

COLLAGE INVESTMENTS LLC

Mobile phone

Model: LK-500

August 03, 2012

Report No.: 12050054-FCC-E1

(This report supersedes NONE)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

		
Danny.Li Compliance Engineer	Alex Liu Technical Manager	

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Test result presented in this test report is applicable to the representative sample only.

EMC Test Report

To:FCC Part 15 Subpart B Class B: 2012, ANSI C63.4: 2009

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Laboratory Introduction

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Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless , Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF , Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC , RF/Wireless, Telecom
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Accreditations for Product Certifications

Country/Region	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC, (RCB 208)	RF , Telecom
Hong Kong	OFTA (US002)	RF , Telecom



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1 EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programme was to demonstrate compliance of the COLLAGE INVESTMENTS LLC, Game Scouting Camera and Model: LO8 against the current Stipulated Standards. The Mobile phone has demonstrated compliance with the FCC Part 15 Subpart B Class B: 2012, ANSI C63.4: 2009.

EUT Information

EUT Description : Mobile phone

Main Model : LK-500

Serial Model N/A

RECHARGEABLE BATTERY:

Input Power : Model: BD-L4C
Power Rating: 3.7Vdc, 600mAh

Classification Per Stipulated Test Standard : Class B Emission Product Per
FCC Part 15 Subpart B Class B: 2012, ANSI C63.4: 2009



2 TECHNICAL DETAILS

Purpose	Compliance testing of Mobile phone with stipulated standards
Applicant / Client	COLLAGE INVESTMENTS LLC 11437 NW 34 STREET, DORAL, FLORIDA 33178 U.S.A.
Manufacturer	NINGBO BIRD CO., LTD No.999 Dacheng East Road, Fenghua City, Zhejiang
Laboratory performing the tests	SIEMIC Nanjing (China) Laboratories NO.2-1, Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China Tel:+86(25)86730128/86730129 Fax:+86(25)86730127 Email:info@siemic.com
Test report reference number	12050054-FCC-E1
Date EUT received	July 02, 2012
Standard applied	FCC Part 15 Subpart B Class B: 2012, ANSI C63.4: 2009
Dates of test (from – to)	July 03, 2012
No of Units	#1
Equipment Category	ITE
Trade Name	LIKUID
RF OPERATING FREQUENCY (IES)	GSM850 TX : 824 ~ 849 MHz; RX : 869 ~ 894 MHz PCS1900 TX : 1850 ~ 1910 MHz; RX : 1930 ~ 1990 MHz
NUMBER OF CHANNELS	299CH (PCS1900) and 124CH (GSM850)
Modulation	GSM: GMSK
FCC ID	GAOLK-500



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3 MODIFICATION

NONE

4 TEST SUMMARY

The product was tested in accordance with the following specifications.
All testing has been performed according to below product classification:

Class B Emission Product

Test Results Summary

Emissions			
Test Standard	Description	Product Class	Pass / Fail
FCC Part 15 Subpart B Class B: 2012	Conducted Emissions	See Above	Pass
FCC Part 15 Subpart B Class B: 2012	Radiated Emissions	See Above	Pass

All measurement uncertainty is not taken into consideration for all presented test result.

5 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

5.1 Conducted Emissions Test Result

Note:

1. All possible modes of operation were investigated. Only the several worst case emissions measured, using the correct CISPR and Average detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Conducted Emissions Measurement Uncertainty
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 9kHz – 30MHz (Average & Quasi-peak) is ± 3.86 dB.
4. Environmental Conditions Temperature 25°C
 Relative Humidity 50%
 Atmospheric Pressure 1009mbar
5. Test date : July 03, 2012
Tested By : Danny.Li

Test Result: Pass



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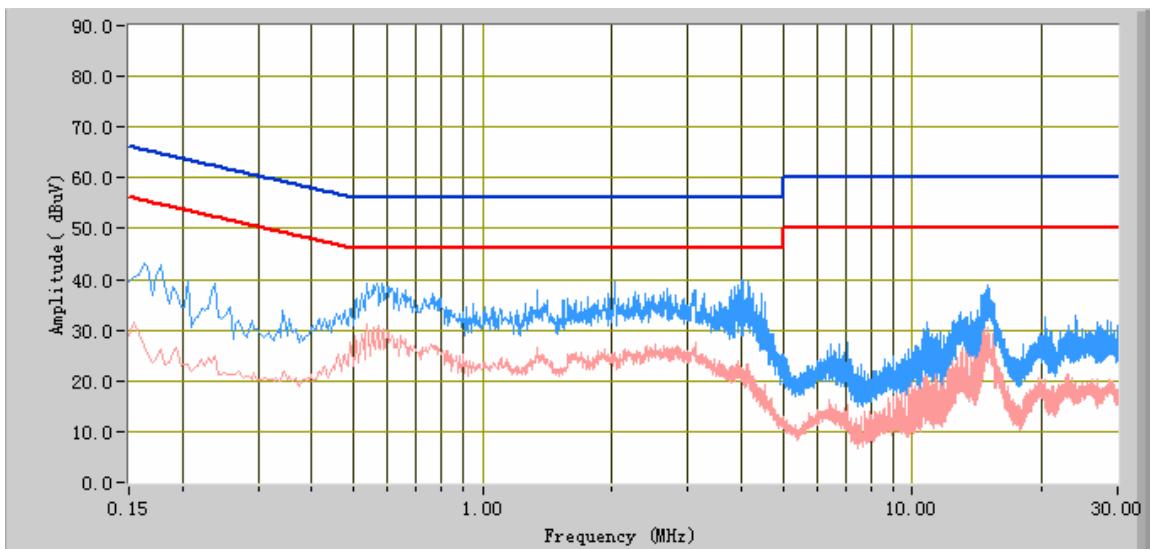
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Test Mode:

Charging & Downloading

Peak Detector Quasi Peak Limit
Average Detector Average Limit



Test Data

Phase Neutral Plot at 120V AC, 60Hz

Frequency (MHz)	Peak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Factors (dB)
3.978	39.929	56.000	-16.071	22.486	46.000	-23.514	10.503
4.046	39.703	56.000	-16.297	22.118	46.000	-23.882	10.502
4.154	39.587	56.000	-16.413	23.133	46.000	-22.867	10.482
2.022	39.493	56.000	-16.507	25.715	46.000	-20.285	10.200
0.538	39.259	56.000	-16.741	31.171	46.000	-14.829	10.160
3.870	38.496	56.000	-17.504	22.102	46.000	-23.898	10.470

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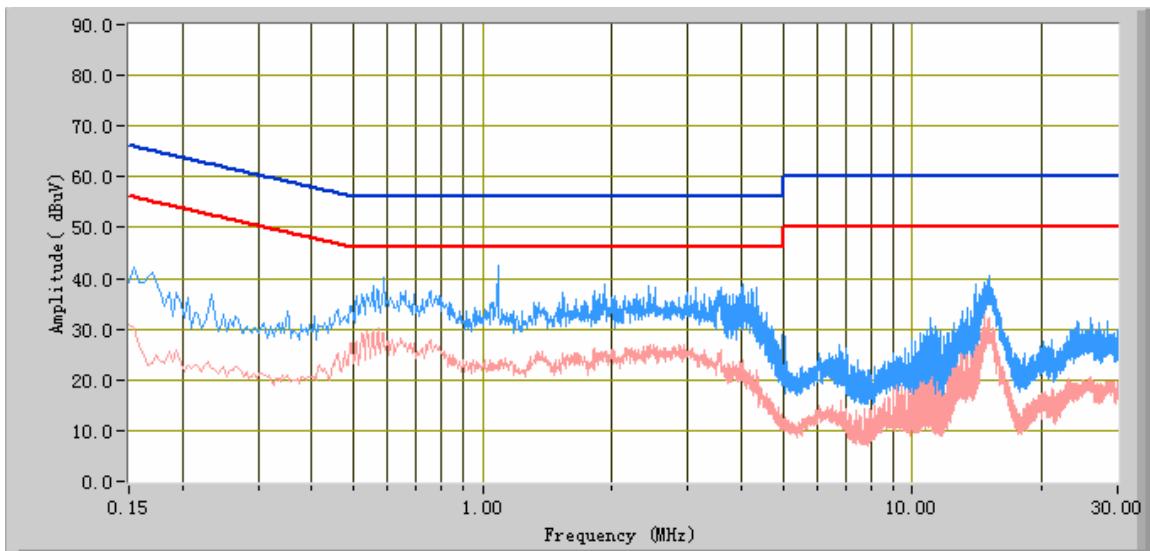
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Test Mode: Charging & Downloading

Peak Detector Quasi Peak Limit
Average Detector Average Limit



Test Data

Phase Line Plot at 120V AC, 60Hz

Frequency (MHz)	Peak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Factors (dB)
1.082	42.526	56.000	-13.474	23.531	46.000	-22.469	10.163
0.590	40.280	56.000	-15.720	27.067	46.000	-18.933	10.150
1.918	38.842	56.000	-17.158	24.606	46.000	-21.394	10.197
4.022	38.734	56.000	-17.266	23.896	46.000	-22.104	10.506
2.438	38.498	56.000	-17.502	26.207	46.000	-19.793	10.200
3.574	38.205	56.000	-17.795	25.035	46.000	-20.965	10.378



5.2 Radiated Emissions Test Results

Note:

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.

2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.

3. **Radiated Emissions Measurement Uncertainty**

All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz (QP only @ 3m & 10m) is +6dB/-6dB (for EUTs < 0.5m X 0.5m X 0.5m).

4.	Environmental Conditions	Temperature	25°C
		Relative Humidity	50%
		Atmospheric Pressure	1011mbar

5. Test date : July 03, 2012
Tested By : Danny.Li

Test Result: Pass



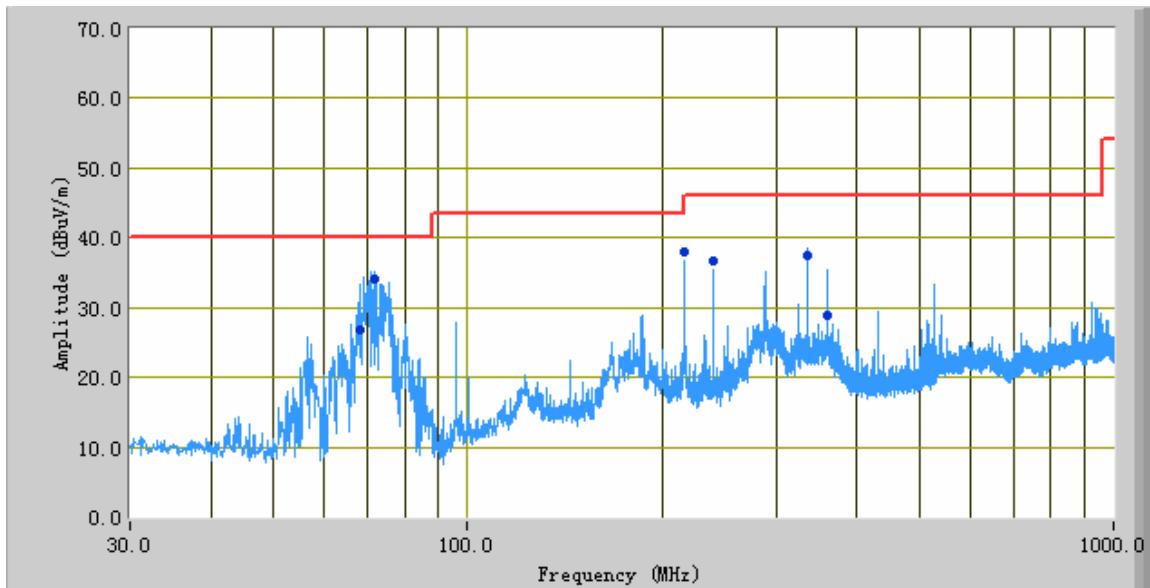
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Test Mode: Charging & Downloading

Below 1GHz

Peak Detector 
Quasi Peak Limit 



Test Data

Horizontal Polarity Plot at 3m

Frequency (MHz)	Quasi Peak (dB μ V/m)	Azimuth	Polarity(H /V)	Height (cm)	Factors (dB)	Limit (dB μ V/m)	Margin (dB)
72.03	34.02	26.00	H	336.00	-37.49	40.00	-5.98
68.11	26.73	183.00	H	303.00	-37.41	40.00	-13.27
336.04	37.51	67.00	H	108.00	-29.71	46.00	-8.49
216.42	38.04	238.00	H	154.00	-34.23	46.00	-7.96
360.71	28.86	16.00	H	124.00	-28.77	46.00	-17.14
240.01	36.67	306.00	H	137.00	-33.55	46.00	-9.33



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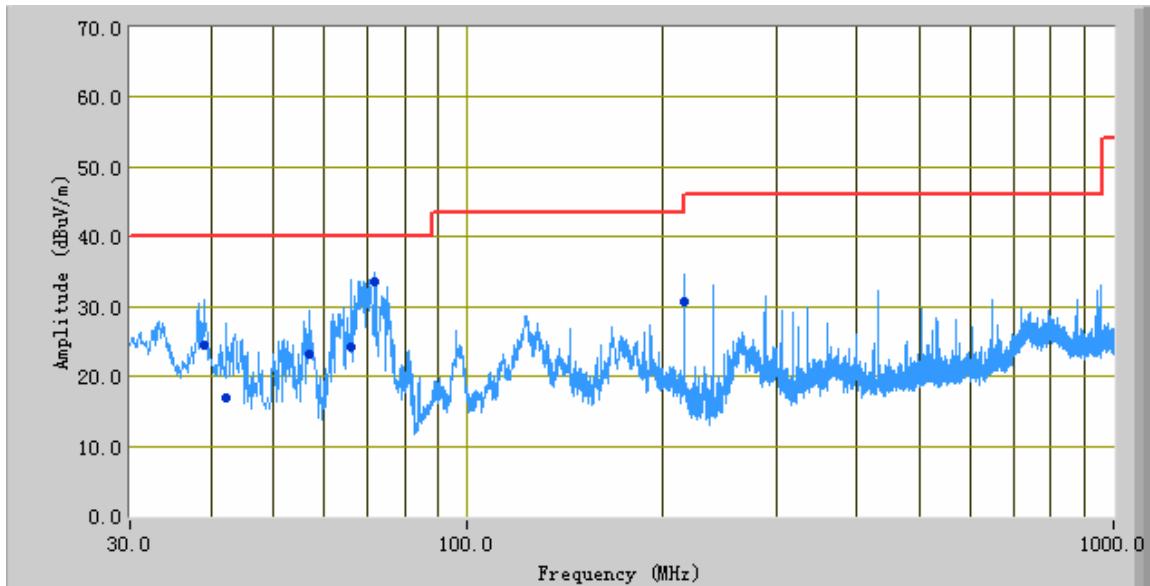
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Test Mode: Charging & Downloading

Below 1GHz

Peak Detector 
Quasi Peak Limit 



Test Data

Vertical Polarity Plot at 3m

Frequency (MHz)	Quasi Peak (dB μ V/m)	Azimuth	Polarity(H /V)	Height (cm)	Factors (dB)	Limit (dB μ V/m)	Margin (dB)
72.00	33.50	266.00	V	111.00	-37.18	40.00	-6.50
66.00	24.12	239.00	V	145.00	-37.15	40.00	-15.88
39.00	24.55	270.00	V	110.00	-25.74	40.00	-15.45
56.94	23.13	223.00	V	102.00	-35.91	40.00	-16.87
216.40	30.72	301.00	V	220.00	-33.59	46.00	-15.28
42.18	16.93	156.00	V	173.00	-27.74	40.00	-23.07

Note: The data above 1 GHz which below 20 dB to the limit was not recorded.



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Annex A. TEST INSTRUMENTATION & GENERAL PROCEDURES

Annex A.i. TEST INSTRUMENTATION

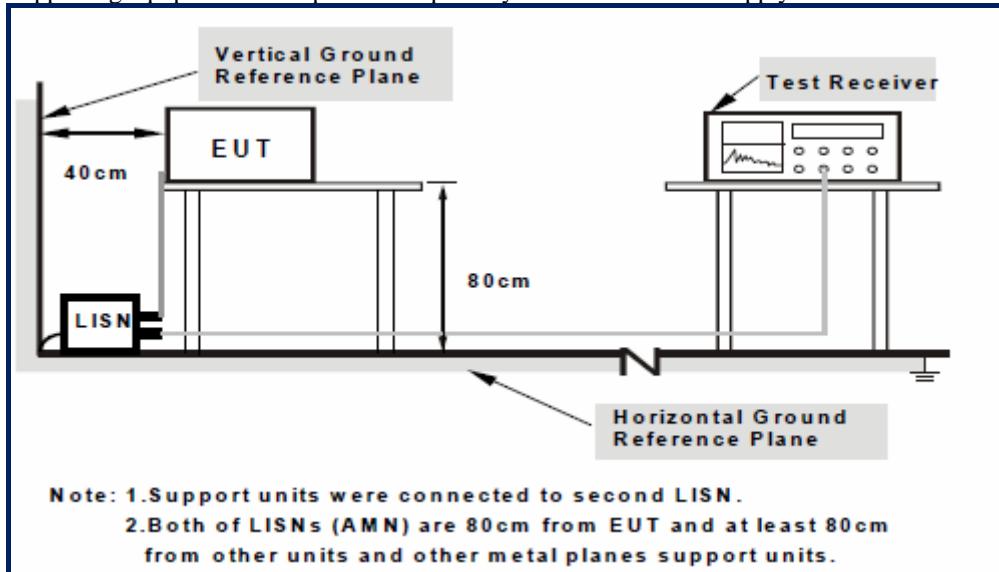
Instrument	Model	Serial #	Calibration Date	Calibration Due Date
AC Line Conducted Emissions				
R&S EMI Test Receiver	ESPI3	101216	08/26/2011	08/25/2012
Com-Power LISN	LI-115	241090	05/26/2012	05/25/2013
Com-Power Transient Limiter	LIT-153	531021	05/26/2012	05/25/2013
Radiated Emissions				
Hp Spectrum Analyzer	8563E	3821A09023	01/10/2012	01/09/2013
R&S EMI Receiver	ESPI3	101216	08/26/2011	08/25/2012
Antenna (30MHz~6GHz)	JB6	A121411	12/28/2011	12/27/2012
ETS-Lindgren Antenna (1 ~18GHz)	3115	N/A	10/04/2011	10/03/2012
A-INFOMW Antenna (1 ~18GHz)	JXTXLB-10180	J2031081120 092	06/25/2012	06/24/2013
Horn Antenna (18~40GHz)	AH-840	N/A	07/23/2012	07/22/2013
Microwave Pre-Amp (18~40GHz)	PA-840	N/A	Every 2000 Hours	
Hp Agilent Pre-Amplifier	8447F	1937A01160	05/25/2012	05/24/2013
MITEQ Pre-Amplifier (0.1 ~ 18GHz)	AMF-7D-00101800-30-10P	1451710	05/26/2012	05/25/2013
Chamber	3m	N/A	04/13/2012	04/12/2013



Annex A.ii. AC LINE CONDUCTED EMISSIONS TEST DESCRIPTION

Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.
2. The power supply for the EUT was fed through a $50\Omega/50\mu\text{H}$ EUT LISN, connected to filtered mains.
3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.
4. All other supporting equipments were powered separately from another main supply.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration1

Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.
3. High peaks, relative to the limit line, were then selected.
4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 kHz. For FCC tests, only Quasi-peak measurements were made; while for CISPR/EN tests, both Quasi-peak and Average measurements were made.
5. Steps 2 to 4 were then repeated for the LIVE line (for AC mains) or DC line (for DC power).

Description of Conducted Emission Program

This EMC Measurement software run LabView automation software and offers a common user interface for electromagnetic interference (EMI) measurements. This software is a modern and powerful tool for controlling and monitoring EMI test receivers and EMC test systems. It guarantees reliable collection, evaluation, and documentation of measurement results. Basically, this program will run a pre-scan measurement before it proceeds with the final measurement. The pre-scan routine will run the common scan range from 150 kHz to 30 MHz; the program will first start a peak and average scan on selectable measurement time and step size. After the program complete the pre-scan, this program will perform the Quasi Peak and Average measurement, based on the pre-scan peak data reduction result.



Sample Calculation Example

At 20 MHz limit = 250 μ V = 47.96 dB μ V

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB

Q-P reading obtained directly from EMI Receiver = 40.00 dB μ V
(Calibrated for system losses)

Therefore, Q-P margin = 47.96 – 40.00 = 7.96 i.e. **7.96 dB below limit**



Annex A. iii. RADIATED EMISSIONS TEST DESCRIPTION

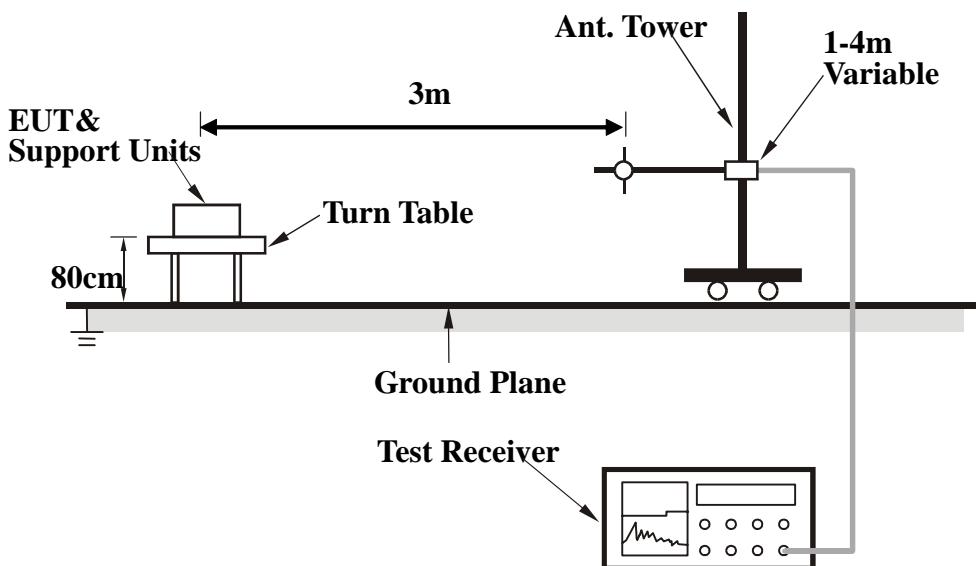
EUT Characterisation

EUT characterisation, over the frequency range from 30MHz to 10th Harmonic, was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

The EUT was placed in the chamber, at a height of about 0.8 m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer /receiver with the appropriate broadband antenna placed 3m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred; clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS) or 3m EMC chamber.

Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5mX1.0mX0.8m high, non-metallic table.
2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.
3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration2



Test Method

The following procedure was performed to determine the maximum emission axis of EUT:

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

Final Radiated Emission Measurement

1. Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function.
2. For emission frequencies measured below 1GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on an open test site. As the same purpose, for emission frequencies measured above 1GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1GHz, set the spectrum analyzer on a 100kHz and 1MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0° to 360° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading.
5. Repeat step 4 until all frequencies need to be measured was complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Peak	100kHz	100kHz
Above 1000	Peak	1MHz	1MHz
	Average	1MHz	10Hz

Sample Calculation Example

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

$$\text{Peak} = \text{Reading} + \text{Corrected Factor}$$

where

$$\text{Corr. Factor} = \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain (if any)}$$

And the average value is

$$\text{Average} = \text{Peak Value} + \text{Duty Factor} \text{ or}$$
$$\text{Set RBW} = 1\text{MHz}, \text{VBW} = 10\text{Hz}.$$

Note:

If the measured frequencies are fall in the restricted frequency band, the limit employed must be quasi peak value when frequencies are below or equal to 1GHz. And the measuring instrument is set to quasi peak detector function.



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Annex B. EUT AND TEST SETUP PHOTOGRAPHS

Please see attachment



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Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

EUT TEST CONDITIONS

Annex C. i. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Equipment Description (Including Brand Name)	Model & Serial Number	Cable Description (List Length, Type & Purpose)
Gateway Laptop	MS2288 & LXWHF02013951C3CA92200	N/A

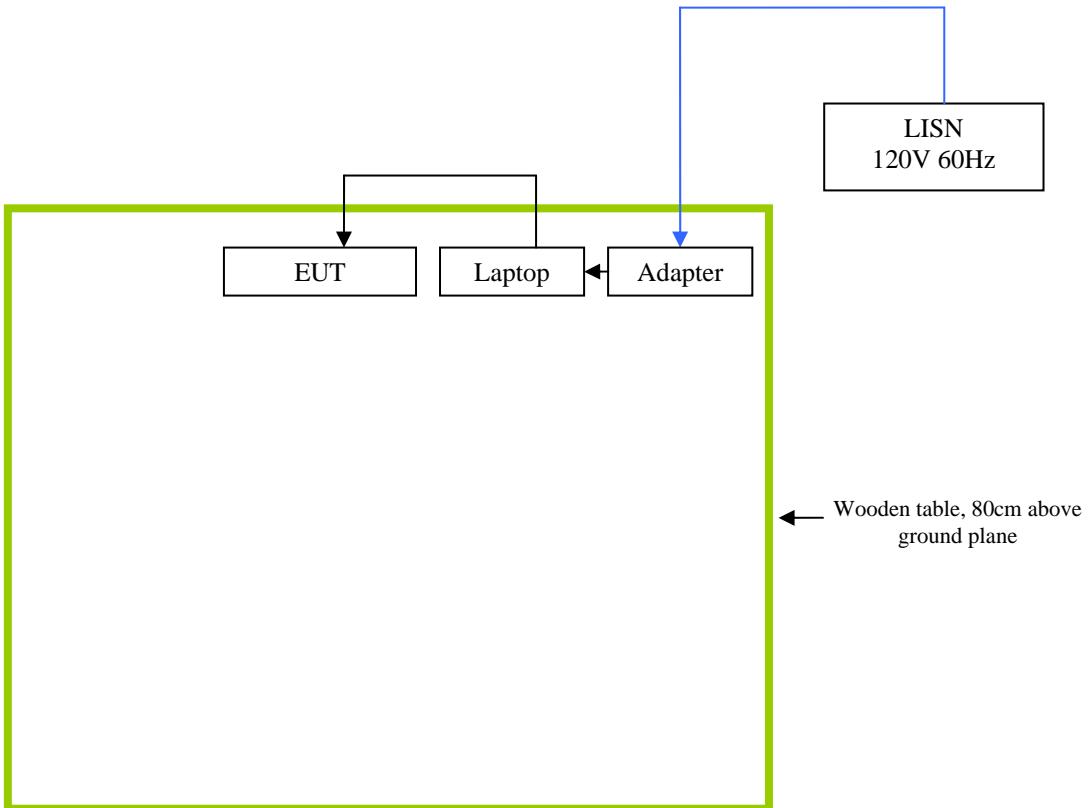


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Block Configuration Diagram for Conducted Emissions



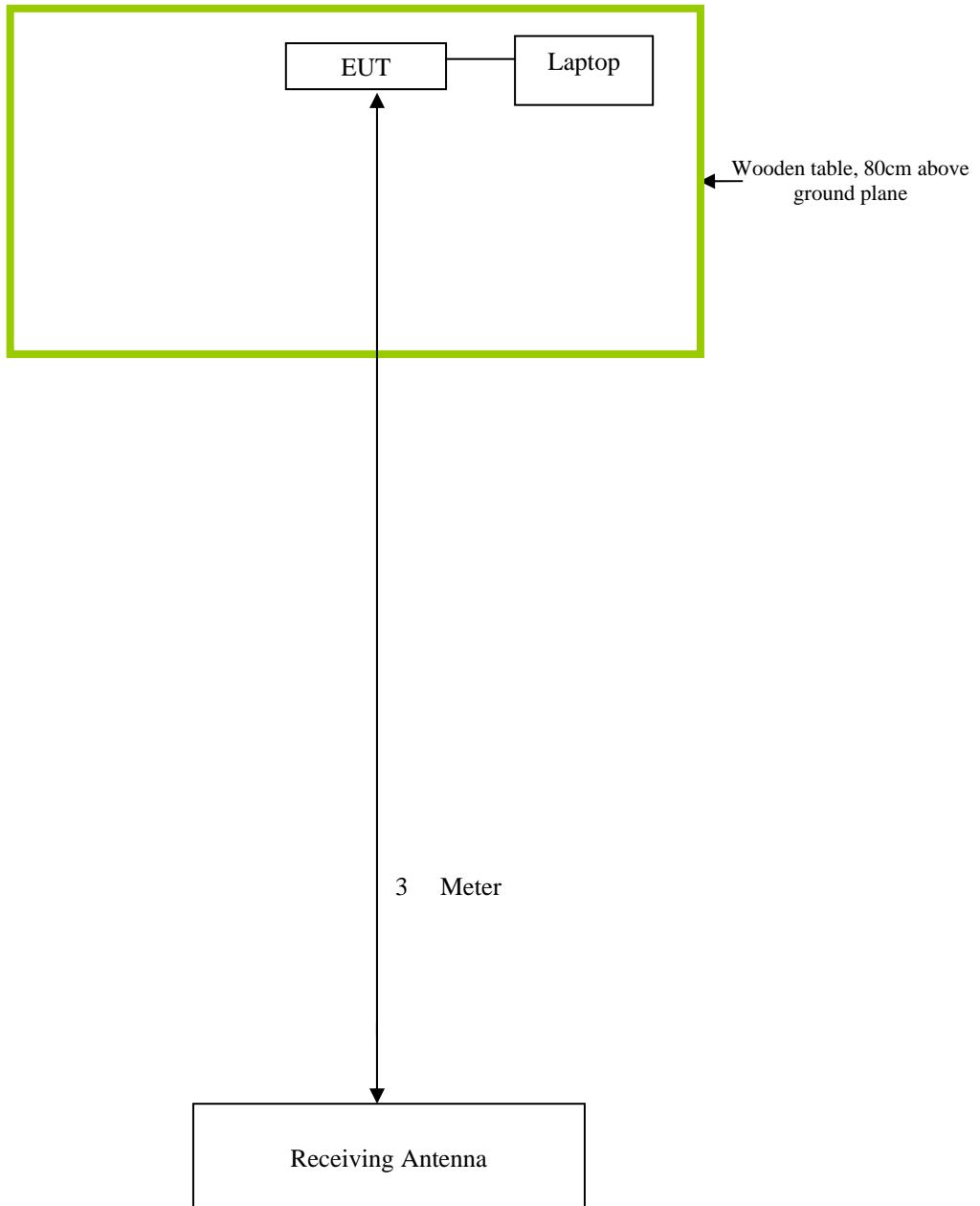


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Block Configuration Diagram for Radiated Emissions





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Annex C.ii. EUT OPERATING CONDITIONS

The following is the description of how the EUT is exercised during testing.

Test	Description Of Operation
Emissions	Charging & Downloading



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Annex D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PART LIST

Please see attachment



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Annex E. DECLARATION OF SIMILARITY

N/A