

EMC Test Report

Silicon Laboratories Finland Oy

Main Model: SiW917Y1GA

Series Model: SiW917Y1GN



In accordance with EN 55032

Prepared for: Silicon Laboratories Finland Oy
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COMMERCIAL-IN-CONFIDENCE

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SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
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Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with EN 55032: 2015 A1: 2020 for the tests detailed in section 1.3.



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Contents

1 **Report Summary2**

1.1 Report Modification Record.....2

1.2 Introduction.....2

1.3 Brief Summary of Results3

1.4 Declaration of Build Status4

1.5 Product Information5

1.6 Deviations from the Standard.....6

1.7 EUT Modification Record6

1.8 Test Location6

2 **Test Details7**

2.1 Radiated Emissions.....7

3 **Test Equipment Information 14**

3.1 General Test Equipment Used 14

4 **Incident Reports 15**

5 **Measurement Uncertainty 16**



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	28-Aug-2024

Table 1

1.2 Introduction

Applicant	Silicon Laboratories Finland Oy
Manufacturer	Silicon Laboratories Finland Oy
Model Number(s)	Main Model SiW917Y1GA Series Model: SiW917Y1GN
Serial Number(s)	Not Serialised (FAR-815415-002)
Hardware Version(s)	1.0
Software Version(s)	Stack's "Connectivity Firmware" version 2.10.1.2.0.4 (WLAN) Stack's "Connectivity Firmware" version 2.12.1.0.0.1 (BLE)
Number of Samples Tested	1
Test Specification/Issue/Date	EN 55032: 2015 A1: 2020
Order Number	PTP ~ 6000530772
Date	08-March-2024
Date of Receipt of EUT	20-May-2024
Start of Test	22-June-2024
Finish of Test	22-June-2024
Name of Engineer(s)	Callum Pennells
Related Document(s)	EN 55016-2-3: 2017



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with EN 55032 is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: DC Powered - Idle				
2.1	Annex A, Section A.2	Radiated Emissions	Pass	EN 55016-2-3: 2017

Table 2



1.4 Declaration of Build Status

MAIN EUT	
MANUFACTURING DESCRIPTION	Radio Module
MANUFACTURER	Silicon Laboratories Finland Oy
MODEL	Main Model SiW917Y1GA Series Model: SiW917Y1GN
PART NUMBER	Not Applicable
HARDWARE VERSION	1.0
SOFTWARE VERSION	Stack's "Connectivity Firmware" version 2.10.1.2.0.4 (WLAN) Stack's "Connectivity Firmware" version 2.12.1.0.0.1 (BLE)
PSU VOLTAGE/FREQUENCY/CURRENT	3.3 V, 400 mA
HIGHEST INTERNALLY GENERATED FREQUENCY	180 MHz (embedded MCU clock, for ARM® Cortex® M4 core) 40 MHz (module's on-board crystal, for radio portion)
TECHNICAL DESCRIPTION (a brief technical description of the intended use and operation)	Bluetooth Low Energy (LE), and Wi-Fi 802.11b/g/n/ax wireless radio module

Data in the table above is provided by the Manufacturer.

1.5 Product Information

1.5.1 Technical Description

The Equipment under test (EUT) was a Bluetooth Low Energy (LE), and Wi-Fi 802.11b/g/n/ax wireless radio module.

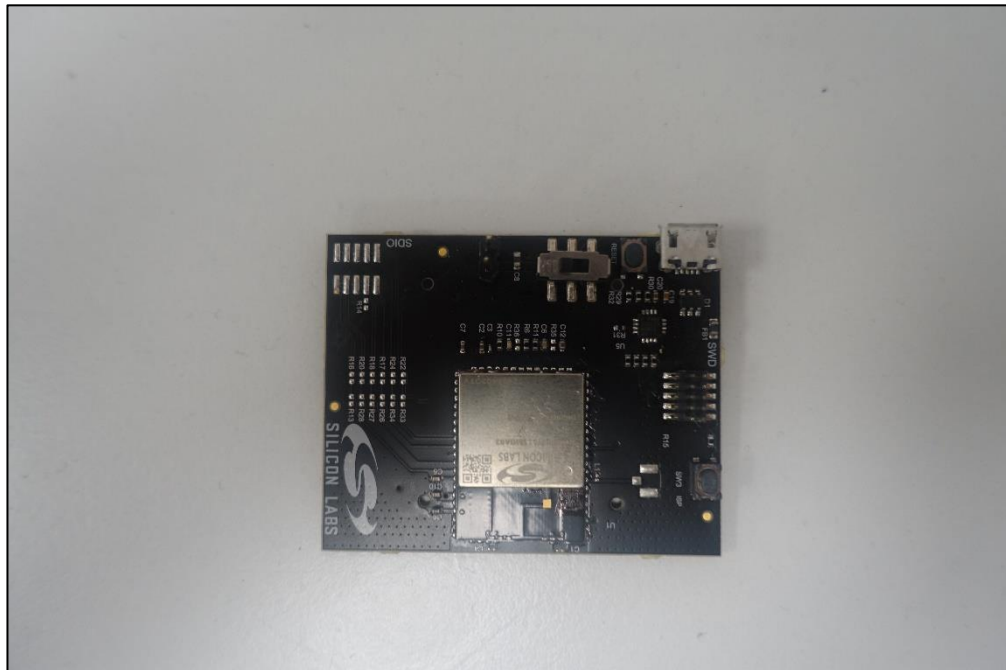


Figure 1 - EUT mounted on host certification board top view.



Figure 2 - host certification board rear view



1.5.2 Test Configuration

Configuration	Description
DC Powered	The EUT was powered by a 3.3 V DC supply

Table 3

1.5.3 Modes of Operation

Mode	Description
Idle	The EUT was powered with all transmitters inactive

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: SiW917Y1GA, Serial Number: Not Serialised (FAR-815415-002)			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 5

1.8 Test Location

TÜV SÜD conducted the following tests at our Octagon House Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: DC Powered - Idle		
Radiated Emissions	Callum Pennells	UKAS

Table 6

Office Address:

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

2 Test Details

2.1 Radiated Emissions

2.1.1 Specification Reference

EN 55032, Clause Annex A, Section A.2

2.1.2 Equipment Under Test and Modification State

SiW917Y1GA, S/N: Not Serialised (FAR-815415-002)- Modification State 0

2.1.3 Date of Test

22-June-2024

2.1.4 Test Method

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

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

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

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

2.1.5 Environmental Conditions

Ambient Temperature 19.4 °C
Relative Humidity 50.8 %
Atmospheric Pressure 1007.0 mbar

2.1.6 Specification Limits

Required Specification Limits - Class B at 3 m Measurement Distance			
Frequency Range (MHz)	Quasi-peak (dBμV/m)	Peak (dBμV/m)	CISPR Average (dBμV/m)
30 to 230	40	N/A	N/A
230 to 1000	47	N/A	N/A
1000 to 6000	N/A	74	54
Supplementary information: Note 1. The EUT is powered at one of the nominal input voltages and frequencies, unless the EUT is intended for worldwide use. Note 2. For apparatus containing devices operating at frequencies less than 9 kHz measurements only need to be performed up to 230 MHz. If the highest internal frequency of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest internal frequency of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. If the highest internal frequency of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. If the highest internal frequency of the EUT is above 1 GHz, the measurement shall be made up to 6 GHz. Where the highest internal frequency if not known, tests shall be performed up to 6 GHz. Note 3. At transitional frequencies, the lower limit applies.			

Table 7

2.1.7 Test Results

Results for Configuration and Mode: DC Powered – Idle

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

Tested to the EN 55032 Class B test limit.

Detailed results are shown below.

Highest frequency generated or used within the EUT: 2.4 GHz
Which necessitates an upper frequency test limit of: 6 GHz

This equipment is DC powered and is not required to be tested at two nominal voltages.

Applied Supply Voltage: 3.3 V
Applied Supply Frequency: N/A DC
Frequency Range of Test: 30 MHz to 1 GHz

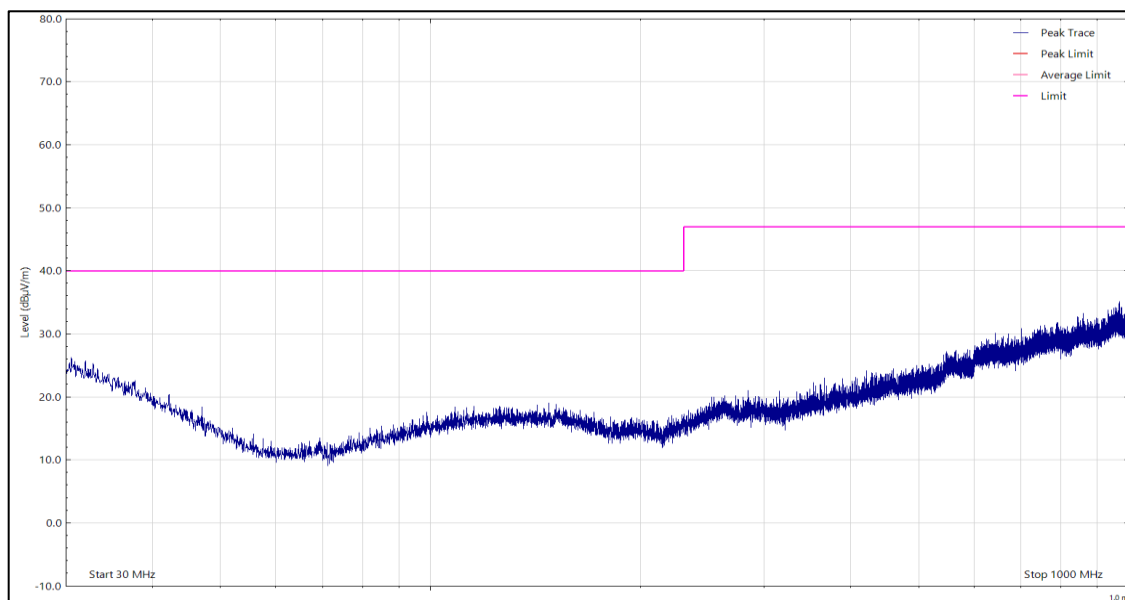


Figure 3 - Graphical Results - Horizontal Polarisation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
*								

Table 8

*No final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the Quasi-Peak test limit.



Frequency Range of Test: 30 MHz to 1 GHz

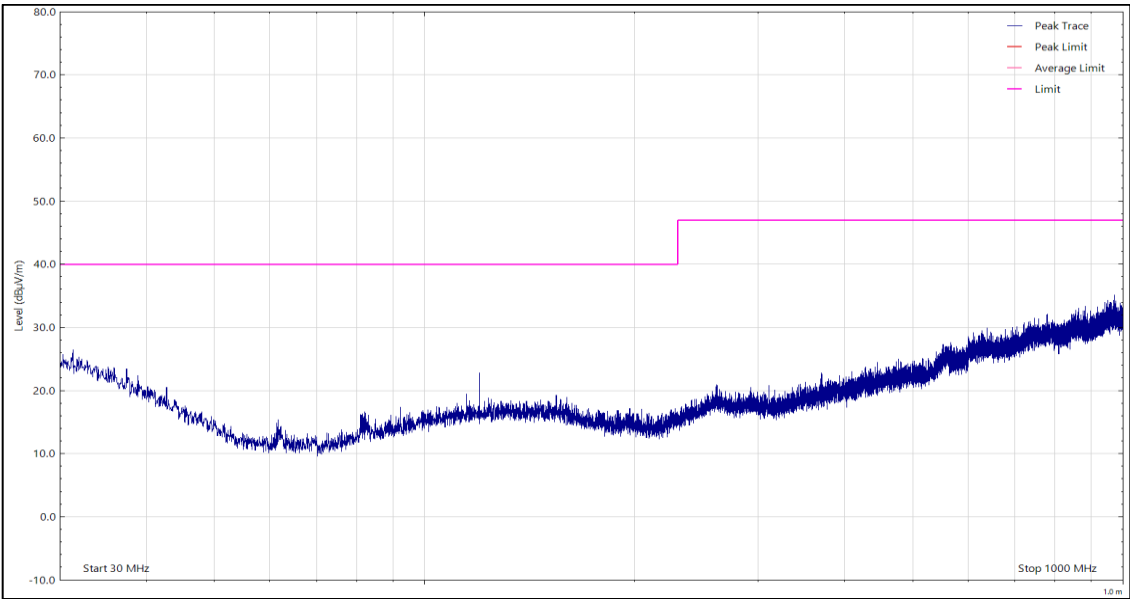


Figure 4 - Graphical Results - Vertical Polarisation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
*								

Table 9

*No final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the Quasi-Peak test limit.



Frequency Range of Test: 1 GHz to 6 GHz

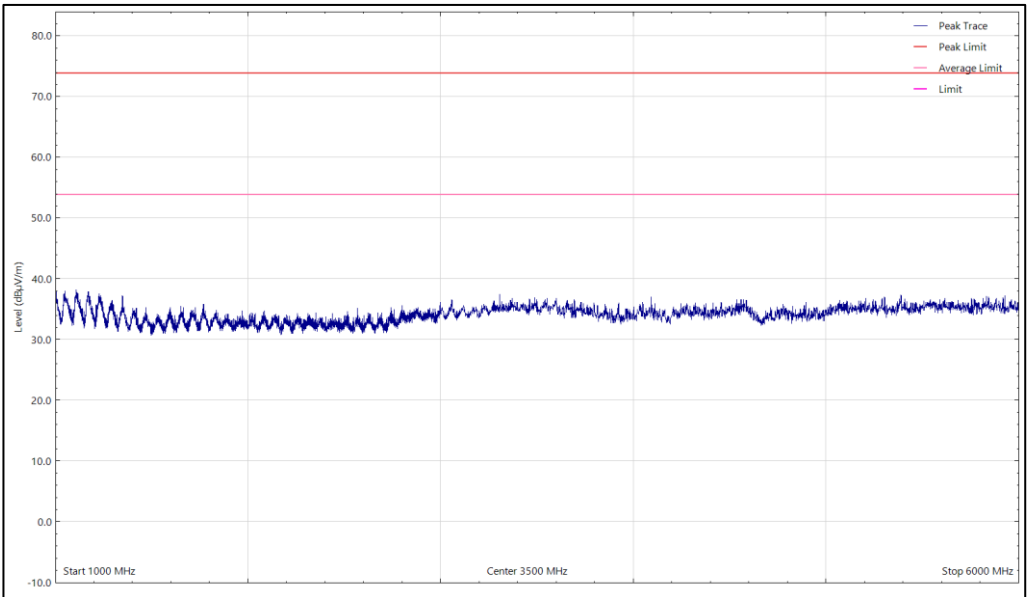


Figure 5 - Graphical Results - Horizontal Polarisation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
*								

Table 10

*No final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the CISPR Average test limit.



Frequency Range of Test: 1 GHz to 6 GHz

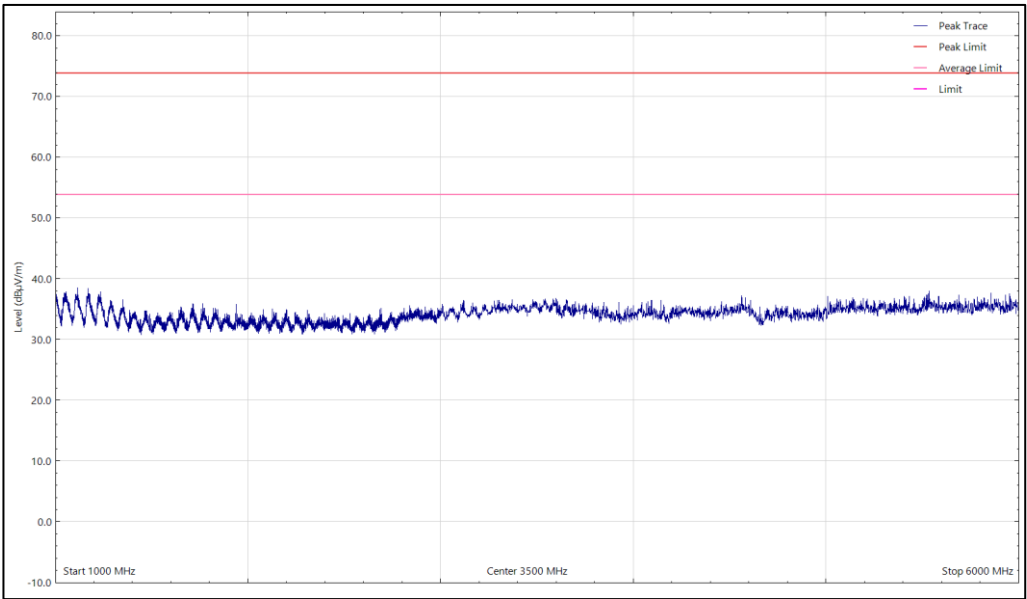


Figure 6 - Graphical Results - Vertical Polarisation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
*								

Table 11

*No final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the CISPR Average test limit.



Figure 7 -Test Setup - Below 1 GHz

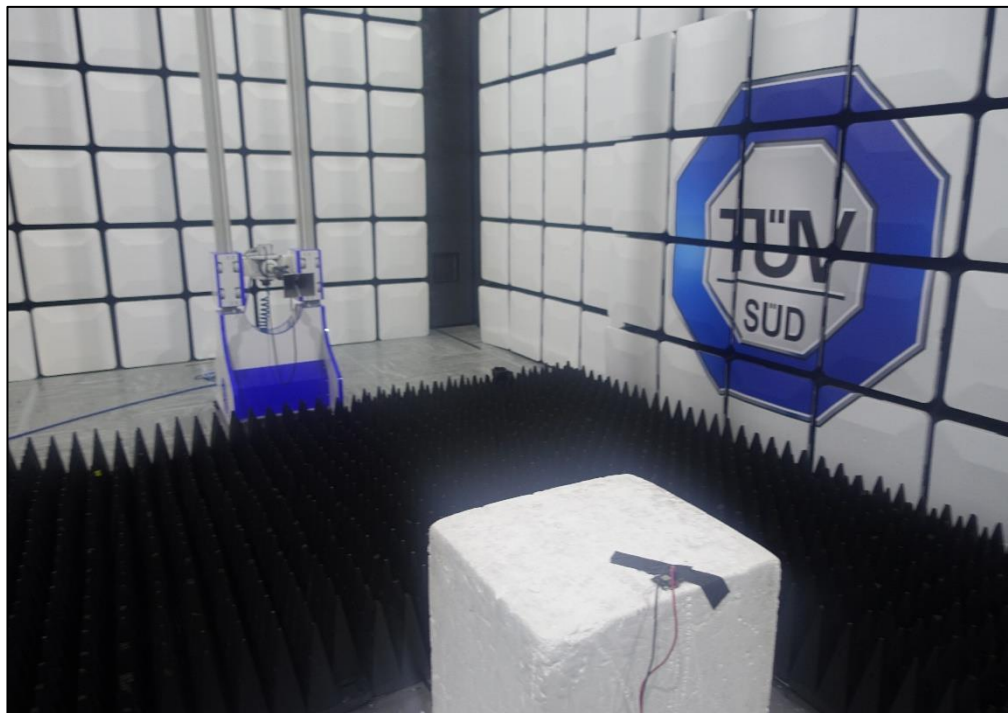


Figure 8 -Test Setup - Above 1 GHz

2.1.8 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
Test Receiver	Rohde & Schwarz	ESU40	3506	12	17-Apr-2025
Emissions Software	TUV SUD	EmX V3.2.0	5125	-	Software
Pre-Amplifier (1 GHz to 18 GHz)	Schwarzbeck	BBV 9718 C	5350	12	01-Dec-2024
Cable (K-Type to K-Type, 2 m)	Junkosha	MWX241-02000KMSKMS/A	5524	12	29-Oct-2024
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5611	12	15-Oct-2024
Turntable & Mast Controller	Maturo Gmbh	NCD/498/2799.01	5612	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	5613	-	TU
Antenna (Bi-Log, 30 MHz to 1 GHz)	Teseq	CBL6111D	5615	24	15-Mar-2025
3m Semi-Anechoic Chamber	MVG	EMC Chamber 12	5621	36	07-Aug-2026
Cable (N-Type to N-Type, 2 m)	Junkosha	MWX221-02000AMSAMS/B	5726	6	17-Aug-2024
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221-08000NMSNMS/B	6321	12	04-Feb-2025

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	5604	12	22-Nov-2024

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 Emissions	30 MHz to 1 GHz, Bilog Antenna, SAC, ± 5.2 dB 1 GHz to 6 GHz, Horn Antenna, SAC, ± 5.1 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 115:2021, Clause 4.4.3 (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.