



Test report no. : 236125-4

Item tested : One2touch Softpad S1

**Type of equipment : NFC/RFID
Cell Phone Keyboard 13.56 MHz**

FCC ID : SN5SOFTPADS1

Client : One2touch AS

FCC Part 15.225

Low Power Transmitter
13.110 - 14.010 MHz Band

RSS-210, Issue 8

Low-Power Licence-exempt Radiocommunications devices
13.110 - 14.010 MHz Band

22 May 2013

Authorized by : .....

Frode Sveinsen
Technical Vericator

CONTENTS

1	GENERAL INFORMATION	3
1.1	Testhouse info	3
1.2	Client information	3
1.3	Manufacturer (if other than client)	3
2	TEST INFORMATION.....	4
2.1	Test item	4
2.2	Test environment	5
2.3	Test period	5
3	TEST REPORT SUMMARY	6
3.1	General	6
3.2	Test summary	7
3.3	Description of modification for modification filing	7
3.4	Comments	7
3.5	Family list rationale	7
4	TEST RESULTS	8
4.1	Occupied Bandwidth	8
4.2	Peak power output	10
4.3	Spurious emissions (radiated)	12
4.4	Transmitter Frequency Stability	15
5	LIST OF TEST EQUIPMENT	16
6	BLOCK DIAGRAM	17
6.1	System set up for radiated measurements	17
6.2	Test site radiated emission	18

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
Email: info@nemko.com
FCC test firm : 994405
IC OATS : 2040D-1
Total Number of Pages: 18

1.2 Client information

Name : One2touch AS
Address : Tollbugaten 24,0157 Oslo, Norway

Telephone : 98293370

Contact:

Name : Arild Terland
E-mail : ate@one2touch.no

1.3 Manufacturer (if other than client)

“-

2 TEST INFORMATION

2.1 Test item

Name :	One2touch
Model/version :	Softpad S1
FCC ID:	SN5SOFTPADS1
IC ID:	-
Serial number :	-
Hardware identity and/or version:	-
Software identity and/or version :	-
Operating frequency:	13.56MHz
Assigned frequency band :	13.553 – 13.567MHz
Tuneable Bands :	None
Number of Channels :	One
Operating Modes :	TX & RX
Type of Modulation :	FSK
User Frequency Adjustment :	None
Rated Output Power :	NA (Keyboard is slave device)
Type of Power Supply :	Primary Batteries
Antenna Connector :	Integral loop antenna
Antenna Diversity Supported :	N/A

Description of Tested Device(s)

One2touch softpad S1 is NFC wireless keyboard for mobile phones with NFC facility. It operates in 13.56MHz frequency band.

2.2 Test environment

2.2.1 Normal test condition

Temperature:	20 – 21 °C
Relative humidity:	29 – 43 %
Normal test voltage:	3.0 V DC (2x CR2025 Lithium batteries connected in parallel)

The values are the limit registered during the test period.

2.3 Test period

Item received date:	2013-04-24
Test period :	from 2013-04-24 to 2013-04-29

3 TEST REPORT SUMMARY

3.1 General

Manufacturer: One2touch
Model No.: Softpad S1

All measurements are traceable to national standards.

The tests were conducted for the purpose of demonstrating compliance with FCC CFR 47 Part 15.225 and Industry Canada RSS-210, Issue 8 and RSS-GEN, Issue 3.

Radiated tests were conducted in accordance with ANSI C63.4-2003 and ANSI C63.10-2009. The radiated tests were made in a semi-anechoic chamber at measuring distances of 3 and 10 meters.

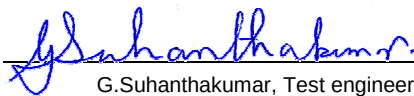
☒ New Submission	☐ Production Unit
☐ Class II Permissive Change	☒ Pre-production Unit
DXT Equipment Code	☐ Family Listing

THIS TEST REPORT RELATES ONLY TO THE ITEM (S) TESTED.

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



TEST REPORT #: 236125-4

TESTED BY: 
G.Suhanthakumar, Test engineer

DATE: 2013-05-07

Nemko AS authorizes the above named company to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only. Any reproduction of parts of this report requires approval in writing from Nemko AS.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko AS accepts no responsibility for damages suffered by any third party as a result of decisions made or actions based on this report.

This test report applies only to the items and configurations tested.

3.2 Test summary

Name of test	FCC Part 15 reference	RSS-210 Issue 8 & RSS-GEN Issue 3	Result
Supply Voltage Variations	15.31(e)	N/A	Complies ¹
Antenna Requirement	15.203	7.1.4 (RSS-GEN)	NA ²
Power-line Conducted Emission	15.207(c)	7.2.2 (RSS-GEN)	N/A ¹
Occupied Bandwidth	N/A	4.6.1 (RSS-GEN)	-
Peak Power Output	15.225(a)	A2.6	Complies
Band Emissions	15.225(b)(c)	A.2.6(b)(c)	Complies
Spurious Emissions (Radiated)	15.225 (d) 15.209	A2.6(d) 4.9 (RSS-GEN)	Complies
Frequency stability	15.225(e)	A2.6	Complies

¹ EUT is battery powered.

² Integral loop antenna

RSS Gen issue 3 covers section 7 & 6

RSS 210 issue 8 covers section A2.9

3.3 Description of modification for modification filing

Not applicable.

3.4 Comments

A mobile telephone from Sony Ericsson is used during all test to activate NFC function. The model name is Sony Experia "LT26i". The type nr: AAD-3880120-AV, S/N: C8511WW1CC.

And the output level is set to maximum in the software.

The radiated measurements are tested on three axis.

Two fully charged Lithium batteries are used.

3.5 Family list rationale

Not Applicable.

4 TEST RESULTS

4.1 Occupied Bandwidth

Para. No.: RSS-Gen

Test Performed By: G.Suwanthakumar

Date of Test: 29-April-2013

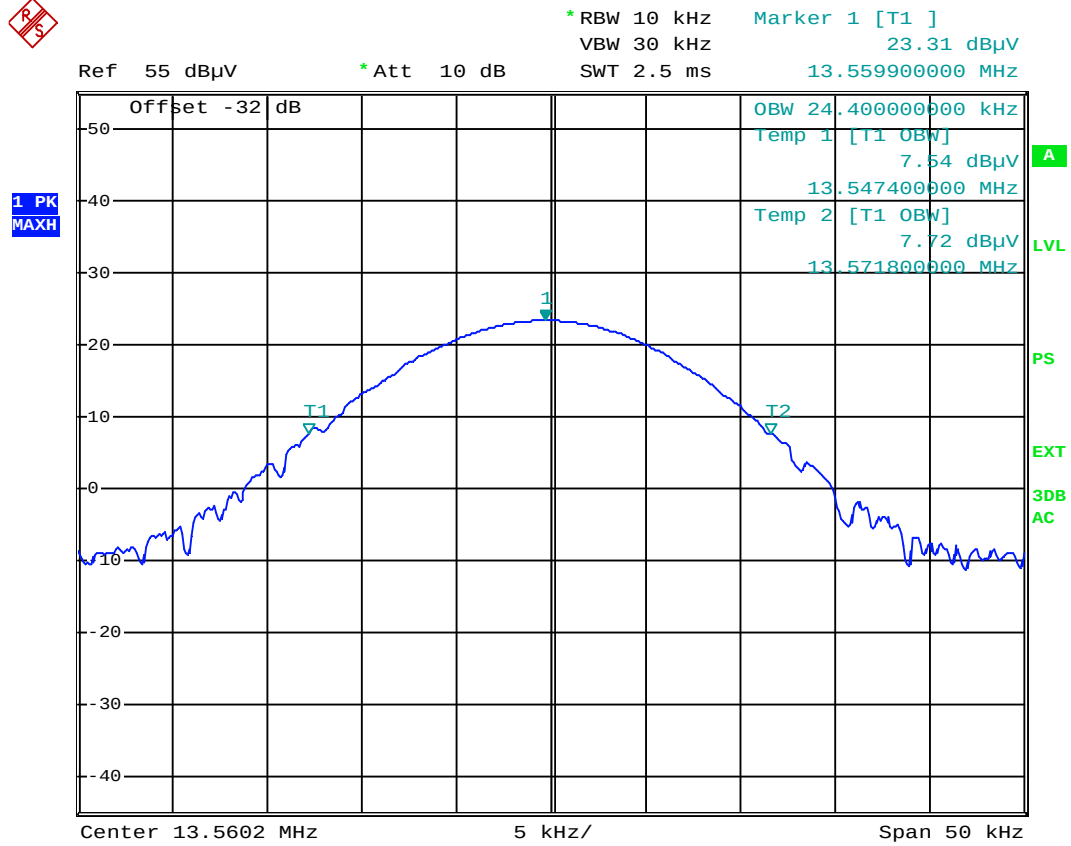
Test Results: Complies

Measurement Data:

OBW (kHz)
13.56MHz
24.4

Requirements:

For information only



Date: 29.APR.2013 09:13:43

13.56MHz – OBW – 24.4kHz

4.2 Peak power output

Para. No.: 15.225 (a) / A2.9

Test Performed By: G.Suwanthakumar

Date of Test: 24 April 2013

Test Results: Complies

Measurement data:

Maximum field strength

RF channel	13.56MHz
Measured value (dB μ V/m)	37.1

Radiated measurements are performed at 10 m distance.

Detachable antenna?

☐ Yes

☒ No

If detachable, is the antenna connector non-standard?

☐ Yes

☐ No

Integral loop antenna

New batteries were used.

Requirements:

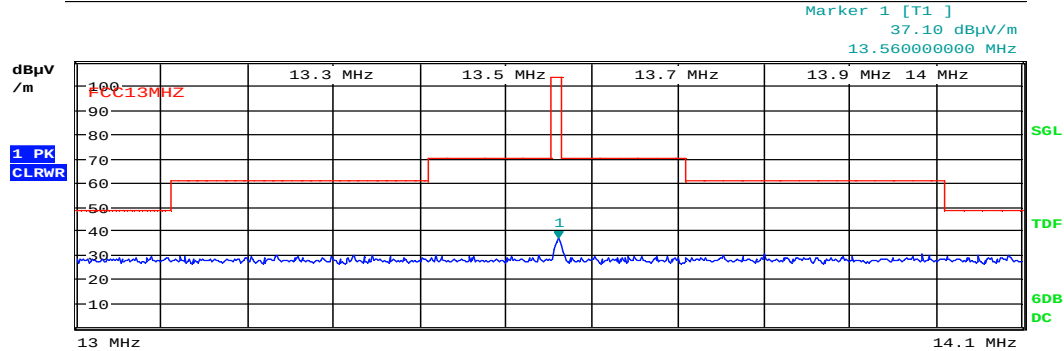
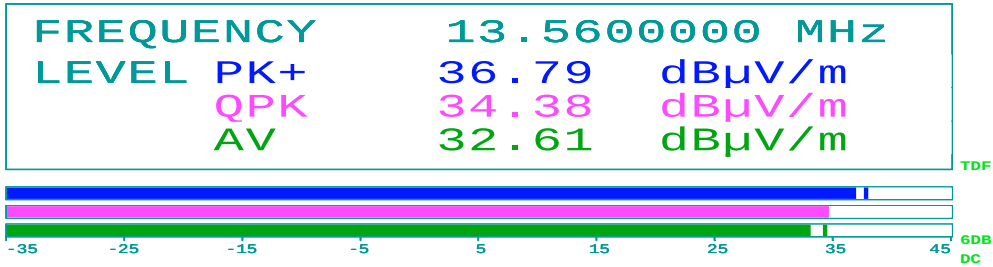
The maximum field strength within band 13.553 – 13.567MHz at 30 meters shall be ≤ 83.99 dB μ V/m (at 10 meters ≤ 103.99 dB μ V/m)

(b) 334 microvolts/m (50.5 dB μ V/m) at 30 m, within the bands 13.410-13.553 MHz and 13.567-13.710 MHz. (at 10 meters ≤ 70.47 dB μ V/m)

(c) 106 microvolts/m (40.5 dB μ V/m) at 30 m, within the bands 13.110-13.410 MHz and 13.710-14.010 MHz. (at 10 meters ≤ 60.5 dB μ V/m)



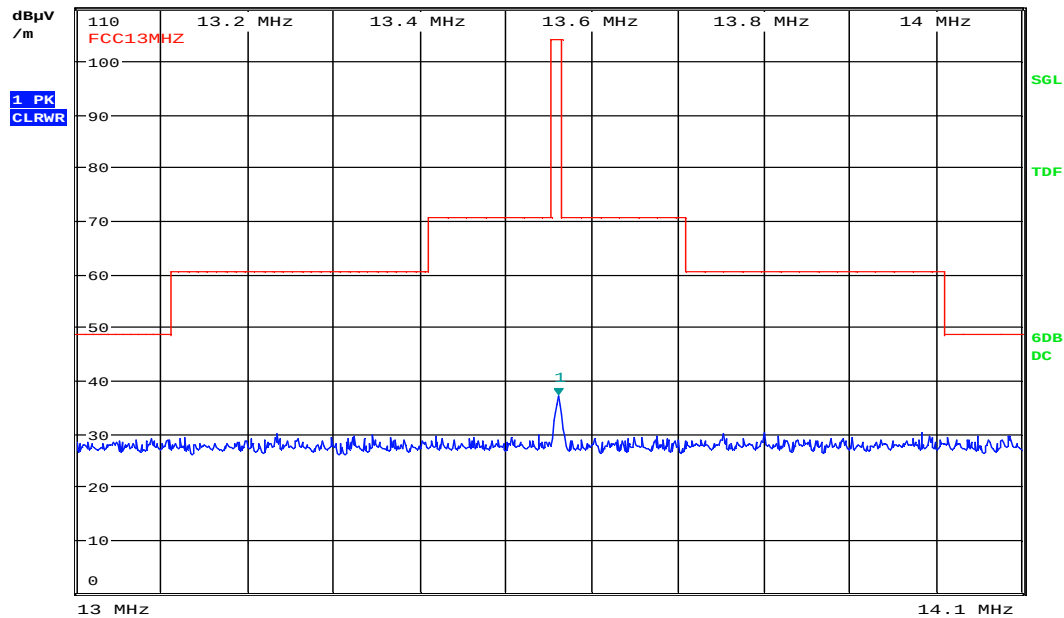
Att 0 dB AUTO RBW 9 kHz
 MT 100 ms
 PREAMP ON



Date: 24.APR.2013 13:50:59



Att 0 dB AUTO RBW 9 kHz
 MT 100 ms
 PREAMP ON



Date: 24.APR.2013 13:51:21

Field strength at transverse polarization – 13.56MHz

4.3 Spurious emissions (radiated)

Para. No.: 15.209 / 15.225 (b,c,d) / A2.6 / 4.9

Test Performed By: G.Suhandhakumar

Date of Test: 24 april.2013

Test Results: Complies

Measurement Data:

Radiated Emissions with loop antenna, 9kHz – 150MHz

9kHz -30MHz measured at a distance of 10m.

Measured with Peak Detector:

Frequency	Dist. corr. factor	Field strength, Peak	Duty cycle corr. factor	Limit	Margin
MHz	dB	dBμV/m	dB	dBμV/m	dB
0.0091	20	57.5	-	107.5	50.0
0.035	20	44.2	-	95.8	51.6
0.15	10	39.4	-	83.2	43.8

The maximum is observed in transverse polarization

Antenna factor, amplifier gain and cable loss are included in spectrum analyzer "Transducer factor".

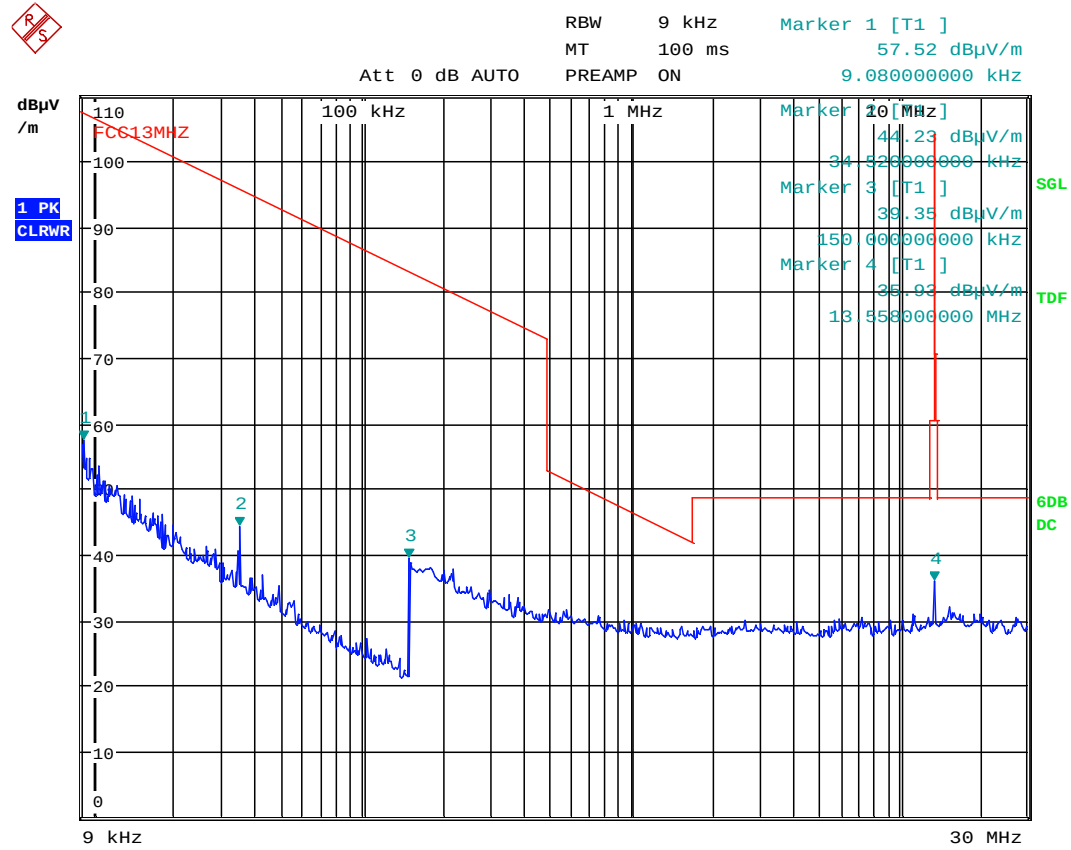
Requirement:

(d) The field strength of any emissions appearing outside of the 13.110 – 14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

Radiated emissions 9kHz – 30 MHz.

Detector: Peak

Measuring distance 10 m.



Date: 24.APR.2013 13:48:23

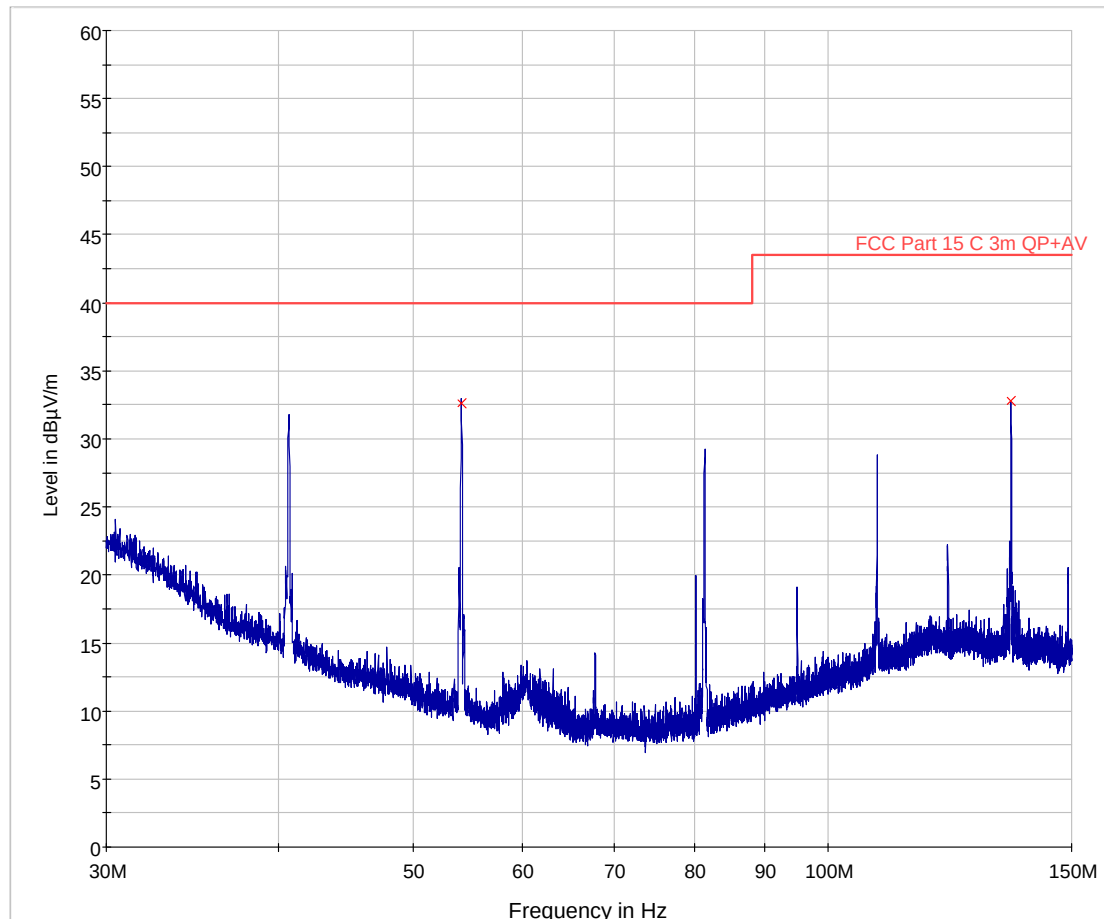
Radiated emissions 30 – 150 MHz.

Detector: Peak

Measuring distance 3 m.

The graph shows peak scan and highest values. Since there is no spurious found no QP values are measured.

FCC Pt15 Class C 30-150 MHz 3m



30 - 150MHz

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
54.238911	32.6	1000.0	120.000	100.0	V	255.0	-14.2	7.4	40.0	
135.597705	32.8	1000.0	120.000	234.0	H	330.0	-9.1	10.7	43.5	

4.4 Transmitter Frequency Stability

Para. No.: 15.225(m)/A2.6

Test Performed By: G.Suwanthakumar

Date of Test: 26-April-2013

Measurement Data:

Temperature	Given Frequency (MHz)	Measured value (MHz)	Deviation (%)
+50 ° C	13.56	13.55982	-0.0013
+40 ° C	13.56	13.55984	-0.0012
+30 ° C	13.56	13.55984	-0.0012
+20 ° C	13.56	13.55982	-0.0013
+10 ° C	13.56	13.55984	-0.0012
+0 ° C	13.56	13.55986	-0.001
-10 ° C	13.56	13.55984	-0.0012
-20 ° C	13.56	13.55986	-0.001

Requirement:

(e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage.

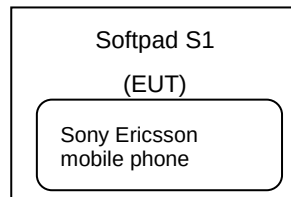
5 LIST OF TEST EQUIPMENT

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.	Model number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1.	ESU40	EMI Receiver	Rohde & Schwarz	LR1639	2010.06	2013.06
2.	3115	Antenna horn	EMCO	LR 1330	2010.08.05	2013.08.05
3.	6810.17A	Attenuator	Suhner	LR 1185	2011.10.18	2013.10.18
4.	87V	Multimeter, Digital	Fluke	LR1599	2012.12.15	2014.12.15
5.	8449B	Amplifier	Hewlett Packard	LR 1322	2012.09.20	2013.09.20
6.	HFH2-Z2	Antenna loop	Rohde and Schwarz	LR 285	2010.10.08	2013.10.08
7.	10855A	Amplifier	Hewlett Packard	LR 1445	2012.09.20	2013.09.20
8.	HL223	Antenna log.per	Rohde & Schwarz	LR 1261	2010.05.09	2013.05.09
9.	HK116	Antenna biconic	Rohde & Schwarz	LR 1260	2010.05.09	2013.05.09
10.	LNA6900	Amplifier, low noise	Teseq	LR1593	2011.11.24	2013.11.24
11.	VULB9163	Antenna Trilog	Schwarzbeck	LR1616	2011.08.29	2013.08.29
12.	6HC 1500-18000	HP filter	Trithlic	LR1612	Cal b4 use	
13.	FA210A1010 003030	Microwave cable	Rosenberger	LR1566	Cal b4 use	

6 BLOCK DIAGRAM

6.1 System set up for radiated measurements



Test equipment: 1- 12

6.2 Test site radiated emission

