

Test Report

Product	LF Beacon	
Name and address of the applicant	Ascom Sweden AB Grimbodalen 2, P.O. Box 8783, Goteborg, SE-40276, Sweden	
Name and address of the manufacturer	Ascom Sweden AB Grimbodalen 2, P.O. Box 8783, Goteborg, SE-40276, Sweden	
Model	NILF	
Rating	24 V DC via 100 - 240V AC/DC adapter GlobTek Inc.	
Trademark	Ascom	
Serial number	/	
Additional information	125kHz low power transmitter	
Tested according to	FCC Part 15.209 Digital Transmission Systems Industry Canada RSS-210, Issue 8 Low Power Licence-Exempt Radiocommunications Devices	
Order number	251949	
Tested in period	2014.02.18 - 2014.02.19	
Issue date	2014.05.16	
Name and address of the testing laboratory	 Instituttveien 6 Kjeller, Norway FCC No: 994405 IC OATS: 2040D-1 TEL: (+47) 22 96 03 30 FAX: (+47) 22 96 05 50	
	 Prepared by [G.Suhanthakumar]	 Approved by [Frode Sveinsen]
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1 INFORMATION

1.1 Test Item

Name :	Ascom
FCC ID :	BXZNILF
IC :	3724B-NILF
Model/version :	NILF
Serial number :	10528365
Hardware identity and/or version:	NILF-AAA
Software identity and/or version :	1.0.4
Frequency Range :	125kHz
Number of Channels :	N/A
Type of Modulation :	AM/OOK
User Frequency Adjustment :	None
Type of Power Supply :	24Vdc
Antenna Connector :	Integral Loop antenna

Description of Test Item

The NILF-AAA is an LF beacon that transmits LF messages with a regular interval, to be received by Wireless Alarm Devices that are within range. The LF message contains the unique location ID of the NILF-AAA, which is used as location information for the Wireless Alarm Devices. The NILF-AAA is either battery operated, connected to a mains power adapter or 12-24VDC external power. It is possible to plug-in an NIRX to send a low battery status alarm, tamper alarm and a heartbeat.

Exposure Evaluation

The EUT is exempted from RF Exposure Evaluation.

Labeling

The Device must be labeled with the two-part warning statement:

“This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.”

Canada:

The device must be labeled according to RSS-310 clause 2.2 with the words: **“Canada 310”**.

1.2 Test Environment

1.2.1 *Normal test condition*

Temperature:	20 - 22 °C
Relative humidity:	40 - 42 %
Normal test voltage:	120Vac

The values are the limit registered during the test period.

1.3 Test Engineer(s)

G.Suhandhakumar

1.4 Test Equipment

See list of test equipment in clause 4.

2 TEST REPORT SUMMARY

2.1 General

All measurements are traceable to national standards.

The tests were conducted for the purpose of demonstrating compliance with FCC CFR 47 Part 15, paragraph 15.209 and Industry Canada RSS-210 Issue 8.

Radiated tests were conducted in accordance with ANSI C63.4-2003 and KDB 558074 D01 DTS Measurement Guidance v03r01. The radiated tests were made in a semi-anechoic chamber at measuring distances of 3m and 10m.

A description of the test facility is on file with the FCC and Industry Canada.

- | | |
|---|---|
| <input checked="" type="checkbox"/> New Submission | <input checked="" type="checkbox"/> Production Unit |
| <input type="checkbox"/> Class II Permissive Change | <input type="checkbox"/> Pre-production Unit |
| DTS Equipment Code | <input type="checkbox"/> 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".

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2.2 Test Summary

Name of test	FCC Part 15 reference	RSS-210 Issue 8 reference	Result
Power Line Conducted Emission	15.107(a) 15.207(a)	7.2.2 (RSS-GEN)	Pass
Spurious Emissions (Radiated)	15.109(a) 15.209(a)	A8.5	Pass
Receiver Emissions (Radiated)	15.109(a)	2.3	Pass

2.3 Description of modification for Modification Filing

Not applicable.

2.4 Comments

All ports were populated during spurious emission measurements.

2.5 Family List Rational

Not Applicable.

3 TEST RESULTS

3.1 Power Line Conducted Emissions

Para. No.: 15.207 (a)

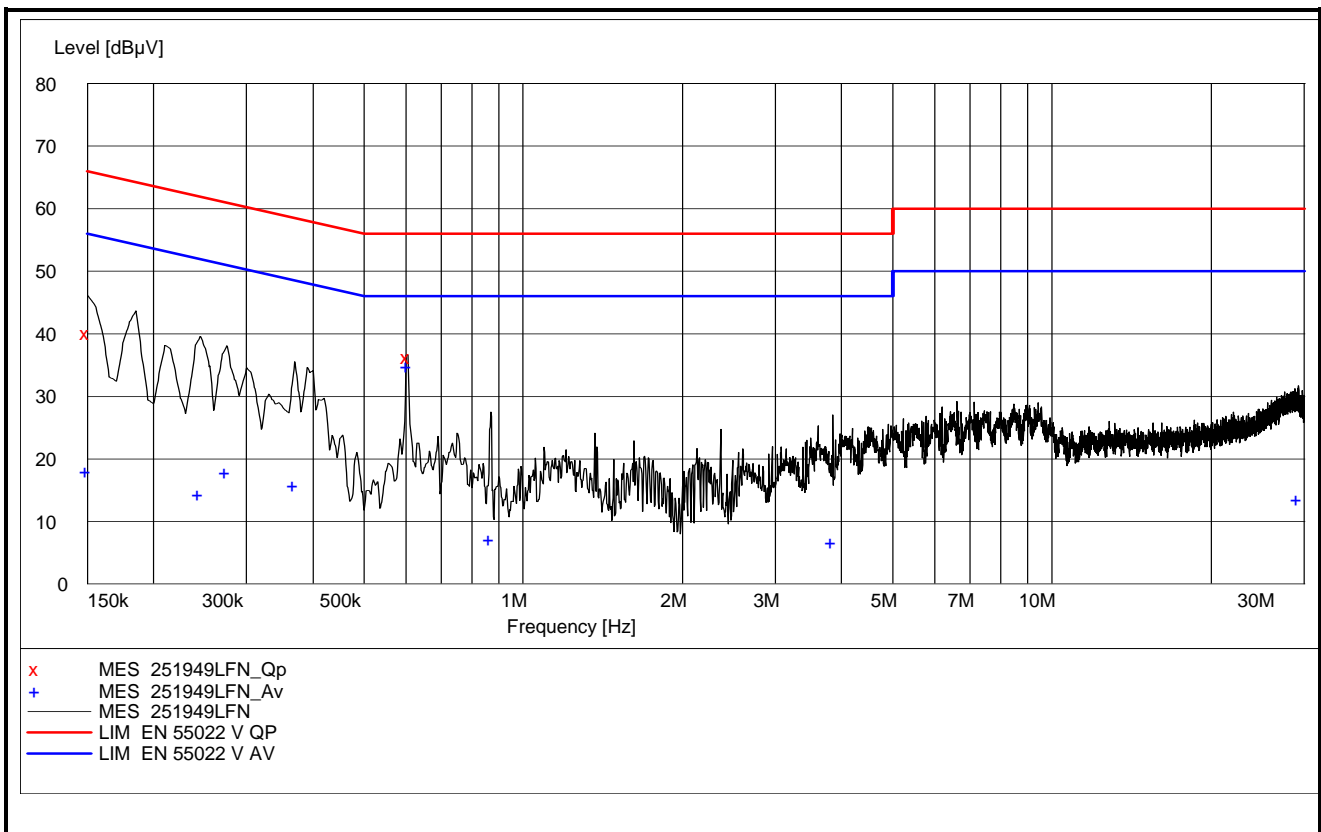
Test Performed By: G.Suhandhakumar	Date of Test: 2014.02.19
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Measurement procedure: ANSI C63.4-2003 using 50 µH/50 ohms LISN.

Test Results: Complies

Measurement Data: See attached graph, (Peak detector).

Manufacturer supplied AC/DC adapter is used: GlobTek , model GT911203024PEIM(RV), 120V/60Hz



Frequency [MHz]	Level [dBuV]	Af [dB]	Limit [dBuV]	Margin [dB]	Det	Position	Verdict [Pass/Fail]
0.150000	40.20	10.10	66.00	25.80	QP	N	Pass
0.605000	36.20	10.20	56.00	19.80	QP	N	Pass

Frequency [MHz]	Level [dBuV]	Af [dB]	Limit [dBuV]	Margin [dB]	Det	Position	Verdict [Pass/Fail]
0.150000	18.10	10.10	56.00	37.90	AV	N	Pass
0.245000	14.40	10.10	51.90	37.50	AV	N	Pass
0.275000	18.00	10.10	51.00	33.00	AV	N	Pass
0.370000	15.90	10.20	48.50	32.60	AV	L1	Pass
0.605000	34.80	10.20	46.00	11.20	AV	N	Pass
0.870000	7.10	10.20	46.00	38.90	AV	N	Pass
3.855000	6.70	10.30	46.00	39.30	AV	L1	Pass
29.280000	13.60	11.40	50.00	36.40	AV	L1	Pass

3.2 20 dB Bandwidth

Para. No.: RSS-Gen

Test Performed By: G.Suhanthakumar	Date of Test: 2014.02.18
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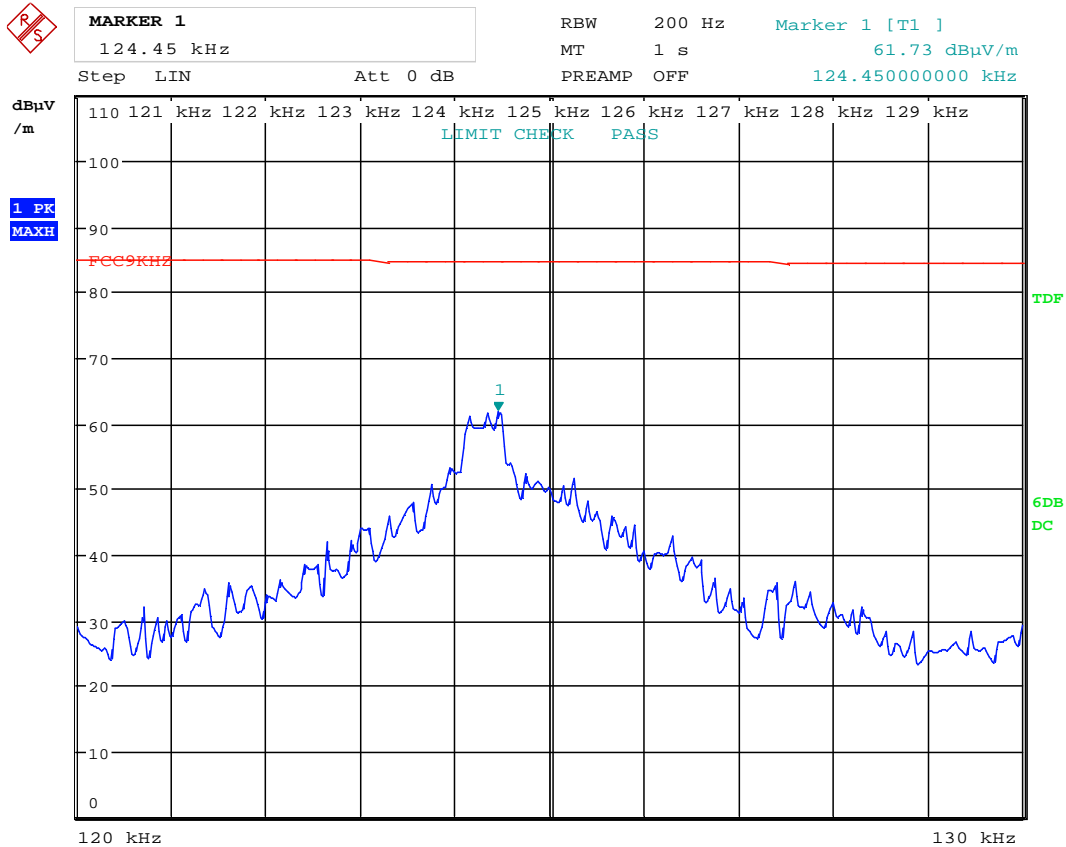
Test Results: Complies

Measurement Data:

20 dB Bandwidth (kHz)		
-	125kHz	-
-	3kHz	-

Requirements:

For information only



Date: 18.FEB.2014 09:24:04

3.3 Spurious Emissions (Radiated)

Para. No.: 15.209 (c)

Test Performed By: G.Suhanthakumar	Date of Test: 2014.02.18
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Test Results: Complies

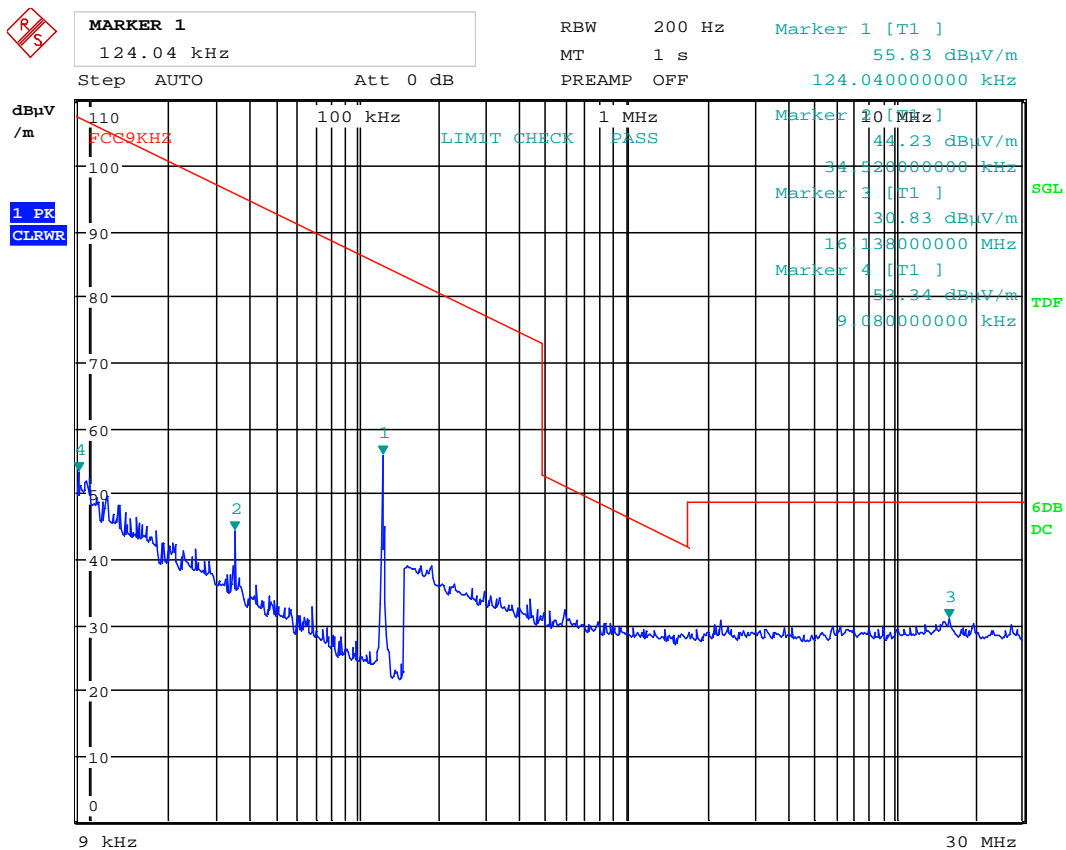
Measurement Data:

Radiated emission 10 kHz-30 MHz.

Measuring distance 10 m, measured with Peak detector.

No component detected, see attached graph.

Limit is converted to 10m using 40 dB/decade according to 15.31 (f) (2).

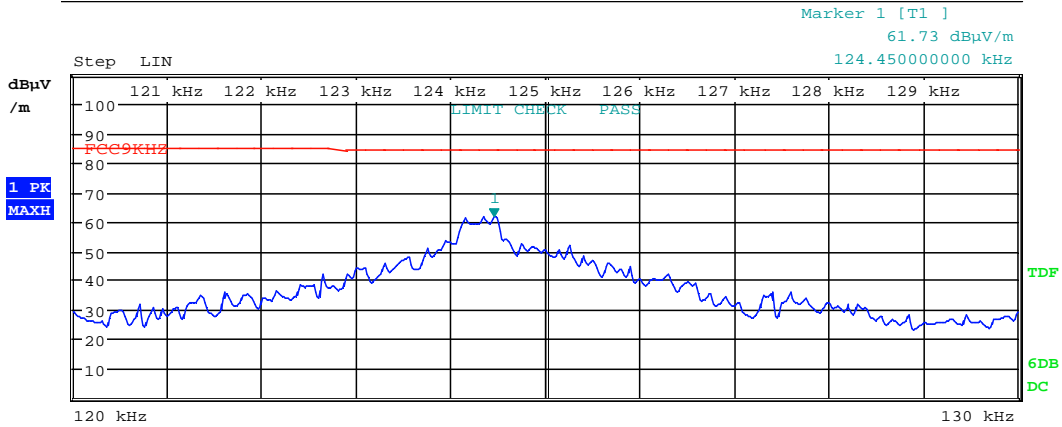
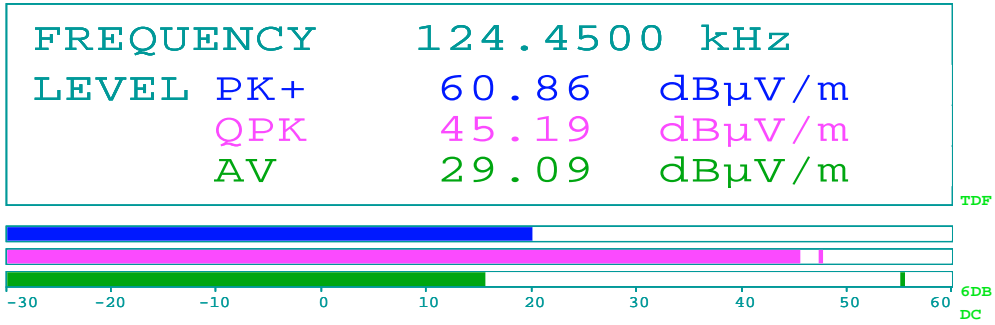


Date: 18.FEB.2014 09:12:13

9kHz - 30MHz



Att 0 dB
 RBW 200 Hz
 MT 1 s
 PREAMP OFF



Date: 18.FEB.2014 09:24:55

Radiated measurement at 124.45kHz

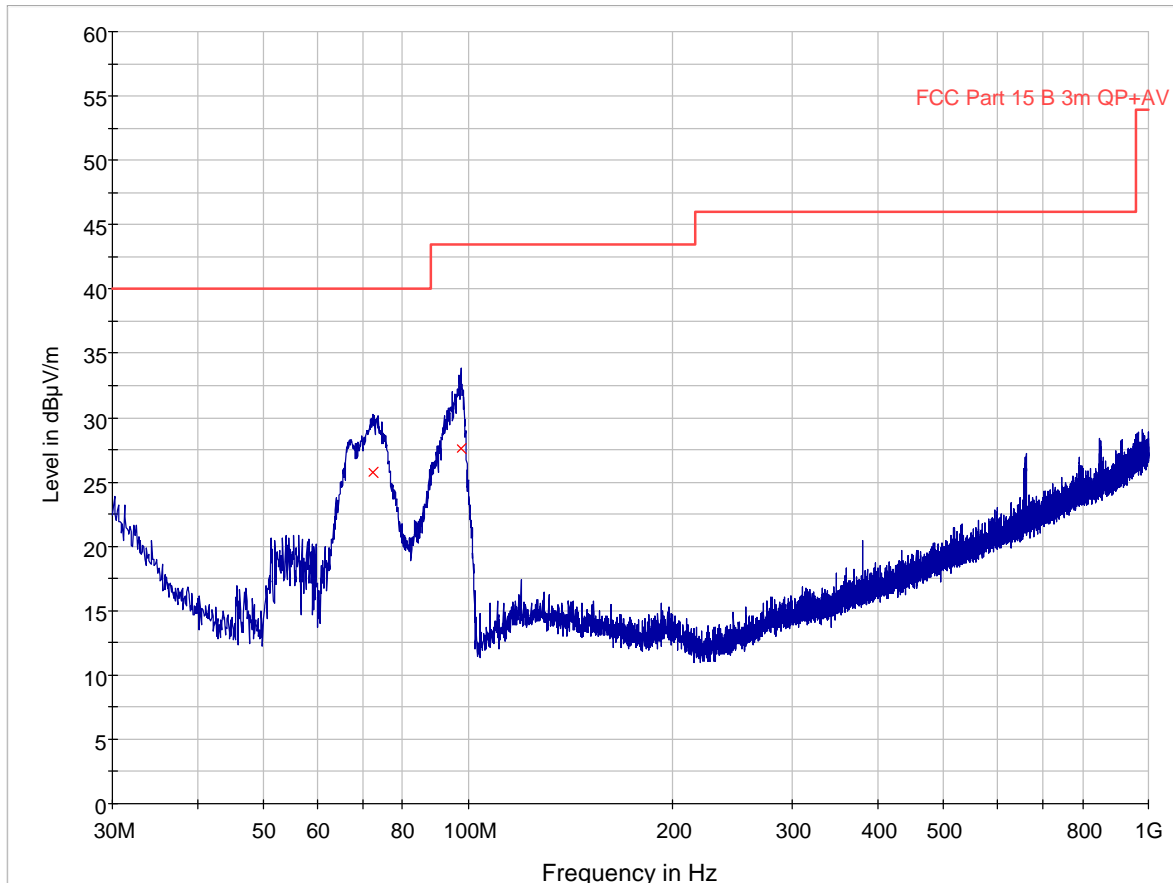
Radiated emission 30 – 1000 MHz.

Detector: Peak

Measuring distance at 3m.

All values are below the limit even when measured with Peak Detector.

See attached plot.



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

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Margin (dB)	Limit (dBµV/m)	Comment
72.493551	25.7	120.000	14.3	40.0	
97.503288	27.6	120.000	15.9	43.5	

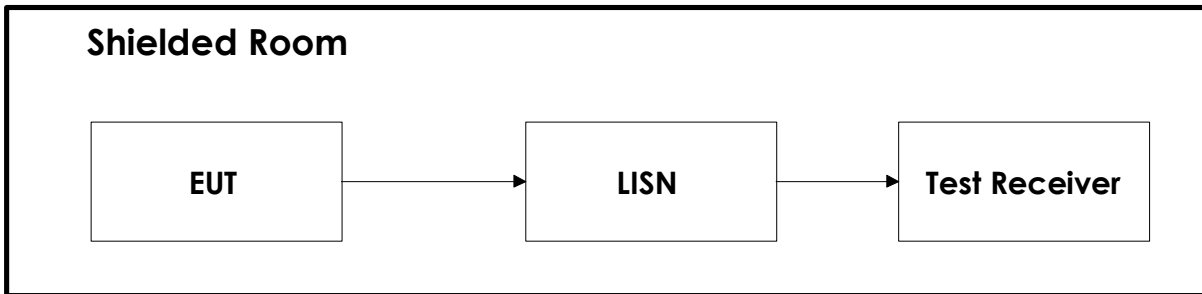
4 LIST OF TEST EQUIPMENT

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.	ESU40	EMI Receiver	Rohde & Schwarz	LR1639	2013.06	2014.06
2.	3115	Antenna horn	EMCO	LR 1330	2014.01.05	2015.01.05
3.	JB3	Antenna bilog	Sunol Sceiences Inc.	N-4525	2013.12	2014.12
4.	8449B	Pre-amplifier	Hewlett Packard	LR 1322	2013.09.27	2014.09.27
5.	LNA6900	Pre-amplifier	Teseq	LR 1593	2013.11	2014.11
6.	6812B	Power Supply	Agilent	LR 1515	2013.10.28	2014.10.28
7.	ESH3-Z2	Pulse Limiter	Rohde & Schwarz	N-3821	2013.11	2015.11
8.	ESCS 30	Measuring Receiver	Rohde & Schwarz	N-3529	2013.08	2014-08
9.	ESH3-Z5	Two Line V-Network	Rohde & Schwarz	N-3558	2013.02	2015.02
10.	Model 87 V	Multimeter	Fluke	LR 1598	2012.12.14	2014.12.14
11.	6810.17A	10 attenuator	Suhner	LR 1143	2012.09.15	2014.09.15
12.	FA210A1010003 030	Microwave cable	Rosenberger	LR1566	Cal b4 use	
13.	6HC 1000-18000	HP Filter	Trithlic	-	Cal b4 use	
14.	6HC 2500-18000	HP Filter	Trithlic	LR1615	Cal b4 use	
15.	FSW	Spectrum Analyzer	Rohde & Schwarz	LR1640	2012.06	2014.06

5 BLOCK DIAGRAM

5.1 Power Line Conducted Emission



5.2 Test Site Radiated Emission

