

FCC TEST REPORT

REPORT NO.: RF941222L04

MODEL NO.: GWT-6A

RECEIVED: Dec. 28, 2005

TESTED: Dec. 29, 2005 ~ Jan. 06, 2006

ISSUED: Jan. 13, 2006

APPLICANT: GRAND WING SERVO-TECH CO., LTD.

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ISSUED BY: Advance Data Technology Corporation

LAB ADDRESS: 47 14th Lin, Chiapau Tsun, Linko, Taipei,
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TEST LOCATION: No. 19, Hwa Ya 2nd Rd., Kueishan, Taoyuan,
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No. 2177-01



Table of Contents

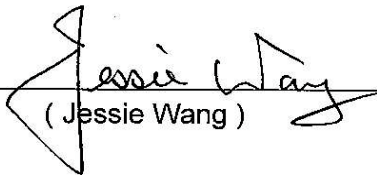
1	CERTIFICATION	4
2	SUMMARY OF TEST RESULTS	5
2.1	MEASUREMENT UNCERTAINTY	5
3	GENERAL INFORMATION	6
3.1	GENERAL DESCRIPTION OF EUT	6
3.2	DESCRIPTION OF TEST MODES	7
3.2.1	CONFIGURATION OF SYSTEM UNDER TEST	7
3.2.2	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	8
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	9
3.4	DESCRIPTION OF SUPPORT UNITS	10
4	TEST PROCEDURE AND RESULT	11
4.1	CONDUCTED EMISSION MEASUREMENT	11
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	11
4.1.2	TEST INSTRUMENT	11
4.1.3	TEST PROCEDURE	12
4.1.4	DEVIATION FROM TEST STANDARD	12
4.1.5	TEST SETUP	13
4.1.6	EUT OPERATING CONDITION	13
4.1.7	TEST RESULTS	14
4.2	RADIATED EMISSIONS MEASUREMENT	16
4.2.1	LIMITS OF FUNDAMENTAL FREQUENCY MEASUREMENT	16
4.2.2	LIMITS OF UNWANTED RADIATED EMISSIONS MEASUREMENT	16
4.2.3	TEST INSTRUMENT	17
4.2.4	TEST PROCEDURE	18
4.2.5	DEVIATION FROM TEST STANDARD	18
4.2.6	TEST SETUP	19
4.2.7	EUT OPERATING CONDITION	19
4.2.8	TEST RESULTS	20
4.3	FREQUENCY STABILITY	24
4.3.1	LIMIT OF FREQUENCY STABILITY MEASUREMENT	24
4.3.2	TEST INSTRUMENT	24
4.3.3	TEST PROCEDURE	24
4.3.4	DEVIATION FROM TEST STANDARD	24
4.3.5	TEST SETUP	25
4.3.6	EUT OPERATING CONDITION	25
4.3.7	TEST RESULTS	26
4.4	EMISSION BANDWIDTH	28

4.4.1	LIMIT OF FREQUENCY STABILITY MEASUREMENT	28
4.4.2	TEST INSTRUMENT	28
4.4.3	TEST PROCEDURE	29
4.4.4	DEVIATION FROM TEST STANDARD	29
4.4.5	TEST SETUP	29
4.4.6	EUT OPERATING CONDITION	29
4.4.7	TEST RESULTS	30
4.5	MODULATION CHARACTERISTICS.....	32
4.6	CRYSTAL ACCESS RESTRICTIONS	33
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	34
6	INFORMATION ON THE TESTING LABORATORIES.....	37
APPENDIX-A.....		A-1

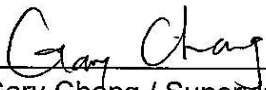
1 CERTIFICATION

PRODUCT : Radio-control transmitter
BRAND NAME : GWS
MODEL NO. : GWT-6A
APPLICANT : GRAND WING SERVO-TECH CO., LTD.
TESTED: Dec. 29, 2005 ~ Jan. 06, 2006
TEST SAMPLE : Engineering Sample
STANDARDS : FCC Part 95, Subpart C
FCC Part 95, Subpart E
FCC Part 2, Subpart J
EIA/TIA 603

The above equipment have been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY :  , **DATE:** Jan. 13, 2006
(Jessie Wang)

TECHNICAL
ACCEPTANCE :  , **DATE:** Jan. 13, 2006
Responsible for
RF
(Long Chen)

APPROVED BY :  , **DATE:** Jan. 13, 2006
(Gary Chang / Supervisor)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 95			
STANDARD PARAGRAPH	TEST TYPE	RESULT	REMARK
95.210 (a)	Transmitter Power Test	PASS	Meet the requirement of limit
15.107	Conducted Test	PASS	Meet the requirement of limit Minimum passing margin is -39.27dB at 0.162MHz
95.635	Unwanted Radiated Test	PASS	Meet the requirement of limit Minimum passing margin is -0.17dB at 150.52MHz
95.623 (c)	Frequency Stability Test	PASS	Meet the requirement of limit
95.633 (b)	Emission Bandwidth Test	PASS	Meet the requirement of limit
95.631 (b)	Modulation Characteristics Test	PASS	Meet the requirement of limit
95.651	Crystal Access Restrictions Test	PASS	Meet the requirement of limit

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.55 dB
	200MHz ~ 1000MHz	3.58 dB
	1GHz ~ 18GHz	1.10 dB
	18GHz ~ 40GHz	0.91 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Radio-control transmitter
MODEL NO.	GWT-6A
POWER SUPPLY	9.6Vdc from battery 9.6Vdc form AC adapter for charging mode Brand: GWS Model: SLC419648 I/P: 120Vac, 60Hz O/P: 9.6Vdc, 60mA (TX) O/P: 4.8Vdc, 60mA (RX)
MODULATION TYPE	PPM (FM)
CARRIER FREQUENCY OF EACH CHANNEL	75.410 ~ 75.990MHz
CHANNEL SPACING	20kHz
NUMBER OF CHANNEL	30
EMISSION DESIGNATOR	5K81F1D
MAXIMUM OUTPUT POWER	49.317mW
ANTENNA TYPE	Rod antenna with 0dBi gain
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is a 75MHz Radio-control transmitter.
2. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

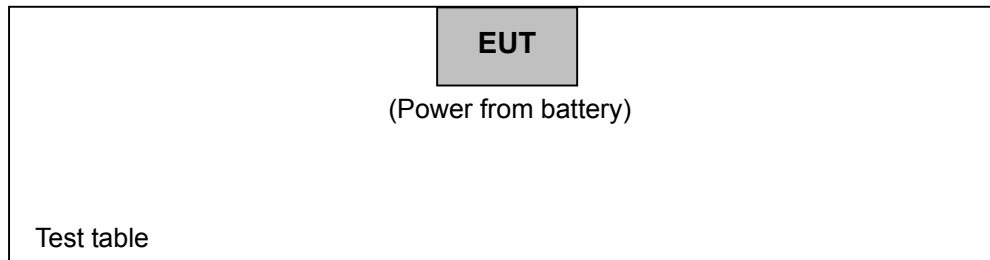
3.2 DESCRIPTION OF TEST MODES

30 channels were provided to this EUT.

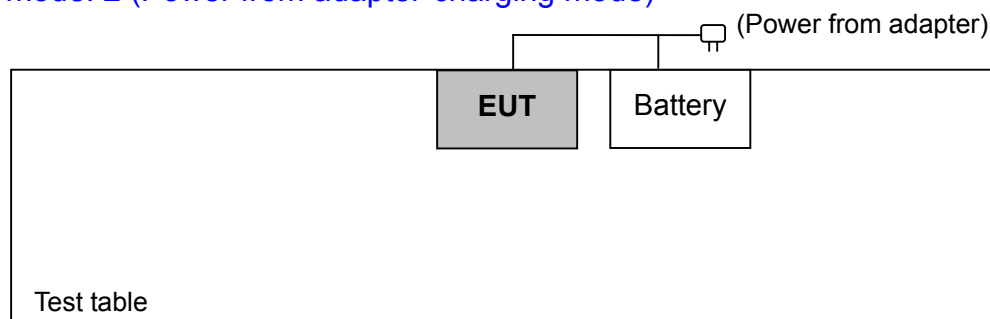
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
61	75.410	71	75.610	81	75.810
62	75.430	72	75.630	82	75.830
63	75.450	73	75.650	83	75.850
64	75.470	74	75.670	84	75.870
65	75.490	75	75.690	85	75.890
66	75.510	76	75.710	86	75.910
67	75.530	77	75.730	87	75.930
68	75.550	78	75.750	88	75.950
69	75.570	79	75.770	89	75.970
70	75.590	80	75.790	90	75.990

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Test mode: 1 (Power from battery-transmission mode)



Test mode: 2 (Power from adapter-charging mode)



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT configure mode	Applicable to			Description
	PLC	RE<1G	RCM	
A	-	x	x	EUT only (transmission mode) (powered by battery)
B	x	x	-	EUT with adapter (charging mode) (powered by adapter)

Where PLC: Power Line Conducted Emission

RE<1G RE: Radiated Emission below 1GHz

RCM: Radiated Characteristic Measurement

Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT configure mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type
B	-	-	-	-

Radiated Emission Test (Below 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and XYZ axis.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT configure mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Axis
A	61 to 90	74	FM	PPM	X
B	-	-	-	-	-

Radiated Characteristic Measurement:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT configure mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type
A	61 to 90	74	FM	PPM



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is the transmitter part of a Radio-control transmitter. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 95, Subpart C

FCC Part 95, Subpart E

FCC Part 2, Subpart J

EIA/TIA 603

All test items have been performed and recorded as per the above standards.

3.4 DESCRIPTION OF SUPPORT UNITS

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NA	NA	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

NOTE: All power cords of the above support units are non shielded (1.8m).

4 TEST PROCEDURE AND RESULT

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 11, 2006
RF signal cable Woken	5D-FB	Cable-HYC01-01	Jan. 09, 2006
LISN SCHWARZBECK	NNBL 8226-2	8226-142	May 02, 2006
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Feb. 15, 2006
Software ADT	ADT_Cond_V3	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 1.
 3. The VCCI Site Registration No. is C-2040.
 4. The test was performed in ADT Chamber No. 6.



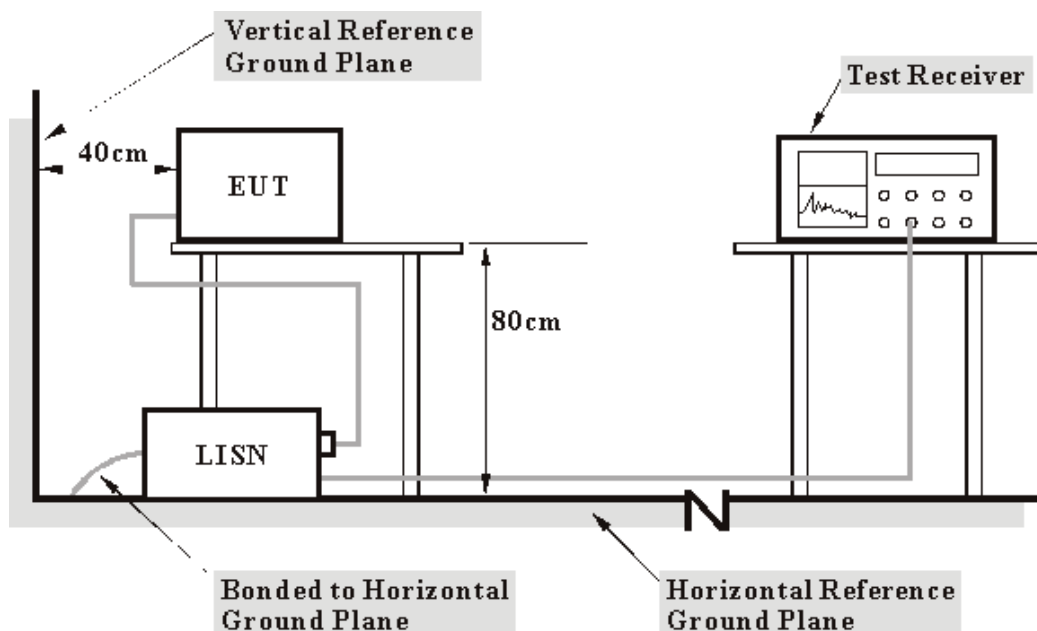
4.1.3 TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under Limit - 20dB was not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



- Note:** 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITION

Enable the EUT under charging condition continuously at specific channel frequencies individually.

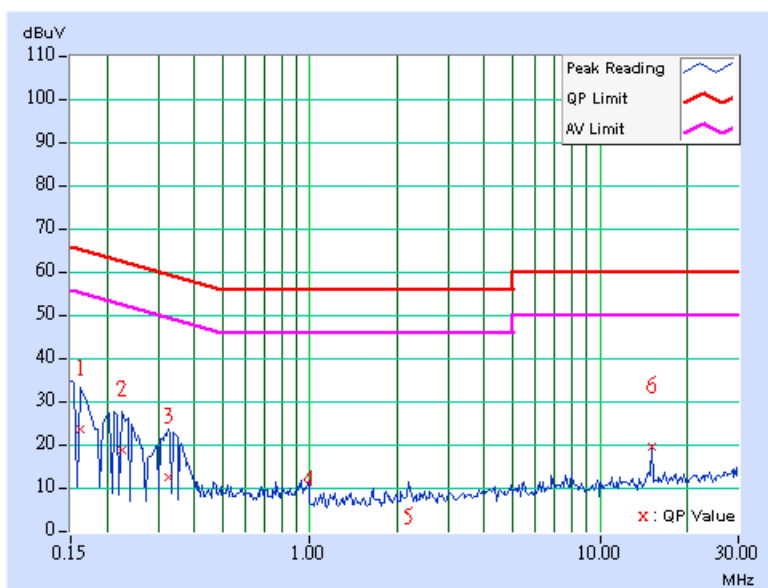
4.1.7 TEST RESULTS

Conducted Worst-Case Data (Power from adapter)

INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line 1
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	TEST MODE	B
TESTED BY	Jay Hsu		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.162	0.11	23.27	-	23.38	-	65.38	55.38	-42.00	-
2	0.224	0.11	18.51	-	18.62	-	62.66	52.66	-44.04	-
3	0.326	0.11	12.20	-	12.31	-	59.56	49.56	-47.25	-
4	0.994	0.24	-2.46	-	-2.22	-	56.00	46.00	-58.22	-
5	2.191	0.27	-11.18	-	-10.91	-	56.00	46.00	-66.91	-
6	15.133	0.56	18.97	-	19.53	-	60.00	50.00	-40.47	-

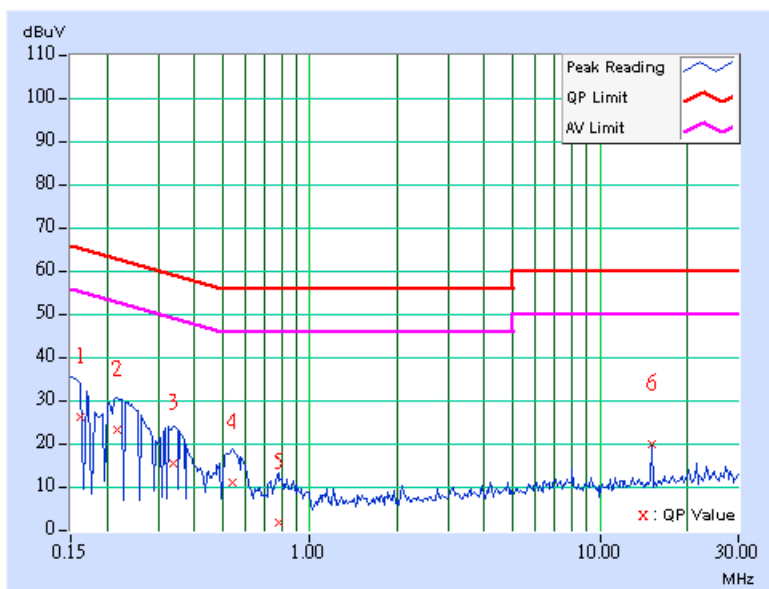
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line 2
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	TEST MODE	B
TESTED BY	Jay Hsu		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.162	0.11	26.00	-	26.11	-	65.38	55.38	-39.27	-
2	0.216	0.11	23.02	-	23.13	-	62.96	52.96	-39.83	-
3	0.338	0.11	15.02	-	15.13	-	59.26	49.26	-44.13	-
4	0.545	0.14	10.52	-	10.66	-	56.00	46.00	-45.34	-
5	0.783	0.19	1.24	-	1.43	-	56.00	46.00	-54.57	-
6	15.133	0.46	19.71	-	20.17	-	60.00	50.00	-39.83	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



4.2 RADIATED EMISSIONS MEASUREMENT

4.2.1 LIMITS OF FUNDAMENTAL FREQUENCY MEASUREMENT

The maximum transmitter output power is 0.75 W.

4.2.2 LIMITS OF UNWANTED RADIATED EMISSIONS MEASUREMENT

The unwanted emissions should be less than the transmitter field strength by at least $56 + 10 \log (TP)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250%.

4.2.3 TEST INSTRUMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	100033	May. 19, 2006
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Dec. 05, 2006
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Jun. 01, 2006
HORN Antenna SCHWARZBECK	9120D	9120D-408	Jan. 08, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Jan. 23, 2006
Preamplifier Agilent	8447D	2944A10633	Nov. 04, 2006
Preamplifier Agilent	8449B	3008A01964	Oct. 30, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218183/4	Jan. 26, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218195/4	Jan. 26, 2006
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 2.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The VCCI Site Registration No. is R-237.
 5. The IC Site Registration No. is IC4924-3.

4.2.4 TEST PROCEDURE

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the receiving antenna, which was mounted on antenna tower and its position at 0.8 m above the ground.
3. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading and recorded the value.
4. Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At the lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.25m above the ground.
5. The signal generator level has to be adjusted to have the same emission nature.
6. The radiated power can be calculated via the factor and antenna gain.
7. Repeat step 1-6 for horizontal polarization.

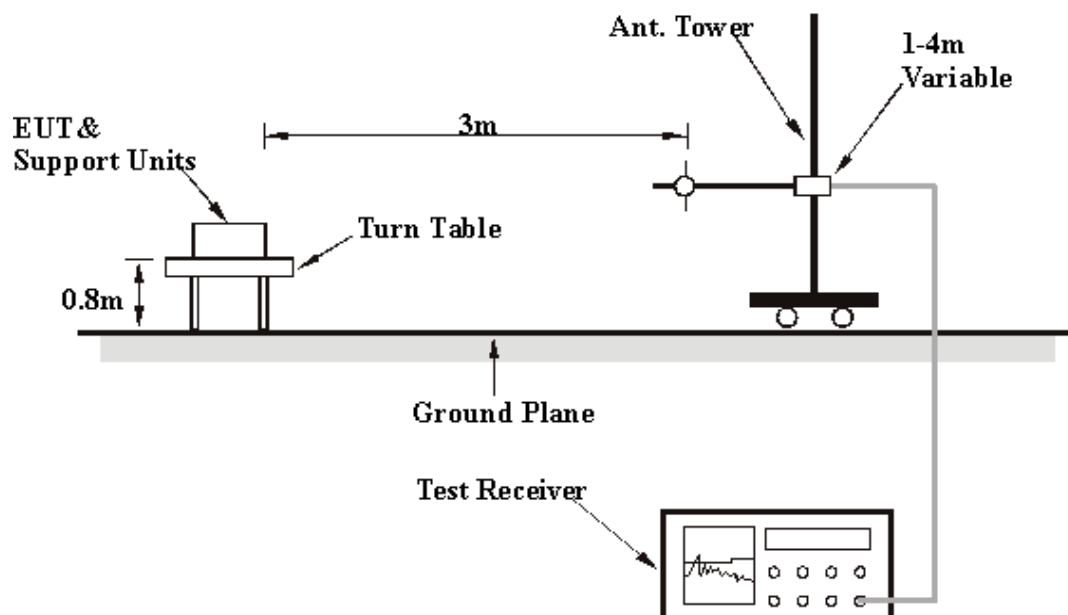
NOTE:

The resolution bandwidth of spectrum analyzer is 100kHz and the video bandwidth is 100kHz for the transmitter output measurement.

4.2.5 DEVIATION FROM TEST STANDARD

No deviation

4.2.6 TEST SETUP



For the actual test configuration, please refer to the related item in this test report - Photographs of the Test Configuration.

4.2.7 EUT OPERATING CONDITION

Test mode A:

Enable the EUT under transmission condition continuously.

Test mode B:

Enable the EUT under charging condition continuously.

4.2.8 TEST RESULTS

Below 1GHz Worst-Case Data (Power from battery)

CHANNEL	Channel 74	FREQUENCY RANGE	Below 1000 MHz
MODULATION TYPE	PPM	DETECTOR FUNCTION	Peak
INPUT POWER (SYSTEM)	9.6Vdc	TEST MODE	A
ENVIRONMENTAL CONDITIONS	20 deg. C, 68 % RH, 991 hPa	TESTED BY	Long Chen

No.	Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Margin (dB)
1	*75.67	16.93	28.75	-11.82

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Emission Level (dBUV)	Limit (dBm)	Margin (dB)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	150.52	68.24 PK	-26.00	-0.98	-18.98	-8.00	-26.98
2	226.33	53.74 PK	-26.00	-15.48	-33.41	-8.07	-41.48
3	302.14	59.77 PK	-26.00	-9.45	-27.27	-8.18	-35.45
4	377.96	53.73 PK	-26.00	-15.49	-33.59	-7.90	-41.49
5	453.77	50.63 PK	-26.00	-18.59	-36.58	-8.01	-44.59
6	529.58	52.08 PK	-26.00	-17.14	-35.02	-8.12	-43.14
7	605.39	56.3 PK	-26.00	-12.92	-30.72	-8.20	-38.92
8	681.2	60.19 PK	-26.00	-9.03	-26.79	-8.24	-35.03
9	757.01	62.82 PK	-26.00	-6.40	-24.16	-8.24	-32.4
10	832.83	52.16 PK	-26.00	-17.06	-34.72	-8.34	-43.06
11	898.92	46.80 PK	-26.00	-22.42	-40.02	-8.40	-48.42
12	908.64	48.17 PK	-26.00	-21.05	-38.55	-8.50	-47.05
13	984.45	64.92 PK	-26.00	-4.30	-21.8	-8.50	-30.3

NOTE:

1. Emission level(dBm)=Raw Value(dBm) + Correction Factor(dB).
2. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
3. Margin value = Power Value - Limit value
4. “ * “ : Fundamental Frequency (主頻)
5. Unwanted emissions more than 20kHz from the channel center frequency shall be attenuated at least $56 + \log(\text{maximum output power}) = 16.93 - (56 + 10\log(0.04932)) = -26.00\text{dBm}$

CHANNEL	Channel 74	FREQUENCY RANGE	Below 1000 MHz
MODULATION TYPE	PPM	DETECTOR FUNCTION	Peak
INPUT POWER (SYSTEM)	9.6Vdc	TEST MODE	A
ENVIRONMENTAL CONDITIONS	20 deg. C, 68 % RH, 991 hPa	TESTED BY	Long Chen

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	Margin (dB)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	59.16	40.56 PK	-26.00	-28.66	-46.75	-7.91	-54.66
2	150.52	56.24 PK	-26.00	-12.98	-30.98	-8.00	-38.98
3	302.14	47.26 PK	-26.00	-21.96	-39.78	-8.18	-47.96
4	377.96	44.99 PK	-26.00	-24.23	-42.33	-7.90	-50.23
5	453.77	44.73 PK	-26.00	-24.49	-42.48	-8.01	-50.49
6	529.58	45.03 PK	-26.00	-24.19	-42.07	-8.12	-50.19
7	681.2	49.27 PK	-26.00	-19.95	-37.71	-8.24	-45.95
8	757.01	54.25 PK	-26.00	-14.97	-32.73	-8.24	-40.97
9	832.83	47.18 PK	-26.00	-22.04	-39.7	-8.34	-48.04
10	898.92	53.21 PK	-26.00	-16.01	-33.61	-8.40	-42.01
11	908.64	46.88 PK	-26.00	-22.34	-39.84	-8.50	-48.34
12	984.45	60.25 PK	-26.00	-8.97	-26.47	-8.50	-34.97

NOTE:

1. Emission level(dBm)=Raw Value(dBm) + Correction Factor(dB).
2. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
3. Margin value = Power Value - Limit value
4. “*” : Fundamental Frequency (主頻)
5. Unwanted emissions more than 20kHz from the channel center frequency shall be attenuated at least $56 + \log(\text{maximum output power}) = 16.93 - (56 + 10\log(0.04764)) = -26.00\text{dBm}$

Below 1GHz Worst-Case Data (Power from adapter)

CHANNEL	Channel 74	FREQUENCY RANGE	Below 1000 MHz
MODULATION TYPE	PPM	DETECTOR FUNCTION	Peak
INPUT POWER (SYSTEM)	120Vac, 60Hz	TEST MODE	B
ENVIRONMENTAL CONDITIONS	20 deg. C, 68 % RH, 991 hPa	TESTED BY	Long Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	Margin (dB)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	59.16	51.54 PK	-26.00	-17.68	-35.77	-7.91	-43.68
2	150.52	69.05 PK	-26.00	-0.17	-18.17	-8.00	-26.17
3	166.07	39.63 PK	-26.00	-29.59	-47.57	-8.02	-55.59
4	226.33	60.50 PK	-26.00	-8.72	-26.65	-8.07	-34.72
5	302.14	65.84 PK	-26.00	-3.38	-21.2	-8.18	-29.38
6	377.96	54.18 PK	-26.00	-15.04	-33.14	-7.90	-41.04
7	453.77	52.42 PK	-26.00	-16.80	-34.79	-8.01	-42.8
8	529.58	51.01 PK	-26.00	-18.21	-36.09	-8.12	-44.21
9	605.39	51.80 PK	-26.00	-17.42	-35.22	-8.20	-43.42
10	681.2	59.23 PK	-26.00	-9.99	-27.75	-8.24	-35.99
11	757.01	62.17 PK	-26.00	-7.05	-24.81	-8.24	-33.05
12	832.83	53.64 PK	-26.00	-15.58	-33.24	-8.34	-41.58
13	908.64	48.08 PK	-26.00	-21.14	-38.64	-8.50	-47.14
14	959.18	45.13 PK	-26.00	-24.09	-41.59	-8.50	-50.09
15	984.45	65.25 PK	-26.00	-3.97	-21.47	-8.50	-29.97

NOTE:

1. Emission level(dBm)=Raw Value(dBm) + Correction Factor(dB).
2. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
3. Margin value = Power Value - Limit value
4. “ * ” : Fundamental Frequency (主頻)
5. Unwanted emissions more than 20kHz from the channel center frequency shall be attenuated at least $56 + \log(\text{maximum output power}) = 16.93 - (56 + 10\log(0.04764)) = -26.00\text{dBm}$

CHANNEL	Channel 74	FREQUENCY RANGE	Below 1000 MHz
MODULATION TYPE	PPM	DETECTOR FUNCTION	Peak
INPUT POWER (SYSTEM)	120Vac, 60Hz	TEST MODE	B
ENVIRONMENTAL CONDITIONS	20 deg. C, 68 % RH, 991 hPa	TESTED BY	Long Chen

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	Margin (dB)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	59.16	57.77 PK	-26.00	-11.45	-29.54	-7.91	-37.45
2	150.52	68.29 PK	-26.00	-0.93	-18.93	-8.00	-26.93
3	226.33	55.58 PK	-26.00	-13.64	-31.57	-8.07	-39.64
4	302.14	53.26 PK	-26.00	-15.96	-33.78	-8.18	-41.96
5	453.77	50.50 PK	-26.00	-18.72	-36.71	-8.01	-44.72
6	529.58	47.61 PK	-26.00	-21.61	-39.49	-8.12	-47.61
7	605.39	48.05 PK	-26.00	-21.17	-38.97	-8.20	-47.17
8	681.2	50.41 PK	-26.00	-18.81	-36.57	-8.24	-44.81
9	757.01	57.49 PK	-26.00	-11.73	-29.49	-8.24	-37.73
10	832.83	50.10 PK	-26.00	-19.12	-36.78	-8.34	-45.12
11	916.41	50.63 PK	-26.00	-18.59	-36.09	-8.50	-44.59
12	984.45	61.68 PK	-26.00	-7.54	-25.04	-8.50	-33.54

NOTE:

1. Emission level(dBm)=Raw Value(dBm) + Correction Factor(dB).
2. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
3. Margin value = Power Value - Limit value
4. “*” : Fundamental Frequency (主頻)
5. Unwanted emissions more than 20kHz from the channel center frequency shall be attenuated at least $56 + \log(\text{maximum output power}) = 16.93 - (56 + 10\log(0.04764)) = -26.00\text{dBm}$

4.3 FREQUENCY STABILITY

4.3.1 LIMIT OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.002% of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4.3.2 TEST INSTRUMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Feb. 09, 2006
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	Jul. 18, 2006

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

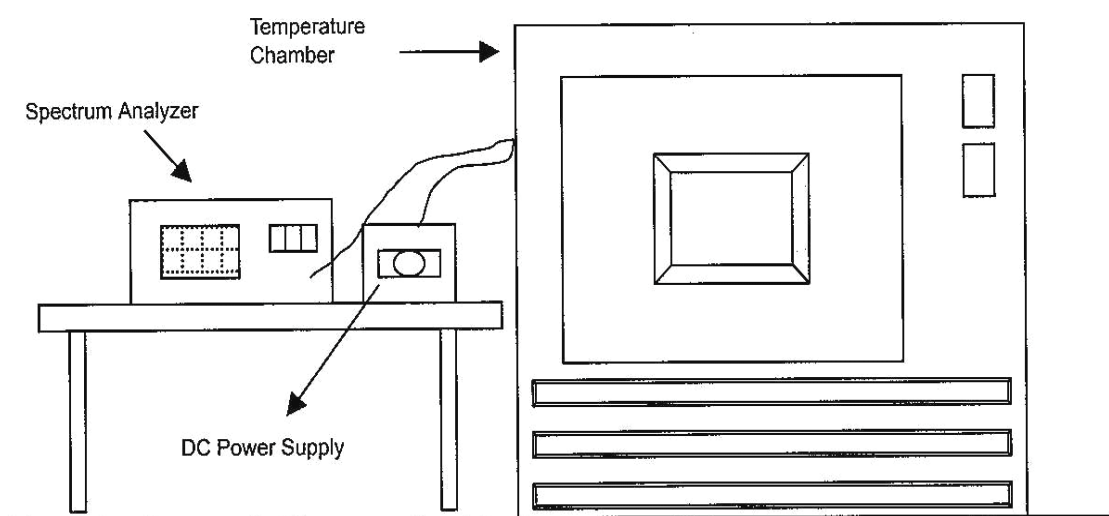
4.3.3 TEST PROCEDURE

- The EUT was situated inside the environmental test chamber and supply the EUT with nominal DC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITION

The EUT was set to enable EUT under transmission condition continuously at specific channel frequency.

4.3.7 TEST RESULTS

Operating frequency: 75.67MHz				Limit: $\pm 0.002\%$	
Temp. (°C)	Power supply (Vdc)	0 minute		2 minute	
		(MHz)	(%)	(MHz)	(%)
50	11.04	75.66886	-0.0015065	75.66884	-0.0015330
	9.60	75.66877	-0.0016255	75.66876	-0.0016387
	8.16	75.66860	-0.0018501	75.66862	-0.0018237
40	11.04	75.66902	-0.0012951	75.66901	-0.0013083
	9.60	75.66891	-0.0014405	75.66894	-0.0014008
	8.16	75.66884	-0.0015330	75.66886	-0.0015065
30	11.04	75.66916	-0.0011101	75.66917	-0.0010969
	9.60	75.66909	-0.0012026	75.66910	-0.0011894
	8.16	75.66896	-0.0013744	75.66893	-0.0014140
20	11.04	75.66920	-0.0010572	75.66923	-0.0010176
	9.60	75.66914	-0.0011365	75.66913	-0.0011497
	8.16	75.66906	-0.0012422	75.66907	-0.0012290
10	11.04	75.66926	-0.0009779	75.66926	-0.0009779
	9.60	75.66919	-0.0010704	75.66916	-0.0011101
	8.16	75.66905	-0.0012555	75.66906	-0.0012422
0	11.04	75.66935	-0.0008590	75.66938	-0.0008193
	9.60	75.66921	-0.0010440	75.66922	-0.0010308
	8.16	75.66913	-0.0011497	75.66912	-0.0011629
-10	11.04	75.66939	-0.0008061	75.66938	-0.0008193
	9.60	75.66930	-0.0009251	75.66932	-0.0008986
	8.16	75.66923	-0.0010176	75.66922	-0.0010308
-20	11.04	75.66955	-0.0005947	75.66954	-0.0006079
	9.60	75.66943	-0.0007533	75.66946	-0.0007136
	8.16	75.66933	-0.0008854	75.66935	-0.0008590
-30	11.04	75.66961	-0.0005154	75.66963	-0.0004890
	9.60	75.66956	-0.0005815	75.66954	-0.0006079
	8.16	75.66941	-0.0007797	75.66944	-0.0007401

Operating frequency: 75.67MHz				Limit: $\pm 0.002\%$	
Temp. (°C)	Power supply (Vdc)	5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)
50	11.04	75.66882	-0.0015594	75.66885	-0.0015198
	9.60	75.66878	-0.0016123	75.66875	-0.0016519
	8.16	75.66862	-0.0018237	75.66863	-0.0018105
40	11.04	75.66901	-0.0013083	75.66903	-0.0012819
	9.60	75.66893	-0.0014140	75.66900	-0.0013268
	8.16	75.66885	-0.0015198	75.66882	-0.0015594
30	11.04	75.66918	-0.0010837	75.66917	-0.0010969
	9.60	75.66909	-0.0012026	75.66912	-0.0011629
	8.16	75.66894	-0.0014008	75.66898	-0.0013480
20	11.04	75.66922	-0.0010308	75.66924	-0.0010044
	9.60	75.66912	-0.0011629	75.66916	-0.0011101
	8.16	75.66905	-0.0012555	75.66904	-0.0012687
10	11.04	75.66927	-0.0009647	75.66929	-0.0009383
	9.60	75.66919	-0.0010704	75.66918	-0.0010837
	8.16	75.66905	-0.0012555	75.66907	-0.0012290
0	11.04	75.66937	-0.0008326	75.66938	-0.0008193
	9.60	75.66921	-0.0010440	75.66924	-0.0010044
	8.16	75.66914	-0.0011365	75.66913	-0.0011497
-10	11.04	75.66941	-0.0007797	75.66942	-0.0007665
	9.60	75.66932	-0.0008986	75.66935	-0.0008590
	8.16	75.66923	-0.0010176	75.66924	-0.0010044
-20	11.04	75.66956	-0.0005815	75.66958	-0.0005550
	9.60	75.66948	-0.0006872	75.66947	-0.0007004
	8.16	75.66937	-0.0008326	75.66939	-0.0008061
-30	11.04	75.66964	-0.0004757	75.66963	-0.0004890
	9.60	75.66956	-0.0005815	75.66952	-0.0006343
	8.16	75.66946	-0.0007136	75.66947	-0.0007004

4.4 EMISSION MASK, BANDWIDTH AND OUTPUT POWER

4.4.1 LIMIT OF MASK AND BANDWIDTH MEASUREMENT

An R/C transmitter is allowed to transmit any appropriate non-voice emission, which meets the emission limitations for an R/C transmitter. The authorized bandwidth for any emission type transmitted by an R/C transmitter is 8kHz.

4.4.2 TEST INSTRUMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2006

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

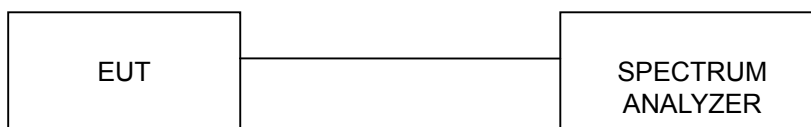
4.4.3 TEST PROCEDURE

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set the resolution bandwidth (300Hz) and video bandwidth to (1kHz) and select Peak function to scan the channel frequency.
- c. The mask and 26dBc bandwidth was measured and recorded.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITION

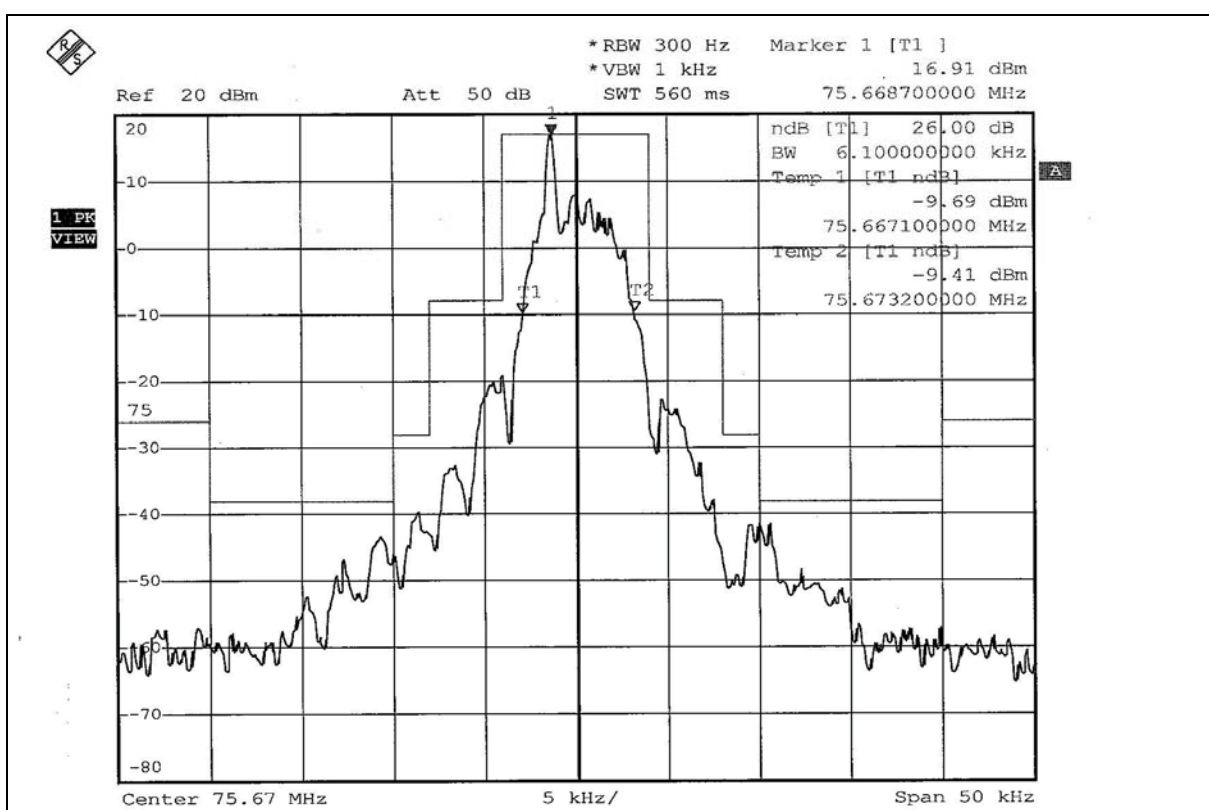
Same as item 4.3.6

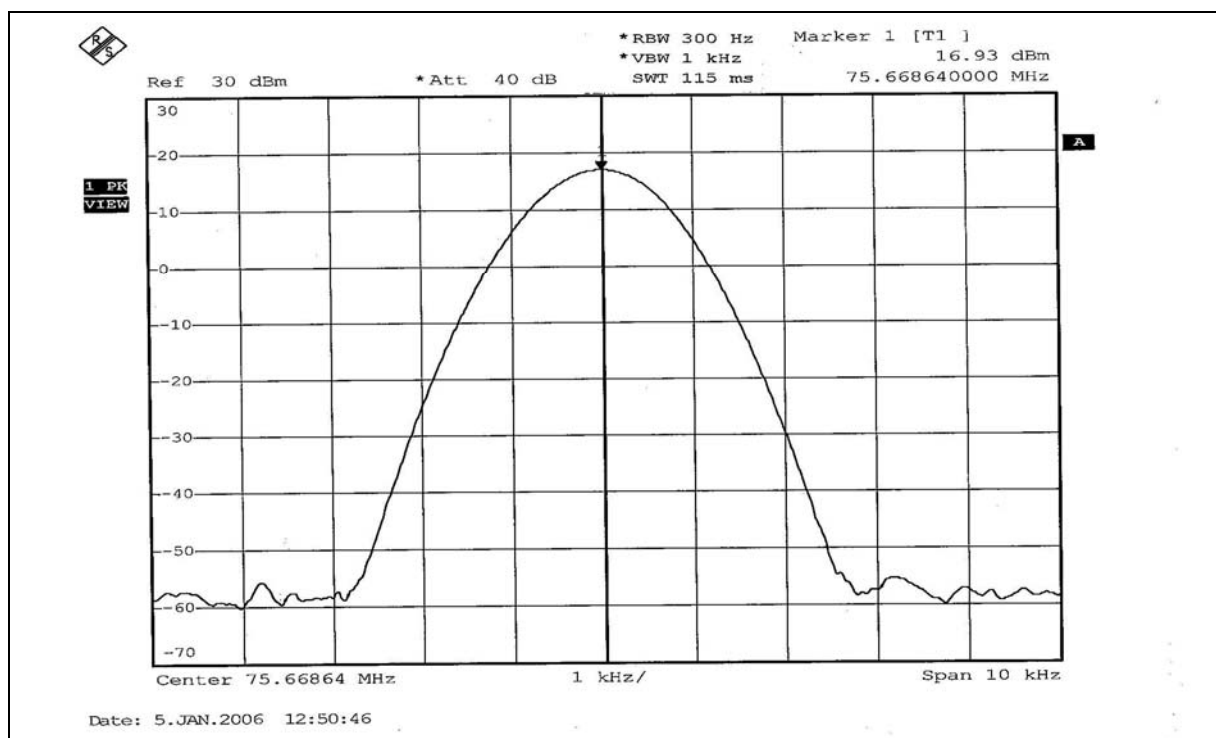
4.4.7 TEST RESULTS

The occupied bandwidth of the EUT complied with the emission bandwidth requirement. During testing, all control switches and buttons were investigated for the worse case modulated signal. The occupied bandwidth plot submitted was the worst case condition.

CHANNEL FREQUENCY (MHz)	99% OBW BANDWIDTH (kHz)	MAXIMUM LIMIT (kHz)	PASS/FAIL
75.67	6.100	8	PASS

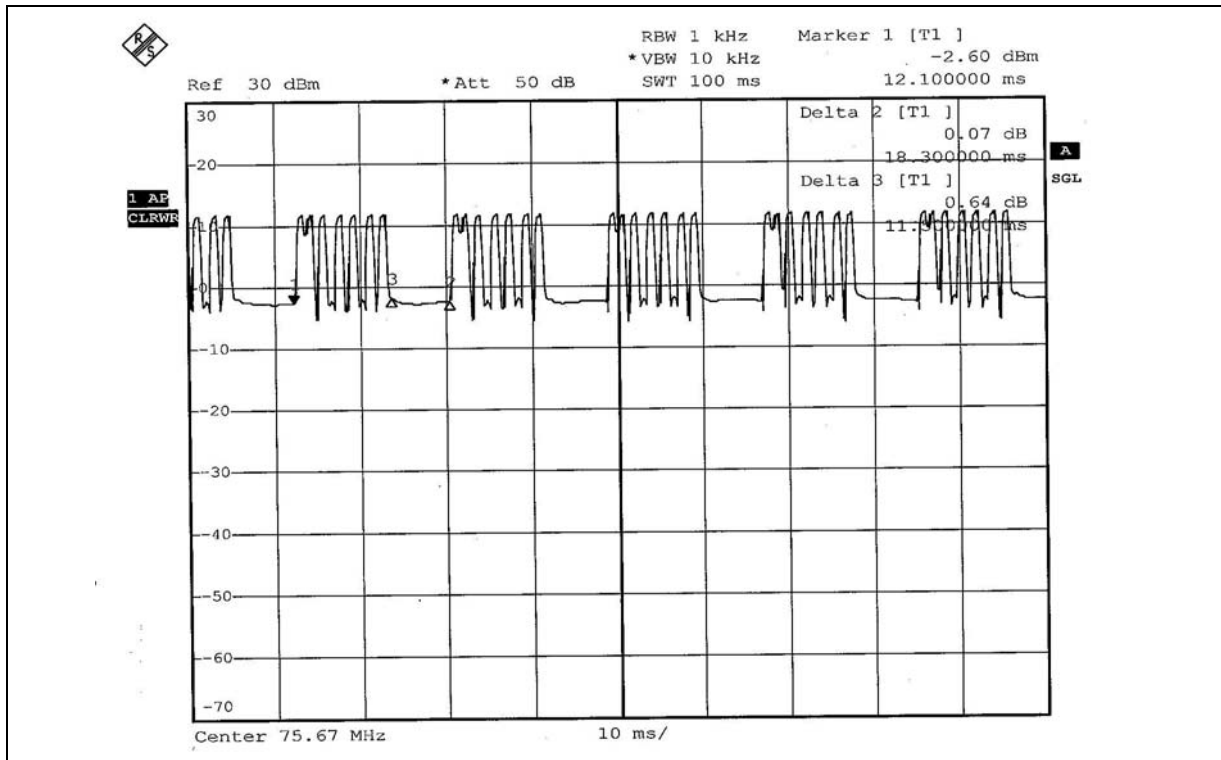
Refer to following image for test plots.





4.5 MODULATION CHARACTERISTICS

Refer to following image for test plots.





4.6 CRYSTAL ACCESS RESTRICTIONS

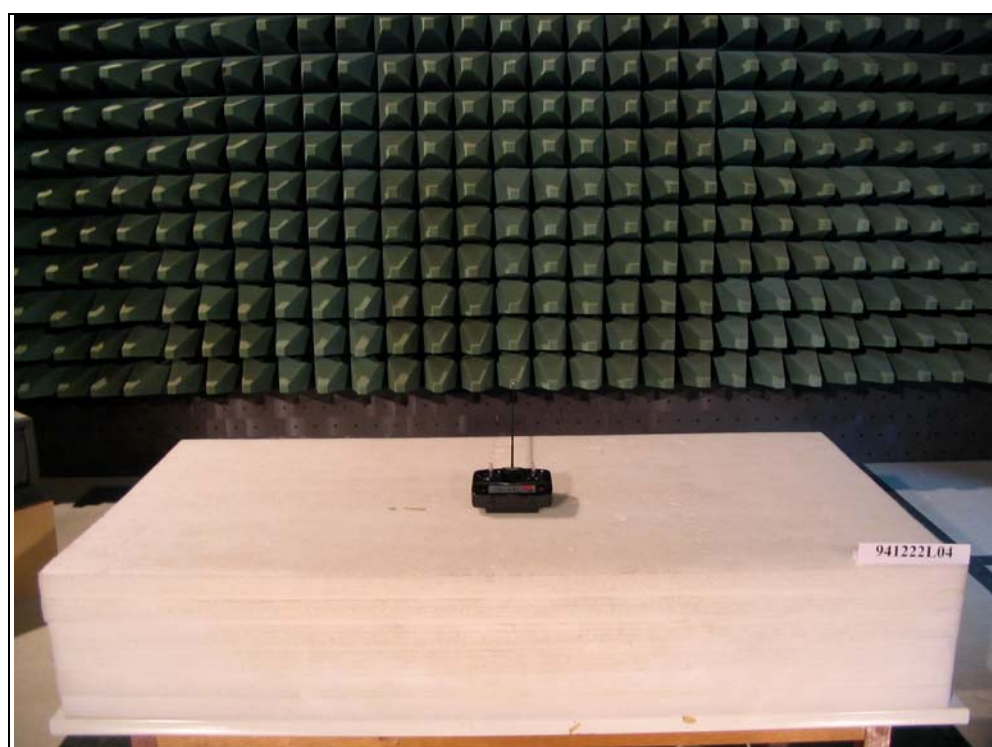
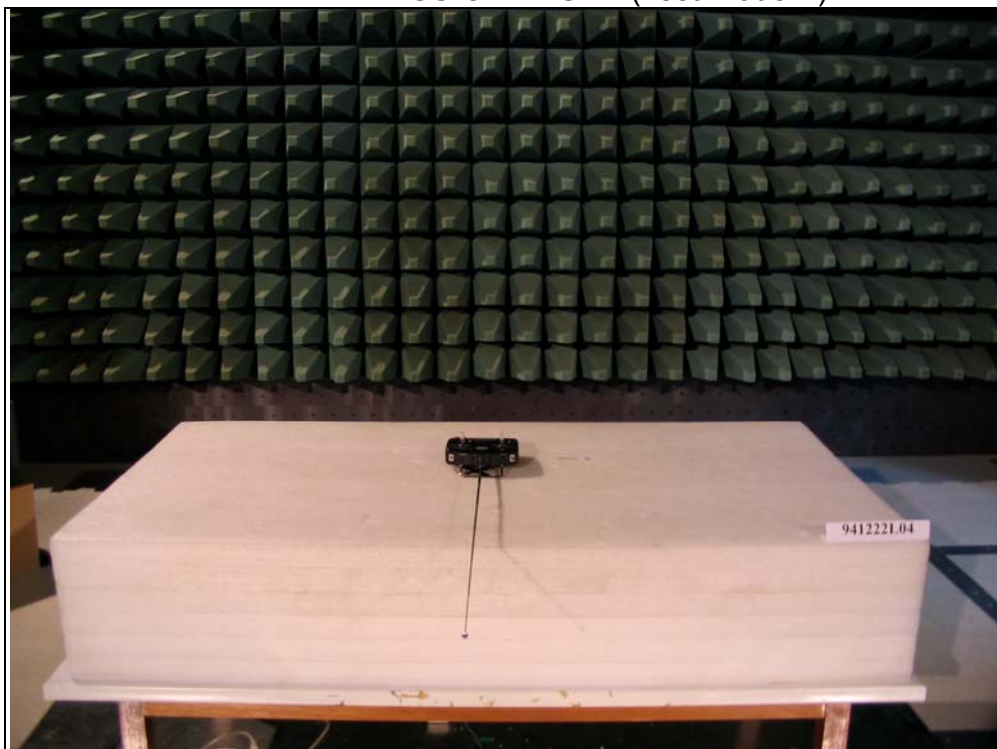
The EUT has no control knobs, switches, or other type of adjustments either on the operating front panel or on the exterior of the transmitter enclosure which when manipulated can result in violation of the rules. The plug in crystal of the transmitter is glued and therefore accessible to the user.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

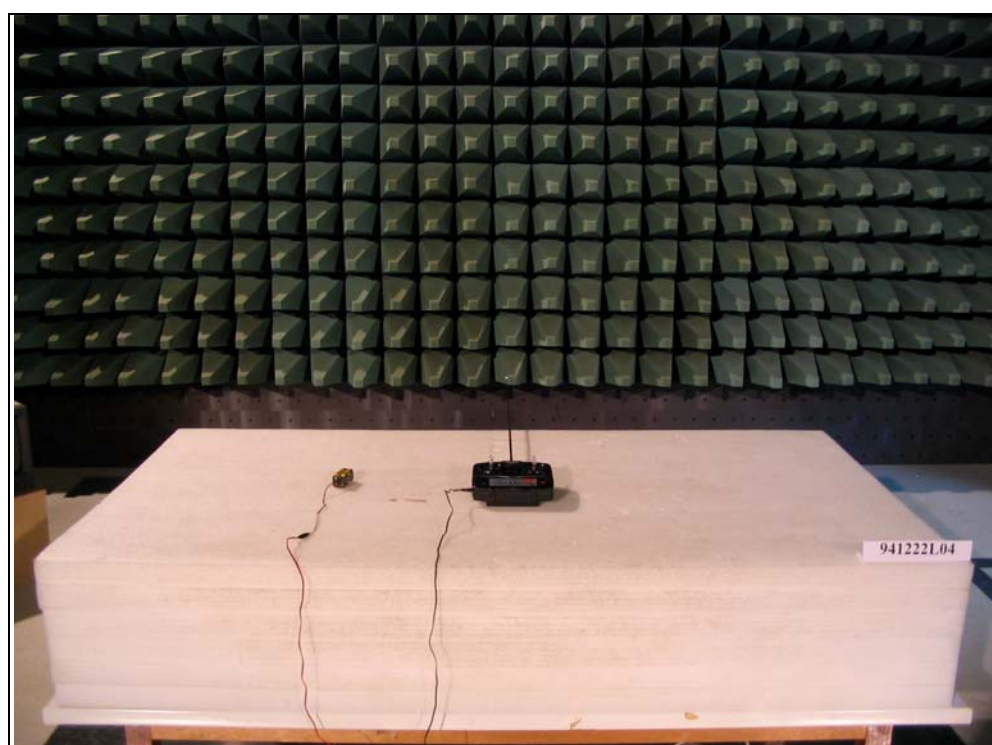
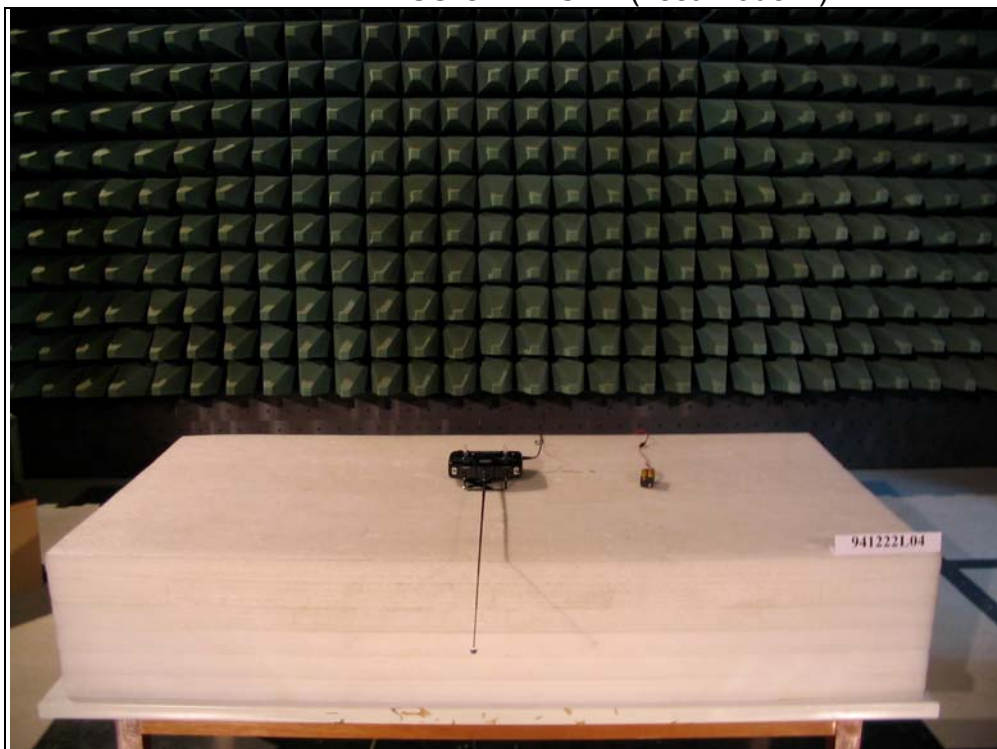
CONDUCTED EMISSION TEST (Test mode B)



RADIATED EMISSION TEST (Test mode A)



RADIATED EMISSION TEST (Test mode B)



6 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC, NVLAP, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.
If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343
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Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232
Fax: 886-3-3185050

Linko RF Lab.

Tel: 886-3-3270910
Fax: 886-3-3270892

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.

APPENDIX-A

MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.