Report on the FCC and IC Testing of the Roboception GmbH Measuring System. Model: rc_visard In accordance with FCC 47 CFR Part 15B

Prepared for: Roboception GmbH
Kaflerstraße 2
81241 München
Germany

FCC ID: 2AVMTRCV17

Product Service

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COMMERCIAL-IN-CONFIDENCE

Date: 2020-02-05
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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Matthias Stumpe	2020-02-05	SIGN-ID 326728
Authorised Signatory	Martin Steindl	2020-02-05	SIGN-ID 327006

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 15C. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Matthias Stumpe	2020-02-05	SIGN-ID 326728

Laboratory Accreditation	Laboratory recognition	Industry Canada test site registration
DAkkS Reg. No. D-PL-11321-11-02	Registration No. BNetzA-CAB-16/21-15	3050A-2

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B.

Trade Register Munich
HRB 85742
VAT ID No. DE129484267
Information pursuant to Section 2(1)
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Germany

Product Service

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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	2020-01-09
2	Update FCC ID, Measuring model rc_visard	2020-02-05

Table 1

1.2 Introduction

Applicant	Roboception GmbH
Manufacturer	Roboception GmbH
Model Number(s)	Roboception rc_visard 160m - 4
Serial Number(s)	03048624
Hardware Version(s)	V02
Software Version(s)	1.8.3
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15B
Test Plan/Issue/Date	---
Order Number Date	713176881 2019-12-11
Date of Receipt of EUT	2019-12-16
Start of Test	2020-01-07
Finish of Test	2020-01-09
Name of Engineer(s)	Matthias Stumpe, Patrick Müller
Related Document(s)	---

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: 120 V AC Powered				
2.1	15.109 and 15.107	Radiated Emission and conducted emission	Pass	ANSI C63.4-2014

Table 2

1.4 Declaration of Build Status

1.5 Application Form

NA

1.6 Product Information

1.6.1 Technical Description

3D Camera that enables robots to generate and process time and location-related data in real time. The sensors can be uses in all areas of robotics, for example in data generation or navigation.
Functions such as object recognition and scene analysis as well as additional software modules e.g. for pick-and-place applications offer numerous application possibilities.

1.7 Deviations from the Standard

NA

1.8 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
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

1.9 Test Location

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

Test Name	Name of Engineer(s)
Configuration and Mode: 120 V AC / 60 Hz Powered	
Radiated Emissions	Matthias Stumpe, Patrick Müller
Conducted emission	Matthias Stumpe, Patrick Müller

Table 4

Office Address:

Äußere Frühlingstraße 45
94315 Straubing
Germany

2 Test Details

2.1 Radiated Emissions and Conducted emission

2.1.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.109 and Clause 15.107

2.1.2 Equipment Under Test and Modification State

3D Camera rc_visard 160m - 4

2.1.3 Date of Test

2020-01-07 – 2020-01-09

2.1.4 Test Method

ANSI C63.4-2014

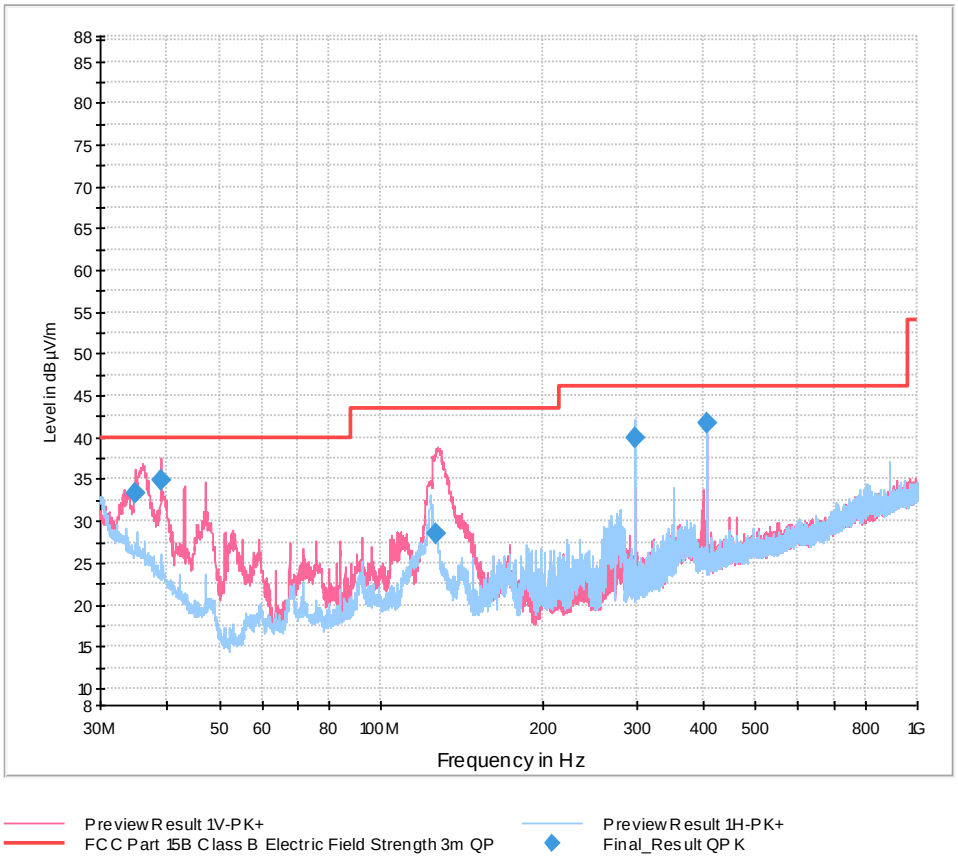
2.1.5 Environmental Conditions

Ambient Temperature	20.0 °C
Relative Humidity	52.0 %

2.1.6 Test Results

120V/60Hz AC powered

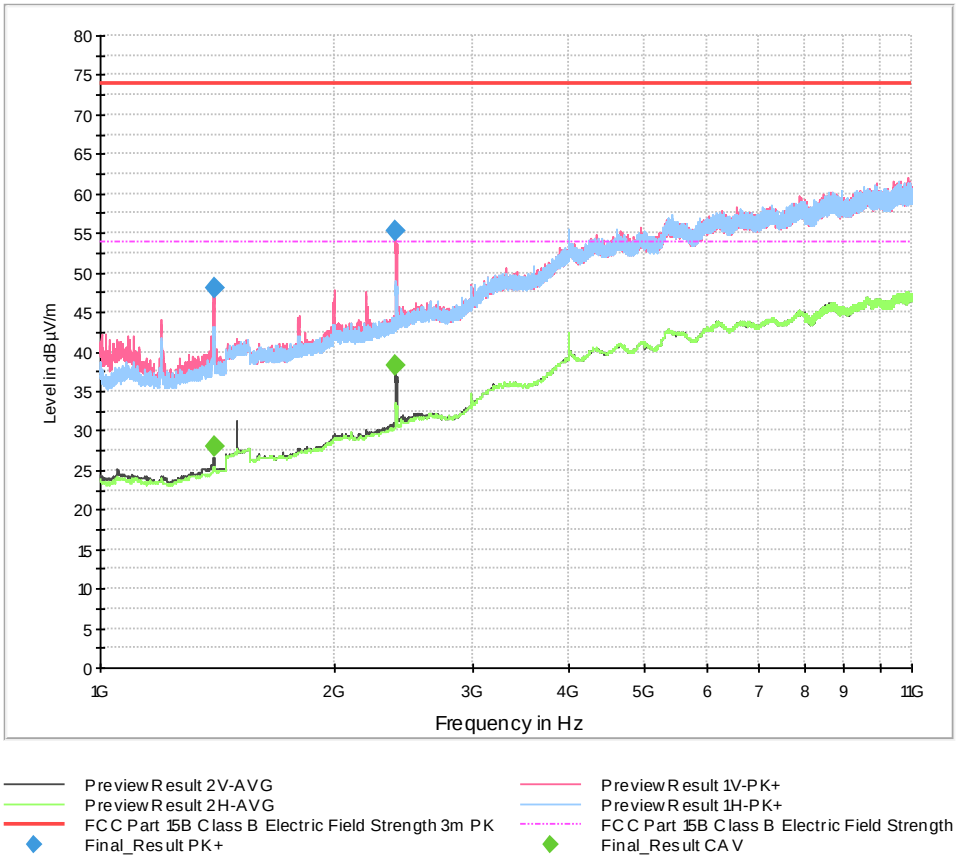
Radiated emission: 30MHz-1GHz



Final Results 1:

Frequency *MHz*	*QuasiPeak* *dBµV/m*	*Limit* *dBµV/m*	*Margin* *dB*	*Meas. Time* *ms*	*Bandwidth* *kHz*	*Height* *cm*	*Pol*	*Azimuth* *deg*	*Corr.* *dB/m*
34.830000	33.44	40.00	6.56	1000.0	120.000	103.0	V	-38.0	23.3
38.910000	34.89	40.00	5.11	1000.0	120.000	108.0	V	-145.0	20.9
126.750000	28.57	43.50	14.93	1000.0	120.000	100.0	V	85.0	17.8
297.000000	40.03	46.02	5.99	1000.0	120.000	100.0	H	106.0	19.0
405.000000	41.66	46.02	4.36	1000.0	120.000	103.0	H	207.0	21.7

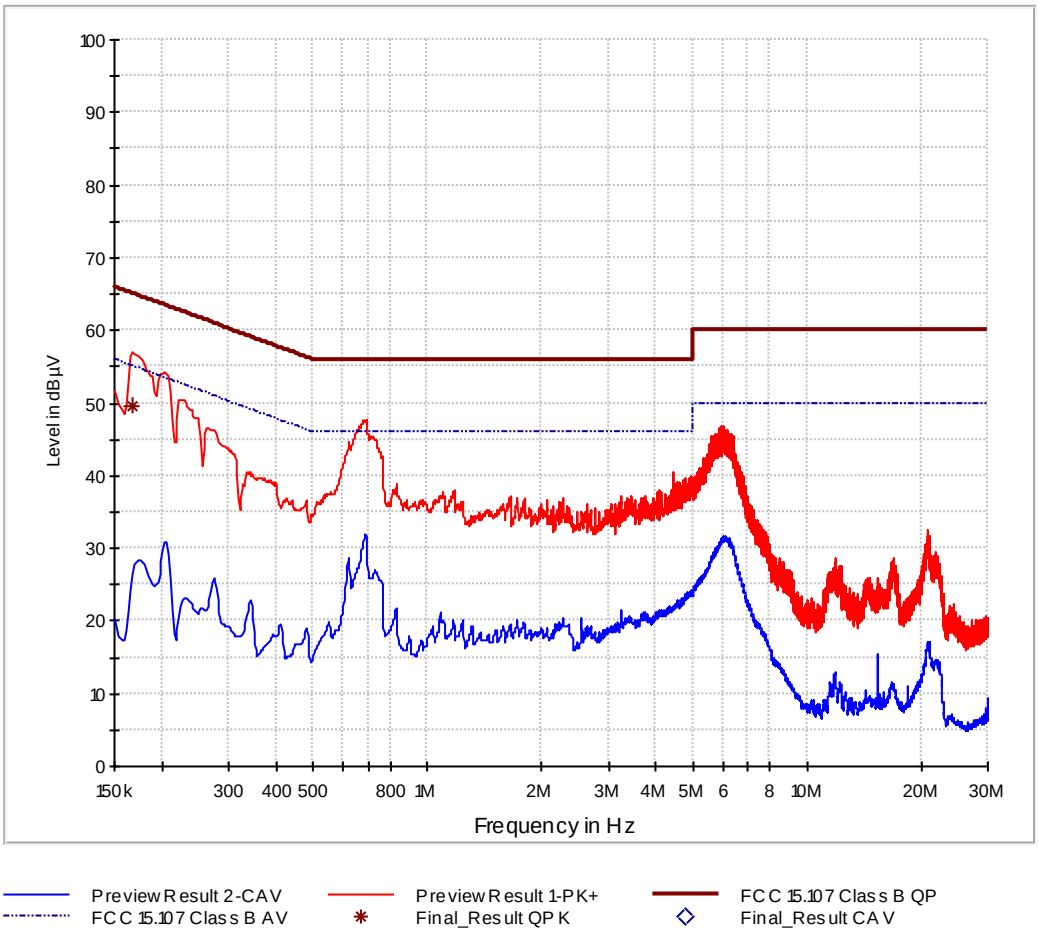
Radiated emission: 1-11GHz



Final Results 1:

Frequency *MHz*	*MaxPeak* *dBµV/m*	*CAverage* *dBµV/m*	*Limit* *dBµV/m*	*Margin* *dB*	*Meas. Time* *ms*	*Bandwidth* *kHz*	*Height* *cm*	*Pol*	*Azimuth* *deg*	*Corr.* *dB/m*
1399.750000	---	28.02	53.98	25.96	1000.0	1000.000	400.0	V	-121.0	27.7
1399.750000	48.15	---	73.98	25.83	1000.0	1000.000	400.0	V	-121.0	27.7
2389.750000	---	38.22	53.98	15.76	1000.0	1000.000	125.0	V	-4.0	32.3
2389.750000	55.27	---	73.98	18.71	1000.0	1000.000	125.0	V	-4.0	32.3

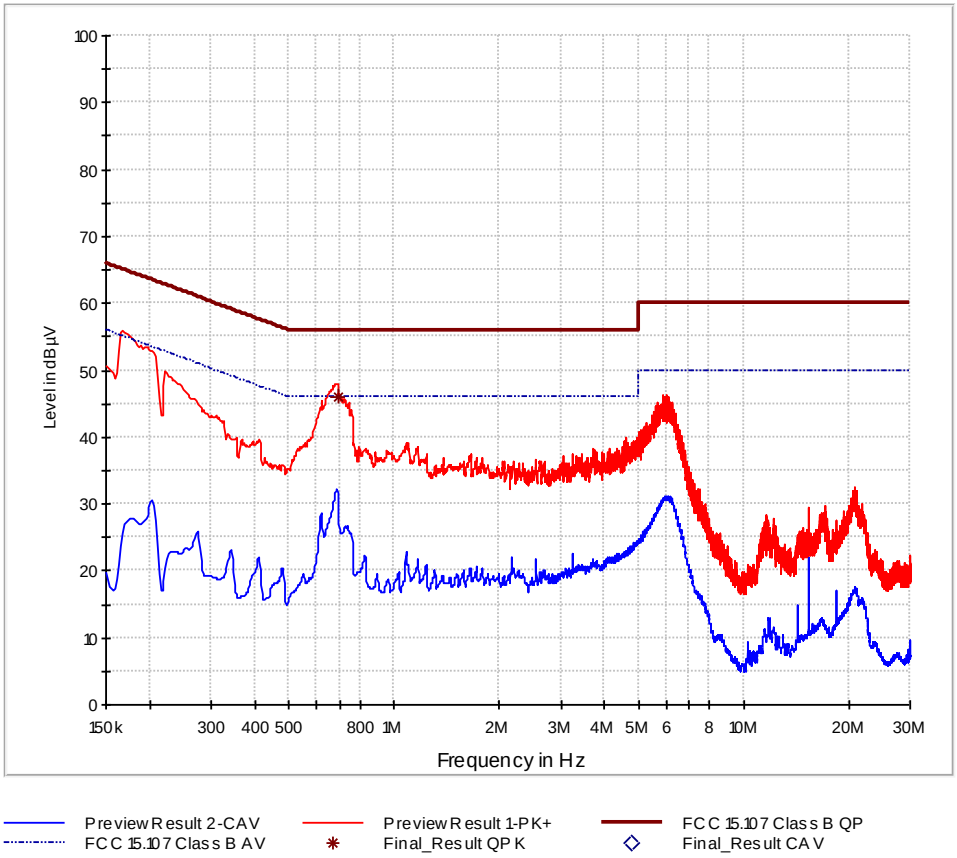
Conducted emission: 150k-30M_L (Phase)



Final Results 1:

Frequency MHz	*QuasiPeak dBµV*	*CAverage dBµV*	*Limit dBµV*	*Margin dB*	*Meas. Time ms*	*Bandwidth kHz*	*Line*	*Filter*	*Corr. dB*
0.168000	49.72	---	65.06	15.34	1000.0	9.000	L1	ON	10.0

Conducted emission: 150k-30M_N (Neutral)



Final Results 1:

Frequency MHz	*QuasiPeak dBµV*	*CAverage dBµV*	*Limit dBµV*	*Margin dB*	*Meas. Time ms*	*Bandwidth kHz*	*Line*	*Filter*	*Corr. dB*
0.690000	46.11	---	56.00	9.89	1000.0	9.000	N	ON	10.0

2.1.7 Test Location and Test Equipment Used

This test was carried out in Semi anechoic room - cabin no. 11 and Shielded room - cabin no. 9.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Spectrum Analyzer	Rohde & Schwarz	ESW44	39897	12	2020-02-29
ULTRALOG Antenna	Rohde & Schwarz	HL562E	39969	36	2022-11-30
Horn antenna	Rohde & Schwarz	HF907	100154	24	2021-07-31
Semi anechoic room No.11	Frankonia	---	42961	36	2022-08-31
EMI test receiver	Rohde & Schwarz	ESU8	19904	18	2020-01-31
V-Network	Rohde & Schwarz	ENV216	39910	12	2020-02-29
Shielded room no.9	Albatross	---	21083	---	---

Table 5

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment
N/A - Not Applicable

3 Photographs

3.1 Equipment Under Test (EUT)

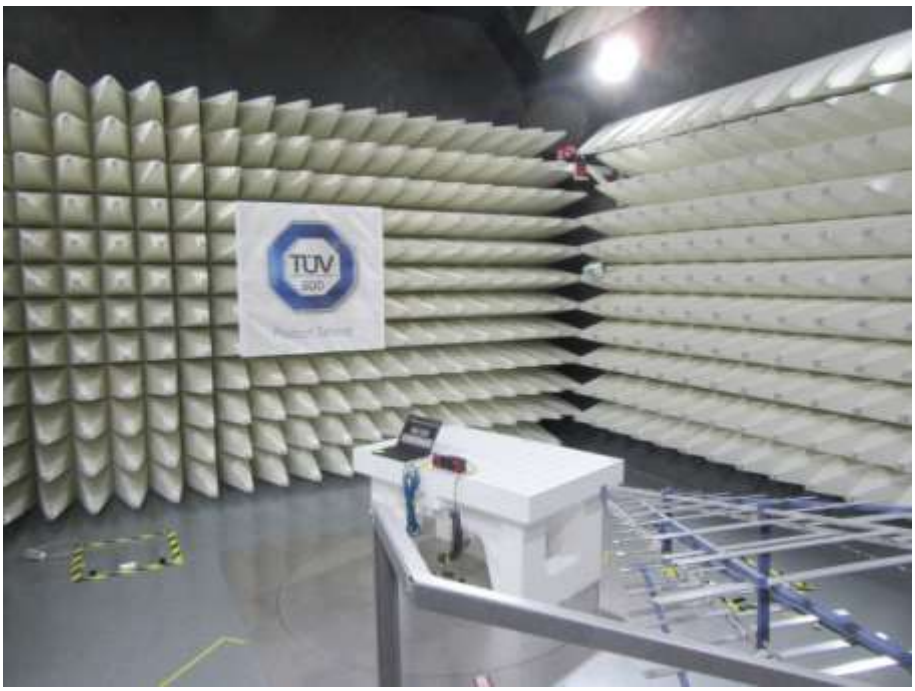


Figure 1 - Radiated emissions

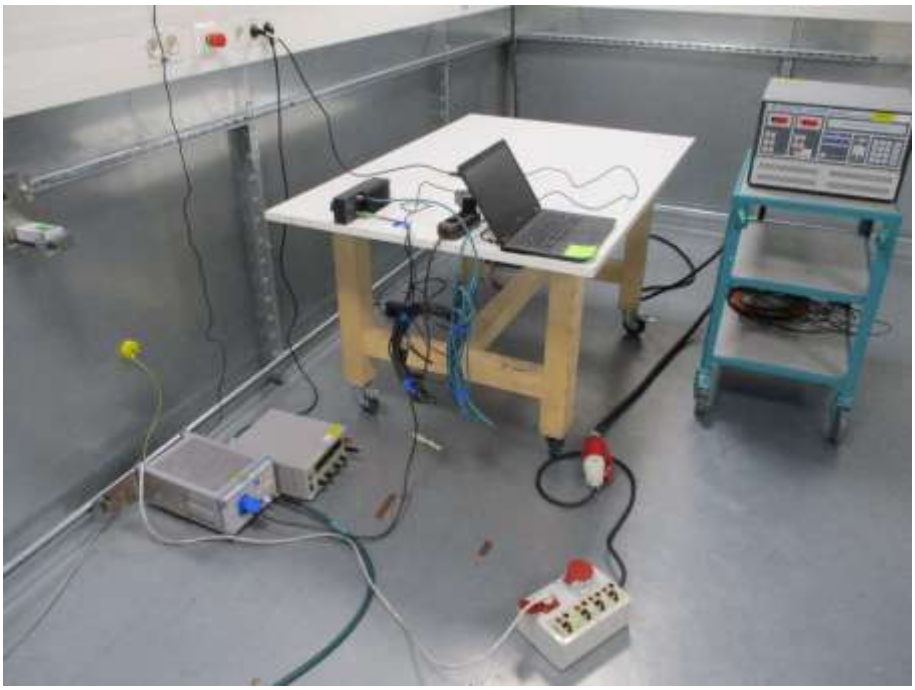


Figure 3 – Conducted emission

4 Test Equipment Information

4.1 General Test Equipment Used

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Spectrum Analyzer	Rohde & Schwarz	ESW44	39897	12	2020-02-29
ULTRALOG Antenna	Rohde & Schwarz	HL562E	39969	36	2022-11-30
Horn antenna	Rohde & Schwarz	HF907	100154	24	2021-07-31
Semi anechoic room No.11	Frankonia	---	42961	36	2022-08-31
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V-Network	Rohde & Schwarz	ENV216	39910	12	2020-02-29
Shielded room no.9	Albatross	---	21083	---	---

Table 6

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment
N/A - Not Applicable