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FCC TEST REPORT

REPORT NO.: RF111208E01

MODEL NO.: AT707-A-4K-RF, AT705-3K-RF,
AT705-23-3K-RF

FCC ID: RPVAT705RFID

RECEIVED: Dec. 08, 2011

TESTED: Dec. 22, 2011 to Feb. 24, 2012

ISSUED: Apr. 02, 2012

APPLICANT: ATOP TECHNOLOGIES, INC.

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ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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R.O.C.

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Table of Contents

RELEASE CONTROL RECORD.....	3
1. CERTIFICATION.....	4
2. SUMMARY OF TEST RESULTS.....	5
2.1 MEASUREMENT UNCERTAINTY.....	6
3. GENERAL INFORMATION.....	7
3.1 GENERAL DESCRIPTION OF EUT.....	7
3.2 DESCRIPTION OF TEST MODES.....	8
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	9
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	10
3.4 DESCRIPTION OF SUPPORT UNITS.....	11
3.5 CONFIGURATION OF SYSTEM UNDER TEST.....	12
4. TEST TYPES AND RESULTS.....	13
4.1 CONDUCTED EMISSION MEASUREMENT.....	13
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	13
4.1.2 TEST INSTRUMENTS.....	13
4.1.3 TEST PROCEDURES.....	14
4.1.4 DEVIATION FROM TEST STANDARD.....	14
4.1.5 TEST SETUP.....	15
4.1.6 EUT OPERATING CONDITIONS.....	15
4.1.7 TEST RESULTS.....	16
4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT.....	18
4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT... ..	18
4.2.2 TEST INSTRUMENTS.....	19
4.2.3 TEST PROCEDURES.....	21
4.2.4 DEVIATION FROM TEST STANDARD.....	22
4.2.5 TEST SETUP.....	23
4.2.6 EUT OPERATING CONDITIONS.....	23
4.2.7 TEST RESULTS (Mode 1).....	24
4.2.8 TEST RESULTS (Mode 2).....	26
4.2.9 TEST RESULTS (SPECTRUM BANDWIDTH).....	28
5. PHOTOGRAPHS OF THE TEST CONFIGURATION.....	29
6. INFORMATION ON THE TESTING LABORATORIES.....	30
7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	31



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF111208E01	Original release	Apr. 02, 2012

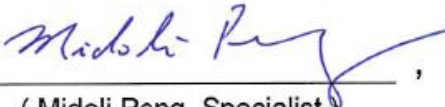


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1. CERTIFICATION

PRODUCT: Picktag
BRAND NAME: Atop
MODEL NO.: AT707-A-4K-RF, AT705-3K-RF, AT705-23-3K-RF
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: ATOP TECHNOLOGIES, INC.
TESTED: Dec. 22, 2011 to Feb. 24, 2012
STANDARDS: **FCC Part 15, Subpart C (Section 15.209)**
ANSI C63.10-2009

The above equipment (Model: AT707-A-4K-RF, AT705-23-3K-RF) have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, 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:** Apr. 02, 2012
(Midoli Peng, Specialist)

APPROVED BY :  , **DATE:** Apr. 02, 2012
(May Chen, Deputy Manager)



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2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.209)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -27.50 dB at 0.173 MHz
15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.9dB at 143.80MHz
15.203	Antenna Requirement	PASS	No antenna connector is used.



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2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

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

Measurement	Value
Conducted emissions	2.45 dB
Radiated emissions	3.89 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Picktag
MODEL NO.	AT707-A-4K-RF, AT705-3K-RF, AT705-23-3K-RF
FCC ID	RPVAT705RFID
POWER SUPPLY	DC 12V from indoor DC power network
FREQUENCY RANGE	125kHz
NUMBER OF CHANNEL	1
ANTENNA TYPE	Loop antenna
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

- The EUT has three model names which are identical to each other in all aspects except for the following table:

Model Name	alphanumerical display	7-segment display	illuminated confirmation button
AT705-23-3K-RF	*	5 ●	6 ●●●●●●
AT705-3K-RF	*	2 ● / 3 ●	6 ●●●●●●
AT707-A-4K-RF	4 ●	3 ●	6 ●●●●●●

Model Name	up/down count buttons	small illuminated button	Function Key	RFID
AT705-23-3K-RF	*	*	3	125kHz
AT705-3K-RF	*	*	3	125kHz
AT707-A-4K-RF	up ◁ / down ▷	4 ●●●●	*	125kHz

From the above models, models: **AT705-23-3K-RF & T707-A-4K-RF** were selected as model for the test and its data was recorded in this report.

- For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



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3.2 DESCRIPTION OF TEST MODES

One channel is provided to this EUT.

Channel	Frequency
1	125kHz



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3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO		DESCRIPTION
	PLC	RE	
1	-	√	EUT (AT707-A-4K-RF)
2	-	√	EUT (AT705-23-3K-RF)
3	√	-	EUT(AT707-A-4K-RF & AT705-23-3K-RF)

Where **PLC**: Power Line Conducted Emission **RE**: Radiated Emission below 1GHz
RE > 1G: Radiated Emission above 1GHz

POWER LINE CONDUCTED EMISSION TEST:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

TESTED CHANNEL	EUT CONFIGURE MODE
1	3

RADIATED EMISSION TEST:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

TESTED CHANNEL	AXIS	EUT CONFIGURE MODE
1	Z	1~2

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	25deg. C, 54%RH	DC 12V	Kyle Huang
RE<1G	22deg. C, 65%RH	DC 12V	Frank Liu
	21deg. C, 68%RH	DC 12V	Amos Chuang

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.209)

ANSI C63.10-2009

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



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3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

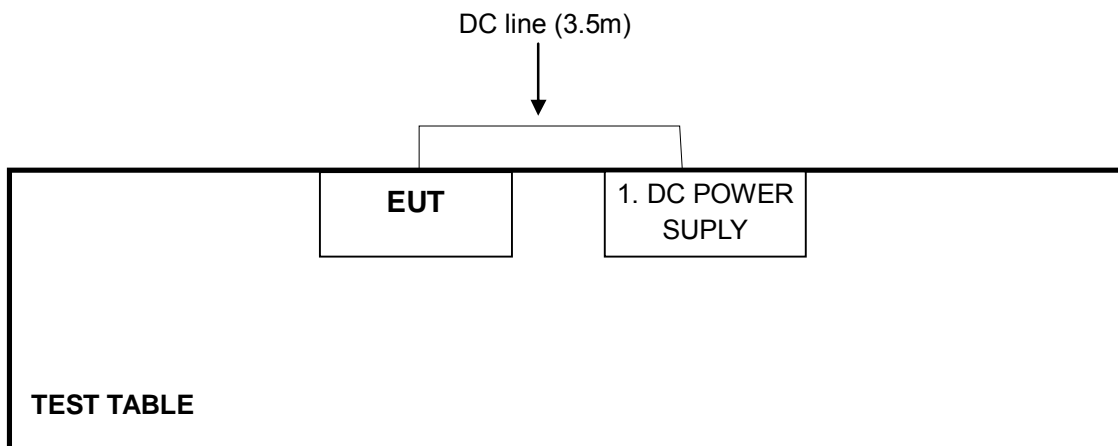
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	DC POWER SUPPLY (for conducted only)	GOOD WILL INSTRUMENT CO., LTD.	GPC-3030D	7700087	NA
	DC POWER SUPPLY (for radiated only)	Topward	6603D	795551	NA

No.	Signal cable description
1	DC line (3.5m)
	DC line (0.34m)

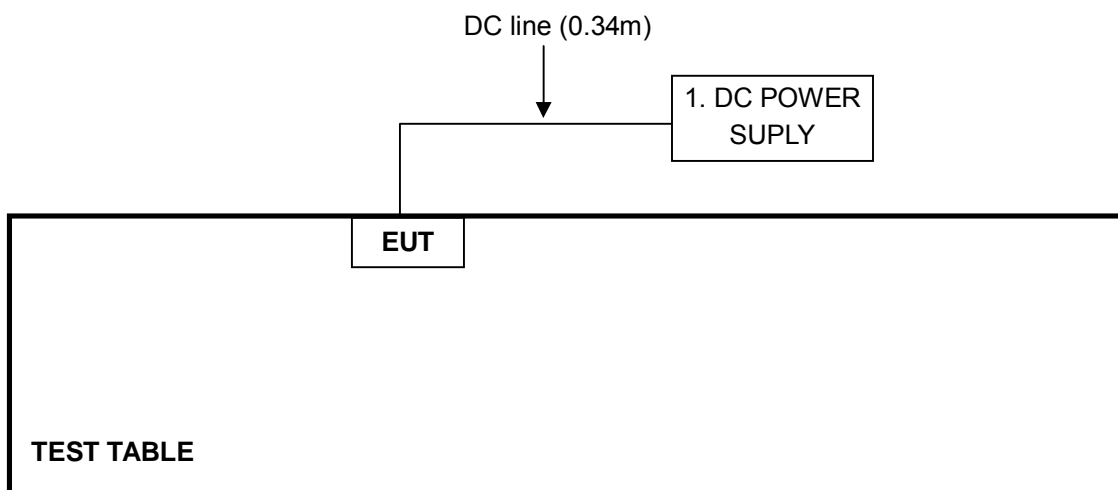
NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For conducted test :



For radiated test :





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4. TEST TYPES AND RESULTS

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. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 02, 2011	Mar. 01, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 20, 2011	Sep. 19, 2012
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 10, 2011	June 09, 2012
RF Cable (JYBAO)	5DFB	CONCAB-003	Aug. 05, 2011	Aug. 04, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 2012
Software	BV ADT_Cond_V7.3.7	NA	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 Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: Test date: Dec. 22, 2011



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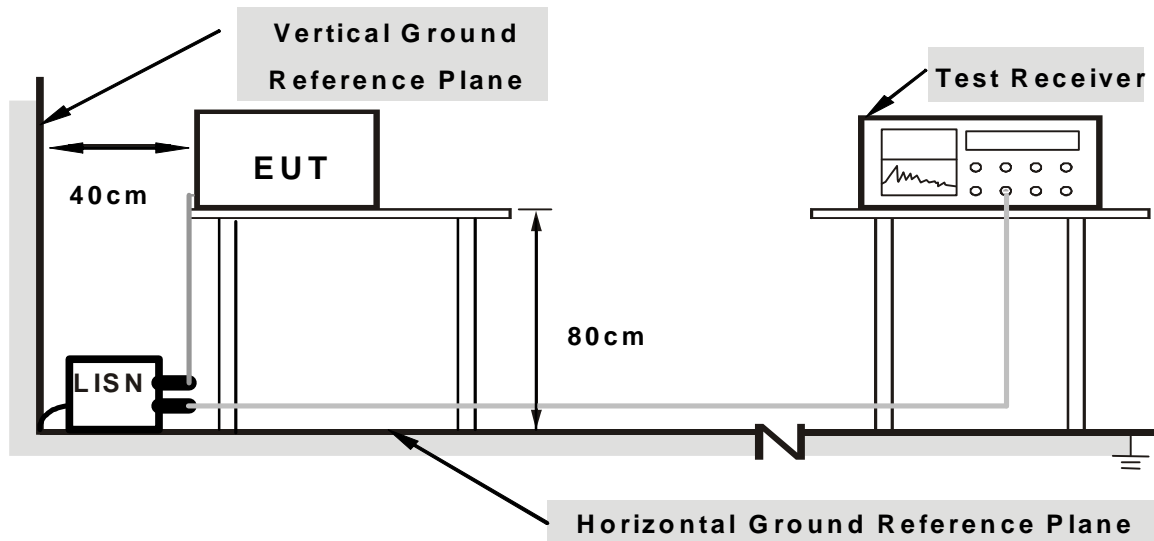
4.1.3 TEST PROCEDURES

- 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) were 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) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

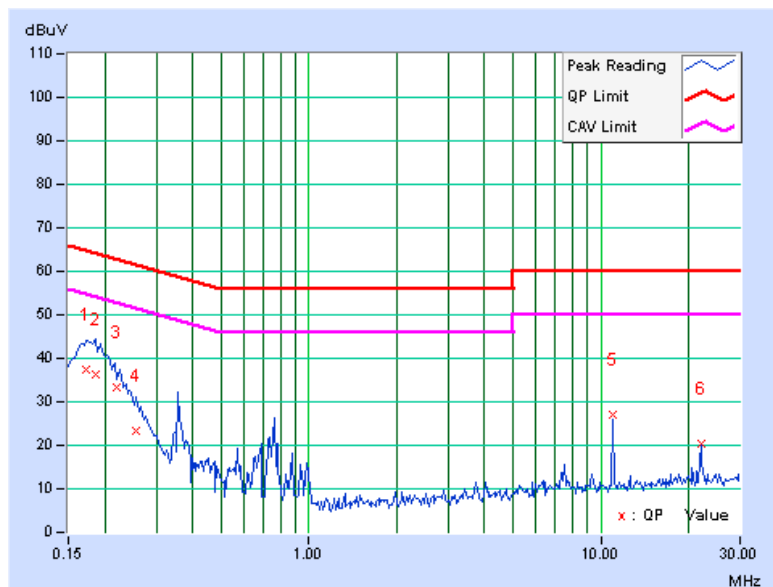
Set the EUT under transmission / receiver condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.173	0.06	37.23	8.25	37.29	8.31	64.79	54.79	-27.50	-46.48
2	0.185	0.06	36.33	7.47	36.39	7.53	64.25	54.25	-27.86	-46.72
3	0.220	0.06	33.25	4.10	33.31	4.16	62.82	52.82	-29.51	-48.66
4	0.255	0.06	23.32	0.14	23.38	0.20	61.58	51.58	-38.19	-51.37
5	11.063	0.42	26.64	21.19	27.06	21.61	60.00	50.00	-32.94	-28.39
6	22.123	0.68	19.66	14.27	20.34	14.95	60.00	50.00	-39.66	-35.05

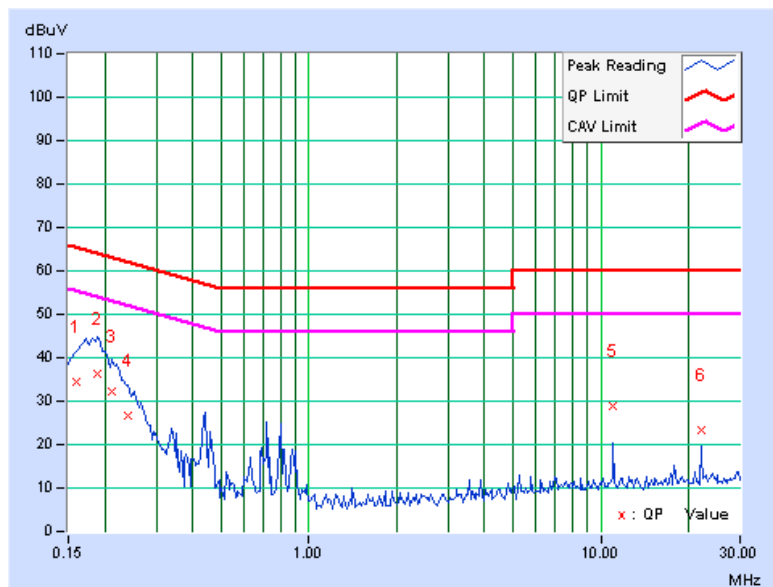
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.160	0.07	34.36	9.97	34.43	10.04	65.47	55.47	-31.04	-45.43
2	0.189	0.07	36.33	7.61	36.40	7.68	64.08	54.08	-27.68	-46.40
3	0.213	0.07	32.16	4.64	32.23	4.71	63.11	53.11	-30.88	-48.40
4	0.240	0.07	26.45	0.86	26.52	0.93	62.10	52.10	-35.58	-51.17
5	11.063	0.40	28.56	23.27	28.96	23.67	60.00	50.00	-31.04	-26.33
6	22.123	0.66	22.83	17.34	23.49	18.00	60.00	50.00	-36.51	-32.00

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





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4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

FOR FREQUENCY BELOW 30MHz

FREQUENCY (MHz)	FIELD STRENGTH (dBuV/m)		MEASUREMENT DISTANCE (meters)
	uV/m	dBuV/m	
0.009 – 0.490	2400 / F (kHz)	48.52-13.80	300
0.490 – 1.705	24000 / F (kHz)	33.80-22.97	30
1.705 – 30.0	30	29.54	30

FOR FREQUENCY ABOVE 30MHz

FREQUENCY (MHz)	FIELD STRENGTH (dBuV/m)		MEASUREMENT DISTANCE (meters)
	uV/m	dBuV/m	
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3



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4.2.2 TEST INSTRUMENTS

For frequency range: 9 kHz ~ 30 MHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012
Agilent Pre-Selector	N9039A	MY46520311	July 12, 2011	July 11, 2012
Agilent Signal Generator	N5181A	MY49060517	July 12, 2011	July 11, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02578	July 04, 2011	July 03, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 14, 2011	Nov. 13, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
R&S Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2013
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 26, 2011	Dec. 25, 2012
RF Cable	NA	CHGCAB_001	Oct. 07, 2011	Oct. 06, 2012
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in 966 Chamber No. G.

4. The FCC Site Registration No. is 966073.

5. The VCCI Site Registration No. is G-137.

6. The CANADA Site Registration No. is IC 7450H-2.

7. Loop antenna was used for all emissions below 30 MHz.

8. Tested Date: Feb. 24, 2012



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For frequency range: 30-1000MHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012
Agilent Pre-Selector	N9039A	MY46520311	July 12, 2011	July 11, 2012
Agilent Signal Generator	N5181A	MY49060517	July 12, 2011	July 11, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02578	July 04, 2011	July 03, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 14, 2011	Nov. 13, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 26, 2011	Dec. 25, 2012
RF Cable	NA	CHGCAB_001	Oct. 07, 2011	Oct. 06, 2012
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Dec. 30, 2011

4.2.3 TEST PROCEDURES

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna. The height of antenna is 1 meter above the ground.
- c. Both X and Y axes of the antenna are set to make the measurement.
- d. 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.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission 30~1000MHz

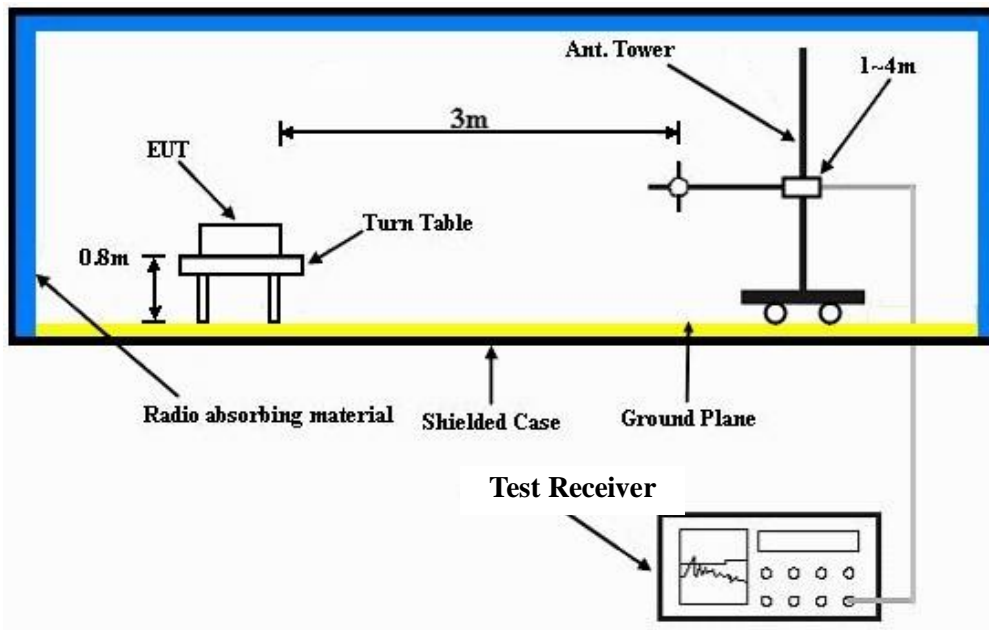
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency 30MHz ~ 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS (MODE 1)

CHANNEL	Channel 1	DETECTOR FUNCTION	Quasi-Peak
FREQUENCY RANGE	9 kHz ~ 30 MHz		

LOOP ANTENNA TEST DISTANCE: AT 3 M (X AXIS)								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	0.13	93.8 QP	105.7	-11.9	1.00 H	125	80.94	12.86
2	0.17	42.5 QP	103.1	-60.6	1.00 H	21	29.64	12.86
3	0.38	48.7 QP	96.1	-47.4	1.00 H	109	35.84	12.86
4	0.63	39.9 QP	71.7	-31.8	1.00 H	78	27.04	12.86
5	0.88	34.9 QP	68.8	-33.9	1.00 H	46	22.04	12.86
6	1.14	31.6 QP	66.5	-34.9	1.00 H	95	18.74	12.86
LOOP ANTENNA TEST DISTANCE: AT 3 M (Y AXIS)								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	0.13	88.7 QP	105.7	-17.0	1.00 H	128	75.84	12.86
2	0.17	54.5 QP	103.1	-48.6	1.00 H	21	41.64	12.86
3	0.38	48.6 QP	96.1	-47.5	1.00 H	77	35.74	12.86
4	0.63	44.8 QP	71.7	-26.9	1.00 H	36	31.94	12.86
5	0.88	40.5 QP	68.8	-28.3	1.00 H	247	27.64	12.86
6	1.14	39.8 QP	66.5	-26.7	1.00 H	41	26.94	12.86

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula

The measured field strength was extrapolated to distance 300 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 24000/125\text{kHz} &= 192 \text{ uV/m} && 300\text{m} \\
 &= 25.66 \text{ dBuV/m} && 300\text{m} \\
 &= 25.66 + 20\log(300/3)^2 && 3\text{m} \\
 &= 105.7 \text{ dBuV/m}
 \end{aligned}$$



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CHANNEL	Channel 1	DETECTOR FUNCTION	Quasi-Peak
FREQUENCY RANGE	30-1000MHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	110.62	36.9 QP	43.5	-6.6	1.51 H	68	25.49	11.41
2	121.67	31.7 QP	43.5	-11.8	1.43 H	56	19.06	12.64
3	143.80	32.9 QP	43.5	-10.7	1.33 H	286	18.18	14.67
4	254.42	29.9 QP	46.0	-16.2	1.00 H	46	15.37	14.48
5	663.24	31.4 QP	46.0	-14.6	1.00 H	168	5.03	26.34
6	1000.00	29.2 QP	54.0	-24.8	1.11 H	335	-1.32	30.55

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	55.33	34.4 QP	40.0	-5.7	1.00 V	219	19.80	14.55
2	80.02	32.9 QP	40.0	-7.1	1.00 V	120	22.79	10.12
3	121.67	38.4 QP	43.5	-5.1	1.00 V	343	25.75	12.64
4	143.80	39.6 QP	43.5	-3.9	1.00 V	0	24.93	14.67
5	254.42	33.8 QP	46.0	-12.3	1.53 V	61	19.27	14.48
6	703.67	33.4 QP	46.0	-12.7	1.00 V	0	6.74	26.61

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.



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4.2.8 TEST RESULTS (MODE 2)

CHANNEL	Channel 1	DETECTOR FUNCTION	Quasi-Peak
FREQUENCY RANGE	9 kHz ~ 30 MHz		

LOOP ANTENNA TEST DISTANCE: AT 3 M (X AXIS)								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	0.13	93.1 QP	105.7	-12.5	1.00 H	211	80.26	12.86
2	0.17	44.5 QP	103.1	-58.6	1.00 H	36	31.64	12.86
3	0.38	47.9 QP	96.1	-48.2	1.00 H	156	35.04	12.86
4	0.63	40.1 QP	71.7	-31.6	1.00 H	88	27.24	12.86
5	0.88	35.8 QP	68.8	-33.0	1.00 H	255	22.94	12.86
6	1.14	33.1 QP	66.5	-33.4	1.00 H	350	20.24	12.86
LOOP ANTENNA TEST DISTANCE: AT 3 M (Y AXIS)								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	0.13	87.8 QP	105.7	-17.9	1.00 H	39	74.94	12.86
2	0.17	53.8 QP	103.1	-49.3	1.00 H	165	40.94	12.86
3	0.38	48.1 QP	96.1	-48.0	1.00 H	65	35.24	12.86
4	0.63	43.8 QP	71.7	-27.9	1.00 H	86	30.94	12.86
5	0.88	39.5 QP	68.8	-29.3	1.00 H	97	26.64	12.86
6	1.14	38.4 QP	66.5	-28.1	1.00 H	75	25.54	12.86

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula

The measured field strength was extrapolated to distance 300 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 24000/125\text{kHz} &= 192 \text{ uV/m} && 300\text{m} \\
 &= 25.66 \text{ dBuV/m} && 300\text{m} \\
 &= 25.66 + 20\log(300/3)^2 && 3\text{m} \\
 &= 105.7 \text{ dBuV/m}
 \end{aligned}$$



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CHANNEL	Channel 1	DETECTOR FUNCTION	Quasi-Peak
FREQUENCY RANGE	30-1000MHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTIO N FACTOR (dB/m)
1	88.00	30.2 QP	40.0	-9.8	1.00 H	153	20.81	9.35
2	276.58	35.3 QP	46.0	-10.7	1.00 H	19	19.99	15.32
3	320.83	34.1 QP	46.0	-11.9	1.00 H	187	17.29	16.84
4	563.17	31.0 QP	46.0	-15.0	1.00 H	0	6.77	24.27
5	675.17	35.0 QP	46.0	-11.0	1.00 H	228	8.58	26.40
6	851.83	28.3 QP	46.0	-17.7	1.00 H	39	-0.63	28.97

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTIO N FACTOR (dB/m)
1	44.24	33.9 QP	40.0	-6.1	1.00 V	153	19.81	14.09
2	80.00	32.4 QP	40.0	-7.7	1.41 V	22	22.23	10.12
3	190.91	30.6 QP	43.5	-12.9	1.00 V	20	17.96	12.62
4	210.00	29.3 QP	43.5	-14.2	1.03 V	264	16.83	12.48
5	575.17	27.7 QP	46.0	-18.3	1.00 V	0	2.99	24.73
6	829.67	32.8 QP	46.0	-13.2	1.00 V	0	4.05	28.77

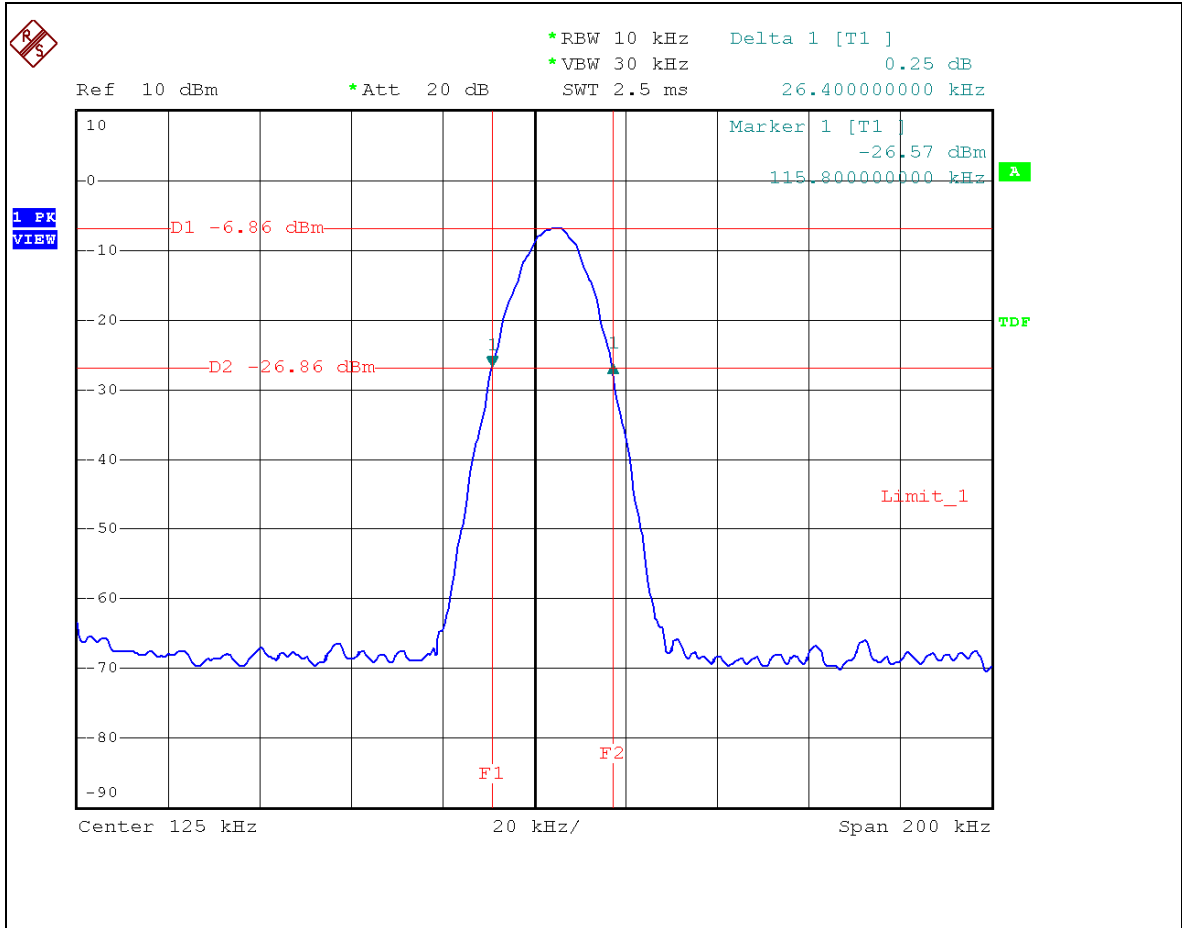
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.



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4.2.9 TEST RESULTS (SPECTRUM BANDWIDTH)

26.4kHz





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Copies of accreditation and authorization 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:

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Web Site: www.adt.com.tw

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



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7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

--- END ---