FCC Part 15C

Measurement and Test Report

For

Pismo Labs Technology Limited

Room 1703A, 17/F, Park Building, 476 Castle Peak Road, Cheung Sha Wan,

Kowloon, HongKong

FCC ID: U8G-P1203

Report Concerns: Original Report	**Equipment Type:** 802.11a Access Point
Report No.:	STR08078011 Lahm peng
Test/Witness Engineer:	Lahm Peng
Test Date:	2008-07-15 to 2008-12-27
Issue Date:	2008-12-31
Prepared By:	**SEM.Test Compliance Service Co., Ltd** 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C.（518101）
Approved & Authorized By:	Jandy So / PSQ Manager

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Pismo Labs Technology Limited
Address of applicant:	Room 1703A, 17/F, Park Building, 476 Castle Peak Road, Cheung Sha Wan, Kowloon, HongKong
Manufacturer:	Pismo Labs Technology Limited
Address of manufacturer:	Room 1703A, 17/F, Park Building, 476 Castle Peak Road, Cheung Sha Wan, Kowloon, HongKong

General Description of E.U.T

Items	Description
EUT Description:	802.11a Access Point
Trade Name:	/
Rated Voltage:	DC 12V Adapter
Max. Output Power	< 18dBm
Omni Antenna Gain:	8dBi
Direction Antenna Gain:	19dBi
Frequency Range:	5745MHz~5825MHz
Number of Channels:	5
Channel Separation:	20MHz
Type of Antenna:	Omni Antenna Direction Antenna
Size:	29.5.0x20.7x6.8cm

Note: The test data gathered are from a production sample, it is provided by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the Pismo Labs Technology Limited in accordance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted with Low Channel, Middle Channel and High Channel. For more details refer to the Operating Instructions.

1.5 Test Facility

- **FCC – Registration No.: 994117**
  SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**
  The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

1.6 EUT Exercise Software

The EUT exercise program used during the testing was designed to exercise the system components.

1.7 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
IBM	Notebook	T22	LV14893
TP-LINK	Modem	TM-EC5658V	KT99CTQC-508
Lenovo	Printer	3110	OD65133711480

1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
RJ45 Cable	1.0	Shielded	With Core
DC Power Cable	1.5	Unshielded	With Core

2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 15.203; § 15.247(c)(1)(i)	Antenna Requirement	Compliant
§ 15.207	Conducted Emission	Compliant
§ 15.247(e)	Power Spectral Density	Compliant
§ 15.247(a)(2)	6 dB Bandwidth	Compliant
§ 15.247(b)(3)	Power Output	Compliant
§ 15.209(a)(d)	Radiated Emission	Compliant
§ 15.247(d)	Band edge	Compliant
§ 1.1307(b)	Maximum Permissible Exposure	Compliant

3. §15.203 - ANTENNA REQUIREMENT

3.1 Standard Applicable

According to FCC 15.203, 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.

3.2 Test Result

This product has an omni antenna and a direction antenna, and all are unique antenna with professinal installation, fulfill the requirement of this section.

4. CONDUCTED EMISSIONS

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 0.5 dB.

4.2 Test Equipment List and Details

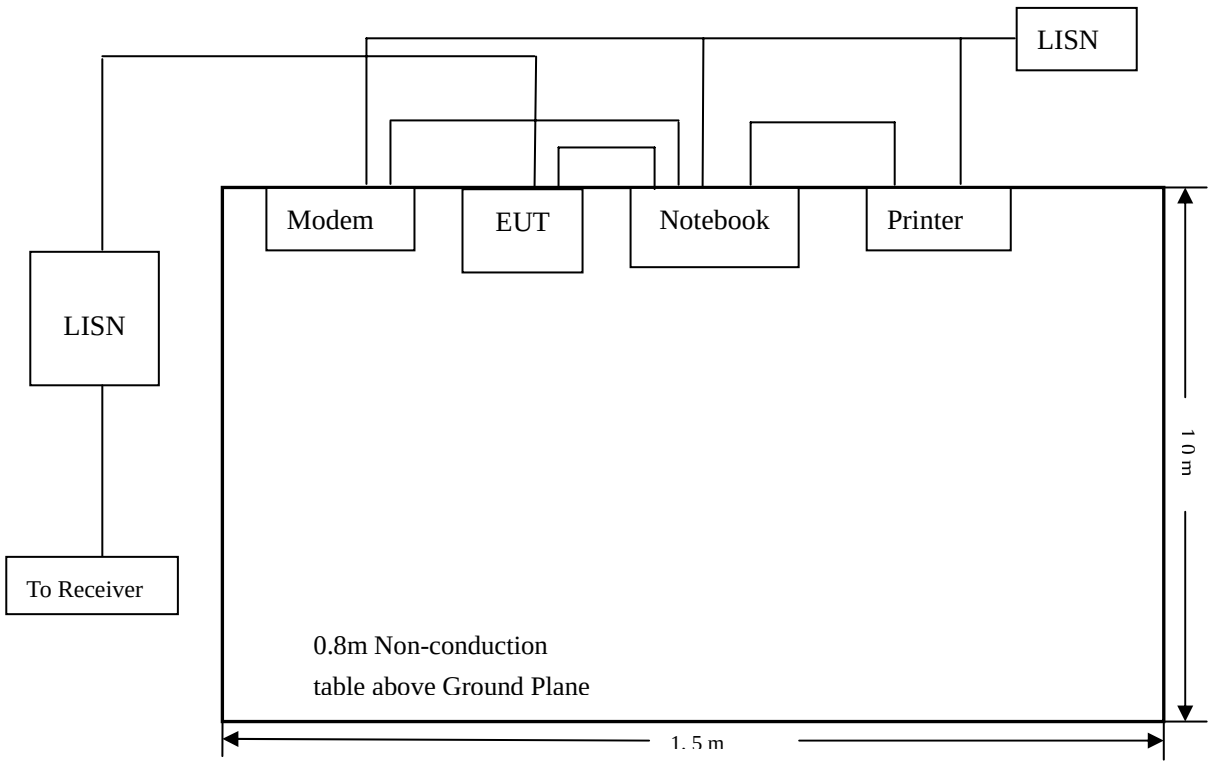
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2008-01-25	2009-01-24
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2008-01-25	2009-01-24
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2008-01-25	2009-01-24
AMN	Rohde & Schwarz	ESH3-Z5	828304/014	2008-01-25	2009-01-24

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

4.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

4.4 Basic Test Setup Block Diagram



4.5 Environmental Conditions

Temperature:	20° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

4.6 Summary of Test Results/Plots

According to the data in section 4.7, the EUT complied with the FCC 15.207 Conducted margin for a Class B device, with the *worst* margin reading of:

-0.4 dBμV at **0.554 MHz** in the **Neutral** mode, **Average** detector, 0.15-30MHz

4.7 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC 15.207	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBμV	QP/Ave/Pk	Line/Neutral	dBμV	dB
0.554	45.58	AV	Neutral	46	-0.4
1.594	42.33	AV	Neutral	46	-3.7
3.67	41.85	AV	Neutral	46	-4.2
0.418	42.00	AV	Line	47.49	-5.5
2.91	40.22	AV	Line	46	-5.8
1.802	39.89	AV	Line	46	-6.1
0.554	48.83	PK	Neutral	56	-7.2
10.666	41.40	AV	Line	50	-8.6
0.346	40.16	AV	Line	49.06	-8.9
11.45	39.08	AV	Neutral	50	-10.9
3.67	44.80	PK	Neutral	56	-11.2
24.39	38.28	AV	Line	50	-11.7
0.482	44.43	PK	Line	56.3	-11.9
0.346	36.87	AV	Neutral	49.06	-12.2
2.91	43.41	PK	Line	56	-12.6
1.594	43.32	PK	Neutral	56	-12.7
1.454	42.03	PK	Line	56	-14.0
25.11	34.63	AV	Neutral	50	-15.4
10.666	43.78	PK	Line	60	-16.2
10.902	43.53	PK	Neutral	60	-16.5
0.346	42.20	PK	Neutral	59.06	-16.9
23.73	42.71	PK	Line	60	-17.3
0.346	41.63	PK	Line	59.06	-17.4
22.678	40.10	PK	Neutral	60	-19.9

Note: Emissions attenuation more than 20dB below maximum permissible value are not report.

Plot of Conducted Emissions Test Data

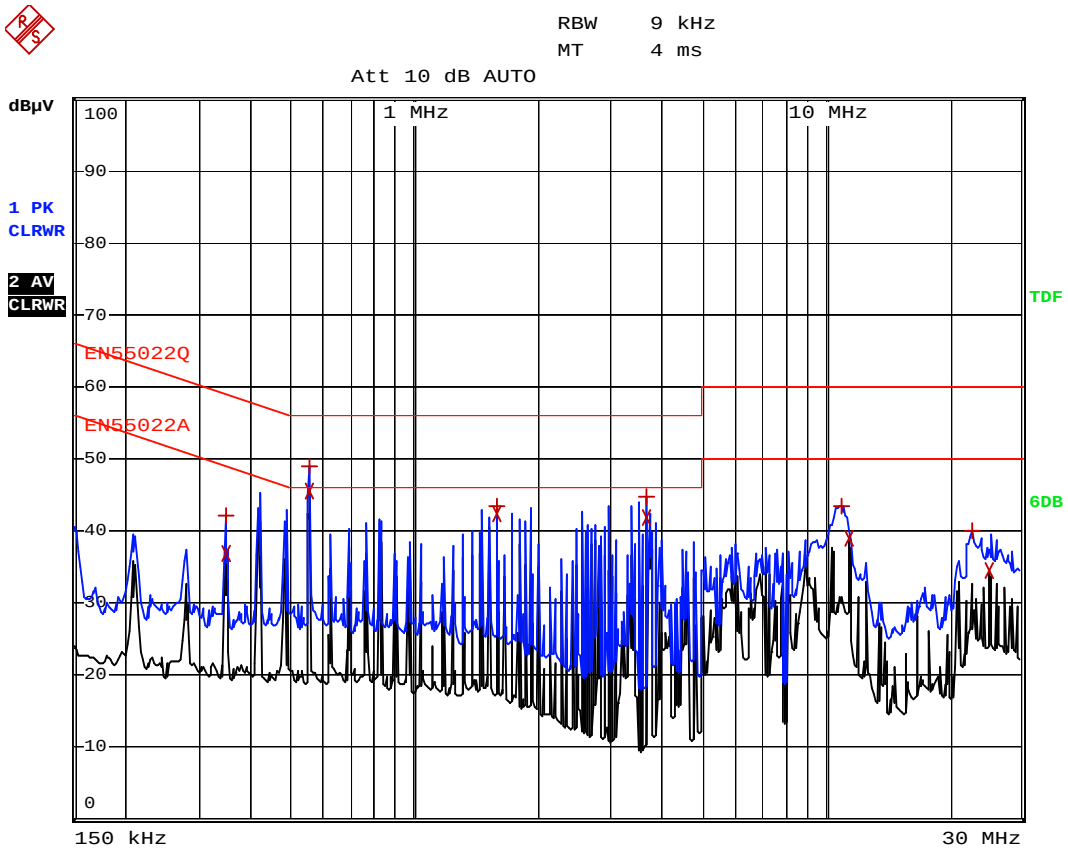
Conducted Disturbance

EUT: 802.11a Access Point

Operating Condition: Running

Test Specification: N

Comment: AC120V/60Hz DC 12V Adapter



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Plot of Conducted Emissions Test Data

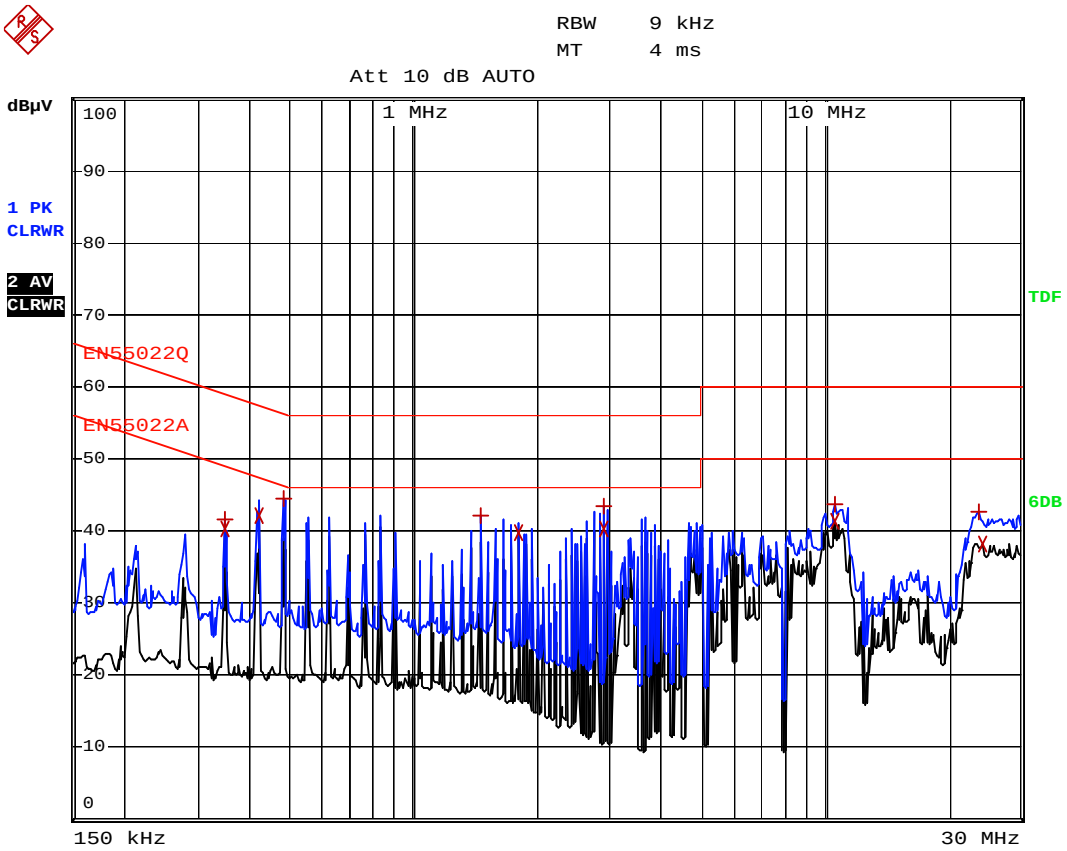
Conducted Disturbance

EUT: 802.11a Access Point

Operating Condition: Running

Test Specification: L

Comment: AC120V/60Hz DC 12V Adapter



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5. POWER SPECTRAL DENSITY

5.1 Standard Applicable

According to 15.247(a)(1)(iii), 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.

5.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E7405A	US41192821	2008-01-25	2009-01-24
ETS	50 ohm Coaxial Cable	SUCOFLEX 104	25498514	2008-01-25	2009-01-24

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

5.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. Set the spectrum analyzer as RBW,VBW=3KHz, Span = 20MHz.
4. Repeat above procedures until all frequency measured was complete.

5.4 Environmental Conditions

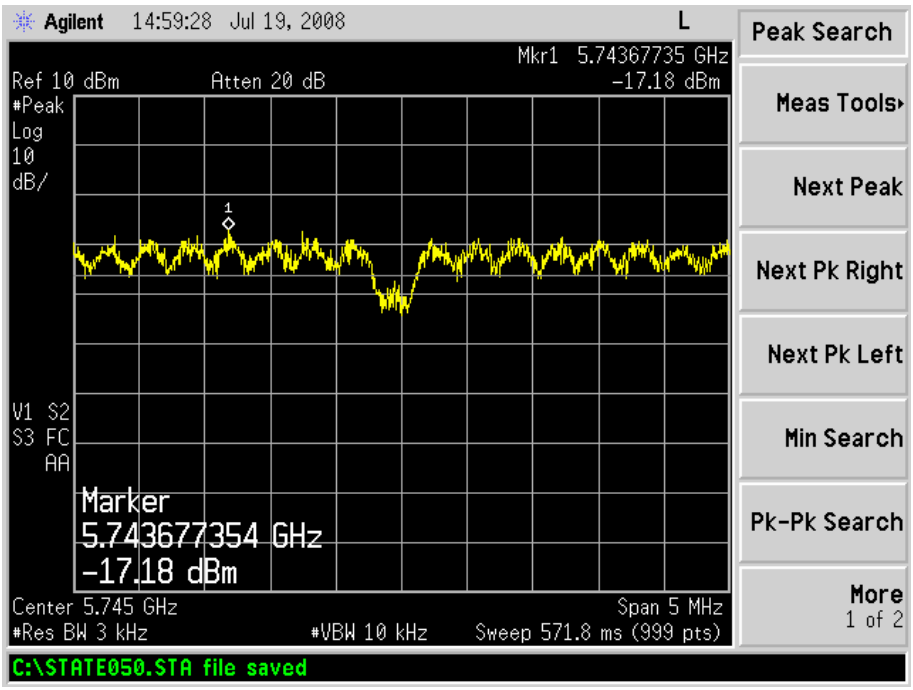
Temperature:	20° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

5.5 Summary of Test Results/Plots

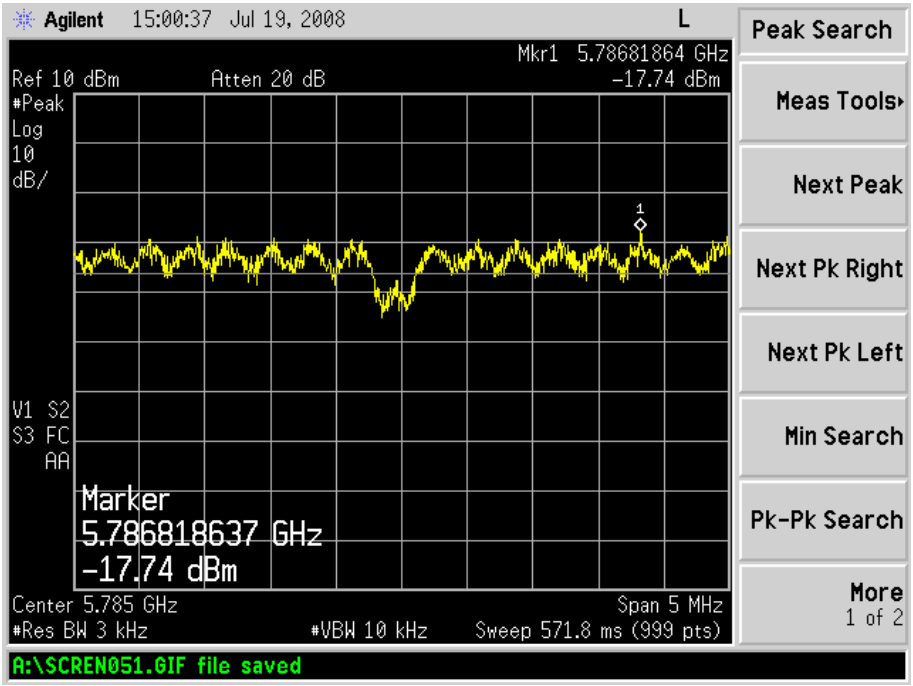
Test mode	Test channel	Reading dBm/3kHz	Limit dBm/3kHz
802.11a Chain A (To Direction)	Low channel (5745MHz)	-17.18	8
	Middle channel (5785MHz)	-17.74	8
	High channel (5825MHz)	-17.24	8
802.11a Chain B (To Omni)	Low channel (5745MHz)	-16.41	8
	Middle channel (5785MHz)	-17.93	8
	High channel (5825MHz)	-17.21	8

For 802.11a Chain A (To Direction Antenna)

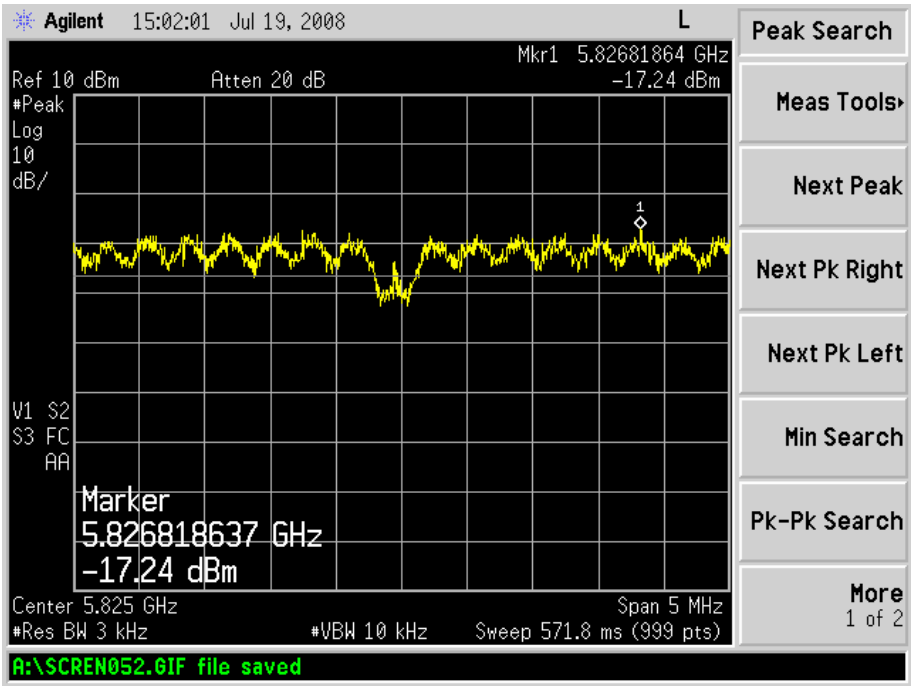
Low Channel:



Middle Channel:

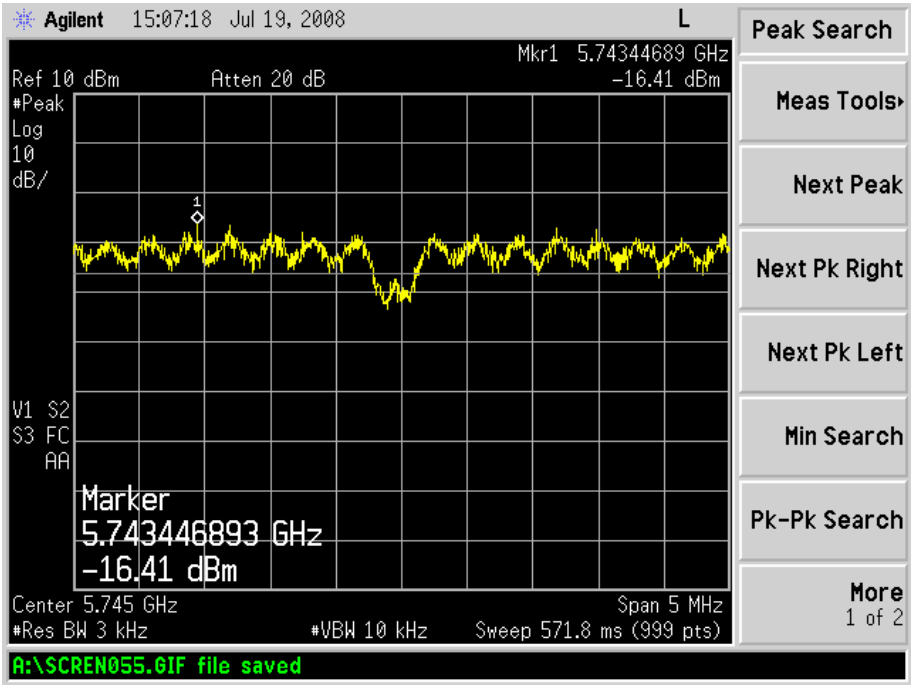


High Channel:

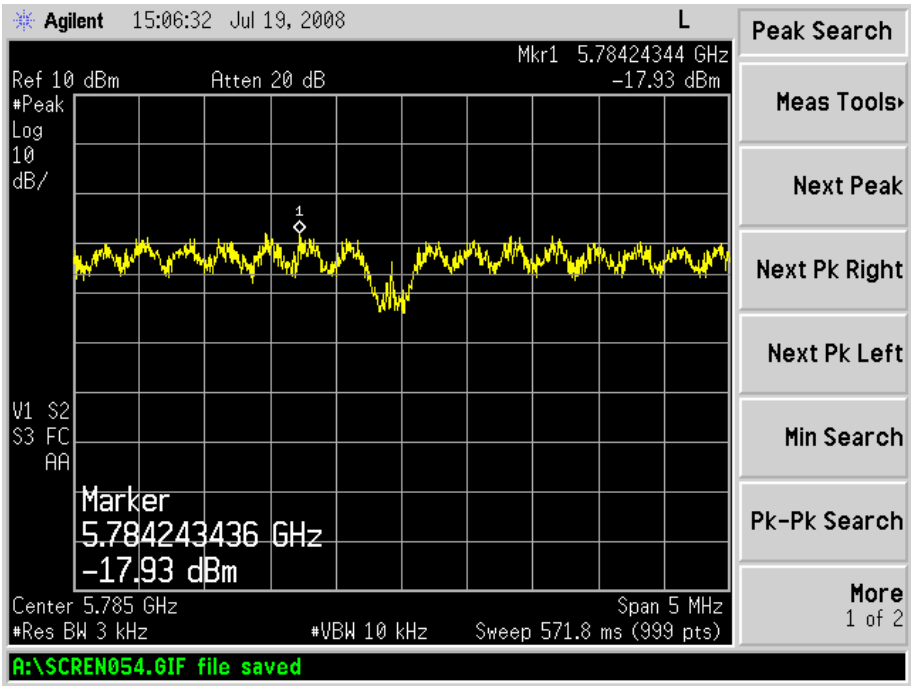


For 802.11a Chain B (To Omni Antenna)

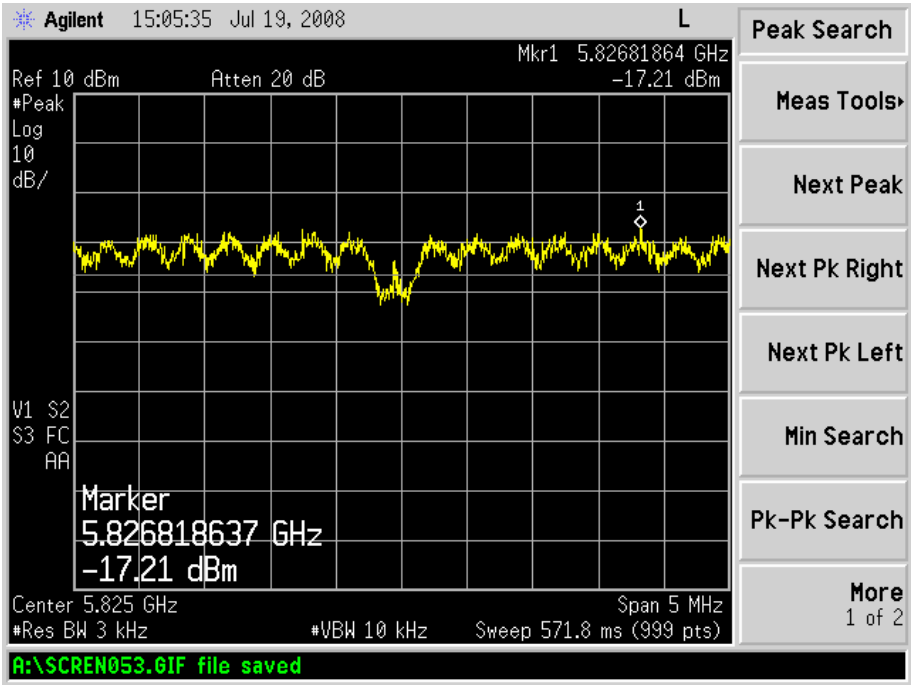
Low Channel:



Middle Channel:



High Channel:



6. 6-dB BANDWIDTH

6.1 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 500 kHz.

6.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E7405A	US41192821	2008-01-25	2009-01-24
ETS	50 ohm Coaxial Cable	SUCOFLEX 104	25498514	2008-01-25	2009-01-24

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

6.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. The spectrum analyzer as RBW=300KHz (1 % of Bandwidth.), Sweep=auto
4. Mark the peak frequency and –6dB (upper and lower) frequency.

6.4 Environmental Conditions

Temperature:	24° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

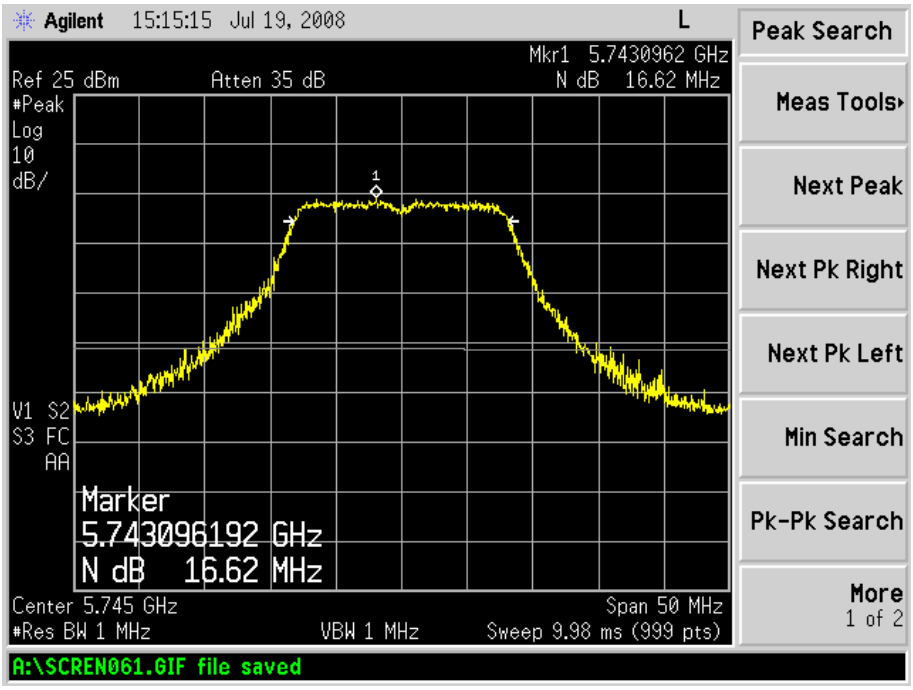
6.5 Summary of Test Results/Plots

6dB Bandwidth Test Data Sheet:

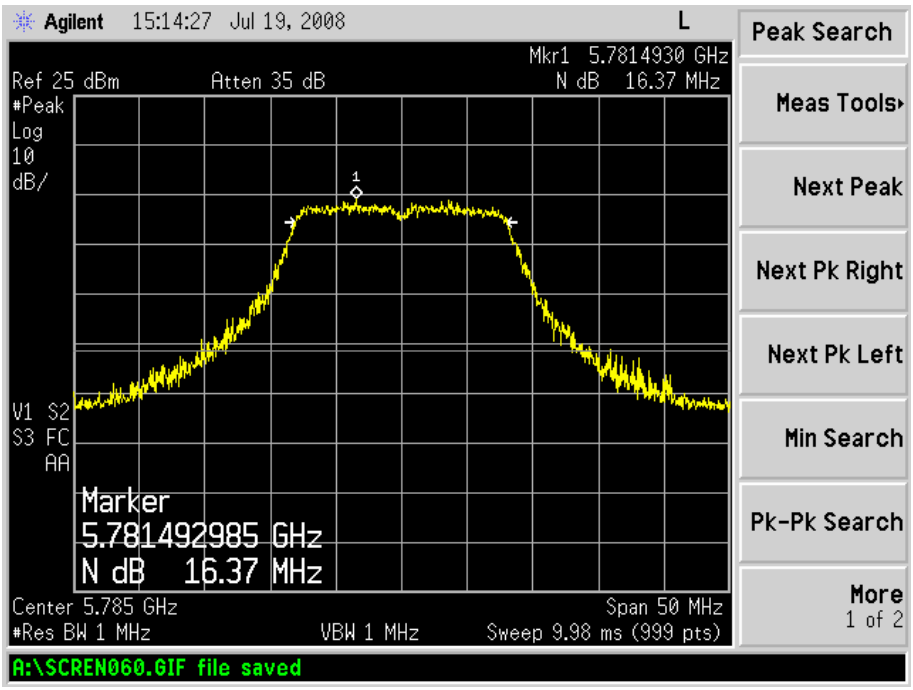
Test mode	Frequency MHz	6 dB Bandwidth kHz	Limit kHz
802.11a Chain A (To Direction)	Low channel (5745MHz)	16620	500
	Middle channel (5785MHz)	16370	500
	High channel (5825MHz)	16720	500
802.11a Chain B (To Omni)	Low channel (5745MHz)	16870	500
	Middle channel (5785MHz)	16720	500
	High channel (5825MHz)	16620	500

For 802.11a Chain A (To Direction Antenna)

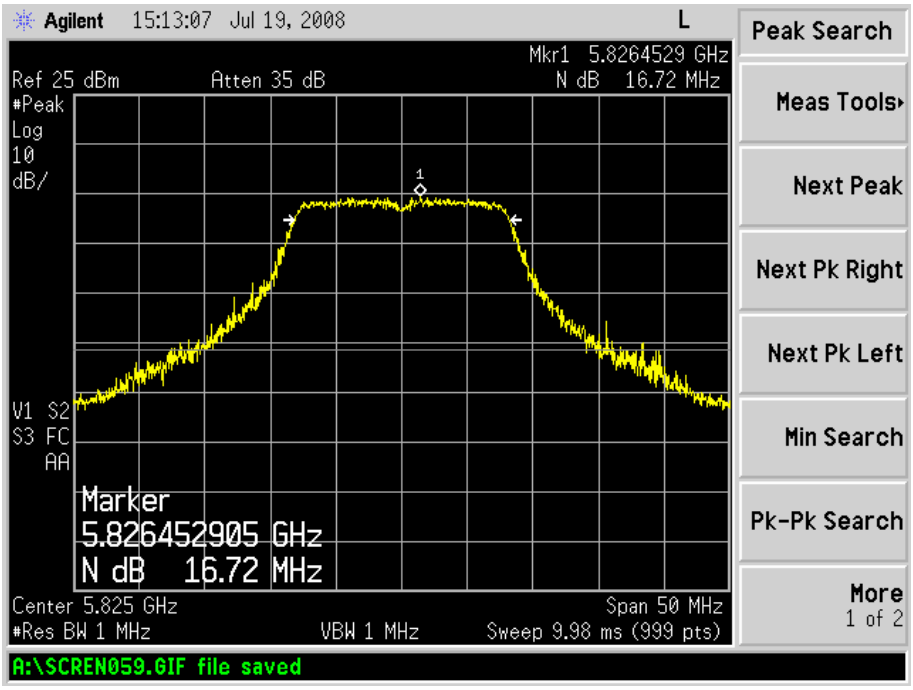
Low Channel:



Mid Channel:

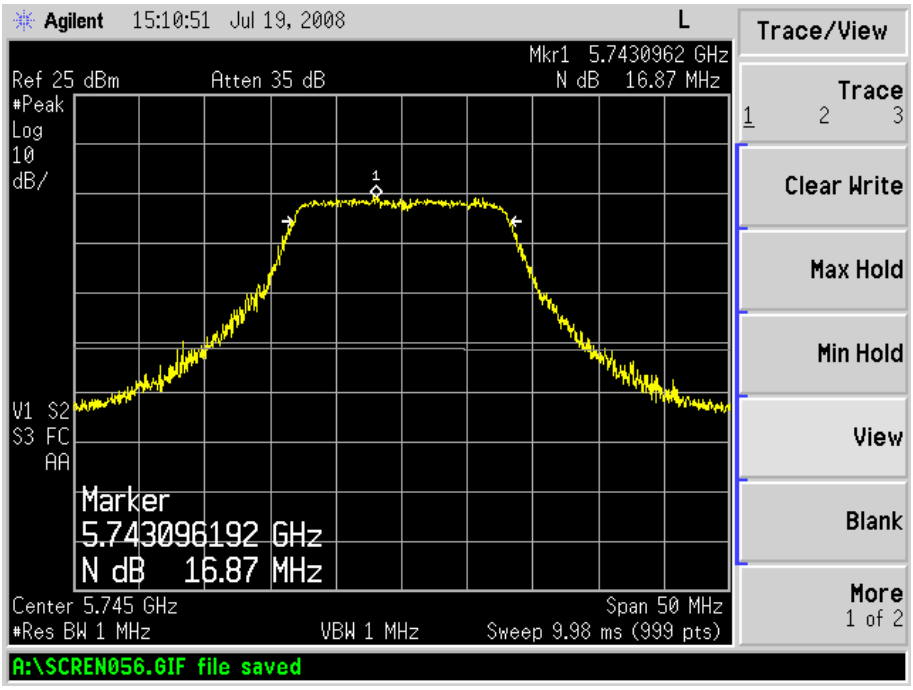


High Channel:

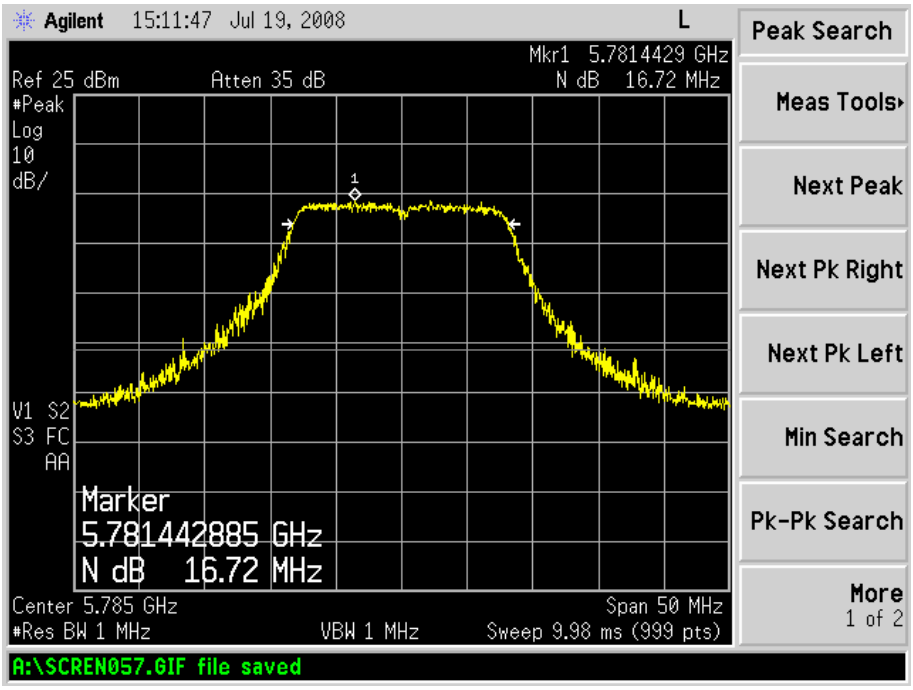


For 802.11a Chain B (To Omni Antenna)

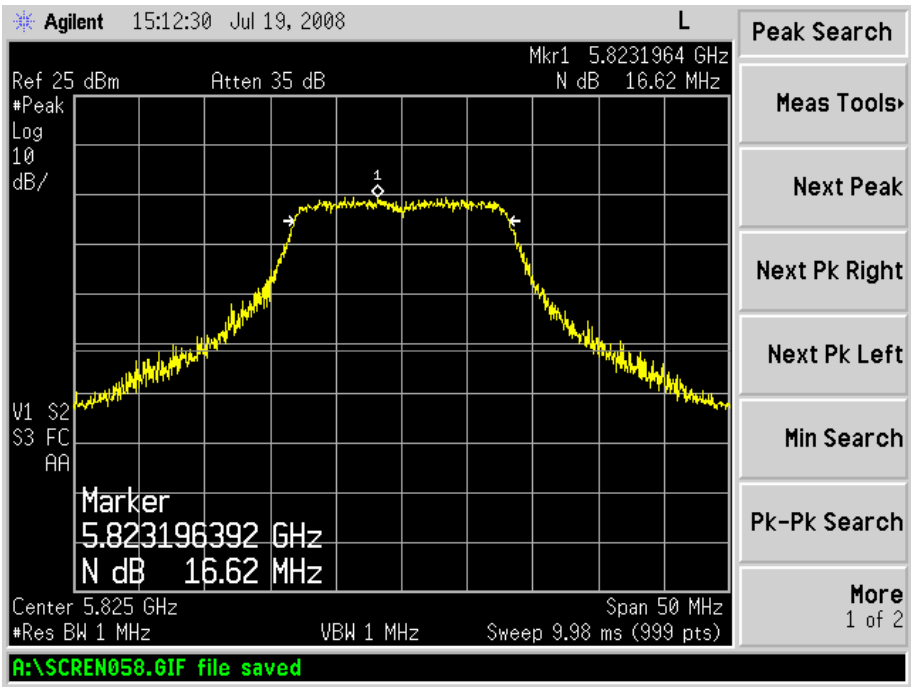
Low Channel:



Mid Channel:



High Channel:



7. POWER OUTPUT

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.

According to 15.247(b)(4). 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.

7.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E7405A	US41192821	2008-01-25	2009-01-24
ETS	50 ohm Coaxial Cable	SUCOFLEX 104	25498514	2008-01-25	2009-01-24

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

7.3 Test Procedure

The device under test has an integral antenna and the power was measured on a conducted methord.

7.4 Environmental Conditions

Temperature:	21° C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

7.5 Summary of Test Results/Plots

Test mode	Frequency MHz	Reading dBm	Output power W	Limit W
802.11a Chain A (To Direction Antenna)	Low channel (5745MHz)	16.42	0.0439	0.05 (17dBm)
	Middle channel (5785MHz)	16.22	0.0419	0.05 (17dBm)
	High channel (5825MHz)	16.70	0.0468	0.05 (17dBm)
802.11a Chain B (To Omni Antenna)	Low channel (5745MHz)	17.64	0.0581	0.63 (28dBm)
	Middle channel (5785MHz)	17.39	0.0548	0.63 (28dBm)
	High channel (5825MHz)	17.31	0.0538	0.63 (28dBm)

Chain A Antenna Gain=19dBi, then the conducted power limit is 30-(19-6)=17dBm
Chain B Antenna Gain=8 dBi, then the conducted power limit is 30-(8-6)=28 dBm

8. FIELD STRENGTH OF SPURIOUS EMISSIONS

8.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ±3.0 dB.

8.2 Standard Applicable

According to §15.247(c), 15.205 15.209(b) &15.35 (b), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Section 15.209:
30 - 88 MHz 40 dBuV/m @3M
88 -216 MHz 43.5 dBuV/m @3M
216 -960 MHz 46 dBuV/m @3M
Above 960 MHz 54dBuV/m @3M

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

Emissions that fall in the restricted bands (15.205) must be less than 54dBuV/m otherwise the spurious and harmonics must be attenuated by at least 20dB.

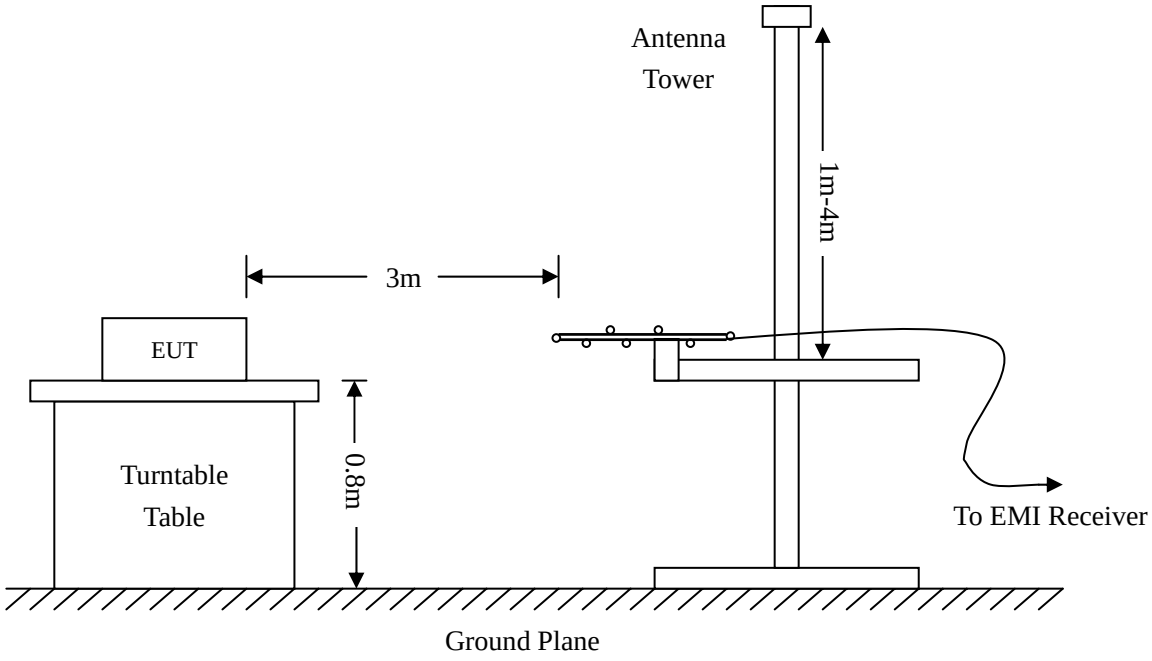
8.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E7405A	US41192821	2008-01-25	2009-01-24
Positioning Controller	C&C	CC-C-1F	N/A	2008-01-25	2009-01-24
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2008-01-25	2009-01-24
Rohde & Schwarz	Horn Antenna	HF906	100014	2008-01-25	2009-01-24
RF Switch	EM	EMSW18	SW060023	2008-01-25	2009-01-24
Amplifier	Agilent	8447F	3113A06717	2008-01-25	2009-01-24
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2008-01-25	2009-01-24
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2008-01-25	2009-01-24
Spectrum Analyzer	Agilent	E7405A	US41192821	2008-01-25	2009-01-24

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

8.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.



8.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Ant. Factor + Cable Loss – Ampl. Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15 Limit

8.6 Environmental Conditions

Temperature:	22° C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

8.7 Summary of Test Results/Plots

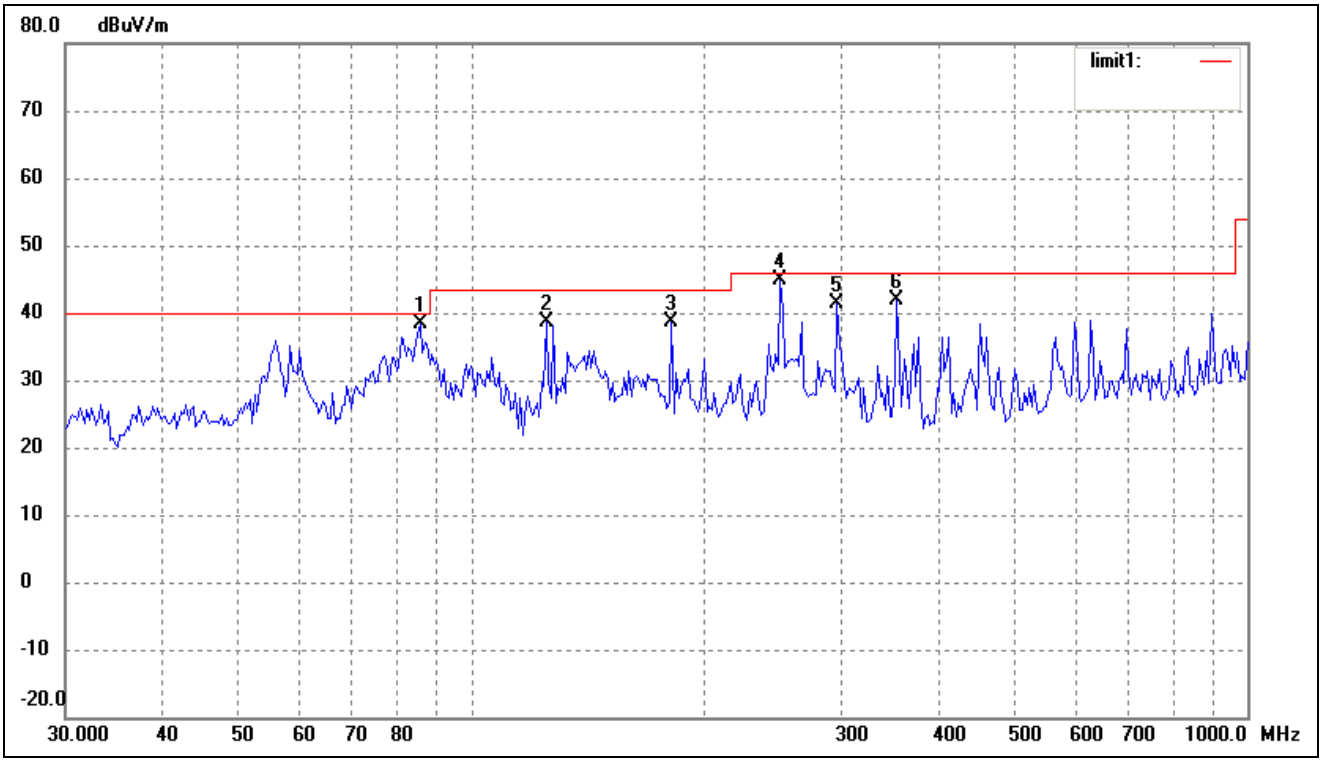
According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst margin of:

-1.08 dBµV at **250.4858 MHz** in the **Horizontal** polarization, **Low channel, 30 MHz to 40 GHz, 3Meters**

-1.52 dBµV at **134.0193 MHz** in the **Vertical** polarization, **Middle channel, 30 MHz to 40 GHz, 3Meters**

-1.49 dBµV at **264.9708 MHz** in the **Vertical** polarization, **High channel, 30 MHz to 40 GHz, 3Meters**

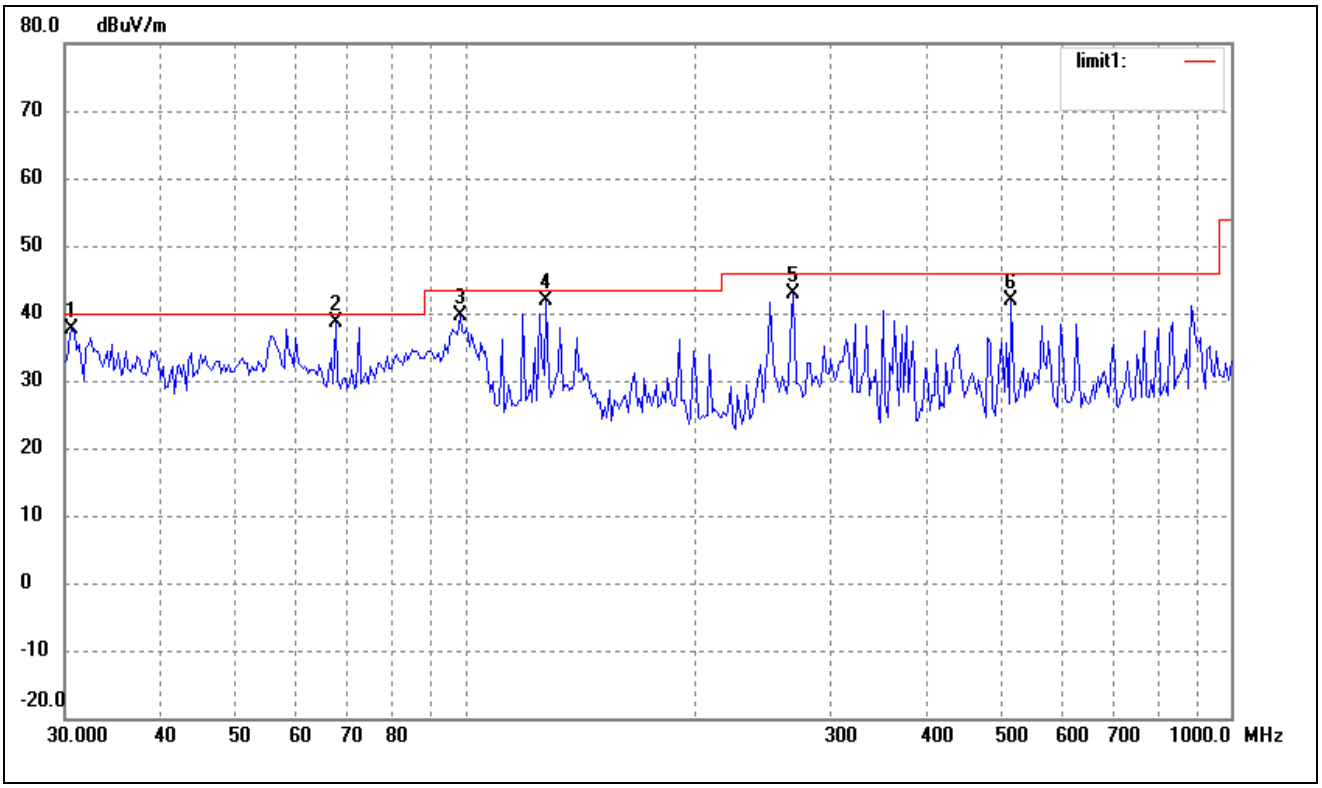
Test Result/Plots:
Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting-Low channel
Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	86.0795	33.17	5.29	38.46	40.00	-1.54	186	100	QP
2	124.9248	34.07	4.57	38.64	43.50	-4.86	133	100	QP
3	181.3000	33.80	4.89	38.69	43.50	-4.81	26	100	QP
4	250.4858	37.23	7.69	44.92	46.00	-1.08	0	100	QP
5	296.5022	32.78	8.61	41.39	46.00	-4.61	235	110	QP
6	353.4472	32.45	9.52	41.97	46.00	-4.03	359	100	QP

Test mode: Transmitting-Low channel

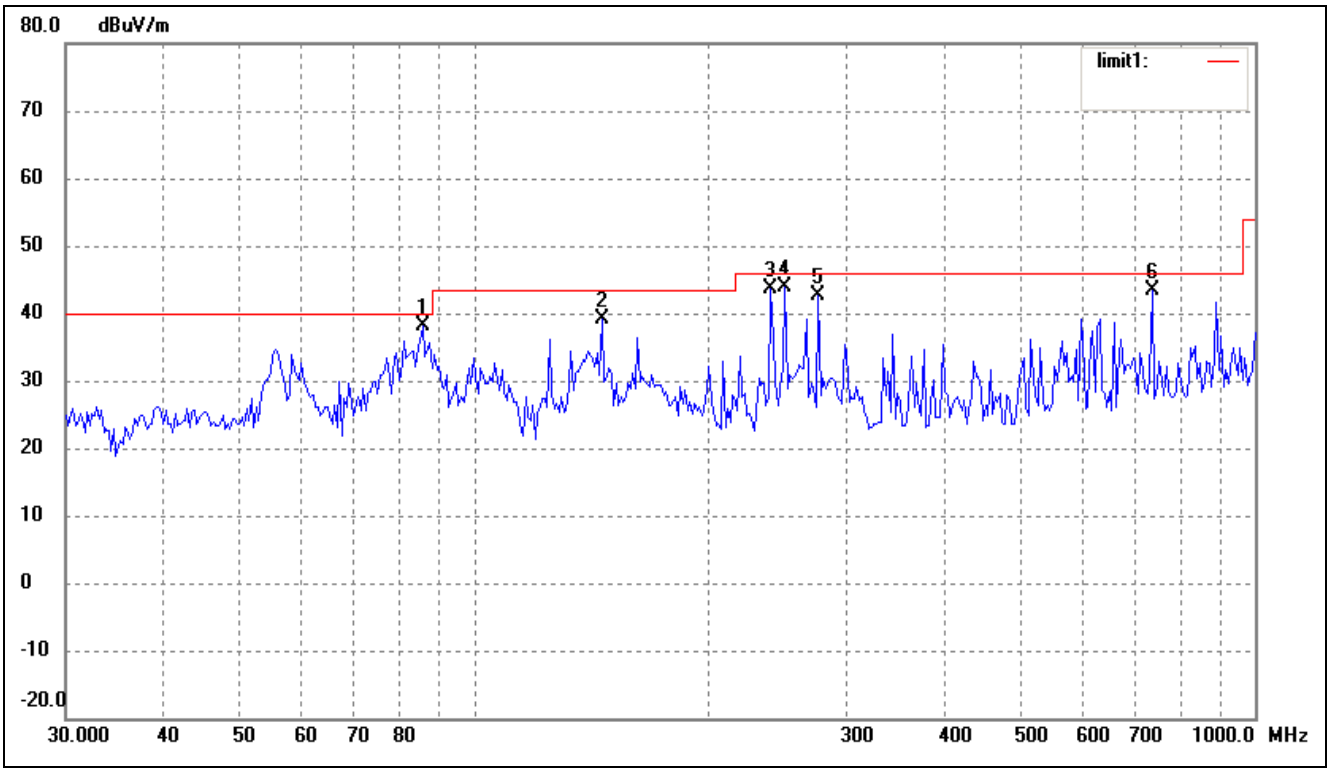
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	30.6391	31.06	6.63	37.69	40.00	-2.31	205	120	QP
2	67.7856	34.46	4.09	38.55	40.00	-1.45	30	100	QP
3	98.3752	31.93	7.70	39.63	43.50	-3.87	0	150	QP
4	127.5865	37.57	4.20	41.77	43.50	-1.73	145	100	QP
5	268.7212	34.76	8.15	42.91	46.00	-3.09	300	110	QP
6	516.5651	30.73	11.19	41.92	46.00	-4.08	360	100	QP

Test mode: Transmitting-Middle channel

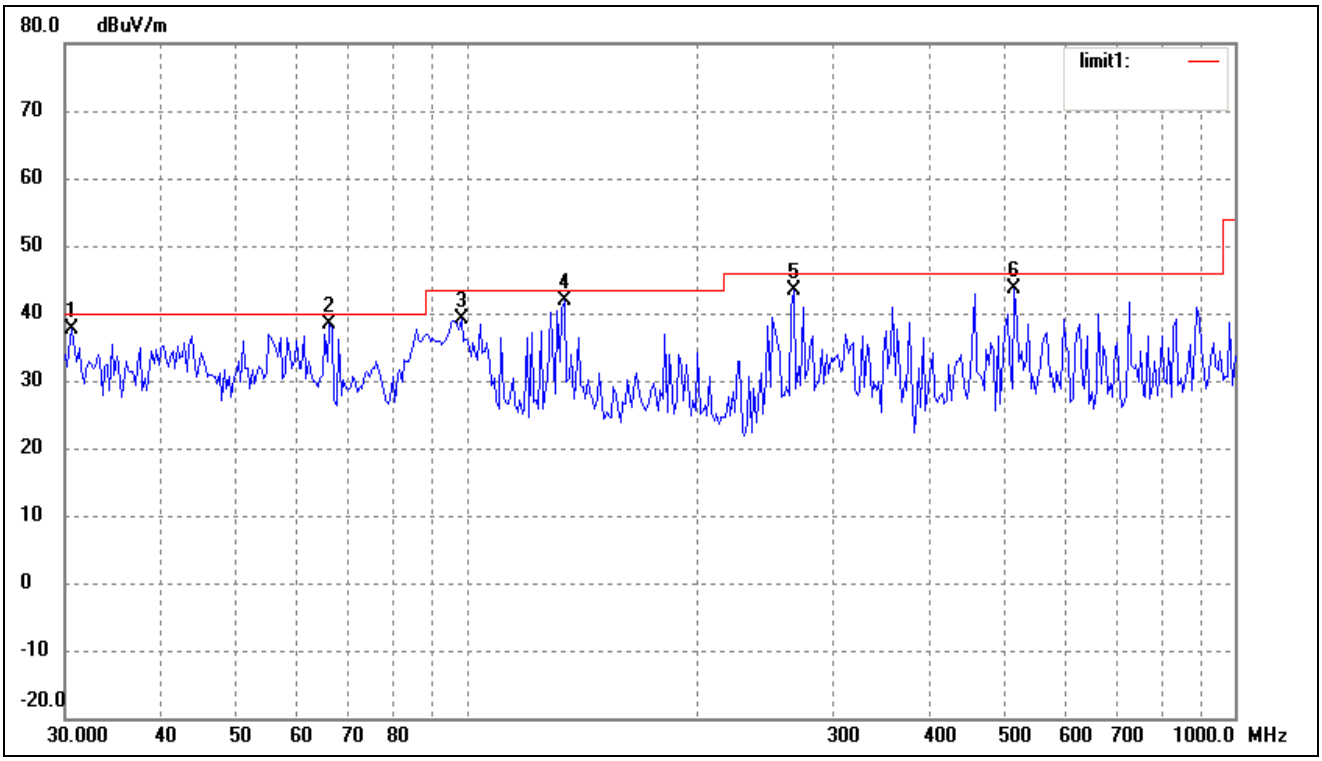
Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	86.0795	32.77	5.29	38.06	40.00	-1.94	210	100	QP
2	145.8109	35.78	3.27	39.05	43.50	-4.45	140	100	QP
3	240.1442	36.22	7.44	43.66	46.00	-2.34	360	120	QP
4	250.4858	36.19	7.69	43.88	46.00	-2.12	0	100	QP
5	276.3817	34.28	8.36	42.64	46.00	-3.36	266	110	QP
6	739.2136	30.36	13.03	43.39	46.00	-2.61	360	100	QP

Test mode: Transmitting-Middle channel

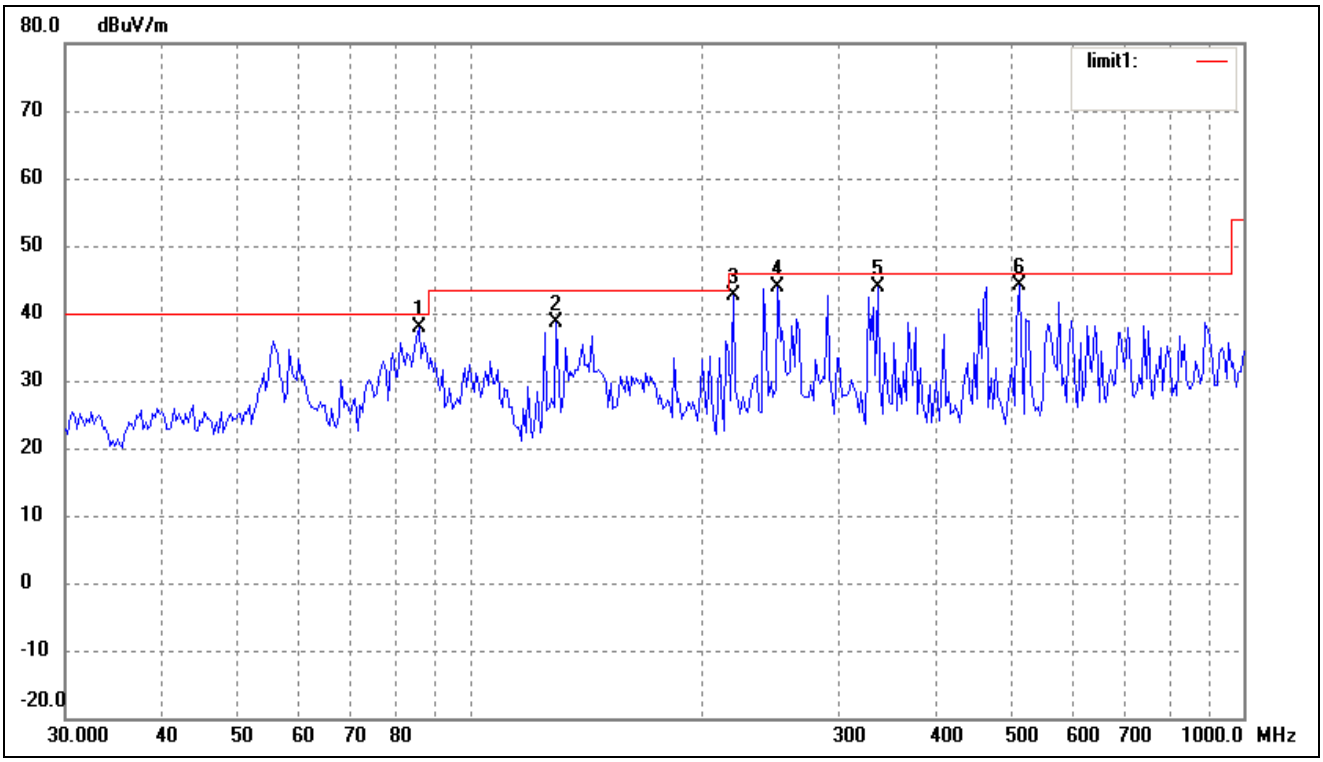
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	30.6391	30.99	6.63	37.62	40.00	-2.38	220	120	QP
2	66.3714	33.75	4.65	38.40	40.00	-1.60	48	100	QP
3	98.3752	31.45	7.70	39.15	43.50	-4.35	5	150	QP
4	134.0193	38.38	3.60	41.98	43.50	-1.52	116	100	QP
5	266.8394	35.34	8.11	43.45	46.00	-2.55	290	110	QP
6	516.5651	32.54	11.19	43.73	46.00	-2.27	354	100	QP

Test mode: Transmitting-High channel

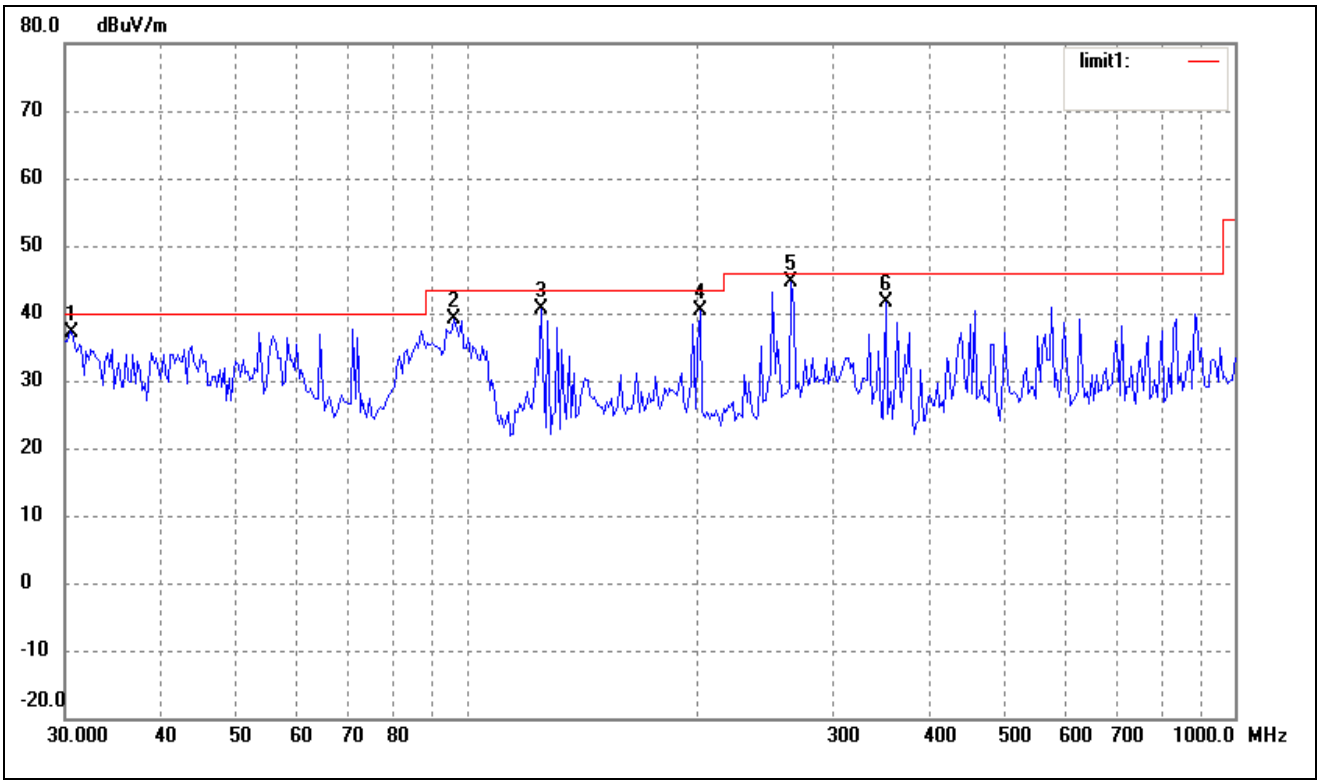
Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	86.0795	32.67	5.29	37.96	40.00	-2.04	206	100	QP
2	129.3923	34.70	3.93	38.63	43.50	-4.87	145	100	QP
3	219.1785	36.44	6.31	42.75	46.00	-3.25	10	120	QP
4	250.4858	36.14	7.69	43.83	46.00	-2.17	20	100	QP
5	336.4816	34.74	9.16	43.90	46.00	-2.10	270	110	QP
6	512.9478	33.12	11.13	44.25	46.00	-1.75	354	100	QP

Test mode: Transmitting-High channel

Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	30.6391	30.60	6.63	37.23	40.00	-2.77	221	120	QP
2	96.3229	31.54	7.56	39.10	43.50	-4.40	45	100	QP
3	124.9248	36.15	4.57	40.72	43.50	-2.78	0	150	QP
4	201.4539	34.54	5.73	40.27	43.50	-3.23	120	100	QP
5	264.9708	36.45	8.06	44.51	46.00	-1.49	271	110	QP
6	350.9721	32.20	9.46	41.66	46.00	-4.34	360	100	QP

Spurious Emission Above 1GHz

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (5745MHz)										
11490	AV	39.9	270	V	38.3	8.3	34.2	52.3	54	-1.7
17235	AV	32.5	90	V	41.1	9.5	34.7	48.4	54	-5.6
11490	AV	39.2	60	H	38.3	8.3	34.2	51.6	54	-2.4
17235	AV	31.8	45	H	41.1	9.5	34.7	47.7	54	-6.3
11490	PK	49.4	90	V	38.3	8.3	34.2	61.8	74	-12.2
17235	PK	42.6	270	V	41.1	9.5	34.7	58.5	74	-15.5
11490	PK	48.8	45	H	38.3	8.3	34.2	61.2	74	-12.8
17235	PK	42.0	180	H	41.1	9.5	34.7	57.9	74	-16.1
Middle Channel (5785MHz)										
11570	AV	39.1	90	V	38.3	8.3	34.2	51.5	54	-2.5
17355	AV	31.9	270	V	41.1	9.5	34.7	47.8	54	-6.2
11570	AV	39.5	45	H	38.3	8.3	34.2	51.9	54	-2.1
17355	AV	32.6	60	H	41.1	9.5	34.7	48.5	54	-5.5
11570	PK	48.3	270	V	38.3	8.3	34.2	60.7	74	-13.3
17355	PK	41.5	45	V	41.1	9.5	34.7	57.4	74	-16.6
11570	PK	48.9	180	H	38.3	8.3	34.2	61.3	74	-12.7
17355	PK	42.4	45	H	41.1	9.5	34.7	58.3	74	-15.7
High Channel (5825MHz)										
11650	AV	39.8	90	V	38.3	8.3	34.2	52.2	54	-1.8
17475	AV	33.5	270	V	41.1	9.5	34.7	49.4	54	-4.6
11650	AV	39.3	60	H	38.3	8.3	34.2	51.7	54	-2.3
17475	AV	32.8	60	H	41.1	9.5	34.7	48.7	54	-5.3
11650	PK	50.3	270	V	38.3	8.3	34.2	62.7	74	-11.3
17475	PK	43.5	45	V	41.1	9.5	34.7	59.4	74	-14.6
11650	PK	50.1	180	H	38.3	8.3	34.2	62.5	74	-11.5
17475	PK	42.9	45	H	41.1	9.5	34.7	58.8	74	-15.2

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 3th Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

9. OUT OF BAND EMISSIONS

9.1 Standard Applicable

According to §15.247 (d) 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.

9.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Agilent	Spectrum Analyzer	E7405A	US41192821	2008-01-25	2009-01-24
Positioning Controller	C&C	CC-C-1F	N/A	2008-01-25	2009-01-24
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2008-01-25	2009-01-24
Rohde & Schwarz	Horn Antenna	HF906	100014	2008-01-25	2009-01-24
RF Switch	EM	EMSW18	SW060023	2008-01-25	2009-01-24
Amplifier	Agilent	8447F	3113A06717	2008-01-25	2009-01-24
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2008-01-25	2009-01-24
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2008-01-25	2009-01-24

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

9.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW, VBW=100KHz, Span=50MHz, Sweep = auto
3. Set the Lowest and Highest Transmitting Channel, observed the outside band of 2400MHz to 2438.5MHz, then mark the higher-level emission for comparing with the FCC rules.

9.4 Environmental Conditions

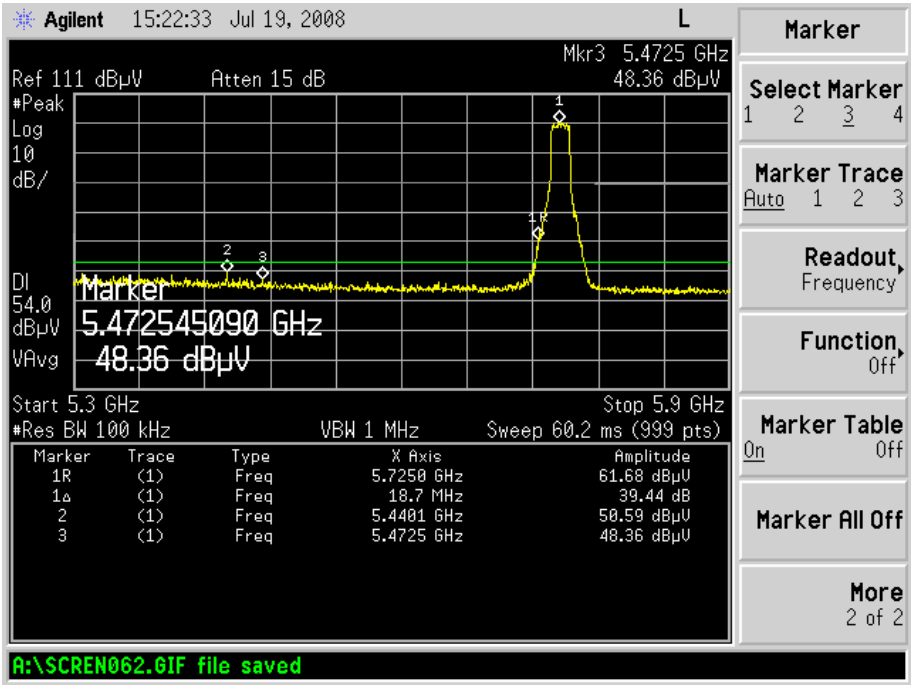
Temperature:	21° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

9.5 Summary of Test Results/Plots

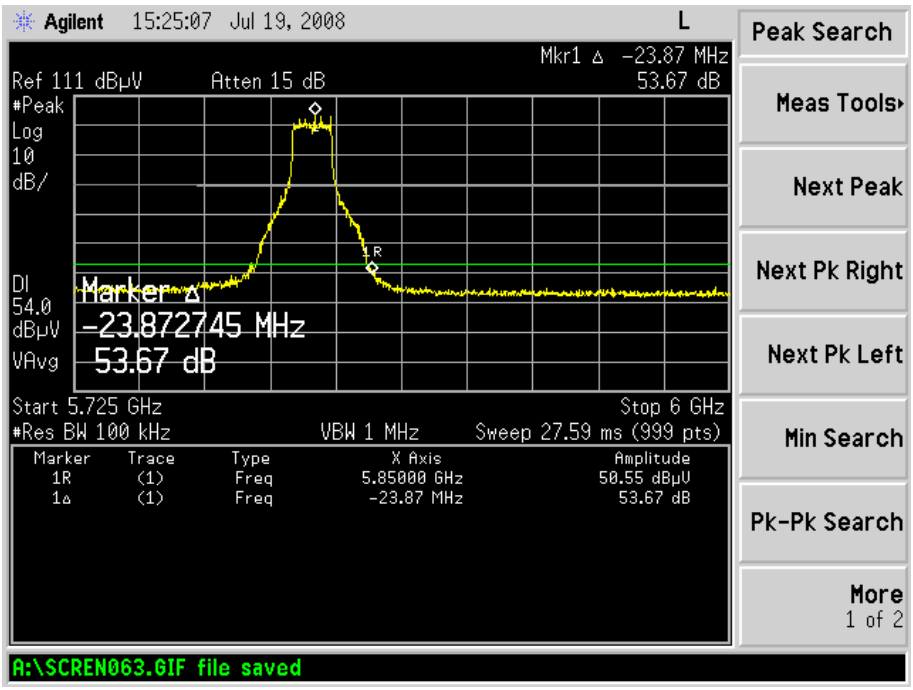
Test mode	Frequency MHz	Limit dBuV /dB	Result
802.11a Chain A (To Direction Ant.)	5460	<54dBuv	Pass
	5725	>20dB	Pass
	5850	>20dB	Pass
802.11a Chain B (To Omni Ant.)	5460	<54dBuv	Pass
	5725	>20dB	Pass
	5850	>20dB	Pass

For 802.11a Chain A

Lowest Bandedge

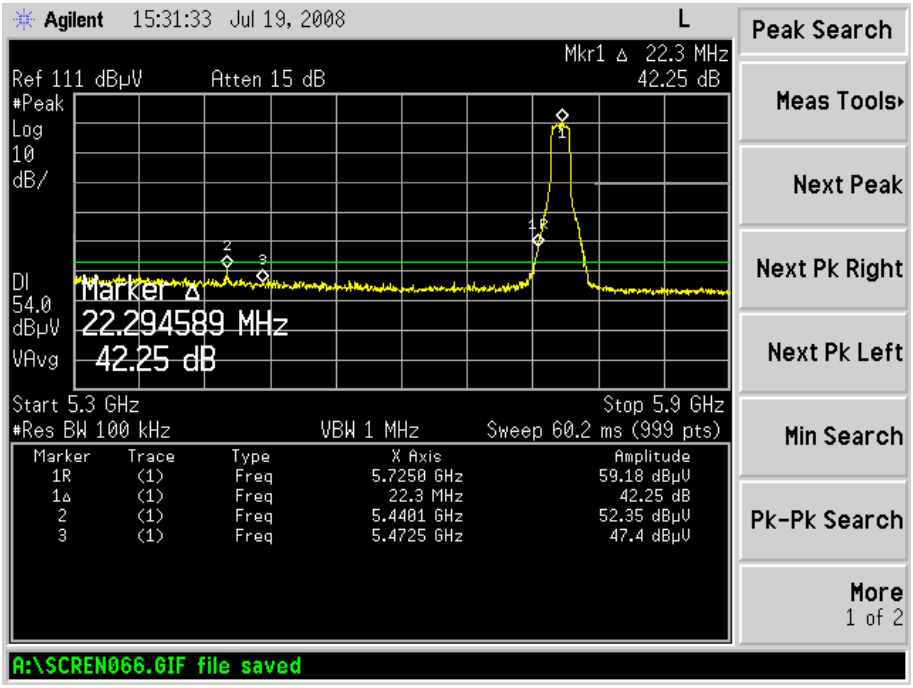


Highest Bandedge

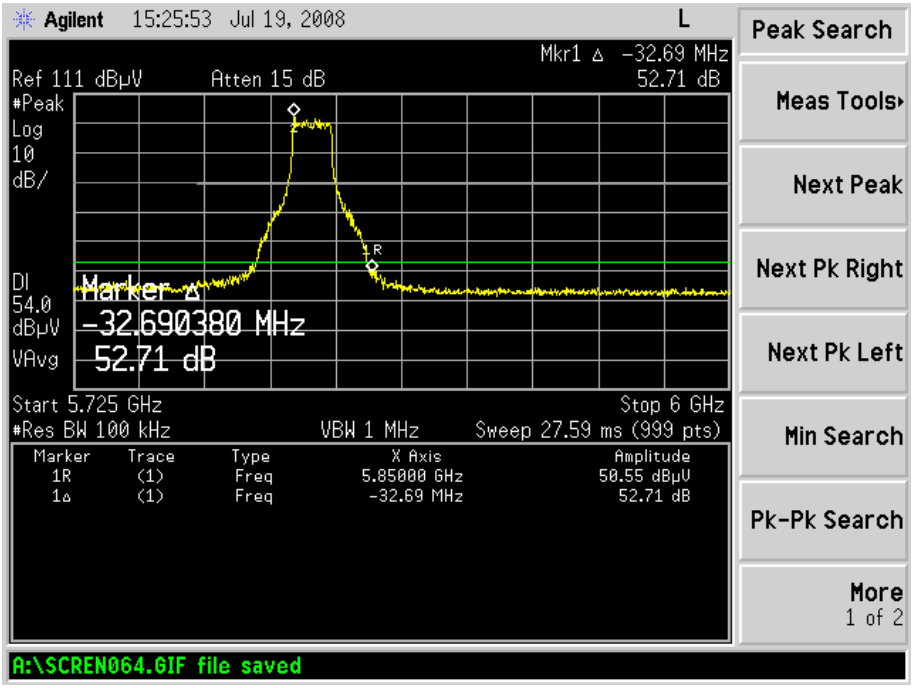


For 802.11a Chain B

Lowest Bandedge



Highest Bandedge



10. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

10.1 Standard Applicable

According to § 1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100000			5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100000			1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density

10.2 MPE Calculation Method

$S = (P*G) / (4*\Pi*R^2)$

S = power density (in appropriate units, e.g., mw/cm^2)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

10.3 MPE Calculation Result

For Chain A (To Direction Aetenna):

Maximum peak output power at antenna input terminal: 16.70 (dBm)
Maximum peak output power at antenna input terminal: 46.7735(mW)
Prediction distance: 20 (cm)
Prediction frequency: 5825 (MHz)
Antenna gain (typical): 19 (dBi)
Antenna gain (numeric): 79.432823 (numeric)
The worst case is power density at prediction frequency at 20cm: 0.739146 (mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

0.739146 (mw/cm^2) < 1 (mw/cm^2)

For Chain B (To Omni Aetenna):

Maximum peak output power at antenna input terminal: 17.64(dBm)
Maximum peak output power at antenna input terminal: 58.07644(mW)
Prediction distance: 20 (cm)
Prediction frequency: 5745 (MHz)
Antenna gain (typical): 8 (dBi)
Antenna gain (numeric): 6.309573 (numeric)
The worst case is power density at prediction frequency at 20cm: 0.0729 (mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

0.0729 (mw/cm^2) < 1 (mw/cm^2)

Result: Pass

******* END OF REPORT *******