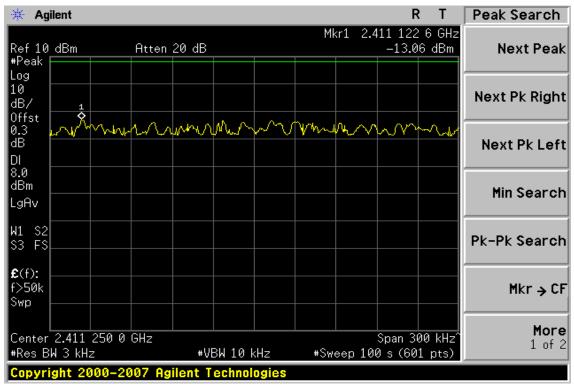
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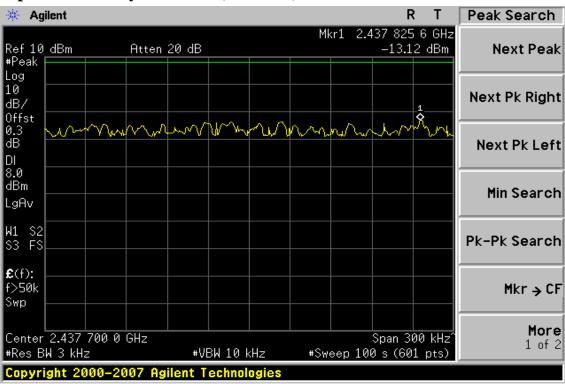
Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 72 of 76

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



Power Spectral Density Test Plot (CH-Mid)



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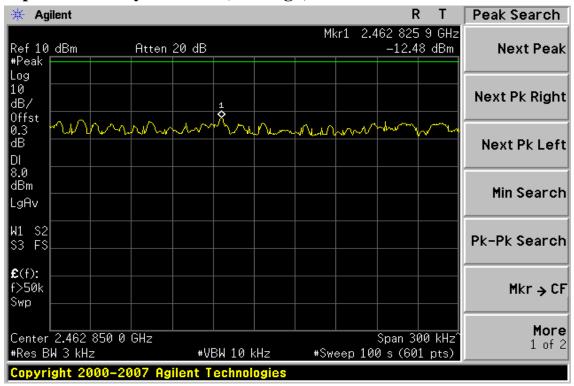
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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 73 of 76

Power Spectral Density Test Plot (CH-High)



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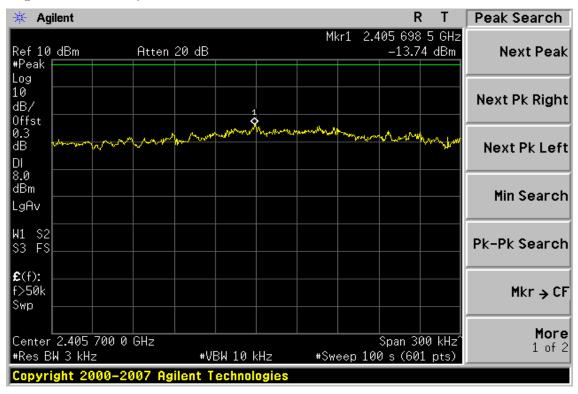
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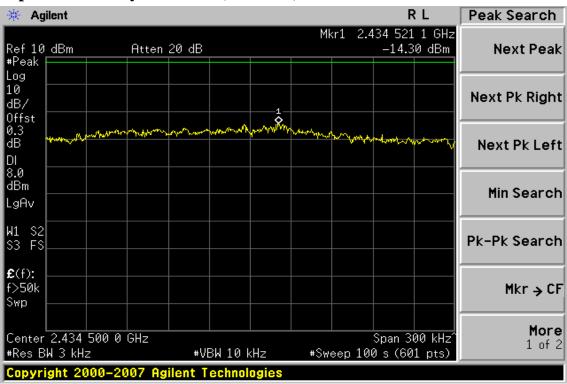
Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 74 of 76

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



Power Spectral Density Test Plot (CH-Mid)



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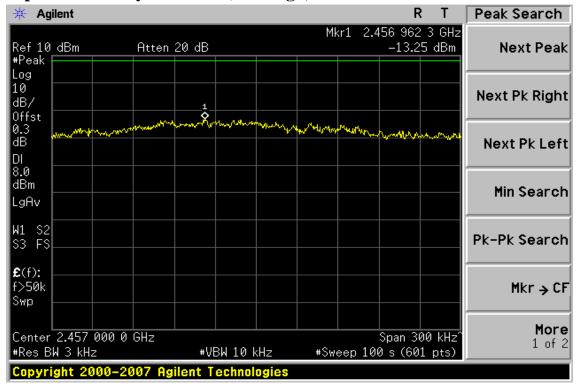
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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 75 of 76

Power Spectral Density Test Plot (CH-High)



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Report No.: EH/2010/A0012 Issue Date: Nov. 01, 2010

Page: 76 of 76

11 ANTENNA REQUIREMENT

11.1 Standard Applicable:

According to §15.203, Antenna requirement.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

11.2 Antenna Connected Construction:

The directional gins of antenna used for transmitting is 1.15dBi, 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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