

FCC Testing of the
Motorola Solutions Inc,
LTE B14 Portable Infrastructure.
Model: LXN 500
In accordance with FCC 47 CFR Part 15B

Prepared for: Motorola Solutions Inc.
Israel Ltd
2 Hanegev St.
Airport City
Israel 70199

FCC ID: AZ492FT7102

COMMERCIAL-IN-CONFIDENCE

Date: October 2017
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Product Service

Choose certainty.
Add value.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Steven White	28 November 2017	
Authorised Signatory	Jensen Adams	28 November 2017	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15B. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Graeme Lawler	28 November 2017	

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory
Designation Number: UK0010

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B: 2016 for the tests detailed in section 1.3.



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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	12 September 2017
2	Update to FCC ID / Model number	17 October 2017
3	Typographical error corrected	18 October 2017
4	FRN Number updated	19 October 2017
5	Added details of antenna for use with LXN 500	30 October 2017
6	Added FCC designation number UK0010	03 November 2017
7	Removed references to backpack	28 November 2017

Table 1

1.2 Introduction

Applicant	Motorola Solutions Inc
Manufacturer	Motorola Solutions Israel Ltd
Model Number(s)	LXN 500
Serial Number(s)	569REG0001
Hardware Version(s)	1.0.0
Software Version(s)	1.0.0
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15B: 2016
Order Number	17-14302
Date	25-May-2017
Date of Receipt of EUT	10-September-2017
Start of Test	10-September-2017
Finish of Test	10-September-2017
Name of Engineer(s)	Graeme Lawler
Related Document(s)	ANSI C63.4: 2014



Product Service

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15B is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: AC Powered - 110 V AC Radio's Idle				
2.1	15.107	AC Power Line Conducted Emissions	Pass	ANSI C63.4: 2014
2.2	15.109	Radiated Emissions	Pass	ANSI C63.4: 2014

Table 2



1.4 Application Form

EQUIPMENT DESCRIPTION	
Model Name/Number	LXN 500 B14
Part Number	SQM01SUM0309A
Hardware Version	1.0.0
Software Version	1.0.0
FCC ID (if applicable)	AZ492FT7102
Industry Canada ID (if applicable)	n/a
Technical Description (Please provide a brief description of the intended use of the equipment)	The LXN 500 is an LTE System designed for on-demand coverage and public safety applications. The solution consists of a single portable unit that can be operated from a vehicle.

INTENTIONAL RADIATORS									
Technology	Frequency Band (MHz)	Conducted Declared Output Power (dBm)	Antenna Gain (dBi)	Supported Bandwidth (s) (MHz)	Modulation Scheme(s)	ITU Emission Designator	Test Channels (MHz)		
							Bottom	Middle	Top
LTE	758-768	30	6	5,10	64QAM	10M0G7D	760.5	763	765.5
Wi-Fi	2400-2500	tbc	10	5,20	OFDM	17M9GXW	2412	2442	2484

UN-INTENTIONAL RADIATOR	
Highest frequency generated or used in the device or on which the device operates or tunes	2484 MHz

Power Source			
AC	Single Phase	Three Phase	Nominal Voltage
	Yes		110/240
External DC	Nominal Voltage		Maximum Current
	9-33VDC		5A
Battery	Nominal Voltage		Battery Operating End Point Voltage
	12-16.8v		
Can EUT transmit whilst being charged?			Yes ☒ No ☐



EXTREME CONDITIONS					
Maximum temperature	60	°C	Minimum temperature	-20	°C

Ancillaries
Please list all ancillaries which will be used with the device.
NP12/NP24 NAV PAC (UPS)
2 x USB flash drives and associated cables

ANTENNA CHARACTERISTICS				
☒	Antenna connector	State impedance	50	Ohm
☐	Temporary antenna connector	State impedance		Ohm
☐	Integral antenna	Type		
☒	External antenna	Type	VLQ69273	

I hereby declare that the information supplied is correct and complete.

Name: Darragh McShane

Position held: Project Manager

Date: 07/06/2017



Product Service

1.5 Product Information

1.5.1 Technical Description

The LXN 500 is a Motorola LTE Portable Infrastructure System for on-demand coverage and public safety applications.

The solution consists of a single portable unit that can be operated from a vehicle.

1.5.2 Antenna and ancillaries for use with the LXN 500

Vehicle 4 port antenna and cables:

AN000226A01	Laird Combo antenna VLQ69273 (4 ports)
CB000613A01	Laird Combo LTE antenna VLQ69273 (4 ports) cable
CB000548A01	Laird Combo WiFi antenna VLQ69273 (4 ports) cable
CB000133A01	Laird Combo GPS antenna VLQ69273 (4 ports) cable

Vehicle 3 port antenna and cables:

AN000036A01	Laird combo antenna (3 ports) - Base
85013016001	Laird combo antenna (3 ports) - Whip
CB000613A01	Laird combo antenna (3 ports) LTE cable
CB000133A01	Laird combo antenna (3 ports) GPS cable
CB000548A01	Laird combo antenna (3 ports) WiFi cable

Vehicle power cable

CB000540A01	Vehicle power cable
-------------	---------------------

1.5.3 Details of antennas for use with LXN 500

APP	Type	LTE Freq (Mhz)	Elec. length	Max Gain	cm	MOTOTOROLA p.n
Vehicle	3 port	LTE: 746 MHz -894MHz WiFi: 2400 MHz-2483 MHz	1/2 wave 1/4 wave	LTE:5 dBi Wifi:7 dBi	LTE mechanical length: 33cm WiFi radiated element : 60x50mm	AN000036A01+ 85013016001(Whip)
Vehicle/ In Building	4 port	LTE: 698-960 MHz , WiFi:2300-2700 MHz	1/4 wave 1/4 wave	LTE:6 dBi Wifi:10 dBi	LTE radiated element : 60x50mm WiFi radiated element : 25x45mm	AN000226A01*

*Antenna used during testing

1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme.
The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Serial Number: Not Serialised			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

1.8 Test Location

TÜV SÜD Product Service conducted the following tests at our Fareham Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: AC Powered - 110 V AC Radio's Idle		
AC Power Line Conducted Emissions	Graeme Lawler	UKAS
Radiated Emissions	Graeme Lawler	UKAS

Table 4

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
United Kingdom

Designation Number: UK0010



2 Test Details

2.1 AC Power Line Conducted Emissions

2.1.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.107

2.1.2 Equipment Under Test and Modification State

LXN 500, S/N: 569REG0001- Modification State 0

2.1.3 Date of Test

10-September-2017

2.1.4 Test Method

The test was performed in accordance with ANSI C63.4, clause 7.

2.1.5 Environmental Conditions

Ambient Temperature 17.4 °C

Relative Humidity 50.0 %

2.1.6 Test Results

AC Powered - 110 V AC Radio's Idle

Applied supply Voltage: 60 Hz

Applied supply frequency: 120 Vac



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.440	40.9	57.1	-16.2	31.2	47.1	-15.9
0.551	39.6	56.0	-16.4	30.8	46.0	-15.2
16.891	35.7	60.0	-24.3	26.0	50.0	-24.0
17.801	38.4	60.0	-21.6	29.4	50.0	-20.6
17.967	38.4	60.0	-21.6	29.4	50.0	-20.6
28.756	37.0	60.0	-23.0	27.2	50.0	-22.8

Table 5 - Live Line Emissions Results

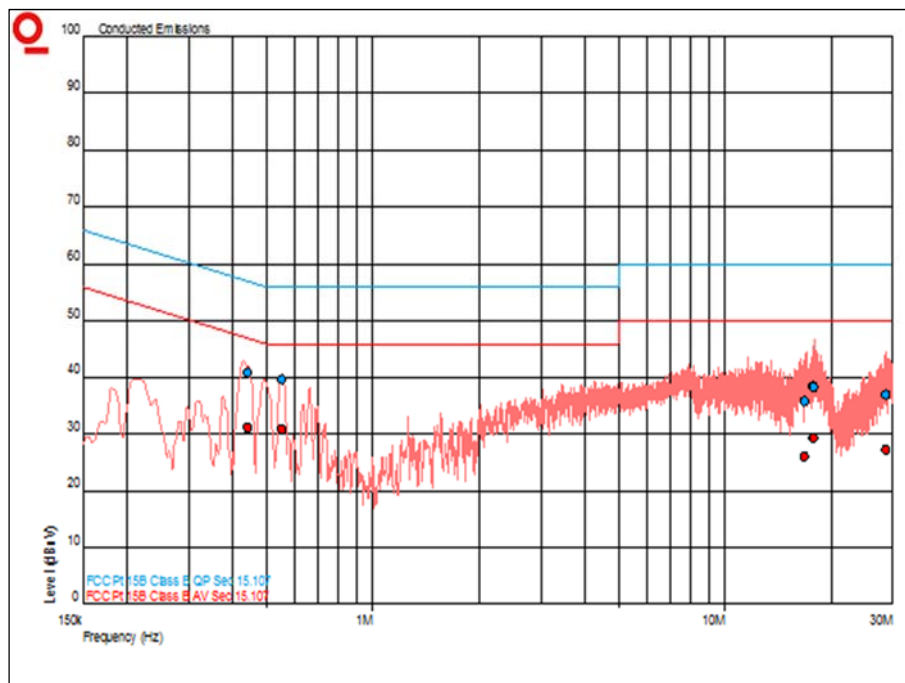


Figure 1 - Live Line - 150 kHz to 30 MHz

Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.552	38.9	56.0	-17.1	30.1	46.0	-15.9
2.652	34.5	56.0	-21.5	27.8	46.0	-18.2
3.071	34.8	56.0	-21.2	27.8	46.0	-18.2
3.455	35.6	56.0	-20.4	26.3	46.0	-19.7
4.142	33.7	56.0	-22.3	26.6	46.0	-19.4
7.426	36.3	60.0	-23.7	27.8	50.0	-22.2

Table 6 - Neutral Line Emissions Results

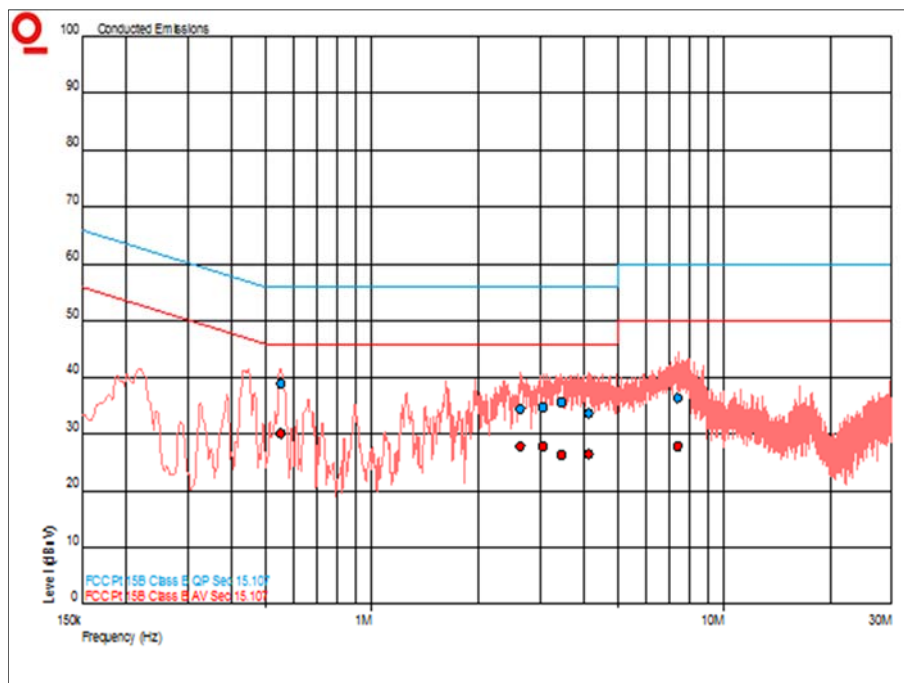


Figure 2 - Neutral Line - 150 kHz to 30 MHz

FCC 47 CFR Part 15, Limit Clause 15.107

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-Peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

Table 7

*Decreases with the logarithm of the frequency.

2.1.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Transient Limiter	Hewlett Packard	11947A	15	12	30-May-2018
LISN (1 Phase)	Chase	MN 2050	336	12	07-Apr-2018
Screened Room (5)	Rainford	Rainford	1545	36	20-Dec-2017
Multimeter	Iso-tech	IDM101	2417	12	30-Sep-2017
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	12-Nov-2017
Hygrometer	Rotronic	HP21	4741	12	22-Aug-2018

Table 8



2.2 Radiated Emissions

2.2.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.109

2.2.2 Equipment Under Test and Modification State

LXN 500, S/N: 569REG0001- Modification State 0

2.2.3 Date of Test

10-September-2017

2.2.4 Test Method

The test was performed in accordance with ANSI C63.4, clause 8.

2.2.5 Environmental Conditions

Ambient Temperature 17.4 °C

Relative Humidity 50.0 %

2.2.6 Test Results

AC Powered - 110 V AC Radio's Idle

Highest frequency generated or used within the EUT: 2.484 GHz

Upper frequency test limit: 13 GHz

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
31.752	30.4	40.0	-9.6	102	1.00	Vertical
324.995	40.5	46.0	-5.5	266	1.00	Horizontal
350.592	34.4	46.0	-11.6	294	1.09	Horizontal
374.984	38.4	46.0	-7.6	283	1.00	Horizontal
424.998	35.4	46.0	-10.6	310	1.00	Horizontal
449.984	39.8	46.0	-6.2	100	1.00	Vertical
450.003	45.1	46.0	-0.9	272	1.00	Horizontal

Table 9 - 30 MHz to 1 GHz

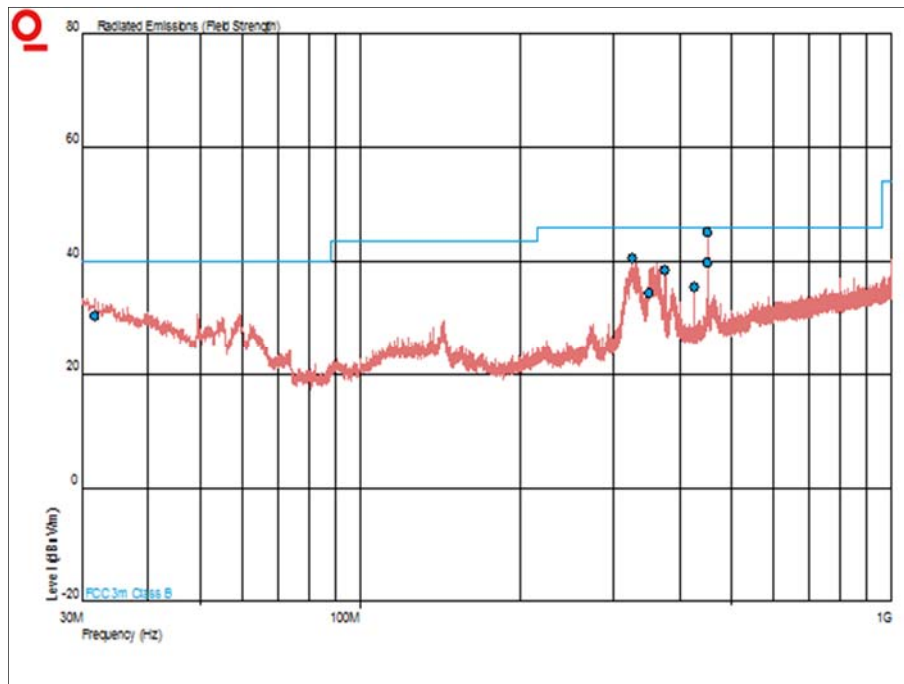


Figure 3 - 30 MHz to 1 GHz - Horizontal and Vertical



Frequency (GHz)	Result (µV/m)		Limit (µV/m)		Margin (µV/m)		Angle (°)	Height (m)	Polarisation
	Peak	Average	Peak	Average	Peak	Average			
*									

Table 10 - 1 GHz to 13 GHz

*No emissions were detected within 10 dB of the limit.

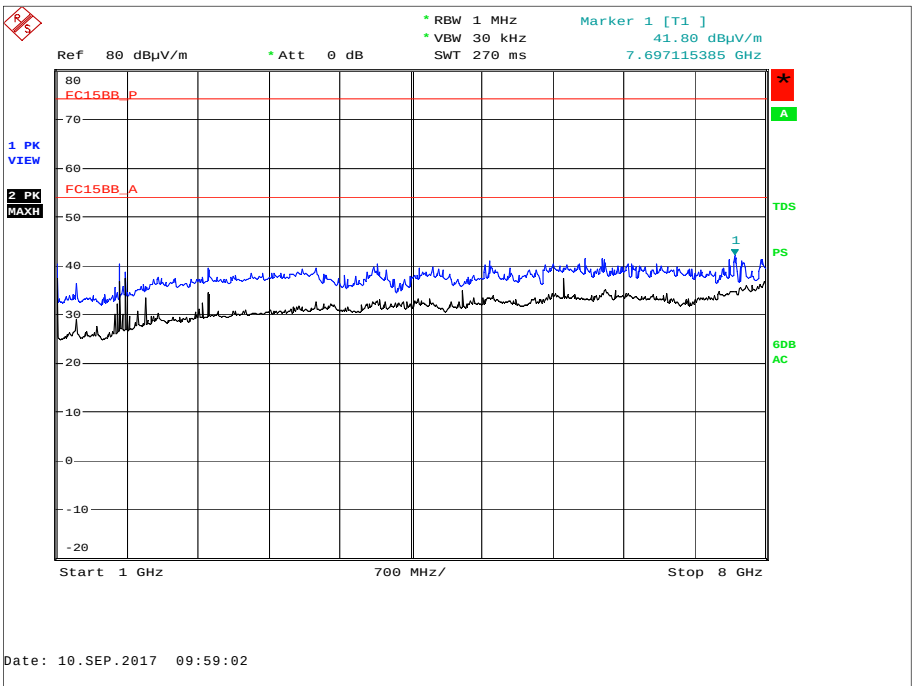


Figure 4 - 1 GHz to 8 GHz - Horizontal and Vertical



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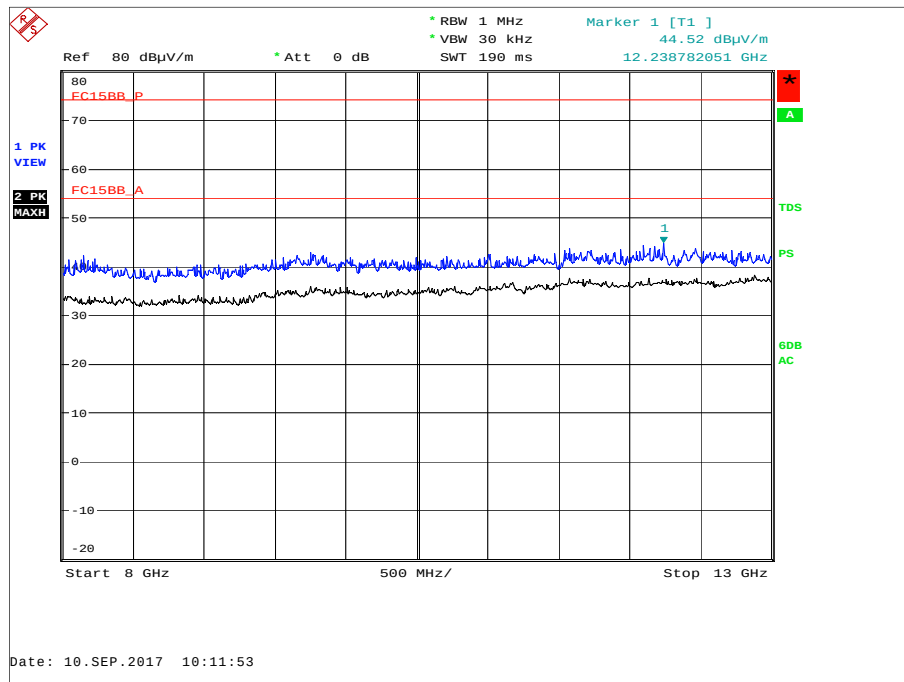


Figure 5 - 8 GHz to 13 GHz - Horizontal and Vertical

FCC 47 CFR Part 15, Limit Clause 15.109

Frequency of Emission (MHz)	Field Strength (μV/m)
30 to 88	100.0
88 to 216	150.0
216 to 960	200.0
Above 960	500.0

2.2.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Antenna (Bilog)	Schaffner	CBL6143	287	24	18-Apr-2018
Pre-Amplifier	Phase One	PS04-0086	1533	12	31-Jul-2018
Screened Room (5)	Rainford	Rainford	1545	36	20-Dec-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Multimeter	Iso-tech	IDM101	2417	12	30-Sep-2017
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	12	23-Nov-2017
Cable (N-N, 8m)	Rhophase	NPS-2302-8000-NPS	3248	12	2-May-2018
Tilt Antenna Mast	maturo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	maturo GmbH	NCD	3917	-	TU
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	17-Oct-2017
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	6	4-Nov-2017
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	17-Feb-2018
Hygrometer	Rotronic	HP21	4741	12	22-Aug-2018

Table 11

TU - Traceability Unscheduled



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3 Measurement Uncertainty

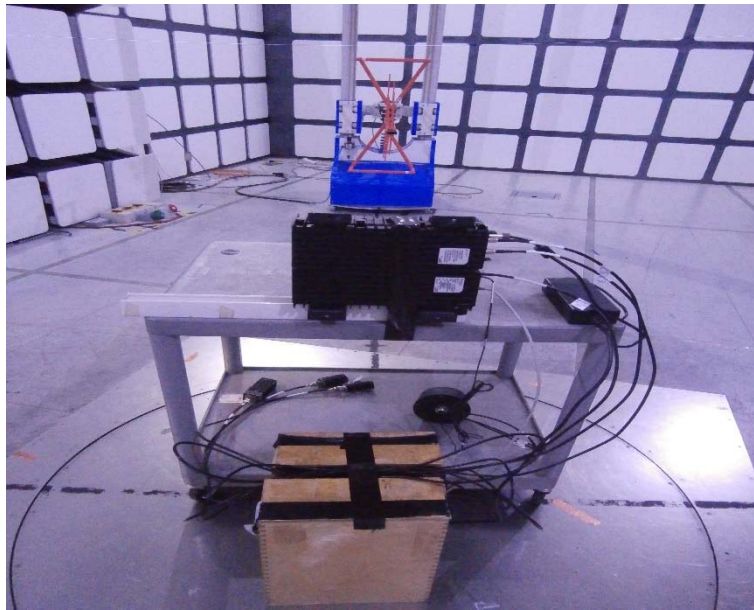
For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
AC Power Line Conducted Emissions	150 kHz to 30 MHz, LISN, ± 3.7 dB
Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB
	1 GHz to 40 GHz: ± 6.3 dB

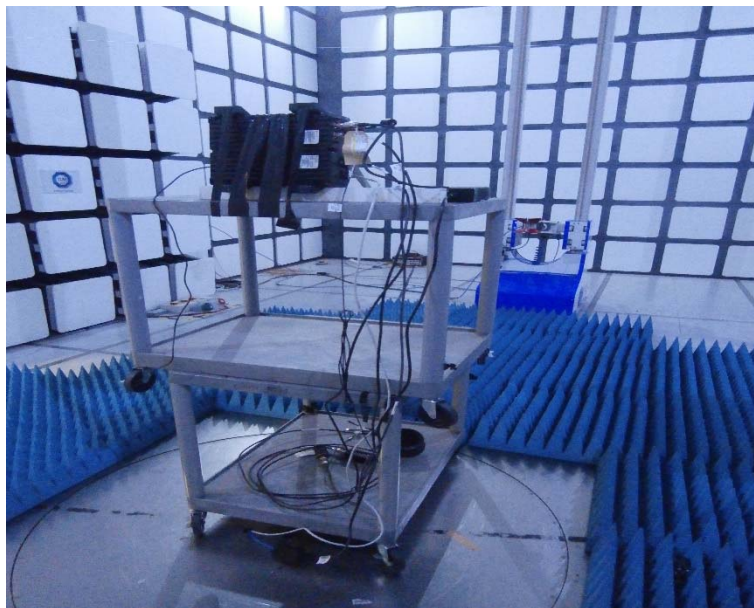
Table 12

4 Appendix A (Set-up Photos)

Radiated Emissions 30 MHz to 1 GHz



Radiated Emissions 1 GHz to 8 GHz



AC Conducted Emissions

