FCC and ISED Test Report

Paxton Access Ltd, Unified Paxlock PRO EMC sample, Model: 900-610BL

In accordance with FCC 47 CFR Part 15B and ISED RSS-GEN

Add value.
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Prepared for: Paxton Access Ltd
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FCC ID: USE900640 IC: 10217A-900640

COMMERCIAL-IN-CONFIDENCE

Document 75953683-04 Issue 01

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Andy Lawson	Chief Engineer, EMC	Authorised Signatory	11 February 2022

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD 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 and ISED RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Connor Lee	11 February 2022	

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

ISED Accreditation
12669A Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B and ISED RSS-GEN: 2020 and Issue 5 and A1 (2019-03) for the tests detailed in section 1.3.

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Contents

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	11 February 2022

Table 1

1.2 Introduction

Applicant	Paxton Access Ltd
Manufacturer	Paxton Access Ltd
Model Number(s)	900-610BL
Serial Number(s)	101645674
Hardware Version(s)	z-pl33_rev4 ppc-pl33C
Software Version(s)	3.0.5
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15B and ISED RSS-GEN: 2020 and Issue 5 and A1 (2019-03)
Order Number Date	203866 22-October-2021
Date of Receipt of EUT	11-November-2021
Start of Test	21-January-2022
Finish of Test	21-January-2022
Name of Engineer(s)	Connor Lee
Related Document(s)	ANSI C63.4: 2014

1.3 Brief Summary of Results

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

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: Battery Powered - Idle				
2.1	15.109 and 7.1	Radiated Disturbance	Pass	ANSI C63.4: 2014

Table 2

1.4 Declaration of Build Status

MAIN EUT	
MANUFACTURING DESCRIPTION	Paxton Paxlock Pro - Euro
MANUFACTURER	Paxton Access Ltd
MODEL	900-600WT-Paxlock Pro - Euro, internal, white 900-600BL-Paxlock Pro - Euro, internal, black 900-610WT-Paxlock Pro - Euro, external, white 900-610BL-Paxlock Pro - Euro, external, black 900-640WT-PaxLock Pro - Mortise, Galaxy, white 900-640BL-PaxLock Pro - Mortise, Galaxy, black 900-650WT-PaxLock Pro - Mortise, Eclipse, white 900-650BL-PaxLock Pro - Mortise, Eclipse, black 900-620WT-PaxLock Pro - Latch, Galaxy, white 900-620BL-PaxLock Pro - Latch, Galaxy, black 900-630WT-PaxLock Pro - Latch, Eclipse, white 900-630BL-PaxLock Pro - Latch, Eclipse, black
PART NUMBER	900-600WT 900-600BL 900-610WT 900-610BL 900-640WT 900-640BL 900-650WT 900-650BL 900-620WT 900-620BL 900-630WT 900-630BL
HARDWARE VERSION	z-pl33_rev4 ppc-pl33C
SOFTWARE VERSION	3.0.5
PSU VOLTAGE/FREQUENCY/CURRENT	6V DC (Four replaceable AA batteries)
HIGHEST INTERNALLY GENERATED FREQUENCY	The highest clock frequency that we generate is 48MhZ **Note that the radio circuitry has a 2.4GHz oscillator in it
FCC ID (if applicable)	USE900640 (to be confirmed)
INDUSTRY CANADA ID (if applicable)	10217A-900640 (to be confirmed)
TECHNICAL DESCRIPTION (a brief technical description of the intended use and operation)	The Paxlock is the battery powered smart electronic lock providing both access control and reader functions. The unit combines a 125kHz and 13.56 MHz proximity reader, a switchable wireless Bluetooth interface (2.4GHz) and 802.15.4 Zigbee (2.4GHz) interface and a locking mechanism. PaxLock is a complete standalone system, there's nothing to wire together and no mains connection is required. The unit is powered by four replaceable AA batteries. The purpose of the equipment is to receive validated user input via a radio signal from a passive proximity token (card or key fob) and then provide a digital output to the internal locking mechanism for access control. An event of this process is then transmitted to the PC through the wireless interface and stored as an archive. User's access rights are configured at the PC and the Paxlock unit is then updated as required using the same wireless method
COUNTRY OF ORIGIN	
RF CHARACTERISTICS (if applicable)	
TRANSMITTER FREQUENCY OPERATING RANGE (MHz)	0.125MHz, 13.56MHz, 2400MHz
RECEIVER FREQUENCY OPERATING RANGE (MHz)	N/A
INTERMEDIATE FREQUENCIES	N/A
EMISSION DESIGNATOR(S): https://fccid.io/Emissions-Designator/	2M40F1D, 10K21D, 5K33K1D

MODULATION TYPES: (i.e. GMSK, QPSK)	RFID (Amplitude Modulation) Bluetooth low energy 5.0 (GFSK) Spread Spectrum/Digital Device (IEEE 802.15.4) (OQPSK)
OUTPUT POWER (W or dBm)	<10mW

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

Name: Kevin Feeney
Position held: Compliance Engineer
Date 23 November 2021

1.5 Product Information

1.5.1 Technical Description

The Equipment under test (EUT) was a Paxton Unified Paxlock Pro, Model 900-610BL.

The primary function of the EUT is to provide secure door access via the use of RFID cards.

The EUT has a secondary function to be able to communicate with other devices via the use of Bluetooth LE and Zigbee capabilities.

The customer has declared that the RFID and Bluetooth LE capabilities have already been tested in this configuration, the results of which are contained in a different report.

1.5.2 Test Configuration

Configuration	Description
Battery Powered	The EUT was a standalone device which was powered via its own internal battery.

Table 3

1.5.3 Modes of Operation

Mode	Description
Idle	The EUT’s intentional transmitters were turned off.

Table 4

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
Model: 900-610BL, Serial Number: 101645674			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 5

1.8 Test Location

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

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: Battery Powered - Idle		
Radiated Disturbance	Connor Lee	UKAS

Table 6

Office Address:

TÜV SÜD
Octagon House
Concorde Way
Fareham
Hampshire
PO15 5RL
United Kingdom

2 Test Details

2.1 Radiated Disturbance

2.1.1 Specification Reference

FCC 47 CFR Part 15B and ISED RSS-GEN, Clause 15.109 and 7.1

2.1.2 Equipment Under Test and Modification State

900-610BL, S/N: 101645674 - Modification State 0

2.1.3 Date of Test

21-January-2022

2.1.4 Test Method

The EUT was set up on a non-conductive table 0.8 m above a reference ground plane within a semi-anechoic chamber on a remotely controlled turntable.

A pre-scan of the EUT emissions profile using a peak detector was made at a 3 m antenna distance whilst varying the antenna-to-EUT azimuth and polarisation.

For an EUT which could reasonable be used in multiple planes, pre-scans were performed with the EUT orientated in X, Y and Z planes with reference to the ground plane.

Using a list of the highest emissions detected during the pre-scan along with their bearing and associated antenna polarisation, the EUT was then formally measured using a Quasi-Peak, Peak or CISPR Average detector as appropriate.

The readings were maximised by adjusting the antenna height, polarisation and turntable azimuth, in accordance with the specification.

2.1.5 Example Calculation

Below 1 GHz:

Quasi-Peak level (dBµV/m) = Receiver level (dBµV) + Correction Factor (dB/m)
Margin (dB) = Quasi-Peak level (dBµV/m) - Limit (dBµV/m)

Above 1 GHz:

CISPR Average level (dBµV/m) = Receiver level (dBµV) + Correction Factor (dB/m)
Margin (dB) = CISPR Average level (dBµV/m) - Limit (dBµV/m)

Peak level (dBµV/m) = Receiver level (dBµV) + Correction Factor (dB/m)
Margin (dB) = Peak level (dBµV/m) - Limit (dBµV/m)

2.1.6 Example Test Setup Diagram

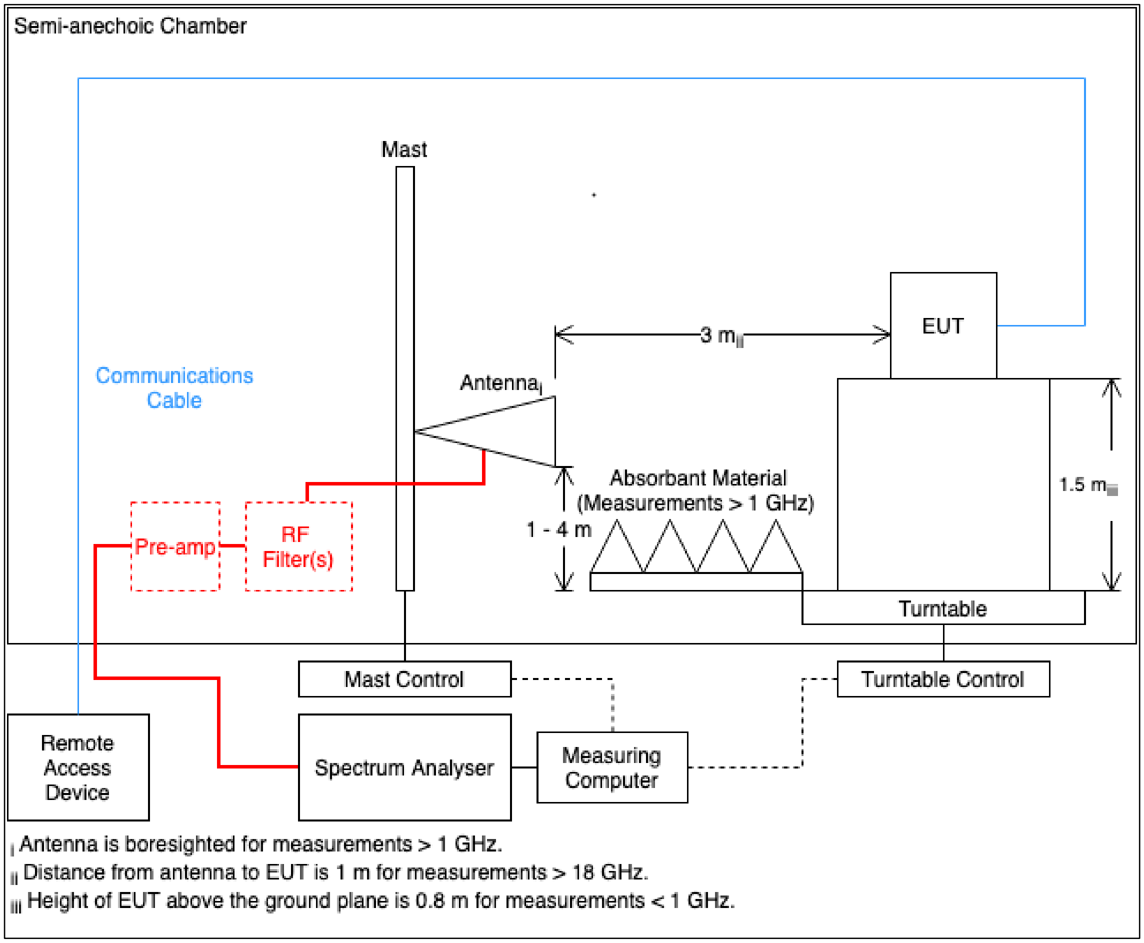

Figure 1

2.1.7 Environmental Conditions

Ambient Temperature	21.1 °C
Relative Humidity	24.8 %

2.1.8 Specification Limits

Required Specification Limits, Field Strength - Class B Test Limit at a 3 m Measurement Distance		
Frequency Range (MHz)	Test Limit (µV/m)	Test Limit (dBµV/m)
30 to 88	100	40.0
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

Supplementary information:
Note 1. A Quasi-peak detector is to be used for measurements below 1 GHz.
Note 2. A CISPR Average detector is to be used for measurements above 1 GHz.
Note 3. The Peak test limit above 1 GHz is 20 dB higher than the CISPR Average test limit.

Table 7

2.1.9 Test Results

Results for Configuration and Mode: Battery Powered - Idle.

This test was performed to the requirements of the Class B limits.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Highest frequency generated or used within the EUT: 2.4 GHz
Which necessitates an upper frequency test limit of: 13 GHz

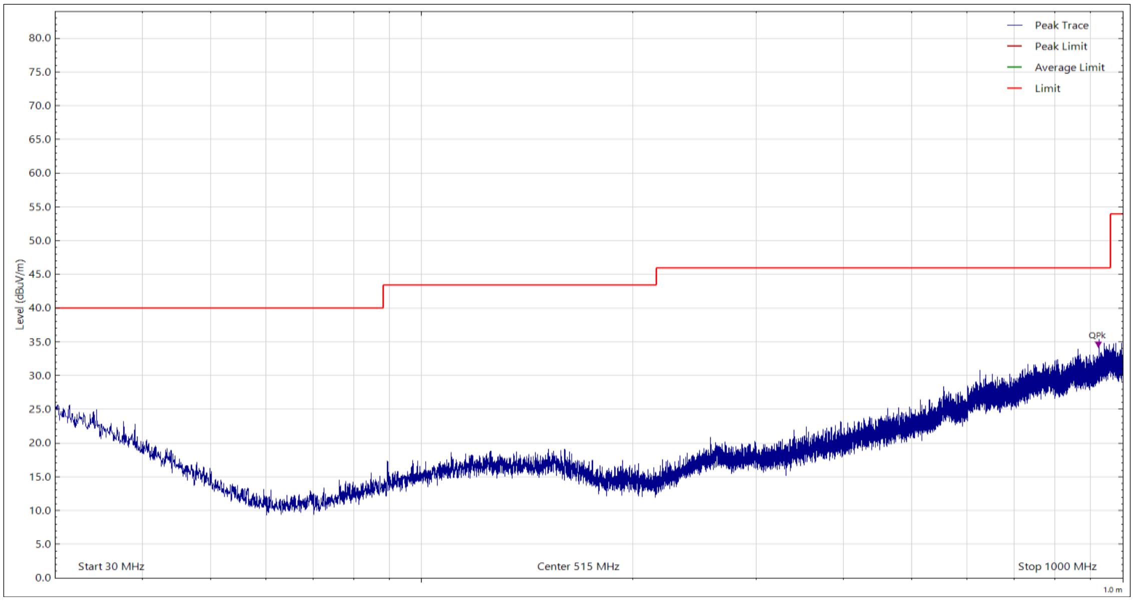

Figure 2 - 30 MHz to 1 GHz, Quasi-Peak, Horizontal

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
923.424	33.9	46.0	-12.1	Q-Peak	350	110	Horizontal

Table 8

No other final measurements were made as all other peak emissions seen above the measurement system noise floor during the pre-scan were greater than 10 dB below the test limit.

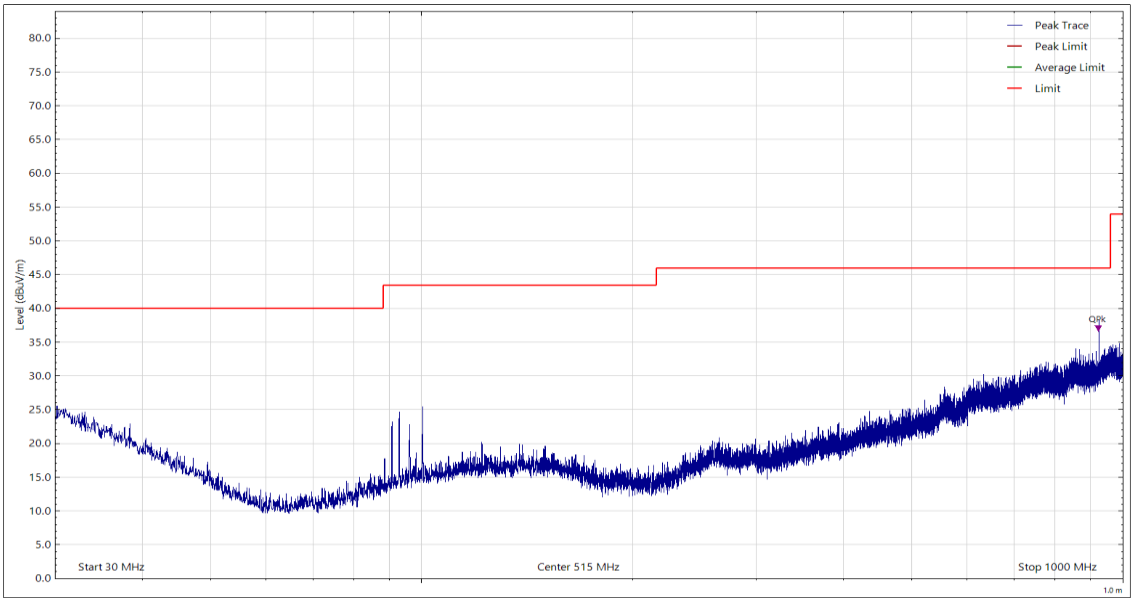

Figure 3 - 30 MHz to 1 GHz, Quasi-Peak, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
923.425	36.3	46.0	-9.7	Q-Peak	157	106	Vertical

Table 9

No other final measurements were made as all other peak emissions seen above the measurement system noise floor during the pre-scan were greater than 10 dB below the test limit.

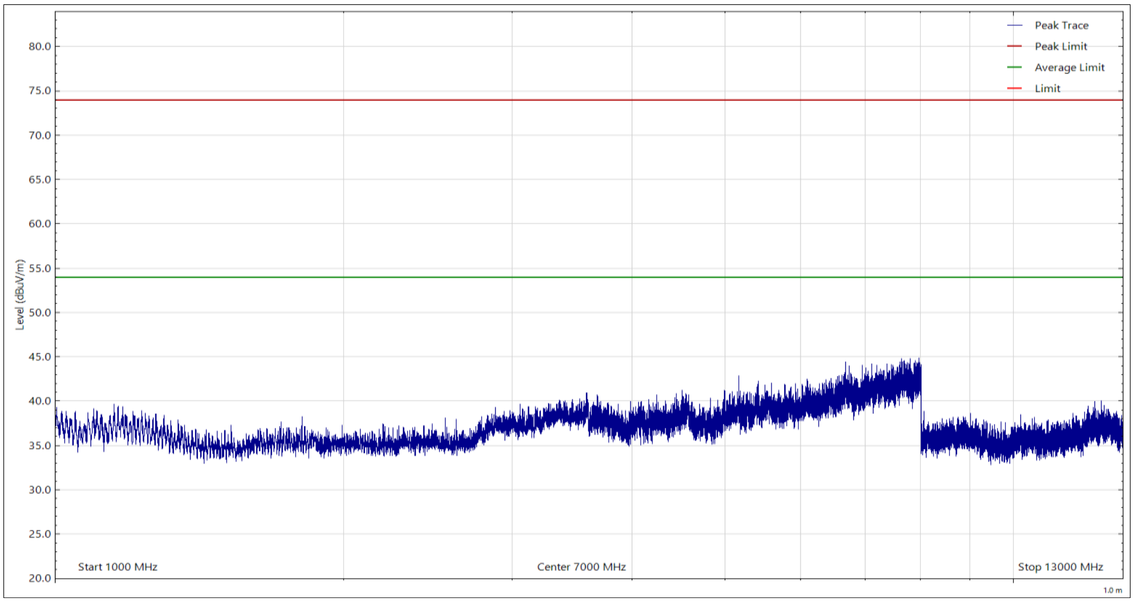

Figure 4 - 1 GHz to 13 GHz, Peak, Horizontal

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 10

*No final measurements were made as all peak emissions seen above the measurement system noise floor during the pre-scan were greater than 10 dB below the test limit.

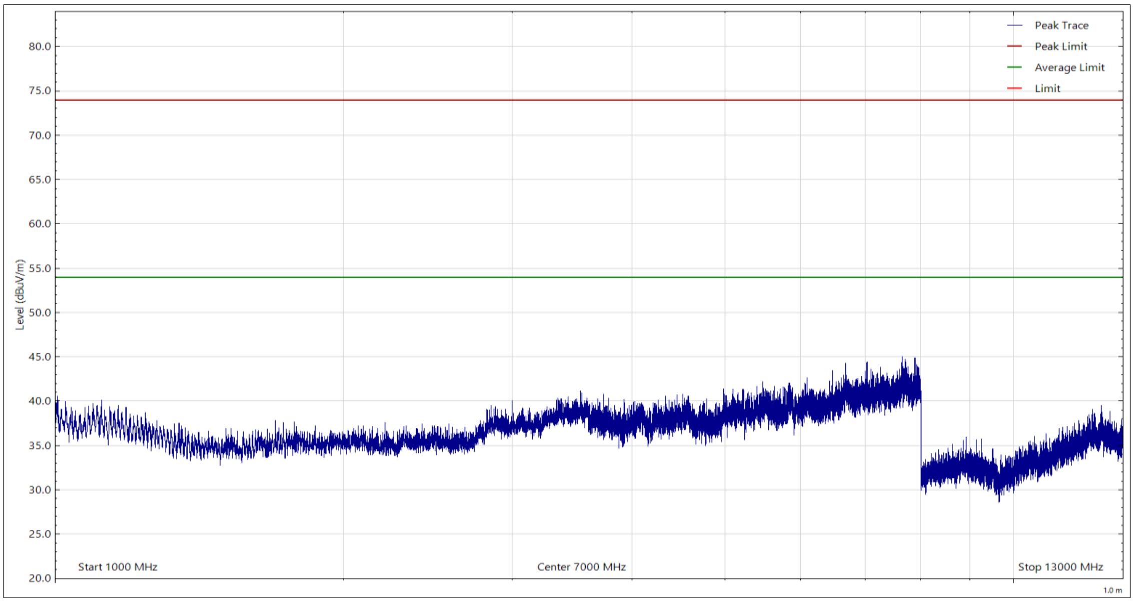

Figure 5 - 1 GHz to 13 GHz, Peak, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 11

*No final measurements were made as all peak emissions seen above the measurement system noise floor during the pre-scan were greater than 10 dB below the test limit.

Figure 6 - Test Setup - 30 MHz to 1 GHz

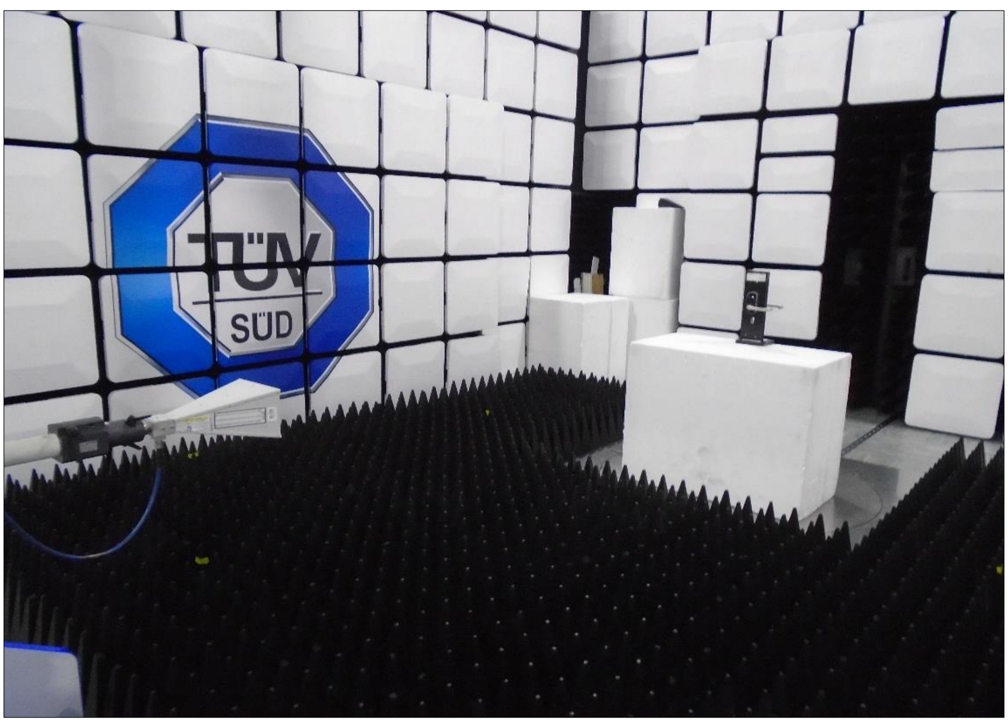

Figure 7 - Test Setup - 1 GHz to 8 GHz

Figure 8 - Test Setup - 8 GHz to 18 GHz

2.1.10 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 12.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Screened Room (12)	MVG	EMC-3	5621	36	11-Aug-2023
Emissions Software	TUV SUD	EmX V2.1.11	5125	-	Software
Test Receiver	Rohde & Schwarz	ESU40	3506	12	18-Mar-2022
Turntable & Mast Controller	Maturo Gmbh	NCD/498/2799.01	5612	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	5613	-	TU
Cable (K-Type to K-Type, 2 m)	Scott Cables	KPS-1501-2000-KPS	4526	6	06-Mar-2022
Cable (N-Type to N-Type, 1 m)	Rosenberger	LU7-036-1000	5031	12	23-Jul-2022
Cable (N-Type to N-Type, 8 m)	Teledyne	PR90-088-8MTR	5450	6	08-Mar-2022
Pre-Amplifier (1 GHz to 18 GHz)	Schwarzbeck	BBV 9718 C	5350	12	22-Sep-2022
Pre-Amplifier (8 GHz to 18 GHz)	Phase One	PS04-0086	1533	12	05-Feb-2022
Antenna (Bi-Log, 30 MHz to 1 GHz)	Teseq	CBL6111D	5615	24	16-Oct-2022
Antenna (DRG, 1 GHz to 10 GHz)	Schwarzbeck	BBHA 9120 B	5611	12	15-Oct-2022
Antenna (DRG, 7.5 GHz to 18 GHz)	Schwarzbeck	HWRD750	5610	12	15-Oct-2022

Table 12

TU - Traceability Unscheduled

3 Test Equipment Information

3.1 General Test Equipment Used

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5471	12	07-Apr-2022
Handheld Digital Multimeter	Agilent Technologies	U1241A	3625	12	10-Dec-2022

Table 13

4 Incident Reports

No incidents reports were raised.

5 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Radiated Disturbance	30 MHz to 1 GHz, Bilog Antenna, ±5.2 dB 1 GHz to 40 GHz, Horn Antenna, ±6.3 dB

Table 14

Worst case error for both Time and Frequency measurement 12 parts in 10^6.

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2007, Clause 4.4.3 and 4.5.1. (Procedure 2). The measurement results are directly compared with the test limit to determine conformance with the requirements of the standard.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8.