

Hong Kong Standards and Testing Centre

Date : 2005-10-31 No. : HM155144

TEST REPORT

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Applicant:

Belkin Corporation 501 West Walnut Street Compton California 90220-5221 United States

Description of Samples:

Model name: Model no.: Brand name: FCC ID:

2005-09-15

WIRELESS RF REMOTE W/RCVR (RECEIVER) FOR iPOD F8Z024 BELKIN K7SF8Z024-RX

Date Samples Received:

Date Tested:

2005-09-23 to 2005-10-21

Investigation Requested:

FCC Part 15 Regulations-Subpart C

Conclusions:

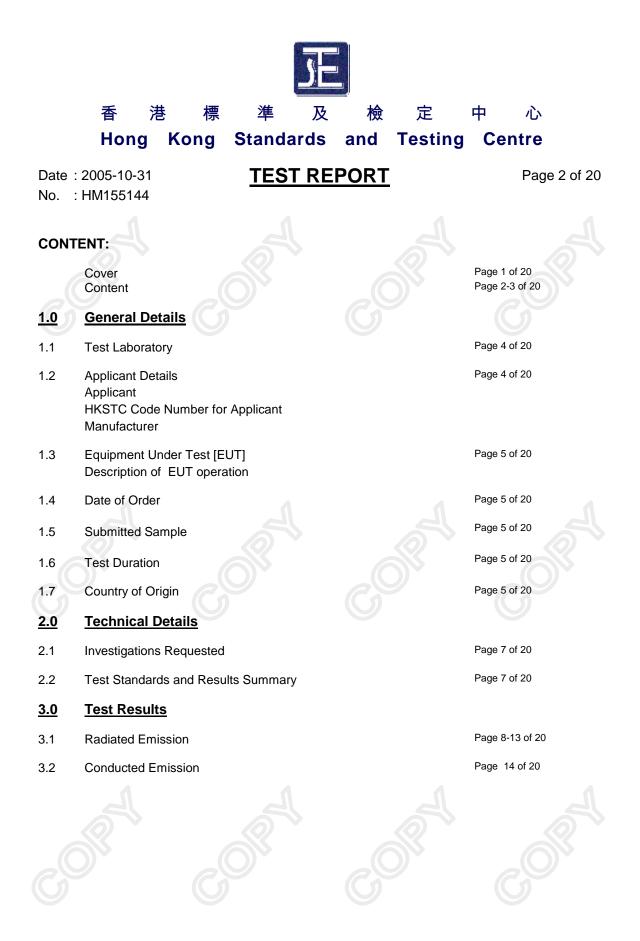
The submitted product <u>COMPLIED</u> with the requirements of Federal Communications Commission [FCC] Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

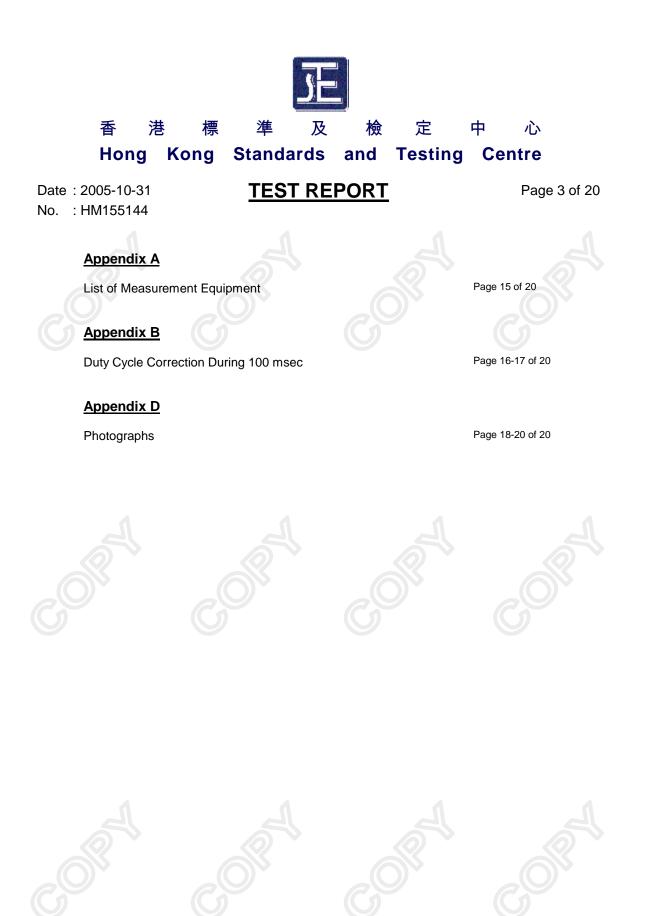
Remarks:

K C Lee, EMD for Chief Executive

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1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd. EMC Laboratory 10 Dai Wang Street, Taipo Industrial Estate New Territories, Hong Kong

1.2 Applicant Details Applicant

Belkin Corporation 501 West Walnut Street Compton California 90220-5221 United States

HKSTC Code Number for Applicant Manufacturer N/A



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1.3 Equipment Under Test [EUT] Description of Sample

Model Name:WIRELESS RF REMOTE W/RCVR (RECEIVER) FOR iPODManufacturer:N/ABrand Name:BELKINModel Number:F8Z024Input Voltage:The product draws power from the signal port of the console.

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a Belkin Corporation, WIRELESS RF REMOTE W/RCVR (RECEIVER) FOR iPOD, the transmission signal is frequency hopping with channel frequency 2433MHz.

1.4 Date of Order

2005-09-15

1.5 Submitted Sample(s):

2 Samples per model

1.6 Test Duration

2005-09-23 to 2005-10-21

1.7 Country of Origin

China



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2.0 Technical Details

2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 Regulations and ANSI C63.4:2003 for FCC Certification.

2.2 Test Standards and Results Summary Tables

	EMISSION Results Summary								
Test Condition Test Requirement Test Method Class / Test Result						lt			
			Severity	Pass	Fail	N/A			
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	ANSI C63.4:2003	N/A	\boxtimes					
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2003	N/A	\boxtimes		E C			
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.207	ANSI C63.4:2003	N/A	\boxtimes					

Note: N/A - Not Applicable



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3.0 Test Results

- 3.1 Emission
- 3.1.1 Radiated Emissions

Test Requirement: Test Method: Test Date: Mode of Operation:

FCC 47CFR 15.249 ANSI C63.4:2003 2005-10-21 Tx mode (connect with iPod)

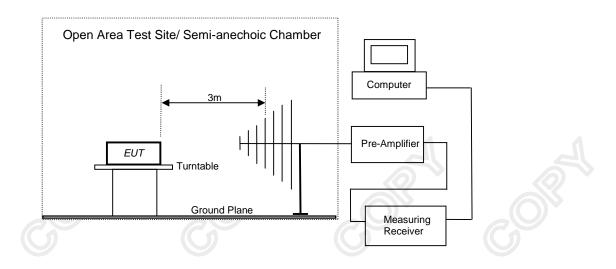
Test Method:

The sample was placed 0.8m above the ground plane on the *OATS / **Semi-anechoic Chamber, measurements in both horizontal and vertical antenna polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The worst case(s) of emission is/are shown in Test Results of the following pages.

* OATS [Open Area Test Site] located at HKSTC with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 90657.

** Semi-anechoic chamber located at HKSTC filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756. (This has been used in the report)

Test Setup:



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Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental	Field Strength of Fundamental Emission	Field Strength of Harmonics Emission		
[MHz]	[microvolts/meter]	[microvolts/meter]		
902-928	50,000 [Average]	500 [Average]		
2400-2483.5	50,000 [Average]	500 [Average]		

Results of Tx mode (connect with iPod): Pass

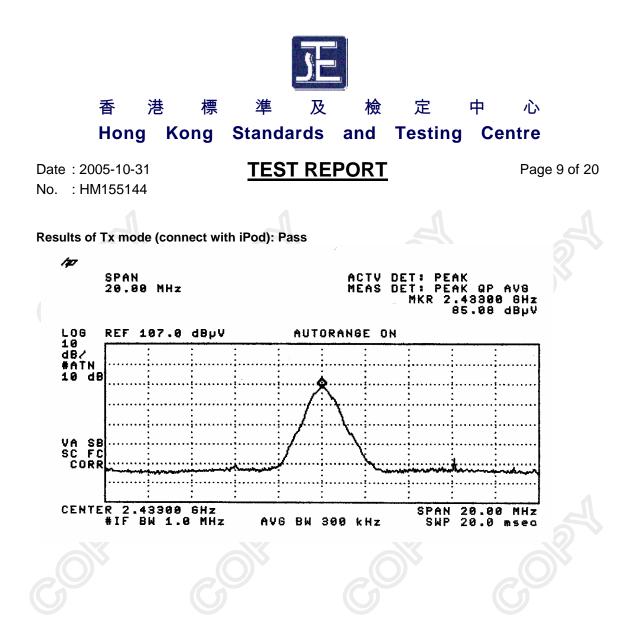
	Field Strength of Fundamental Emissions							
				Peak Value				
F	requency	Measured	Correction	Field	Field	Limit @3m	E-Field	
		Level @3m	Factor	Strength	Strength		Polarity	
	MHz	dBµV/m	dBµV/m	dBµV/m	μV/m	μV/m		
	2433.0	51.8	34.1	85.9	19,724.2	50,000	Horizontal	
*	4866.0	11.2	41.1	52.3	412.1	500	Horizontal	
*	7299.0					500	Vertical	
	9732.0	JL				500	Vertical	
*	12165.0					500	Vertical	
	14598.0		No Emissio	on Detected		500	Vertical	
	17031.0					500	Vertical	
*	19464.0					500	Vertical	
	21897.0					500	Vertical	
))	24330.0				U	500	Vertical	

Remarks:

*: Denotes restricted band of operation. Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.



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Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [µV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasipeak detector and above 1000MHz are based on measurements employing an average detector.

Results of Rx Mode (connect with iPod) : Pass

Radiated Emissions Quasi-Peak							
Emission	E-Field	Level	Limit	Level @3m	Limit		
Frequency	Polarity	@3m	@3m	@3m	@3m		
MHz		dBµV/m	dBµV/m	μV/m	μV/m		
78.0	Vertical	37.8	40	77.6	100		
182.0	Horizontal	29.3	43.5	29.2	150		
208.0	Horizontal	36.6	43.5	67.6	150		
229.6	Horizontal	26.8	46	21.9	200		
260.0	Horizontal	30.1	46	32.0	200		
311.9	Horizontal	32.8	46	43.7	200		

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz ±4.1dB 1GHz to 18GHz ±4.4dB



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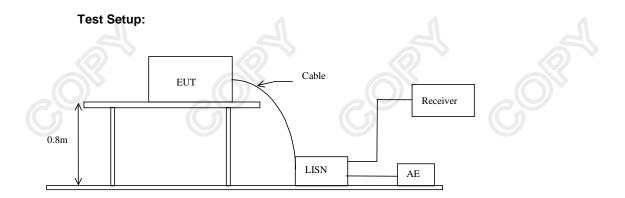
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3.1.2 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement: Test Method: Test Date: Mode of Operation: FCC 47CFR 15.207 ANSI C63.4:2003 2005-09-20 Stand by mode and recharge mode, MP3 play mode and recharge mode

Test Method:

The test was performed in accordance with ANSI C63.4:2003, with the following: an initial measurement was performed in peak and average detection mode on the live line. Any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.





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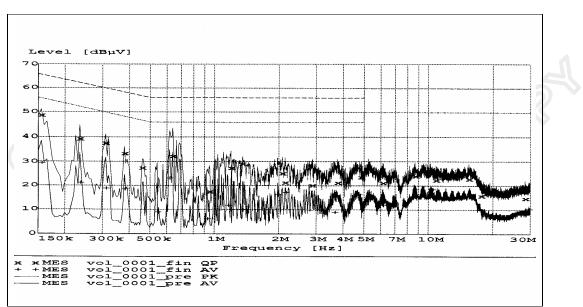
Limits for Conducted Emissions (FCC 47 CFR 15.107):

Frequency Range	Quasi-Peak Limits	Average
[MHz]	[dBµV]	[dBµV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Results of Stand by mode and recharge mode : Pass





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Results of Stand by mode and recharge mode : Pass

Conductor	Frequency	uency Quasi-Peak			rage
		Level	Limit	Level	Limit
Live or Neutral	MHz	dBµV	dBµV	dBµV	dBµV
Live	0.155	48.6	66	-*-	-*-
Live	0.235	-*-	_*_	21.2	52
Live	0.310	37.6	60	18.8	50
Live	0.615	-*-	_*-	23.1	46
Live	0.640	32.3	56	-*-	-*-
Live	1.355	29.2	56	-*-	-*-
Live	2.080	25.2	56	-*-	-*-
Live	2.140	21.3	56	-*-	-*-
Live	2.155	-*-	_*-	17.2	46
Live	2.780	-*-	_*-	9.9	46
Live	3.645	-*-	_*-	9.0	46
Live	3.760	21.3	56	-*-	-*-
Live	4.860	23.6	56	-*-	-*-
Live	6.140	21.2	60	-*-	-*-
Live	8.665	_*-	_*-	18.4	50
Live	8.690	24.0	60	_*_	-*-
Live	10.845	22.3	60	_*-	-*-
Live	15.490	22.7	60	_*-	-*-
Live	17.755	_*_	-*-	9.8	50

To Be Continues...



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Results of Stand by mode and recharge mode : Pass

Conductor	Frequency	Quasi	-Peak	Ave	rage
		Level	Limit	Level	Limit
Live or Neutral	MHz	dBµV	dBµV	dBµV	dBµV
Neutral	0.155	-*-	-*-	29.5	56
Neutral	0.235	39.2	62	-*-	_*_
Neutral	0.380	-*-	-*-	18.5	48
Neutral	0.460	27.4	57	-*-	-*-
Neutral	0.540	-*-	-*-	8.8	46
Neutral	0.925	-*-	-*-	6.1	46
Neutral	0.950	17.5	56	-*-	-*-
Neutral	1.155			11.8	46
Neutral	1.200	27.4	56	-*-	-*-
Neutral	1.355	-*-	-*-	10.0	46
Neutral	1.980	-*-	-*-	16.4	46
Neutral	2.875	20.1	56	-*-	-*-
Neutral	4.710	-*-	-*-	16.3	46
Neutral	6.140	-*-	-*-	11.9	50
Neutral	10.430	-*-	-*-	18.5	50
Neutral	15.615	-*-	-*-	16.6	50
Neutral	17.675	15.8	60	_*-	-*-
Neutral	28.330	14.8	60	_*-	-*-
Neutral	29.515	_*-	-*-	10.3	50

Remarks:

Calculated measurement uncertainty: ±2.8dB

-*- Emission greater than 30dB below limit line

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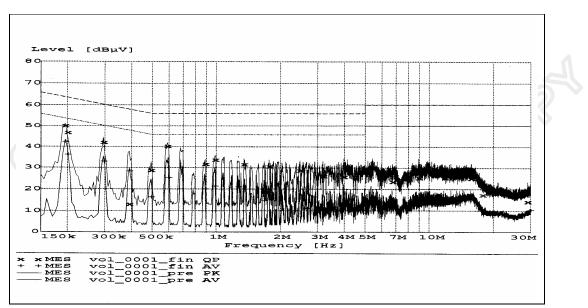
Limits for Conducted Emissions (FCC 47 CFR 15.107):

Frequency Range	Quasi-Peak Limits	Average
[MHz]	[dBµV]	[dBµV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Results of MP3 play mode and recharge mode : Pass





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Results of MP3 play mode and recharge mode : Pass

Conductor	Frequency	Quasi-	Peak	Ave	rage
		Level	Limit	Level	Limit
Live or Neutral	MHz	dBµV	dBµV	dBµV	dBµV
Live	0.195	-*-	-*-	42.4	54
Live	0.200	46.8	64	36.2	54
Live	0.295	42.1	60	-*-	-*-
Live	0.390	13.1	58	-*-	-*-
Live	0.495	28.7	56	-*-	-*-
Live	0.590	40.2	56	-*-	-*-
Live	0.595	-*-	_*_	25.4	46
Live	0.985	-*-	_*_	21.4	46
Live	0.990	33.7	56	-*-	-*-
Live	1.350	31.6	56	-*-	-*-
Live	2.830	-*-	-*-	16.6	46
Live	3.180	26.1	56	-*-	-*-
Live	4.980	-*-	-*-	14.1	46
Live	6.755	23.5	60	-*-	-*-
Live	8.910	25.2	60	-*-	-*-
Live	10.000	-*-	_*-	15.9	50
Live	10.590	26.2	60	-*-	-*-
Live	12.695	-*-	-*-	15.1	50
Live	28.970	14.3	60	-*-	-*-

To Be Continues...



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Results of MP3 play mode and recharge mode : Pass

Conductor	Frequency	Quas	-Peak	Ave	rage
		Level	Limit	Level	Limit
Live or Neutral	MHz	dBµV	dBµV	dBµV	dBµV
Neutral	0.195	50.1	64	-*-	-*-
Neutral	0.294	-*-	_*_	33.0	50
Neutral	0.395	-*-	_*-	28.3	48
Neutral	0.495	-*-	_*-	16.5	46
Neutral	0.890	31.7	56	_*-	-*-
Neutral	0.885	-*-	_*-	20.1	46
Neutral	1.270	-*-	_*-	21.1	46
Neutral	1.675	-*-	_*-	14.9	46
Neutral	1.775	30.7	56	_*-	-*-
Neutral	2.475	28.8	56	_*-	-*-
Neutral	2.665	-*-	-*-	11.1	46
Neutral	3.975	25.7	56	12.5	46
Neutral	5.000	27.8	56	-*-	-*-
Neutral	6.715	-*-	-*-	14.3	50
Neutral	14.440	_*-	_*-	16.1	50
Neutral	15.755	25.0	60	_*-	-*-
Neutral	17.715	_*_	_*-	10.1	50
Neutral	17.825	17.3	60	-*-	-*-
Neutral	29.865	_*_	_*_	10.3	50

Remarks:

Calculated measurement uncertainty: ±2.8dB

-*- Emission greater than 30dB below limit line

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Appendix A

List of Measurement Equipment

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM007	SPECTRUM ANALYZER	HEWLETT PACKARD	HP85660B	3144A21192	15/06/04
EM008	SPECTRUM ANALYZER DISPLAY	HEWLETT PACKARD	HP85662A	3144A20514	15/06/04
EM009	QUASI PEAK ADAPTOR	HEWLETT PACKARD	HP85650A	3303A01702	15/06/04
EM010	RF PRESELECTOR	HEWLETT PACKARD	HP85685A	3221A01410	15/06/04
EM011	ATTENNUATOR/SWITCH	HEWLETT PACKARD	HP11713A	2508A10595	15/06/04
EM012	PRE-AMPLIFIER	HEWLETT PACKARD	HP8449B	3008A00262	15/06/04
EM013	CONTROLLER (COMPUTER), COLOR MONITOR, KEYBOARD & MOUSE FLOPPY DRIVE	HEWLETT PACKARD HEWLETT PACKARD HEWLETT PACKARD	HP9000 HP A1097C HP9133L	6226A60314 3151J39517 2623A02468	15/06/04
EM020	HORN ANTENNA	EMCO	3115	4032	30/07/03
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	30/07/03
EM072	SIGNAL GENERATOR	HEWLETT PACKARD	8640B	1948A11892	N/A
EM083	HKSTC OPEN AREA TEST SITE	HKSTC	N/A	N/A	08/02/03
EM131	PORTABLE SPECTRUM ANALYSER	HEWLETT PACKARD	8595EM	3710A00155	13/01/04
EM145	EMI TEST RECEIVER	R&S	ESCS 30	830245/021	04/10/04
EM219	BICONILOG ANTENNA	EMCO	3142C	00029071	28/10/03
EM195	ANTENNA POSITIONING MAST	EMCO	2075	2368	N/A
EM196	MULTI-DEVICE CONTROLLER	EMCO	2090	1662	N/A
EM223	HORN ANTENNA	EMCO	3160-09	08163126	18/06/04
EM224	HORN ANTENNA	EMCO	3160-09	08198430	20/06/04

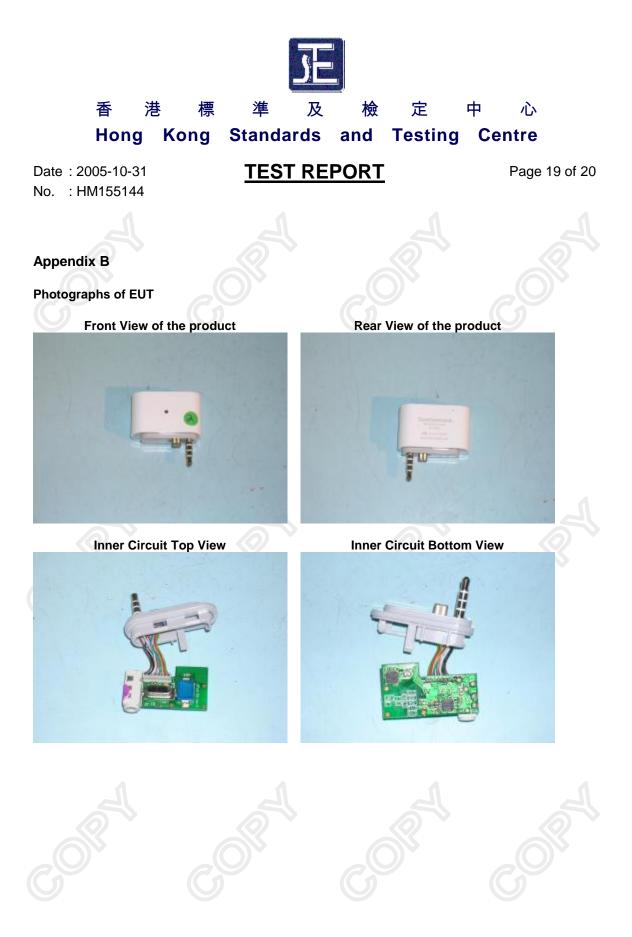
Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM078	VARIAC	SHANGHAI VOLTAGE	TDGC-3/0.5	N/A	CM
EM081	SMALL SCREENED ROOM	MIKO INST HK	N/A	N/A	17/10/03
EM119	LISN	R&S	ESH3-Z5	0831.5518.52	14/10/04
EM127	ISOLATION TRANSFORMER 220 TO 300	WING SUN	N/A	N/A	СМ
EM142	PULES LIMITER	R&S	ESH3Z2	357.8810.52	04/08/04
EM181	EMI TEST RECEIVER	R&S	ESIB7	100072	06/01/04
EM154	SHIELDING ROOM	SIEMENA MATSUSHITA COMPONENTS	N/A	803-740-057- 99A	17/10/03
EM197	LISN	EMCO	4825/2	1193	05/06/04

Remarks:-

- CM Corrective Maintenance
- N/A Not Applicable or Not Available
- TBD To Be Determined

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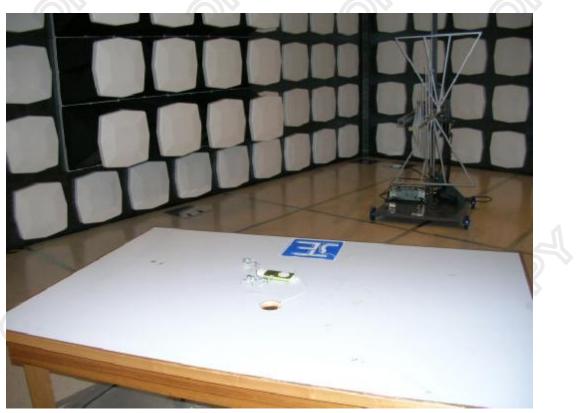
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Photographs of EUT

Measurement of Radiated Emission Test Set Up



***** End of Test Report *****



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