

Report No. : FD122237-01

FCC Test Report

APPLICANT : Mobile Action Technology Inc.

EQUIPMENT: GPS TRACKER

BRAND NAME : i-gotU

MODEL NAME : GT-1800 series FCC ID : Q7Z-IGT1800

STANDARD : FCC 47 CFR FCC Part 15 Subpart B

CLASSIFICATION: Certification

The product was received on Feb. 22, 2011 and completely tested on Jul. 30, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai / Manager





SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: Q7Z-IGT1800 Page Number : 1 of 19 Report Issued Date : Aug. 03, 2011

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FD122237-01	Rev. 01	Initial issue of report	Jun. 03, 2011
FD122237-01	Rev. 02	Add the USB Link mode in section 2.1	Aug. 03, 2011

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.107	7.2.2	AC Conducted Emission	< 15.107 limits < RSS-Gen table 2 limits	PASS	Under limit 15.3 dB at 0.19 MHz
3.2	15.109	7.2.3.2	Radiated Emission	< 15.109 limits or < RSS-Gen table 1 limits (Section 6)	PASS	Under limit 0.16 dB at 191.73 MHz

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1. General Description

1.1. Applicant

Mobile Action Technology Inc.

5F., No. 205-2, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 23143, Taiwan

1.2. Manufacturer

Mobile Action Technology Inc.

5F., No. 205-2, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 23143, Taiwan

1.3. Feature of Equipment Under Test

Product Feature & Specification					
Equipment GPS TRACKER					
Brand Name	i-gotU				
Model Name	GT-1800 series				
FCC ID	Q7Z-IGT1800				
Tx Frequency Range	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz GSM850 : 869 MHz ~ 894 MHz				
Rx Frequency Range	GSM1900 : 1930 MHz ~ 1990 MHz GPS : 1.57542 GHz				
Antenna Type	Fixed Internal Antenna				
Type of Modulation	GSM / GPRS : GMSK GPS : BPSK				
EUT Stage	Production Unit				

Remark:

The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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1.4. Test Site

Test Site	SPORTON INTERNATIONAL INC.				
	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park,				
Took Site Leastion	Kwei-Shan Hsiang, Ta	ao Yuan Hsien, Taiwan	R.O.C.		
Test Site Location	TEL: +886-3-327-3456				
	FAX: +886-3-328-497	8			
Toot Site No	Sporton	Site No.	FCC/IC Registration No.		
Test Site No.	CO05-HY	03CH06-HY	722060/4086B-1		

1.5. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2003
- IC RSS-Gen Issue 3

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

1.6. Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	iPod	Apple	A1199	FCC DoC	Unshielded, 1.2 m	N/A
6.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

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2. Test Configuration of Equipment Under Test

2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following tables are showing the test modes as the worst cases and recorded in this report.

		Test Condition			
Item	EUT Configuration	ЕМІ	ЕМІ	ЕМІ	
		AC	RE<1G	RE≥1G	
1.	Charging Mode (EUT with notebook)	\boxtimes	\boxtimes	\boxtimes	

Abbreviations:

EMI AC: AC conducted emissions

• EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz

EMI RE < 1G: EUT radiated emissions < 1GHz

Test Items	EUT Configure Mode	Function Type
		Mode 1: GSM850 (GPRS 8) Idle + GPS Rx + USB Cable (Charging with Notebook)
AC Conducted Emission	1	Mode 2: GSM1900 (GPRS 8) Idle + GPS Rx + USB Cable (Charging with Notebook)
		Mode 3: GSM1900 (GPRS 8) Idle + GPS Rx + USB Cable (Link with Notebook)
		Mode 1: GSM850 (GPRS 8) Idle + GPS Rx + USB Cable (Charging with Notebook)
Radiated Emissions < 1GHz	1	Mode 2: GSM1900 (GPRS 8) Idle + GPS Rx + USB Cable (Charging with Notebook)
		Mode 3: GSM1900 (GPRS 8) Idle + GPS Rx + USB Cable (Link with Notebook)
Radiated Emissions ≥ 1GHz	1	Mode 1: GSM1900 (GPRS 8) Idle + GPS Rx + USB Cable (Link with Notebook)

Remark:

1. The worst case of AC is mode 1; only the test data of this mode was reported.

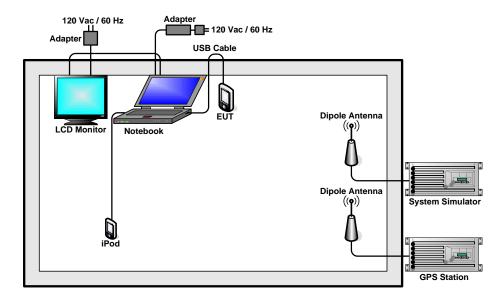
2. The worst case of RE < 1G is mode 3; only the test data of this mode was reported.

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2.2. Connection Diagram of Test System



2.3. Test Software

The EUT was in GSM idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was charging from the notebook, and following programs installed in the EUT were programmed during the test.

- 1. Execute the programs, "WINXP" or "Hypeterminal", installed in notebook for active sync files transfer with EUT via USB cable.
- 2. Turn on GPS Function.

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3. Test Result

3.1. Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission	Conducted	limit (dBuV)
(MHz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

^{*}Decreases with the logarithm of the frequency.

3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

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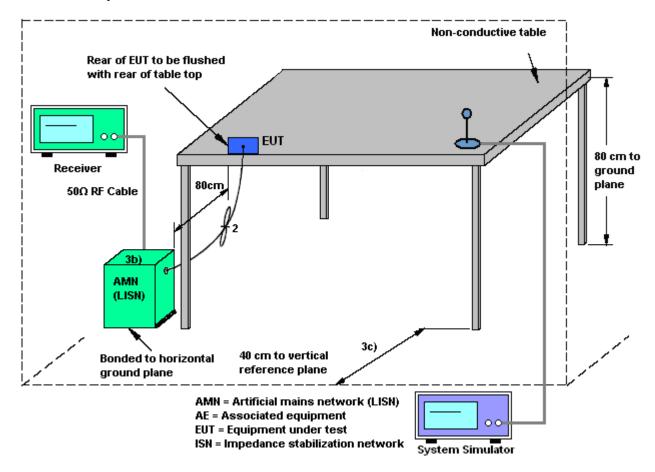
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3.1.4 Test Setup



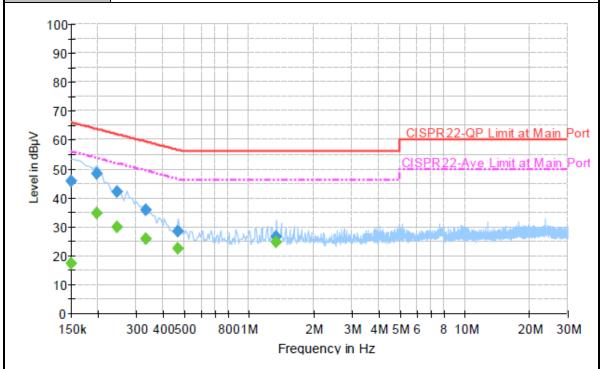
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3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22℃			
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%			
Test Voltage :	120Vac / 60Hz	Phase :	Line			
Function Type :	GSM850 (GPRS 8) Idle + GPS Rx + USB Cable (Charging with Notebook)					

Remark: All emissions not reported here are more than 10 dB below the prescribed limit.



Final Result 1

Frequency	QuasiPeak	Filter	Line	Corr.	Margin	Limit
(MHz)	(dBµV)	Filter	Line	(dB)	(dB)	(dBµV)
0.150000	45.9	Off	L1	19.4	20.1	66.0
0.198000	48.4	Off	L1	19.3	15.3	63.7
0.246000	41.9	Off	L1	19.4	20.0	61.9
0.334000	35.9	Off	L1	19.3	23.5	59.4
0.470000	28.5	Off	L1	19.4	28.0	56.5
1.342000	26.6	Off	L1	19.4	29.4	56.0

Final Result 2

0.150000 17.4 Off L1 19.4 38.6	56.0
0.198000 34.7 Off L1 19.3 19.0	53.7
0.246000 29.8 Off L1 19.4 22.1	51.9
0.334000 25.8 Off L1 19.3 23.6	49.4
0.470000 22.4 Off L1 19.4 24.1	46.5
1.342000 24.7 Off L1 19.4 21.3	46.0

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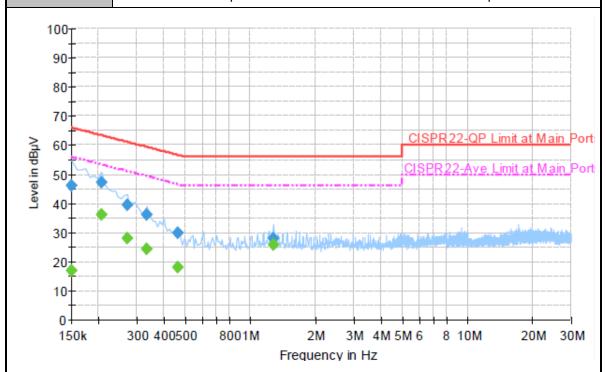
 Test Mode :
 Mode 1
 Temperature :
 20~22°C

 Test Engineer :
 Novic Chiang
 Relative Humidity :
 40~42%

 Test Voltage :
 120Vac / 60Hz
 Phase :
 Neutral

Function Type: GSM850 (GPRS 8) Idle + GPS Rx + USB Cable (Charging with Notebook)

Remark: All emissions not reported here are more than 10 dB below the prescribed limit.



Final Result 1

Frequency	QuasiPeak	F:14	Line	Corr.	Margin	Limit
(MHz)	(dBµV)	Filter		(dB)	(dB)	(dBµV)
0.150000	46.1	Off	N	19.4	19.9	66.0
0.206000	47.1	Off	N	19.3	16.3	63.4
0.270000	39.6	Off	N	19.3	21.5	61.1
0.334000	36.2	Off	N	19.3	23.2	59.4
0.462000	30.0	Off	N	19.3	26.7	56.7
1.278000	28.2	Off	N	19.5	27.8	56.0

Final Result 2

Frequency	Average	Filter	Line	Corr.	Margin	Limit
(MHz)	(dBµV)	Filler		(dB)	(dB)	(dBµV)
0.150000	17.0	Off	N	19.4	39.0	56.0
0.206000	36.3	Off	N	19.3	17.1	53.4
0.270000	28.1	Off	N	19.3	23.0	51.1
0.334000	24.5	Off	N	19.3	24.9	49.4
0.462000	18.1	Off	N	19.3	28.6	46.7
1.278000	25.8	Off	N	19.5	20.2	46.0

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3.2. Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency	Field Strength	Measurement Distance		
(MHz)	(microvolts/meter)	(meters)		
0.009 - 0.490	2400/F(kHz)	300		
0.490 – 1.705	24000/F(kHz)	30		
1.705 – 30.0	30	30		
30 – 88	100	3		
88 – 216	150	3		
216 - 960	200	3		
Above 960	500	3		

3.2.2. Measuring Instruments

See list of measuring instruments of this test report.

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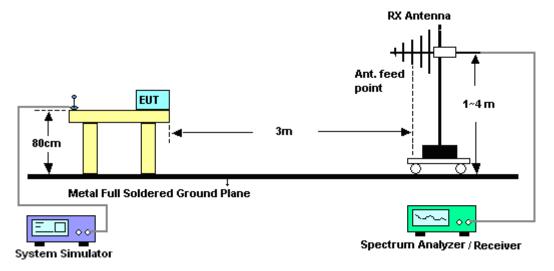
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3.2.3. Test Procedures

- 1. The EUT was placed on a turntable with 0.8 meter above ground.
- 2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest radiation.
- 4. The antenna is a Bi-Log antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- 5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- 6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- 7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported
- 8. Emission level (dBuV/m) = 20 log Emission level (uV/m)
- 9. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level

3.2.4. Test Setup of Radiated Emission



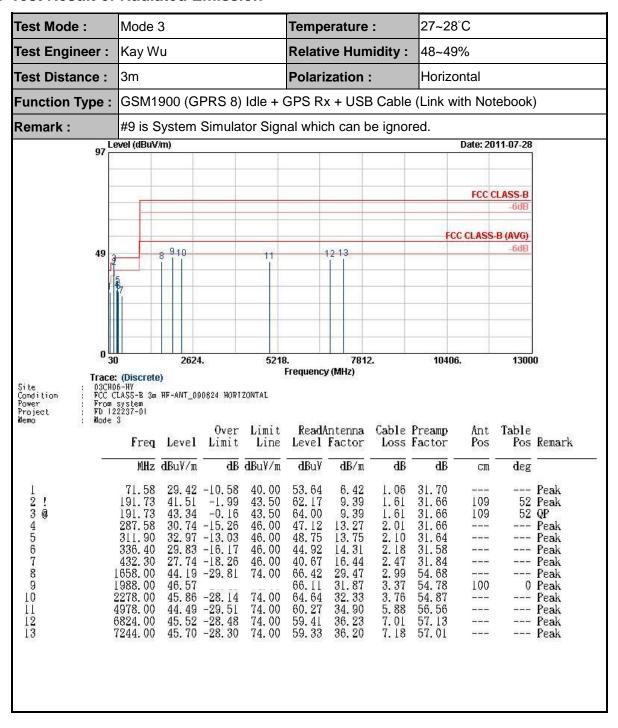
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3.2.5. Test Result of Radiated Emission



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27~28°C Test Mode: Mode 3 Temperature: Test Engineer: Kay Wu **Relative Humidity:** 48~49% Test Distance: 3m **Polarization:** Vertical GSM1900 (GPRS 8) Idle + GPS Rx + USB Cable (Link with Notebook) Function Type: Level (dBuV/m) Date: 2011-07-28 FCC CLASS-B FCC CLASS-B (AVG) 9 10 -6dE 49 0 30 2624. 5218. 7812. 10406. 13000 Frequency (MHz) Trace: (Discrete) Site Condition Power Project Memo 03CH06-HV FCC CLASS-B 3m HF-ANT_090824 VERTICAL From system FD 122237-01 Mode 3 Table 0ver Limit ReadAntenna Cable Preamp Ant Freq Level Limit Line Level Factor Loss Factor Pos Pos Remark dB dBuV/m dB MHz dBuY/m dBuV dB/mdBCM deg 40.00 30.54 34.63 -5.3748.31 0.72 Peak 17.31 31.72123456789 31.73 31.66 31.66 28. 59 -14. 91 43. 16 -0. 34 43. 11 -0. 39 50.10 63.82 63.77 9. 08 9. 39 9. 39 --- Peak 43.501. 14 1. 61 1. 61 2. 52 2. 77 3. 78 3. 01 3. 37 322 Peak 322 QP 191. 73 191. 73 100 43.50 43. 11 -0. 39 27. 09 -18. 91 25. 76 -20. 24 27. 13 -18. 87 49. 23 -24. 77 47. 59 -26. 41 43.50 100 39. 50 36. 62 32. 91 71. 42 16. 91 18. 21 21. 76 29. 47 455. 40 528. 90 929. 30 1664. 00 46.00 31.85 31.84 Peak ---46.00 ___ --- Peak 46.00 74.00 31.32 ___ --- Peak 54.68 100 0 Peak 31.87 1994.00 74.00 67.13 54.78 Peak 47. 54 -26. 46 41. 59 -32. 41 45. 99 -28. 01 74.00 74.00 74.00 3. 82 4. 94 7. 01 66. 21 58. 62 59. 89 32. 39 33. 38 36. 23 2328.00 54. 88 55. 35 10 --- Peak 3384.00 --- Peak ___ 12 13 6828.00 57.13 ___ --- Peak 8974.00 45.84 -28.16 74.0058.43 36.47 56.83 --- Peak

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4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 16, 2010	Aug. 15, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz – 30MHz	Dec. 03, 2010	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz – 30MHz	Dec. 01, 2010	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct. 25, 2010	Oct. 24, 2011	Radiation (03CH06-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz~7GHz	Aug.19, 2010	Aug.19, 2011	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Oct. 31, 2010	Oct. 31, 2011	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz~18GHz	Aug. 02, 2010	Aug. 01, 2011	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Training Research	AH-0801	95119	8GHz~18GHz	Oct. 20, 2010	Oct. 19, 2011	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917025 1	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 14, 2011	Apr. 13, 2012	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 14, 2011	Apr. 13, 2012	Radiation (03CH06-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH06-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 18, 2010	Oct. 17, 2011	-
GPS Station	T&E	GS-50	N/A	N/A	N/A	N/A	=

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5. Uncertainty of Evaluation

<u>Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)</u>

	Uncerta			
Contribution	dB	Probability Distribution	u(X _i)	
Receiver Reading	0.10	Normal (k=2)	0.05	
Cable Loss	0.10	Normal (k=2)	0.05	
AMN Insertion Loss	2.50	Rectangular	0.63	
Receiver Specification	1.50	Rectangular	0.43	
Site Imperfection	1.39	Rectangular	0.80	
Mismatch	+0.34 / -0.35	U-Shape	0.24	
Combined Standard Uncertainty Uc(y)	1.13			
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.26			

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

	Uncerta			
Contribution	dB	Probability Distribution	u(X _i)	
Receiver Reading	0.41	Normal (k=2)	0.21	
Antenna Factor Calibration	0.83	Normal (k=2)	0.42	
Cable Loss Calibration	0.25	Normal (k=2)	0.13	
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14	
RCV/SPA Specification	2.50	Rectangular	0.72	
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29	
Site Imperfection	1.43	Rectangular	0.83	
Mismatch	+0.39 / -0.41	U-Shape	0.28	
Combined Standard Uncertainty Uc(y)	1.27			
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.54			

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Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

	Uncertai				
Contribution	dB	Probability Distribution	u(X _i)	C _i	C _i * u(X _i)
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ 1 = 0.197 Antenna VSWR Γ 2 = 0.194 Uncertainty = 20Log(1- Γ 1* Γ 2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	2.36				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.72				

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Appendix A. Photographs of EUT

Please refer to Sporton report number EP122237-01 as below.

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