Test report no. : 193638-1

Item tested : L951LP

Type of equipment : LF Locator

FCC ID : BXZL951LP

IC : 3724B-L951LP

Client : Ascom Sweden AB

FCC Part 15C
Power Line conducted emission (15.207)
and Radiated emissions (15.209)

RSS-GEN, Issue 3
General Requirements and Information
for the Certification of Radio Apparatus

2012-04-27

Authorized by : .....
Geir Antonsen
Technical Verificator

Nemko AS, Gaustadalléen 30, P.O.Box 73 Blindern, NO-0314 Oslo Norway **T** +47 22 96 03 30 **F** +47 22 96 05 50 Enterprise number NO974404532
Visiting address: Nemko Kjeller, Instituttveien 6, P.O.Box 96, NO-2027 Kjeller Norway **T** +47 64 84 57 00 **F** +47 64 84 57 05

CONTENTS

1 GENERAL INFORMATION

1.1 Testhouse Info

Name :	Nemko AS
Address :	Nemko Kjeller Instituttveien 6, Box 96 NO-2027 Kjeller, NORWAY
Telephone :	+47 64 84 57 00
Fax :	+47 64 84 57 05
E-mail:	comlab@nemko.com
FCC test firm :	994405
IC OATS :	2040D-1
Total Number of Pages:	16

1.2 Client Information

Name :	Ascom Sweden AB
Address :	Grimbodalen 2, P.O.Box 8783, SE-40276 Gotenberg, Sweden.
Telephone :	+46 31 55 94 16
Fax :	+46 31 55 20 31

Contact:

Name :	Gilbert Kristiensson
Telephone :	+46 31 55 94 16
E-mail :	gilbert.kristensson@ascom.se

1.3 Responsible Manufacturer (If other than client)

Name :	/
Address :	/

2 Test Information

2.1 Test Item

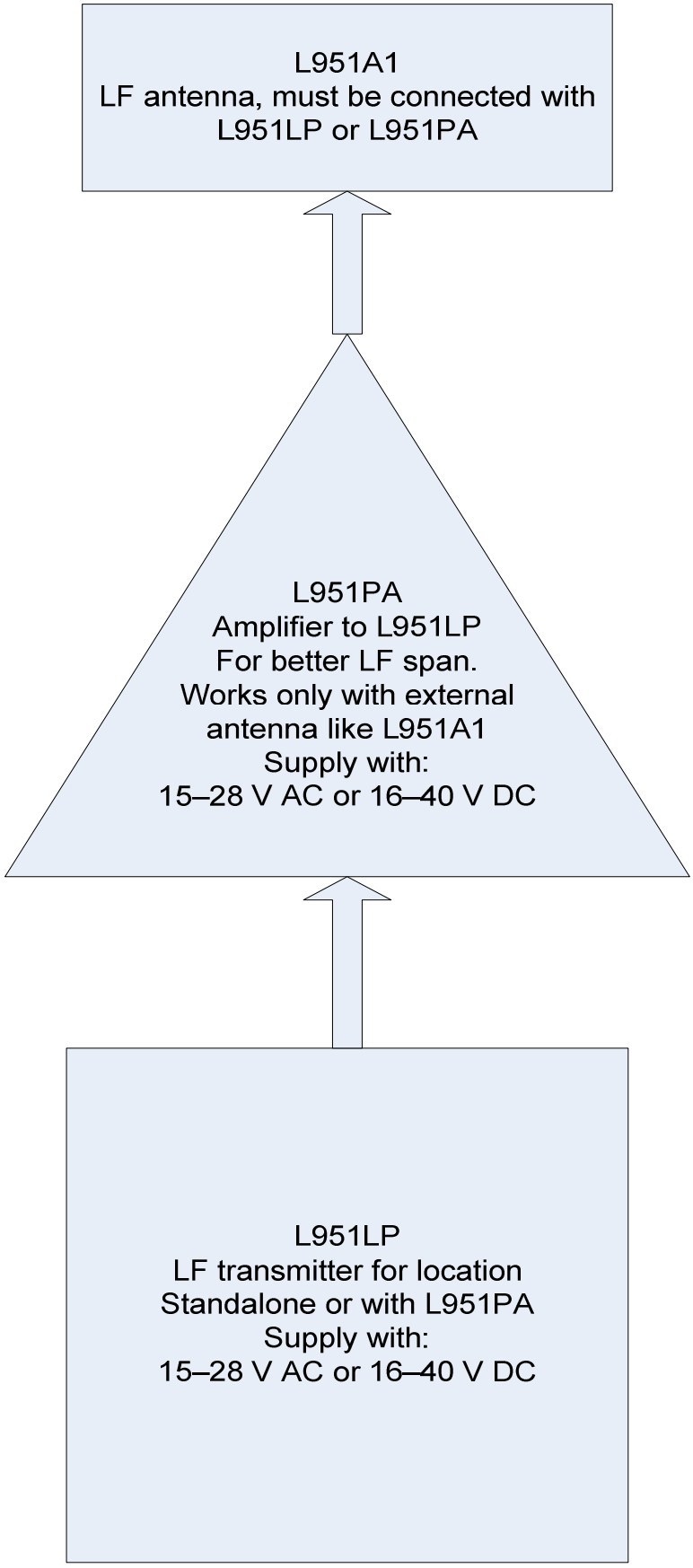
Name :	Ascom
FCC ID :	BXZL951LP
IC :	3724B-L951LP
Model/version :	L951LP
Serial number :	/
Hardware identity and/or version:	/
Software identity and/or version :	/
Frequency Range :	40kHz
Number of Channels :	/
Type of Modulation :	FSK
User Frequency Adjustment :	None
Type of Power Supply :	DC 24V
Antenna Connector :	Integral
Antenna Diversity Supported :	No
Desktop Charger :	None

Description of Test Item

L951LP is an LF transmitter with a configurable ID that gives a unique location from each transmitter (Stand-alone)

Exposure Evaluation

The EUT is exempted from RF Exposure Evaluation.


L951A1
LF antenna, must be connected with
L951LP or L951PA
L951PA
Amplifier to L951LP
For better LF span.
Works only with external
antenna like L951A1
Supply with:
15–28 V AC or 16–40 V DC
L951LP
LF transmitter for location
Standalone or with L951PA
Supply with:
15–28 V AC or 16–40 V DC

2.2 Test Environment

2.2.1 Normal test condition

Temperature:	20 – 22 °C
Relative humidity:	27 – 36 %
Normal test voltage:	12V DC

The values are the limit registered during the test period.

2.3 Test Period

Item received date:	2012-01-26
Test period :	2012-01-26

3 TEST REPORT SUMMARY

3.1 General

Manufacturer: Ascom Sweden AB

Model No.: L951LP

Serial No.: /

All measurements are tracable to national standards.

The tests were conducted for the purpose of demonstrating compliance with FCC CFR 47 Part 15C and Industry Canada RSS-Gen Issue 3.

Radiated tests were conducted in accordance with ANSI C63.4-2003. The radiated tests were made in a semi-anechoic chamber at measuring distances of 3m and 10m.

☒ New Submission ☒ Production Unit

☐ Class II Permissive Change ☐ Pre-production Unit

DCD Equipment Code ☐ Family Listing

THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.

Deviations from, additions to, or exclusions from the test specifications are described in "Summary of Test Data".

TEST REPORT #: 193590

TESTED BY: Tore Løvlien DATE: 2012-04-23

Tore Løvlien, Test engineer

3.2 Test Summary

Name of test	FCC Part 15 reference	RSS-Gen, Issue 3 Reference	Result
Power Line Conducted Emissions	15.107(a) 15.207(a)	7.2.4	Complies
Spurious Emissions (Radiated)	15.209(a)	7.2.5	Complies
20dB Emission Bandwidth	N/A	4.6.3	No requirement

3.3 Description of modification for Modification Filing

Not applicable.

3.4 Comments

All ports were populated during spurious emission measurements.

3.5 Family List Rational

Not Applicable.

4 TEST RESULTS

4.1 20 dB Bandwidth

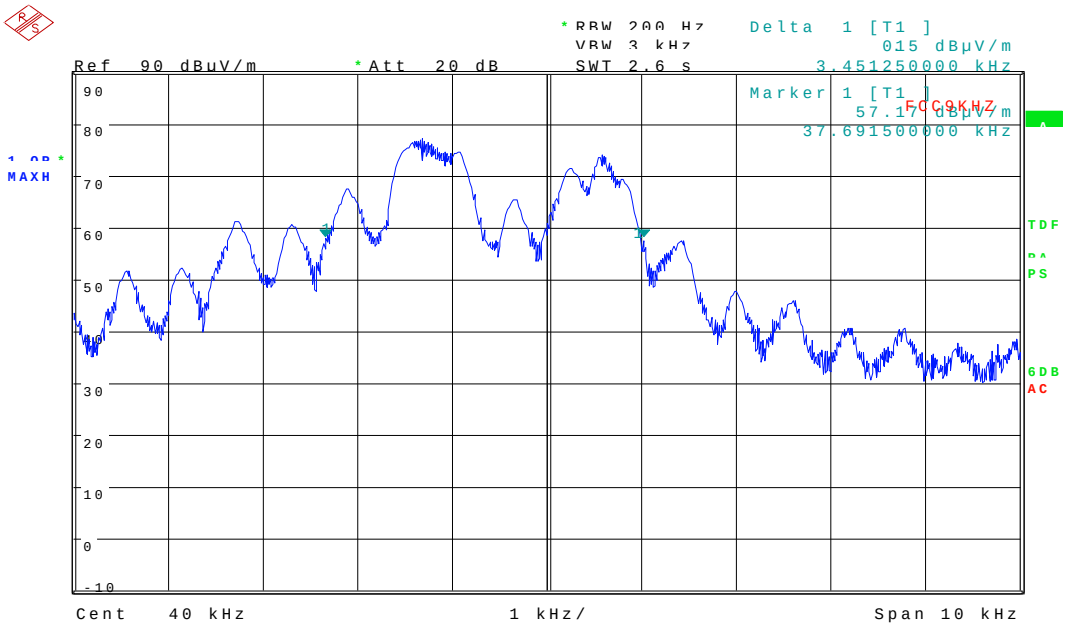
Test Performed By: G.Suhanthakumar	Date of Test: 26.01. 2012

Measurement Data:

Measured 20 dB Bandwidth
40kHz
3.45kHz

Requirements:

No requirements. Reported for information only.



Date: 26.JAN.2012 11:38:09

20 dB Bandwidth at 40kHz

4.2 Power Line Conducted Emissions

Para. No.: 15.207 (a)

Test Performed By: Tore Løvlien	**Date of Test: 26.01.2012**

Measurement procedure: **ANSI C63.4-2003 using 50 µH/50 ohms LISN.**

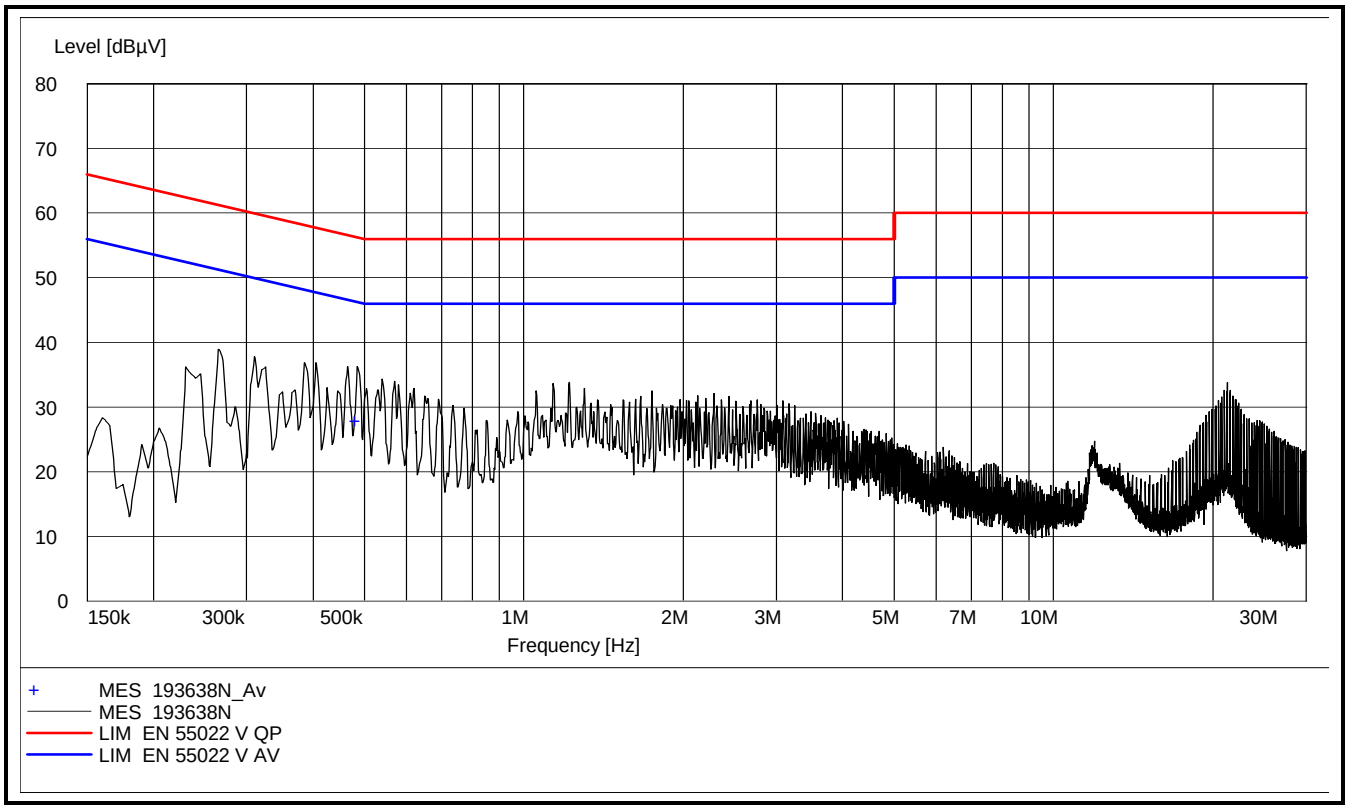
Test Results: **Complies**

Measurement Data: **All emissions were below the Average Limit even when measured with Peak Detector. See attached plots (Peak detector).**

Order #:	193638	Operator:	TLO
		Test site:	Shielded Enclosure C
Manufacturer:	Ascom	Doc date:	26-01-2012
Model:	L951LP (193638)	Doc time:	12:33
	L951PA (193638)		

Specifications and comments:

24Vdc LR-1012 Oltronix B32-10R



QP results:

Frequency [MHz]	Level [dBuV]	Limit [dBuV]	Margin [dB]	Det	Position	Verdict [Pass/Fail]
-	-	-	-	QP	L1 + N	PASS

AV results:

Frequency [MHz]	Level [dBuV]	Limit [dBuV]	Margin [dB]	Det	Position	Verdict [Pass/Fail]
0.485000	27.80	46.30	18.50	AV	N	PASS

4.3 Spurious Emissions (Radiated)

Para. No.: 15.209 (a)

Test Performed By: Tore Løvlien	**Date of Test: 26 Jan 2012**

Test Results: Complies

Measurement Data:

9kHz - 1000MHz

Frequency	Operational condition	Field strength (QP)	Measuring distance	Polarization	Limit FCC15.209	Margin
MHz		dBµV/m	m	-	dBµV/m	dB
0.03869*	TXON	77.15	10	-	94.94	17.19
0.04059*	TXON	74.17	10	-	94.52	20.35
40.69	TX ON	35.7	3	VP	40	4.3

*RF Carrier

See attached plots.

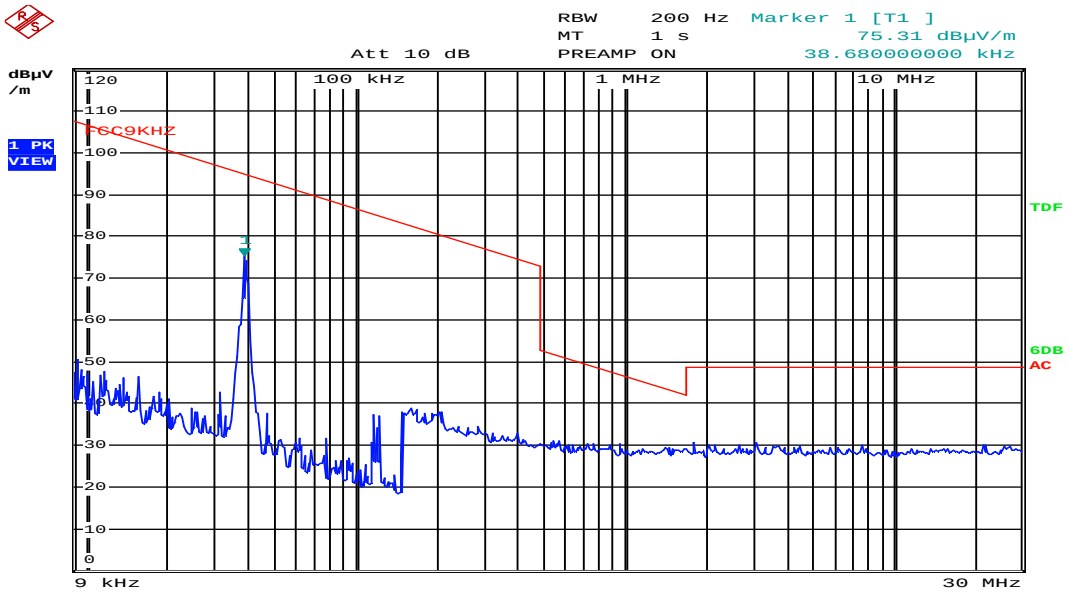
Requirements:

According to FCC section 15.209(a)

Radiated emission 9kHz – 30 MHz.

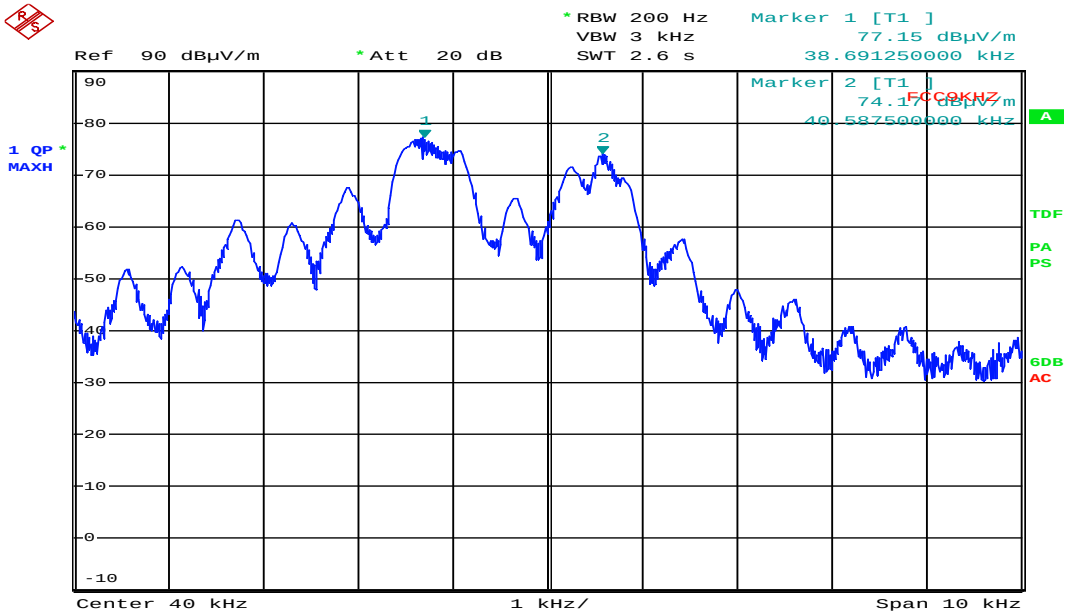
Detector: Q-Peak

Measuring distance 10m.



Date: 26.JAN.2012 11:24:42

Radiated Emissions, 9kHz – 30 MHz, @10m



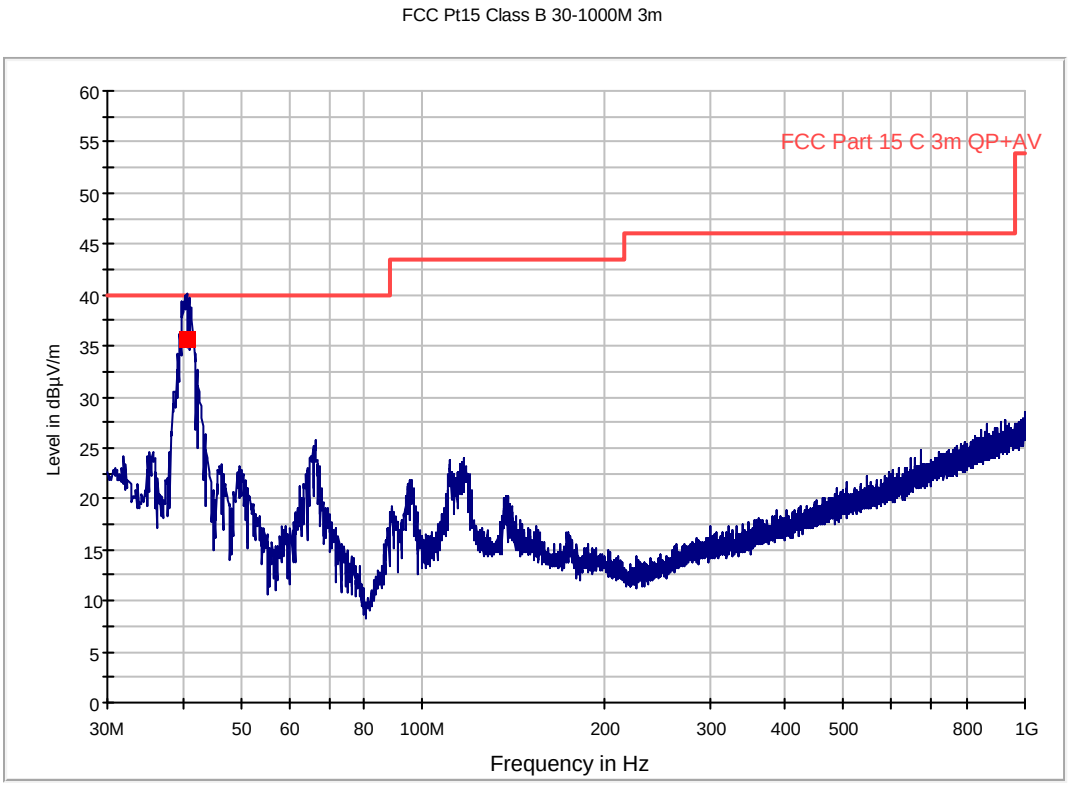
Date: 26.JAN.2012 11:33:09

RF Carrier, 40kHz, @10m

Radiated emission 30 – 1000 MHz.

Detector: Q-Peak

Measuring distance 3m.



Radiated Emissions, 30 – 1000 MHz, VP and HP, @3m

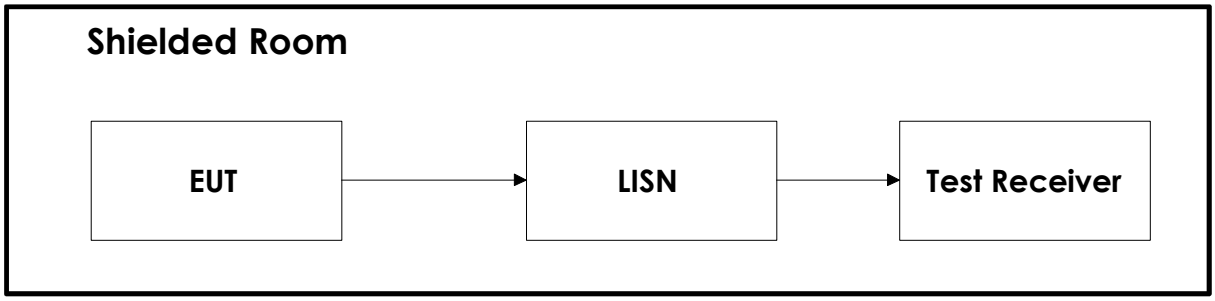
5 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the test laboratory.

No.	Instrument/ ancillary	Type of instrument/ ancillary	Manufacturer	Ref. no.	Cal. Date	Cal. Due
1	ESHS10	Spectrum Analyzer	Rohde & Schwarz	N-3528	2011.06.21	2012.06.21
2	JB3	Antenna Bilog	Sunol Sciences Inc.	N-4525	2011.09	2012.09
3	LNA6900	Pre-amplifier	Teseq	LR 1593	2011.11.24	2013.11.24
4	ESCI	Test Receiver	Rohde & Schwarz	N-4529	2010.11.08	2012.11.08
5	ESH3-Z3	LISN	Rohde & Schwarz	LR 1076	2011-11-03	2013-11-03
6	Model 87 V	Multimeter	Fluke	LR 1598	2011-11-03	2012-11-03
7	ESH3-Z2	Puls Limiter	Rohde & Schwarz	N-3932	2010.11.04	2012.11.04

6 BLOCK DIAGRAM

6.1 Power Line Conducted Emission



6.2 Test Site Radiated Emission