



**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A11111502
Report No.: FCCA11111502
FCC ID : HLG-PAG-QT
Page: 1 of 28
Date: Dec. 16, 2011

Product Name: Top Mount Alpha Pager
Model No.: PAG-QT
Applicant: JTECH COMMUNICATIONS, INC.
6413 CONGRESS AVE. STE 150 BOCA
RATON FL. 33487 U.S.A
Date of Receipt: Nov. 15, 2011
Finished date of Test: Dec. 16, 2011
Applicable Standards: 47 CFR Part 15, Subpart B, Class B
ANSI C63.4: 2003

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : Richard Lin , Date: 2011/12/16
(Richard Lin)

Approved By : Johnson Ho , Date: 12/16/2011
(Johnson Ho, Director)





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1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- DC power source from battery: DC power source, 2.4 Vdc, was used during the test.

1.3 EUT MODIFICATION

- No modification in SRT Lab.



TEST REPORT

2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Top Mount Alpha Pager
MODEL NO.	PAG-QT
POWER SUPPLY	2.4Vdc, 280mA Charge Battery
CABLE	NA
FREQUENCY BAND	UHF BAND
CARRIER FREQUENCY	430~474MHz
NUMBER OF CHANNEL	1
RATED RF OUTPUT POWER	48.8 dBuV/m (Rx)
CHANNEL SPACING	12.5KHZ
MODULATION TYPE	FSK
MODE OF OPERATION	Simplex
ANTENNA TYPE	Loop antenna
ANTENNA GAIN	0 dBi

NOTE : For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.2 DESCRIPTION OF EUT INTERNAL DEVICE

DEVICE	BRAND / MAKER	MODEL #	FCC ID / DOC	REMARK
N/A				

2.3 EUT OPERATING CONDITION

1. Setup the EUT and all peripheral devices .
2. Turn on the power of all equipment and EUT.
3. Set the EUT under continuous transmission condition, standby and link mode.
4. The EUT was set to the highest available power level.



2.4 DESCRIPTION OF TEST MODE

Test Mode	Frequency
Receiving-1	430MHz
Receiving-2	463MHz
Receiving-3	474MHz
Standby	N/A

NOTE : The axis X,Y and Z we evaluate in chamber, the X axis is worst case.

X axis:



Y axis:



Z axis:



2.5 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement of ANSI C63.4:2003. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #	FCC ID/DOC	CABLE
1	Pager Tester	Credix	PT-7200	N/A	1.5m unshielded AC cable

NOTE : For the actual test configuration, please refer to the photos of testing.



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3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a wireless product. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart B, Class B

ANSI C63.4: 2003

All tests have been performed and recorded as the above standards.



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4. TECHNICAL CHARACTERISTICS TEST

4.1 CONDUCTED EMISSION TEST

The test item was not performed, because the EUT used 2.4Vdc charge battery as power source.



4.2 RADIATED EMISSION TEST

4.2.1 LIMIT

FCC Part15, Subpart B Section 15.109 limit of radiated emission for frequency below 1000MHz. Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values: :

FREQUENCY (MHz)	DISTANCE (m)	FIELD TRENGTH (microvolts/meter)	FIELD STRENGTH (dB μ V/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

FCC Part 15, Subpart B limit of radiated emission for frequency above 1 GHz (Close)

FREQUENCY (MHz)	Class A (dB μ V/m) (at 3m)	Class B (dB μ V/m) (at 3m)
	AV dB μ V/m	AV dB μ V/m
Above 1000	60.0	54.0

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB μ V/m) = 20 log Emission level (μ V/m).
3. The device operates or tunes above 1000MHz, upper frequency of measurement shall be 5th harmonic of the highest frequency or 40GHz and whichever is lower.
4. The radiated emission limits of digital devices may be shown to comply with the standards contained in Third Edition of the CISPR 22.

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4.2.2 TEST EQUIPMENT

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

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	20 MHz TO 1000 MHz	ROHDE & SCHWARZ	ESVS30 / 841977/003	DEC. 2011 ETC
BI-LOG ANTENNA	30 MHz TO 2 GHz	SCHAFFNER	CBL6141A / 4181	MAY 2012 ETC
OATS	3 – 10 M MEASUREMENT	SRT	SRT-2	JUN. 2012 SRT
COAXIAL CABLE	30M	TIMES	LMR-400 / #30M	MAY 2012 ETC
FILTER	2 LINE, 30A	FIL.COIL	FC-943 / 869	NCR
SPECTRUM ANALYZER	9K-40GHz	R&S	FSP40/ 100093	DEC. 2011 ETC
PRE-AMPLIFIER	1 GHz TO 26.5 GHz	HP	8449B/ 3008A01995	JAN. 2012 ETC
HORN ANTENNA	1 GHz TO 18 GHz	EMCO	3115/ 6881	JAN. 2012 ETC
HORN ANTENNA	18 GHz TO 40 GHz	EMCO	3116/ 00032255	JAN. 2012 ETC
K-TYPE CABLE	1M	HUBER SUHNER	SF 102-40/2*11 /23934/2	OCT. 2012 ETC
Loop Antenna	9KHz TO 30MHz	ETS.LINDGREN	6512/ 00063889	JUN. 2012 ETC

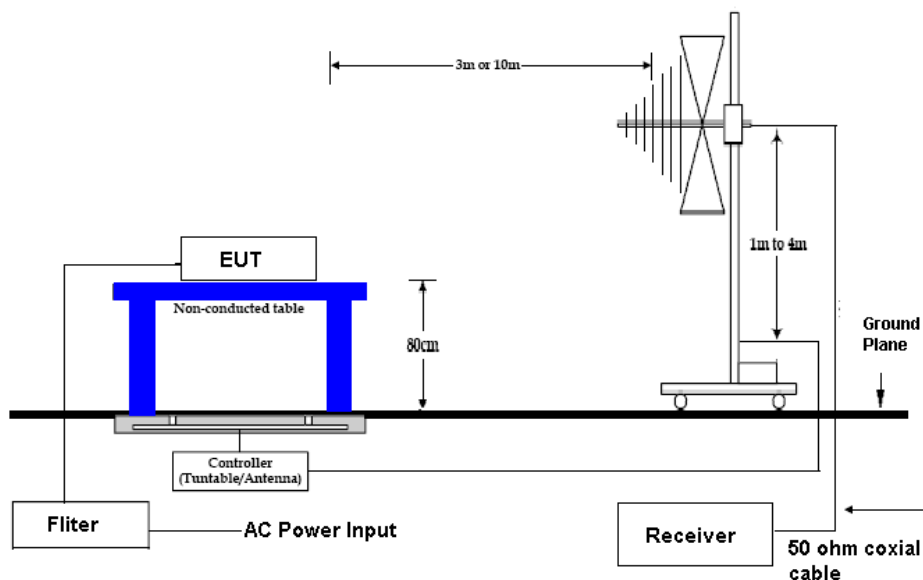
NOTE :

1. The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

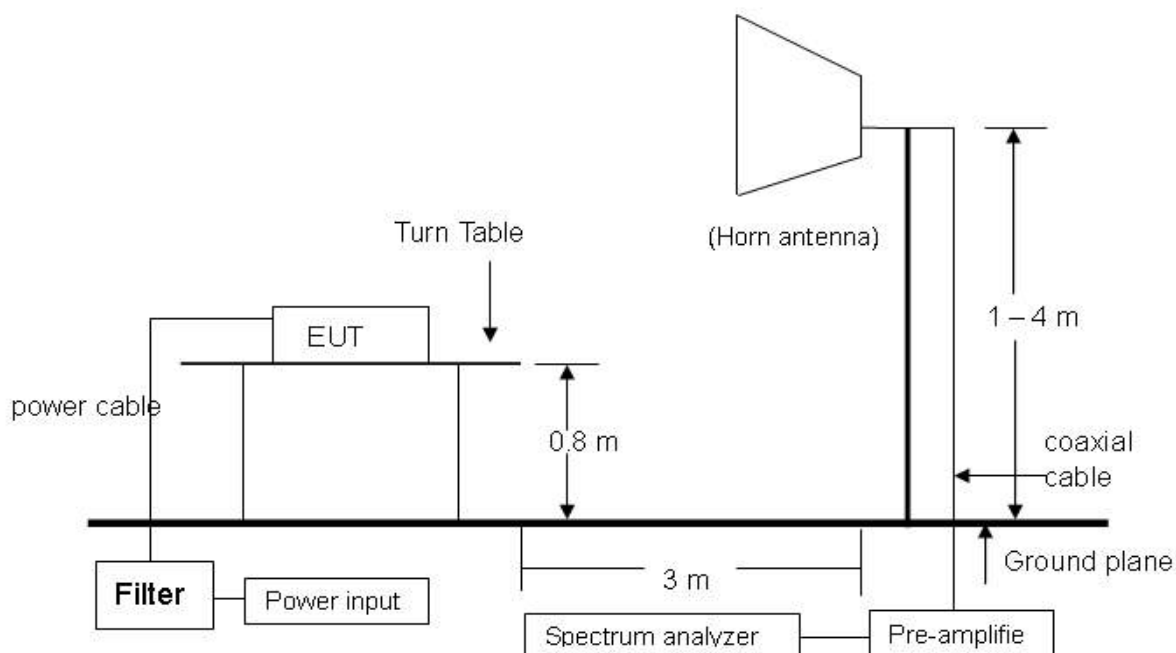


4.2.3 TEST SET-UP

30MHz ~ 1GHz



Above 1GHz



NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
For the actual test configuration, please refer to the photos of testing.

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4.2.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR 22:2003.

The measurements were made at an open area test site with 3 meter measurement distance under 1 GHz and with 3m distance above 1GHz.

The frequency spectrum measured started from 30 MHz to 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver.

Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver.

The EUT system was operated in all typical methods by users.

The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data.

The procedure is referred on the test procedure of SRT LAB.



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4.2.5 TEST RESULT

Temperature:	20 °C	Humidity:	54 %RH
Frequency Range:	30M – 1000MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	1
Test By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
55.4780	1.15	11.70	12.2	25.1	40.0	-15.0	221	3.44
438.1920	2.95	17.06	10.7	30.7	46.0	-15.3	183	2.96
585.7740	3.47	19.30	5.2	28.0	46.0	-18.0	67	2.73
829.6380	4.22	22.56	3.7	30.5	46.0	-15.5	104	2.35
880.2910	4.42	23.02	3.2	30.6	46.0	-15.4	325	2.06
961.4540	4.62	24.29	6.9	35.8	54.0	-18.2	266	1.92

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
35.1580	0.95	21.50	5.0	27.5	40.0	-12.6	138	1.66
76.5120	1.26	8.12	13.0	22.4	40.0	-17.6	54	1.98
438.7250	2.95	17.06	14.0	34.0	46.0	-12.0	91	2.34
673.8140	3.75	20.48	3.2	27.4	46.0	-18.6	127	2.59
828.5590	4.21	22.55	7.0	33.8	46.0	-12.2	246	2.73
936.0730	4.57	23.89	3.8	32.3	46.0	-13.7	175	3.06

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



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Temperature:	20 °C	Humidity:	54 %RH
Frequency Range:	30M – 1000MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	1(Fundamental)
Test By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
430(F)	2.92	16.90	3.8	23.6	46.0	-22.4	236	3.04
860	4.34	22.94	4.3	31.6	46.0	-14.4	81	2.17

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
430(F)	2.92	16.90	3.7	23.5	46.0	-22.5	149	2.38
860	4.34	22.94	4.2	31.5	46.0	-14.5	309	2.85

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



TEST REPORT

Temperature:	20 °C	Humidity:	54 %RH
Frequency Range:	30M – 1000MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	2
Test By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
145.0640	1.70	12.65	14.9	29.3	43.5	-14.3	129	3.54
438.7590	2.95	17.06	13.2	33.2	46.0	-12.8	304	3.12
585.0120	3.47	19.30	4.7	27.5	46.0	-18.5	257	2.88
854.3380	4.32	22.92	3.8	31.0	46.0	-15.0	156	2.46
900.4970	4.50	23.10	3.9	31.5	46.0	-14.5	212	2.19
926.0810	4.55	23.67	4.3	32.5	46.0	-13.5	335	2.03

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
44.0260	1.04	16.96	5.2	23.2	40.0	-16.8	171	1.86
68.3580	1.20	8.30	13.5	23.0	40.0	-17.0	193	2.07
115.4030	1.50	11.45	12.9	25.9	43.5	-17.7	245	2.47
438.7150	2.95	17.06	12.4	32.4	46.0	-13.6	263	2.66
847.8890	4.29	22.85	3.6	30.7	46.0	-15.3	304	2.84
937.6940	4.57	23.91	3.9	32.4	46.0	-13.6	96	3.25

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



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Temperature:	20 °C	Humidity:	54 %RH
Frequency Range:	30M – 1000MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	2(Fundamental)
Test By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
463(F)	3.05	17.48	4.0	24.5	46.0	-21.5	55	3.15
926	4.55	23.67	4.5	32.7	46.0	-13.3	127	3.12

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
463(F)	3.05	17.48	3.9	24.4	46.0	-21.6	202	2.64
926	4.55	23.67	3.4	31.6	46.0	-14.4	315	3.24

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



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Temperature:	20 °C	Humidity:	54 %RH
Frequency Range:	30M – 1000MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	3
Test By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
55.2770	1.15	11.70	12.6	25.5	40.0	-14.6	69	3.62
144.5960	1.70	12.66	10.1	24.5	43.5	-19.0	241	3.25
438.9040	2.95	17.06	10.9	30.9	46.0	-15.1	309	2.94
585.1680	3.47	19.30	5.8	28.6	46.0	-17.4	82	2.51
828.5060	4.21	22.55	3.5	30.3	46.0	-15.7	133	2.27
880.3970	4.42	23.02	3.2	30.6	46.0	-15.4	218	2.18

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
35.1860	0.95	21.50	4.1	26.6	40.0	-13.5	157	1.93
76.4170	1.26	8.12	11.4	20.8	40.0	-19.2	112	2.15
438.8260	2.95	17.06	14.2	34.2	46.0	-11.8	275	2.57
829.9040	4.22	22.56	11.4	38.2	46.0	-7.8	312	2.73
836.7220	4.24	22.68	11.3	38.2	46.0	-7.8	99	2.91
948.1270	4.60	24.16	3.3	32.1	46.0	-13.9	207	3.38

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



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Temperature:	20 °C	Humidity:	54 %RH
Frequency Range:	30M – 1000MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	3(Fundamental)
Test By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
474(F)	3.10	17.64	3.8	24.5	46.0	-21.5	166	2.75
948	4.60	24.16	3.7	32.5	46.0	-13.5	123	2.04

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
474(F)	3.10	17.64	3.4	24.1	46.0	-21.9	105	2.69
948	4.60	24.16	3.6	32.4	46.0	-13.6	324	3.37

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



TEST REPORT

Temperature:	21 °C	Humidity:	56 %RH
Frequency Range:	30M – 1000MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	4
Test By:	Richard Lin	Tested Date:	Dec. 12, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
44.2480	1.04	16.96	3.5	21.5	40.0	-18.5	287	2.86
144.5920	1.70	12.66	8.6	23.0	43.5	-20.5	306	2.64
438.1620	2.95	17.06	12.9	32.9	46.0	-13.1	155	2.35
585.7180	3.47	19.30	4.1	26.9	46.0	-19.1	83	2.02
842.9020	4.27	22.77	3.3	30.3	46.0	-15.7	129	1.78
880.7560	4.42	23.02	3.5	30.9	46.0	-15.1	235	1.55

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
44.1700	1.04	16.96	5.3	23.3	40.0	-16.7	91	1.48
68.5340	1.20	8.30	15.3	24.8	40.0	-15.2	147	1.57
438.9880	2.95	17.06	11.7	31.7	46.0	-14.3	252	1.74
748.3960	3.90	21.85	3.9	29.6	46.0	-16.4	98	1.92
870.7250	4.38	22.98	4.1	31.5	46.0	-14.5	305	2.29
900.6340	4.50	23.10	3.3	30.9	46.0	-15.1	197	2.58

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



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Temperature:	20 °C	Humidity:	54 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	1
Frequency Range:	1 – 25GHz	Modulation Type:	FSK
Tested By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1085.51	-35.52	24.40	57.8	56.3	46.7	45.2	74.0	54.0	-27.3	-8.8	108	1.96
1933.48	-34.06	26.96	53.6	52.4	46.5	45.3	74.0	54.0	-27.5	-8.7	296	1.64
2022.65	-33.97	27.25	53.3	51.7	46.6	45.0	74.0	54.0	-27.4	-9.0	135	1.52
2081.80	-33.96	27.38	53.5	51.9	46.9	45.3	74.0	54.0	-27.1	-8.7	182	1.45
2166.30	-33.94	27.57	53.5	51.8	47.1	45.4	74.0	54.0	-26.9	-8.6	201	1.32
2375.89	-33.89	28.03	53.7	52.3	47.8	46.4	74.0	54.0	-26.2	-7.6	257	1.27

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1085.15	-35.52	24.40	59.5	58.4	48.4	47.3	74.0	54.0	-25.6	-6.7	88	1.31
2003.44	-33.98	27.21	52.9	51.5	46.1	44.7	74.0	54.0	-27.9	-9.3	73	1.48
2319.07	-33.90	27.90	53.3	51.9	47.3	45.9	74.0	54.0	-26.7	-8.1	169	1.55
2472.53	-33.87	28.24	53.2	51.6	47.6	46.0	74.0	54.0	-26.4	-8.0	312	1.69
2504.90	-33.86	28.31	53.8	52.2	48.3	46.7	74.0	54.0	-25.7	-7.3	304	1.83
2637.56	-33.83	28.79	53.7	52.1	48.7	47.1	74.0	54.0	-25.3	-6.9	275	1.91

NOTE :

1. Measurement uncertainty is +/- 2.4dB.
2. "": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F): The field strength of fundamental frequency.



TEST REPORT

Temperature:	20 °C	Humidity:	54 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	1 (Fundamental)
Frequency Range:	1 – 25GHz	Modulation Type:	FSK
Tested By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1290.00	-35.05	24.90	52.1	40.3	41.9	30.1	74.0	54.0	-32.1	-23.9	59	1.82
1720.00	-34.30	26.19	51.0	39.5	42.9	31.4	74.0	54.0	-31.1	-22.6	147	1.73
2150.00	-33.94	27.53	52.1	40.6	45.7	34.2	74.0	54.0	-28.3	-19.8	255	1.37
2580.00	-33.84	28.59	51.6	39.9	46.3	34.6	74.0	54.0	-27.7	-19.4	332	1.22

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1290.00	-35.05	24.90	52.4	40.7	42.2	30.5	74.0	54.0	-31.8	-23.5	119	1.41
1720.00	-34.30	26.19	51.1	40.0	43.0	31.9	74.0	54.0	-31.0	-22.1	194	1.52
2150.00	-33.94	27.53	51.0	39.7	44.6	33.3	74.0	54.0	-29.4	-20.7	212	1.53
2580.00	-33.84	28.59	52.1	40.2	46.8	34.9	74.0	54.0	-27.2	-19.1	69	1.87

NOTE :

1. Measurement uncertainty is +/- 2.4dB.
2. "**": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field strength of fundamental frequency.



Spectrum Research & Testing Lab., Inc.
No. 101-10, Ling 8,
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City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A11111502
Report No.: FCC A11111502
FCC ID : HLG-PAG-QT
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Date: Dec. 16, 2011

Temperature:	20 °C	Humidity:	54 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	2
Frequency Range:	1 – 25GHz	Modulation Type:	FSK
Tested By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2107.87	-33.95	27.44	53.4	42.1	46.9	35.6	74.0	54.0	-27.1	-18.4	302	1.95
2124.59	-33.95	27.47	52.9	41.3	46.4	34.8	74.0	54.0	-27.6	-19.2	238	1.62
2396.69	-33.88	28.07	54.0	42.8	48.2	37.0	74.0	54.0	-25.8	-17.0	155	1.57
2450.91	-33.87	28.19	53.0	42.2	47.3	36.5	74.0	54.0	-26.7	-17.5	106	1.49
2476.83	-33.87	28.25	53.8	42.7	48.2	37.1	74.0	54.0	-25.8	-16.9	94	1.33
2593.75	-33.84	28.63	53.4	41.9	48.2	36.7	74.0	54.0	-25.8	-17.3	73	1.38

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1824.50	-34.18	26.57	54.1	42.5	46.5	34.9	74.0	54.0	-27.5	-19.1	168	1.32
2154.84	-33.94	27.54	53.7	42.4	47.3	36.0	74.0	54.0	-26.7	-18.0	273	1.51
2263.17	-33.92	27.78	53.5	42.2	47.4	36.1	74.0	54.0	-26.6	-17.9	209	1.64
2343.96	-33.90	27.95	54.1	43.3	48.2	37.4	74.0	54.0	-25.8	-16.6	188	1.69
2554.89	-33.85	28.49	53.8	42.6	48.4	37.2	74.0	54.0	-25.6	-16.8	174	1.75
2595.13	-33.84	28.64	53.5	42.1	48.3	36.9	74.0	54.0	-25.7	-17.1	91	1.89

NOTE :

1. Measurement uncertainty is +/- 2.4dB.
2. "**": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F): The field strength of fundamental frequency.



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TEST REPORT

Reference No.: A11111502
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Date: Dec. 16, 2011

Temperature:	20 °C	Humidity:	54 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	2 (Fundamental)
Frequency Range:	1 – 25GHz	Modulation Type:	FSK
Tested By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1389.00	-34.82	25.13	51.6	40.8	41.9	31.1	74.0	54.0	-32.1	-22.9	193	2.14
1852.00	-34.15	26.67	52.8	41.7	45.3	34.2	74.0	54.0	-28.7	-19.8	255	2.07
2315.00	-33.90	27.89	52.8	41.6	46.8	35.6	74.0	54.0	-27.2	-18.4	314	1.59

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1389.00	-34.82	25.13	51.7	40.3	42.0	30.6	74.0	54.0	-32.0	-23.4	122	1.33
1852.00	-34.15	26.67	52.3	41.0	44.8	33.5	74.0	54.0	-29.2	-20.5	279	1.35
2315.00	-33.90	27.89	52.2	40.8	46.2	34.8	74.0	54.0	-27.8	-19.2	75	1.67

NOTE :

1. Measurement uncertainty is +/- 2.4dB.
2. "***": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field strength of fundamental frequency.



TEST REPORT

Temperature:	20 °C	Humidity:	54 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	3
Frequency Range:	1 – 25GHz	Modulation Type:	FSK
Tested By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1085.18	-35.52	24.40	57.8	46.2	46.7	35.1	74.0	54.0	-27.3	-18.9	117	2.04
2176.59	-33.94	27.59	53.7	41.8	47.3	35.4	74.0	54.0	-26.7	-18.6	252	1.83
2197.16	-33.93	27.63	53.6	41.5	47.3	35.2	74.0	54.0	-26.7	-18.8	306	1.67
2445.38	-33.87	28.18	53.6	41.7	47.9	36.0	74.0	54.0	-26.1	-18.0	154	1.58
2538.07	-33.85	28.44	53.5	41.3	48.1	35.9	74.0	54.0	-25.9	-18.1	198	1.42
2657.49	-33.82	28.87	54.4	43.1	49.4	38.1	74.0	54.0	-24.6	-15.9	215	1.33

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1541.38	-34.51	25.55	52.9	41.5	43.9	32.5	74.0	54.0	-30.1	-21.5	233	1.35
2173.06	-33.94	27.58	53.6	42.2	47.2	35.8	74.0	54.0	-26.8	-18.2	84	1.49
2249.31	-33.92	27.75	53.7	42.8	47.5	36.6	74.0	54.0	-26.5	-17.4	96	1.64
2285.40	-33.91	27.83	53.8	42.6	47.7	36.5	74.0	54.0	-26.3	-17.5	201	1.82
2460.94	-33.87	28.21	53.9	42.9	48.2	37.2	74.0	54.0	-25.8	-16.8	317	1.99
2583.17	-33.84	28.60	53.5	42.4	48.3	37.2	74.0	54.0	-25.7	-16.8	163	2.06

NOTE :

1. Measurement uncertainty is +/- 2.4dB.
2. "**": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F): The field strength of fundamental frequency.



**Spectrum Research &
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TEST REPORT

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Temperature:	20 °C	Humidity:	54 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	3 (Fundamental)
Frequency Range:	1 – 25GHz	Modulation Type:	FSK
Tested By:	Richard Lin	Tested Date:	Dec. 28, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1422.00	-34.74	25.21	51.9	40.8	42.4	31.3	74.0	54.0	-31.6	-22.7	315	1.92
1896.00	-34.10	26.83	51.5	40.6	44.2	33.3	74.0	54.0	-29.8	-20.7	91	1.96
2370.00	-33.89	28.01	51.5	40.4	45.6	34.5	74.0	54.0	-28.4	-19.5	295	1.62

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1422.00	-34.74	25.21	51.8	40.5	42.3	31.0	74.0	54.0	-31.7	-23.0	124	1.33
1896.00	-34.10	26.83	51.9	40.7	44.6	33.4	74.0	54.0	-29.4	-20.6	286	1.45
2370.00	-33.89	28.01	52.3	40.9	46.4	35.0	74.0	54.0	-27.6	-19.0	199	1.86

NOTE :

1. Measurement uncertainty is +/- 2.4dB.
2. "***": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field strength of fundamental frequency.



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TEST REPORT

Reference No.: A11111502
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Date: Dec. 16, 2011

Temperature:	21 °C	Humidity:	56 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	4
Frequency Range:	1 – 25GHz	Modulation Type:	FSK
Tested By:	Richard Lin	Tested Date:	Dec. 12, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1838.59	-34.17	26.62	53.9	41.7	46.3	34.1	74.0	54.0	-27.7	-19.9	208	1.74
1899.47	-34.10	26.84	53.4	41.2	46.1	33.9	74.0	54.0	-27.9	-20.1	315	1.52
2183.11	-33.94	27.60	53.2	41.0	46.9	34.7	74.0	54.0	-27.1	-19.3	129	1.36
2323.24	-33.90	27.91	53.7	41.5	47.7	35.5	74.0	54.0	-26.3	-18.5	102	1.31
2419.84	-33.88	28.12	53.5	41.4	47.7	35.6	74.0	54.0	-26.3	-18.4	77	1.28
2598.97	-33.84	28.65	53.7	41.7	48.5	36.5	74.0	54.0	-25.5	-17.5	246	1.24

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2136.39	-33.95	27.50	53.1	41.2	46.7	34.8	74.0	54.0	-27.3	-19.2	159	1.37
2180.95	-33.94	27.60	54.5	42.3	48.2	36.0	74.0	54.0	-25.8	-18.0	271	1.48
2272.76	-33.91	27.80	53.3	41.8	47.2	35.7	74.0	54.0	-26.8	-18.3	99	1.59
2331.49	-33.90	27.93	53.5	41.9	47.5	35.9	74.0	54.0	-26.5	-18.1	192	1.62
2571.67	-33.84	28.56	53.5	41.5	48.2	36.2	74.0	54.0	-25.8	-17.8	116	1.74
2667.84	-33.82	28.90	53.7	41.7	48.8	36.8	74.0	54.0	-25.2	-17.2	86	1.78

NOTE :

1. Measurement uncertainty is +/- 2.4dB.
2. "": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F): The field strength of fundamental frequency.



5. PHOTOS OF TESTING

- Radiated test (below 1G , Receiving & Standby)





TEST REPORT

- Radiated test (above 1G , Receiving & Standby)





6. TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction