Prüfbericht-Nr.: *Test Report No.:*	**15070817 001**	**Auftrags-Nr.:** *Order No.:*	154031076	Seite 1 von 16 *Page 1 of 16*
Kunden-Referenz-Nr.: *Client Reference No.:*	405064	**Auftragsdatum:** *Order date:*	15.07.2013	
Auftraggeber: *Client:*	Shanghai Huace Navigation Technology Ltd. Floor 5, Building 35 No. 680 Guiping Road Shanghai 200223 P.R. China			
Prüfgegenstand: *Test item:*	Handheld GPS receiver			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	LT400XY FCC ID :SY4-B01003			
Auftrags-Inhalt: *Order content:*	Complete test			
Prüfgrundlage: *Test specification:*	47 CFR Part 15 Subpart B ANSI C63.4-2009 ICES-003 Issue 4			

Wareneingangsdatum: *Date of receipt:*	19.07.2013
Prüfmuster-Nr.: *Test sample No.:*	A02 and B02
Prüfzeitraum: *Testing period:*	09.08.2013 – 08.03.2014
Ort der Prüfung: *Place of testing:*	QuieTek Technology(Suzhou)Co., Ltd.
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shanghai) Co., Ltd.
Prüfergebnis*: *Test result*:*	Pass

geprüft von / *tested by:* Adrian Shi

Datum *Date*	Name / Stellung *Name / Position*	Unterschrift *Signature*
31.03.2014	Adrian Shi / Project Engineer	

kontrolliert von / *reviewed by:*

Datum *Date*	Name / Stellung *Name / Position*	Unterschrift *Signature*
31.03.2014	Sam Lin / Technical Certifier	

Sonstiges / *Other:*

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

TEST SUMMARY

5.1.1 CONDUCTED EMISSIONS

RESULT: Pass

5.2.1 RADIATED EMISSION

RESULT: Pass

CONTENTS

1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report.

2. Test Sites

2.1 Test Facilities

QuieTek Technology(Suzhou)Co.,Ltd.
No.99 Hongye RD.Suzhou Industnal Park Loufeng Hi-Tech Development Zone.,Suzhou,China
The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communications Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules. The description of the test facility is listed under FCC registration number 800392.

The Industry Canada has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance. The description of the test facility is listed under chambers filing number 4075B.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Model	S/N	Cal due date
Conducted Emission			
EMI test receiver	ESIB26	100227	21.05.2014
Artificial mains network	NNB 42	04/10048	27.05.2014
Discontinuous interference analyzer	DIA 1512 D	21005	17.10.2014
Artificial mains network	ESH3-Z5	100325	28.06.2014
EMI test receiver (EMC-C-066)	ESCI	100280	07.11.2014
Artificial mains network (EMC-C-104)	ENV216	101199	27.09.2014
EMI test receiver (EMC-C-103)	ESCI	101083	28.09.2014
Artificial mains network (EMC-C-110)	ENV216	100122	25.02.2015
Coupling/decoupling network	CDNE M210	34732	29.10.2015
Coupling/decoupling network	CDNE M310	36888	29.10.2015
Artificial mains network	NNLK 8121	8121-463	24.02.2015
Artificial mains network	NNLK 8130	8130-172	24.02.2015
Radiated Emission			
3m modified semi-anechoic chamber	SAC3	FJ129002	04.02.2015
EMI test receiver (EMC-C-066)	ESCI	100280	07.11.2014
Broadband antenna (EMC-C-005)	BTA-H	040005H	25.09.2015
EMI test receiver	ESIB26	100227	21.05.2014
Triple loop antenna	HXYZ 9170	HXYZ 9170-128	21.05.2014
EMI test receiver (EMC-C-103)	ESCI	101083	28.09.2014
EMI test receiver (EMC-C-107)	ESCI	100178	24.02.2015
Trilog broadband antenna	VULB 9163	9163-492	29.05.2015

2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO/IEC 17025 are:

Table 2: Measurement Uncertainty

Items		Extended Uncertainty
Conducted Emission (0.15-30MHz)	Disturbance Voltage (dBuV)	U=±2.23dB, k=2, σ=95%
Radiated Emission (30-1000MHz)	Field strength (dBuV/m)	U=±4.42dB, k=2, σ=95%
Radiated Emission (1-25GHz)	Field strength (dBuV/m)	U=±4.06dB, k=2, σ=95%

2.6 Location of Original Data

The original copies of all test data taken during actual testing were retained in the TÜV Rheinland (Shanghai) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

QuieTek Technology(Suzhou)Co.,Ltd. test facility located at F1, Bldg. A, No.99 Hongye RD.Suzhou Industnal Park Loufeng Hi-Tech Development Zone.,Suzhou,China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

2.8 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test

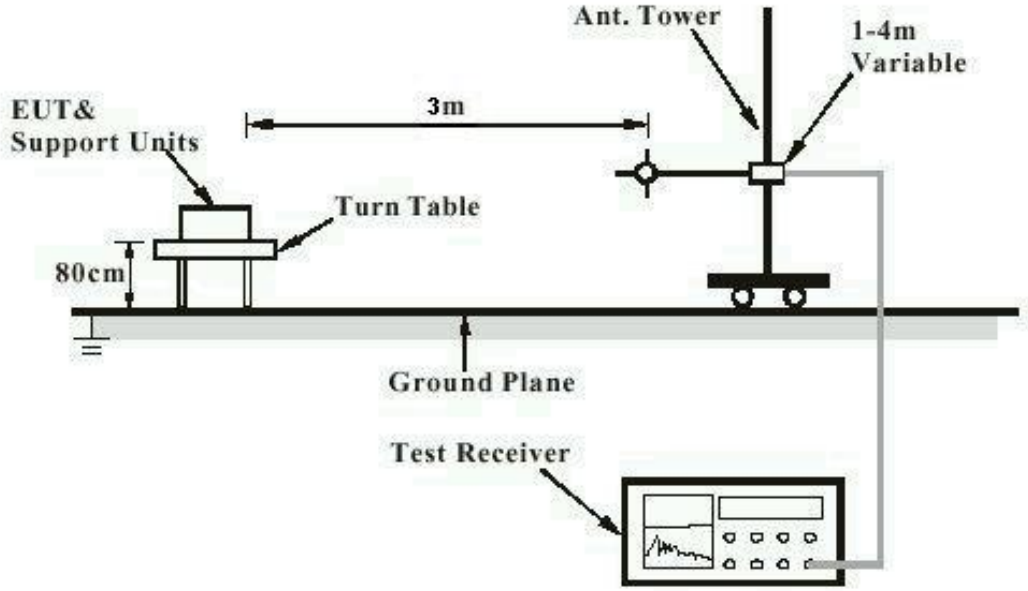
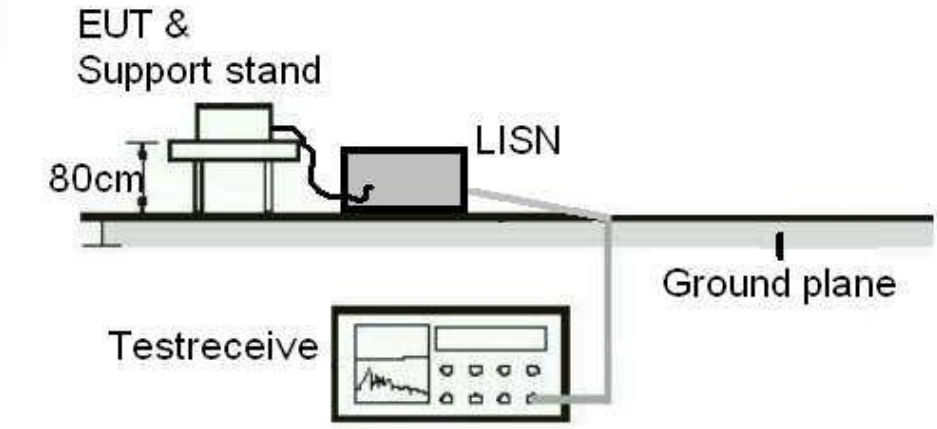


Diagram of Measurement Equipment Configuration for Conduction Measurement



3. General Product Information

3.1 Product Function and Intended Use

The EUT (Equipment Under Test) is Handheld GPS receiver.
The Applicant declares that the model LT400XY ,Model LT400XY, X is variable, it indicated A-Z or 0-9，Y is variable, it indicated A-Z, 0-9 or blank.due to sales purpose in different countries or regions. The internal PCB design are no difference，but only distinct in colours and model names.The test model name is LT400H.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

Technical Specification	Value
Kind of Equipment	Handheld GPS receiver
Type Designation	LT400XY
Extreme Temperature Range	-20~+55℃
Operation Voltage	DC 3.7V

3.3 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The test modes of the EUT are showed as below:
Mode A. EUT+PC Mode
The EUT configuration of the emission test is EUT + Micro SD card + Battery +PC.
In this test mode, a connection was established between the EUT and a PC; date was transmitted between EUT and the PC, and maintained during the measurement.

4.2 Special Accessories and Auxiliary Equipment

The EUT was tested together with the following accessories:

Description	Manufacturer	Part No.	S/N	Rating
AC Adapter	Phihong	PSAI05R-050Q	N/A	Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5V, 1A

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	Manufacturer
1	Notebook	D630	N/A	DELL
2	Micro SD card	N/A	N/A	N/A

4.3 Countermeasures to Achieve ERM Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF). No additional measures were employed to achieve compliance.

5. Test Results

5.1 Emission in the Frequency Range up to 30 MHz

5.1.1 Conducted Emissions

RESULT: **Pass**

Date of testing	:	2014-03-08
Test standard	:	FCC Part 15.107 (a) ICES-003 Issue 4 February 2004
Basic standard	:	ANSI C63.4: 2009
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.107(a) ICES-003 Issue 4 February 2004
Kind of test site	:	Shield room

Test setup

Input Voltage	:	AC 120V, 60Hz
Operation Mode	:	A
Earthing	:	Not Connected
Ambient temperature	:	25℃
Relative humidity	:	52%
Atmospheric pressure	:	101kPa

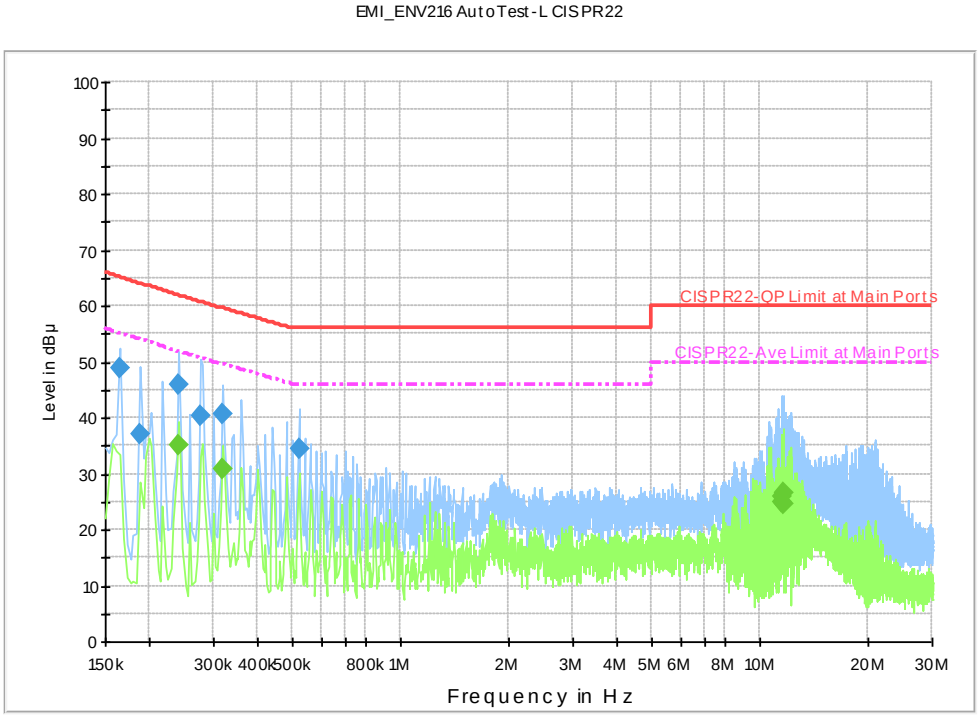
For details refer to following test plot.

The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

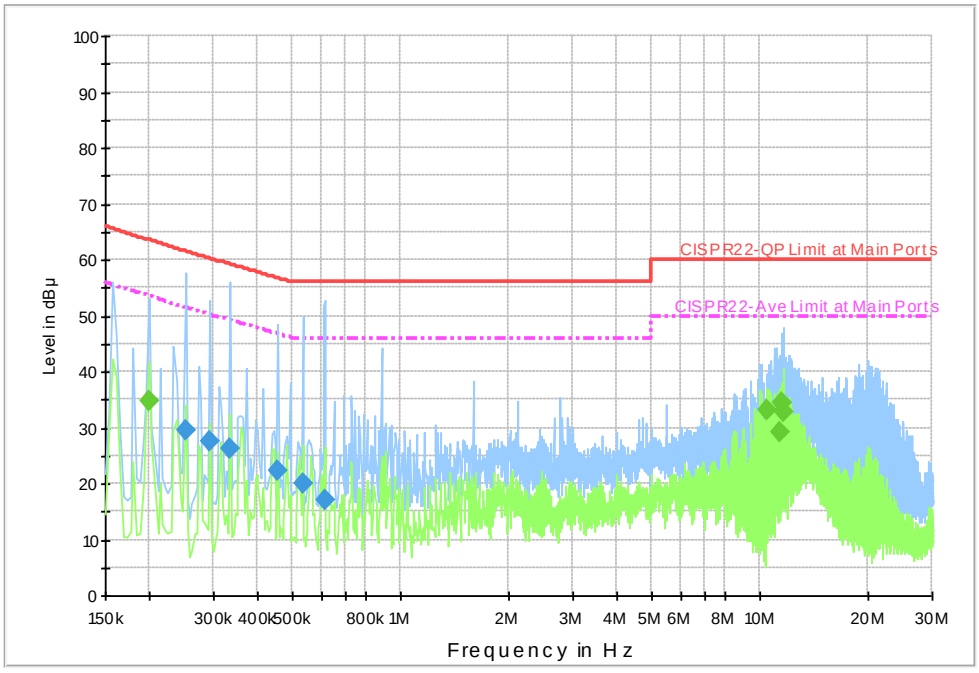
Frequency (MHz)	QuasiPeak (dBµ V)	Meas. Time (ms)	Band width (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.164925	49.0	150.000	9.000	L	9.5	16.2	65.2	PASS
0.187312	37.0	150.000	9.000	L	9.6	27.0	64.0	PASS
0.239550	45.9	150.000	9.000	L	9.7	16.0	61.9	PASS
0.276862	40.4	150.000	9.000	L	9.7	20.3	60.7	PASS
0.317906	40.8	150.000	9.000	L	9.7	18.8	59.6	PASS
0.519394	34.5	150.000	9.000	L	9.7	21.5	56.0	PASS
0.250744	29.5	150.000	9.000	N	9.6	32.0	61.5	PASS
0.291788	27.6	150.000	9.000	N	9.6	32.7	60.3	PASS
0.332831	26.3	150.000	9.000	N	9.7	32.9	59.2	PASS
0.452231	22.2	150.000	9.000	N	9.7	34.6	56.8	PASS
0.530588	20.0	150.000	9.000	N	9.7	36.0	56.0	PASS
0.612675	16.9	150.000	9.000	N	9.7	39.1	56.0	PASS

Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Band width (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.239550	35.2	150.000	9.000	L	9.7	16.7	51.9	PASS
0.317906	30.7	150.000	9.000	L	9.7	18.8	49.5	PASS
11.422106	25.9	150.000	9.000	L	10.1	24.1	50.0	PASS
11.500462	24.9	150.000	9.000	L	10.1	25.1	50.0	PASS
11.541506	26.6	150.000	9.000	L	10.1	23.4	50.0	PASS
11.578819	24.5	150.000	9.000	L	10.1	25.5	50.0	PASS
0.198506	34.7	150.000	9.000	N	9.6	18.8	53.5	PASS
10.429594	33.0	150.000	9.000	N	10.1	17.0	50.0	PASS
11.310169	29.1	150.000	9.000	N	10.1	20.9	50.0	PASS
11.474344	34.3	150.000	9.000	N	10.1	15.7	50.0	PASS
11.515388	34.5	150.000	9.000	N	10.1	15.5	50.0	PASS
11.552700	32.9	150.000	9.000	N	10.1	17.1	50.0	PASS

L Phase



N Phase



5.2 Emission in the Frequency Range above 30 MHz

5.2.1 Radiated Emission

RESULT: **Pass**

Date of testing	:	2013-03-08
Test standard	:	FCC Part 15.109 (a) ICES-003 Issue 4 February 2004
Test procedure	:	ANSI C63.4: 2003
Frequency range	:	30 - 25000MHz
Equipment Classification	:	Class B
Limits	:	FCC Part 15.109(a) ICES-003 Issue 4 February 2004
Kind of test site	:	3m Semi-Anechoic Chamber

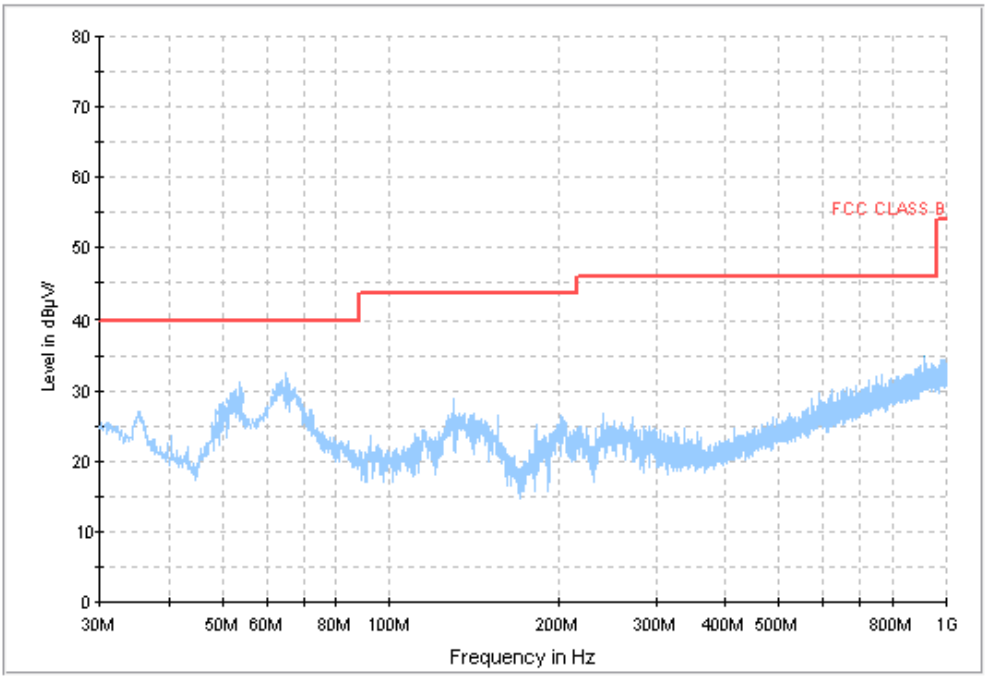
Test setup

Input Voltage	:	AC 120V, 60Hz
Operation mode	:	A
Earthing	:	Not connected
Ambient temperature	:	25℃
Relative humidity	:	52%
Atmospheric pressure	:	101kPa

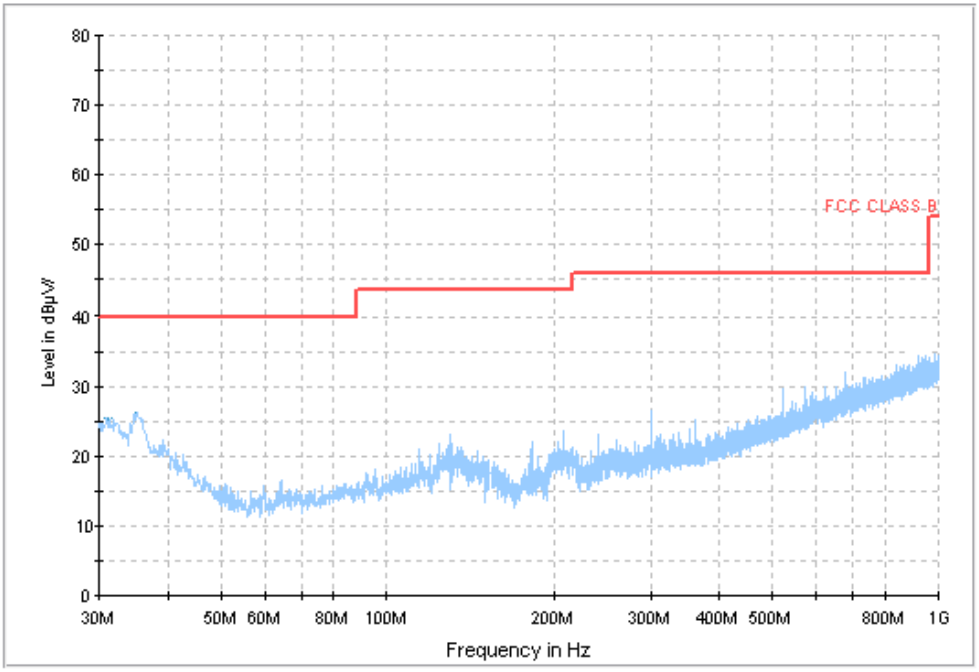
For details refer to following test plot.

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

Test Antenna Vertical

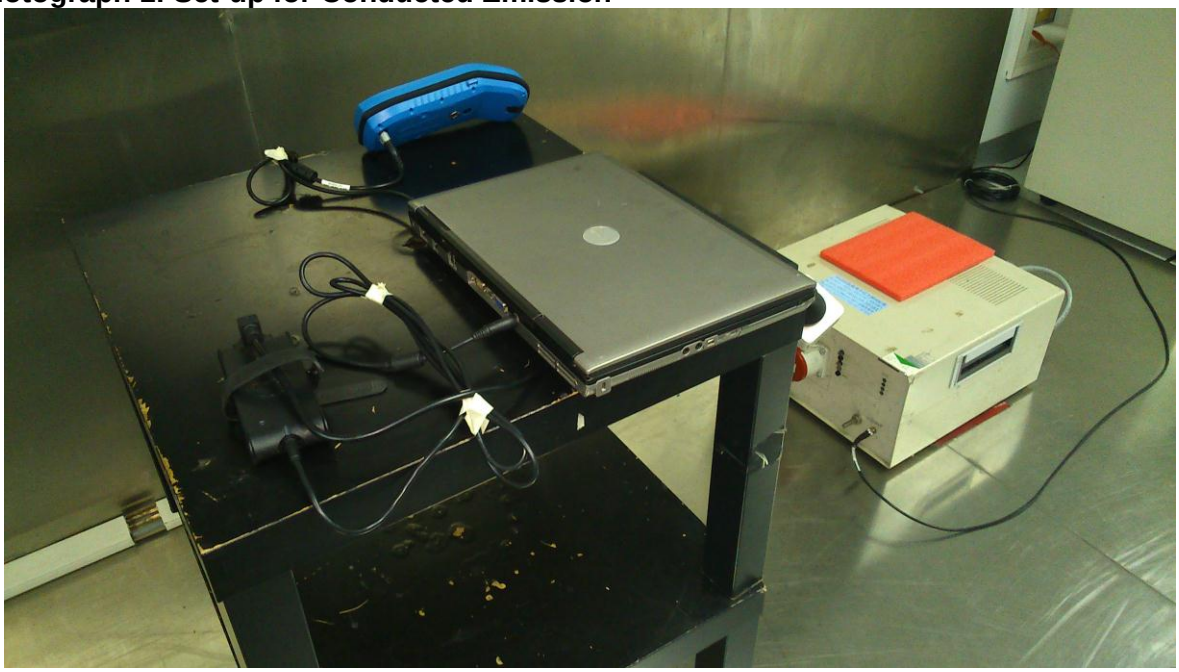


Test Antenna Horizontal

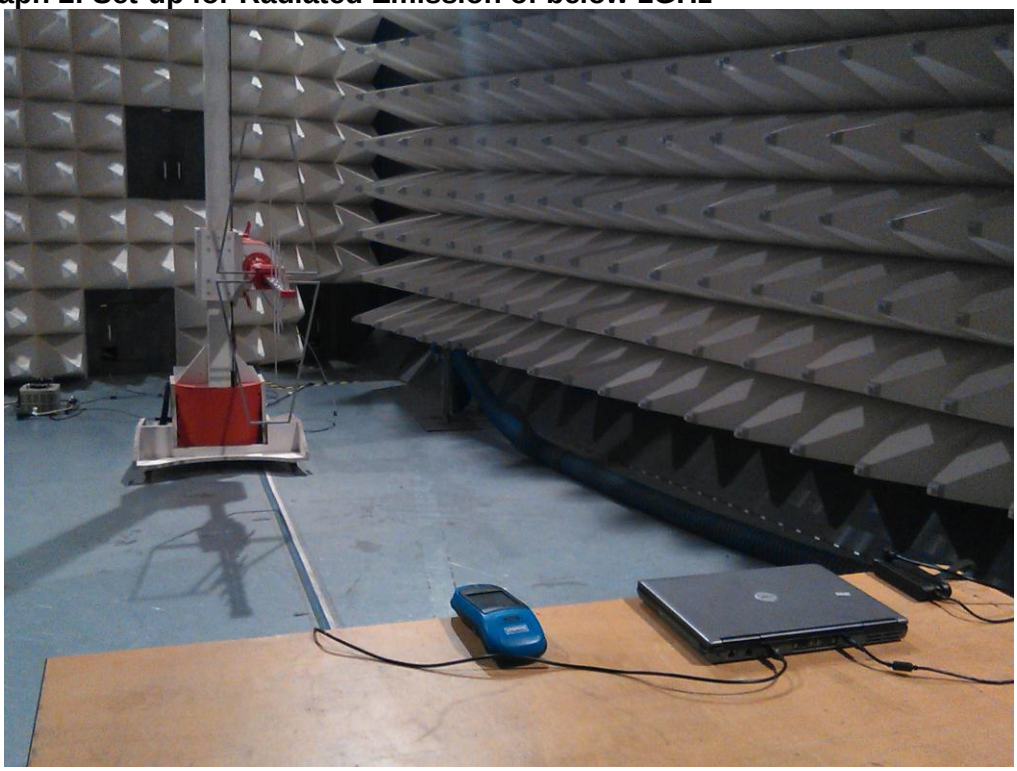


6. Photographs of the Test Set-Up

Photograph 1: Set-up for Conducted Emission



Photograph 2: Set-up for Radiated Emission of below 1GHz



7. List of Tables

8. List of Photographs