

FCC Test Report (TR-1006-013-01)

Applicant : GameTech International, Inc.
Address : 8850 Double Diamond Blvd, Reno NV 89521, USA
Manufacturer : Pronology Services Inc.
Address : 2nd Industrial Zone Lou Village, Gongming, GuangMing, ShenZhen, GuangDong, China
Product Name : Explorer Player Unit
Trademark : none
Model(s) : EXPL-10-01
Standard(s) : FCC Part 15 Subpart C
Test Result : Pass
Date of Test : Jun 23, 2010 to Jun 30, 2010
Report issued Dated : Jun 30, 2010

Note:

This test report covers 802.11 b/g test modes only and refer to additional test report for 802.11 a measurement (report no.:1006-013-02).

The report shall not be reproduced except in full, without the written approval of the TDK EMC Center.

The results in this report apply only to the sample(s) tested. The production units are required to conform to the initial sample as received when the units are placed in the market.

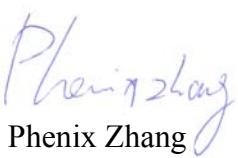
Responsible Engineer	:	 Phenix Zhang	Approved by	:	 CHAN king-chui
Date	:	2010.06.30	Technical manager	:	2010.06.30

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1. Description of the Test Site

1.1 Test Site Location:

Laboratory : TDK South China EMC Center
SAE Technologies Development (Dongguan) Co.,
Ltd. Changan Branch

Address : Zhenan Hi-tech Industrial Park, Dongguang City,
Guangdong Province, China

Phone no. : (86)-769-8564-4678

Fax no. : (86)-769-8564-4499

Email : emc@cn.tdk.com

1.2 Site Registration

VCCI (September, 2008) : Reg. No. R-2205, C-2392

FCC site registration (July, 2008) : Reg. No. 732901

IC registration : Reg. No. 7993

EMCC (September, 2008) : Reg. No. NAR/tl-060330

1.3 Test Scope

EMC and RF testing according to national / international standards

2. Description of the Tested Samples

2.1 Customer Information

Customer : GameTech International, Inc.
Address : 8850 Double Diamond Blvd, Reno NV 89521, USA
Phone no. : (775) 850-6073
Fax no. :

2.2 Identification of EUT

Trademark : none
Model(s) No. : EXPL-10-01
Serial No. : None

2.3 Spec of EUT

Description of Antenna : fixed omnidirectional antenna, 2.5dBi gain @ 2.5GHz, 3.5dBi gain @ 5.0GHz.
The two antennas being capable of reception and transmission at both 2.4 and 5 GHz. The two antennas provide 'diversity' for the RF signal path.

Battery Description : Voltage: 7.4V 6000mAh
Manufacturer: GameTech International Inc.
Model: EXPL-BATT-01

Operation Frequency : 2412 MHz, 2437MHz, 2462 MHz, 5180MHz

Number of Channels : 4

Type of Modulation : DSSS for IEEE 802.11b ; OFDM for IEEE 802.11g
OFDM for IEEE 802.11a

Data Rate : IEEE 802.11b: 11/5.5/2/1Mbps
IEEE 802.11g: 54/48/36/24/18/12/9/6Mbps
IEEE 802.11a: 54/48/36/24/18/12/9/6Mbps

2.4 Test Standards List

FCC Part 15 (2009)

American national standard for methods of measurement of radio noise emissions from low-voltage electrical and electronic equipment in the range of 9KHz to 40GHz.

3. Test Specifications

3.1 Standard(s) Used

FCC Rules	Description Of Test	Result
15.203/15.247(b)	Antenna Requirement	Pass
15.207	Conducted Emission	Pass
15.247(b)(3)	Maximum Peak Output Power	Pass
15.247(d)	Band Edges Emission	Pass
15.247(a)(2)	6 dB Bandwidth	Pass
15.247(e)	Power Spectral Density	Pass
15.247(d)	Spurious Radiated Emission	Pass

3.2 Test Mode

The EUT has been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

IEEE 802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 11Mbps data rate (worst case) are chosen for the final testing.

IEEE 802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 54Mbps data rate (worst case) are chosen for the final testing.

In pretesting, we compared the output of two antennas, and find out the worst case which is the antenna 1 working.

3.3 Deviations from the Test Specification

N/A

This product does not operate/transmit during charging process in professional charging tower.

4. Test Result

4.1 Antenna Requirement

4.1.1 Standard Applicable

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. 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 James or electrical connector is prohibited.

Section 15.247(b):

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.1.2 Antenna Connected Construction

The antenna connector is designed with permanent attachment and no consideration of replacement.

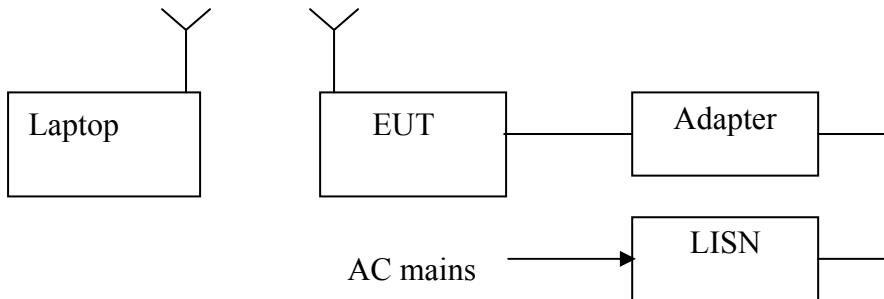
Transmitter antenna of directional gain is 2.5dBi @ 2.5GHz and 3.5dBi @ 5.0GHz.

4.2 Conducted Emission (mains)

4.2.1 Test Summary

Test Room	:	Shielded Room
Power Source	:	AC 120V / 60Hz
Standards:	:	FCC Part15 B : 2008
EUT Type	:	Table Top
EUT configuration	:	EUT's highest possible emission level

4.2.2 Block diagram of test setup



4.2.3 Measurement method

The EUT along with its peripherals were placed on a 1.0m (W) x 1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4m space from a vertical reference plane. The EUT was connected to power mains through a Artificial Mains Network(AMN), which provided 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.

The excess power cable between the EUT and the AMN was bundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

4.2.4. Result

N/A

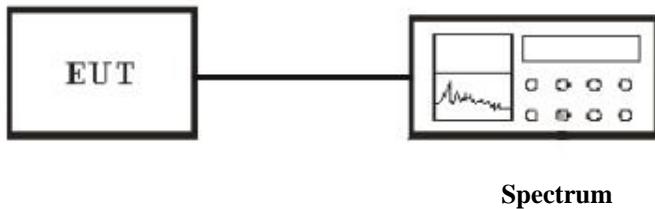
This product does not operate/transmit during charging process in professional charging tower.

4.3 Maximum Peak Output Power

4.3.1 Applicable Standard

According to Section 15.247(b)(3), for systems using digital modulation in 2400-2483.5MHz: 1 Watt.

4.3.2 Block diagram of test setup



Connection method: The shield cable was connected with EUT and Spectrum which have $50\Omega Z_C$. The connector of EUT side is original by manufacturer. The connector of Spectrum side is N type.

4.3.3 Measurement method

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in above figure without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Use the following spectrum analyzer settings:
Measurement mode: Channel Power
Center Frequency = 2412MHz, 2437MHz or 2462MHz
Channel Power Span = 45MHz
Integ. Bandwidth = 30MHz for 802.11b, 30MHz for 802.11g
Sweep = auto
Detector function = peak
4. Hold on 30s, find out the max value on the screen of Spectrum.
5. Repeat above procedures until all frequencies measured were complete.

4.3.4. Result

Temperature () : 22~23	EUT: Explorer Player Unit
Humidity (%RH) : 50~54	M/N: EXPL-10-01
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test data: Jun 24, 2010	Test engineer: Phenix

802.11b mode:

Channel No.	Frequency (MHz)	Output Power (dBm)	Limits (dBm)	Margin (dB)
LOW (CH 1)	2412	11.11	30	18.89
MID (CH 6)	2437	10.14	30	19.86
HIG (CH 11)	2462	10.67	30	19.33

802.11g mode:

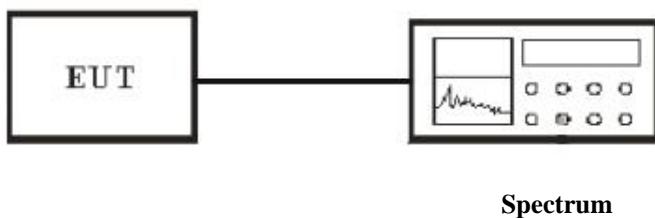
Channel No.	Frequency (MHz)	Output Power (dBm)	Limits (dBm)	Margin (dB)
LOW (CH 1)	2412	9.91	30	20.09
MID (CH 6)	2437	10.97	30	19.03
HIG (CH 11)	2462	7.93	30	22.07

4.4 Band Edges Emission

4.4.1 Applicable Standard

Section 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. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

4.4.2 Block diagram of test setup



Connection method: The shield cable was connected with EUT and Spectrum which have $50\Omega Z_C$. The connector of EUT side is original by manufacturer. The connector of Spectrum side is N type.

4.4.3 Measurement method

1. The transmitter is set to the lowest channel.
2. The transmitter output was connected to the spectrum analyzer via a cable and cable loss is used as the offset of the spectrum analyzer.
3. Set both RBW and VBW of spectrum analyzer to 100KHz with convenient frequency span including 20MHz bandwidth from lower band edge. Then detector set to peak and max hold this trace.
4. The lowest band edges emission was measured and recorded.
5. The transmitter set to the highest channel and repeated 2~4.

4.4.4. Result

Conducted:

Temperature () : 22~23	EUT: Explorer Player Unit
Humidity (%RH) : 50~54	M/N: EXPL-10-01
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test data: Jun 24, 2010	Test engineer: Phenix

802.11b mode:

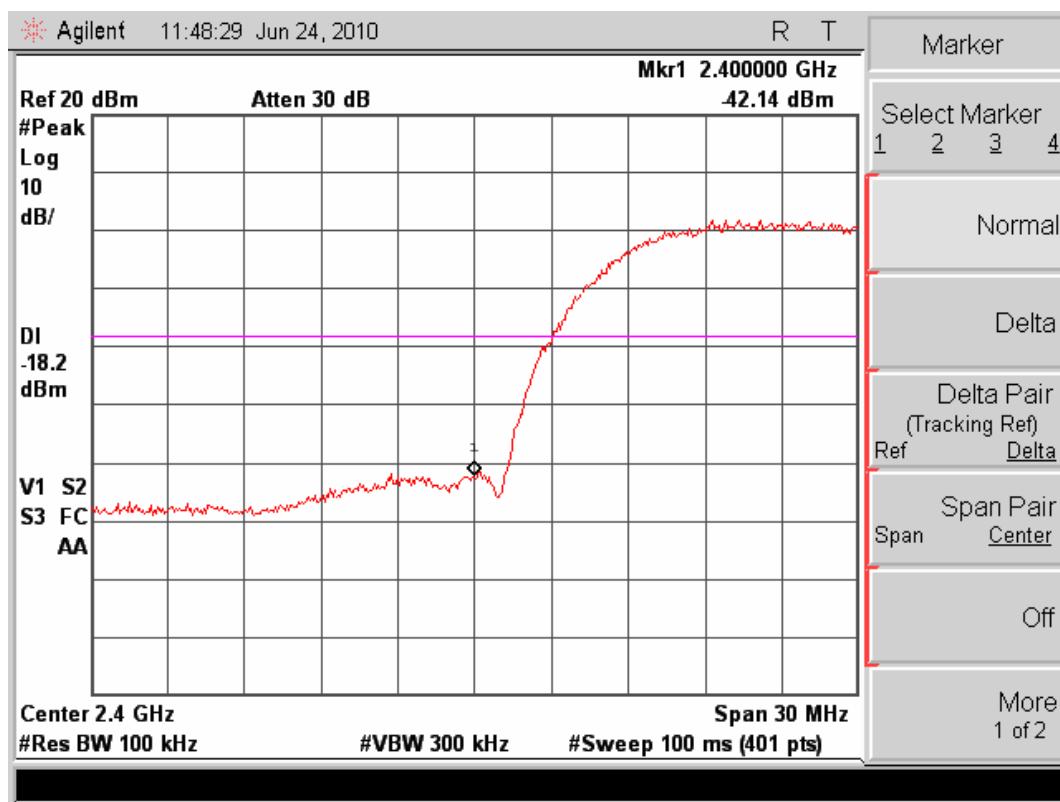
Frequency (MHz)	Max. value in the plot (dBm)	Reading value (dBm)	Read Delta (dB)	Limits (dB)	Margin (dB)
2400	1.8	-42.14	-43.94	-20	23.94
2483.5	0.9	-47.91	-48.81	-20	28.81

802.11g mode:

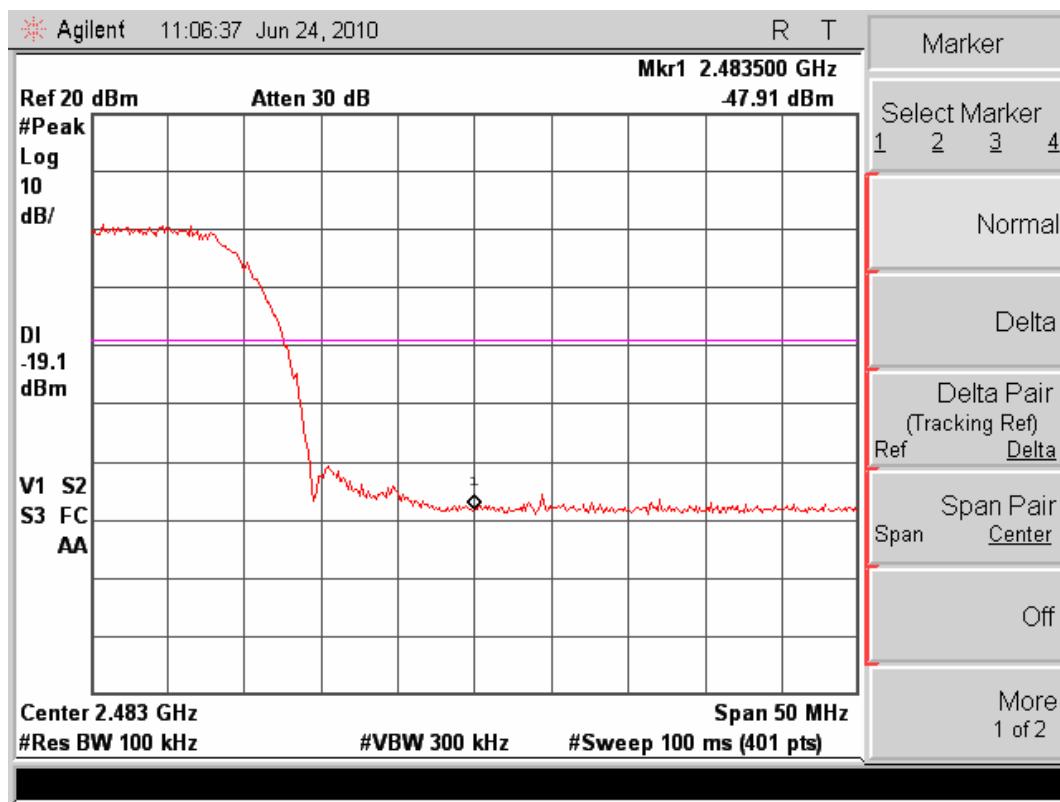
Frequency (MHz)	Max. value in the plot (dBm)	Reading value (dBm)	Read Delta (dB)	Limits (dB)	Margin (dB)
2400	-2.5	-30.69	-28.19	-20	8.19
2483.5	-4.9	-47.6	-42.70	-20	22.70

802.11b mode Plot:

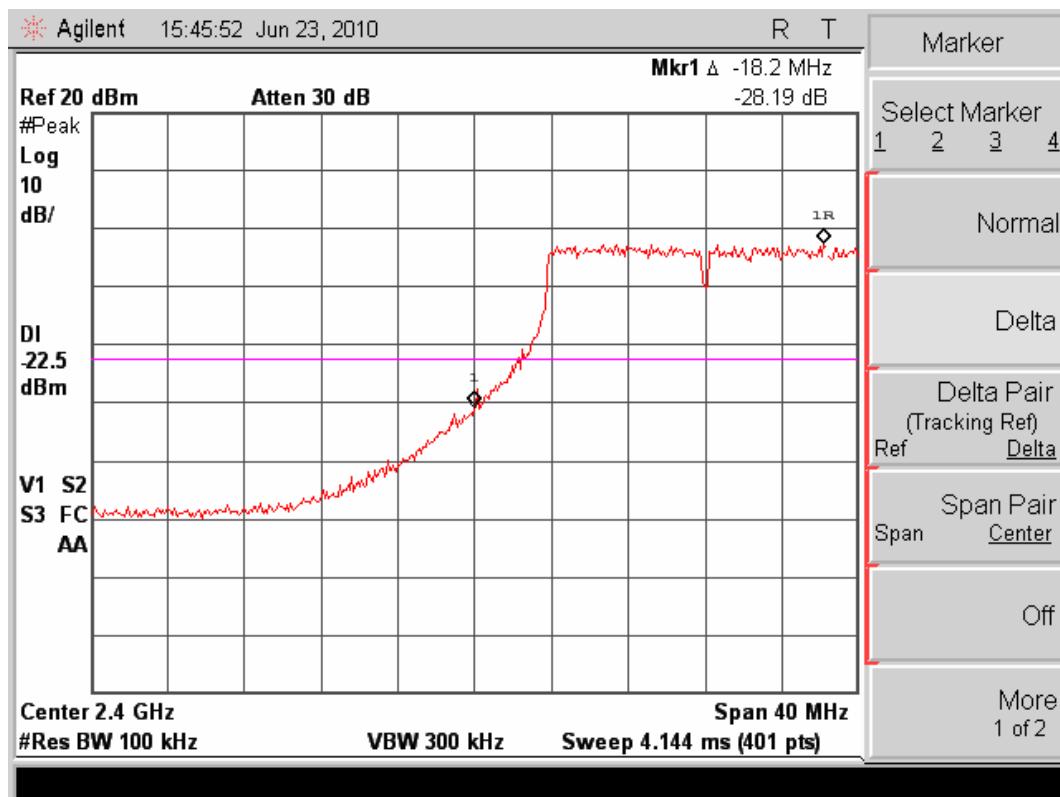
Channel LOW :



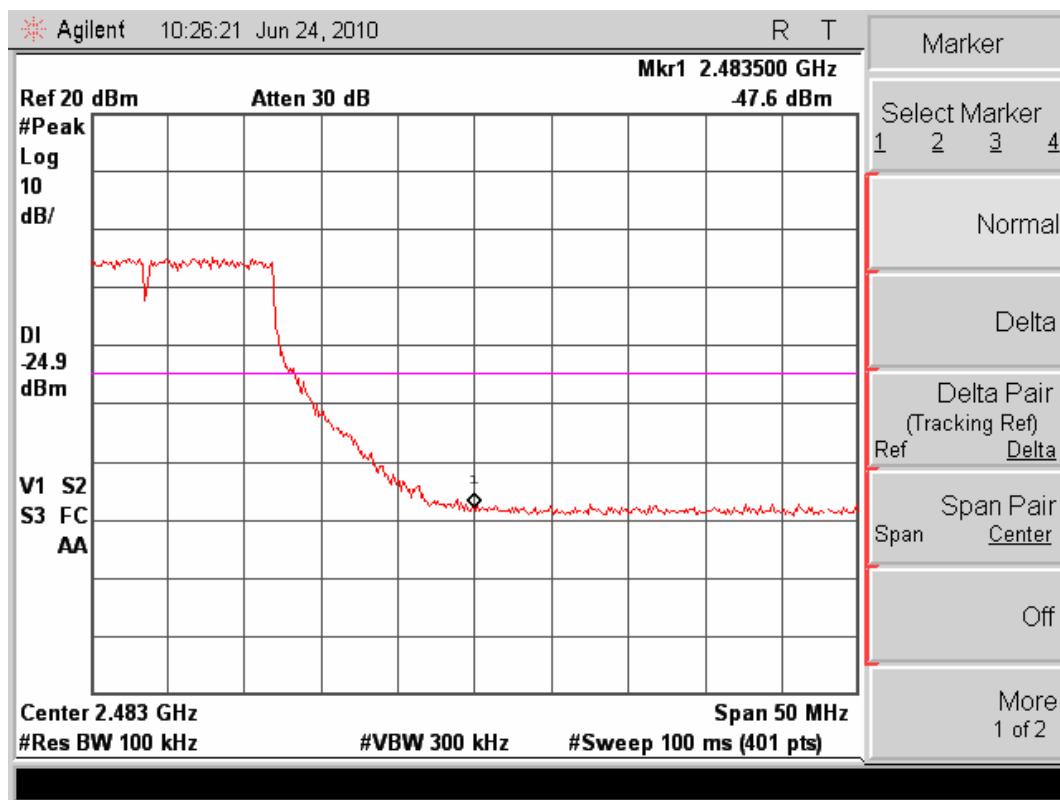
Channel HIG :



802.11g mode Plot: Channel LOW :



Channel HIG :



Radiated:

802.11b mode:

2010-06-28 16:21:30

RADIATED EMISSION

Date : 2010-06-28 16:21:23

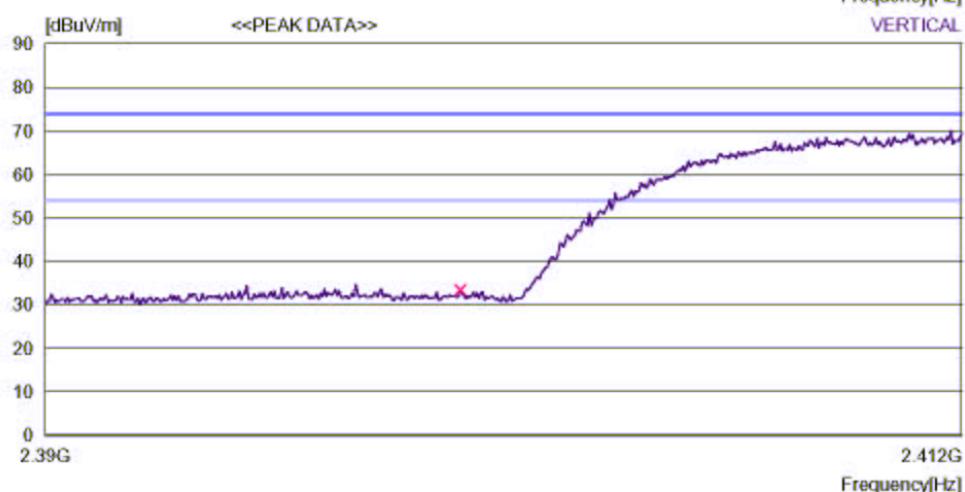
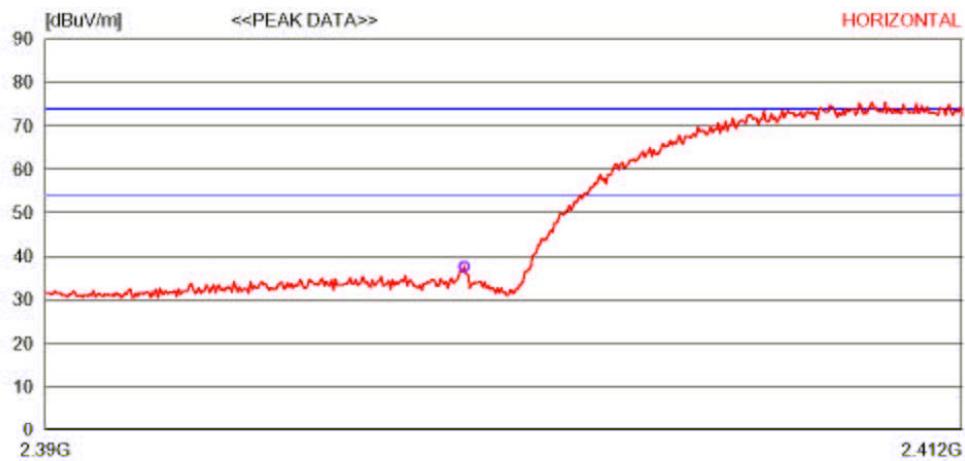
Trade Name : GameTech
Model Name : EXPL-10-01
Product Name : Explorer Player Unit
Test Condition : TX 802.11b CH1

Document No.
Power Supply
Temp/Humi
Operator

Internal battery
27/55RH%
Phenix

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)



2010-06-28 16:21:30

RADIATED EMISSION

Date : 2010-06-28 16:21:23

Trade Name	:	GameTech	Document No.	:
Model Name	:	EXPL-10-01	Power Supply	:
Product Name	:	Explorer Player Unit	Temp/Humi	:
Test Condition	:	TX 802.11b CH1	Operator	:

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dBuV/m]	RESULT [dBuV/m]	LIMIT [dB]	MARGIN [cm]	ANTENNA TABLE [DEG]
----- Horizontal -----									
1	2400.031	40.2	31.4	5.5	39.5	37.6	74	36.4	100
----- Vertical -----									
2	2399.943	36.0	31.4	5.5	39.5	33.4	74	40.6	100
									267

2010-06-28 16:13:43

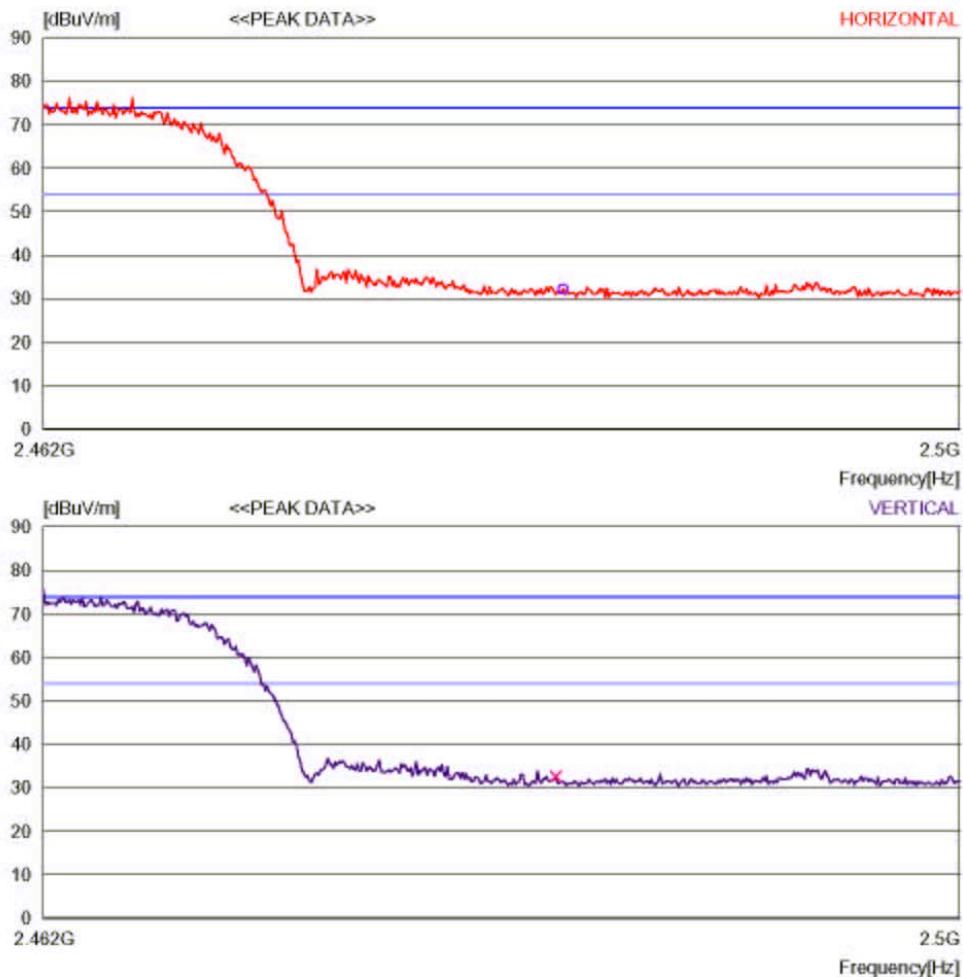
RADIATED EMISSION

Date : 2010-06-28 16:13:36

Trade Name	:	GamoTech	Document No.	:
Model Name	:	EXPL-10-01	Power Supply	:
Product Name	:	Explorer Player Unit	Temp/Humi	:
Test Condition	:	TX 802.11b CH11	Operator	:

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)



2010-06-28 16:13:43

RADIATED EMISSION

Date : 2010-06-28 16:13:36

Trade Name	:	GameTech	Document No.	:
Model Name	:	EXPL-10-01	Power Supply	:
Product Name	:	Explorer Player Unit	Temp/Humi	:
Test Condition	:	TX 802.11b CH11	Operator	:

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dBuV/m]	RESULT [dBuV/m]	LIMIT [dB]	MARGIN [cm]	ANTENNA TABLE [DEG]
----- Horizontal -----									
1	2483.480	34.8	31.2	5.6	39.4	32.2	74	41.8	300
----- Vertical -----									
2	2483.176	35.2	31.2	5.6	39.4	32.6	74	41.4	200
									174

802.11g mode:

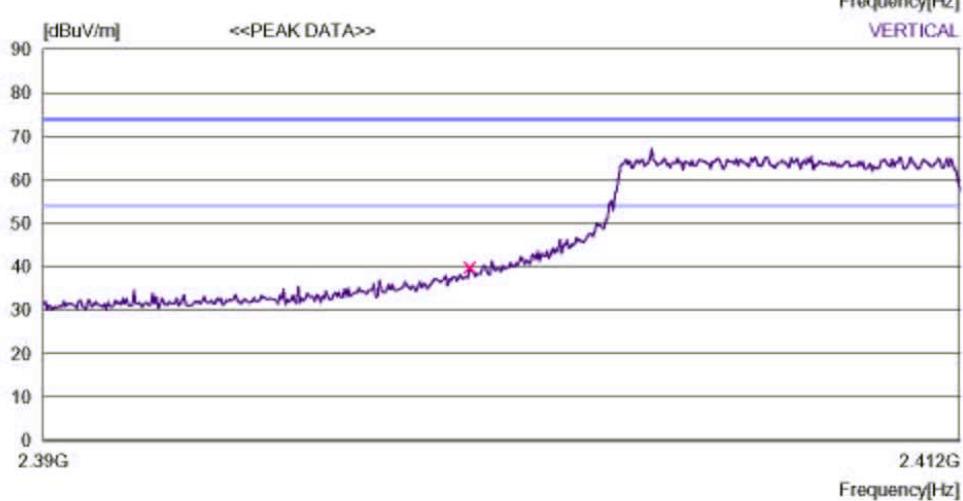
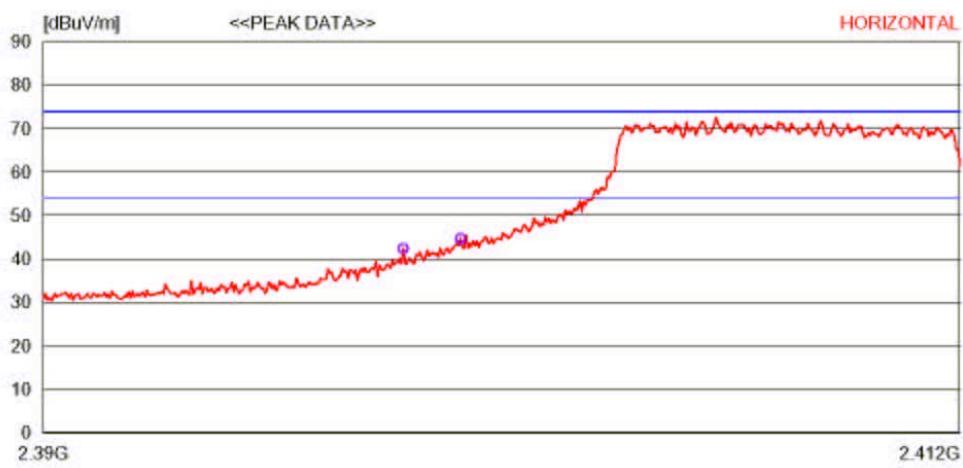
2010-06-28 15:13:15

RADIATED EMISSION

Date : 2010-06-28 15:13:08

Trade Name	:	GameTech	Document No.	:
Model Name	:	EXPL-10-01	Power Supply	:
Product Name	:	Explorer Player Unit	Temp/Humi	:
Test Condition	:	TX 802.11g CH1	Operator	Internal battery

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

2010-06-28 15:13:16

RADIATED EMISSION

Date : 2010-06-28 15:13:08

Trade Name	:	GameTech	Document No.	:
Model Name	:	EXPL-10-01	Power Supply	:
Product Name	:	Explorer Player Unit	Temp/Humi	:
Test Condition	:	TX 802.11g CH1	Operator	:

Memo	:
------	---

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	2398.617	45.0	31.4	5.5	39.5	42.4	74	31.6	100	204
2	2399.987	47.3	31.4	5.5	39.5	44.7	74	29.3	100	204
----- Vertical -----										
3	2400.208	42.4	31.4	5.5	39.5	39.8	74	34.2	100	172

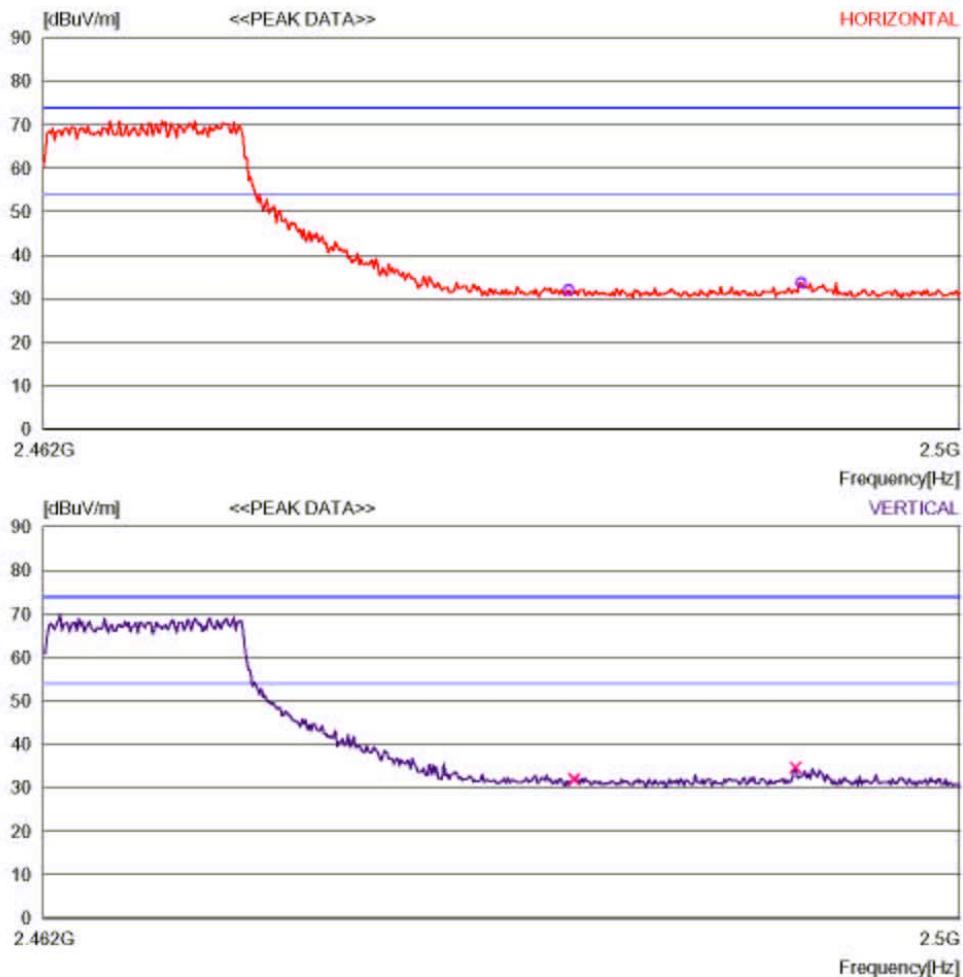
2010-06-28 15:04:57

RADIATED EMISSION

Date : 2010-06-28 15:04:50

Trade Name	:	GamoTech	Document No.	:
Model Name	:	EXPL-10-01	Power Supply	:
Product Name	:	Explorer Player Unit	Temp/Humi	:
Test Condition	:	TX 802.11g CH11	Operator	:

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

2010-06-28 15:04:57

RADIATED EMISSION

Date : 2010-06-28 15:04:50

Trade Name	GameTech	Document No.	
Model Name	EXPL-10-01	Power Supply	Internal battery
Product Name	Explorer Player Unit	Temp/Humi	27/55RH%
Test Condition	TX 802.11g CH11	Operator	Phenix

Memo

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

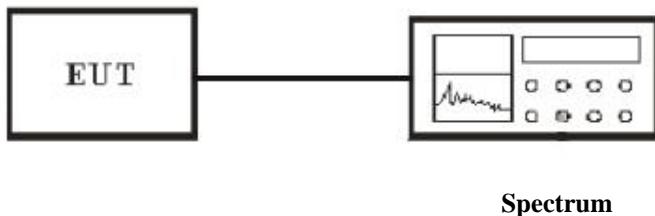
No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS		GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	LIMIT [dB]	MARGIN [cm]	ANTENNA TABLE [DEG]
				[dB]	[dB]						
---- Horizontal ----											
1	2483.709	34.7	31.2	5.6	39.4	32.1	74	41.9	200	201	201
2	2493.383	36.3	31.2	5.6	39.4	33.7	74	40.3	100	100	208
---- Vertical ----											
3	2483.938	34.6	31.2	5.6	39.4	32.0	74	42.0	200	183	183
4	2493.154	37.3	31.2	5.6	39.4	34.7	74	39.3	100	100	203

4.5 6dB BANDWIDTH

4.5.1 Applicable Standard

According to section 15.247(a)(2), for digital modulation technique, the minimum 6dB bandwidth shall be at least 500kHz.

4.5.2 Block diagram of test setup



Connection method: The shield cable was connected with EUT and Spectrum which have $50\Omega Z_C$. The connector of EUT side is original by manufacturer. The connector of Spectrum side is N type.

4.5.3 Measurement method

1. The transmitter output was connected to the spectrum analyzer through a shielded cable.
2. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Span=40MHz, Sweep=auto.
3. Set Detector to Peak, Trace to Max Hold and Sweep Time is auto.
4. Mark the peak frequency and -6dB(upper and lower) frequency.
5. Repeat above 1-4 points for the middle and highest channel of the EUT.

4.5.4. Result

Temperature () : 22~23	EUT: Explorer Player Unit
Humidity (%RH) : 50~54	M/N: EXPL-10-01
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test data: Jun 24, 2010	Test engineer: Phenix

802.11b mode:

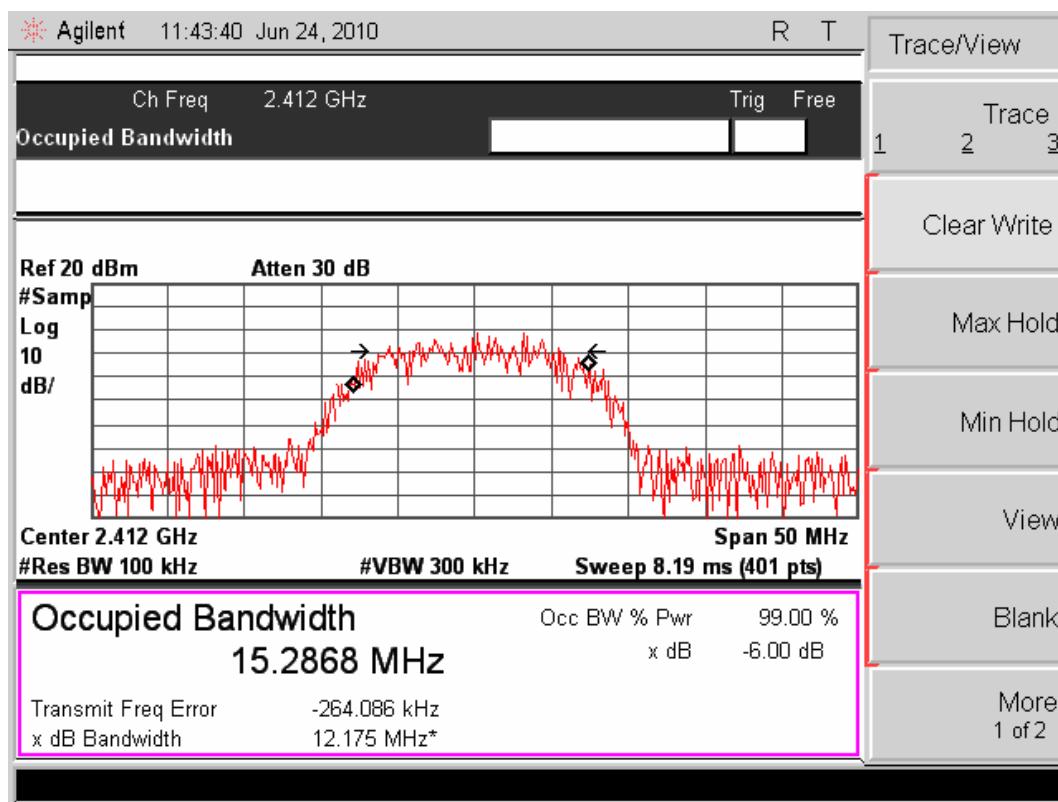
Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limits (MHz)
LOW (CH 1)	2412	12.175	> 0.5
MID (CH 6)	2437	12.051	> 0.5
HIG (CH 11)	2462	12.020	> 0.5

802.11g mode:

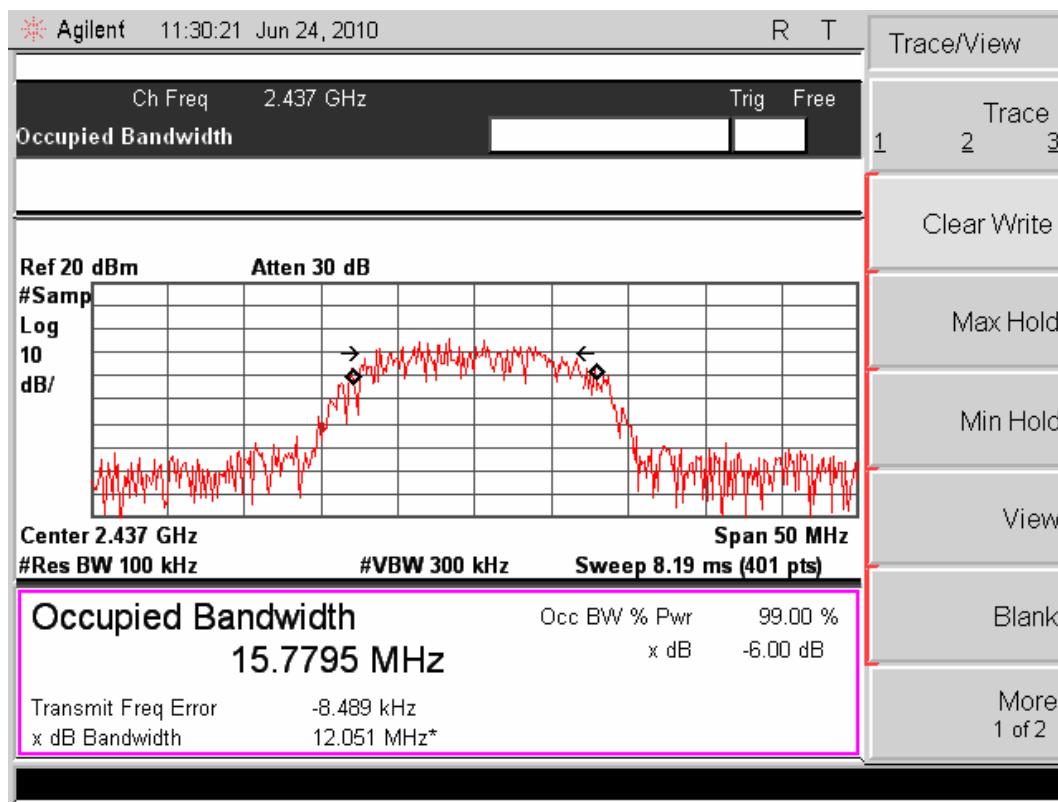
Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limits (MHz)
LOW (CH 1)	2412	16.374	> 0.5
MID (CH 6)	2437	16.420	> 0.5
HIG (CH 11)	2462	16.313	> 0.5

802.11b mode Plot:

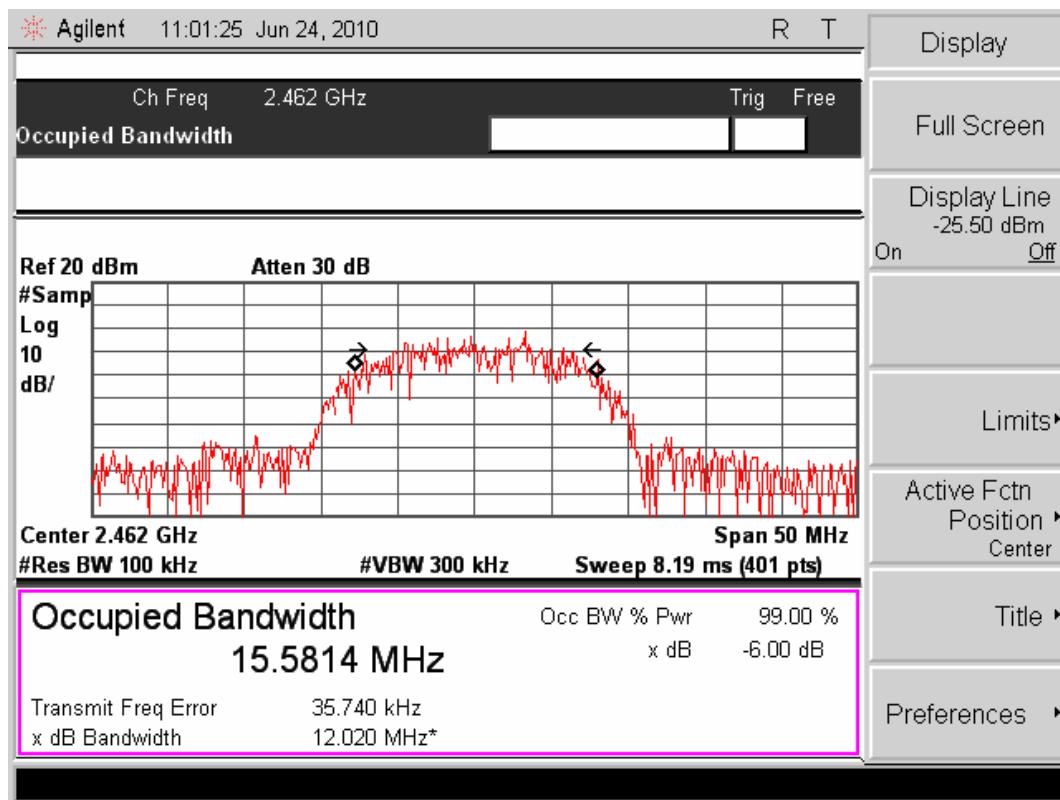
Channel LOW :



Channel MID :

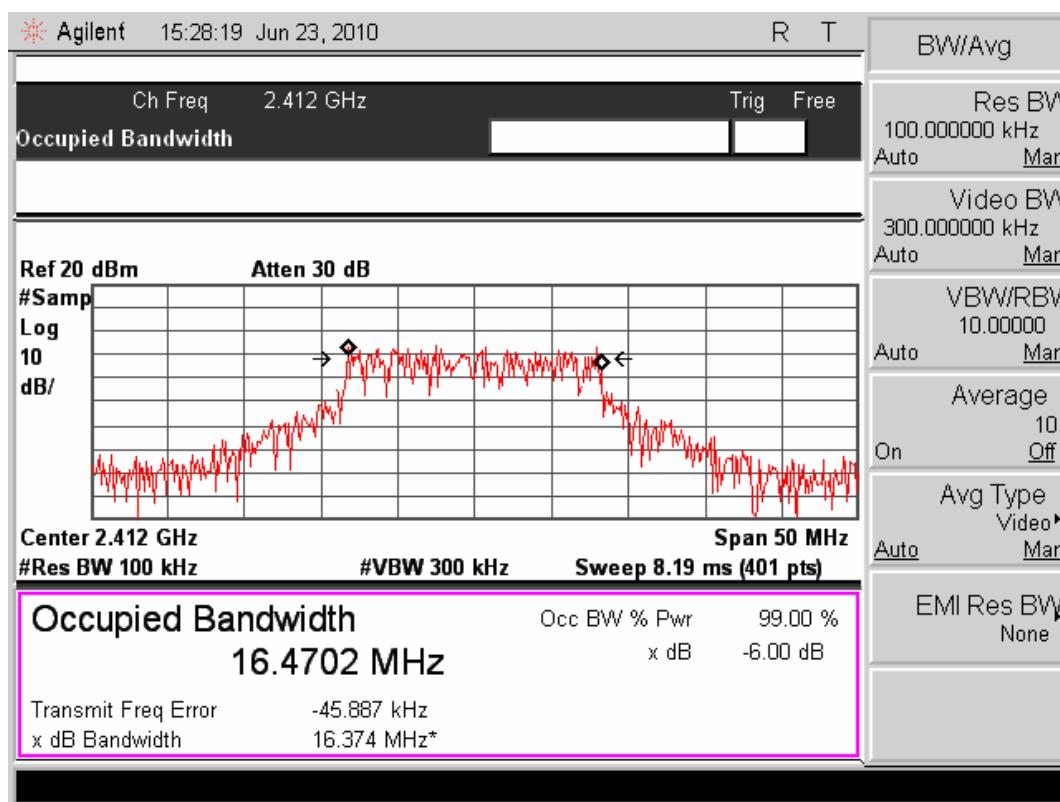


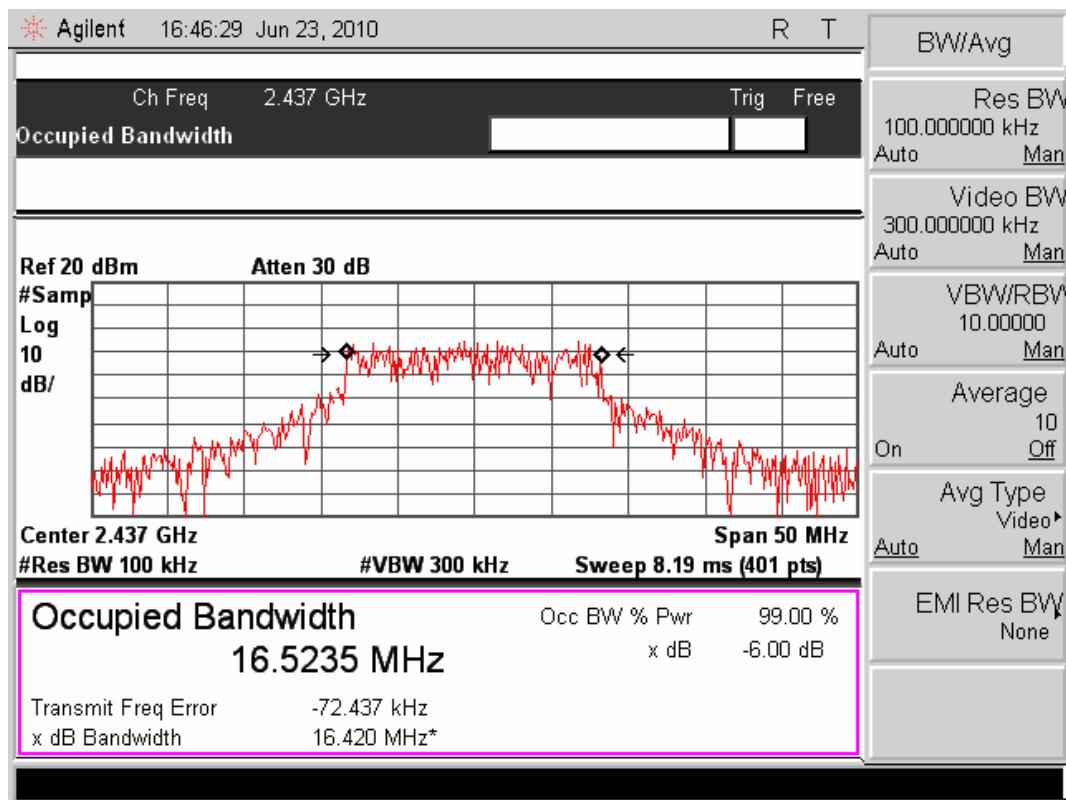
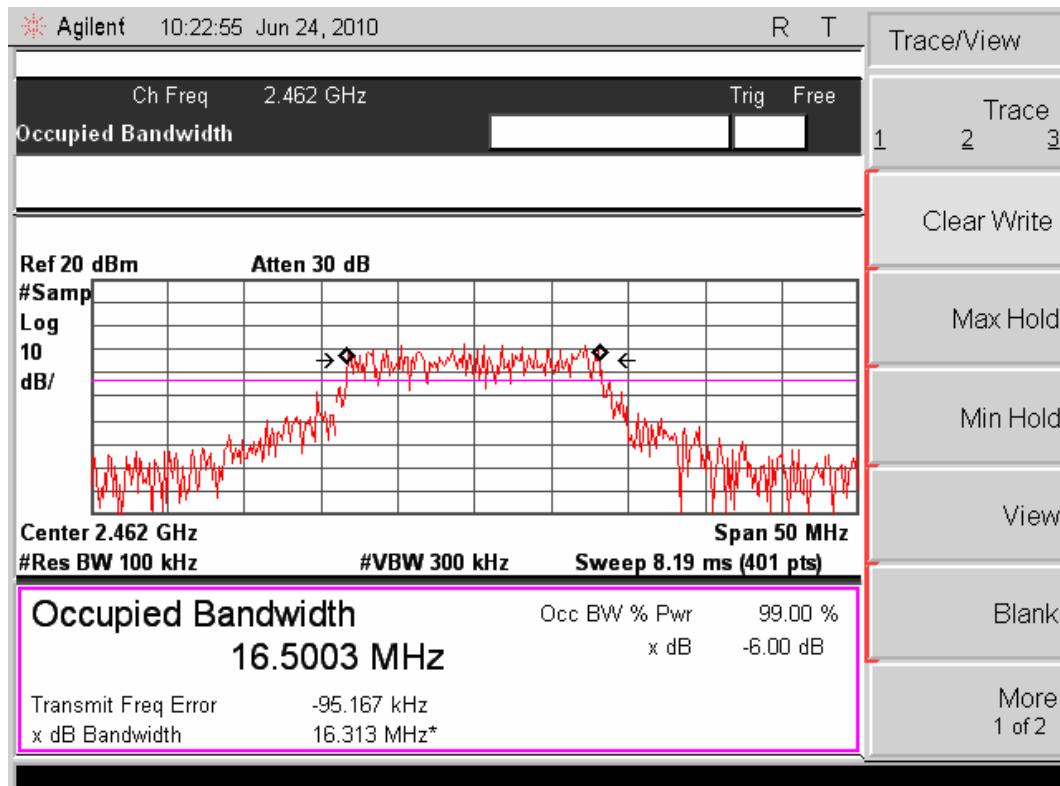
Channel HIG :



802.11g mode Plot:

Channel LOW :



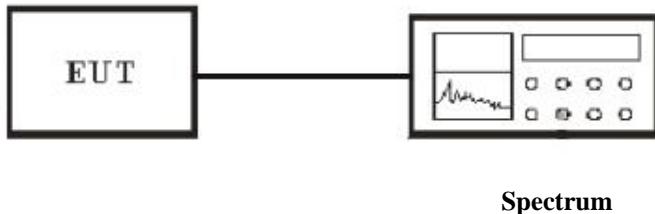
Channel MID :

Channel HIG :


4.6 Power Spectral Density

4.6.1 Applicable Standard

According to section 15.247(d), for digital modulation technique, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

4.6.2 Block diagram of test setup



Connection method: The shield cable was connected with EUT and Spectrum which have $50\Omega Z_C$. The connector of EUT side is original by manufacturer. The connector of Spectrum side is N type.

4.6.3 Measurement method

1. The transmitter output was connected to the spectrum analyzer through a shielded cable.
2. Set the spectrum analyzer as RBW=3 kHz, VBW=10 kHz, Span=300 kHz, Sweep=100s.
3. Set Detector to Peak, Trace to Max Hold.
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The plot of result is show on the screen of spectrum analyzer.
5. Repeat above 1-4 points for the middle and highest channel of the EUT.

4.6.4. Result

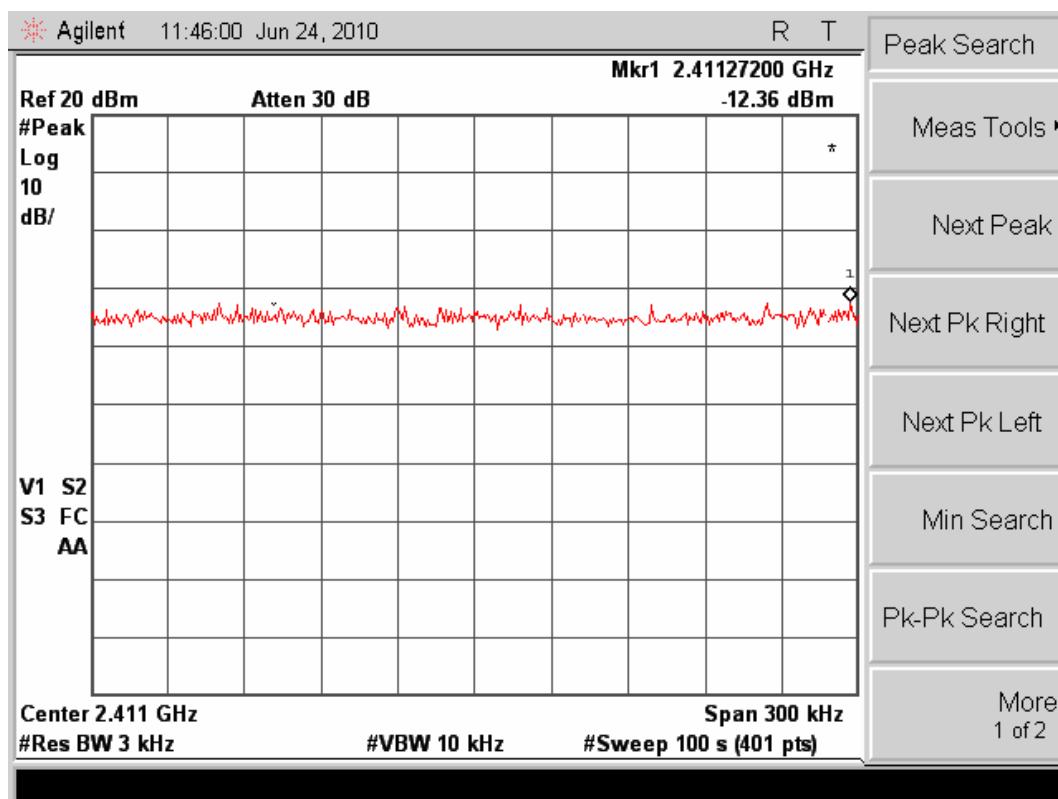
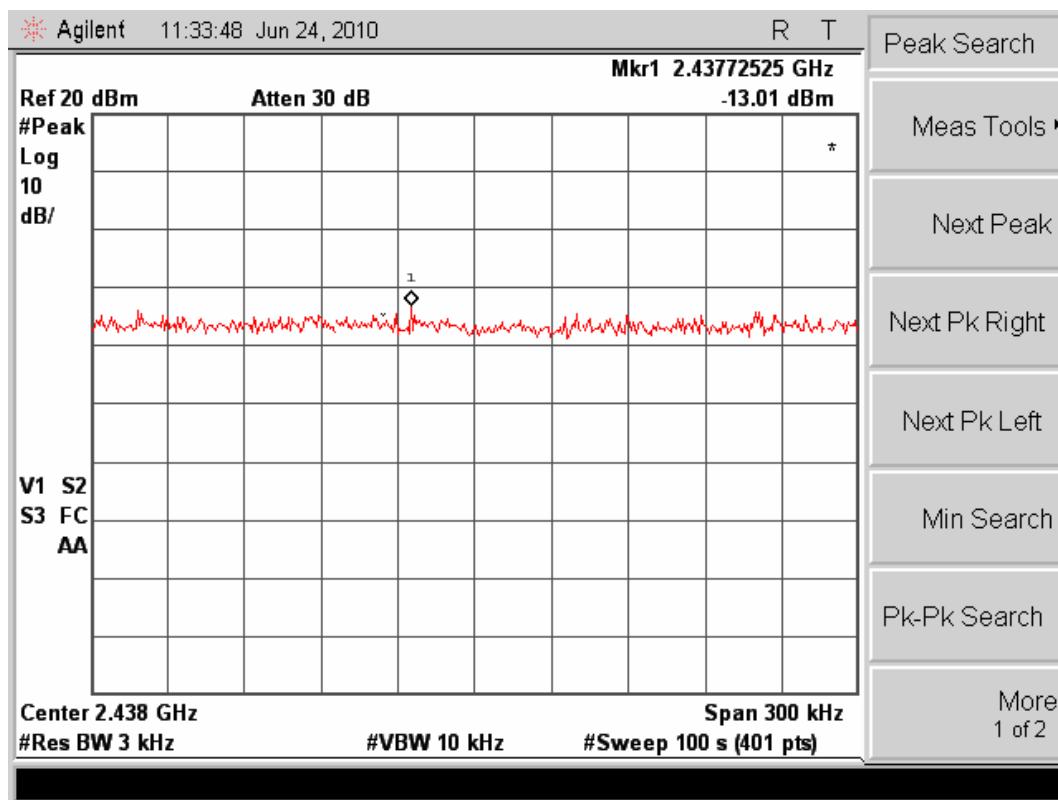
Temperature () : 22~23	EUT: Explorer Player Unit
Humidity (%RH) : 50~54	M/N: EXPL-10-01
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test data: Jun 24, 2010	Test engineer: Phenix

802.11b mode:

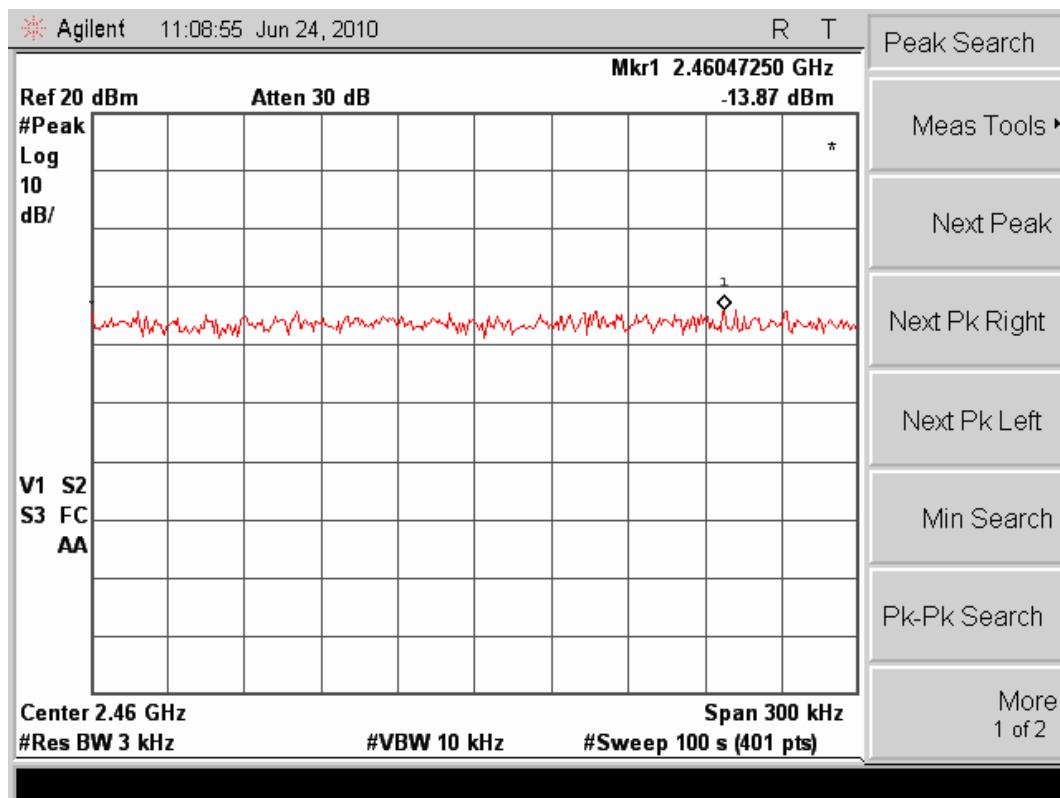
Channel No.	Frequency (MHz)	Power Spectral Density (MHz)	Limits (dBm)	Margin (dB)
LOW (CH 1)	2412	-12.36	8	20.36
MID (CH 6)	2437	-13.01	8	21.01
HIG (CH 11)	2462	-13.87	8	21.87

802.11g mode:

Channel No.	Frequency (MHz)	Power Spectral Density (MHz)	Limits (dBm)	Margin (dB)
LOW (CH 1)	2412	-15.51	8	23.51
MID (CH 6)	2437	-15.84	8	23.84
HIG (CH 11)	2462	-16.86	8	24.86

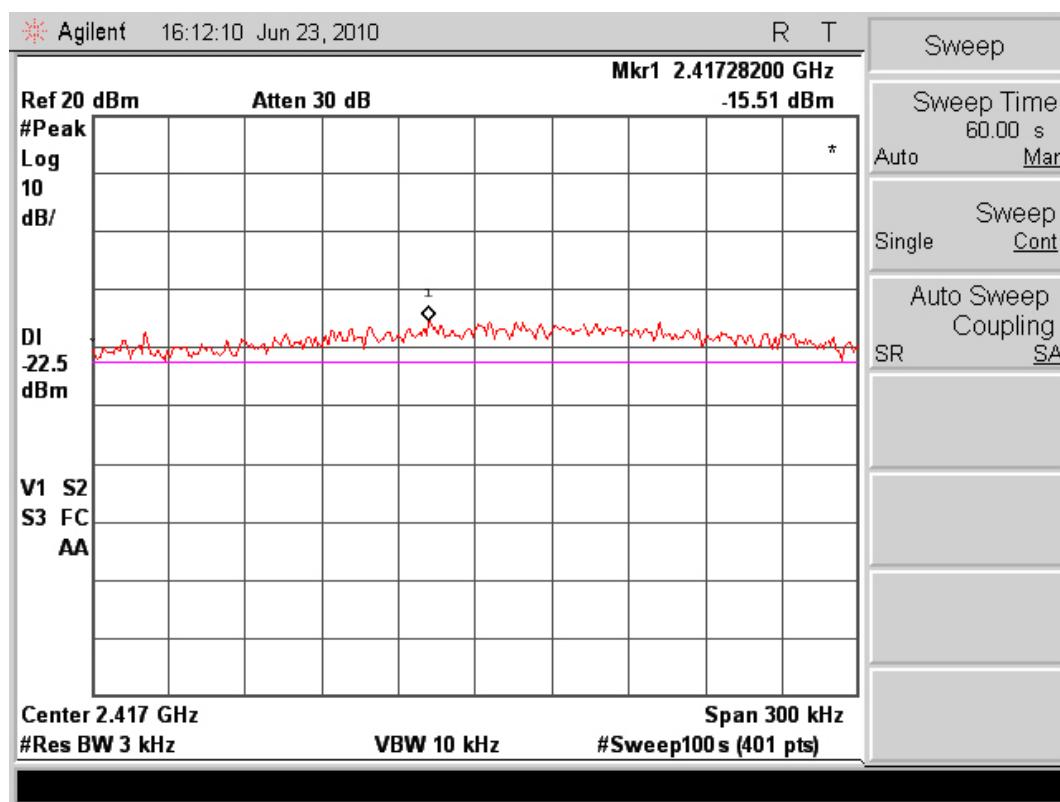
802.11b mode Plot:
Channel LOW :

Channel MID :


Channel HIG :

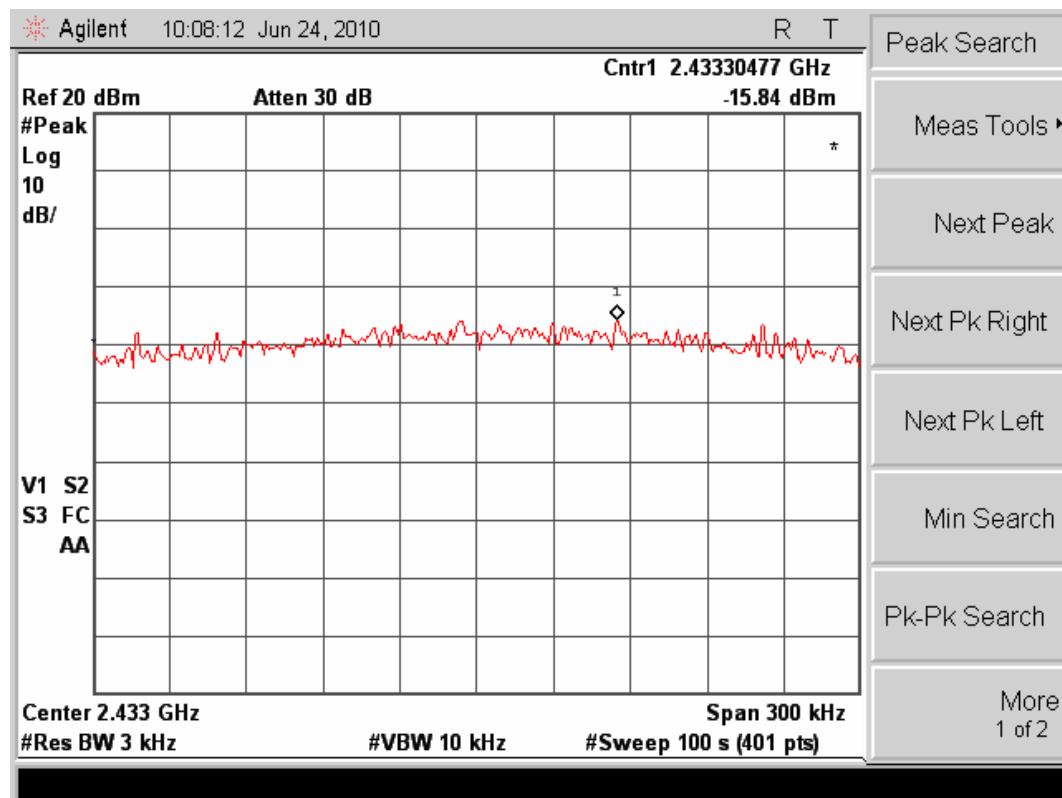


802.11g mode Plot:

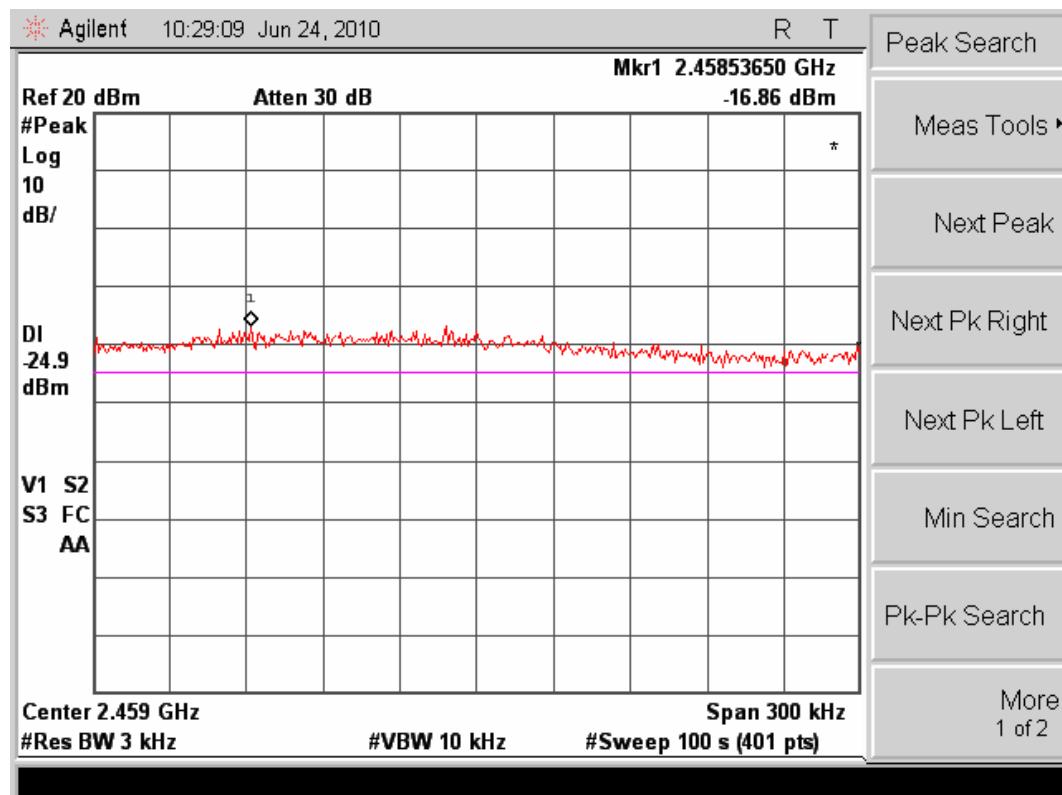
Channel LOW :



Channel MID :



Channel HIG :



4.7 Spurious Radiated Emission

4.7.1 Applicable Standard

Section 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. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

4.7.2 Block diagram of test setup

Radiated Measurement Setup:

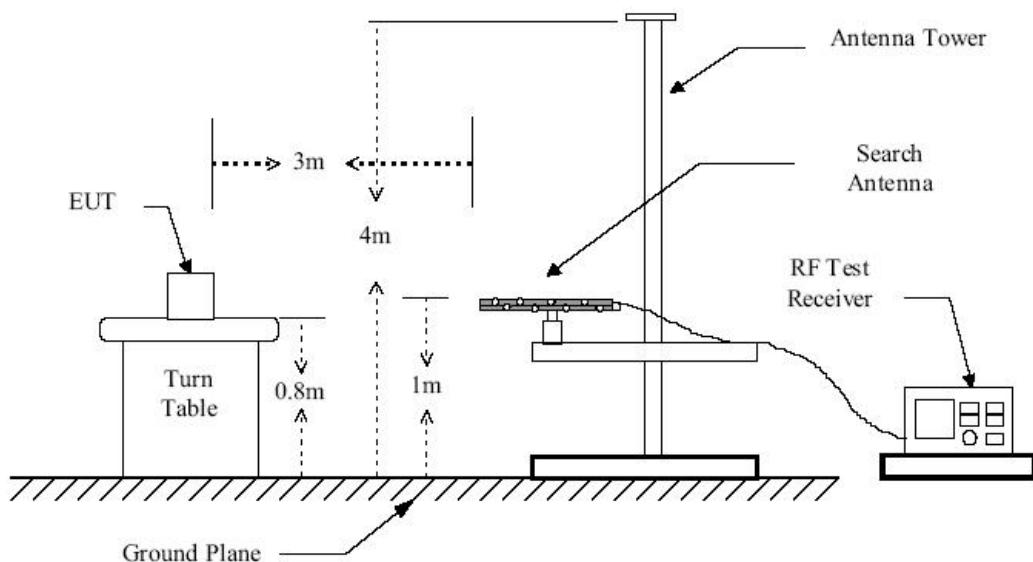


Figure 1 : Frequencies measured below 1 GHz configuration

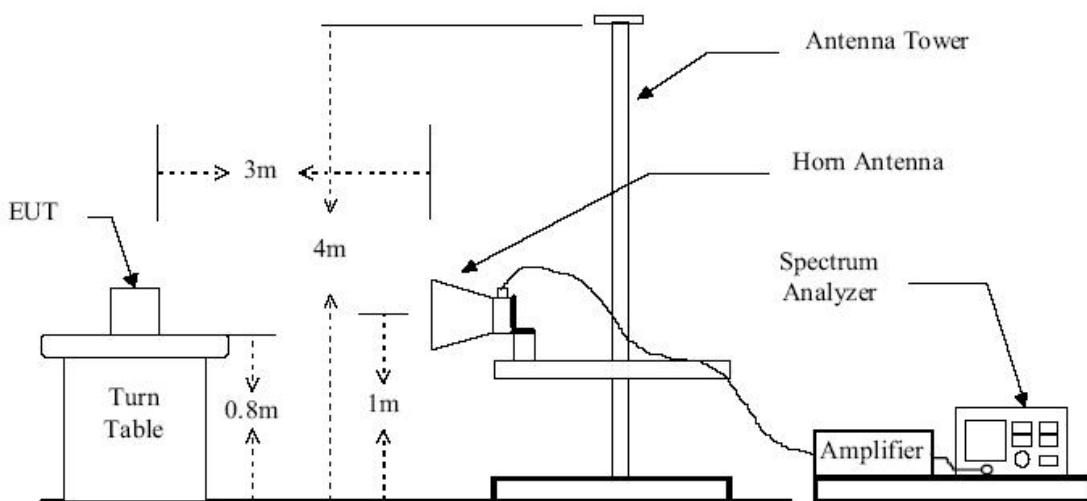
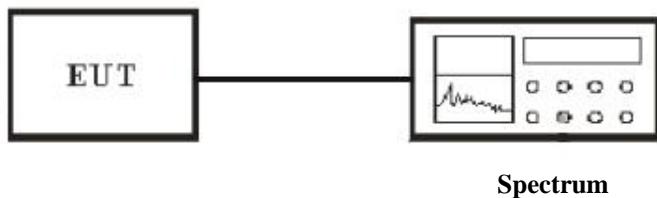


Figure 2 : Frequencies measured above 1 GHz configuration

Conducted Measurement Setup:



Connection method: The shield cable was connected with EUT and Spectrum which have $50\Omega Z_C$. The connector of EUT side is original by manufacturer. The connector of Spectrum side is N type.

4.7.3 Measurement method

Radiated Measurement

1. Configure the EUT according to ANSI C63.4.
2. The EUT was placed on the top of the turntable 0.8 meter above ground.
3. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
4. Power on the EUT and all the supporting units.
5. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
6. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.
7. For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
8. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

Conducted Measurement

1. For emission above 1GHz, conducted measurement method is used.
2. The transmitter is set to the lowest channel.
3. The transmitter output was connected to the spectrum analyzer via a cable and cable loss is used as the offset of the spectrum analyzer.
4. Set RBW to 100 KHz and VBW to 300 KHz, Then detector set to peak and max hold this trace.
5. The lowest band edges emission was measured and recorded.
6. The transmitter set to the highest channel and repeated 2~4.

4.7.4. Result

PASS**Radiated:****Below 30MHz:**

No further spurious emissions found between lowest internal used or generated frequency and 30 MHz.

30M- 1GHz:

2010-06-30 09:10:19

RADIATED EMISSION

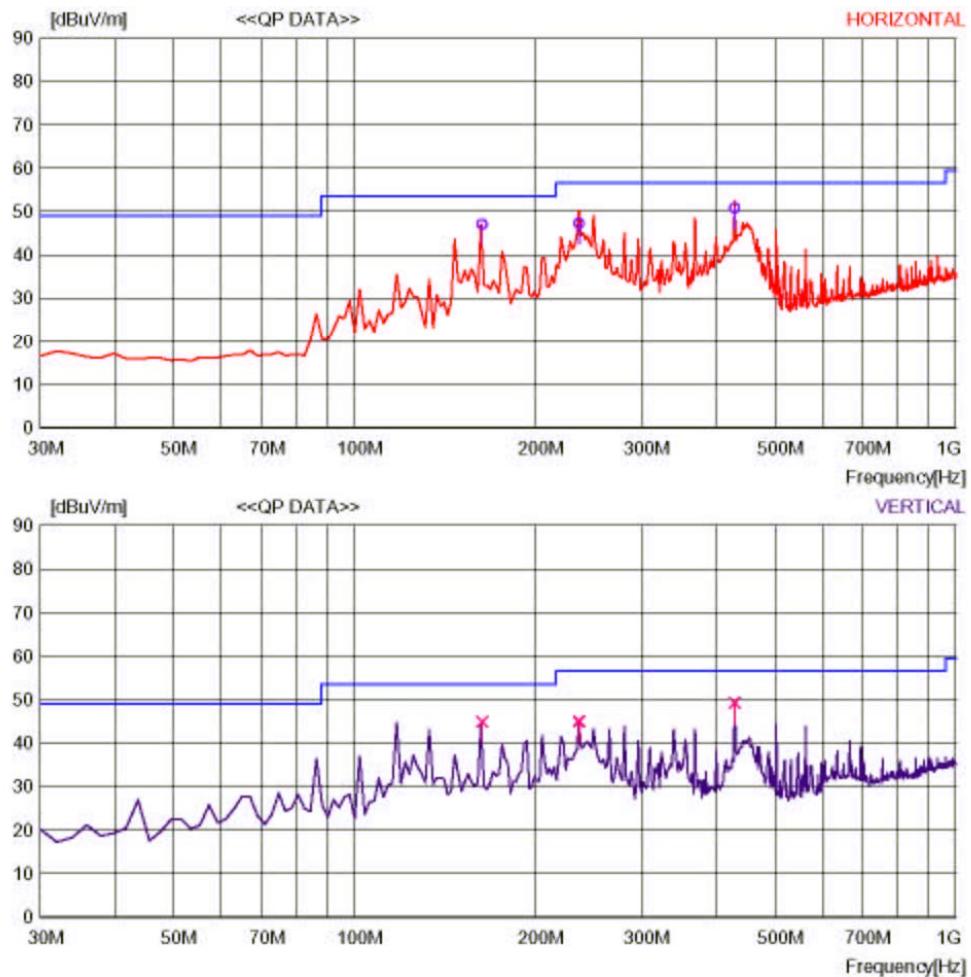
Date : 2010-06-26 10:39:09

Trade Name	:	GameTech	Document No.	:
Model Name	:	EXPL-10-01	Power Supply	
Product Name	:	Explorer Player Unit	Temp/Humi	
Test Condition	:	TX mode	Operator	

Internal Battery	
25 Deg/55% RH	
Phenix Zhang	

Memo :

LIMIT : FCC Part15 Subpart.B Class A (3m)



2010-06-30 09:10:19

RADIATED EMISSION

Date : 2010-06-26 10:39:09

Trade Name	:	GameTech	Document No.	:
Model Name	:	EXPL-10-01	Power Supply	:
Product Name	:	Explorer Player Unit	Temp/Humi	:
Test Condition	:	TX mode	Operator	:

Memo :

LIMIT : FCC Part15 Subpart.B Class A (3m)

No.	FREQ QP [MHz]	READING [dBuV]	ANT FACTOR	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT QP [dB]	MARGIN [dB]	ANTENNA [cm]	TABLE [deg]
<hr/>										
1	162.974	59.0	12.0	7.7	31.6	47.1	53.5	6.4	190	142
2	236.052	58.6	12.2	8.1	31.6	47.3	56.5	9.2	100	208
3	428.497	56.3	16.9	9.1	31.5	50.8	56.5	5.7	200	180
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Above 1GHz:

802.11b mode Channel Low:

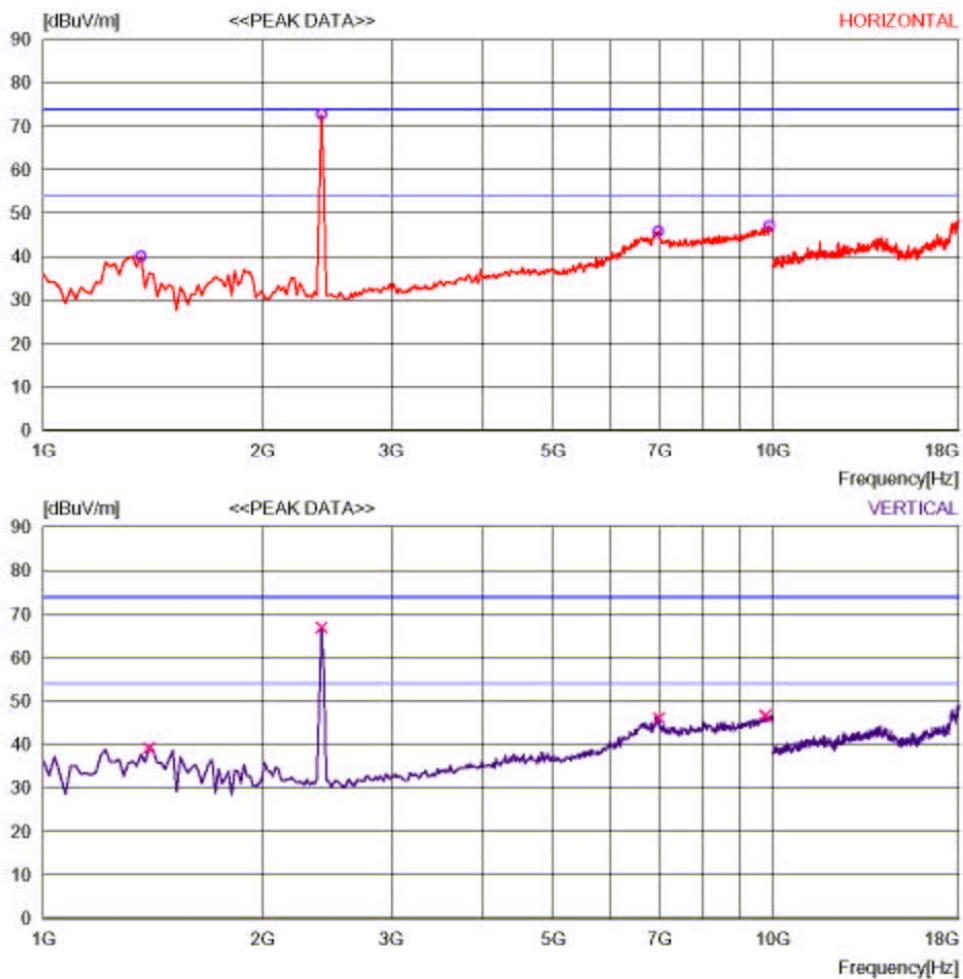
2010-06-28 15:37:18

RADIATED EMISSION

Date : 2010-06-28 15:37:11

Trade Name	:	GameTech	Document No.	
Model Name	:	EXPL-10-01	Power Supply	
Product Name	:	Explorer Player Unit	Temp/Humi	
Test Condition	:	TX 802.11b CH1	Operator	

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No further spurious emissions found between 18GHz and 25GHz.

2010-06-28 15:37:18

RADIATED EMISSION

Date : 2010-06-28 15:37:11

Trade Name : GameTech
Model Name : EXPL-10-01
Product Name : EXplorer Player Unit
Test Condition : TX 802.11b CH1

Document No.
Power Supply : Internal battery
Temp/Humi : 27/55RH%
Operator : Phenix

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dBuV/m]	RESULT [dBuV/m]	LIMIT [dB]	MARGIN [cm]	ANTENNA TABLE [DEG]
<hr/>									
1	1360.722	47.5	28.8	4.1	40.3	40.1	74	33.9	200
2	2406.818	75.3	31.4	5.5	39.4	72.8	74	1.2	100
3	6969.959	34.6	40.9	9.6	39.3	45.8	74	28.2	300
4	9891.813	32.6	42.3	11.7	39.5	47.1	74	26.9	100
<hr/>									
----- Vertical -----									
5	1396.795	46.5	28.9	4.1	40.3	39.2	74	34.8	200
6	2406.818	69.4	31.4	5.5	39.4	66.9	74	7.1	200
7	6987.996	34.7	41.0	9.6	39.2	46.1	74	27.9	100
8	9765.560	32.2	42.4	11.6	39.6	46.6	74	27.4	200
<hr/>									

802.11b mode Channel Mid:

2010-06-28 15:50:09

RADIATED EMISSION

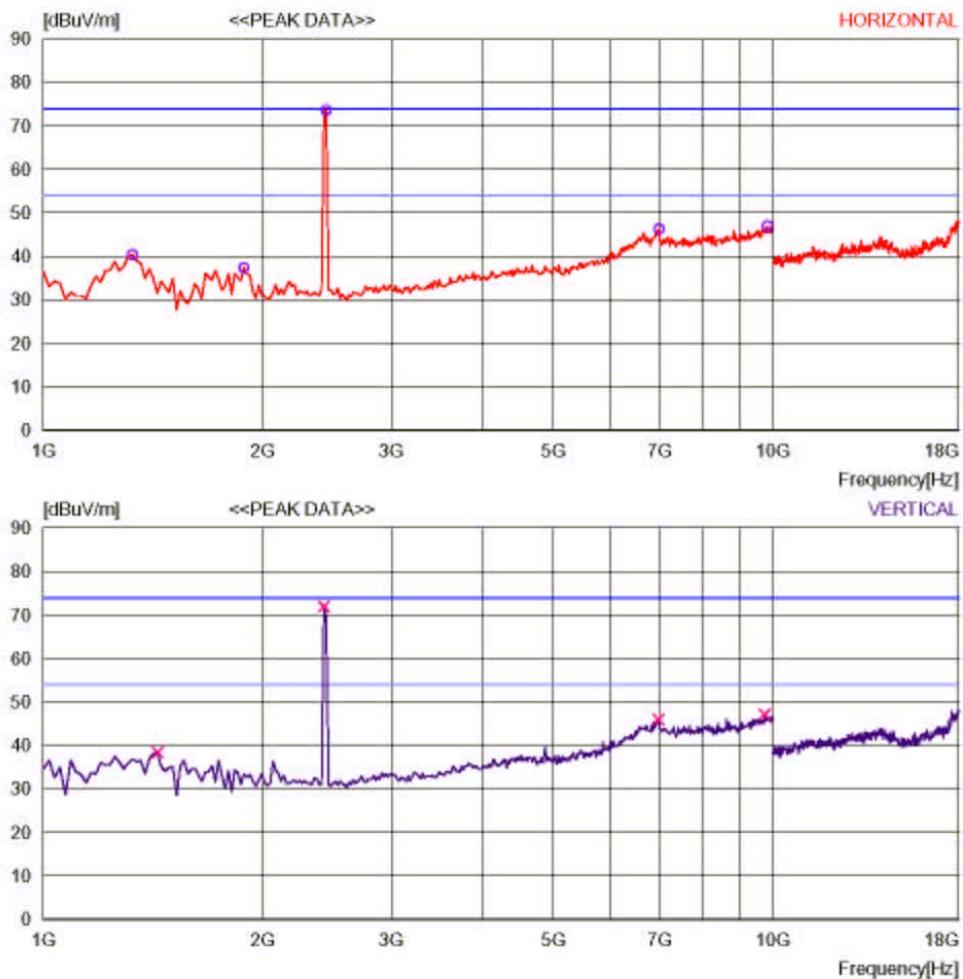
Date : 2010-06-28 15:50:01

Trade Name	:	GameTech	Document No.	
Model Name	:	EXPL-10-01	Power Supply	
Product Name	:	Explorer Player Unit	Temp/Humi	
Test Condition	:	TX 802.11b CH6	Operator	

Internal battery
27/55RH%
Phenix

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)



No further spurious emissions found between 18GHz and 25GHz.

2010-06-28 15:50:09

RADIATED EMISSION

Date : 2010-06-28 15:50:01

Trade Name	GameTech	Document No.	
Model Name	EXPL-10-01	Power Supply	Internal battery
Product Name	Explorer Player Unit	Temp/Humi	27/55RH%
Test Condition	TX 802.11b CH6	Operator	Phenix

Memo

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
---- Horizontal -----										
1	1324.650	48.1	28.7	4.0	40.4	40.4	74	33.6	100	147
2	1883.770	42.3	29.9	4.9	39.7	37.4	74	36.6	100	184
3	2442.890	76.1	31.3	5.6	39.4	73.6	74	0.4	100	205
4	6987.996	34.9	41.0	9.6	39.2	46.3	74	27.7	400	238
5	9837.704	32.5	42.4	11.6	39.5	47.0	74	27.0	300	355
---- Vertical -----										
6	1432.867	45.5	28.9	4.2	40.2	38.4	74	35.6	200	234
7	2424.854	74.4	31.4	5.5	39.4	71.9	74	2.1	200	180
8	6969.959	34.8	40.9	9.6	39.3	46.0	74	28.0	100	290
9	9747.523	32.7	42.4	11.6	39.6	47.1	74	26.9	100	310

802.11b mode Channel High:

2010-06-28 16:06:24

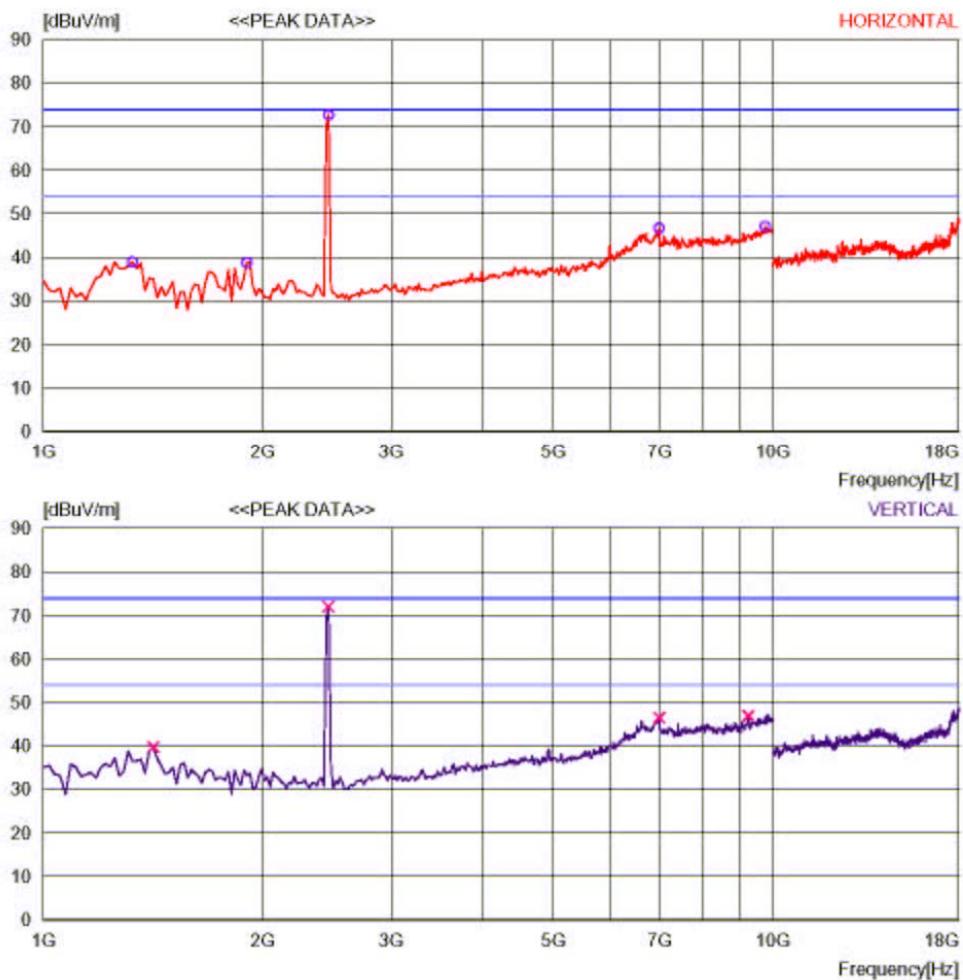
RADIATED EMISSION

Date : 2010-06-28 16:06:18

Trade Name	:	GameTech	Document No.	
Model Name	:	EXPL-10-01	Power Supply	
Product Name	:	Explorer Player Unit	Temp/Humi	
Test Condition	:	TX 802.11b CH11	Operator	

Internal battery
27/55RH%
Phenix

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No further spurious emissions found between 18GHz and 25GHz.

2010-06-28 16:06:24

RADIATED EMISSION

Date : 2010-06-28 16:06:18

Trade Name	GameTech	Document No.	
Model Name	EXPL-10-01	Power Supply	Internal battery
Product Name	Explorer Player Unit	Temp/Humi	27/55RH%
Test Condition	TX 802.11b CH11	Operator	Phenix

Memo

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT		LIMIT [dB]	MARGIN [cm]	ANTENNA TABLE [DEG]
						[dBuV/m]	[dBuV/m]			
---- Horizontal ----										
1	1324.650	46.6	28.7	4.0	40.4	38.9	74	35.1	100	150
2	1901.806	43.7	29.9	4.9	39.7	38.8	74	35.2	100	187
3	2460.927	75.2	31.3	5.6	39.4	72.7	74	1.3	100	198
4	6987.996	35.3	41.0	9.6	39.2	46.7	74	27.3	300	0
5	9765.560	32.7	42.4	11.6	39.6	47.1	74	26.9	100	111
---- Vertical ----										
6	1414.831	46.9	28.9	4.2	40.3	39.7	74	34.3	200	246
7	2460.927	74.5	31.3	5.6	39.4	72.0	74	2.0	200	176
8	6987.996	35.1	41.0	9.6	39.2	46.5	74	27.5	400	111
9	9260.548	33.2	42.1	11.4	39.8	46.9	74	27.1	300	216

802.11g mode Channel Low:

2010-06-28 15:24:34

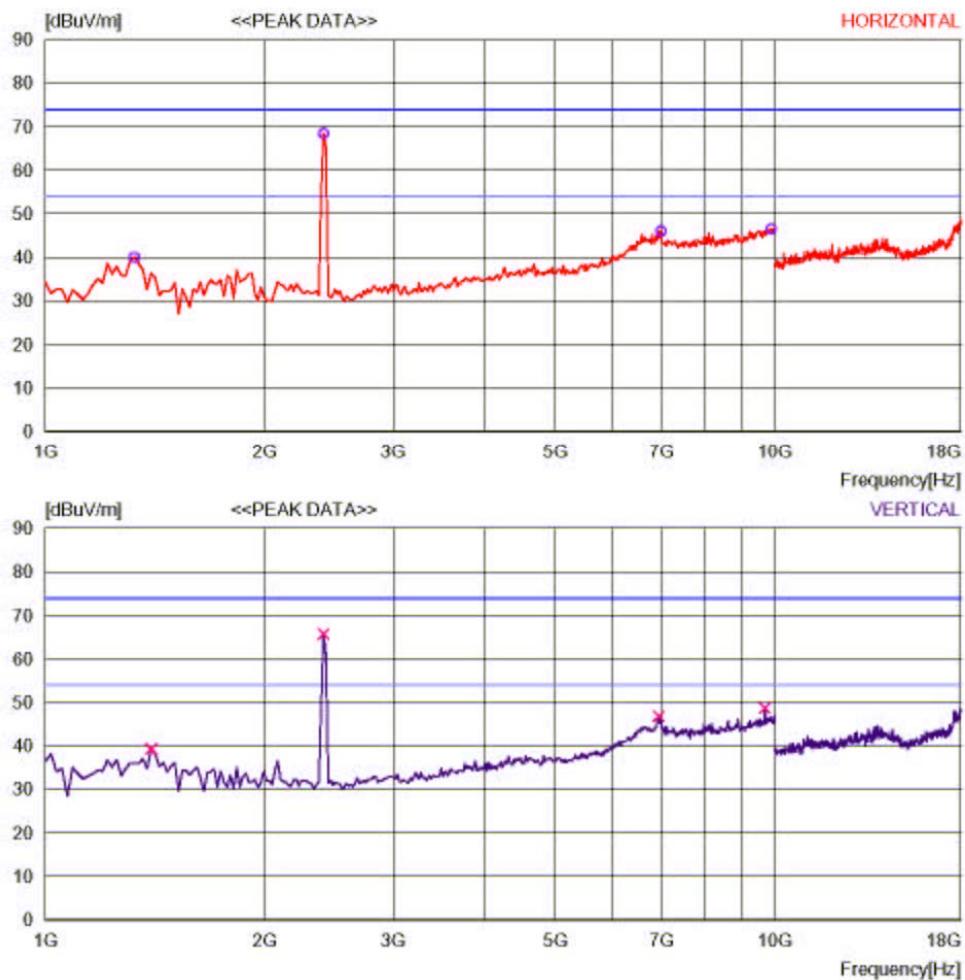
RADIATED EMISSION

Date : 2010-06-28 15:24:24

Trade Name	:	GameTech	Document No.	
Model Name	:	EXPL-10-01	Power Supply	
Product Name	:	Explorer Player Unit	Temp/Humi	
Test Condition	:	TX 802.11g CH1	Operator	

Internal battery
27/55RH%
Phenix

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No further spurious emissions found between 18GHz and 25GHz.

2010-06-28 15:24:34

RADIATED EMISSION

Date : 2010-06-28 15:24:24

Trade Name	GameTech	Document No.	
Model Name	EXPL-10-01	Power Supply	Internal battery
Product Name	Explorer Player Unit	Temp/Humi	27/55RH%
Test Condition	TX 802.11g CH1	Operator	Phenix

Memo

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]		GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	LIMIT [dB]	MARGIN [cm]	ANTENNA TABLE [DEG]
				LOSS [dB]	LOSS [dB]						
---- Horizontal ----											
1	1324.650	47.7	28.7	4.0	40.4	40.0	74	34.0	200	147	
2	2406.818	71.0	31.4	5.5	39.4	68.5	74	5.5	100	204	
3	6987.996	34.6	41.0	9.6	39.2	46.0	74	28.0	300	177	
4	9891.813	32.0	42.3	11.7	39.5	46.5	74	27.5	100	146	
---- Vertical ----											
5	1396.795	46.6	28.9	4.1	40.3	39.3	74	34.7	100	240	
6	2406.818	68.2	31.4	5.5	39.4	65.7	74	8.3	100	175	
7	6933.887	35.7	40.8	9.6	39.3	46.8	74	27.2	300	14	
8	9693.415	34.5	42.3	11.5	39.6	48.7	74	25.3	100	117	

802.11g mode Channel Mid:

2010-06-28 14:43:33

RADIATED EMISSION

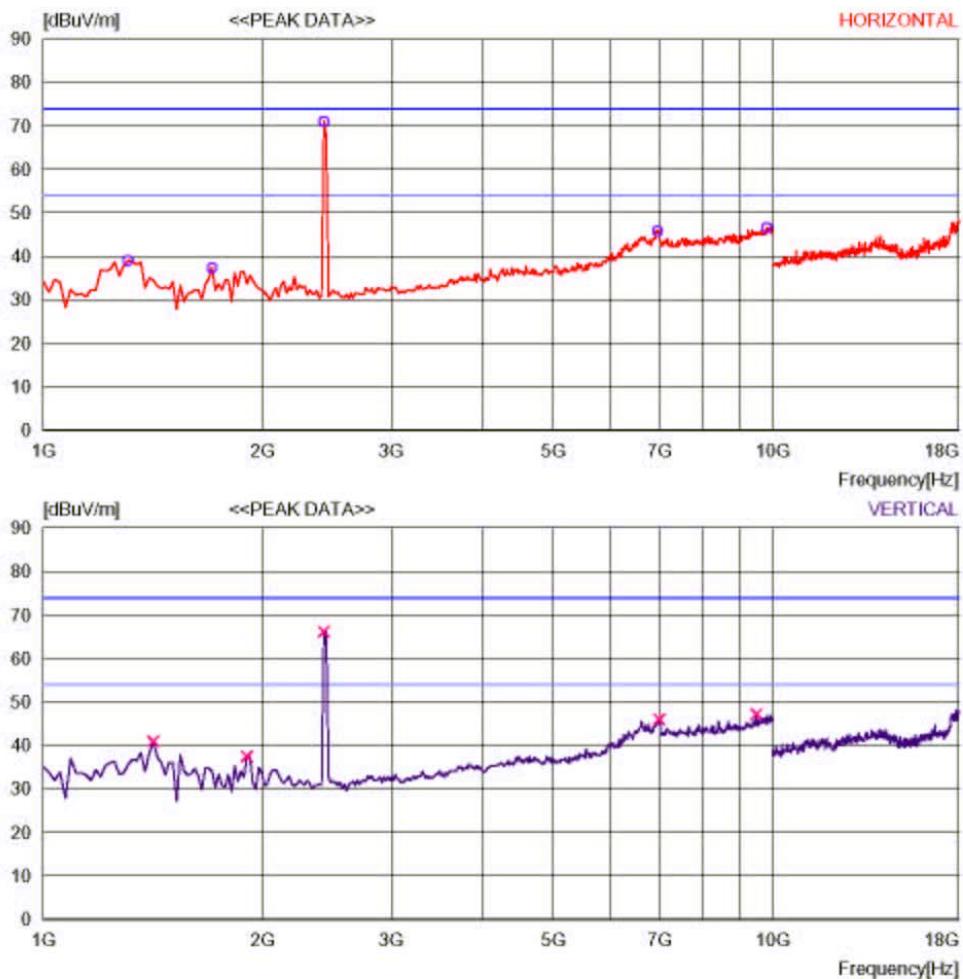
Date : 2010-06-28 14:43:25

Trade Name	:	GameTech	Document No.	
Model Name	:	EXPL-10-01	Power Supply	
Product Name	:	Explorer Player Unit	Temp/Humi	
Test Condition	:	TX 802.11g CH6	Operator	

Internal battery
27/55RH%
Phenix

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)



No further spurious emissions found between 18GHz and 25GHz.

2010-06-28 15:50:09

RADIATED EMISSION

Date : 2010-06-28 15:50:01

Trade Name	GameTech	Document No.	
Model Name	EXPL-10-01	Power Supply	Internal battery
Product Name	Explorer Player Unit	Temp/Humi	27/55RH%
Test Condition	TX 802.11b CH6	Operator	Phenix

Memo

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT		LIMIT [dB]	MARGIN [cm]	ANTENNA TABLE [DEG]
						[dBuV/m]	[dBuV/m]			
---- Horizontal ----										
1	1324.650	48.1	28.7	4.0	40.4	40.4	74	33.6	100	147
2	1883.770	42.3	29.9	4.9	39.7	37.4	74	36.6	100	184
3	2442.890	76.1	31.3	5.6	39.4	73.6	74	0.4	100	209
4	6987.996	34.9	41.0	9.6	39.2	46.3	74	27.7	400	238
5	9837.704	32.5	42.4	11.6	39.5	47.0	74	27.0	300	355
---- Vertical ----										
6	1432.867	45.5	28.9	4.2	40.2	38.4	74	35.6	200	234
7	2424.854	74.4	31.4	5.5	39.4	71.9	74	2.1	200	180
8	6969.959	34.8	40.9	9.6	39.3	46.0	74	28.0	100	290
9	9747.523	32.7	42.4	11.6	39.6	47.1	74	26.9	100	310

802.11g mode Channel High:

2010-06-28 14:57:12

RADIATED EMISSION

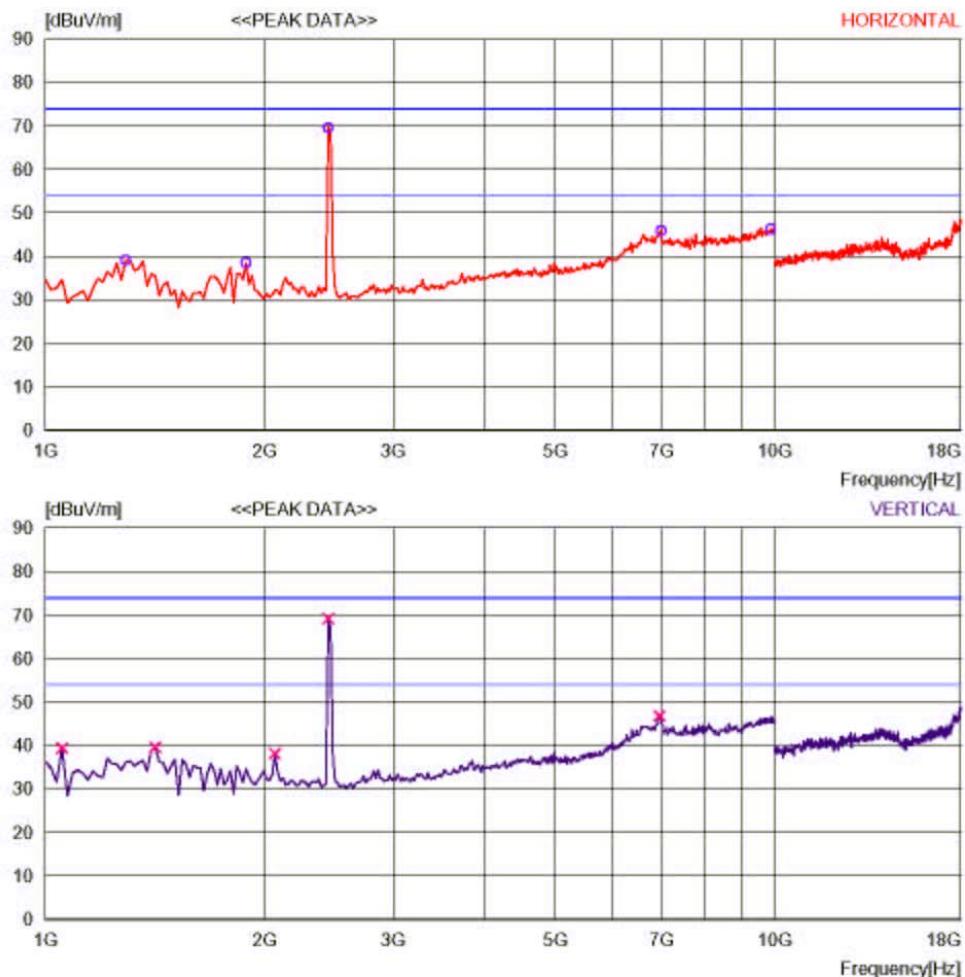
Date : 2010-06-28 14:57:05

Trade Name	:	GameTech	Document No.	
Model Name	:	EXPL-10-01	Power Supply	
Product Name	:	Explorer Player Unit	Temp/Humi	
Test Condition	:	TX 802.11g CH11	Operator	

Internal battery
27/55RH%
Phenix

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)



No further spurious emissions found between 18GHz and 25GHz.

2010-06-28 14:57:12

RADIATED EMISSION

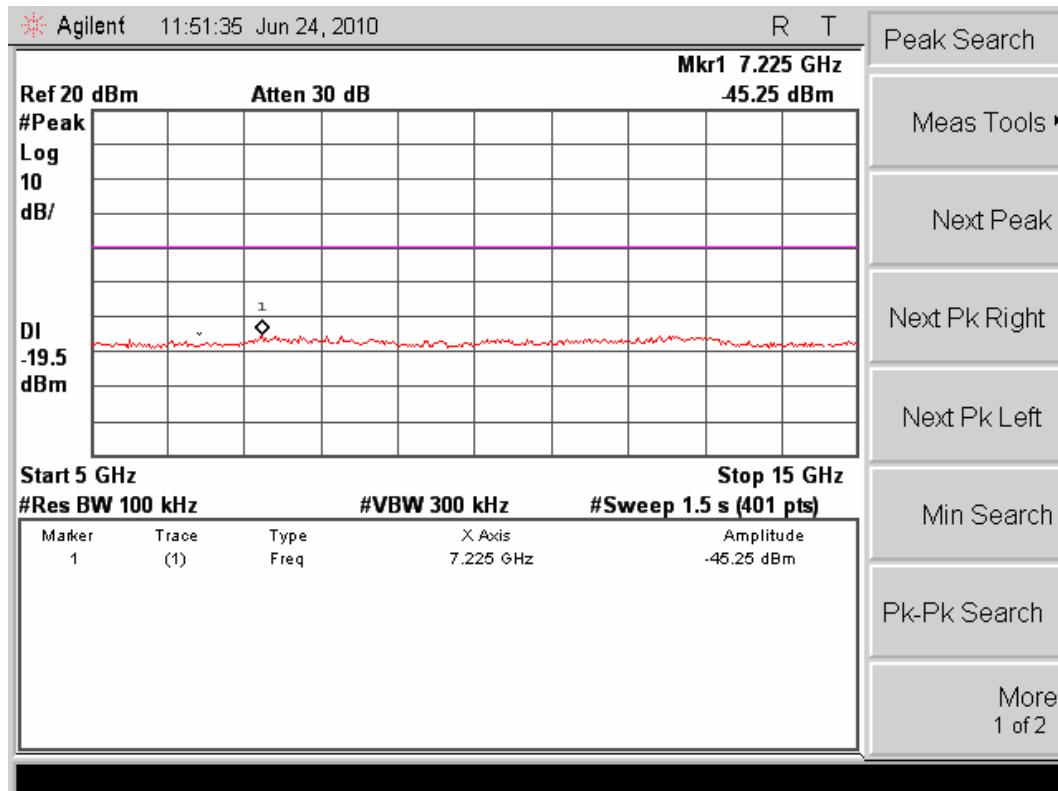
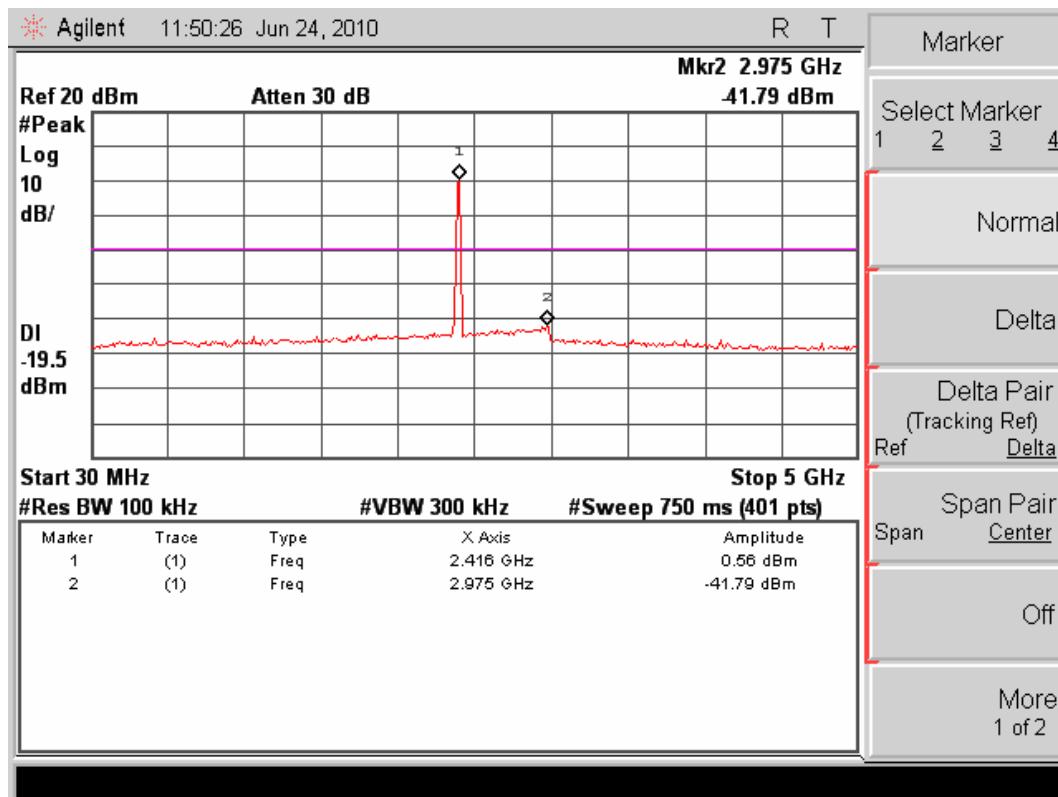
Date : 2010-06-28 14:57:05

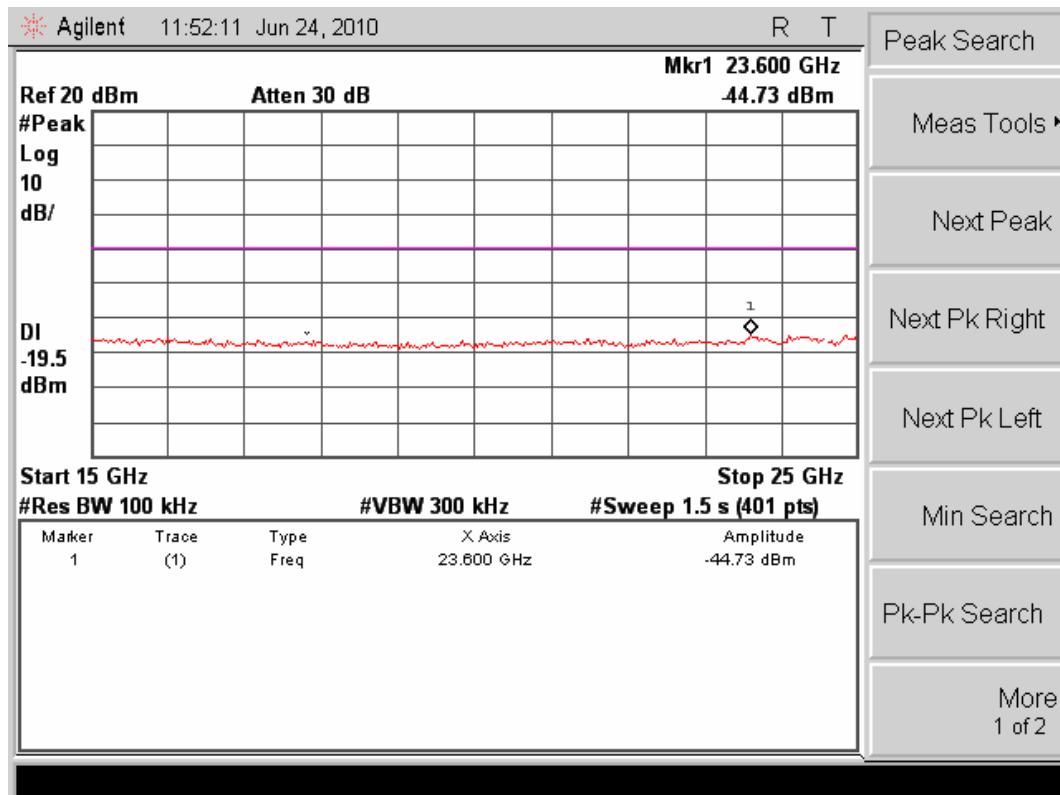
Trade Name	GameTech	Document No.	
Model Name	EXPL-10-01	Power Supply	Internal battery
Product Name	Explorer Player Unit	Temp/Humi	27/55RH%
Test Condition	TX 802.11g CH11	Operator	Phenix

Memo

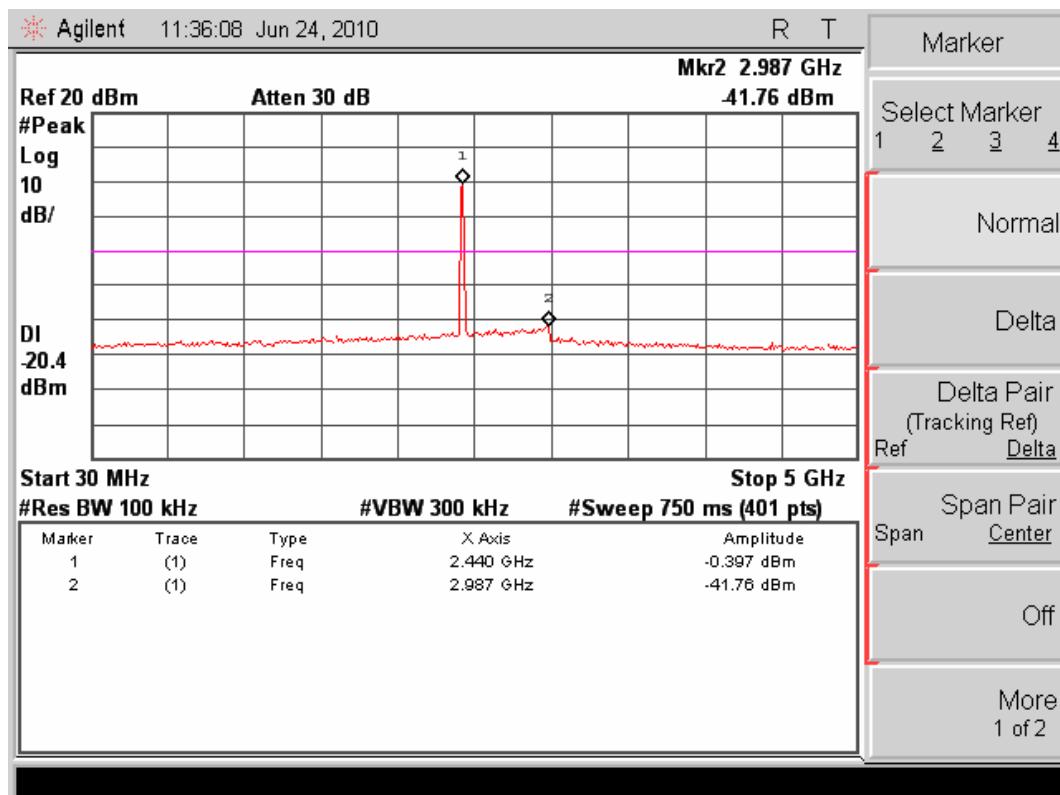
LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)

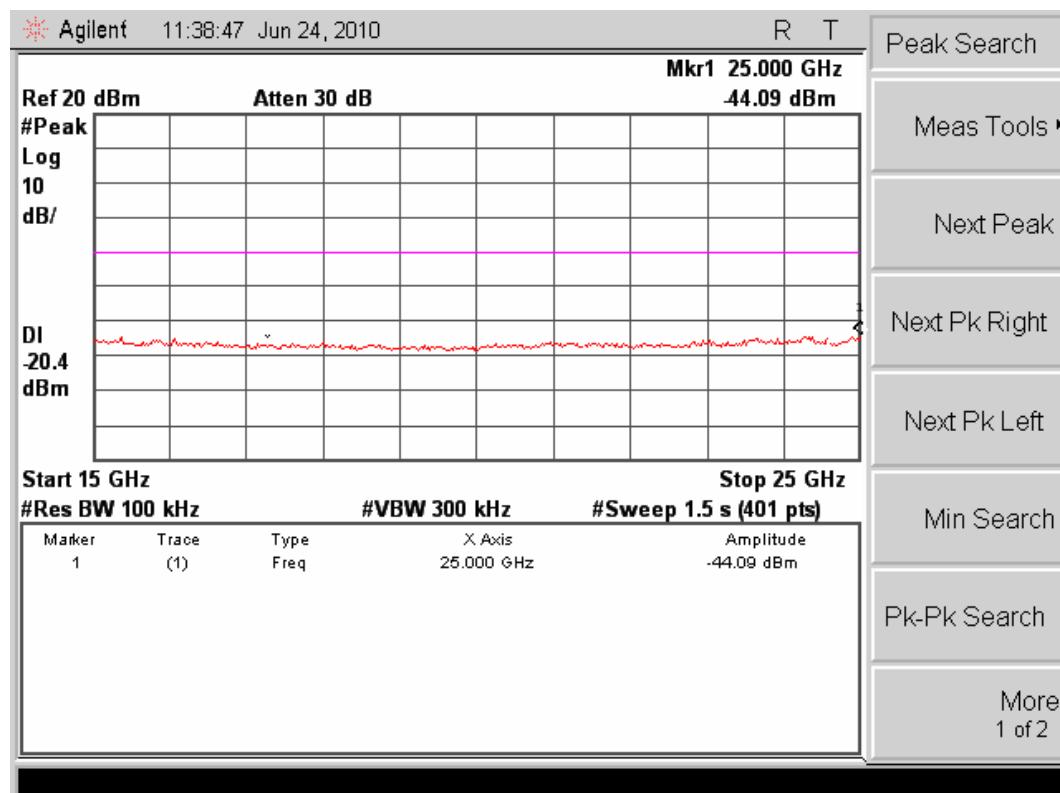
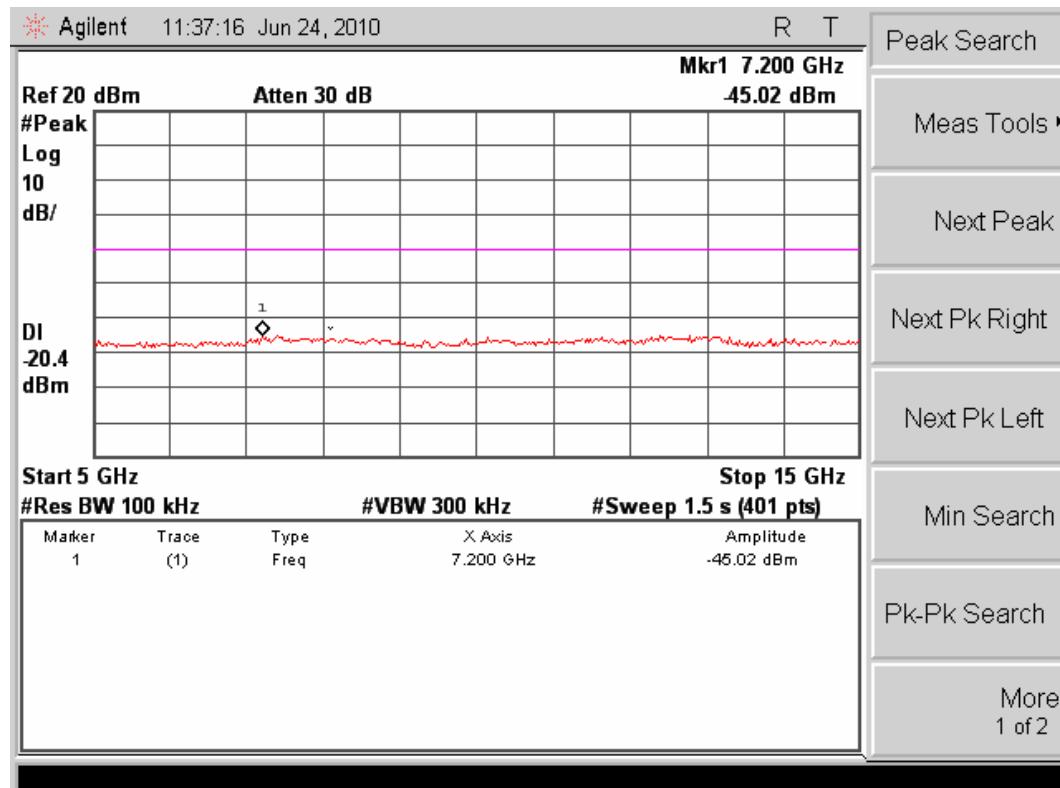
No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	LIMIT [dB]	MARGIN [cm]	ANTENNA TABLE [DEG]
----- Horizontal -----										
1	1288.578	46.9	28.6	4.0	40.4	39.1	74	34.9	200	2
2	1883.770	43.4	29.9	4.9	39.7	38.5	74	35.5	200	85
3	2442.890	72.1	31.3	5.6	39.4	69.6	74	4.4	100	195
4	6987.996	34.5	41.0	9.6	39.2	45.9	74	28.1	100	268
5	9873.776	31.7	42.4	11.7	39.5	46.3	74	27.7	300	14
----- Vertical -----										
6	1054.108	48.9	27.6	3.6	40.7	39.4	74	34.6	100	253
7	1414.831	46.8	28.9	4.2	40.3	39.6	74	34.4	200	230
8	2064.132	42.0	30.6	5.1	39.6	38.1	74	35.9	100	179
9	2442.890	71.7	31.3	5.6	39.4	69.2	74	4.8	100	187
10	6951.923	35.6	40.9	9.6	39.3	46.8	74	27.2	100	47

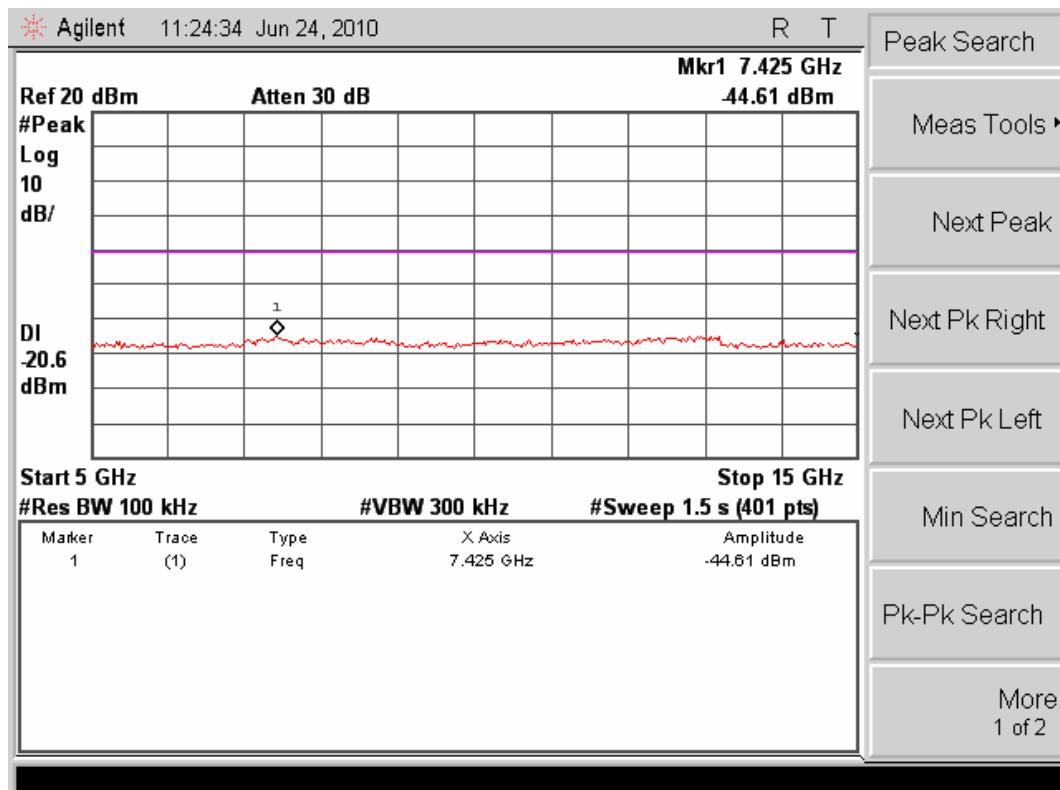
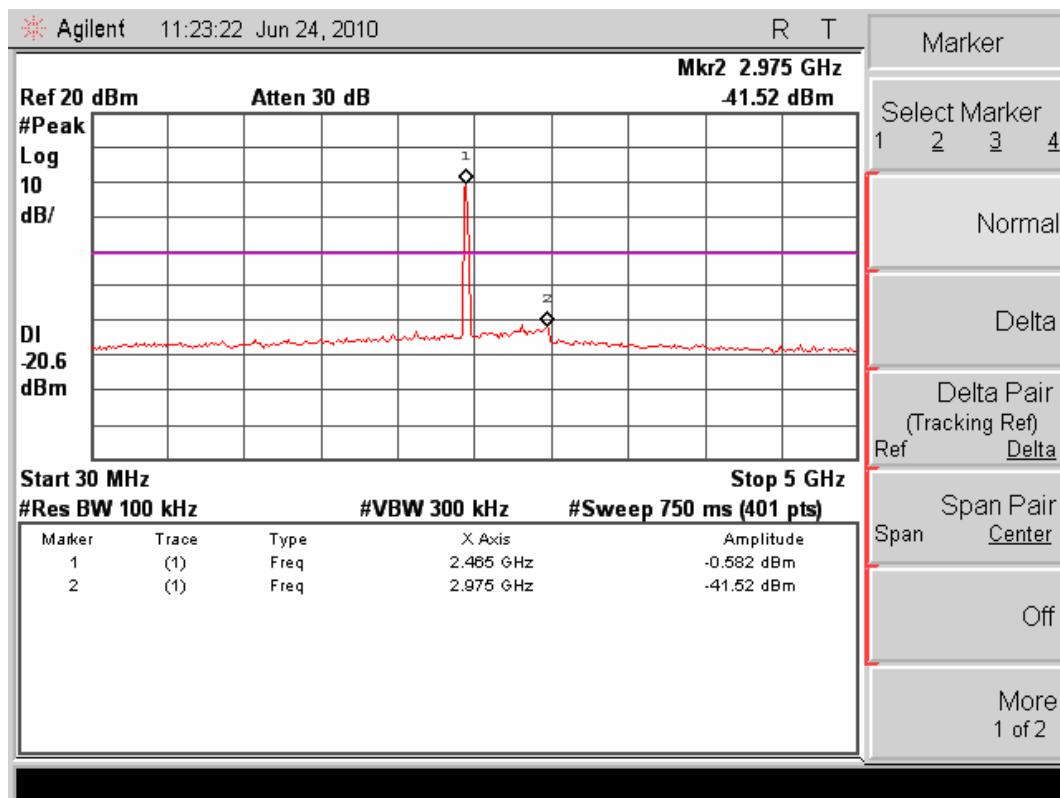
Conducted:
802.11b mode Channel LOW :


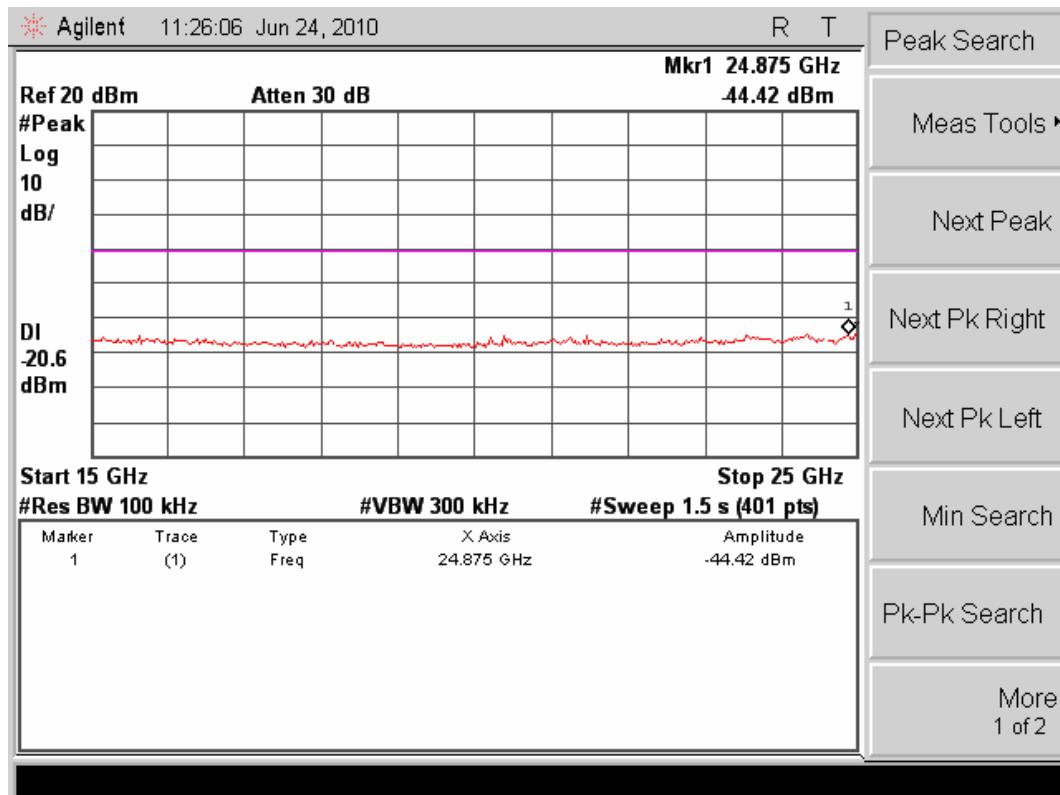


Channel MID :

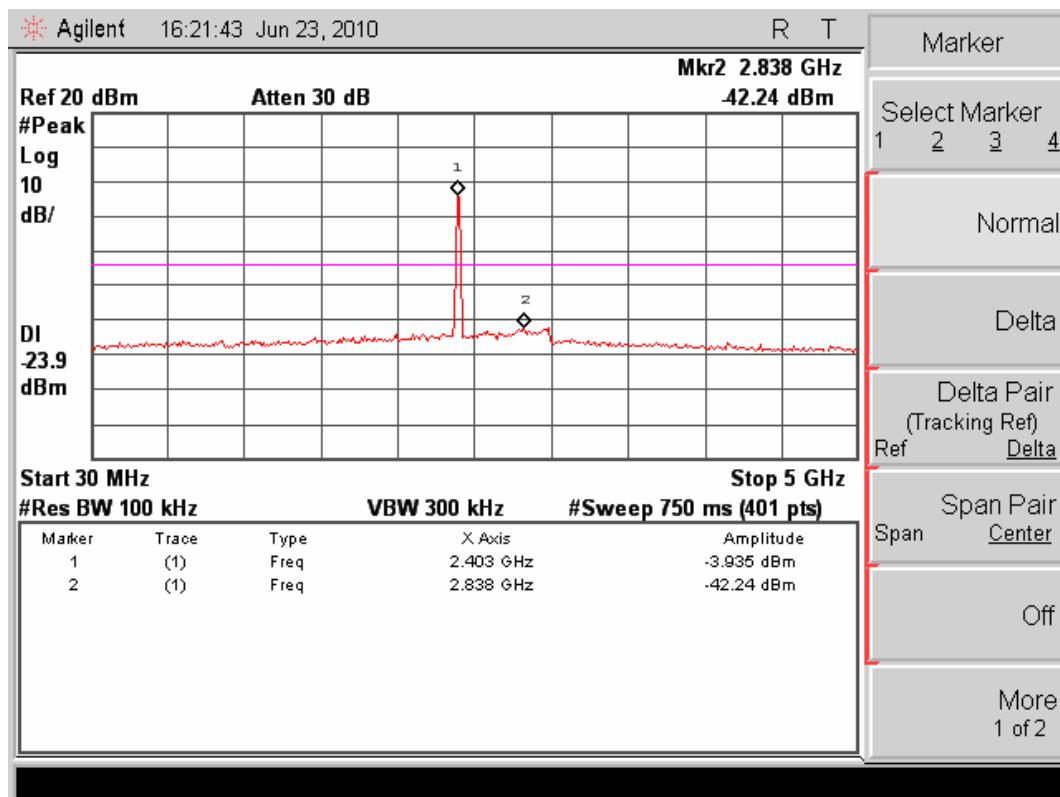


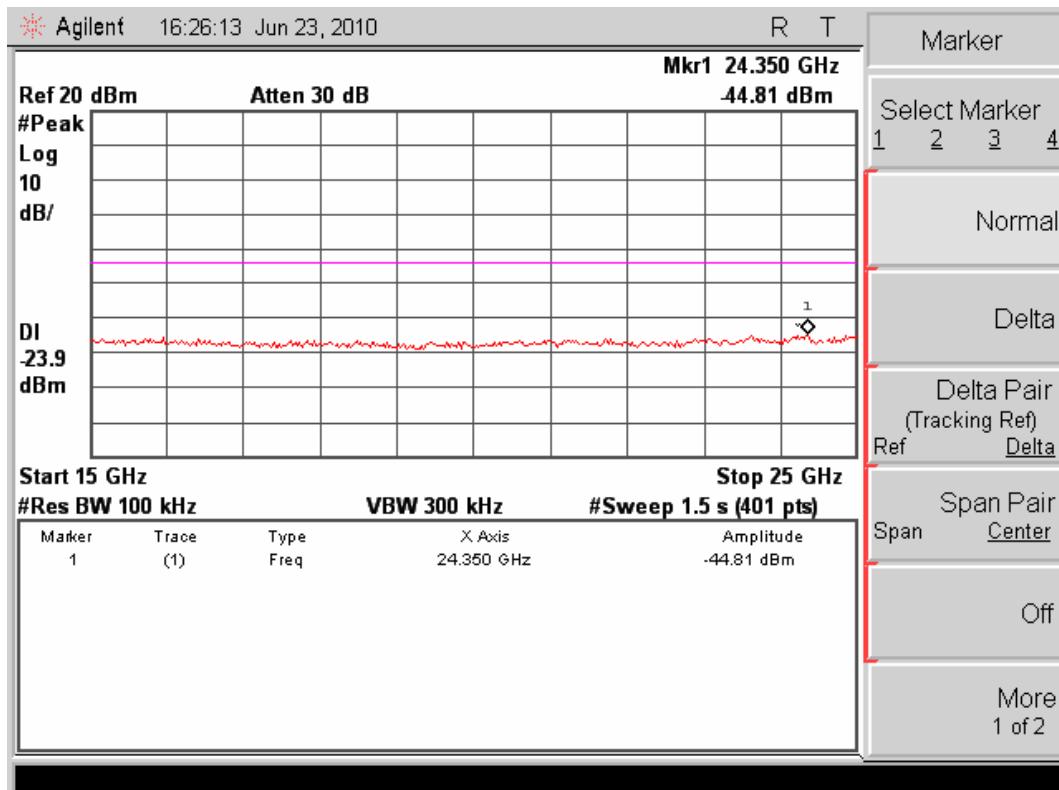
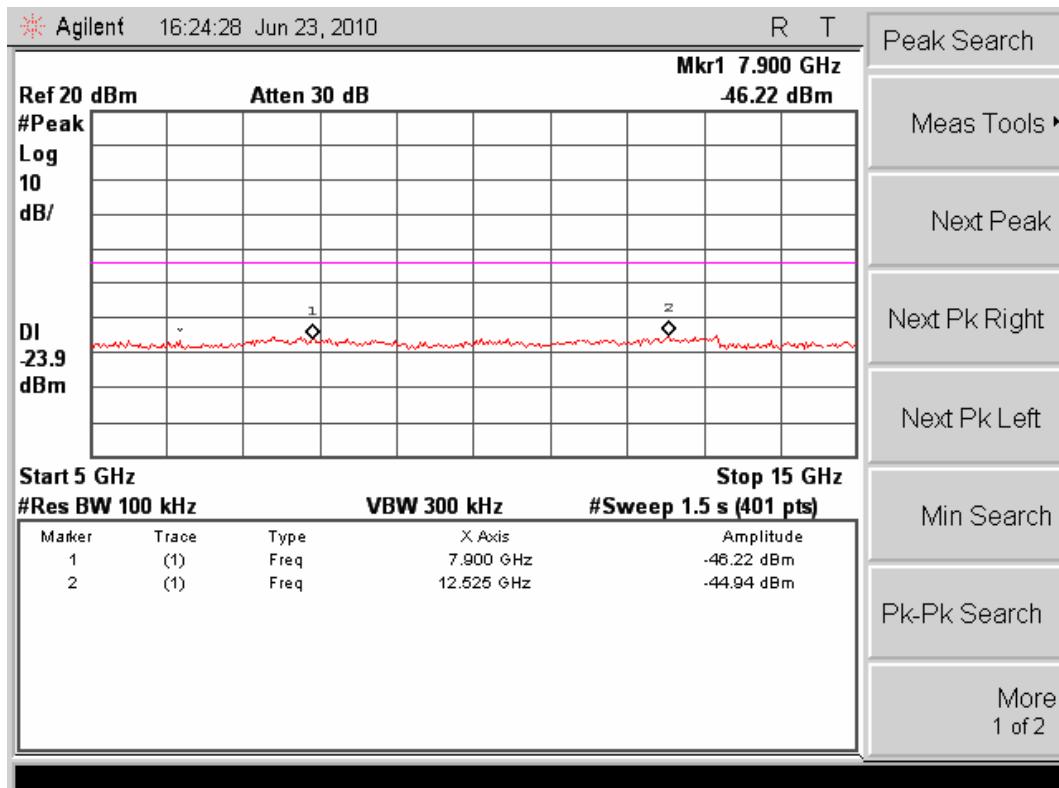


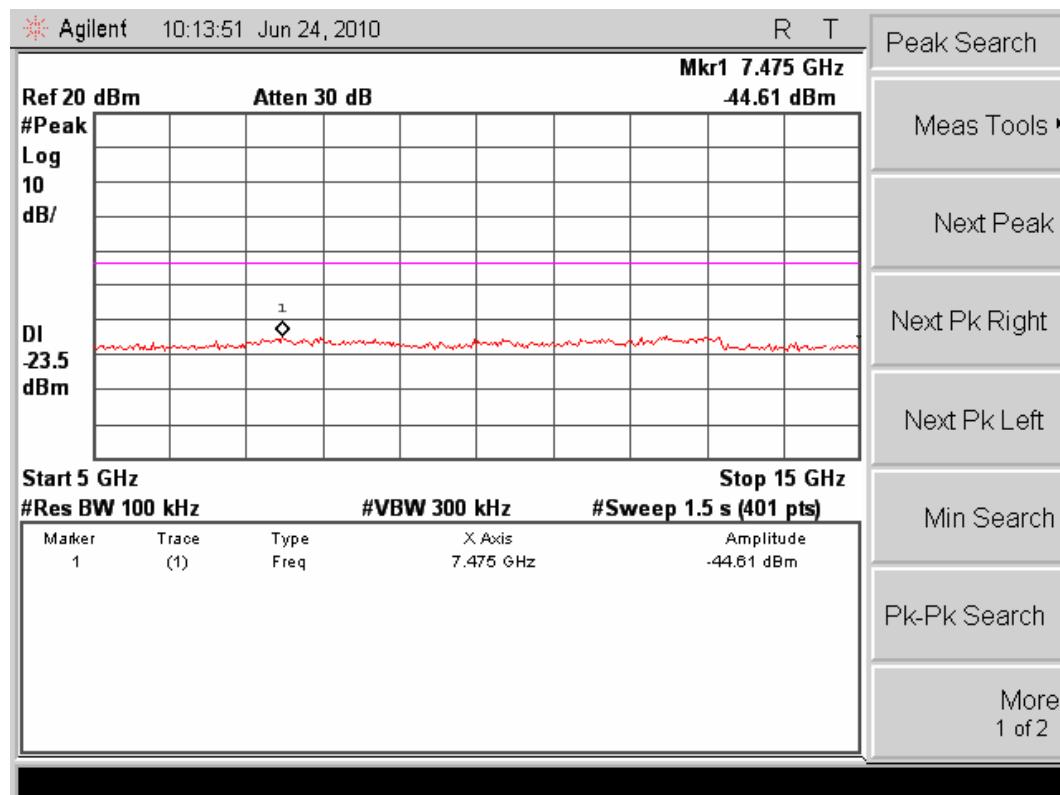
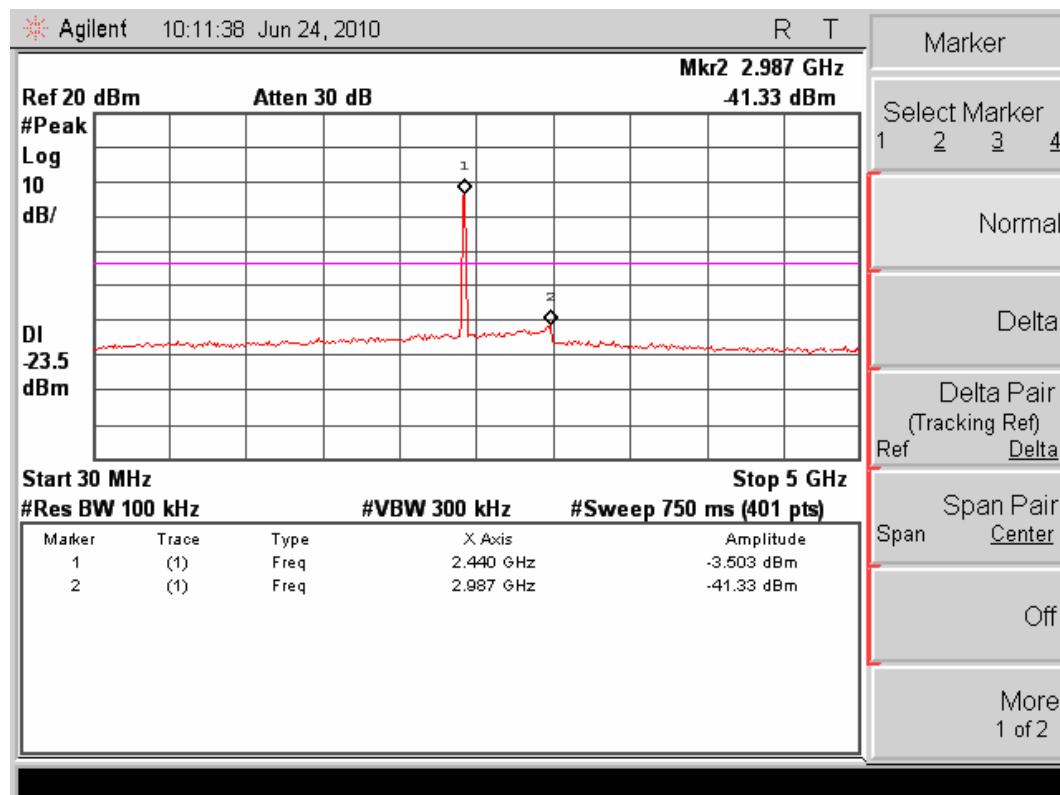
Channel HIG :


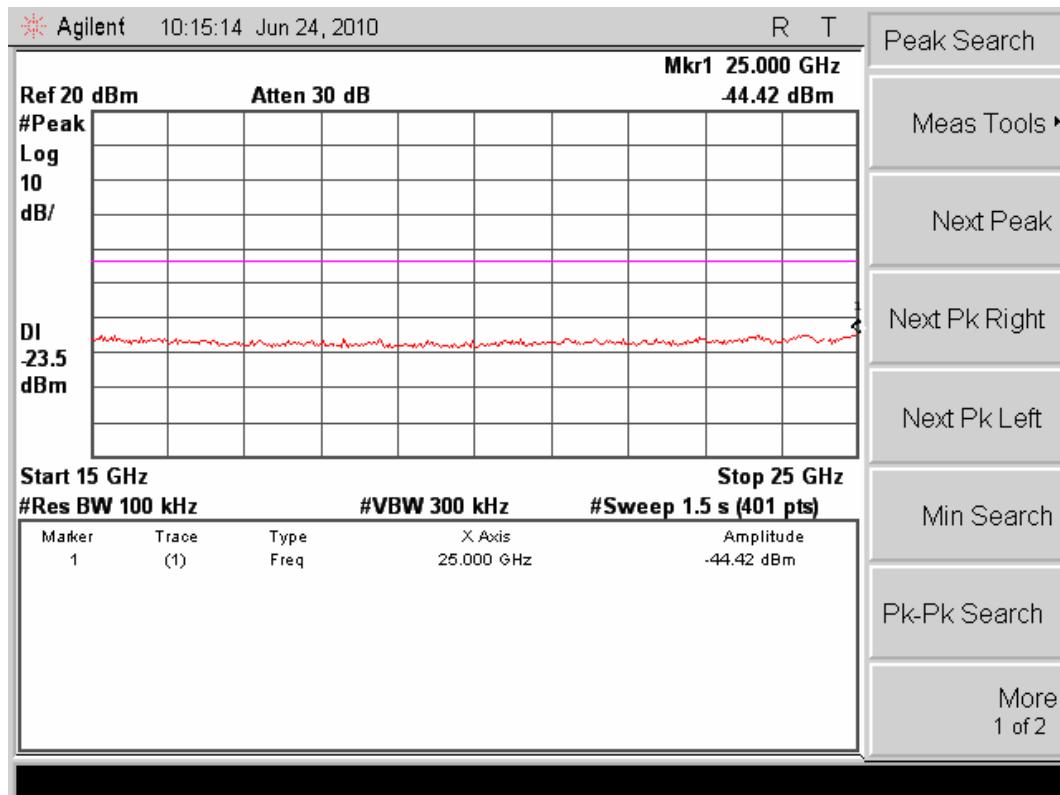


802.11g mode Channel LOW :

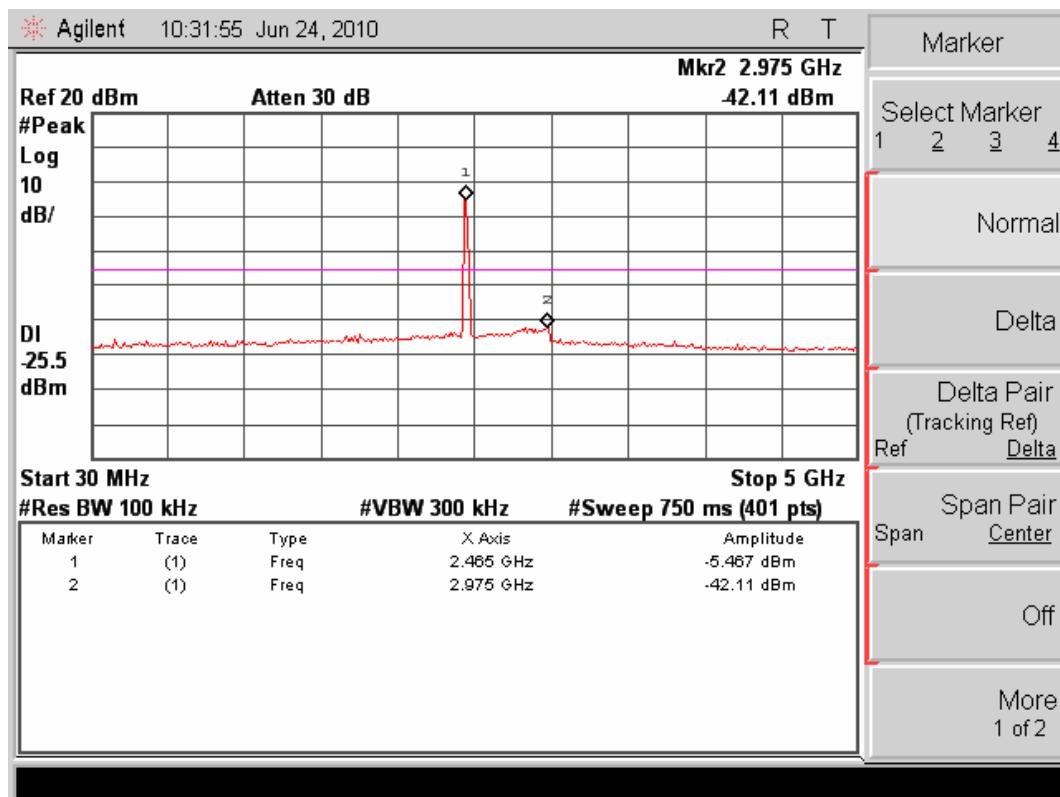


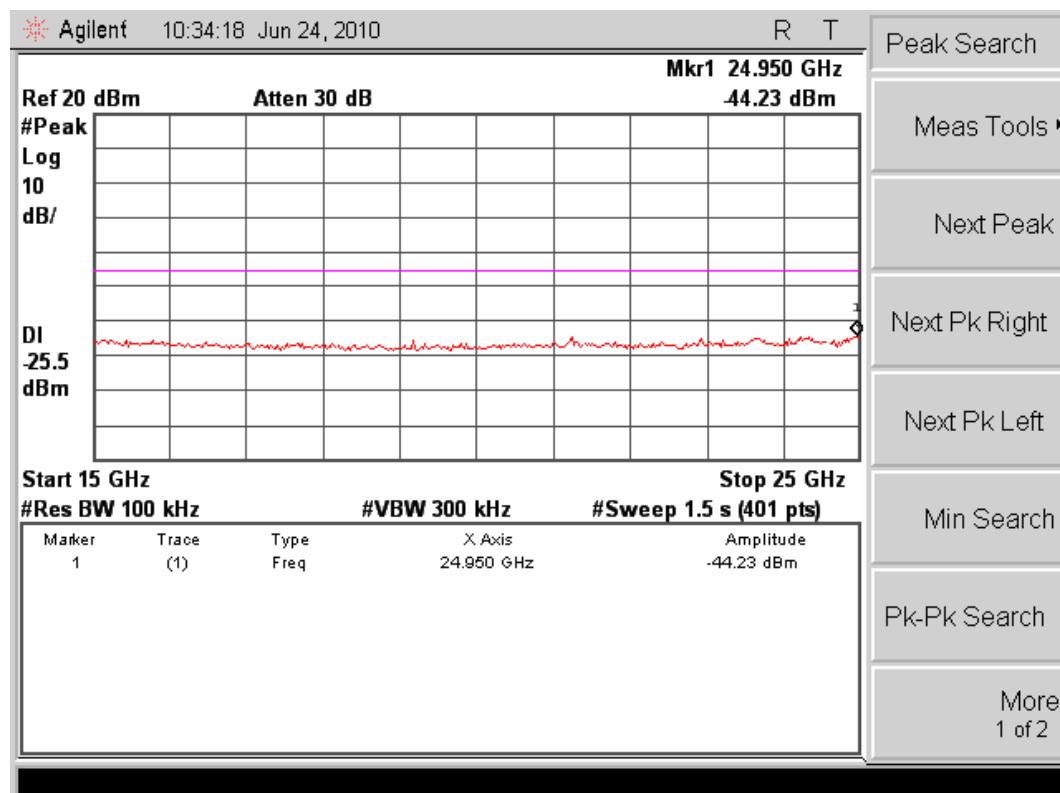
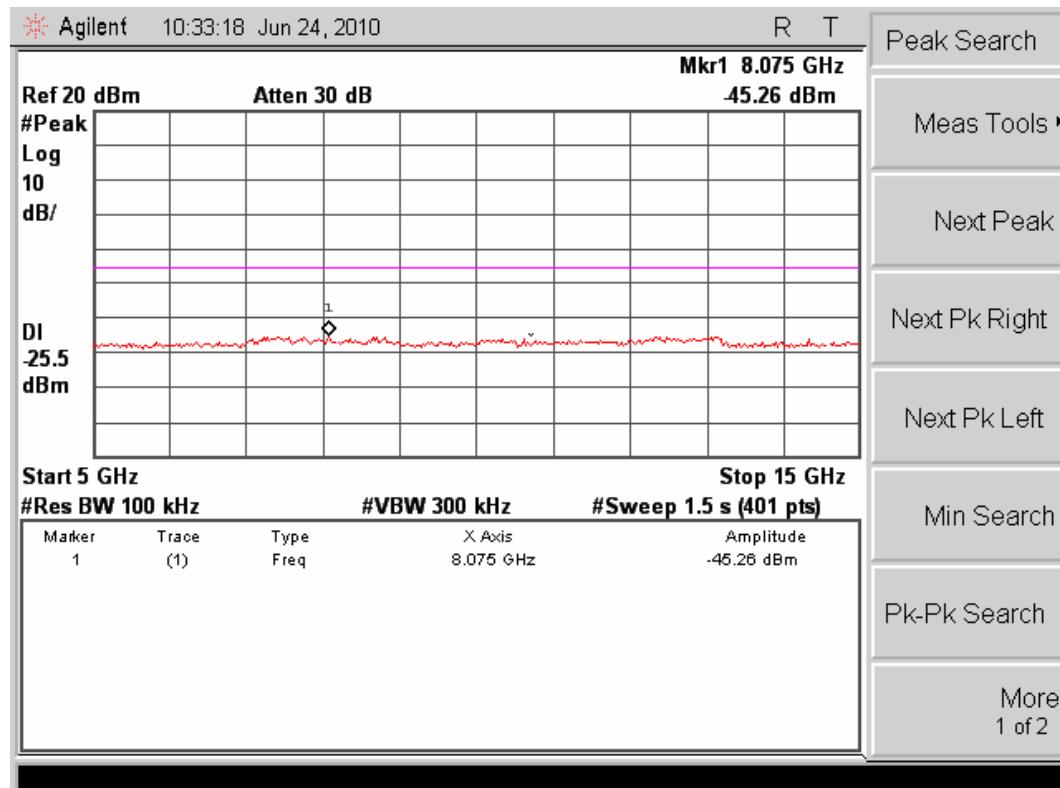


Channel MID :




Channel HIG :

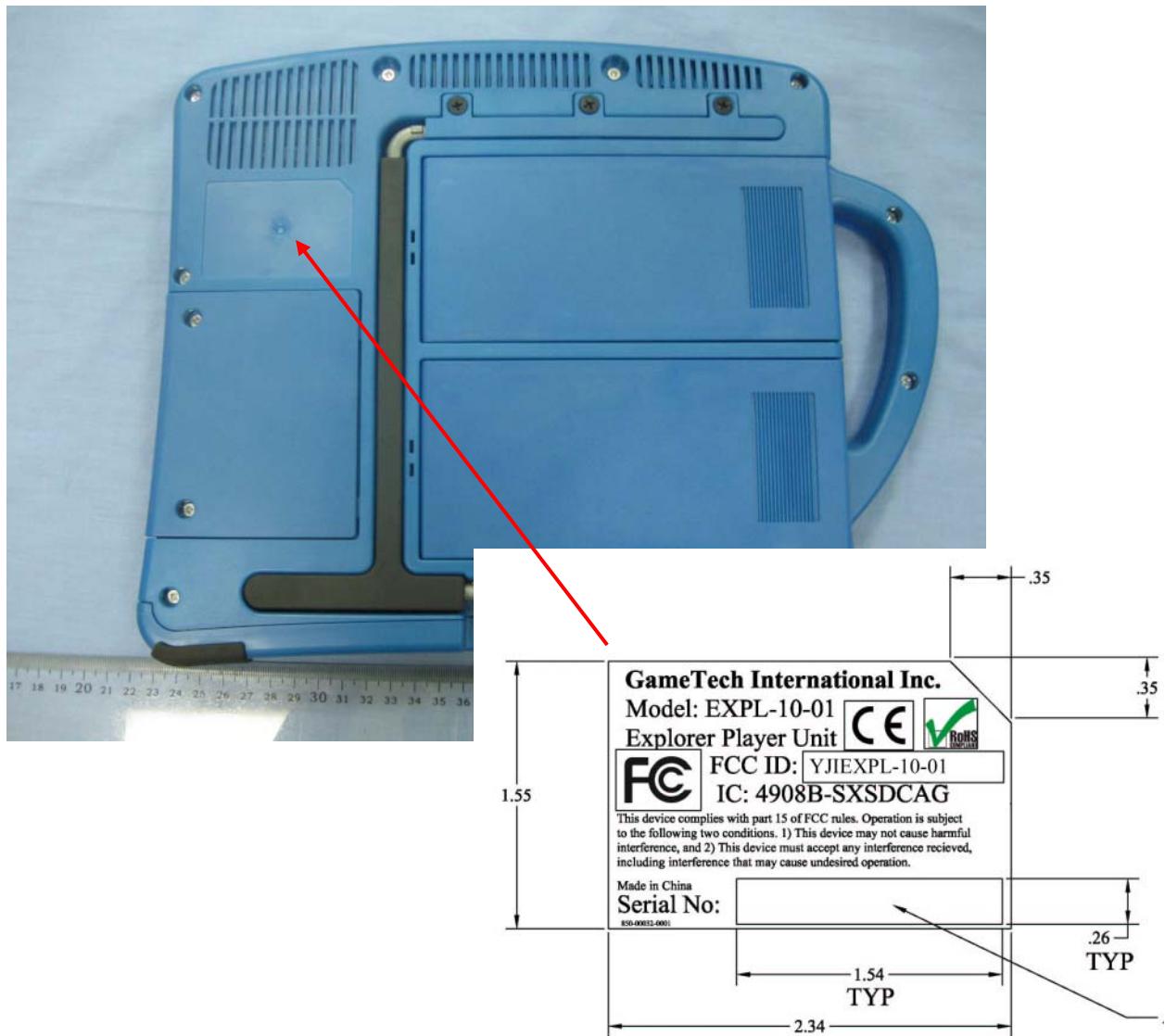




5. FCC ID Label

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.

Mark Location:

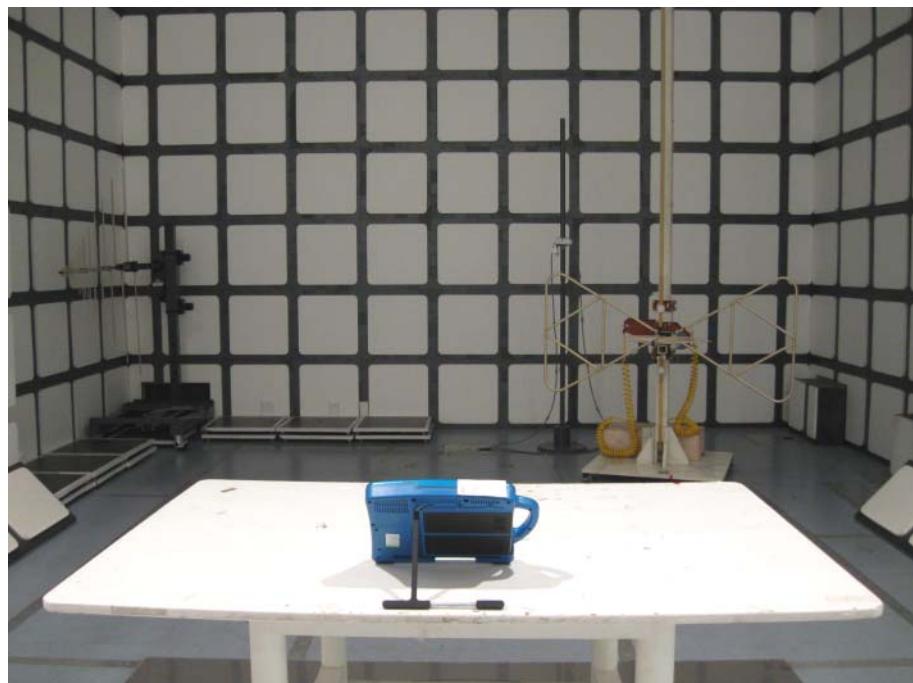


6. Test Setup

6.1 Photographs of the Test Configuration

6.1.1 Radiated emission

Below 1GHz:



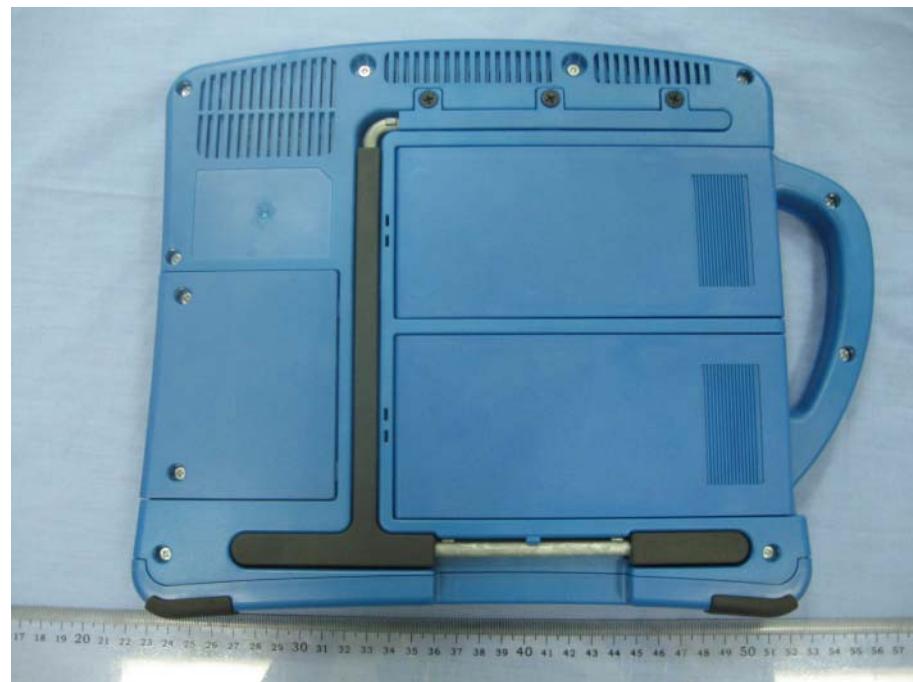
Above 1GHz:



6.2 Photographs of the EUT



Enclosure of EUT



Enclosure of EUT



Photo of batteries

7. Equipment List

No.	Equipment	Manufacturer	Model	Serial No.	Calibration Date
1	Precision Biconical Antenna	TDK Co.	PBA-2030	090500	2009-09-18
2	Precision Log Periodic Antenna	TDK Co.	PLP-3003	061001	2009-09-18
3	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130174	2009-09-18
4	Horn antenna	TDK	HRN-0118	130186	2010-04-07
5	Attenuator 6 dB	Agilent	8491B	MY39260147	2009-09-18
6	Preamplifier	TDK Sonoma	310	242803	2010-04-07
7	Preamplifier	ELENA	EAU-3718 GXA	A070701	2010-04-07
8	EMI Receiver	Rohde & Schwarz	ESIB26	100234	2010-04-07
9	EMI Receiver	Rohde & Schwarz	ESCS30	100350	2010-04-07
10	Spectrum Analyzer	Agilent	E4403B	MY44210199	2010-04-07
11	Spectrum Analyzer	Agilent	E4408B	MY44210575	2010-04-07
12	Art. Mains Network	EMCO	3816/2	00044921	2010-04-07
13	Transient Limiter(10 dB)	Agilent	11947A	3107A03736	2010-04-07
14	Personal Computer	HP	DX2000MT	MXD4250FZM	N/A
15	Personal Computer	HP	DX2000MT	MXD4130B2N	N/A
16	Semi-Anechoic Chamber	TDK Co.	N/A	N/A	2010-04-07
17	Shielded Room	TDK Co.	N/A	N/A	N/A
18	Loop Antenna	EMCO	6502	9107-2440	2010-04-07

8. Test Uncertainty

Test	Range	Confidence Level	Calculated Uncertainty
Radiated emission(3m)	30-1000MHz	95%	4.3dB
Conducted emission	0.15-30MHz	95%	3.3dB

9. Appendix

9.1 Confirmation of Compliance within the Limits

9.1.1 Method of calculating measurement result

Radiated Emission

For example the point of 1396.795MHz, vertical, Page 38.

$$\text{Reading} + \text{Antenna factor} + \text{Cable loss} - \text{Gain} = \text{Result}$$

Example 46.5 + 28.9 + 4.1 - 40.3 = 39.2