



STC Test Report

Date : 2008-01-17

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No. : HM160845

Applicant (SUT008):

Super Technology Limited.
Suite 1203, Chinachem Golden Plaza, 77 Mody Road,
TST East, Kowloon, Hong Kong.

Manufacturer:

Super Technology Limited.
Suite 1203, Chinachem Golden Plaza, 77 Mody Road,
TST East, Kowloon, Hong Kong.

Description of Samples:

Product: The Dark Knight-Walkie Talkies
Brand Name: The Dark Knight
Model Number: 63215
FCC ID: NVB63215

Date Samples Received:

2007-12-20, 2008-01-02, 2008-01-09, 2008-01-15

Date Tested:

2007-12-20 to 2008-01-16

Investigation Requested:

Perform ElectroMagnetic Interference measurement in
accordance with FCC 47CFR [Codes of Federal Regulations]
Part 15: 2006 and ANSI C63.4:2003 for FCC Certification.

Conclusions:

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

Remarks:

Dr. LEE Kam Chuen,
ElectroMagnetic Compatibility Department
For and on behalf of
The Hong Kong Standards and Testing Centre Ltd.

The Hong Kong Standards and Testing Centre Ltd.

10 Dai Wang Street, Taiipo Industrial Estate, N.T., Hong Kong

Tel: (852) 2666 1888 Fax: (852) 2664 4353 Homepage: www.hkstdc.org E-mail: hkstdc@hkstdc.org

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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

Telephone: 852 2666 1888
Fax: 852 2664 4353

1.2 Applicant Details **Applicant**

Super Technology Limited.
Suite 1203, Chinachem Golden Plaza, 77 Mody Road,
TST East, Kowloon, Hong Kong.

Manufacturer

Super Technology Limited.
Suite 1203, Chinachem Golden Plaza, 77 Mody Road,
TST East, Kowloon, Hong Kong.

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10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong

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1.3 Equipment Under Test [EUT] Description of Sample

Model Name: The Dark Knight-Walkie Talkies
Manufacturer: Super Technology Limited.
Brand Name: The Dark Knight
Model Number: 63215
Input Voltage: 9Vd.c. ("6F22" size battery x 1)

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a Super Technology Limited., The Dark Knight-Walkie Talkies. The transmitter is a button transmitter. The EUT continues to transmit while button is being pressed. It is voice transmission, Modulation by microphone, and type is amplitude modulation.

1.4 Date of Order

2007-12-20, 2008-01-02, 2008-01-09, 2008-01-15

1.5 Submitted Sample(s):

8 Samples

1.6 Test Duration

2007-12-20 to 2008-01-16

1.7 Country of Origin

China

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2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15:2006 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 / Severity	Test Result	
				Pass	Failed
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.235	ANSI C63.4:2003	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiated Emissions, 30MHz to 1GHz	FCC 47CFR 15.209	ANSI C63.4:2003	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Note: N/A - Not Applicable

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3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions (30 – 1000MHz)

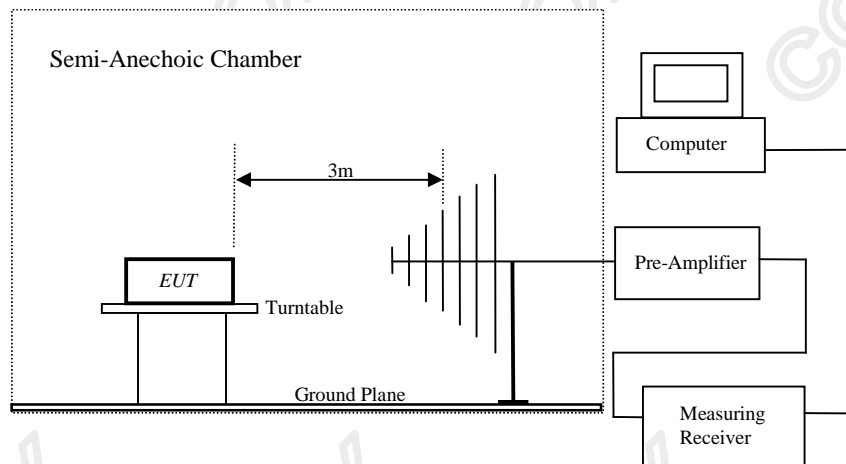
Test Requirement: FCC 47CFR 15.209
Test Method: ANSI C63.4:2003
Test Date: 2008-01-16
Mode of Operation: Tx mode

Test Method:

The sample was placed 0.8m above the ground plane of Semi-Anechoic Chamber*. Measurements in both horizontal and vertical 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 emissions worst-case are shown in Test Results of the following pages.

*: Semi-Anechoic Chamber located on the G/F of HKSTC with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

Test Setup:



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Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.235]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Peak] [$\mu\text{V/m}$]	Field Strength of Fundamental Emission [Average] [$\mu\text{V/m}$]
49.82-49.90	100,000	10,000

Results of Tx Mode: PASS

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB μV	Correction Factor dB/m	Field Strength dB $\mu\text{V/m}$	Field Strength $\mu\text{V/m}$	Limit @3m $\mu\text{V/m}$	E-Field Polarity
49.86	54.9	9.2	64.1	1,603.2	100,000	Vertical

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB μV	Correction Factor dB/m	Field Strength dB $\mu\text{V/m}$	Field Strength $\mu\text{V/m}$	Limit @3m $\mu\text{V/m}$	E-Field Polarity
49.86	46.7	9.2	55.9	623.7	10,000	Vertical

Remarks:

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

For effective averaging, the bandwidth of the video filter must be smaller than the resolution bandwidth.

The higher the ratio of resolution bandwidth to video bandwidth, the greater the averaging will be recorded. Below setting for HP8572A EMI Receiver.

Resolution Bandwidth = 3MHz

Video Bandwidth = 1Hz

Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB

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Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [$\mu\text{V/m}$]
30-88	100
88-216	150
216-960	200
Above 960	500

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

Results of Tx Mode: PASS

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dB μV	Correction Factor dB/m	Field Strength dB $\mu\text{V/m}$	Field Strength $\mu\text{V/m}$	Limit @3m $\mu\text{V/m}$	E-Field Polarity
99.72	< 1.0	9.9	< 10.9	< 3.5	150	Vertical
149.58	32.9	9.3	42.2	128.8	150	Vertical
199.44	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
249.30	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
299.16	< 1.0	16.9	< 17.9	< 7.9	200	Vertical
349.02	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
398.88	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
448.74	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
498.60	19.8	20.5	40.3	103.5	200	Vertical

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB

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Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [$\mu\text{V/m}$]
30-88	100
88-216	150
216-960	200
Above 960	500

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

Results of Rx Mode: PASS

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dB μV	Correction Factor dB/m	Field Strength dB $\mu\text{V/m}$	Field Strength $\mu\text{V/m}$	Limit @3m $\mu\text{V/m}$	E-Field Polarity
49.20	20.3	9.4	29.7	30.5	100	Vertical
50.50	< 1.0	9.4	< 10.4	< 3.3	100	Vertical
85.30	< 1.0	9.0	< 10.0	< 3.2	100	Vertical
87.80	< 1.0	9.3	< 10.3	< 3.3	100	Vertical
149.58	< 1.0	9.8	< 10.8	< 3.5	150	Vertical
199.44	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
249.30	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
299.16	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
349.02	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
398.88	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
448.74	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
498.60	< 1.0	20.6	< 21.6	< 12.0	200	Vertical

Remark:

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB

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3.2 20dB Bandwidth of Fundamental Emission

Test Requirement:	FCC 47 CFR 15.235
Test Method:	ANSI C63.4:2003 (Section 13.1.7)
Test Date:	2008-01-16
Mode of Operation:	On mode

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

Test Setup:

As Test Setup of clause 3.1.1 in this test report.

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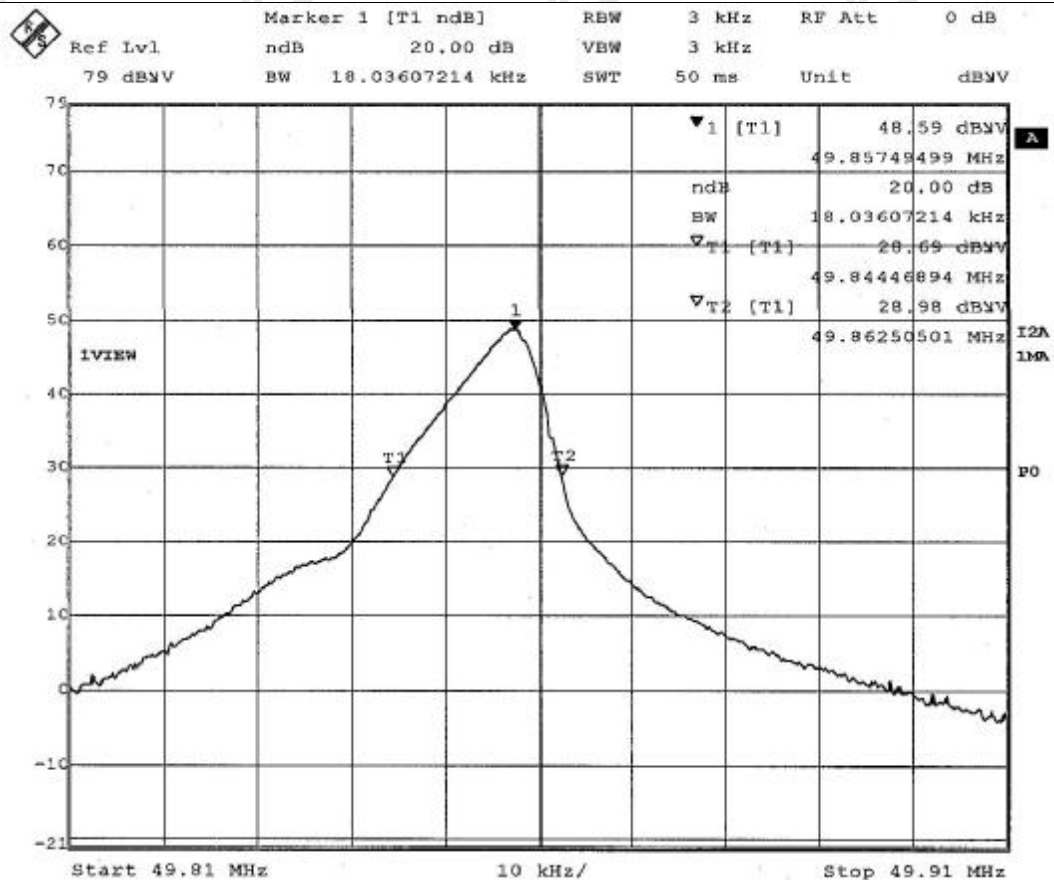
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Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [KHz]	FCC Limits [MHz]
49.86	18.03	within 49.82-49.90

20dB Bandwidth of Fundamental Emission



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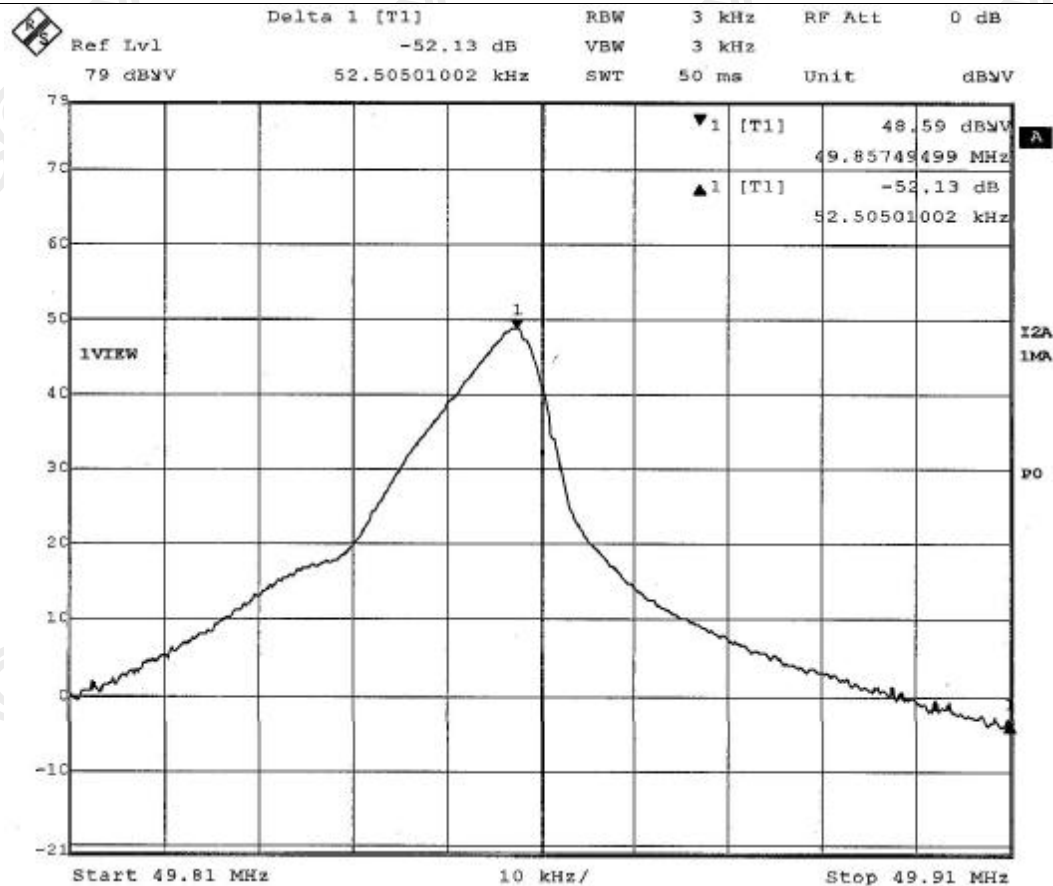
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20dB Bandwidth of Fundamental Emission



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Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM012	PRE-AMPLIFIER	HEWLETT PACKARD	HP8449B	3008A00262	2006/12/29	2007/12/29
EM020	HORN ANTENNA	ETS-LINGGREN	3115	4032	2006/07/11	2008/07/11
EM022	LOOP ANTENNA	ETS-LINGGREN	6502	1189-2424	2006/07/26	2008/07/26
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB 7	100072	22007/06/08	2008/06/08
EM215	MULTIDEVICE CONTROLLER	ETS-LINGGREN	2090	00024676	N/A	N/A
EM216	MINI MAST SYSTEM	ETS-LINGGREN	2075	00026842	N/A	N/A
EM217	ELECTRIC POWERED TURNABLE	ETS-LINGGREN	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-LINGGREN	FACT-3	--	2007/05/02	2008/05/02
EM219	BICONILOG ANTENNA	ETS-LINGGREN	3142C	00029071	2006/02/01	2008/02/01
EM229	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB 40	100248	2007/07/11	2008/07/11

Remarks:-

CM Corrective Maintenance

N/A Not Applicable or Not Available

TBD To Be Determined

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Appendix B

Photographs of EUT

Front View of the product



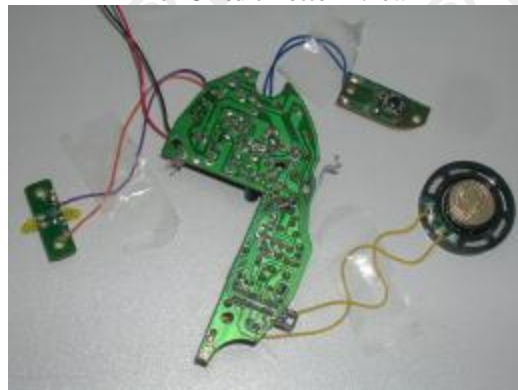
Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View



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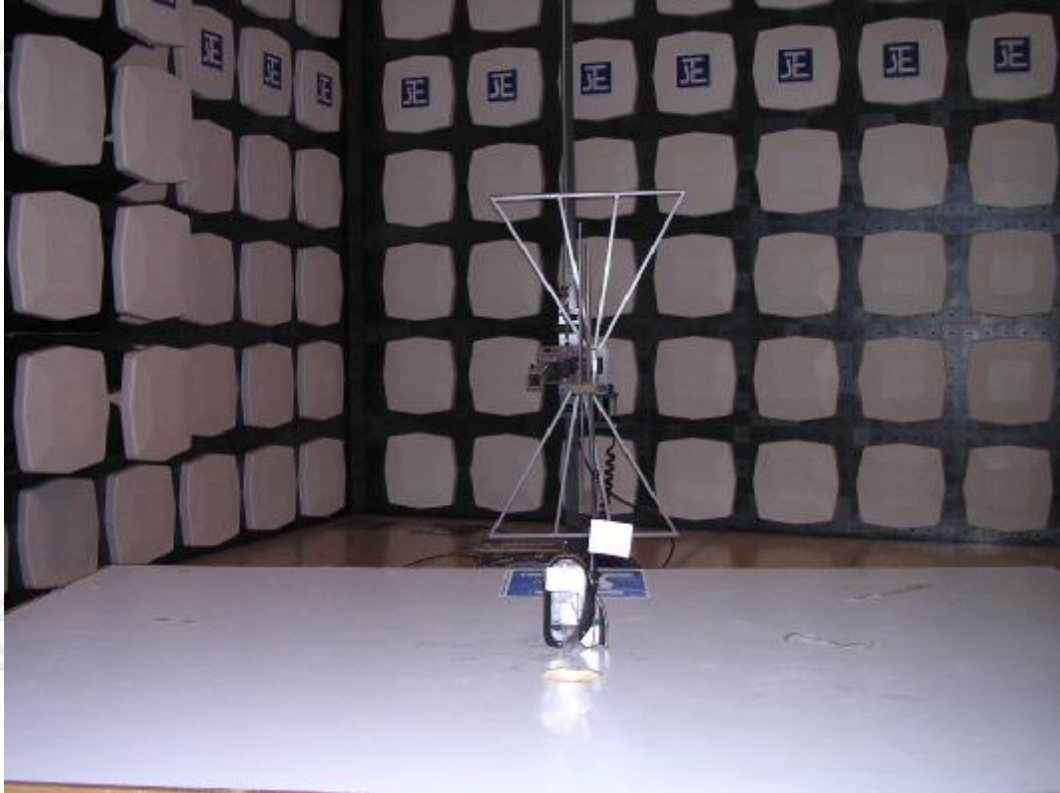
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Photographs of EUT

Measurement of Radiated Emission Test Set Up



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