APPLICATION FOR CERTIFICATION Class II PERMISSIVE CHANGE On Behalf of FUTABA Corporation Radio Control Model No. : T3PRKA-2.4G FCC ID : AZPT2POK-24G Brand: Futaba

Prepared for : FUTABA Corporation 1080 Yabutsuka Chosei-son Chosei-gun Chiba, 299-4395 Japan.

Prepared by : AUDIX Technology Corporation EMC Department No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang, Taipei Hsien, Taiwan

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Date of Test	:	Apr. 01 ~ 12, 2011
Date of Report	:	Mar. 20, 2011

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TEST REPORT CERTIFICATION (Class II Permissive Change)

Applicant	:	FUTABA Corporation		
Manufacturer	:	FUTABA Corporation		
EUT Description	:	Radio Control		
FCC ID	:	AZPT2POK-24G		
		(A) Model No.	:	T3PRKA-2.4G
		(B) Serial No.	:	N/A
		(C) Brand	:	Futaba
		(D) Power Supply	:	DC 6V
		(E) Test Voltage	:	DC 6V (Via Batteries)

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, Oct. 2009 AND ANSI C63.4/2003

(FCC CFR 47 Part 15C, §15.207 and §15.209 and §15.247)

The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart B & C limits.

The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology Corporation.

This report is based on reports of EM-F1000217.

Date of Test :	Apr. 01 ~ 12, 2011	Date of Report :	Apr 20, 2011
Producer : (A	Annie Yu/Assistant Administrator)		
Reviewer :	(Henning Chang/Supervisor)		
Signatory :	Ben Cheng/Manager		
	U		

Edition No.	Date of Rev.	Summary	Report No.
Rev. 0	Mar. 14, 2011	Original Report. (Original model: T2POK-2.4G)	EM-F1000217
Rev. 1	Apr. 20, 2011	 According to 178919 D01 Permissive Change Policy v04r06, our change for FCC ID: AZPT2POK-24G is complied with C2PC policy and we would like to apply C2PC for FCC ID: AZPT2POK-24G. The different with original grant is changed assembly (control buttons) and host. RF and others' schematic are identical with original grant. Supplementary test data are recorded in report of EM-F1000365. 	EM-F1000365

1. DESCRIPTION OF VERSION

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Description	:	Radio Control (Transmitter Unit)
Model Number	:	T3PRKA-2.4G
Serial Number	:	N/A
FCC ID	:	AZPT2POK-24G
Applicant	:	FUTABA Corporation
		1080 Yabutsuka Chosei-son Chosei-gun Chiba, 299-4395 Japan.
Manufacturer	:	FUTABA Corporation
		1080 Yabutsuka Chosei-son Chosei-gun Chiba, 299-4395 Japan.
Radio Technology	:	FSK Modulation
Frequency Band	:	2404.000MHz ~ 2447.500MHz
Tested Frequency	:	2404.000MHz (Channel 01) 2425.000MHz (Channel 15) 2447.500MHz (Channel 30)
Frequency Channel	:	30 channels
Antenna (Pencil Antenna)	:	Antenna Gain: 2.14dBi
Date of Receipt of Sample	:	Mar. 21, 2011
Date of Test	:	Apr. 01 ~ 12, 2011

Information for Class II Permissive Change:

- 1. This EUT is additional version with original FCC ID AZPT2POK-24G.
- According to 178919 D01 Permissive Change Policy v04r06, our change for FCC ID: AZPT2POK-24G is complied with C2PC policy and we would like to apply C2PC for FCC ID: AZPT2POK-24G. The different with original grant is changed assembly (control buttons) and host. RF and others' schematic are identical with original grant. For more detail change, please refer to following table.

No	item	T2POK (original grant)	T3PRKA
1	Host	for T2POK only	for T3PRKA only
2	2ch EPA	none	support
	end point adjuster		
	(adjust servo travel range)		
3	3ch	none	support
4	1ch Dual Rate	placed the left upper of	placed the left under of
	(adjust servo travel range)	the wheel	the wheel
5	trim volume	placed top side of the	placed front side of the
		case	case

Remark: For Item 2 and 3, T2POK and T3PRKA are use the same firmware but T3PRKA is built with new button then can support these functions and it won't make any affect on RF power and modulation with original grant. For item4 and 5 are control buttons' location different only.

3. This report is based on reports of EM-F1000365.

2.2. Description of Test Facility

Name of Firm	:	AUDIX Technology Corporation EMC Department No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang, Taipei Hsien, Taiwan
Test Location & Facility (AC)	:	Semi-Anechoic Chamber No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang, Taipei Hsien, Taiwan.
		May 14, 2009 Renewal on Federal Communication Commission Registration Number: 90993
NVLAP Lab. Code	:	200077-0
TAF Accreditation No	:	1724

2.3. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Radiation Test (Distance: 3m)	30MHz~300MHz	±2.91dB
	300MHz~1000MHz	±2.94dB
	Above 1GHz	± 5.02dB

Remark : Uncertainty = $ku_c(y)$

Test Item	Uncertainty		
20dB Bandwidth	± 0.2 kHz		
Carrier Frequency Separation	$\pm 0.2 \mathrm{kHz}$		
Time Of Occupancy	± 0.03sec		
Maximum peak Output power	± 0.52dBm		
Emission Limitations	± 0.13dB		
Band Edges	± 0.13dB		

3. CONDUCTED EMISSION MEASUREMET

【The EUT only employs battery power for operation, no conductive emission limits are required according to FCC Part 15 Section §15.207】

4. RADIATED EMISSION MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the radiated emission measurement:

4.1.1. For Frequency Range 30MHz~1000MHz (at Semi-Anechoic Chamber)

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'
2.	Test Receiver	R & S	ESCS30	100265	Sep. 01, 10'	Aug. 31, 11'
3.	Pre-Amplifier	HP	8447D	2944A06305	Feb. 10, 11'	Feb. 09, 12'
4.	Biconical Antenna	CHASE	VBA6106A	1264	Mar. 08, 11'	Mar. 07, 12'
	Log Periodic	Schwarzbeck	UHALP91	0810	Mar. 08, 11'	Mar 07 12'
	Antenna	Sellwarzbeek	08-A	0010	Wiai. 00, 11	Wiai. 07, 12

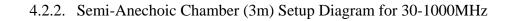
4.1.2. For Frequency Above 1GHz (at Semi-Anechoic Chamber)

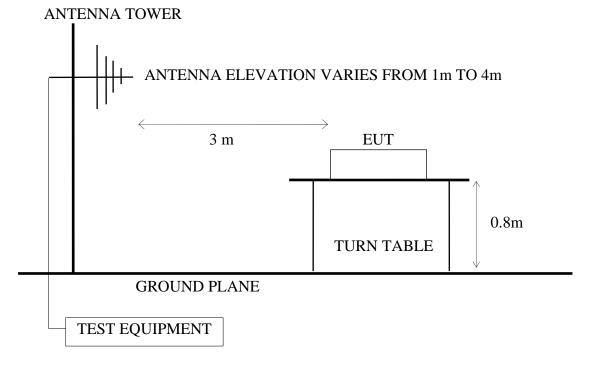
Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'
2.	Pre-Amplifier	HP	8449B	3008A00529	Dec. 10, 10'	Dec. 09, 11'
4	2.4GHz Notch Filter	EWT	EWT-14-0 070-R1	G2	Dec. 03, 11'	Dec. 02, 12'
	3.5G High Pass Filter	HP	84300-800 38	005	Jan. 05, 11'	Jan. 04, 12'
5.	Horn Antenna	EMCO	3115	9112-3775	May 10, 10'	May 09, 11'
6.	Horn Antenna	EMCO	3116	2653	Oct. 04, 10'	Oct. 03, 11'

4.2. Test Setup

4.2.1. Block Diagram of connection between EUT and simulators

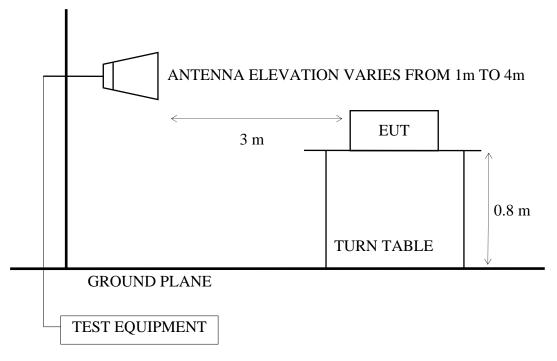
RADIO CONTROL (EUT)





4.2.3. Semi-Anechoic Chamber (3m) Setup Diagram for above 1GHz





FREQUENCY	DISTANCE	FIELD STREN	GTHS LIMITS	
MHz	Meters	μV/m	dBµV/m	
30 ~ 88	3	100	40.0	
88 ~ 216	3	150	43.5	
216 ~ 960	3	200	46.0	
Above 960	3	500	54.0	
Above 1000	3	74.0 dBµV/m (Peak)		
		54.0 dBµV/m (Average)		

4.3. Radiated Emission Limits (§15.209)

Remark : (1) Emission level $(dB\mu V/m) = 20 \log Emission level (\mu V/m)$

- (2) The tighter limit applies at the edge between two frequency bands.
- (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) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
- (5) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

4.4. Operating Condition of EUT

- 4.4.1. Set up the EUT (Radio Control) as shown on 4.2.
- 4.4.2. To turn on the power of all equipment.
- 4.4.3. The EUT was set the PC system using test program "Futaba Term".
- 4.4.4. Transmit Mode: The EUT was set to continuously transmit signals at 2404.000MHz, 2425.000MHz and 2447.500MHz during testing.
- 4.4.5. Receive Mode: The EUT was set to continuously receive signals at 2425.000MHz during testing.

4.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set to 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna could be moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna such as calibrated biconical and log-periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to FCC ANSI C63.4-2003 regulation.

The bandwidth of the R&S Test Receiver ESCS30 was set at 120kHz. (For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of test spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.

The resolution bandwidth of test spectrum analyzer is 1MHz and the video bandwidth is 10Hz for average detection (AV) at frequency above 1GHz.

The frequency range from 30MHz to 25GHz (Up to 10th harmonics from fundamental frequency) was checked.

Above 1GHz was measured with peak and average detector. For frequency from 7.5GHz to 25GHz, we checked it in 1 meter distance and with a shorter cable 2 meter instead of original's. There is no signal exist.

4.6. Radiated Emission Measurement Results

PASSED.

(All emissions not reported below are too low against the prescribed limits.)

EUT: Radio Control	M/N: T3PRKA-2.4G	r
Test Date : Apr. 12, 2011	Temperature: 23	Humidity: 52%

For Frequency Range 30MHz~1000MHz:

The EUT emitted the fundamental frequency with data code at the stand, side and lying conditions.

The EUT select **worst position "stand"** and with following test modes was performed during this section testing and all the test results are listed in section 4.6.1.

Mode	Channal	Eraguanay	Test Mode	Desition	Reference Test Data		
Mode	Channel	Frequency	Test Mode	POSITIOII	Horizontal	Vertical	
1.	01	2404.000MHz		Stand	# 13	# 14	
2.	15	2425.000MHz	Transmit	Stand	# 13	# 14	
3.	30	2447.500MHz		Stand	# 13	# 14	
4.	15	2425.000MHz	Receive	Stand	#7	# 8	

* Above all final readings were measured with Quasi-Peak detector.

For Frequency above 1GHz:

The EUT with following test modes was performed during this section testing and all the test results are listed in section 4.6.2.

Mode	Chnnel	Frequency	Test Mode	Position	Test Frequency Range
1.					1000-2680MHz*
2.					2680-4000MHz
3.	01	2404.000MHz	Transmit	Stand	4000-5500MHz*
4.	01	2404.000MINZ	Tansiint	Stallu	5500-7500MHz*
5.					7500-12750MHz*
6.					12750-18000MHz
7.	15	2425.000MHz	Transmit		1000-2680MHz*
8.				Stand	2680-4000MHz
9.					4000-5500MHz*
10.	15				5500-7500MHz*
11.					7500-12750MHz*
12.					12750-18000MHz
13.					1000-2680MHz*
14.					2680-4000MHz
15.	30	2447.500MHz	Transmit	Stand	4000-5500MHz*
16.	30	2447.300WITIZ	Tansiint	Stallu	5500-7500MHz*
17.	-				7500-12750MHz*
18.					12750-18000MHz
19.					1000-2680MHz
20.	15	2425.000MHz	Receive	Stand	2680-5500MHz
21.					5500-18000MHz

Remark 1: The emissions level were too low against the official limit and not report.

Remark 2 : "*" means there is spurious emission falling the frequency band and be measures.

For Restricted Bands:

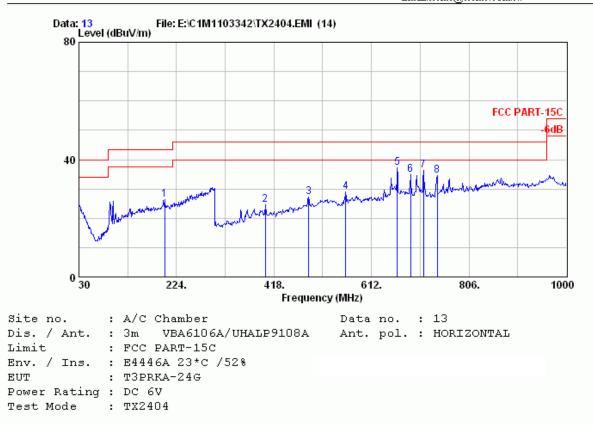
The EUT was tested in restricted bands and all the test results are listed in section 4.6.3. (The restricted bands defined in part 15.205(a))

Mode	Channel	Frequency	Test Mode	Reference Test Data		
	Channel	Trequency	Test Mode	Horizontal	Vertical	
1.	01	2404.000MHz	Transmit	#2	#1	
2.	30	2447.500MHz	Transmit	#3	#4	

4.6.1. Frequency Range 30-1000MHz

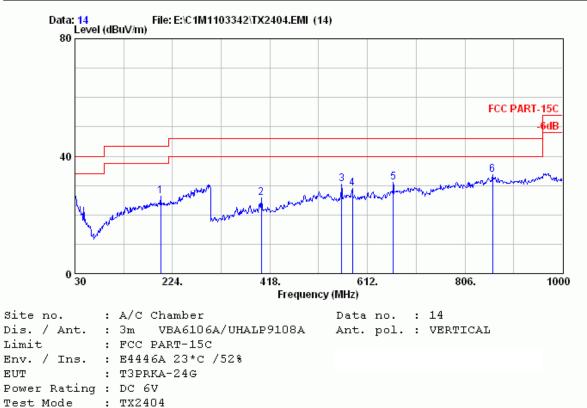


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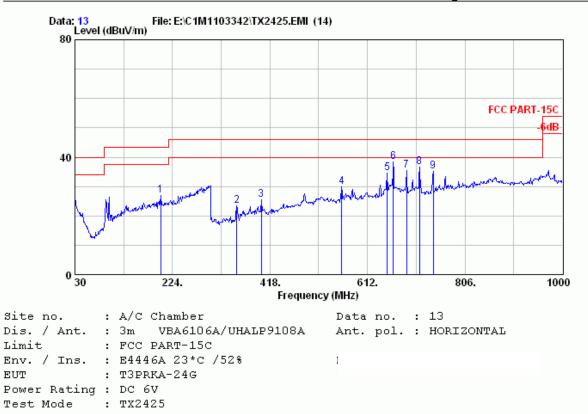
	-	Factor		Reading	Emission Level (dBµV/m)		Margin Remark (dB)	
1	200.720	22.08	3.00	1.39	26.47	43.50	17.03	
2	400.540	17.66	4.80	2.14	24.60	46.00	21.40	
3	486.870	18.67	6.20	2.32	27.19	46.00	18.81	
4	560.590	20.03	6.70	2.15	28.88	46.00	17.12	
5	663.410	22.52	6.32	8.42	37.25	46.00	8.75	
6	689.600	23.25	6.50	5.13	34.88	46.00	11.12	
7	715.790	22.74	6.55	7.08	36.38	46.00	9.62	
8	742.950	22.56	6.70	5.30	34.56	46.00	11.44	
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading. 2. The emission levels that are 20dB below the official								
	li	mit are	not re	eported.				





	Freq. (MHz)	Ant. Factor (dB/m)		Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin Remark (dB)
1	200.720	22.08	3.00	1.19	26.27	43.50	17.23
2	400.540	17.66	4.80	3.44	25.90	46.00	20.10
3	560.590	20.03	6.70	3.86	30.59	46.00	15.41
4	581.930	20.91	6.30	1.85	29.06	46.00	16.94
5	663.410	22.52	6.32	2.14	30.97	46.00	15.03
6	861.290	26.09	7.20	0.35	33.64	46.00	12.36

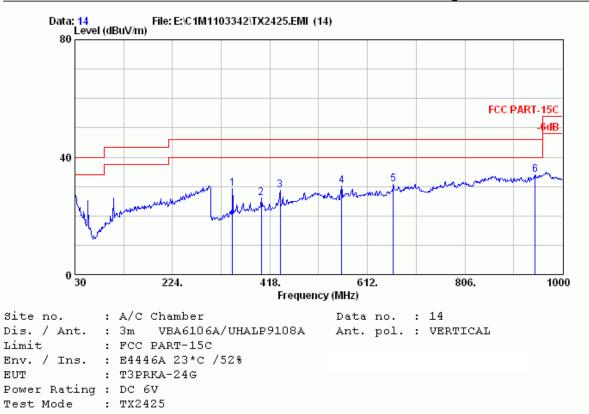




	Freq. (MHz)			Reading	Emission Level (dBµV/m)		Margin Remark (dB)	
1	200.720	22.08	3.00	1.74	26.82	43.50	16.68	
2	352.040	15.55	4.30	3.52	23.38	46.00	22.62	
3	400.540	17.66	4.80	2.92	25.38	46.00	20.62	
4	560.590	20.03	6.70	3.27	30.00	46.00	16.00	
5	651.770	21.72	6.30	6.59	34.60	46.00	11.40	
6	663.410	22.52	6.32	9.52	38.35	46.00	7.65	
7	689.600	23.25	6.50	5.68	35.43	46.00	10.57	
8	715.790	22.74	6.55	7.39	36.69	46.00	9.31	
9	742.950	22.56	6.70	5.95	35.21	46.00	10.79	
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.								

 The emission levels that are 20dB below the official limit are not reported.



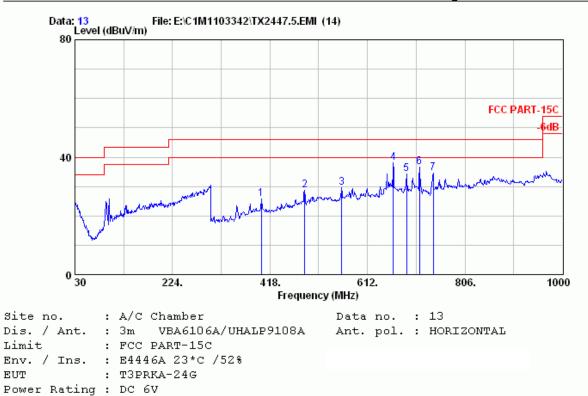


	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin Remark (dB)
1	343.310	15.05	4.34	9.99	29.37	46.00	16.63
2	400.540	17.66	4.80	3.72	26.18	46.00	19.82
3	438.370	17.53	5.30	5.79	28.63	46.00	17.37
4	560.590	20.03	6.70	3.44	30.17	46.00	15.83
5	663.410	22.52	6.32	1.98	30.81	46.00	15.19
6	945.680	25.68	7.50	0.88	34.06	46.00	11.94



Test Mode : TX2447.5

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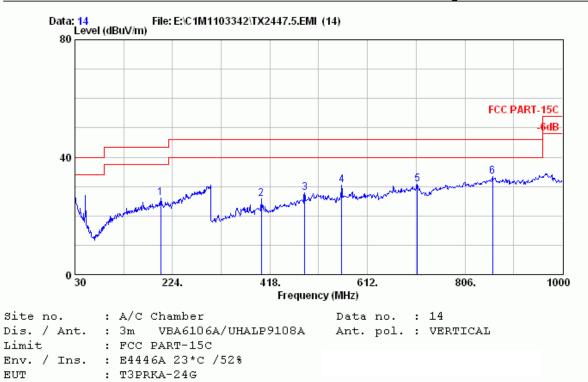


	Freq. (MHz)	Ant. Factor (dB/m)		Reading (dBµV)	Emission Level (dBµV/m)		Margin Remark (dB)
1	400.540	17.66	4.80	3.30	25.76	46.00	20.24
2	486.870	18.67	6.20	3.93	28.80	46.00	17.20
3	560.590	20.03	6.70	2.96	29.69	46.00	16.31
4	663.410	22.52	6.32	9.36	38.19	46.00	7.81
5	689.600	23.25	6.50	4.59	34.34	46.00	11.66
6	715.790	22.74	6.55	7.39	36.69	46.00	9.31
7	742.950	22.56	6.70	5.42	34.68	46.00	11.32

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading. 2. The emission levels that are 20dB below the official limit are not reported.

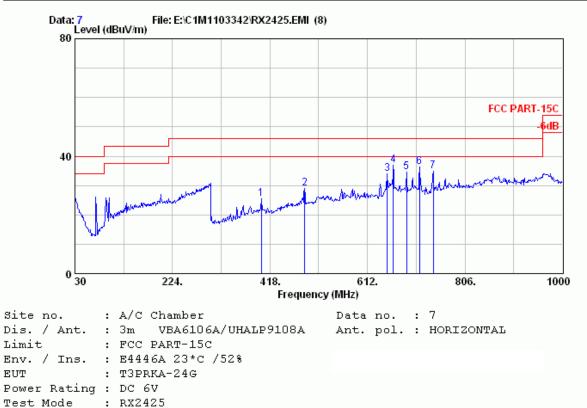


Power Rating : DC 6V Test Mode : TX2447.5 AUDIX TECHNOLOGY Corp. EMC Laboratory No.53-11, Tin-fu Tsun, Lin-kou Hsiang, Taipei County, Taiwan R.O.C. Post Code:24443 Tel:+886-2-26092133 Fax:+886-2-26099303 Email:ttemc@ttemc.com.tw



	Freq. (MHz)	Ant. Factor (dB/m)		Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin Remark (dB)
1	200.720	22.08	3.00	1.05	26.13	43.50	17.37
2	400.540	17.66	4.80	3.39	25.85	46.00	20.15
3	486.870	18.67	6.20	2.83	27.70	46.00	18.30
4	560.590	20.03	6.70	3.79	30.52	46.00	15.48
5	710.940	23.54	6.51	0.79	30.83	46.00	15.17
6	861.290	26.09	7.20	0.17	33.46	46.00	12.54





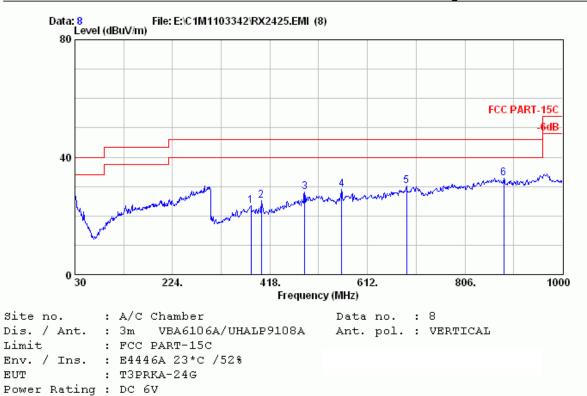
	Freq. (MHz)	Ant. Factor (dB/m)		Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin Remark (dB)
1	400.540	17.66	4.80	2.92	25.38	46.00	20.62
2	486.870	18.67	6.20	4.19	29.06	46.00	16.94
3	651.770	21.72	6.30	5.98	33.99	46.00	12.01
4	663.410	22.52	6.32	7.97	36.80	46.00	9.20
5	689.600	23.25	6.50	4.88	34.63	46.00	11.37
6	715.790	22.74	6.55	7.03	36.33	46.00	9.67
7	742.950	22.56	6.70	5.67	34.93	46.00	11.07

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading. 2. The emission levels that are 20dB below the official limit are not reported.



Test Mode : RX2425

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	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin Remark (dB)
1	380.170	17.25	4.60	1.48	23.33	46.00	22.67
2	400.540	17.66	4.80	2.79	25.25	46.00	20.75
3	486.870	18.67	6.20	3.39	28.26	46.00	17.74
4	560.590	20.03	6.70	2.36	29.09	46.00	16.91
5	689.600	23.25	6.50	0.56	30.31	46.00	15.69
6	883.600	25.27	7.30	0.36	32.93	46.00	13.07

4.6.2. Above 1GHz Frequency Range Measurement Results

Date of Test :	Apr. 12, 2011	Temperature :	23
EUT :	Radio Control	Humidity :	52%

Test Mode : Transmitting Mode, Frequency: 2404MHz, Position: Stand

	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Horizontal	Emission Level Horizontal	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)
	2249.920 2330.560 4808.500	27.96 28.03 32.92	6.17 6.26 9.14	11.30 16.61 14.30	45.43 50.90 56.37	74.00 74.00 74.00	28.57 23.10 17.63
*	7208.000 9621.000	35.84 37.77	11.25 13.03	16.25 13.48	63.34 64.28	74.00 83.50	10.66 19.22

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.

2. The emission levels that are 20dB below the official limit are not reported.

3. All final readings of measurement were with Peak values.

4. *: Measured at 1m and limit is transformed to 83.5 by adding a factor 9.5 which is calculated from 20log(3/1).

Emission Frequency	Peak Value	PDCF	Average Value	Limit	Margin
(MHz)	(dB/m)	(dB)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)
2249.92	45.43	-30.34	15.09	54.00	38.91
2330.56	50.9	-30.34	20.56	54.00	33.44
4805.50	56.37	-30.34	26.03	54.00	27.97
7208.00	63.34	-30.34	33.00	54.00	21.00
* 9621.00	64.28	-30.34	33.94	63.50	29.56

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.041ms/100ms)=-30.34

2. Average value=Peak value+PDCF

3. All final readings of measurement were with Average values.

Date of Test :	Apr. 12, 2011	Temperature :	23
EUT:	Radio Control	Humidity :	52%

Test Mode : Transmitting Mode, Frequency: 2404MHz, Position: Stand

Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertical	Emission Level Vertical	Limits	Margin
(MHz)	(dB/m)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)
2249.920	27.96	6.17	13.62	47.75	74.00	26.25
2330.560	28.03	6.26	19.80	54.09	74.00	19.91
2565.760 4808.500	28.45 32.92	6.58 9.14	14.54 21.04	49.57 63.11	74.00 74.00	24.43 10.89
7208.000	35.84	11.25	23.33	70.42	74.00	3.58
* 9621.000	37.77	13.03	12.53	63.33	83.50	20.17

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.

- The emission levels that are 20dB below the official limit are not reported.
 All final readings of measurement were with Peak values.
 - 5. All final feadings of measurement were with reak values.
- 4. *: Measured at 1m and limit is transformed to 83.5 by adding a factor 9.5 which is calculated from 20log(3/1).

Emission Frequency	Peak Value	PDCF	Average Value	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBµV/m)	$(dB\mu V/m)$	(dB)
2254.96	47.75	-30.34	17.41	54.00	36.59
2330.56	54.09	-30.34	23.75	54.00	30.25
2565.76	48.39	-30.34	18.05	54.00	35.95
4805.50	63.11	-30.34	32.77	54.00	21.23
7208.00	70.42	-30.34	40.08	54.00	13.92
* 9621.00	63.33	-30.34	32.99	63.50	30.51

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.041ms/100ms)=-30.34 2. Average value=Peak value+PDCF

3. All final readings of measurement were with Average values.

Date of Test :	Apr. 12, 2011	Temperature :	23	
EUT :	Radio Control	Humidity :	52%	

Test Mode : Transmitting Mode, Frequency: 2425MHz, Position: Stand

Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Horizontal	Emission Level Horizontal	Limits	Margin
(MHz)	(dB/m)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)
2355.760	28.06	6.29	16.84	51.19	74.00	22.81
2367.520	28.06	6.31	14.23	48.61	74.00	25.39
2518.720	28.26	6.49	12.30	47.05	74.00	26.95
2574.160	28.52	6.59	13.56	48.66	74.00	25.34
4846.000	32.99	9.15	15.08	57.23	74.00	16.77
7274.000 9699.750	35.96 37.82	11.32 13.00	17.81 14.34	65.09 65.17	74.00 83.50	8.91 18.33

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.

*

2. The emission levels that are 20dB below the official limit are not reported.

3. All final readings of measurement were with Peak values.

4. *: Measured at 1m and limit is transformed to 83.5 by adding a factor 9.5 which is calculated from 20log(3/1).

Emission Frequency	Peak Value	PDCF	Average Value	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
2355.76	51.19	-30.34	20.85	54.00	33.15
2367.52	48.61	-30.34	18.27	54.00	35.73
2518.72	47.05	-30.34	16.71	54.00	37.29
2574.16	48.66	-30.34	18.32	54.00	35.68
4846.00	57.23	-30.34	26.89	54.00	27.11
7274.00	65.09	-30.34	34.75	54.00	19.25
* 9699.75	65.17	-30.34	34.83	63.50	28.67

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.041ms/100ms)=-30.34

2. Average value=Peak value+PDCF

3. All final readings of measurement were with Average values.

Date of Test :	Apr. 12, 2011	Temperature :	23
EUT :	Radio Control	Humidity :	52%

Test Mode : Transmitting Mode, Frequency: 2425MHz, Position: Stand

_							
_	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertical	Emission Level Vertical	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)
2	2350.720	28.04	6.29	21.69	56.03	74.00	17.98
2	2367.520	28.06	6.31	24.64	59.02	74.00	14.98
2	2535.520	28.33	6.53	21.21	56.07	74.00	17.93
2	2574.160	28.52	6.59	16.60	51.70	74.00	22.30
	4846.000	32.99	9.15	22.57	64.72	74.00	9.28
-	7274.000	35.96	11.32	24.66	71.94	74.00	2.06
: !	9699.750	37.82	13.00	11.94	62.77	83.50	20.73

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.

*

2. The emission levels that are 20dB below the official limit are not reported.

3. All final readings of measurement were with Peak values.

4. *: Measured at 1m and limit is transformed to 83.5 by adding a factor 9.5 which is calculated from 20log(3/1).

Emission Frequency	Peak Value	PDCF	Average Value	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBµV/m)	$(dB\mu V/m)$	(dB)
2350.72	56.03	-30.34	25.69	54.00	28.31
2367.52	59.02	-30.34	28.68	54.00	25.32
2535.52	56.07	-30.34	25.73	54.00	28.27
2574.16	51.70	-30.34	21.36	54.00	32.64
4846.00	64.72	-30.34	34.38	54.00	19.62
7274.00	71.94	-30.34	41.60	54.00	12.40
* 9699.75	62.77	-30.34	32.43	63.50	31.07

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.041ms/100ms)=-30.34

2. Average value=Peak value+PDCF

3. All final readings of measurement were with Average values.

Date of Test :	Apr. 12, 2011	Temperature :	23
EUT:	Radio Control	Humidity :	52%

Test Mode : Transmitting Mode, Frequency: 2447.5MHz, Position: Stand

Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Horizontal	Emission Level Horizontal	Limits	Margin
(MHz)	(dB/m)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)
2291.920	27.99	6.22	14.57	48.79	74.00	25.21
2355.760	28.04	6.29	12.30	46.64	74.00	27.36
2367.520	28.06	6.31	14.60	48.98	74.00	25.02
2523.760	28.33	6.50	15.57	50.39	74.00	23.61
2548.960	28.39	6.54	14.40	49.34	74.00	24.66
4891.000	33.09	9.16	15.03	57.29	74.00	16.71
7338.000	36.13	11.44	18.54	66.11	74.00	7.89
9794.250	37.88	12.93	13.29	64.09	74.00	9.91

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.

2. The emission levels that are 20dB below the official limit are not reported.

3. All final readings of measurement were with Peak values.

4. *: Measured at 1m and limit is transformed to 83.5 by adding a factor 9.5 which is calculated from 20log(3/1).

Emission Frequency	Peak Value	PDCF	Average Value	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBµV/m)	$(dB\mu V/m)$	(dB)
2291.92	48.79	-30.34	18.45	54.00	35.55
2355.76	46.64	-30.34	16.30	54.00	37.70
2367.52	48.98	-30.34	18.64	54.00	35.36
2523.76	50.39	-30.34	20.05	54.00	33.95
2548.96	49.34	-30.34	19.00	54.00	35.00
4891.00	57.29	-30.34	26.95	54.00	27.05
7338.00	66.11	-30.34	35.77	54.00	18.23
* 9794.25	64.09	-30.34	33.75	63.50	29.75

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.041ms/100ms)=-30.34

2. Average value=Peak value+PDCF

3. All final readings of measurement were with Average values.

Date of Test :	Apr. 12, 2011	Temperature :	23
EUT :	Radio Control	Humidity :	52%

Test Mode : Transmitting Mode, Frequency: 2447.5MHz, Position: Stand

	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertical	Emission Level Vertical	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)
	2291.920	27.99	6.22	17.61	51.82	74.00	22.18
	2355.760	28.06	6.29	21.45	55.80	74.00	18.20
	2523.760	28.33	6.50	20.37	55.19	74.00	18.81
	2548.960 4891.000	28.39 33.09	6.54 9.16	20.82 23.57	55.76 65.83	74.00 74.00	18.24 8.17
¢	7338.000 9794.250	36.13 37.88	11.44 12.93	23.65 12.11	71.22 62.91	74.00 83.50	2.78 20.59

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.

*

2. The emission levels that are 20dB below the official limit are not reported.

3. All final readings of measurement were with Peak values.

4. *: Measured at 1m and limit is transformed to 83.5 by adding a factor 9.5 which is calculated from 20log(3/1).

Emission Frequency	Peak Value	PDCF	Average Value	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBµV/m)	$(dB\mu V/m)$	(dB)
2291.92	51.82	-30.34	21.48	54.00	32.52
2355.76	55.80	-30.34	25.46	54.00	28.54
2523.76	55.19	-30.34	24.85	54.00	29.15
2548.96	55.76	-30.34	25.42	54.00	28.58
4891.00	65.83	-30.34	35.49	54.00	18.51
7338.00	71.22	-30.34	40.88	54.00	13.12
* 9794.25	62.91	-30.34	32.57	63.50	30.93

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.041ms/100ms)=-30.34

2. Average value=Peak value+PDCF

3. All final readings of measurement were with Average values.

	Date of Test :		Apr.	Т	Temperature :	23			
	EUT:		Radio	o Control		Humidity :	52%		
	Test Mode :		Transmi	t, Channel: ()1, Frequency	ency: 2404.000MHz			
	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Horizontal	Emission Level Horizontal	Limits	Margin		
	(MHz)	(dB/m)	(dB)	(dBµV)	$(dB\mu V/m)$	(dBµV/m)	(dB)		
Peak *	2389.090	28.10	6.34	35.06	69.49	74.00	4.51		
	Emission Frequ	ency Peak	. Value	PDCF A	verage Value	Limit	Margin		
	(MHz)	(dl	B/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
Average *		()		20.24					
	2389.09 Remark :	 Emission Low free 2310-24 '*' The shall not All final All final 	equency s 420MHz field stro ot exceed l reading l reading	section (spur). ength of emi the limits sl s of measure s of measure	tious in the re ssion appeari nown in section ement were w ement were w	ng within Part on 15.209. ith Peak values ith Average va	15.205(a) s. lues.		
	Remark :	 Emissic Low free 2310-24 '*' The shall not All final PDCF=2 	on Level equency s 420MHz field stro ot exceed l reading l reading 20log(dw	= Antenna F section (spur). ength of emi the limits sl s of measure s of measure vell time/100 AUDIX TECHN No3511, Tawa Tel4862-2000 Emailtem@tt	Factor + Cable Fious in the resistion appearing town in section town in section town were were the section of the section to the section of t	e Loss + Meter stricted band ng within Part on 15.209. ith Peak values	Reading. 15.205(a) 3. lues.		
	Remark :	1. Emissic 2. Low fre 2310-24 3. '*' The shall nc 4. All final 5. All final 6. PDCF=2 [●] [●]	2010g(dw	= Antenna F section (spur). ength of emi the limits sl s of measure s of measure vell time/100 AUDIX TOCH No.3211, Turf County, Tawa County, County, Co	Factor + Cable Factor + Cable Figure 1 and the re- ssion appearing frown in section ement were we ement were we 0ms)=20log(3) 0LOY(Cop. EMC Laboratory ROC. PostCode 2443 2133 Fact 4866-2.26009303 mc.com.tw	e Loss + Meter stricted band ng within Part on 15.209. ith Peak values ith Average va	Reading. 15.205(a) 3. lues.		

4.6.3. Restricted Bands Measurement Results

	EUT:						
			Radio	o Control		Humidity :	52%
	Test Mode:		Transmi	t, Channel	: 01, Frequency	: 2404.000MH	łz
	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertical	•	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)
Peak *	2389.640	28.10	6.34	37.85	72.29	74.00	1.71
	Emission Frequ (MHz)	-	x Value B/m)	PDCF (dB)	Average Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Average *	2389.64	72	2.29	-30.34	41.95	54.00	12.05
	AUD	shall no 4. All fina 5. All fina	ot exceed l reading l reading	the limits s of measu s of measu vell time/1 No 33-11, T County, T Tel+886-2	nission appeari shown in section rement were w rement were w 00ms)=20log(3 CINOLOV Corp. EMC Laboratory infu Tom, Linkow Heimg, Tape iman ROC. Post Code 24443 200110 Fact resto - 22009303	on 15.209. ith Peak value ith Average va	s. alues.
	Data: 1	File: E:\C1M1103 el (dBuV/m)	3342\out of band.EM		@ttemc.com.tw		
		mmuniter and a second	2354.	2376.	2398. 2420		
	Site no.	: A/C Chamber : 3m 3115(3775	Frequenc	/(MHz) Data no. : 1 Ant. pol. : VEI	TICAL		
	(MHz) 1 2389.6(2 2390.0(3 2403.9(Ant. Cable Factor Loss R (dB/m) (dB) (0 28.10 6.34 28.11 6.36 Emission Level= A The emission leve	dBµV) (dBµ 37.85 72.2 37.09 71.5 75.72 110.1 	1 Limits Mai 7/m) (dBµV/m) (dl 	3) 71 Peak 47 Peak 19 Peak Reading.		

	Date of Test :	Apr. 12, 2011				Semperature :	23
	EUT:		Radi	o Control		Humidity :	52%
	Test Mode :	Transmit, Channel: 30, Frequer			30, Frequency	2447.500MH	Iz
	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Horizontal	Emission Level Horizontal	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dB)
Peak *	2487.920	28.20	6.45	27.86	62.51	74.00	11.49
	Emission Frequ (MHz)	-	x Value B/m)		verage Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Average *	2487.92		2.51	-30.34	32.17	(dBμ V/lll) 54.00	21.83
	58 58 0 244 Site no. Dis. / Ant. Limit	4. All fina 5. All fina 6. PDCF= (dBuvin) File: E:C1M1102 (dBuvin) File: E:C1M102 (dBuvin) File: E:C1M102 (I reading I reading 20log(dv 3342 out of band.EM MM.umM.um 2472. Frequenc	gs of measure gs of measure well time/100 AUDIX TECHI No.5311, Tin-f County, Taiwa Tel+886-2:400 Emailteme@tt	ement were w ODS)=20log(3) NOLOGY Corp. EMC Laboratory U Fran, Lin-kou Heiner, Tapei n ROC. Post Code 24443 2013 Fract 486-2-2009303 emc.com.tw PART-15C (16-PK) - 6dB - 400 - 6dB - 400 -	on 15.209. ith Peak value ith Average va 0.041ms/100ms	alues.

	Date of Test :	Apr. 12, 2011				Temperature :	23	
	EUT:		Radio	o Control		Humidity:	52%	
	Test Mode :	Transmit, Channel: 30, Frequer			: 30, Frequenc	ncy: 2447.500MHz		
	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertica	•	Limits	Margin	
	(MHz)	(dB/m)	(dB)	(dBµV)	$(dB\mu V/m)$	(dBµV/m)	(dB)	
Peak *	2489.120	28.20	6.45	32.30	66.95	74.00	7.05	
	Emission Frequ (MHz)	•	Value B/m)	PDCF (dB)	Average Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)	
Average *	2489.12		5.95	-30.34	36.61	54.00	17.39	
	58 58 0 244 Site no. Dis. / Ant. Limit Env. / Ins. BUT Power Rating Test Mode	4. All fina 5. All fina 6. PDCF=2 (dBuvin) File: E:C 1M1103 (dBuvin) File: E:C 1M1103 (dBuvin) File: E:C 1M1103 (dBuvin) File: E:C 1M1103 (dBuvin) File: E:C 1M1103 (dBuvin) File: E:C 1M103 (dBuvin) File: E:C 1M103 (dBuvin) (dB	l reading l reading 20log(dx 342out of band.EM 342out of band.EM 342out of band.EM 2472. Frequenc	s of measu s of measu vell time/1 AUDIXT COUNTY, T COUNTY, T C COUNTY, T C COUNTY, T C COUNTY, T C C C C C C C C C C C C C C C C C C C	Irement were v 00ms)=20log((CEINOLOGY Corp. EMC Laboratory iwon ROC. Foot Code 2443 2009133 Fact. We86-2:2009933 @ttemc.com.tw FCC PART-15C (1G-Pk) 	vith Peak value vith Average va 3.041ms/100ms	alues.	

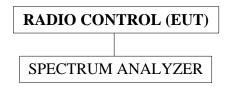
5. TIME OF OCCUPANCY MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the time of occupancy measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A-526	MY48031076	Oct. 05, 10'	Oct. 04, 11'

5.2. Block Diagram of Test Setup



5.3. Specification Limits (\$15.247(a)(1)(iii))

Frequency hopping systems in the 2400-2483.5MHz shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by number of hopping channels employed.

5.4. Operating Condition of EUT

- 5.4.1. Set up the EUT and simulator as shown on 5.2.
- 5.4.2. To turn on the power of all equipment.
- 5.4.3. EUT (Radio Control) was on transmitting frequency function during the testing.

5.5. Test Procedure (DA 00-705)

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 1MHz RBW and 1MHz VBW. VBW≥RBW ; Span=zero span.

Centered on a hopping channel sweep=as necessary to capture the entire dwell time per hopping channel ; Detector function=peak ; Trace=Max hold

5.6. Test Results

PASSED. All the test results are attached in next pages.

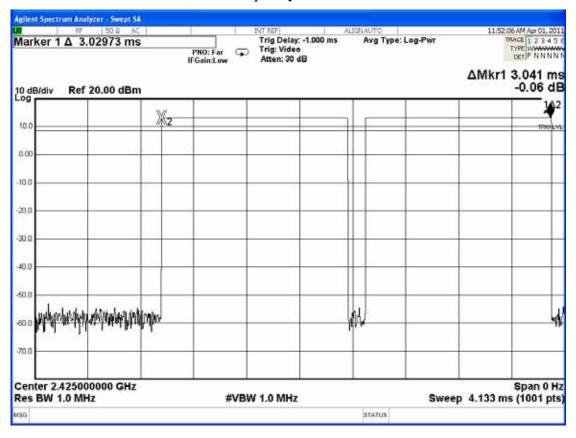
Test Date : Apr. 01, 2011 Temperature :24 Humidity : 59%

Duty cycle: 30 channels*0.4 seconds = 12 seconds

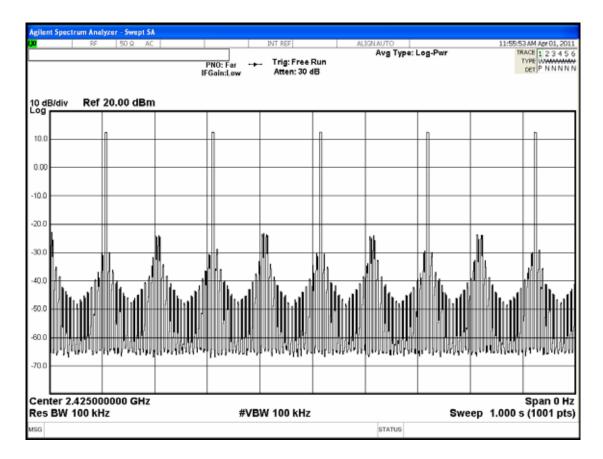
Test Frequency: 2425.000MHz

For per second of 5 channels appearance, the longest time of occupancy for each of 12 seconds is:

5 channels*12 seconds* 3.041ms = 182.28ms (<400ms)



5.6.1. Channel 30, Test Frequency: 2425.000MHz



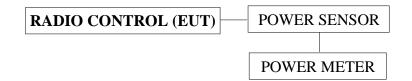
6. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

6.1. Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Power Meter	Anritsu	ML2487A	6K00005406	Feb. 11, 11'	Feb. 10, 12'
2.	Power Sensor	Anritsu	MA2491A	030873	Feb. 11, 11'	Feb. 10, 12'

6.2. Block Diagram of Test Setup



6.3. Specification Limits (§15.247(b)-(1))

The Limits of maximum Peak Output Power for frequency hopping systems in 2400-2483.5MHz is: 0.125Watt. (21dBm)

6.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in 5.4 except the test set up replaced by section 6.2.

6.5. Test Procedure (DA 00-705)

The transmitter output was connected to the power sensor and record the reading of power meter.

6.6. Test Results

PASSED. All the test results are listed below.

Test Date : Apr. 01, 2011 Temperature :24 Humidity : 59%

No.	Channel	Test Frequency	Peak Output Power	Limit
1.	01	2404.000MHz	13.68dBm	21dBm
2.	12	2425.000MHz	13.12dBm	21dBm
3.	30	2447.500MHz	12.65dBm	21dBm

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7. DEVIATION TO TEST SPECIFICATIONS

[NONE]

8. PHOTOGRAPHS

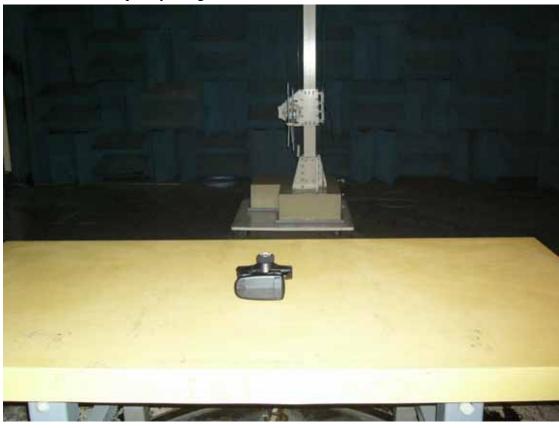
8.1. Photos of Radiated Measurement at Semi-Anechoic Chamber8.1.1.Frequency Range 30MHz~1GHz, Stand



8.1.2.Frequency Range 30MHz~1GHz, Side



AUDIX Technology Corporation Report No. EM-F1000365



8.1.3.Frequency Range 30MHz~1GHz, Lie

8.1.4. Frequency Range Above 1GHz, Stand





8.1.5.Frequency Range Above 1GHz, Side

8.1.6.Frequency Range Above 1GHz, Lie





8.2. Photo of RF Conducted Measurement