Test Report

Product Name	Wireless Trio Racer
Model No.	31620031100(AK12W)
FCC ID.	FSUGG000I

Applicant	KYE SYSTEMS CORP.
Address	No. 492, Sec. 5, Chung Hsin Rd., San Chung, Taipei Hsien, 24160, Taiwan, R.O.C.

Date of Receipt	Jun. 06, 2009
Issued Date	Jul. 16, 2009
Report No.	096124R-RFUSP06V01
Report Version	V1.0

Test Report Certification

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Applicant	KYE SYSTEMS CORP.
Address	No. 492, Sec. 5, Chung Hsin Rd., San Chung, Taipei Hsien, 24160, Taiwan, R.O.C.
Manufacturer	KYE SYSTEMS CORP.
Model No.	31620031100(AK12W)
FCC ID.	FSUGG000I
EUT Rated Voltage	DC 4.5V (Power by Battery)
EUT Test Voltage	DC 4.5V (Power by Battery)
Trade Name	Genius
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2008 ANSI C63.4: 2003 NVLAP Lab Code: 200533-0
Test Result	Complied

The Test Results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By : (Adm. Specialist /Joanne Lin)

Tested By : (Engineer / Eason Hung)

Approved By : (Manager / Vincent Lin)

Testing Laboratory
0914

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Wireless Trio Racer
Trade Name	Genius
Model No.	31620031100(AK12W)
FCC ID.	FSUGG000I
Frequency Range	2408 – 2476MHz
Channel Number	16
Type of Modulation	FHSS
Antenna Type	Printed on PCB
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	Genius	N/A	-2.41dBi for 2.4835 GHz

Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2408 MHz	Channel 02:	2410 MHz	Channel 03:	2418 MHz	Channel 04:	2428 MHz
Channel 05:	2432 MHz	Channel 06:	2436 MHz	Channel 07:	2442 MHz	Channel 08:	2444 MHz
Channel 09:	2448 MHz	Channel 10:	2452 MHz	Channel 11:	2460 MHz	Channel 12:	2462 MHz
Channel 13:	2466 MHz	Channel 14:	2472 MHz	Channel 15:	2474 MHz	Channel 16:	2476 MHz

Note:

1. This device is an Wireless Trio Racer with a built-in 2.4GHz FHSS transceiver.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of FHSS transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

1.2. Operational Description

The EUT is Joystick with built-in 2.4GHz transceiver. The number of the channels is 16 and operation in 2408-2476MHz with FHSS modulation. The device adapts the frequency hopping spread spectrum modulation. The antenna is Printed on PCB.

The device can transmit signal to associate USB dongle and receive signal form USB dongle.

Another information please refer to users manual.

Test Mode	Mode 1: Transmitter

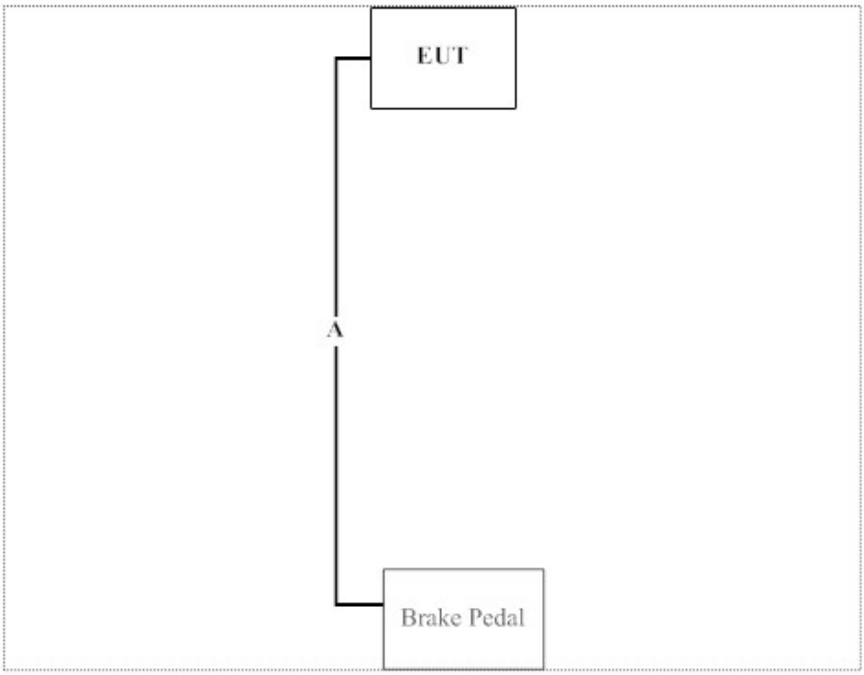
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
N/A	N/A	N/A	N/A	N/A	N/A

Signal Cable Type	Signal cable Description
N/A	N/A

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1	Setup the EUT and display as shown on 1.4
2	Installs the battery.
3	The EUT will continuously transmit the radio signal.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site: http://tw.quietek.com/modules/myalbum/
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation
Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

Testing Laboratory
0914

2. Conducted Emission

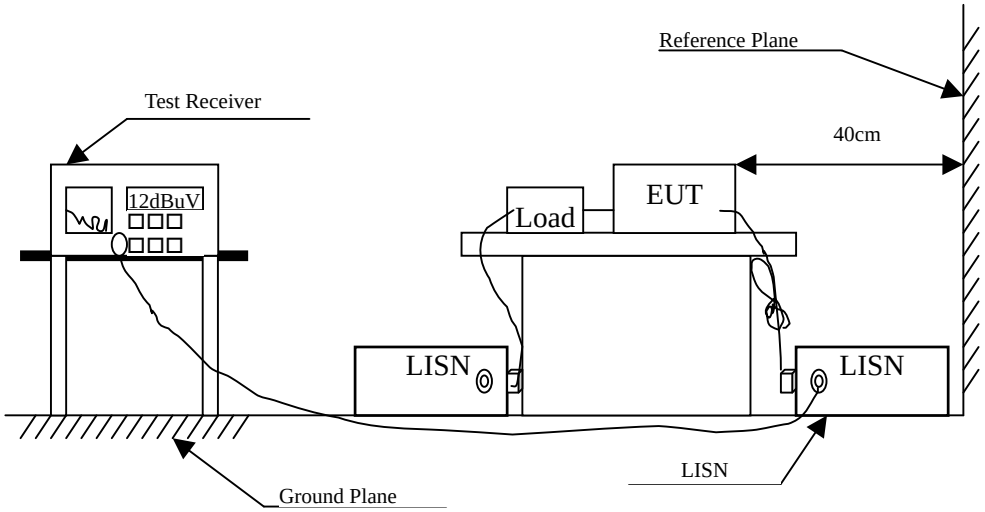
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/014	Feb., 2009	
2	L.I.S.N.	R & S	ESH3-Z5/825562/002	Feb., 2009	EUT
3	L.I.S.N.	R & S	ENV4200/848411/010	Feb., 2009	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2/100410	July, 2009	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Owing to the DC operation of EUT, this test item is not performed.

3. Peak Power Output

3.1. Test Equipment

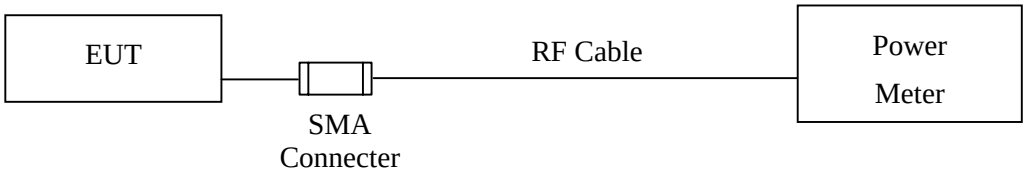
The following test equipments are used during the radiated emission tests:

Equipment		Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2009
X	Power Sensor	Anritsu	MA2491A/034457	May, 2009

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

3.2. Test Setup



3.3. Limit

The maximum peak power shall be less 1Watt.

3.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : Wireless Trio Racer
Test Item : Peak Power Output
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 01	2408.00	4.44 dBm	0.125 Watt= 20.9 dBm	Pass
Channel 07	2442.00	4.17 dBm	0.125 Watt= 20.9 dBm	Pass
Channel 16	2476.00	3.63 dBm	0.125 Watt= 20.9 dBm	Pass

4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the radiated emission test:

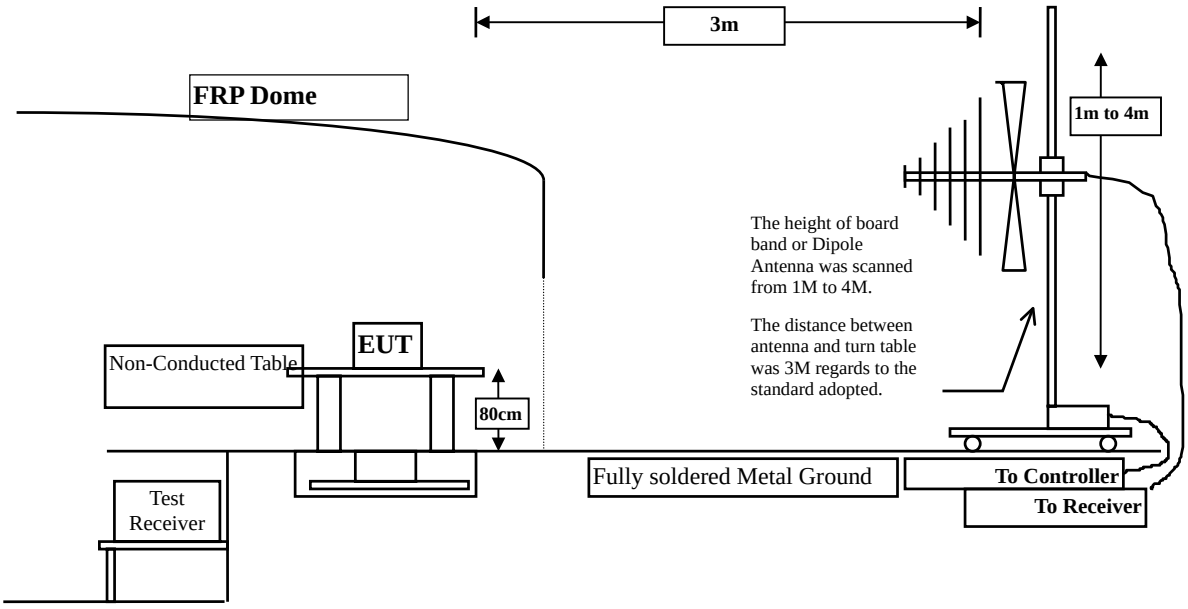
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2008
	X	Pre-Amplifier	HP	8447D/2944A09549	Sep., 2008
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2008
	X	Spectrum Analyzer	HP	E4407B / US39440758	May, 2009
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2009
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All equipments are calibrated every one year.

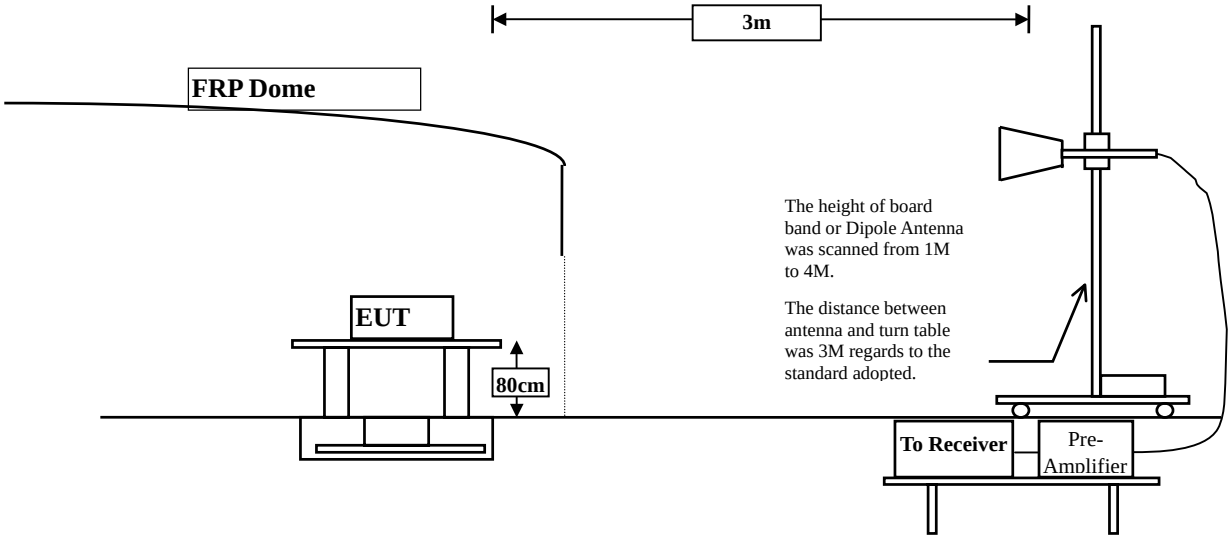
2. The test instruments marked by "X" are used to measure the final test results.

4.2. Test Setup

Below 1GHz



Above 1GHz



4.3. Limits

➢ **General Radiated Emission Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The measurement frequency range form 30MHz - 10th Harmonic of fundamental was investigated.

4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product : Wireless Trio Racer
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2408MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4816.000	9.593	43.930	53.523	-20.477	74.000
7224.000	14.373	35.210	49.582	-24.418	74.000
9632.000	19.758	32.760	52.519	-21.481	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4816.000	8.395	47.350	55.745	-18.255	74.000
7224.000	15.428	36.240	51.667	-22.333	74.000
9632.000	18.967	33.240	52.208	-21.792	74.000
Average Detector:					
4816.000	8.395	37.850	46.245	-7.755	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Wireless Trio Racer
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2442MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4884.000	9.481	44.010	53.490	-20.510	74.000
7326.000	14.559	34.650	49.210	-24.790	74.000
9768.000	20.046	33.850	53.896	-20.104	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4884.000	8.950	48.450	57.399	-16.601	74.000
7326.000	15.268	33.850	49.119	-24.881	74.000
9768.000	19.252	33.090	52.342	-21.658	74.000
Average Detector:					
4884.000	8.950	38.410	47.359	-6.641	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Wireless Trio Racer
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2476MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4952.000	9.430	44.200	53.630	-20.370	74.000
7428.000	14.964	34.374	49.338	-24.662	74.000
9904.000	19.777	33.170	52.947	-21.053	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4952.000	9.650	45.500	55.150	-18.850	74.000
7428.000	15.353	33.800	49.153	-24.847	74.000
9904.000	18.929	33.280	52.209	-21.791	74.000
Average Detector:					
4952.000	9.650	38.600	48.250	-5.750	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Wireless Trio Racer
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2442MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
472.320	0.180	25.550	25.730	-20.270	46.000
534.400	1.540	25.125	26.665	-19.335	46.000
608.120	3.877	24.122	27.999	-18.001	46.000
689.600	3.184	24.732	27.916	-18.084	46.000
786.600	4.305	25.362	29.667	-16.333	46.000
887.480	5.768	27.703	33.471	-12.529	46.000
Vertical					
381.140	-2.176	26.779	24.603	-21.397	46.000
538.280	-0.506	25.800	25.294	-20.706	46.000
749.740	1.998	25.882	27.880	-18.120	46.000
823.460	3.169	26.790	29.959	-16.041	46.000
920.460	5.040	25.889	30.929	-15.071	46.000
967.020	7.541	26.120	33.661	-20.339	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

5. RF Antenna Conducted Test

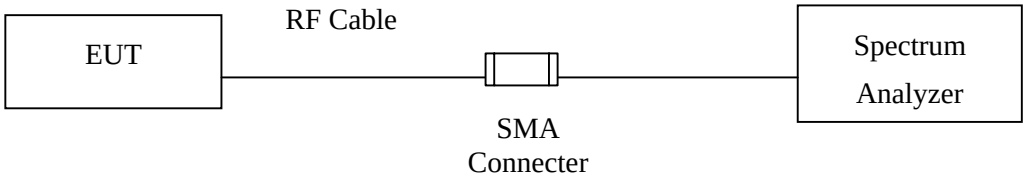
5.1. Test Equipment

Equipment		Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Jun, 2008

Note: 1. All equipments are calibrated every one year.

2. The test instruments Marked "X" are used to measure the final test results.

5.2. Test Setup



5.3. Limits

According to FCC 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 measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

5.5. Uncertainty

± 150Hz

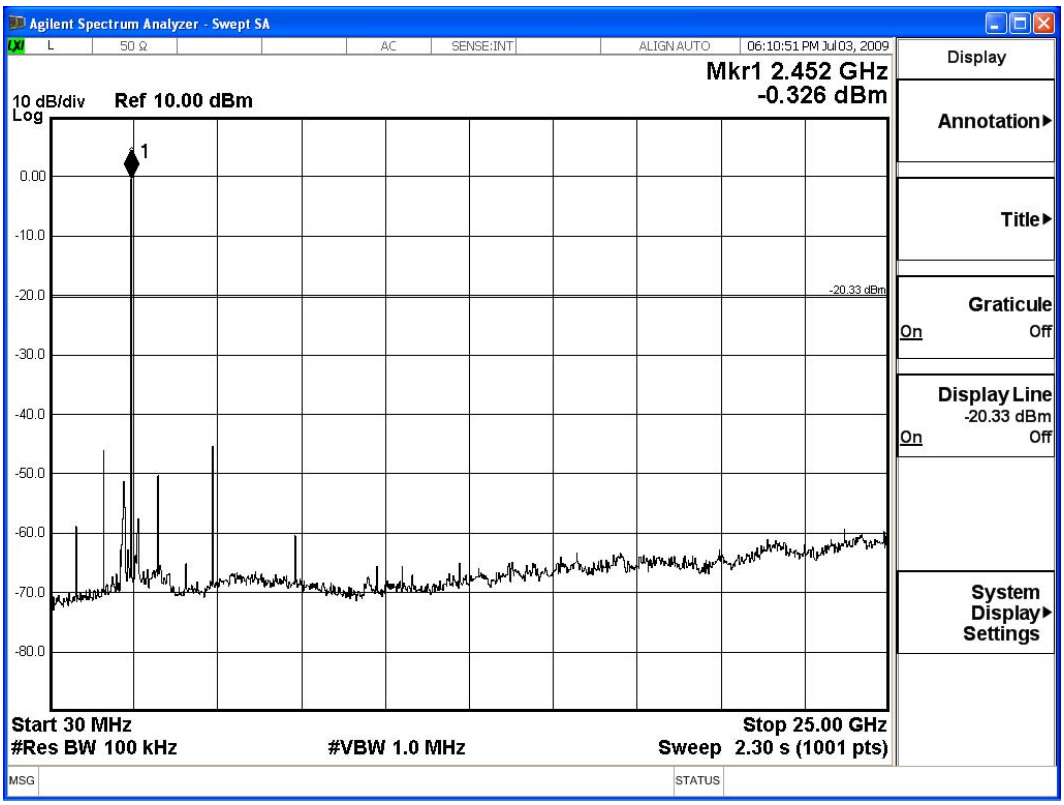
5.6. Test Result of RF Antenna Conducted Test

Product : Wireless Trio Racer
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Figure Channel 01: 30MHz-25GHz

Product : Wireless Trio Racer
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Figure Channel 07: 30MHz-25GHz



Product : Wireless Trio Racer
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Figure Channel 16: 30MHz-25GHz

6. Band Edge

6.1. Test Equipment

The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2008
	X	Pre-Amplifier	HP	8447D/2944A09549	Sep., 2008
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2008
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2009
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

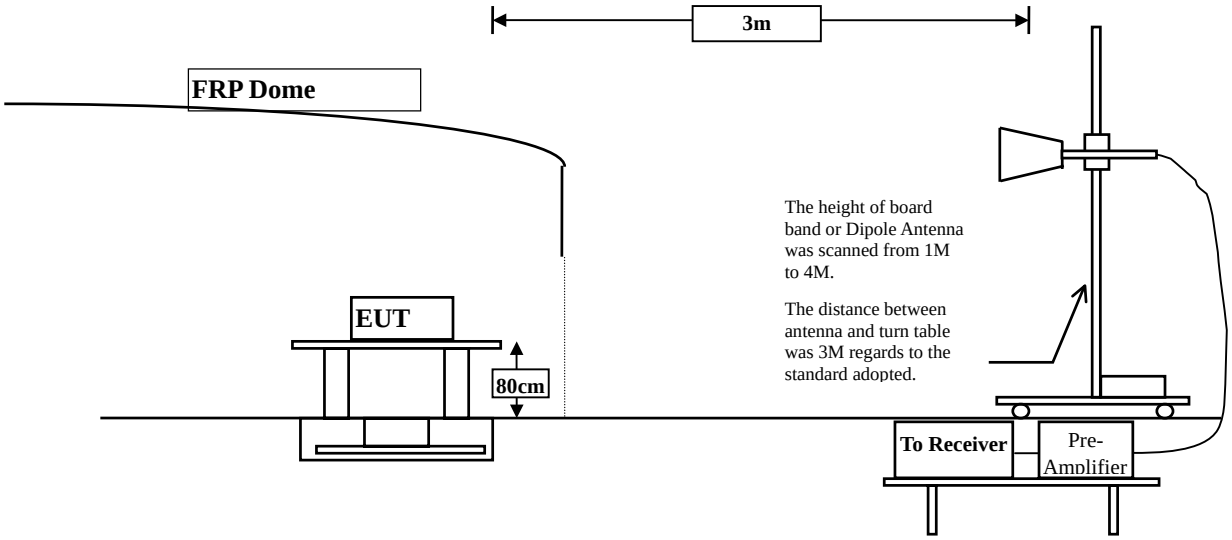
Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

6.2. Test Setup

RF Radiated Measurement:

Above 1GHz



6.3. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.
The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.
The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

6.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

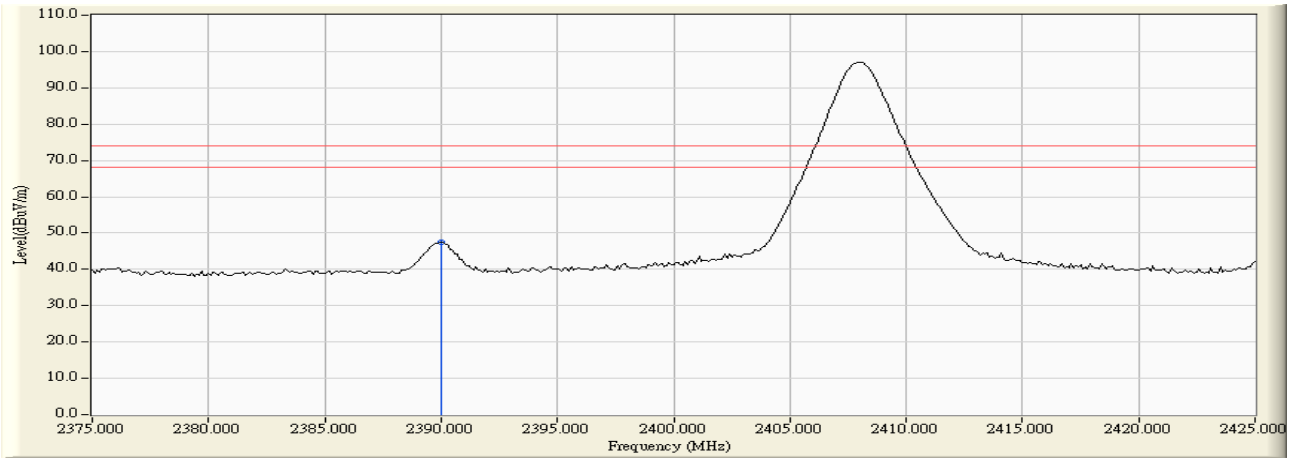
6.6. Test Result of Band Edge

Product : Wireless Trio Racer
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	2.937	44.409	47.346	74.00	54.00	Pass
00 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 01: Horizontal (Peak)



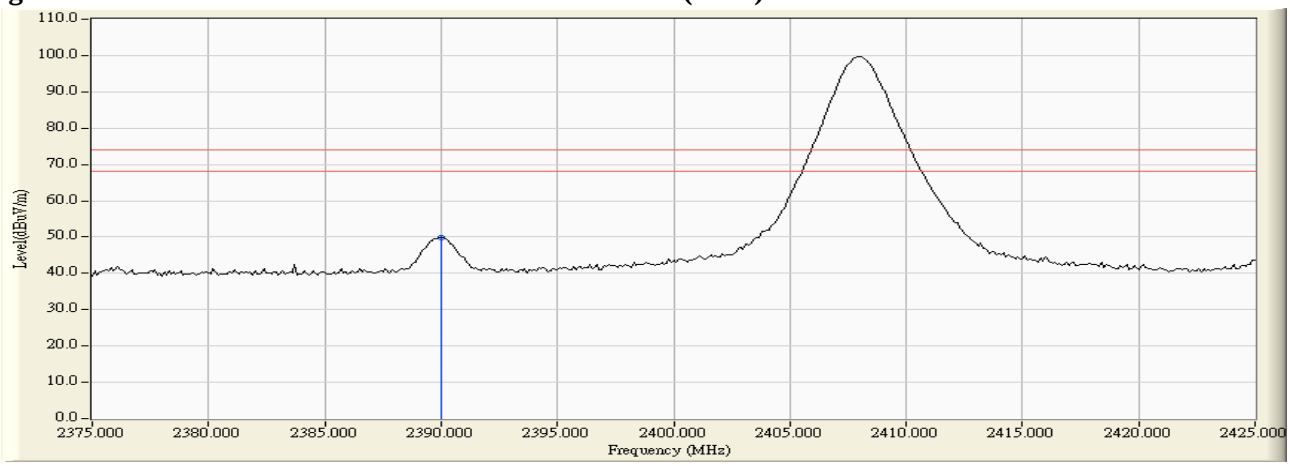
Note: RBW=1MHz, VBW=3MHz, Sweep=500ms

Product : Wireless Trio Racer
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	1.929	48.021	49.951	74.00	54.00	Pass
00 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 01: Vertical (Peak)



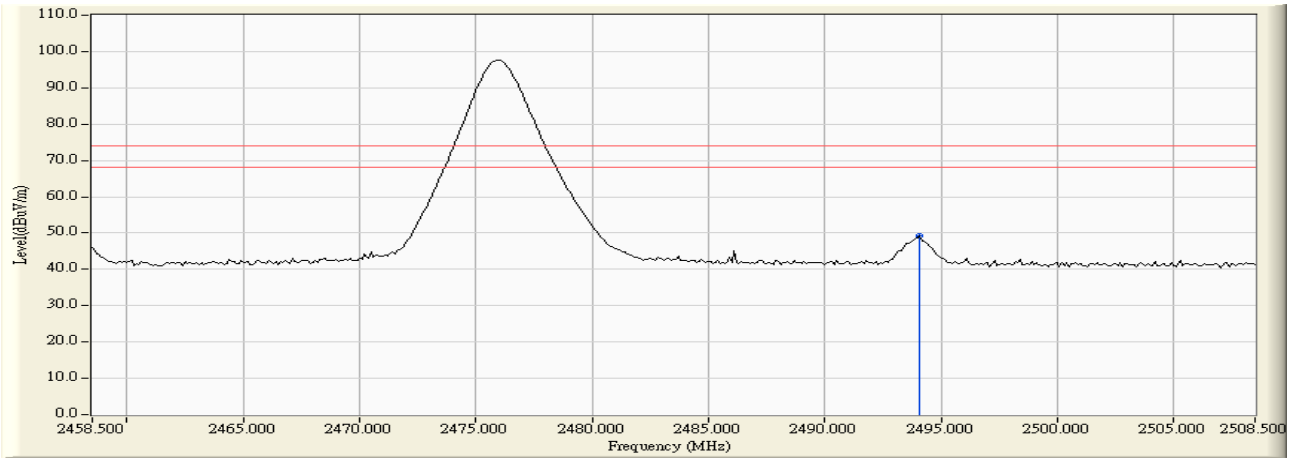
Note: RBW=1MHz, VBW=3MHz, Sweep=500ms

Product : Wireless Trio Racer
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78 (Peak)	2494.100	3.075	46.039	49.115	74.00	54.00	Pass
78 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 16: Horizontal (Peak)



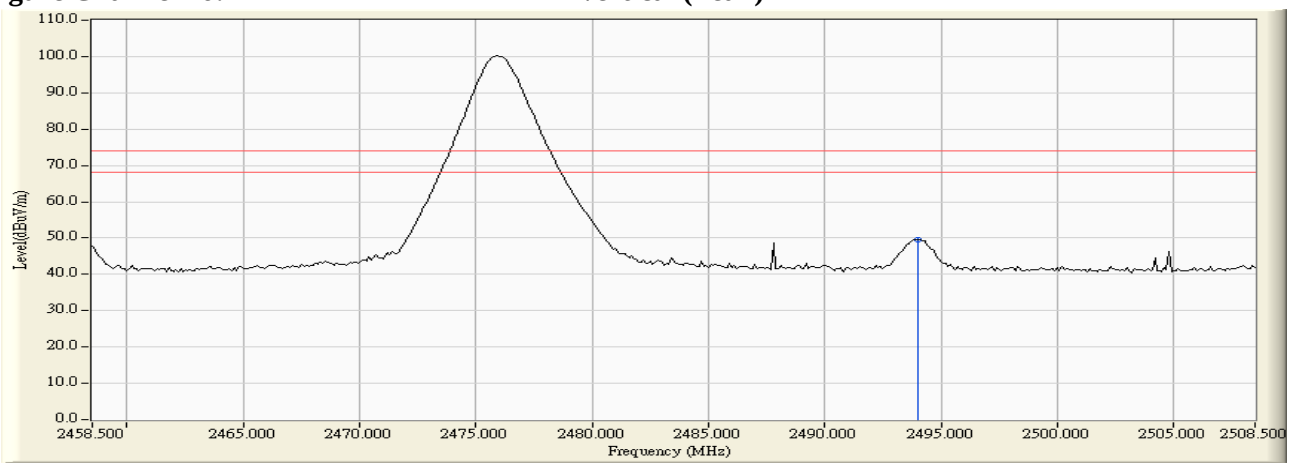
Note: RBW=1MHz, VBW=3MHz, Sweep=500ms

Product : Wireless Trio Racer
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78 (Peak)	2494.000	2.620	47.023	49.643	74.00	54.00	Pass
78 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 16: Vertical (Peak)



Note: RBW=1MHz, VBW=3MHz, Sweep=500ms

7. Channel Number

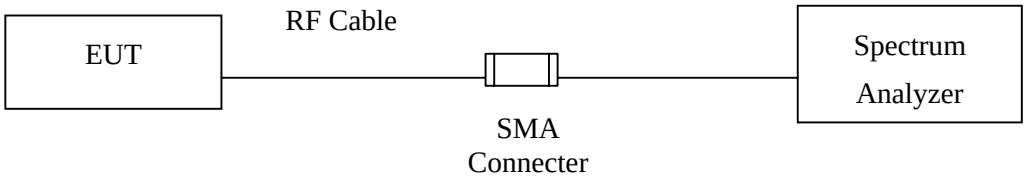
7.1. Test Equipment

The following test equipments are used during the radiated emission tests:

Equipment		Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2008
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Jun, 2009
	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009

Note: 1. All equipments are calibrated every one year.
2. The test instruments marked by "X" are used to measure the final test results.

7.2. Test Setup



7.3. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 15 hopping frequencies.

7.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

7.5. Uncertainty

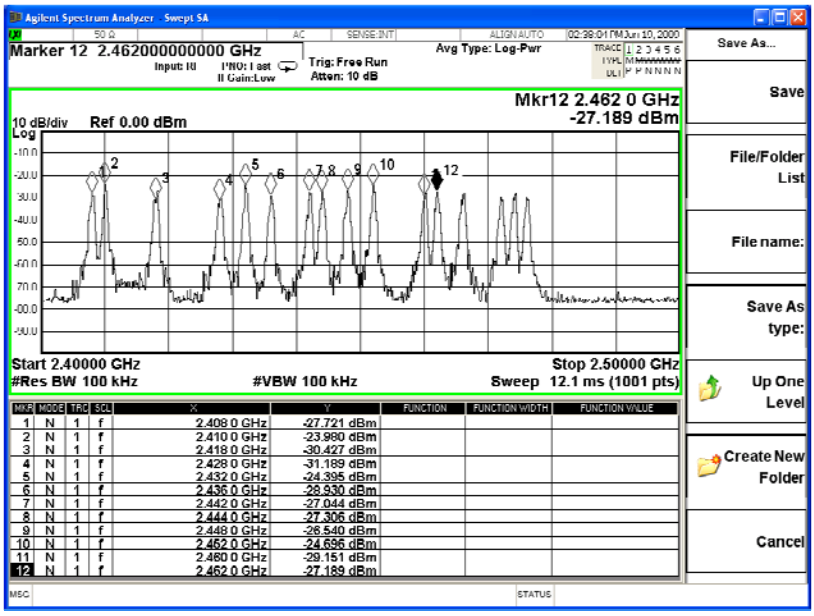
N/A

7.6. Test Result of Channel Number

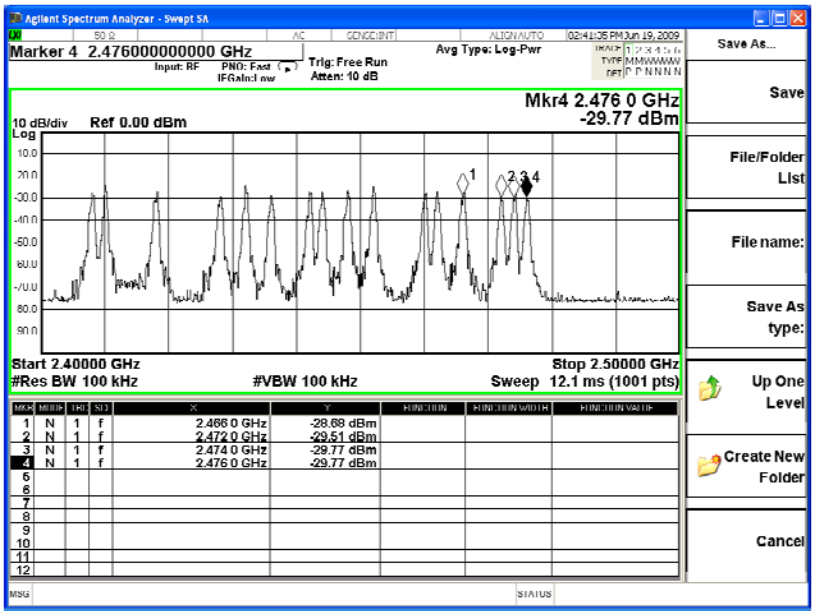
Product : Wireless Trio Racer
Test Item : Channel Number
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2408 ~ 2476	16	>15	Pass

2408-2462MHz



2466-2476MHz



8. Channel Separation

8.1. Test Equipment

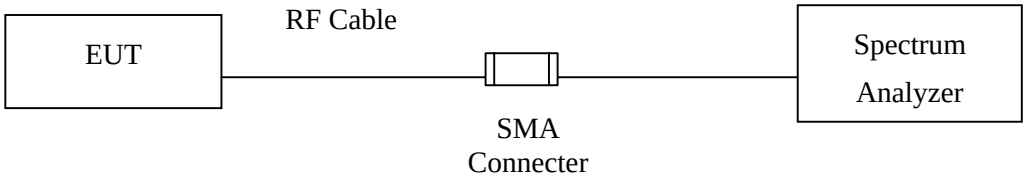
The following test equipments are used during the radiated emission tests:

Equipment		Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2008
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Jun, 2009
	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009

Note: 1. All equipments are calibrated every one year.

2. The test instruments mark by "X" are used to measure the final test results.

8.2. Test Setup



8.3. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

8.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

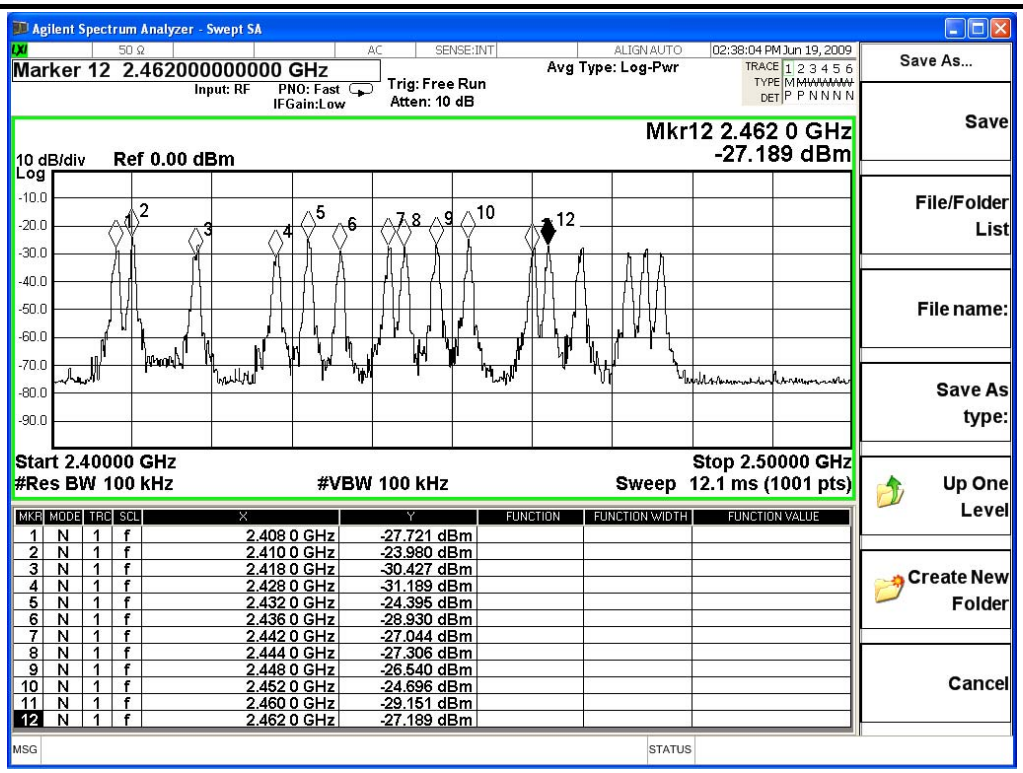
8.5. Uncertainty

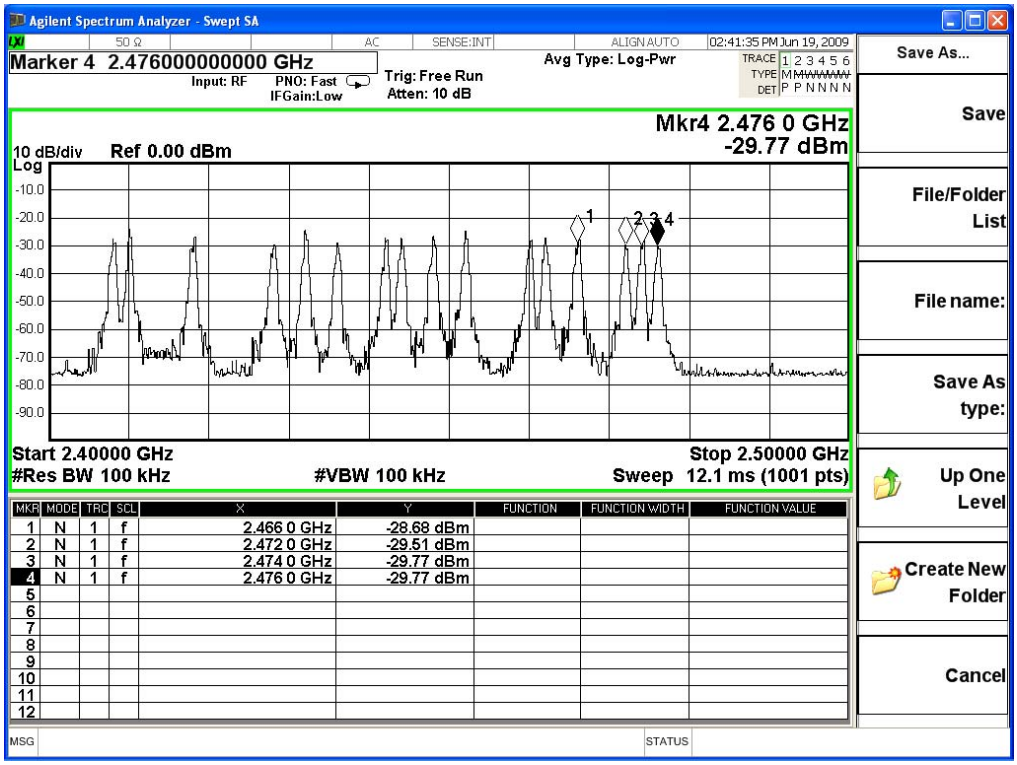
± 150Hz

8.6. Test Result of Channel Separation

Product : Wireless Trio Racer
Test Item : Channel Separation
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Frequency (MHz)	Measurement Level (MHz)	Limit	Limit of (2/3)*20dB Bandwidth (kHz)	Result
2408 to 2410	2.00	>25 kHz	180.0	Pass
2410 to 2418	2.00	>25 kHz	180.0	Pass
2418 t0 2428	2.00	>25 kHz	180.0	Pass
2428 to 2432	4.00	>25 kHz	180.0	Pass
2432 to 2436	4.00	>25 kHz	180.0	Pass
2436 to 2442	6.00	>25 kHz	180.0	Pass
2442 to2444	2.00	>25 kHz	180.0	Pass
2444 to 2448	4.00	>25 kHz	180.0	Pass
2448 to 2452	4.00	>25 kHz	180.0	Pass
2452 to 2460	8.00	>25 kHz	180.0	Pass
2460 to 2462	2.00	>25 kHz	180.0	Pass
2462 to 2466	4.00	>25 kHz	180.0	Pass
2466 to 2472	6.00	>25 kHz	180.0	Pass
2472 to 2474	2.00	>25 kHz	180.0	Pass
2474 to 2476	2.00	>25 kHz	180.0	Pass


Agilent Spectrum Analyzer - Swept SA
Marker 12 2.462000000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
02:38:04 PM Jun 19, 2009
Mkr12 2.462 0 GHz
-27.189 dBm
10 dB/div
Log
Ref 0.00 dBm
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 2.50000 GHz
Sweep 12.1 ms (1001 pts)
1 N 1 f 2.408 0 GHz -27.721 dBm
2 N 1 f 2.410 0 GHz -23.980 dBm
3 N 1 f 2.418 0 GHz -30.427 dBm
4 N 1 f 2.428 0 GHz -31.189 dBm
5 N 1 f 2.432 0 GHz -24.395 dBm
6 N 1 f 2.436 0 GHz -28.930 dBm
7 N 1 f 2.442 0 GHz -27.044 dBm
8 N 1 f 2.444 0 GHz -27.306 dBm
9 N 1 f 2.448 0 GHz -26.540 dBm
10 N 1 f 2.452 0 GHz -24.696 dBm
11 N 1 f 2.460 0 GHz -29.151 dBm
12 N 1 f 2.462 0 GHz -27.189 dBm
Save As...
Save
File/Folder List
File name:
Save As type:
Up One Level
Create New Folder
Cancel
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 4 2.476000000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
02:41:35 PM Jun 19, 2009
Mkr4 2.476 0 GHz
-29.77 dBm
10 dB/div
Log
Ref 0.00 dBm
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 2.50000 GHz
Sweep 12.1 ms (1001 pts)
1 N 1 f 2.466 0 GHz -28.68 dBm
2 N 1 f 2.472 0 GHz -29.51 dBm
3 N 1 f 2.474 0 GHz -29.77 dBm
4 N 1 f 2.476 0 GHz -29.77 dBm
Save As...
Save
File/Folder List
File name:
Save As type:
Up One Level
Create New Folder
Cancel
MSG
STATUS

9. Dwell Time

9.1. Test Equipment

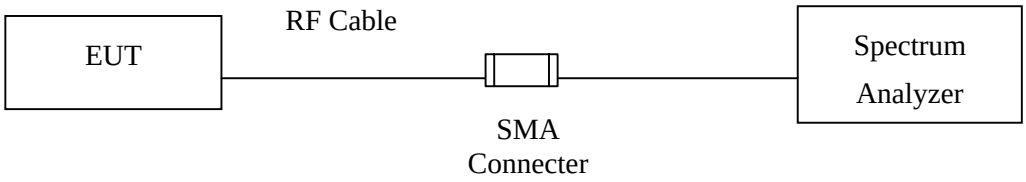
The following test equipments are used during the radiated emission tests:

Equipment		Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2008
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Jun, 2009
	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

9.2. Test Setup



9.3. Limit

The dwell time shall be the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 6.4second period.

9.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

9.5. Uncertainty

± 25msec

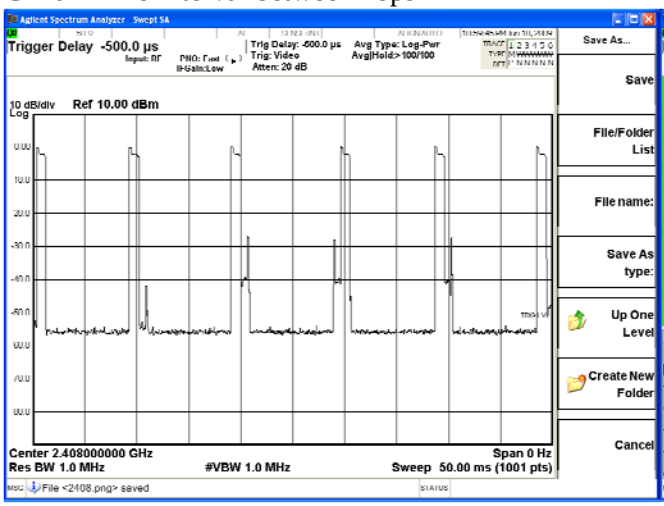
9.6. Test Result of Dwell Time

Product : Wireless Trio Racer
Test Item : Dwell Time
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

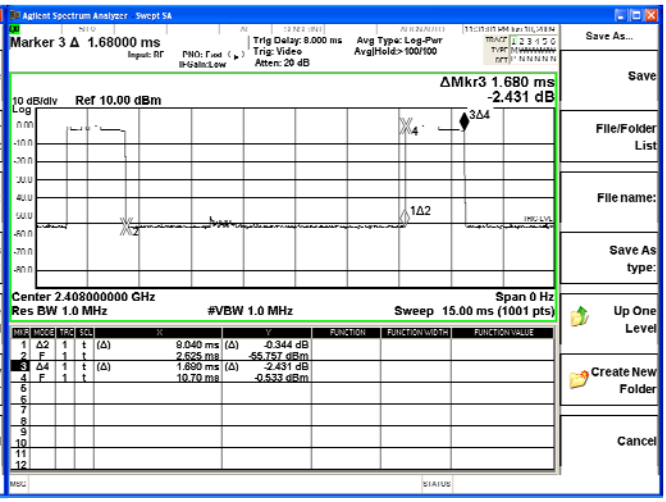
Channel No.	Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
01	2408	1.680	6	50	0.20	0.081	0.4	Pass
07	2442	1.680	6	50	0.20	0.081	0.4	Pass
16	2476	1.680	6	50	0.20	0.081	0.4	Pass

Note: Dwell Time = (((Time slot length * Hopping of Number)/ Sweep time)/16)*(16*0.4)

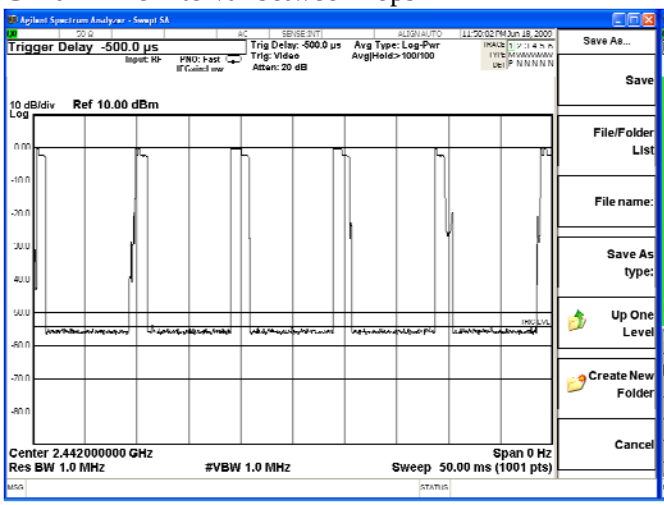
CH 01 Time Interval between hops



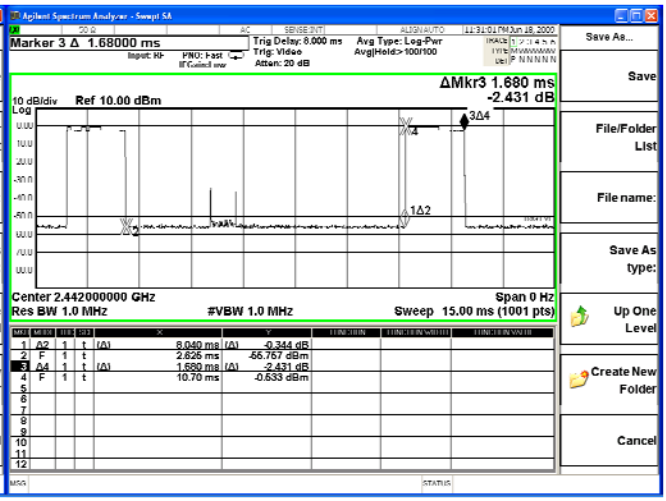
CH 01 Transmission Time



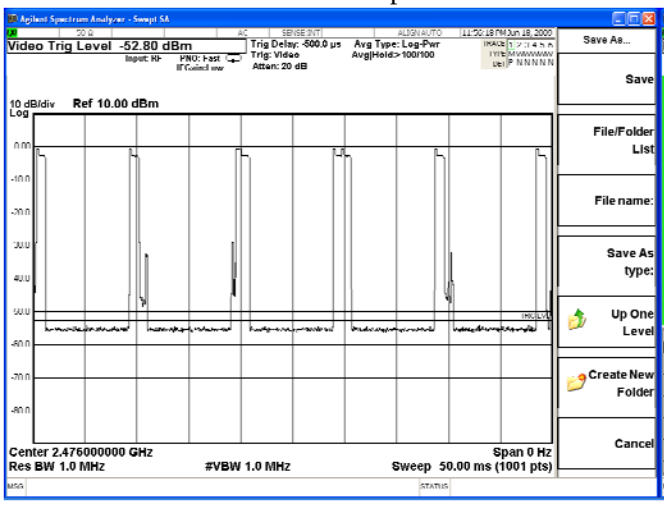
CH 07 Time Interval between hops



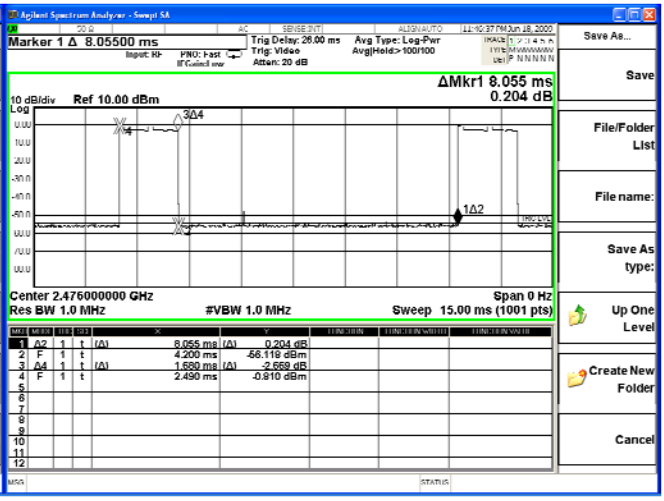
CH 07Transmission Time



CH 16 Time Interval between hops



CH 16 Transmission Time



10. Occupied Bandwidth

10.1. Test Equipment

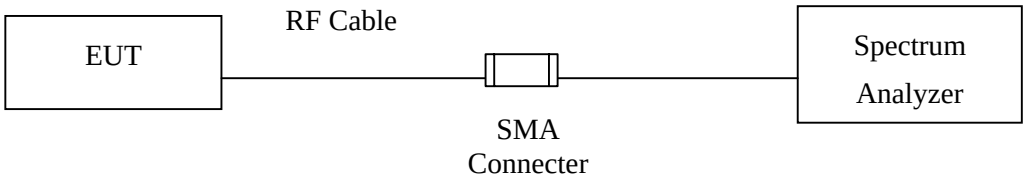
The following test equipments are used during the radiated emission tests:

Equipment		Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2008
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Jun, 2009
	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

10.2. Test Setup



10.3. Limits

N/A

10.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

10.5. Uncertainty

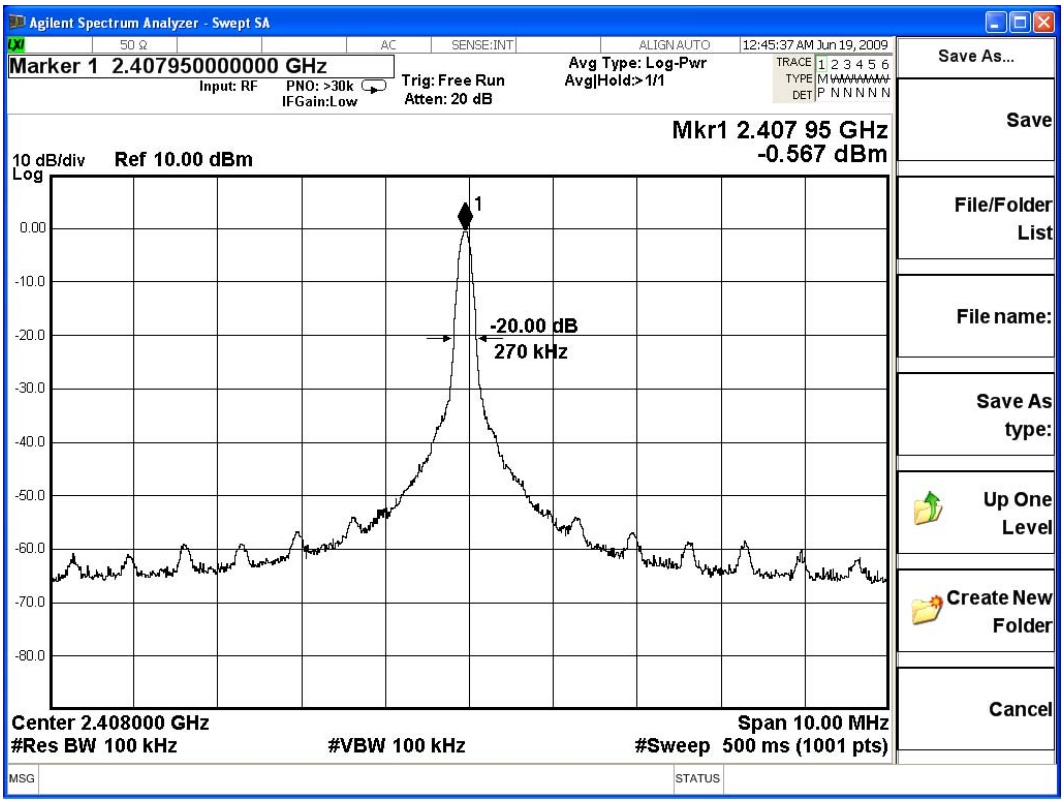
± 150Hz

10.6. Test Result of Occupied Bandwidth

Product : Wireless Trio Racer
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2408MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2408	270	--	NA

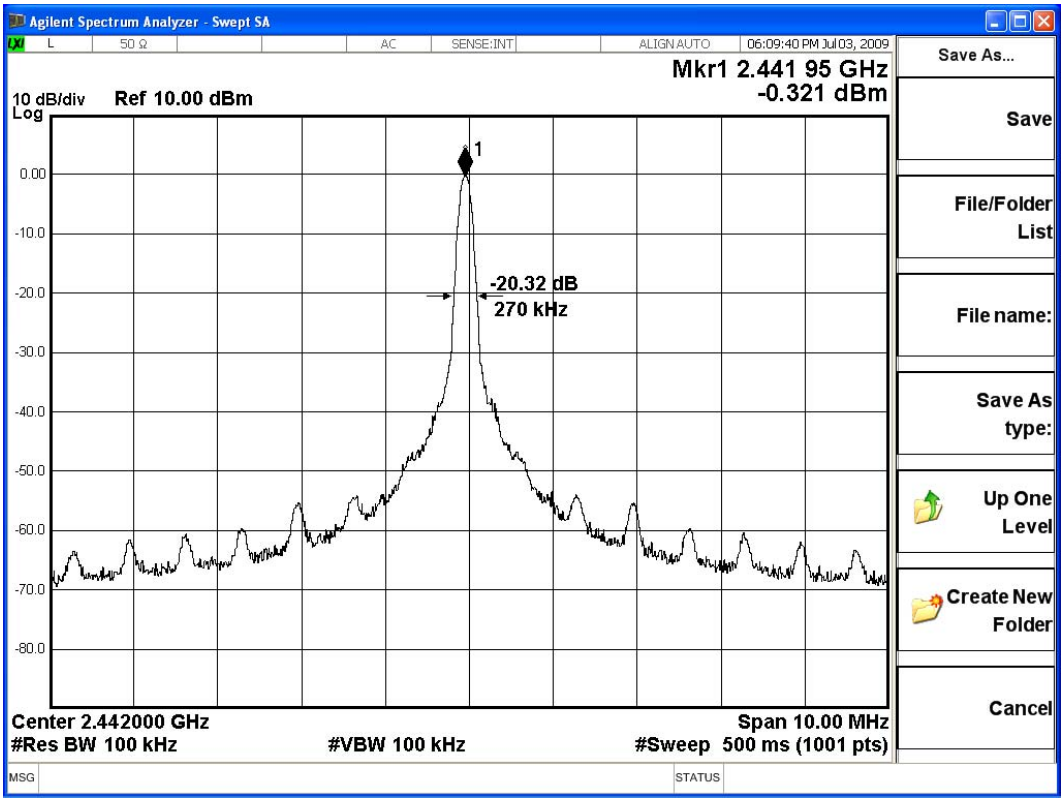
Figure Channel 01:



Product : Wireless Trio Racer
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2442MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
07	2442	270	--	NA

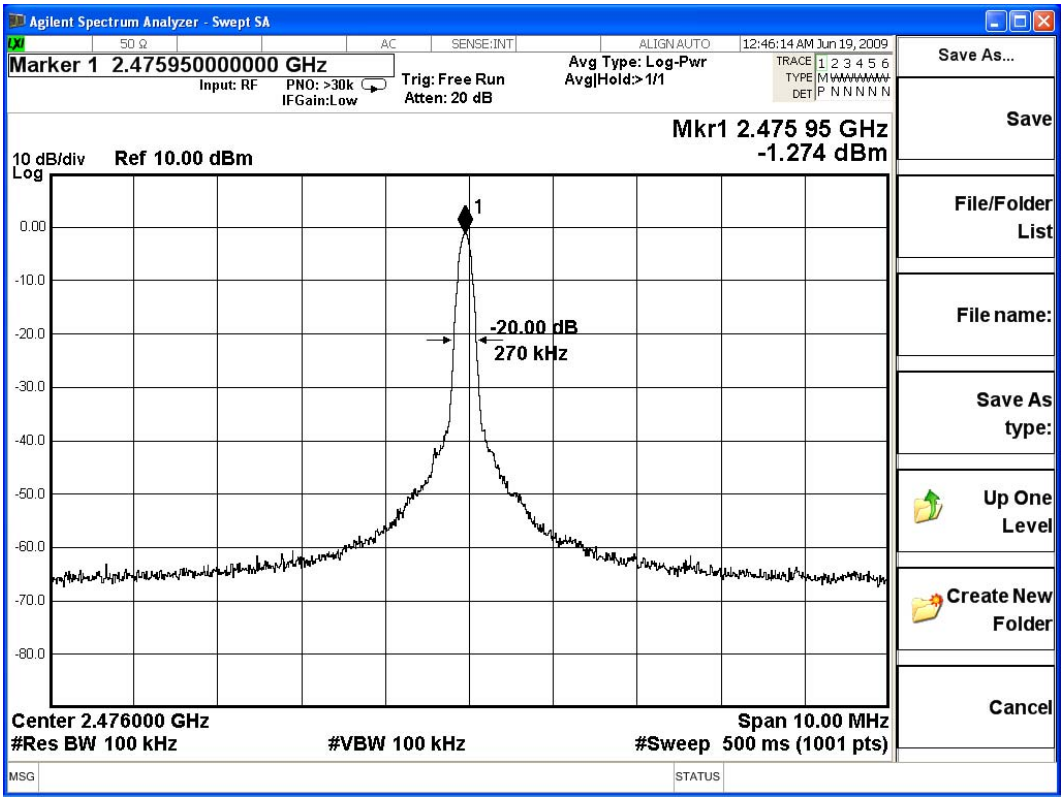
Figure Channel 07:



Product : Wireless Trio Racer
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2476MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
16	2476	270	--	NA

Figure Channel 16:



11. EMI Reduction Method During Compliance Testing

No modification was made during testing.