





# ISO/IEC17025Accredited Lab.

Report No: FCC/IC 0808057-01 File reference No: 2008-10-16

Applicant: Group Sense Mobile-Tech Limited

Product: PDA with WiFi 802.11b/g

Model No: WF35

Trademark: WideFly

Test Standards: FCC Part 15 Subpart C, Paragraph 15.247 and RSS-210

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.247 regulations and RSS-210 for the evaluation of

electromagnetic compatibility

Approved By

Jack Chung

Jack Chung Manager

Dated: Oct 16,2008

Results appearing herein relate only to the sample tested The technical reports is issued errors and omissions exempt and is subject to withdrawal at

# SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD

5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

Tel (755) 83448688 Fax (755) 83442996

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# **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

#### **CNAL-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

# FCC-Registration No.: 899988

The 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. Registration No.: 899988.

# IC- Registration No.: IC5205A-01

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-01.



Date: 2008-10-16



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#### 1.0 General Details

#### 1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD

Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District,

Shenzhen, CHINA.

Telephone: (755) 83448688 Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-01

For 3m & 10 m OATS

#### 1.2 Applicant Details

Applicant: Group Sense Mobile-Tech Limited

Address: 6 th Floor, Building 9, No.5 Science Park West Avenue, Hong Kong Science Park, Shatin,

Hong Kong

Telephone: 852-28328596 Fax: 852-25912397

### 1.3 Description of EUT

Product: PDA with WiFi 802.11b/g

Manufacturer: Group Sense Mobile-Tech Limited

Brand Name: WideFly
Model Number: WF35
Additional Model Name DT350
Additional Trade Name Xplore

Rating: Input: DC 5V; 1.5A

Power Supply: Model 1: SCP0501500P, Input: 100-240V~, 0.3A, 50/60Hz; Output: DC5V, 1.5A

Model 2:S010AU0500150, Input: 100-240V~, 0.35A, 50/60Hz; Output: DC5V,

1.5A

Type of Modulation OFDM

Frequency range 2412-2462MHz

Number of Channel 11

Air Data Rate 54、48、36、24、18、12、9、6Mbps at 802.11g mode; 11、5.5、2、1Mbps at

802.11b mode

Frequency Selection By software

Antenna type chip dielectric antenna

#### 1.4 Submitted Sample

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2 Sample

1.5 Test Duration 2007-08-08 to 2007-10-15

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

Terry Tang

The sample tested by

Print Name: Terry Tang

2.0			Took E	Same and a		
	. T	) / C /	Test Equi	Ī	D : 601	D D :
Instrument Type		Manufacturer	Model	Serial No.	Date of Cal.	Due Date
	PI Test	ROHDE&SCHWARZ	ESPI 3	100379	2007-12-05	2008-12-04
Rec	ceiver					
Absorbi	ing Clamp	ROHDE&SCHWARZ	MDS-21	100126	2007-12-05	2008-12-04
T	WO	ROHDE&SCHWARZ	EZH3-Z5	100294	2007-12-05	2008-12-04
Line-V	V-NETW	KUNDE&SCHWAKZ	EZN3-Z3	100294	2007-12-03	2006-12-04
T	WO	DOUBL O COLUMN DO	EGU2 65	100252	2007 12 05	2000 12 04
Line-V	V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2007-12-05	2008-12-04
Ultra B	roadband	ROHDE&SCHWARZ	HL562	100157	2007-12-05	2008-12-04
A	NT					
ESD	V Test	ROHDE&SCHWARZ	ESDV	100008	2008-04-26	2009-04-25
Rec	ceiver					
4-WI	RE ISN	ROHDE&SCHWARZ	ENY 41	830663/044	2008-02-18	2009-02-17
	ENY22					
	e 2-Wire	ROHDE&SCHWARZ	ENY22	83066/016	2008-02-18	2009-02-17
	SN	ROHDLæschwarz	LIVIZZ	03000/010	2000-02-10	2007-02-17
		ROHDE&SCHWARZ	ESH3-Z2	100281	2008-02-18	2009-02-17
Impuls-Begrenzer		Τ		100281		
System Controller		CT	SC100	-	2008-02-18	2009-02-17
Pr	rinter	EPSON	РНОТО ЕХЗ	CFNH234850	2008-02-18	2009-02-17
FM-A	M Signal	HINC HN	CC 150M	200011177	2009 02 19	2000 02 17
Ger	nerator	JUNG.JIN	SG-150M	389911177	2008-02-18	2009-02-17

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		13			
Color TV Pattern Generator	PHILIPS	PM5418	LO621747	2008-02-18	2009-02-17
Computer	IBM	8434	1S8434KCE99BLX LO*	-	-
Oscillator	KENWOOD	AG-203D	3070002	2008-02-18	2009-02-17
Power meter	Anritsu	ML2487A	6K00003613	2008-02-18	2009-02-17
Power sensor	Anritsu	MA2491A	32263	2008-02-18	2009-02-17
Spectrum Analyzer	HAMEG	HM5012	-	2008-04-26	2009-04-25
Power Supply	LW	APS1502	-	-	-
5K VA AC Power Source	California Instruments	5001iX	56060	2008-02-18	2009-02-17
CDN	EM TEST	CDN M2/M3	-	2008-02-18	2009-02-17
Attenuation	EM TEST	ATT6/75	-	2008-02-18	2009-02-17
Resistance	EM TEST	R100	-	2008-02-18	2009-02-17
Electromagnetic Injection Clamp	LITTHI	EM101	35708	2008-02-18	2009-02-17
Signal Generator	ROHDE&SCHWARZ	SMT03	100029	2008-02-18	2009-02-17
Power Amplifier	AR	150W1000	300999	2008-02-18	2009-02-17
Field probe	Holaday	HI-6005	105152	2008-02-18	2009-02-17
Bilog Antenna	Chase	CBL6111C	2576	2008-02-18	2009-02-17
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2008-02-18	2009-02-17
3m OATS			N/A	2008-02-18	2009-02-17
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2008-08-18	2009-08-17
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2008-04-26	2009-04-25

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#### 3.0 Technical Details

# 3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107 & 15.207, RSS-210	<b>Conducted Emission Test</b>	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit RSS-210	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz	PASS	Complies
FCC Part 15, Paragraph 15.247(b) RSS-210	Maximum peak output power Limit: max. 30dBm	PASS	Complies
FCC Part 15, Paragraph 15.109,15.205 & 15.209 RSS-210	Transmitter Radiated Emission Limit: Table 15.209	PASS	Complies
FCC Part 15, Paragraph 15.247(d) RSS-210	Power Spectral Density Limit: max. 8dBm	PASS	Complies
FCC Part 15, Paragraph 15.247(c)	Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209	PASS	Complies
RSS-210	99% occupied bandwidth	PASS	Complies

# 3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

#### 4.0 EUT Modification

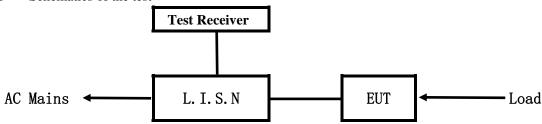
No modification by Shenzhen Timeway Technology Consulting Co.,Ltd

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# 5. Power Line Conducted Emission Test



#### 5.1 Schematics of the test

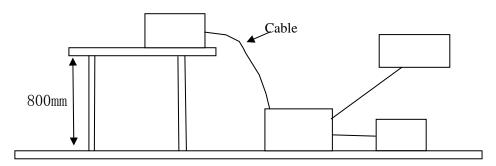


**EUT: Equipment Under Test** 

#### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.

#### Block diagram of Test setup



# 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

Two channels are provided to the EUT

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437		

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#### A. EUT

Device	Manufacturer	Model	FCC & IC ID
PDA with WiFi	Group Sense Mobile-Tech Limited	WF35	VRI-B106
802.11b/g			7039A-WFB106

#### B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

# C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A				

# 5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency	Class A Lim	its (dB µ V)	Class B Limits (dB µ V)		
(MHz)	Quasi-peak Level Average Level		Quasi-peak Level	Average Level	
$0.15 \sim 0.50$	79.0	66.0	66.0~56.0*	56.0~46.0*	
$0.50 \sim 5.00$	73.0	60.0	56.0	46.0	
$5.00 \sim 30.00$	73.0	60.0	60.0	50.0	

Notes:

- 1. \*Decreasing linearly with logarithm of frequency.
- 2. The tighter limit shall apply at the transition frequencies

#### 5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

Note: the worse cases was selected to conducted the test

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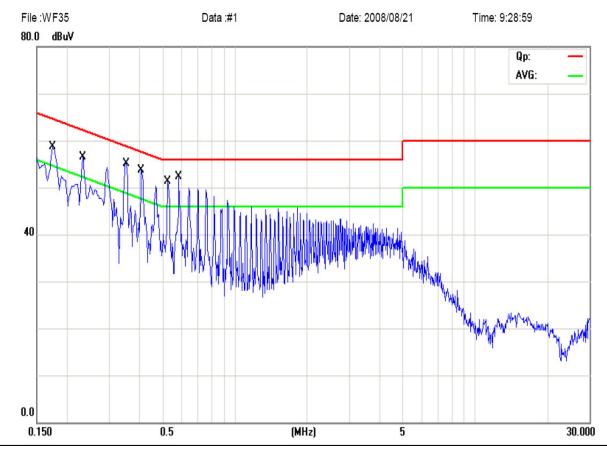
# A Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Transmitting mode
Power supply model SCP0501500P

**Results:** Pass

Please refer to following diagram for individual

### **Conducted Emission Measurement**



Eraguanay	Reading(dB \( \mu \)				Limit	
Frequency (MHz)	Neutr	Neutral		Line		V)
(WITIZ)	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.174	56.33	37.53			64.77	54.77
0.233	54.49	31.74			62.34	52.34
0.350	53.51	40.51			58.94	48.91
0.408	51.27	40.17			57.68	47.68
0.525	48.20	37.50			56.00	46.00
0.584	49.26	35.36			56.00	46.00

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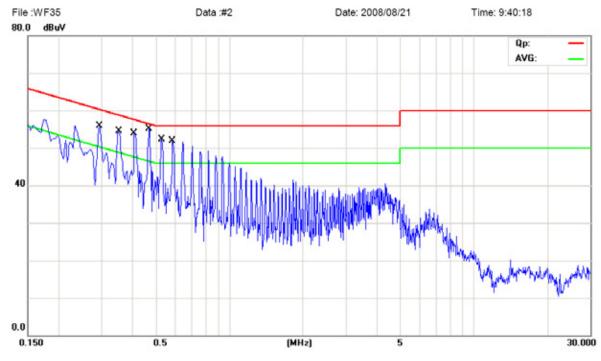
# B Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Transmitting mode
Power supply model SCP0501500P

Results: Pass

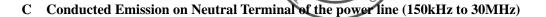
Please refer to following diagram for individual

#### Conducted Emission Measurement



Eraguanay	Reading(dB µ V)			Limit		
Frequency (MHz)	Neutr	Neutral		Line		V)
(WITIZ)	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.293			54.45	33.45	60.24	50.24
0.353			53.22	32.62	58.88	48.88
0.408			52.37	38.27	57.67	47.67
0.469			53.34	34.84	56.52	46.52
0.529			50.80	29.80	56.00	46.00
0.588			50.16	33.76	56.00	46.00

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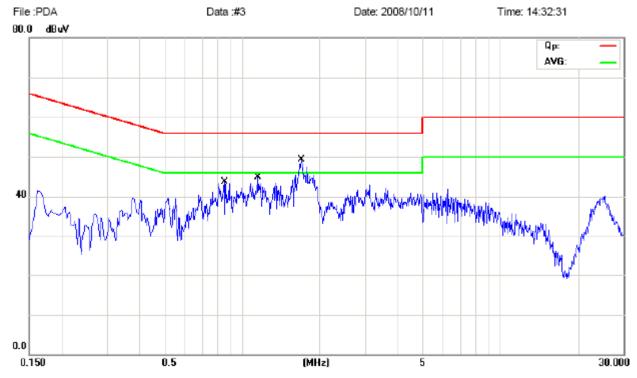


EUT set Condition: Transmitting mode
Power supply model S010AU0500150

**Results:** Pass

Please refer to following diagram for individual

#### Conducted Emission Measurement



Fraguanay		Reading(dB µ V)			Limit	
Frequency (MHz)	Neutral Line		$(dB \mu V)$			
(WITIZ)	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.8536	36.64	22.34			56.00	46.00
1.1588	37.46	25.86			56.00	46.00
1.7090	40.28	28.18			56.00	46.00

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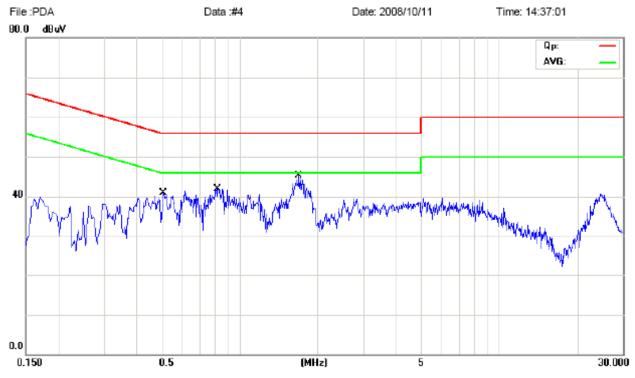
# D Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Transmitting mode
Power supply model S010AU0500150

**Results:** Pass

Please refer to following diagram for individual

# Conducted Emission Measurement



Fraguanay	Reading(dB \( \mu \)			Limit		
Frequency (MHz)	Neutr	al	Line		(dB µ V)	
(MHZ)	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.5101			36.18	21.18	56.00	46.00
0.8264			37.62	22.92	56.00	46.00
1.7001			38.88	24.88	56.00	46.00

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#### 6 Radiated Emission Test

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- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
- (3) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

# Block diagram of Test setup Distance = 3m Computer Pre -Amplifier EUT Turn-table Receiver

- 6.2 Configuration of The EUT

  Same as section 5.3 of this report
- 6.3 EUT Operating Condition
  Same as section 5.4 of this report.

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#### 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

### Frequencies in restricted band are complied to limit on Paragraph 15.209 and RSS-210

Frequency Range (MHz)	Distance (m)	Field strength (dB µ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage  $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 2. In the Above Table, the higher limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

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#### Test result

# General Radiated Emission Data and Harmonics Radiated Emission Data

# Radiated Emission In Horizontal (30MHz----1000MHz)

**EUT** set Condition: Tx under transmitting mode

Power supply model SCP0501500P

**Results: Pass** 

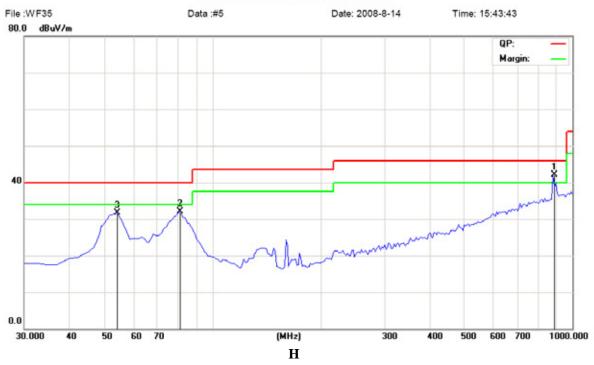
Frequency (MHz)	Level@3m (dB \u03bc V/m)	Antenna Polarity	Limit@3m (dB \( \mu \)V/m)
160.950	26.47	Н	46.00
54.25	31.70	V	40.00
80.925	32.04	V	40.00
886.025	42.16	V	43.50

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Test Figure: transmitting mode

#### **Radiated Emission Measurement**



#### Radiated Emission Measurement



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#### Test result

# General Radiated Emission Data and Harmonics Radiated Emission Data

# Radiated Emission In Horizontal (30MHz----1000MHz)

**EUT** set Condition: Tx under receiving mode

Power supply model SCP0501500P

**Results: Pass** 

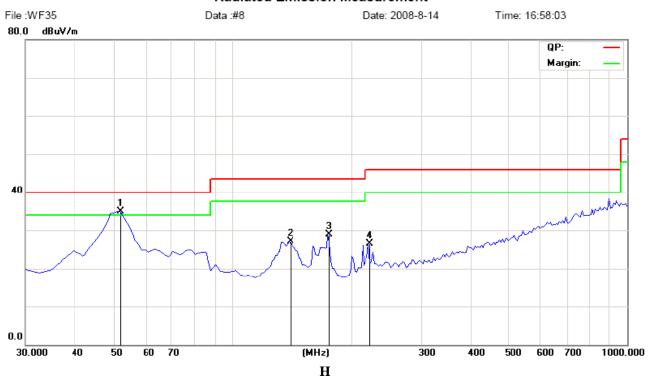
Frequency (MHz)	Level@3m (dB \u03bc V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
134.275	26.40	Н	43.50
175.500	27.67	Н	43.50
221.575	27.27	Н	46.00
51.825	35.00	V	40.00
139.125	27.04	V	43.50
175.500	28.92	V	43.50
221.575	26.58	V	46.00

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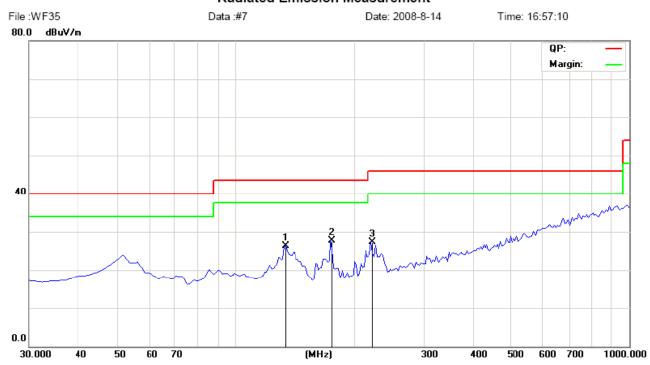


# Test Figure: receiving mode

#### Radiated Emission Measurement



# Radiated Emission Measurement



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#### Test result

# General Radiated Emission Data and Harmonics Radiated Emission Data

# Radiated Emission In Horizontal (30MHz----1000MHz)

**EUT** set Condition: Tx under receiving mode

Power supply model S010AU0500150

**Results: Pass** 

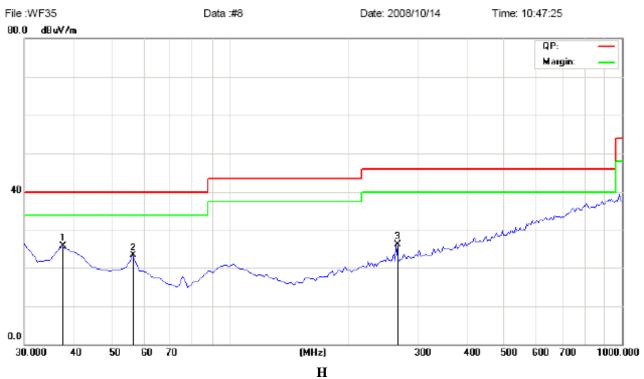
Frequency (MHz)	Level@3m (dB \u03bc V/m)	Antenna Polarity	Limit@3m (dB \u03b4 V/m)
37.351	24.49	Н	40.00
173.075	21.62	Н	43.50
37.351	25.86	V	40.00
56.675	23.29	V	40.00
267.650	26.40	V	46.00

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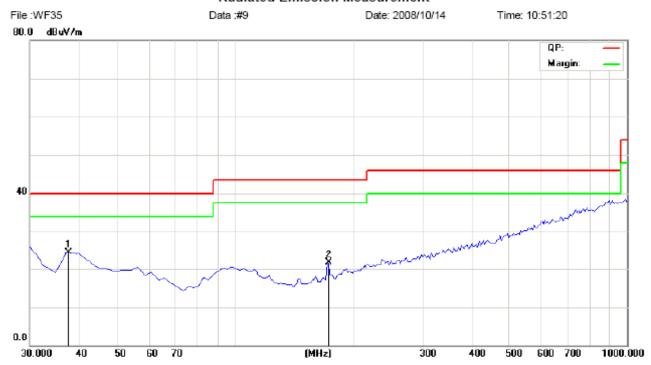


# Test Figure: receiving mode

#### Radiated Emission Measurement



# Radiated Emission Measurement



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Date: 2008-10-16

# Operation Mode: Transmitting & Receiving under CH01 at 6Mbps

	Trung of receiving to	2202 01102 01120	
Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
2412.00	94.2 (PK) /83.8 (AV)	Н	Fundamental Frequency
2412.00	93.6 (PK) /80.2 (AV)	V	Tundamental Frequency
4824.00		H/V	74(Peak)/ 54(AV)
7236.00		H/V	74(Peak)/ 54(AV)
9648.00		H/V	74(Peak)/ 54(AV)
12060		H/V	74(Peak)/ 54(AV)
14472		H/V	74(Peak)/ 54(AV)
16884		H/V	74(Peak)/ 54(AV)
19296		H/V	74(Peak)/ 54(AV)
21708		H/V	74(Peak)/ 54(AV)
24120		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

- 2. Remark "---" means that the emissions level is too low to be measured
- 3. For 802.11g mode 6Mbps

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Operation Mode: Transmitting & Receiving under CH06 at 6Mbps

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
2437.00	100.2 (PK) /87.6 (AV)	Н	Fundamental Frequency
2437.00	98.5 (PK) /84.5 (AV)	V	Tundamental Frequency
4874.00		H/V	74(Peak)/ 54(AV)
7311.00		H/V	74(Peak)/ 54(AV)
9748.00		H/V	74(Peak)/ 54(AV)
12185		H/V	74(Peak)/ 54(AV)
14622		H/V	74(Peak)/ 54(AV)
17059		H/V	74(Peak)/ 54(AV)
19496		H/V	74(Peak)/ 54(AV)
21933		H/V	74(Peak)/ 54(AV)
24370		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

- 2. Remark "---" means that the emissions level is too low to be measured
- 3. For 802.11g mode 6Mbps

Date: 2008-10-16

Operation Mode: Transmitting & Receiving under CH11 at 6Mbps

Frequency (MHz)	Level@3m (dB \u03bc V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
2462.00	95.3 (PK) /83.2 (AV)	Н	Fundamental Frequency
2462.00	92.8 (PK) /80.1 (AV)	V	Tundamental Frequency
4924	-	H/V	74(Peak)/ 54(AV)
7368	1	H/V	74(Peak)/ 54(AV)
9848	1	H/V	74(Peak)/ 54(AV)
12310	1	H/V	74(Peak)/ 54(AV)
14772	1	H/V	74(Peak)/ 54(AV)
17234	1	H/V	74(Peak)/ 54(AV)
19696	1	H/V	74(Peak)/ 54(AV)
22158		H/V	74(Peak)/ 54(AV)
24650		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

- 2. Remark "---" means that the emissions level is too low to be measured
- 3. For 802.11g mode at 6Mbps

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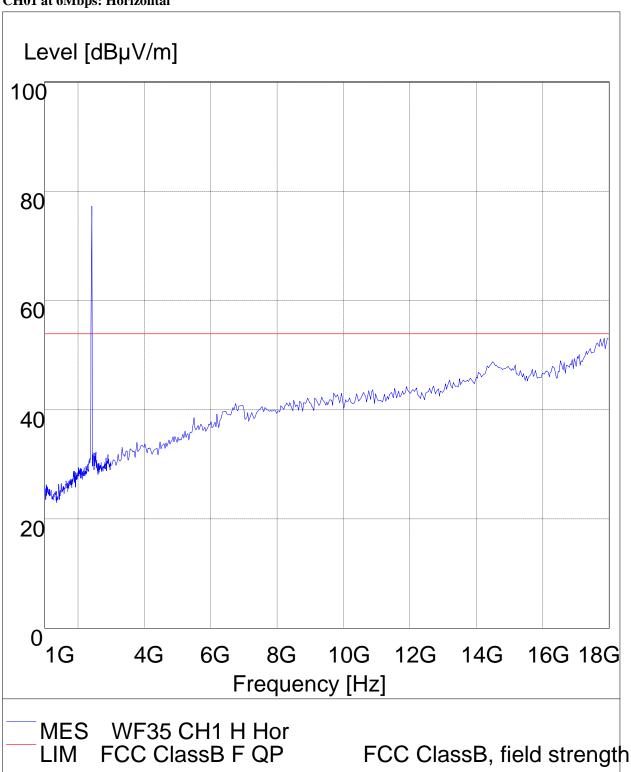
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Please refer to the following test plots for details

CH01 at 6Mbps: Horizontal



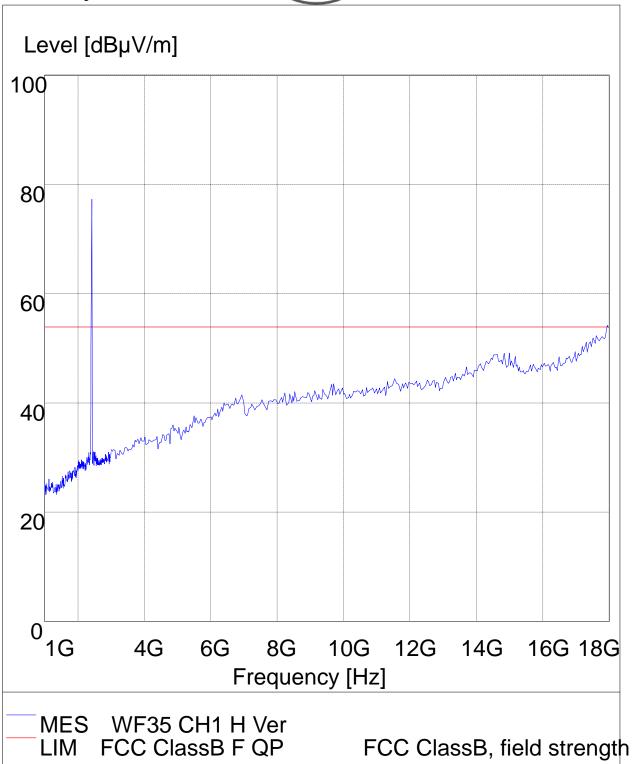
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CH01 at 6Mbps: Vertical

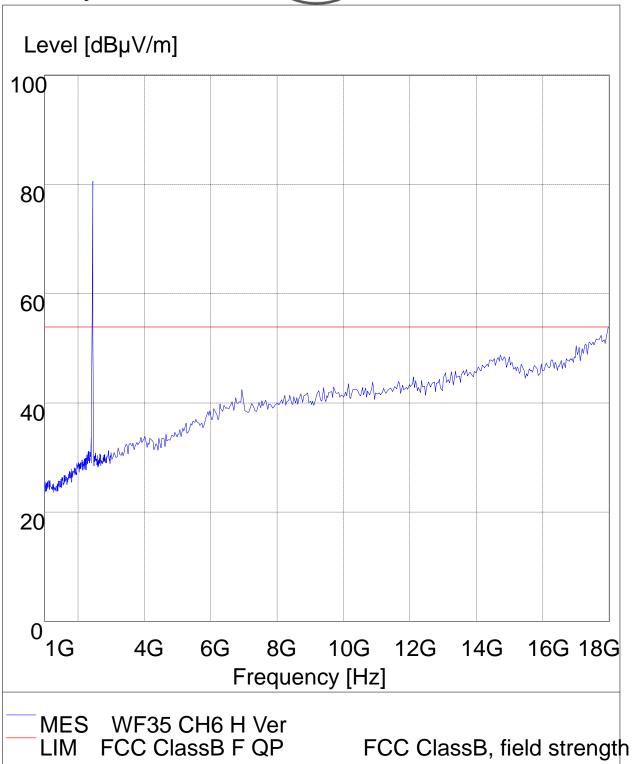


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CH06 at 6Mbps: Vertical

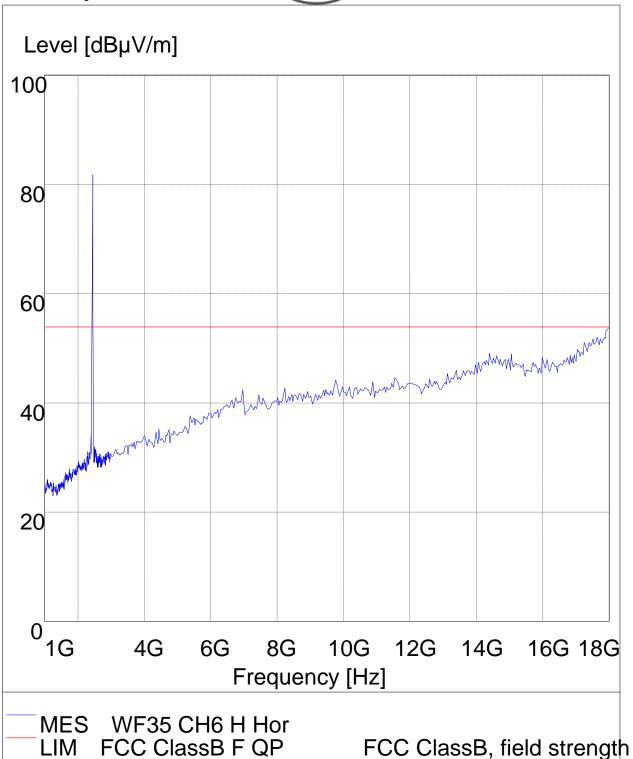


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CH06 at 6Mbps: Horizontal

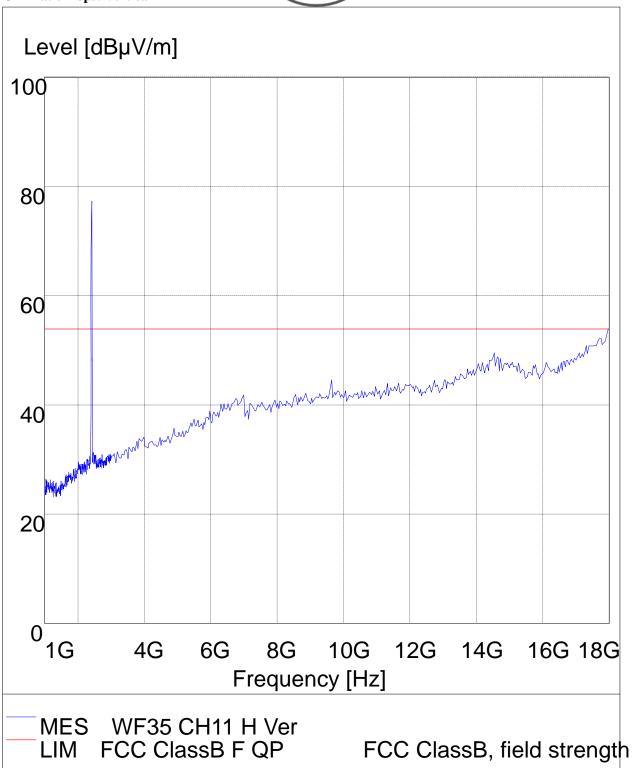


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CH11 at 6Mbps: Vertical

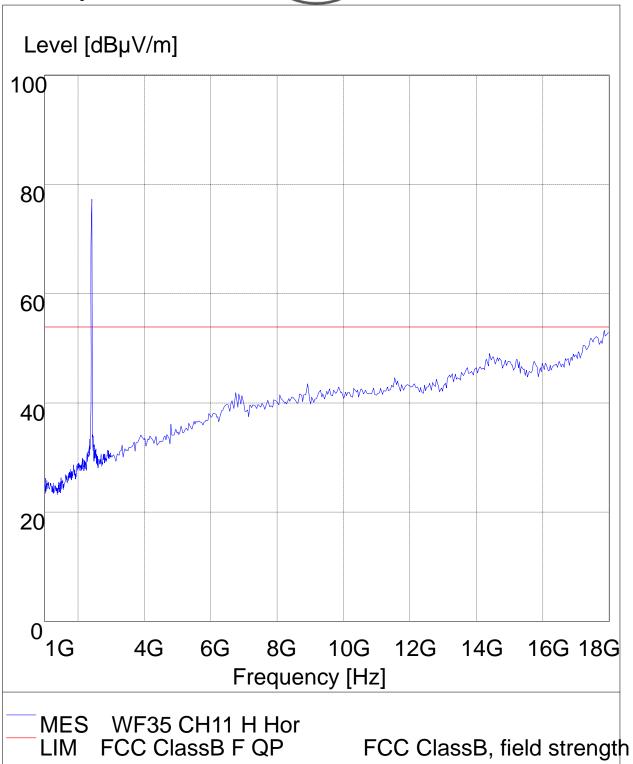


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CH11at 6Mbps: Horizontal

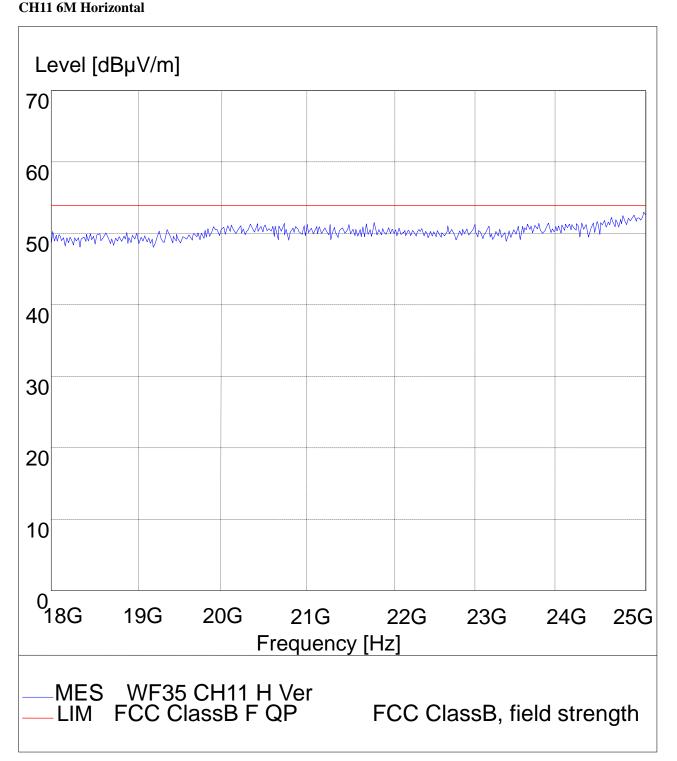


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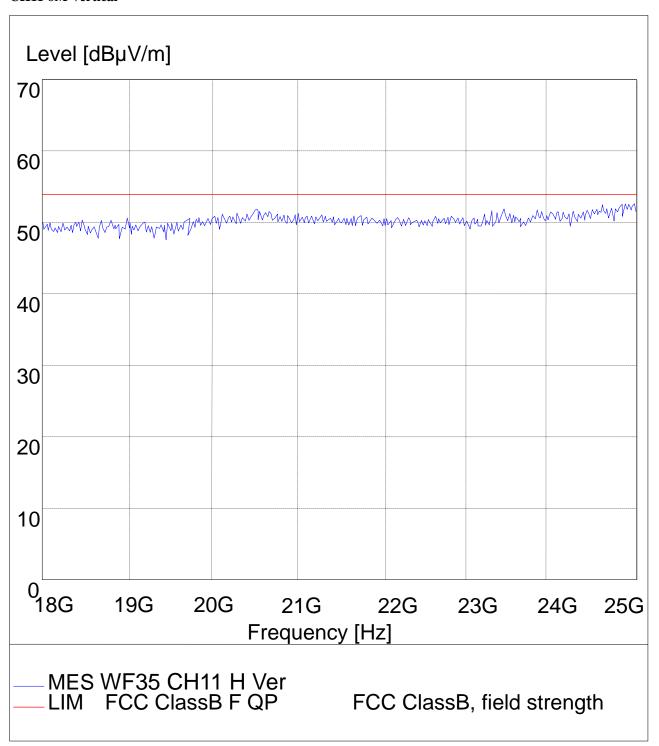
18-25G



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18-25G CH11 6M Vertical



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Operation Mode: Transmitting & Receiving under CH01 at 11Mbps

Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
2412.00	98.2 (PK)/ 86.8(AV)	Н	Fundamental Frequency
2412.00	95.9 (PK)/84.6 (AV)	V	Fundamental Frequency
4824.00		H/V	74(Peak)/ 54(AV)
7236.00		H/V	74(Peak)/ 54(AV)
9648.00		H/V	74(Peak)/ 54(AV)
12060		H/V	74(Peak)/ 54(AV)
14472		H/V	74(Peak)/ 54(AV)
16684		H/V	74(Peak)/ 54(AV)
19296		H/V	74(Peak)/ 54(AV)
21708		H/V	74(Peak)/ 54(AV)
24120		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

- 2. Remark "---" means that the emissions level is too low to be measured
- 3. For 802.11b mode 11Mbps

Date: 2008-10-16

#### Operation Mode: Transmitting & Receiving under CH06 at 11Mbps

	Transmitting & Receiving a		
Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB $\mu$ V/m)
2437.00	97.8 (PK)/ 86.2(AV)	Н	Fundamental Fraguency
2437.00	94.5 (PK)/82.7 (AV)	V	Fundamental Frequency
4874.00		H/V	74(Peak)/ 54(AV)
7311.00		H/V	74(Peak)/ 54(AV)
9748.00		H/V	74(Peak)/ 54(AV)
12185		H/V	74(Peak)/ 54(AV)
14622		H/V	74(Peak)/ 54(AV)
17059		H/V	74(Peak)/ 54(AV)
19496		H/V	74(Peak)/ 54(AV)
21933		H/V	74(Peak)/ 54(AV)
24370		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

- 2. Remark "---" means that the emissions level is too low to be measured
- 3. For 802.11b mode 11Mbps

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Operation Mode: Transmitting & Receiving under CH11 at 11Mbps

operation mode.	Trumsmitting to receiving t	meer criff at marph	
Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
2462.00	99.5 (PK)/ 87.1(AV)	Н	Fundamental Frequency
2462.00	97.2 (PK)/85.9 (AV)	V	Fundamental Frequency
4924		H/V	74(Peak)/ 54(AV)
7368		H/V	74(Peak)/ 54(AV)
9848		H/V	74(Peak)/ 54(AV)
12310		H/V	74(Peak)/ 54(AV)
14772		H/V	74(Peak)/ 54(AV)
17234		H/V	74(Peak)/ 54(AV)
19696		H/V	74(Peak)/ 54(AV)
22158		H/V	74(Peak)/ 54(AV)
24650		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

- 2. Remark "---" means that the emissions level is too low to be measured
- 3. For 802.11b mode at 11Mbps

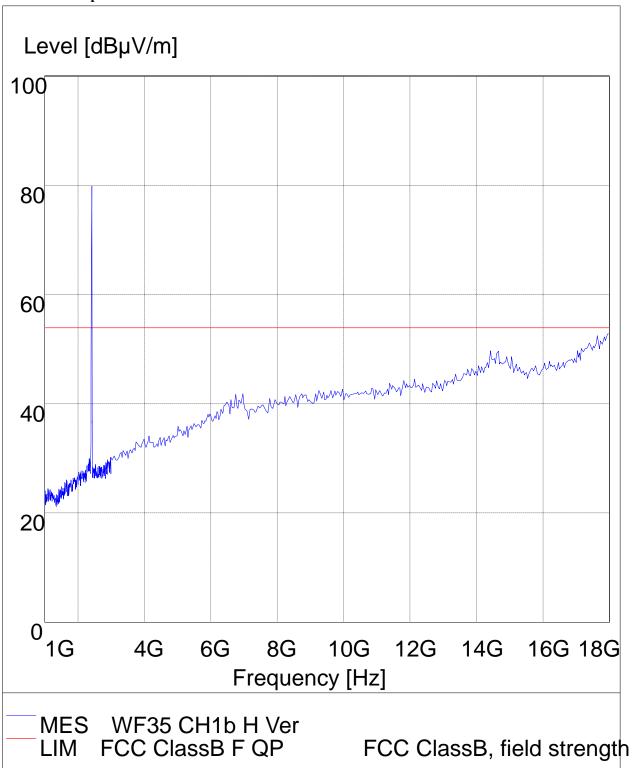
Date: 2008-10-16

Date: 2008-10-16



Please refer to the following test plots for details

CH01 at 11Mbps: Vertical



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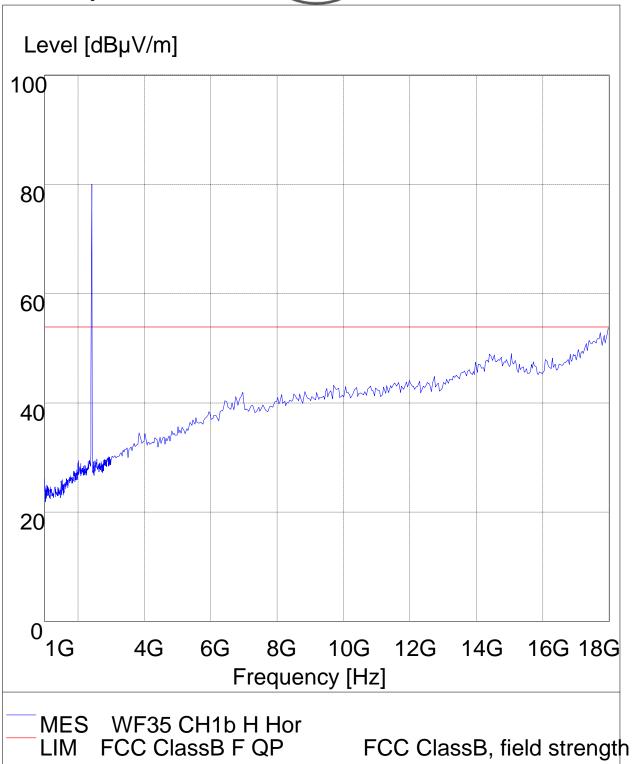
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CH01 at 11Mbps: Horizontal

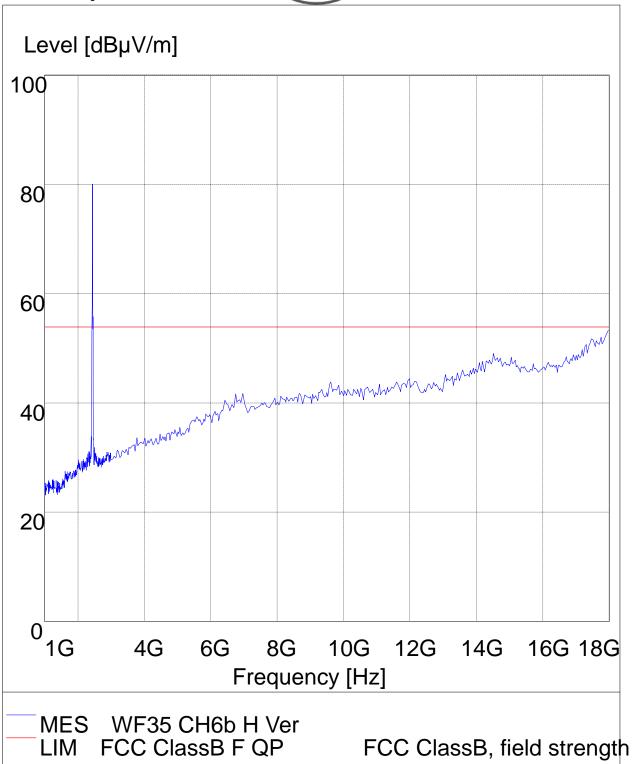


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CH06 at 11Mbps: Vertical

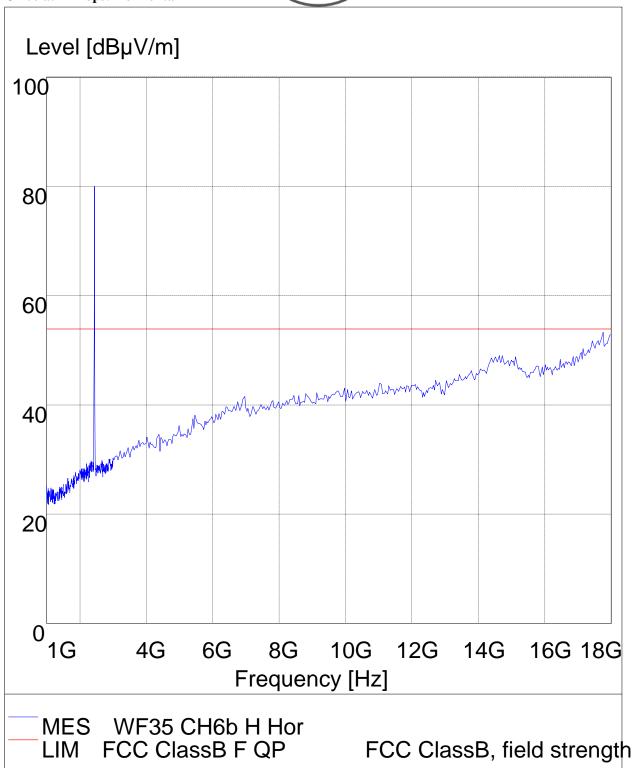


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CH06 at 11Mbps: Horizontal

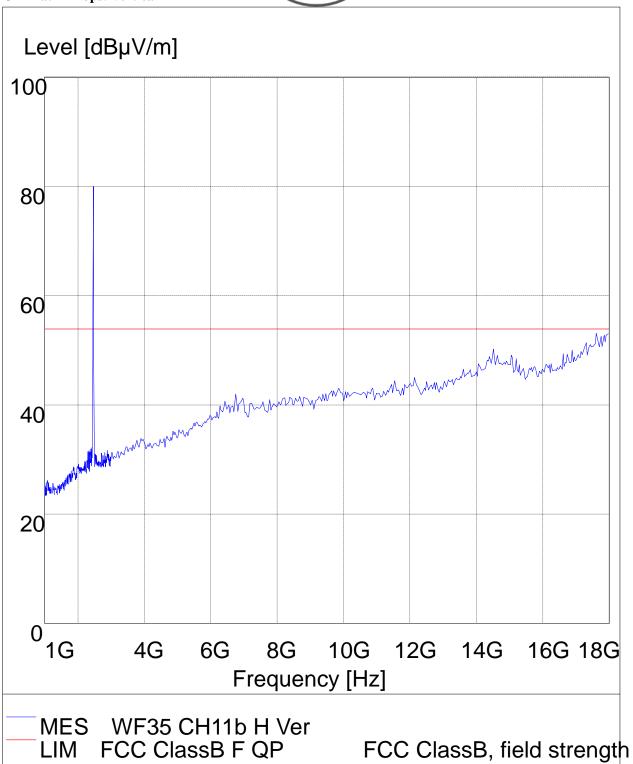


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CH11 at 11Mbps: Vertical

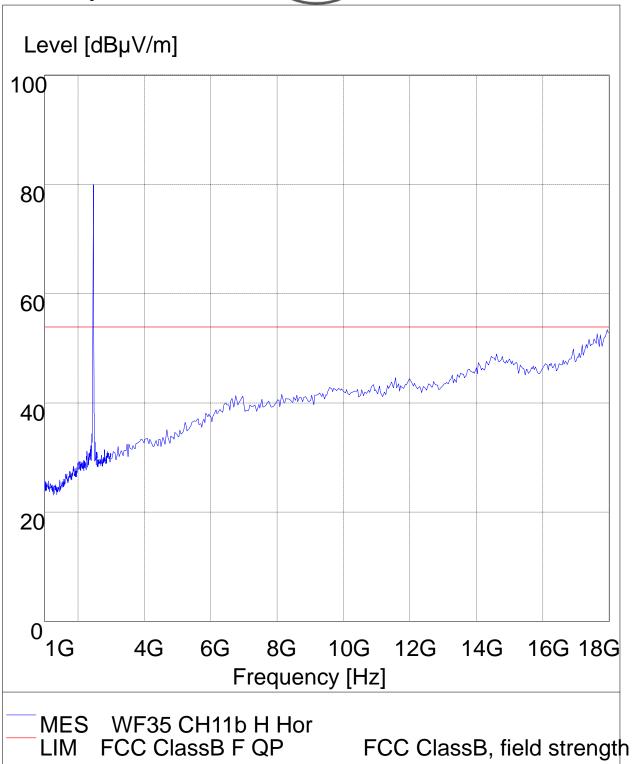


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CH11 at 11Mbps: Horizontal



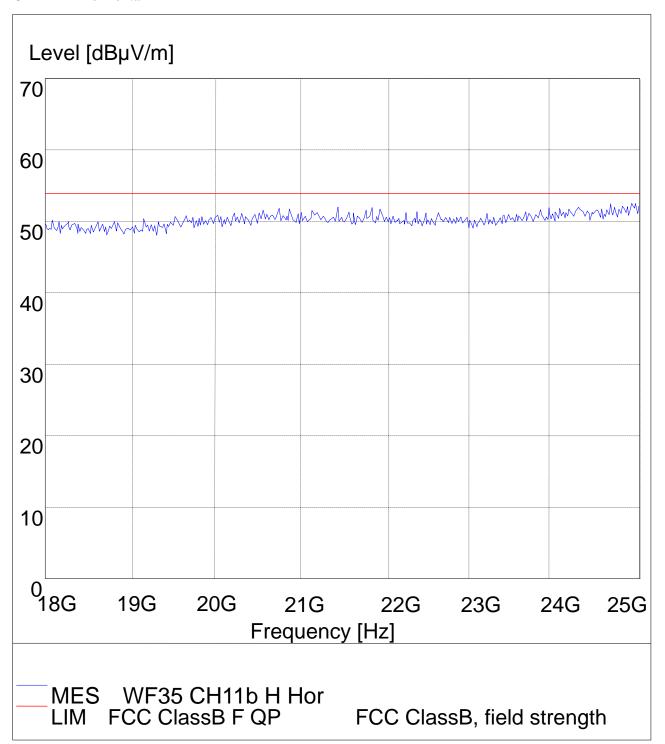
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18-25G

#### **CH11 11M Horizontal**

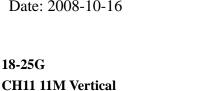


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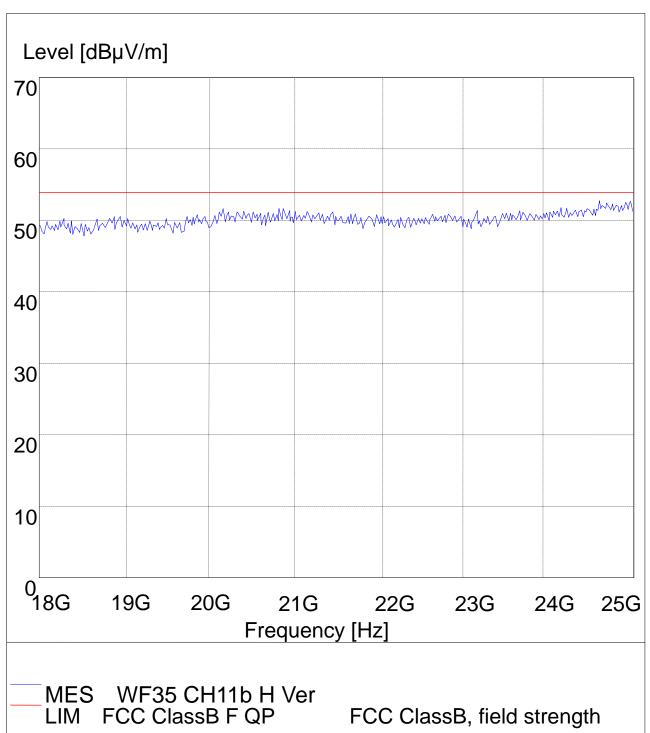
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18-25G







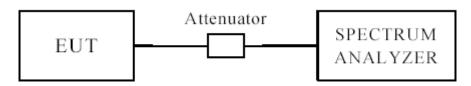
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# **7.0** 6dB Bandwidth Measurement

# 7.1 Test Setup



#### 7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500KHz

#### 7.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator.

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 100 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

#### 7.4 Test Result

EU'	Т	PDA with	WiFi 802.	11b/g	Model		WF3	15		
Mod	le	8	302.11b		Input Voltage		oltage 120°			
Temper	ature	24	4 deg. C,	leg. C, Humidity 56% F		Humidity		Humidity 56%		RH
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)		indwidth Hz)		num Limit MHz)	Pass/ Fail		
1		2412	1 11		.20		0.5	Pass		
6		2437	1 11		10.20 10.38		0.5	Pass		
11		2462	1 11		.20		0.5	Pass		

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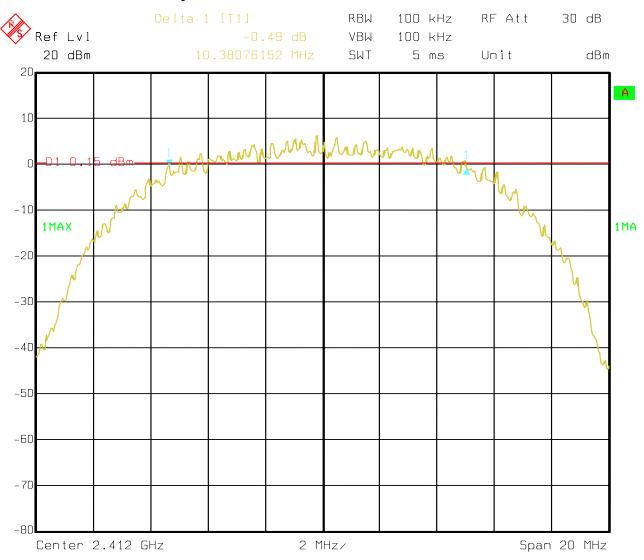
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# Test Figure:

### 1. Condition: 802.11b at 11Mbps of CH01



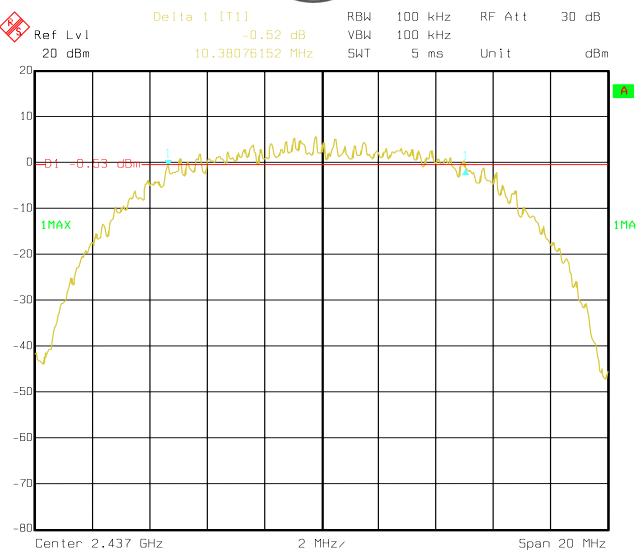
Date: 12.AUG.2008 16:18:04

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# 2. Condition: 802.11b at 11Mbps of CH06



Date: 12.AUG.2008 16:38:33

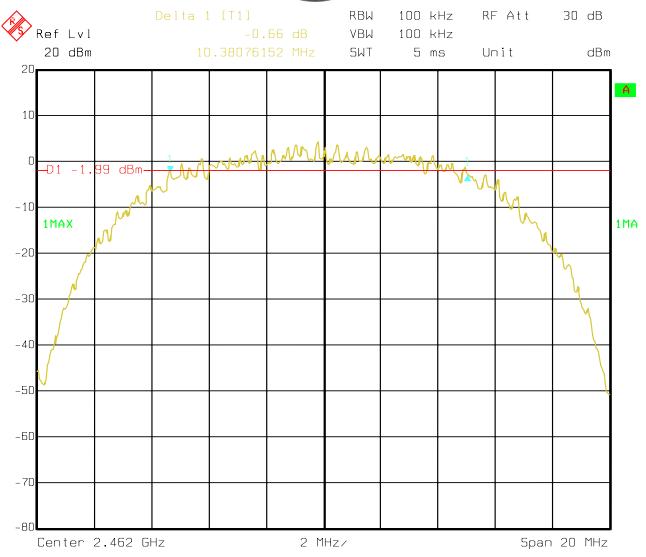
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# 3. 802.11b at 11Mbps of CH11

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Date: 12.AUG.2008 16:41:03

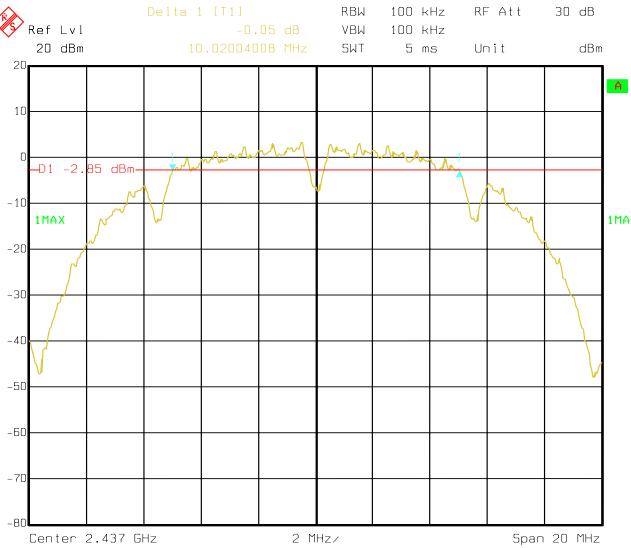
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## 4. 802.11b at 1Mbps of CH01



Date: 12.AUG.2008 16:07:57

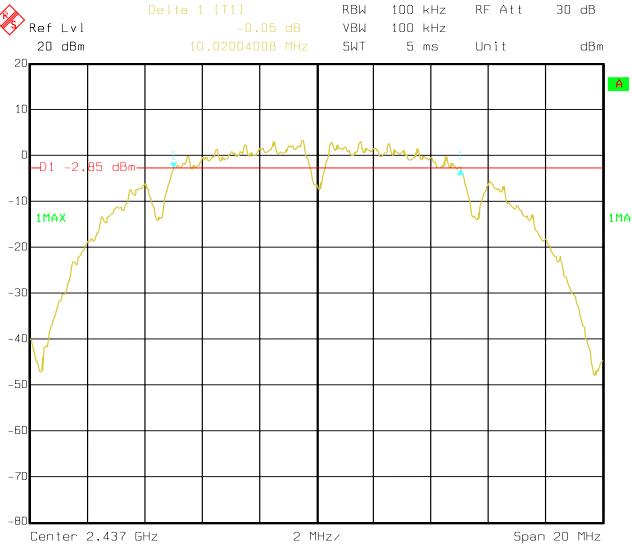
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## 5. 802.11b at 1Mbps of CH06



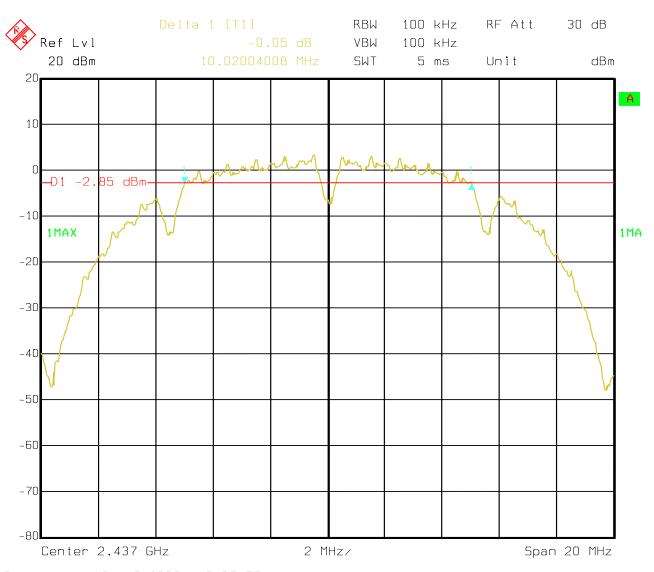
Date: 12.AUG.2008 16:07:57

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## 6. 802.11b at 1Mbps of CH11



Date: 12.AUG.2008 16:07:57

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EUT		PDA with	WiFi 802.	11b/g	Mod	el	WF35	
Mode		8	302.11g		Input Voltage		120V	/~
Temperat	ure	24 deg. C,		Humidity		56% RH		
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)		ındwidth Hz)		num Limit MHz)	Pass/ Fail
1		2412	6 54		.63		0.5	Pass
6		2437	6 54		.63 .55		0.5	Pass
11		2462	6 54		.63 .55		0.5	Pass

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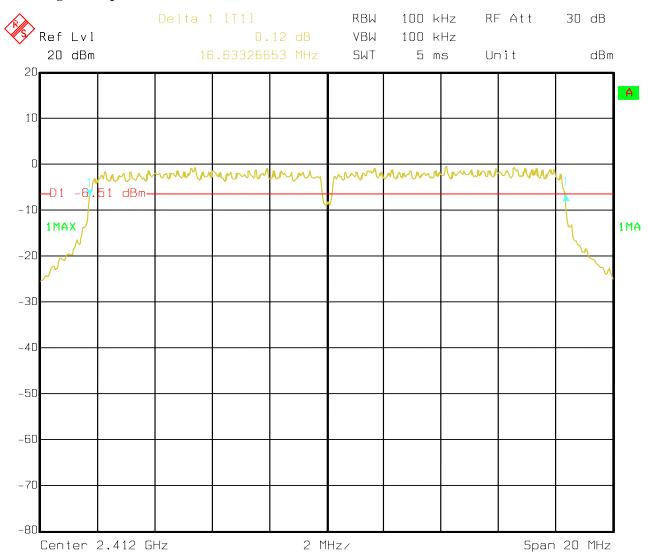
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#### **Test Plots:**

### 1. 802.11g at 6Mbps of CH01



Date: 12.AUG.2008 16:45:19

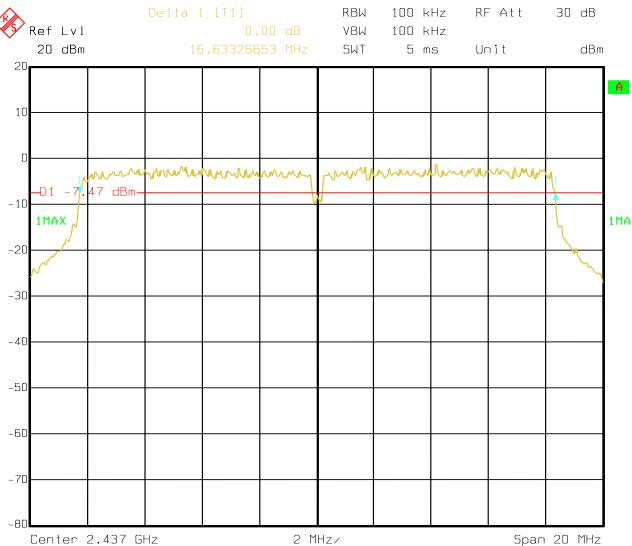
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## 2. 802.11g at 6Mbps of CH06



Date: 12.AUG.2008 16:47:20

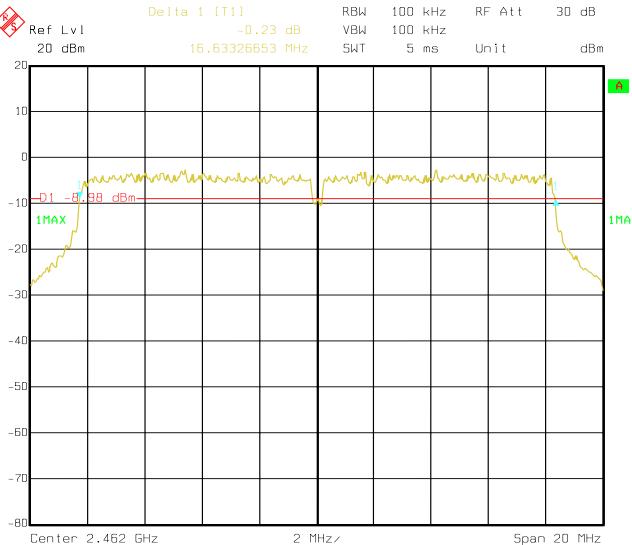
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# 3. 802.11g at 6Mbps of CH11



Date: 12.AUG.2008 16:50:34

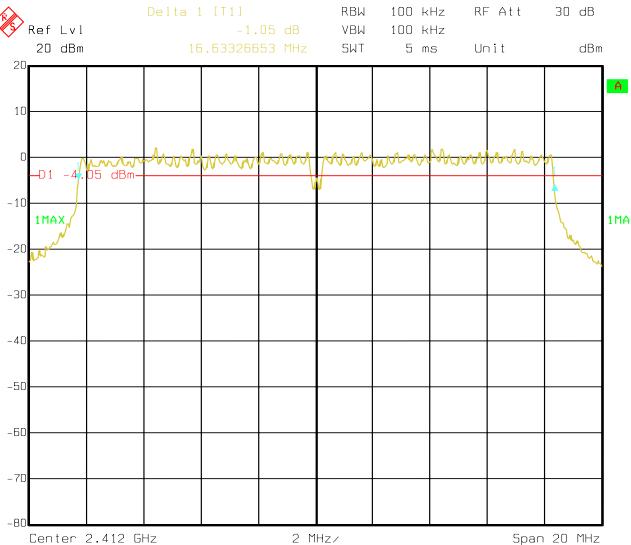
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# 4. 802.11g at 54Mbps of CH11



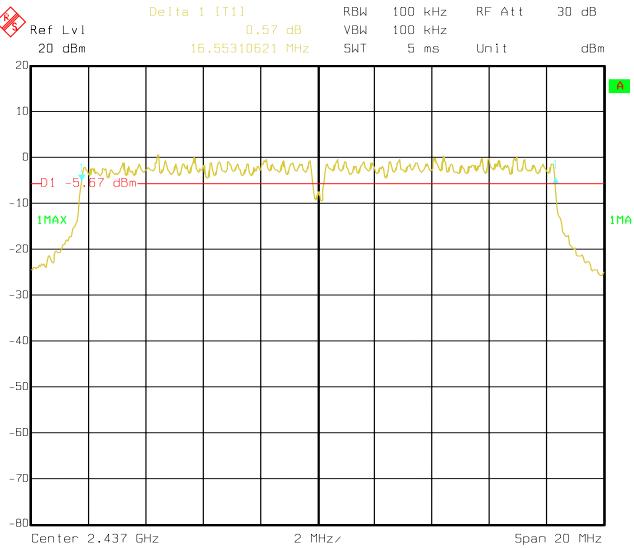
Date: 12.AUG.2008 16:58:53

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# 5. 802.11g at 54Mbps of CH06



Date: 12.AUG.2008 16:57:19

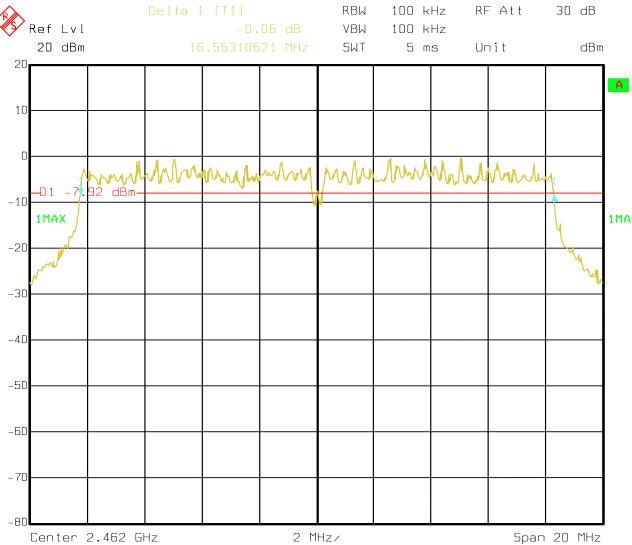
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## 6. 802.11g at 54Mbps of CH01



Date: 12.AUG.2008 16:53:37

Report No: 0808057-01

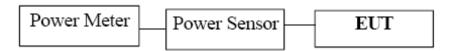
Date: 2008-10-16



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# 8. Maximum Peak Output Power

8.1 Test Setup



### 8.2 Limits of Maximum Peak Output Power

The Maximum Peak Output Power Measurement is 30dBm.

#### **8.3 Test Procedure**

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

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#### **8.4Test Results**

EUT	PDA with WiFi 802.11b/g N		Model		WF35		
Mode	de 802.11b Input Vo		Input Voltage		120V~		
Temperature	e	24 deg	g. C,	Humidity		56% RH	
Channel	Cha	annel Frequency (MHz)	Peak Power Output (dBm)		Peak P Lin (dB	nit	Pass/ Fail
1		2412	12.44		30		Pass
6		2437	12.49		30		Pass
11		2462	12.84		30	)	Pass

Note: 1. At finial test to get the worst-case emission at 11Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

 $Peak\ Power\ Output = Peak\ Power\ Reading + Cable\ loss + Attenuator$ 

EUT		PDA with WiF	Fi 802.11b/g	Model		WF35		
Mode		802.1	11g Input Voltage		1	20V~		
Temperature	e	24 deg	g. C,	Humidity		C, Humidity 56		5% RH
Channel	Cha	annel Frequency (MHz)	Peak Power (dBm)	Output	Peak P Lin (dB:	nit	Pass/ Fail	
1		2412	9.09		30	)	Pass	
6		2437	13.09		30	)	Pass	
11		2462	10.89		30	)	Pass	

Note: 1. At finial test to get the worst-case emission at 6Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss + Attenuator

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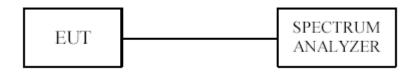
Date: 2008-10-16



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# 9. Power Spectral Density Measurement

9.1 Test Setup



#### 9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm.

#### 9.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3KHz RBW and 10kHz VBW, set sweep time=500s

The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span / 3KHz for a full response of the mixer in the spectrum analyzer.

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#### 9.4Test Result

EUT	PDA with WiFi 802.11b/g Mo		odel	WF35					
Mode	802.11b Input Vo		Input Voltage		1	20V~			
Temperature	9	24 deg	g. C,	Humidi	dity		ty 56%		5% RH
Channel	Cha	annel Frequency (MHz)		vel in 3kHz BW		m Limit m)	Pass/ Fail		
1		2412	-16.92		8		Pass		
6		2437	-17.13		8		Pass		
11		2462	-17.15		8		Pass		

Note: For 802.11b mode at finial test to get the worst-case emission at 11Mbps for CH11, CH06 and CH01

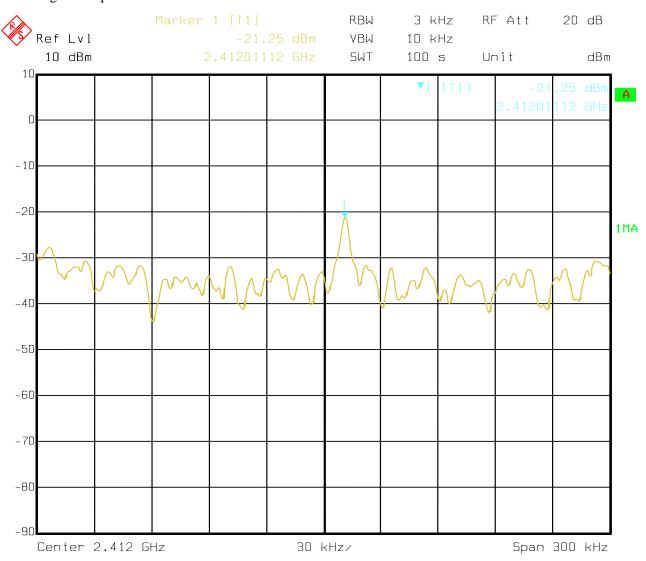
EUT		PDA with WiF	PDA with WiFi 802.11b/g		Model		WF35	
Mode		802.11g		Input Voltage		120V~		
Temperature	e	24 deg. C,		Humidity		56% RH		
Channel	Ch	annel Frequency (MHz)	Final RF Po Level in 3kH: (dBm)		Maximur (dB		Pass/ Fail	
1		2412	-21.25		8		Pass	
6		2437	-21.18	-21.18			Pass	
11		2462	-20.74		8		Pass	

Note: For 802.11g mode at finial test to get the worst-case emission at 6Mbps for CH11, CH06 and CH01

Date: 2008-10-16

# 9.5Photo of Power Spectral Density Measurement

### 1.802.11g at 6Mbps of CH01



Date: 12.AUG.2008 18:45:19

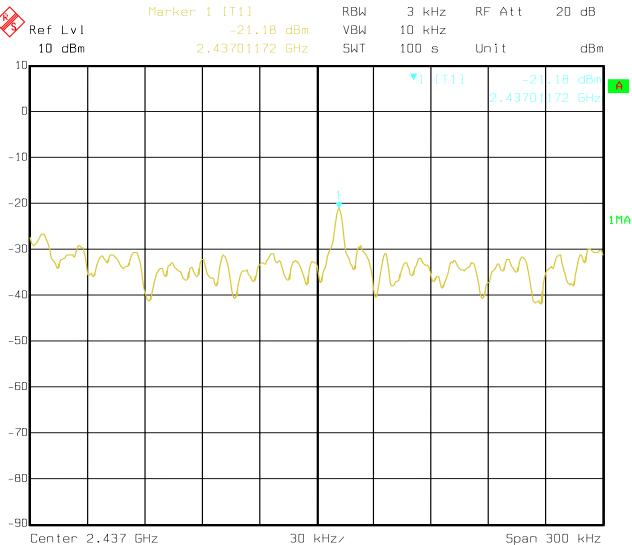
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### 2. 802.11g at 6Mbps at CH06



Date: 12.AUG.2008 18:43:07

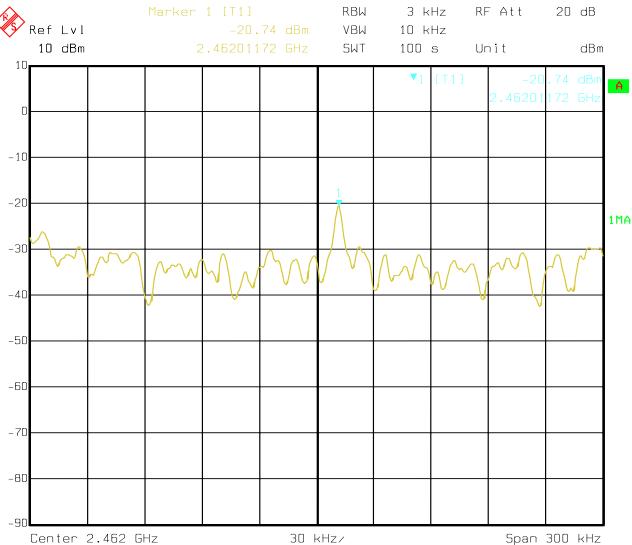
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### 3. 802.11g at 6Mbps of CH11



Date: 12.AUG.2008 18:39:16

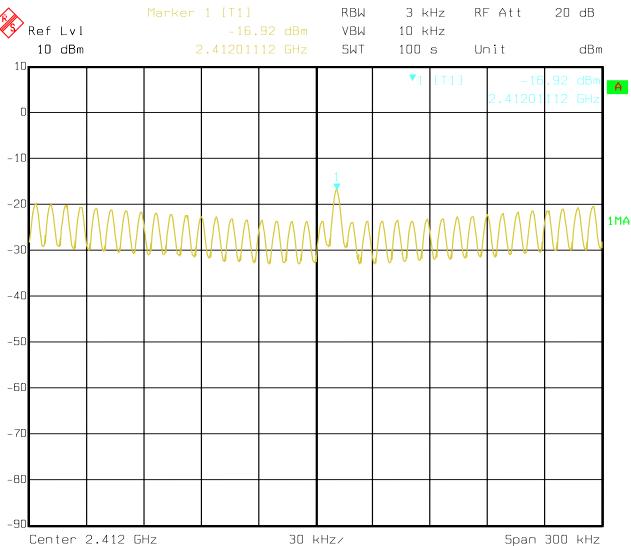
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## 4. 802.11b at 11Mbps of CH01



Date: 12.AUG.2008 18:24:08

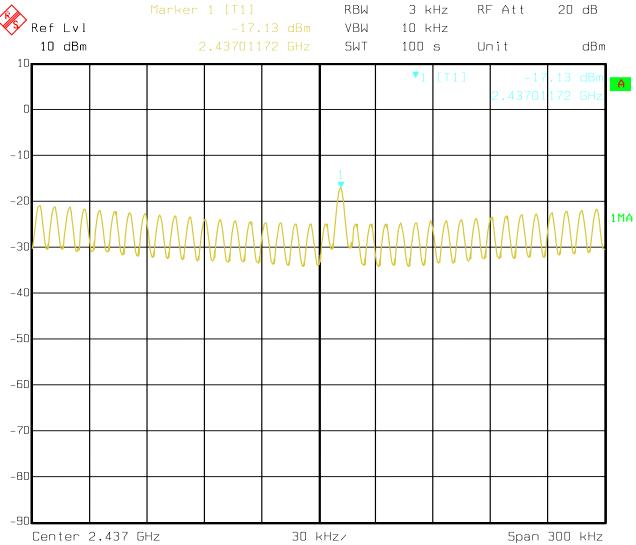
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## 5. 802.11b at 11Mbps of CH06



Date: 12.AUG.2008 18:26:32

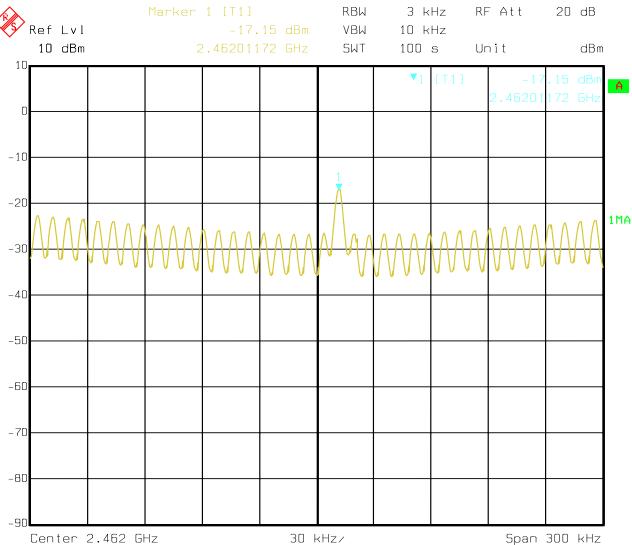
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## 6. 802.11b at 11Mbps of CH11



Date: 12.AUG.2008 18:29:05

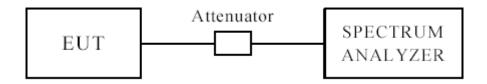
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Date: 2008-10-16



# 10 Out of Band Measurement

10.1 Test Setup



#### 10.2 Limits of Out of Band Emissions Measurement

- 1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209 and RSS-210

#### **10.3 Test Procedure**

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Peak RBW=VBW=1MHz; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

#### 10.4Test Result

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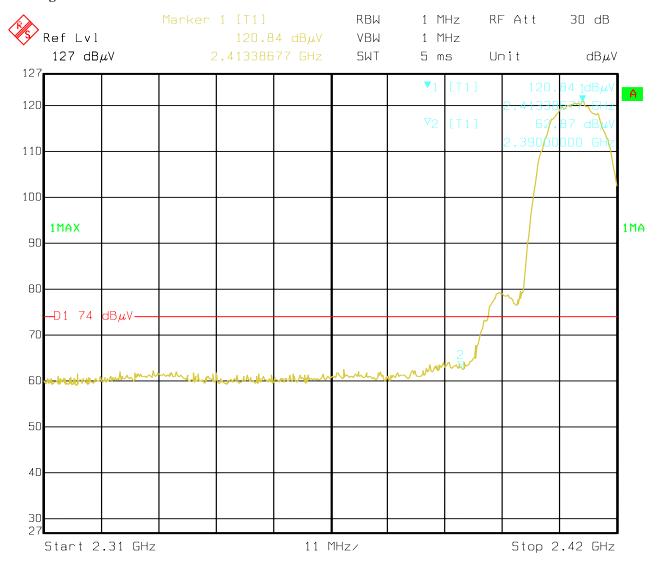
### For 802.11b mode

CH01 at 11Mbps

#### 10.4 Out of Band Test Result

Product:	PDA with WiFi 802.11b/g		Test Mode:	CH1
Mode	Keeping Tr	ansmitting	Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pas	SS	Detector	PK
The Max. FS in	PK (dBμV/m)	45.8(V)/47.6(H)	Limit	74(dBμV/m)
Restrict Band	AV(dBμV/m)	31.6(V)/33.2(H)	Limit	54(dBµV/m)

### **Test Figure:**



Date: 12.AUG.2008 17:46:09

#### Note: The Max. FS in Restrict Band are measured in conventional method.

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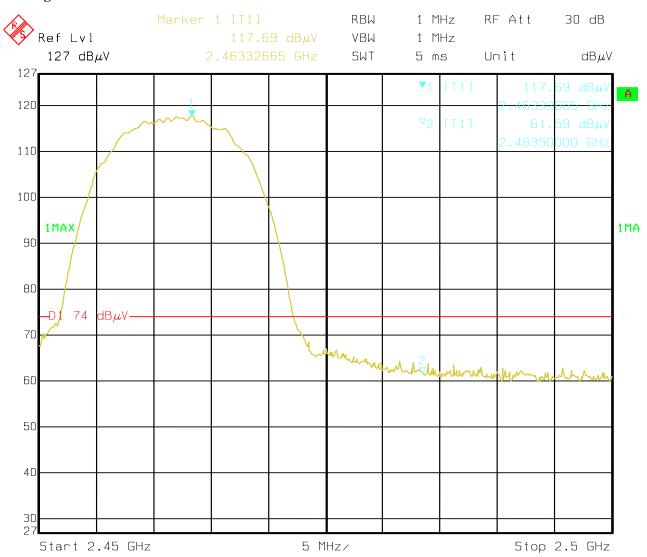


### CH11 at 11Mbps

#### 10.4 Out of Band Test Result

Product:	PDA with WiFi 802.11b/g		Test Mode:	CH11		
Mode	Keeping Transmitting		e Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH		
Test Result:	Pas	SS	Detector	PK		
The Max. FS in	PK ( $dB\mu V/m$ )	38.2(V)/40.2(H)	Limit	$74(dB\mu V/m)$		
Restrict Band	$AV(dB\mu V/m)$	26.7(V)/29.2(H)	Lillill	54(dBµV/m)		

### **Test Figure:**



Date: 12.AUG.2008 17:36:06

#### Note: The Max. FS in Restrict Band are measured in conventional method.

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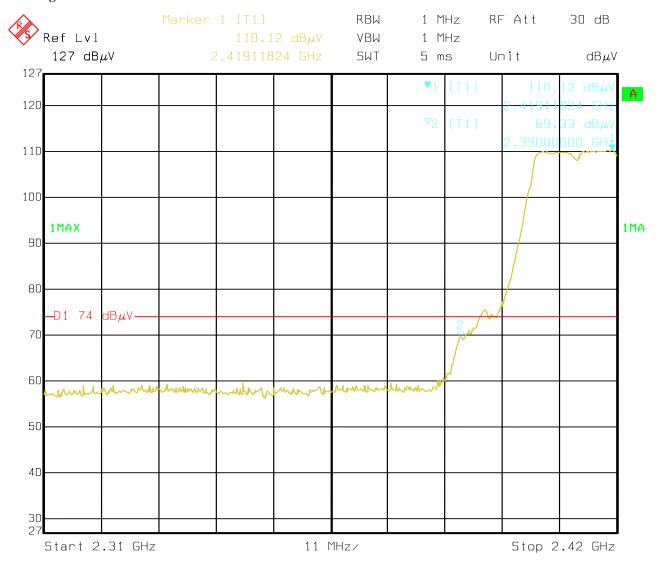
# For 802.11g mode

CH01 at 6Mbps

#### 10.4 Out of Band Test Result

Product:	PDA with WiFi 802.11b/g		Test Mode:	CH1
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pas	SS	Detector	PK
The Max. FS in	PK (dBμV/m)	56.5(V)/57.8(H)	Limit	$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)	42.4(V)/44.6(H)	Liffill	54(dBµV/m)

### **Test Figure:**



Date: 12.AUG.2008 17:23:00

#### Note: The Max. FS in Restrict Band are measured in conventional method.

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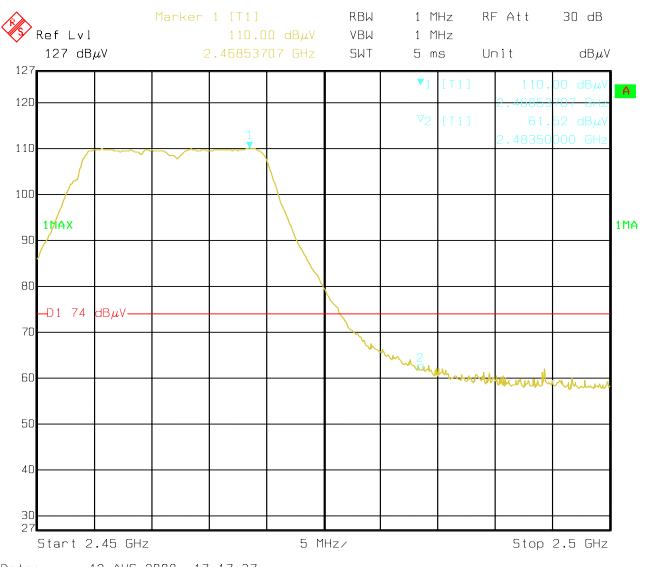


# CH11 at 6Mbps

#### 10.4 Out of Band Test Result

Product:	PDA with WiFi 802.11b/g		Test Mode:	CH11
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pas	SS	Detector	PK
The Max. FS in	PK ( $dB\mu V/m$ )	46.7(H)/50.5(V)	Limit	$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)	35.8(H)/38.6(V)	Limit	54(dBµV/m)

## **Test Figure:**



Date: 12.AUG.2008 17:17:37

Note: The Max. FS in Restrict Band are measured in conventional method.

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# 11.0 Antenna Requirement

## 11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi

are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 11.2 Antenna Connected construction

he antenna is chip dielectric antenna. The maximum Gain of this antenna is -0.8dBi

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## 12.0 Maximum Permissible Exposure

### **Applicable Standard**

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

### (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 <sup>2</sup> )	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 <sup>2</sup> )	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			1.0	30

Note: f=frequency in MHz; \*Plane-wave equivalent power density

#### **MPE Calculation Method**

 $E(V/m) = (30*P*G)^{0.5}/d$  Power Density:  $Pd(W/m^2) = E^2/377$ 

 $\mathbf{E} = \text{Electric Field (V/m)}$ 

 $\mathbf{P}$  = Peak RF output Power (W)

**G** = EUT Antenna numeric gain (numeric)

**d** = Separation distance between radiator and human body (m)

The formula can be changed to

 $Pd = (30*P*G) / (377*d^2)$ 

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

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#### **Calculated Result and Limit**

#### 802.11b Mode

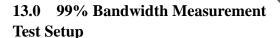
Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
0.832	12.84	19.2309	0.003183	1	Compiles

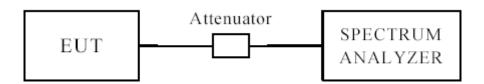
## 802.11g Mode

Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
0.832	13.09	20.3704	0.003716	1	Compiles

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#### **Test Procedure**

The transmitter output was connected to the spectrum analyzer through an attenuator.

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 300 kHz VBW. Then use the 99% Occupied Bandwidth function of the analyzer to measure. The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

#### **Test Result**

EUT PDA with WiF		Fi 802.11b/g	Model	WF35	
Mode	802.11g		Input Voltage	120V~	
Temperat	Temperature 24 deg. C,			Humidity	56% RH
Channel	Channel Frequency (MHz)		Data Transfer Rate (Mbps)	99% Bandwidth (MHz)	Pass/ Fail
1		2412	6	16.55	Pass
6		2437	6	16.55	Pass
11		2462	6	16.55	Pass

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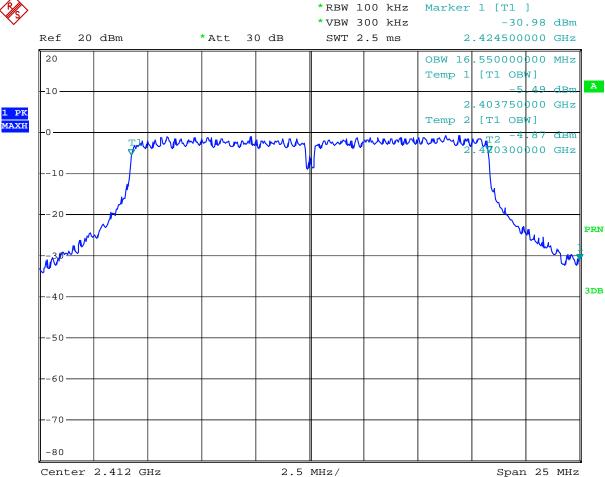
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## **Test Figure:** Ch1 6Mbps





Date: 13.AUG.2008 11:10:41

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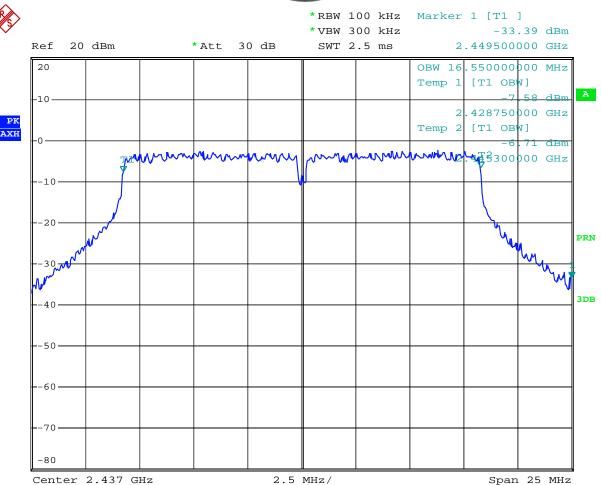
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## Ch6 6Mbps





13.AUG.2008 11:10:09 Date:

Center 2.437 GHz

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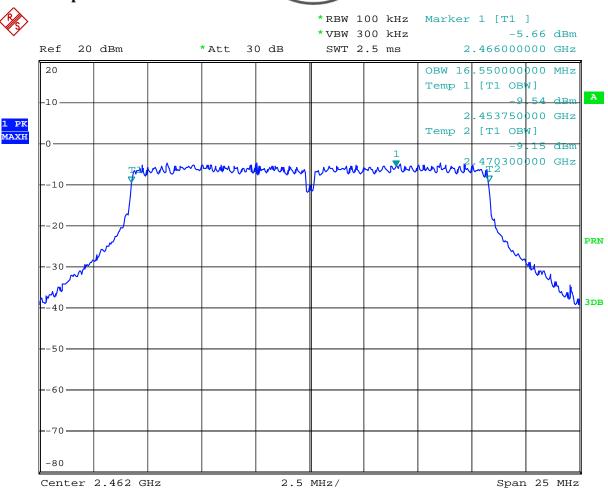
Report No: 0808057-01

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## Ch11 6Mbps





13.AUG.2008 11:02:50 Date:

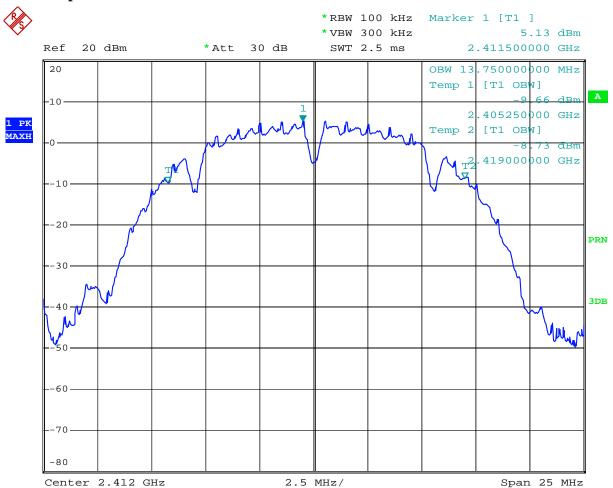
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Span 25 MHz

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EUT PDA with WiFi 802.11b/g		Model	WF35			
Mode		802.11b		Input Voltage	120V~	
Temperature 24 deg. C,			Humidity	56% RH		
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)	99% Bandwidth (MHz)	Pass/ Fail	
1		2412	1	13.75	Pass	
6		2437	1	13.75	Pass	
11		2462	1	13.80	Pass	

## **Test Figure:** Ch1 1Mbps



Date: 13.AUG.2008 11:17:04

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## Ch6 11Mbps





13.AUG.2008 11:16:42 Date:

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## Ch11 11Mbps





13.AUG.2008 11:15:53 Date:

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#### 14.0 FCC ID Label

# FCC ID: VRI-B106 IC ID:7039A-WFB106

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

#### Mark Location:



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## 15.0 Photo of testing

#### 15.1 Conducted test View--



DSC-H10 F3.5 1/15s ISO 400

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#### Emission Radiated test View--



DSC-H10 F8.0 1/500s ISO125



DSC-H10 F8.0 1/400s ISO125

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#### 14.3 Photo for the EUT

#### Outside View with power supply SCP0501500P



DSC-H10 F4.0 1/8s ISO 400



DSC-H10 F4.0 1/8s ISO400

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DSC-H10 F4.0 1/13s ISO 400



DSC-H10 F3.5 1/10s ISO 400

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DSC-H10 F3.5 1/40s ISO160



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DSC-H10 F4.0 1/50s ISO 200



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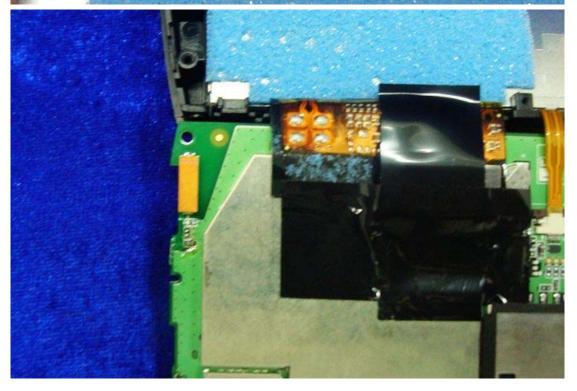
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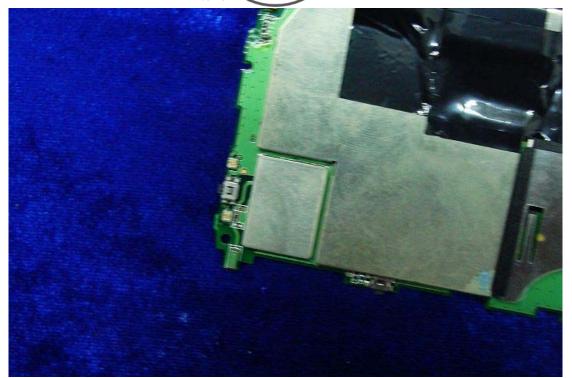
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DSC-H10 F4.0 1/10s ISO 400

## End of the report