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Report on the EMC Testing of: VECTOR NETWORK ANALYZER

Model(s): MN7021A

In accordance with
FCC 47 CFR Part 15B

Prepared for:
Keysight Technologies (M) Sdn Bhd
Bayan Lepas Free Industrial Zone,
Bayan Lepas, Malaysia 11900

COMMERCIAL-IN-CONFIDENCE

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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
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Prepared By	Quek Keng Huat	11 Dec 2025	

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

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with the mentioned standard(s).



		LA-2007-0380-A LA-2007-0381-F LA-2007-0382-B LA-2007-0383-G LA-2007-0384-G LA-2007-0385-E LA-2007-0386-C LA-2010-0464-D LA-2018-0702-B LA-2018-0703-G LA-2020-0747-L	The results reported herein have been performed in accordance with the terms of accreditation under the Singapore Accreditation Council. Inspections/Calibrations/Tests marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our inspection body/laboratory.
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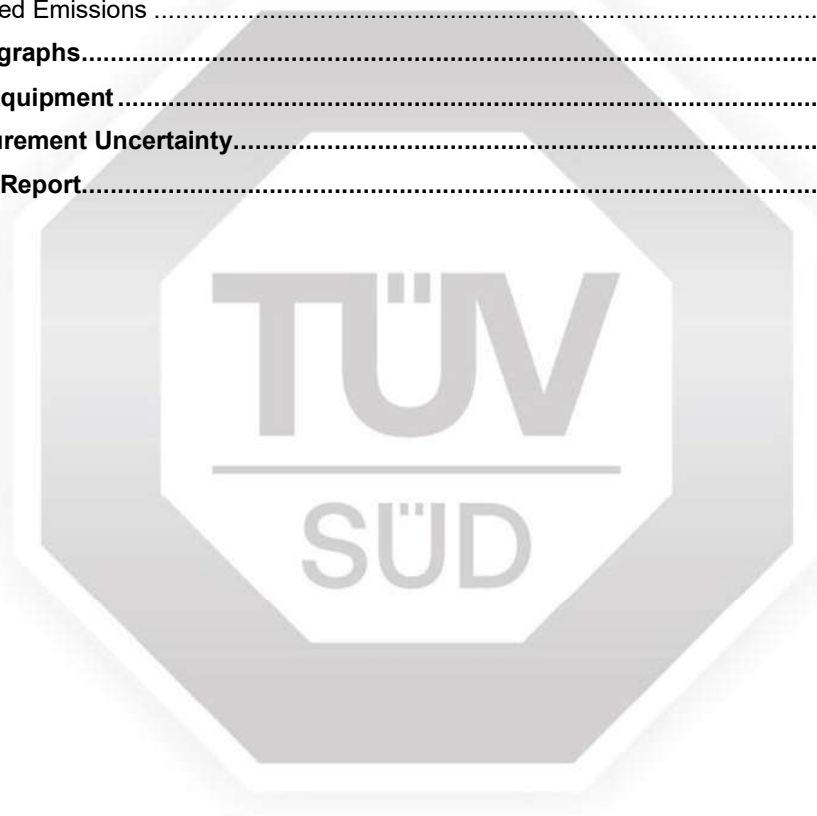
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1 Report Summary

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 Dec 2025





1.2 Introduction

Applicant	:	Keysight Technologies (M) Sdn Bhd Bayan Lepas Free Industrial Zone, Bayan Lepas, Malaysia 11900
Manufacturer	:	Same as applicant
Factory	:	Same as applicant
Model Number(s)	:	MN7021A
Serial Number(s)	:	MY61120165
Number of Samples Tested	:	1
Test Sample(s) Condition	:	Good
Quotation Reference	:	8233217
Test Specification/Issue/Date	:	FCC 47 CFR 15B
Test Sample(s) Received Date	:	24 Jul 2025
Start of Test	:	25 Jul 2025
Finish of Test	:	25 Jul 2025



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with the specifications as shown below.

Specification Clause	Test Description	Result	Comments/Base Standard
<i>FCC 47 CFR 15B</i>			
15.107	Conducted Emissions at Mains Terminals (Class A)	Pass	ANSI C63.4: 2014
15.109	Radiated Emissions (Class A)	Pass	ANSI C63.4: 2014

Notes

1. Nil.





1.4 Product Information

1.4.1 Technical Description

Description	:	The Equipment Under Test(s) (EUT(s)) is a VECTOR NETWORK ANALYZER .
Microprocessor	:	XC7Z035 with Dual ARM Cortex-A9 Microprocessors
Operating Frequency	:	500MHz-2GHz
Clock / Oscillator Frequency	:	33.333MHz
Modulation	:	Not Applicable
Antenna Gain	:	Not Applicable
Port / Connectors	:	LAN(RJ45), USB2.0(TYPE A), USB2.0(MINI B), SMA CH1-4, SMA LO In, SMA LO Out, SMB Ref In, SMB Ref Out, two SMB Trig I/O
Rated Power	:	100-240VAC, 50/60Hz
Accessories	:	Meanwell Power Adaptor: Model: GSM40A12 Input: 100 – 240VAC, 50/60Hz, 1.0-0.5A Output: 12VDC, 3.34A, 40W MAX

1.4.2 Test Configuration and Modes of Operation

Mode(s)	Description
Sweep Mode	The EUT was exercised in the mode(s) throughout the test(s).

1.4.3 Performance Criteria and Monitoring Methods

Not Applicable.



1.5 Deviations from the Standard

Nil.

1.6 EUT Modification Record

No modifications were made.

1.7 Test Location(s)

TÜV SÜD PSB Pte Ltd
Electrical & Electronics Centre (EEC), Product Services,
15 International Business Park
TÜV SÜD @ IBP
Singapore 609937

1.8 Test Facilities Registrations

Requirements	Registration Numbers
FCC	994109 (Test Firm Registration Number) SG0002 (Designation Number)
ISED	SGAP01 (CAB Identifier) 2932N-1 (10m Semi-Anechoic Chamber)
VCCI	R-13324 (10m ANC), G-10203 (10mANC) R-20151 (3m RF Chamber - Lab 7), G-20149 (3m RF Chamber - Lab 7) C-14933 (C.E @ CEIBP) T-12403 (Telecom Ports @ CEIBP)
BSMI	SL2-IS-E-6001R [CNS-13803 (ISM Equipment)] SL2-IN-E-6001R [CNS-13438, CNS-15936 (IT Equipment)] SL2-R1/R2-E-6001R [CNS-13439, CNS-15936 (Broadcast Receivers)] SL2-A1-E-6001R [CNS-13783-1 (Household Appliances)] SL2-L1-E-6001R [CNS-14115 (Lighting Equipment)]
SABS	SABS/A-LAB/0030/2018



1.9 Supporting Equipment

Equipment Description (Including Brand Name)	Model, Serial & FCC ID Number	Cable Description (List Length, Type & Purpose)
AGX machine	M/N: Nil S/N: Nil FCC ID: Nil	
Power Adaptor (MEAN WELL)	M/N: GST90A19 S/N: SC26437603 FCC ID: SDoc	2.00m unshielded power cable
4 x 3ft SMSM+ cable (Mini-Circuits)	M/N: Nil S/N: #1-237719 #2-237713 #3-237763 #4-237766 FCC ID: Nil	3ft
Monitor (HP)	M/N: Z23n S/N: Nil FCC ID: SDoC	2.00m unshielded power cable 2.00 standard VGA cable



2 Test Details

2.1 Conducted Emissions at Mains Terminals

2.1.1 Test Limits

AC Mains Port (Class A)

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak (Q-P)	Average (AV)
0.15 - 0.5	79	66
0.5 - 30.0	73	60





2.1.2 Test Setup

- 2.1.2.1 The EUT and supporting equipment were set up in accordance with the requirements of the standard as shown in the setup photos.
- 2.1.2.2 The power supply for the EUT was fed through a 50 Ω /50 μ H EUT LISN, connected to filtered mains.
- 2.1.2.3 The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.
- 2.1.2.4 All other supporting equipment were powered separately from another LISN.

2.1.3 Test Method

- 2.1.3.1 The EUT was switched on and allowed to warm up to its normal operating condition.
- 2.1.3.2 A scan was made on the NEUTRAL line over the required frequency range using an EMI test receiver.
- 2.1.3.3 High peaks, relative to the limit line, were then selected.
- 2.1.3.4 The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 9kHz. Both Quasi-peak and Average measurements were made.
- 2.1.3.5 The measurements were then repeated for the LIVE line.

Sample Calculation Example

At 20 MHz

Q-P limit (Class B) = 60.0 dB μ V

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.2 dB

Q-P reading obtained directly from EMI Receiver = 40.0 dB μ V
(Calibrated for system losses)

Therefore, Q-P margin = 60.0 - 40.0 = 20.0

i.e. 20.0 dB below Q-P limit

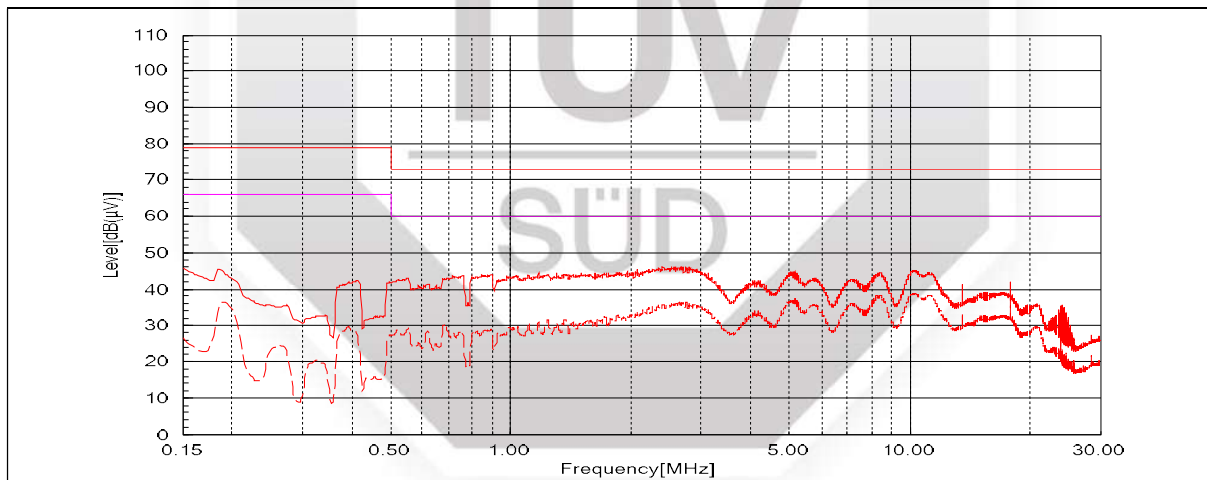


2.1.5 Test Results

The details of the test results are shown below.

Operating Mode	Sweep Mode	Temperature	21°C
Test Input Power	120V 60Hz	Relative Humidity	54%
Line Under Test	AC Mains	Atmospheric Pressure	1006mbar
Class	A	Tested By	Fahim
		Test Date	25 Jul 2025

Frequency (MHz)	Q-P Value (dBμV)	Q-P Limit (dBμV)	Q-P Margin (dB)	AV Value (dBμV)	AV Limit (dBμV)	AV Margin (dB)	Line
0.1860	45.4	79.0	33.6	35.4	66.0	30.6	Live
0.4130	42.3	79.0	36.7	27.0	66.0	39.0	Live
0.5510	42.8	73.0	30.2	29.2	60.0	30.8	Live
1.1720	44.4	73.0	28.6	30.7	60.0	29.3	Live
2.6680	46.3	73.0	26.7	36.2	60.0	23.8	Live
10.2950	45.1	73.0	27.9	38.9	60.0	21.1	Live

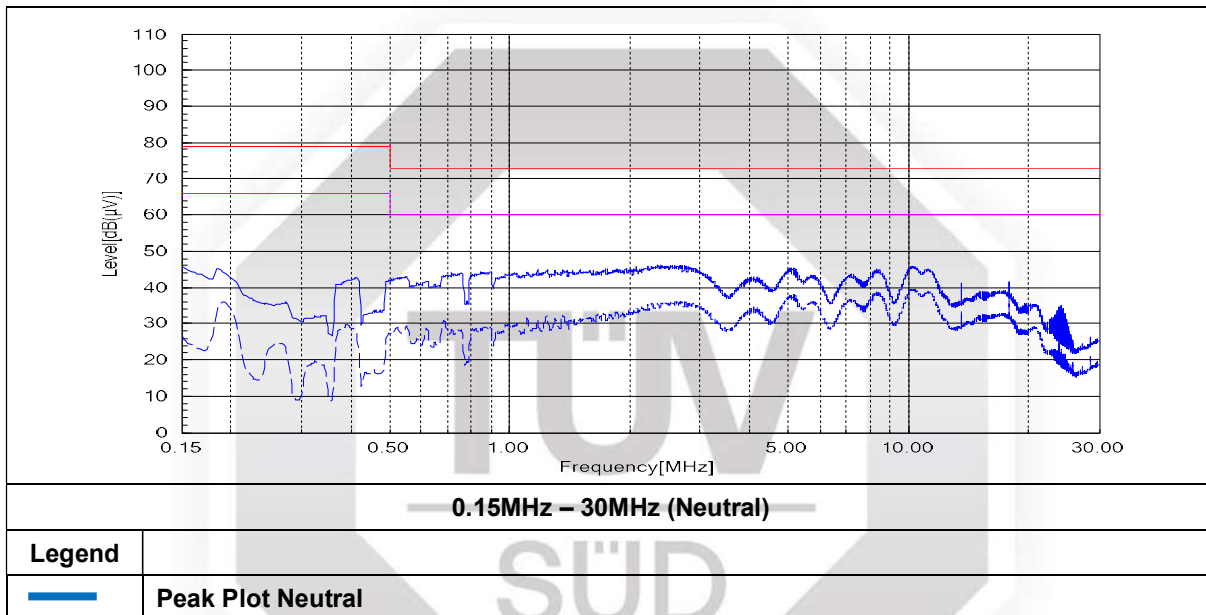


0.15MHz – 30MHz (Live)

Legend	
—	Peak Plot Live



Frequency (MHz)	Q-P Value (dBµV)	Q-P Limit (dBµV)	Q-P Margin (dB)	AV Value (dBµV)	AV Limit (dBµV)	AV Margin (dB)	Line
0.1860	45.1	79.0	33.9	35.0	66.0	31.0	Neutral
0.8450	44.4	73.0	28.6	28.7	60.0	31.3	Neutral
2.6680	46.2	73.0	26.8	36.1	60.0	23.9	Neutral
5.0660	45.5	73.0	27.5	37.7	60.0	22.3	Neutral
8.3290	45.0	73.0	28.0	38.7	60.0	21.3	Neutral
17.9160	41.7	73.0	31.3	37.6	60.0	22.4	Neutral



Notes

1.	All possible modes of operation were investigated from 150kHz to 30MHz. Only the worst-case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2.	A "positive margin" indicates a PASS as it refers to the margin present below the limit line at the particular frequency. Conversely, a "negative margin" indicates a FAIL.
3.	EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings: <u>150kHz - 30MHz</u> RBW: 9kHz VBW: 30kHz



2.2 Radiated Emissions

2.2.1 Test Limits

Class A

Frequency Range (MHz)	Quasi-Peak Limits (dB μ V/m) @ 10m
30 - 88	39.0
88 - 216	43.5
216 - 960	46.4
Above 960 - 1000	49.5
Note : At transition frequency, lower limit applies.	

Frequency Range (GHz)	Average Limits (dB μ V/m) @ 3m	Peak Limits (dB μ V/m) @ 3m
1 – 40	60.0	80.0



2.2.2 Test Setup

- 2.2.2.1 The EUT and supporting equipment were set up in accordance with the requirements of the standard as shown in the setup photos.
- 2.2.2.2 The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.
- 2.2.2.3 The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.

2.2.3 Test Method

- 2.2.3.1 The EUT was switched on and allowed to warm up to its normal operating condition.
- 2.2.3.2 A pre-scan was carried out to pick the worst emission frequencies from the EUT. For EUT which is a portable device, the pre-scan was carried out by rotating the EUT through three orthogonal axes to determine which altitude and equipment arrangement produces such emissions.
- 2.2.3.3 The test was carried out at the selected frequency points obtained from the pre-scan. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
 - a. Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
 - b. The EUT was then rotated to the direction that gave the maximum emission.
 - c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
- 2.2.3.4 A Quasi-peak measurement was made for that frequency point if it was less than or equal to 1GHz. For frequency point that above 1GHz, both Peak and Average measurements were carried out.
- 2.2.3.5 The measurements were repeated for the next frequency point, until all selected frequency points were measured.

Sample Calculation Example

At 300 MHz

Q-P limit (Class B) = 37.0 dB μ V/m

Log-periodic antenna factor & cable loss at 300 MHz = 18.5 dB

Q-P reading obtained directly from EMI Receiver = 31.0 dB μ V/m

(Calibrated level including antenna factors & cable losses)

Therefore, Q-P margin = 37.0 - 31.0 = 6.0

i.e. 6.0 dB below Q-P limit



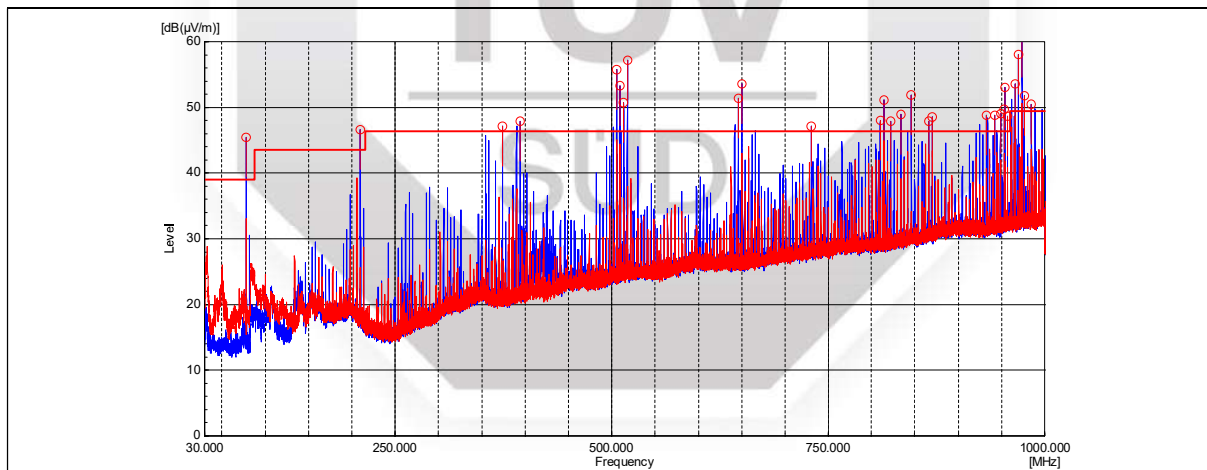
2.2.5 Test Results

The details of the test results are shown below.

Operating Mode	Sweep Mode	Temperature	23°C
Test Input Power	120V 60Hz	Relative Humidity	58%
Test Distance	10m (30MHz – 1GHz) 3m (1GHz – 21GHz)	Atmospheric Pressure	1006mbar
Class	A	Tested By	Kelvin Cheng
		Test Date	25 Jul 2025

Emissions from 30MHz – 1GHz

Frequency (MHz)	Q-P Value (dBμV/m)	Q-P Limit (dBμV/m)	Q-P Margin (dB)	Height (cm)	Azimuth (Degrees)	Polarization (H/V)
78.0600	24.1	39.0	14.9	300	164	H
210.0100	31.0	43.5	12.5	300	91	H
394.0030	31.3	46.4	15.1	300	91	H
505.9680	40.6	46.4	5.8	200	191	H
518.0210	42.9	46.4	3.5	101	269	H
966.0370	45.0	49.5	4.5	300	64	H



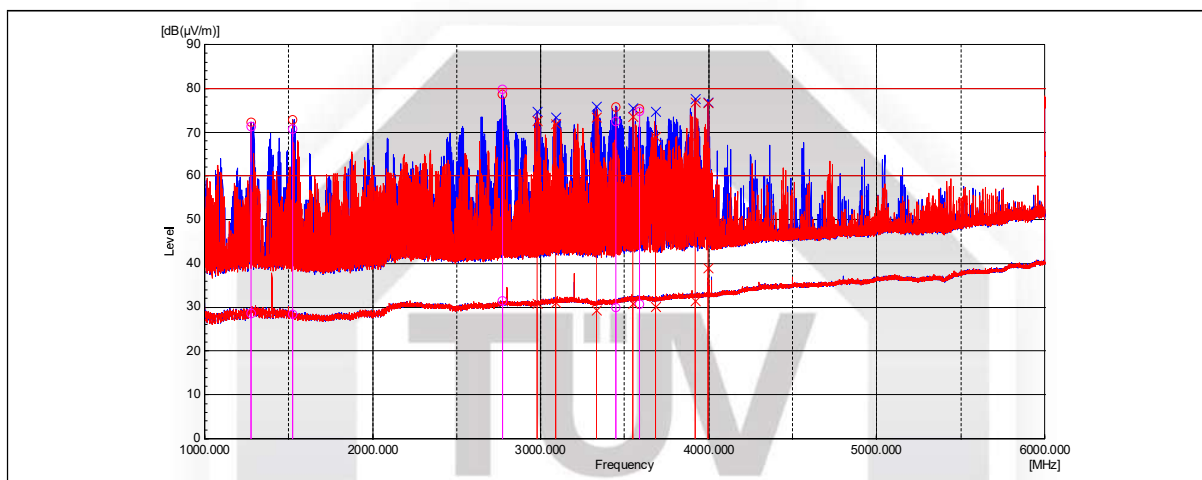
Emissions Plot – 30MHz - 1GHz

Legend	
—	Vertical Polarization
—	Horizontal Polarization



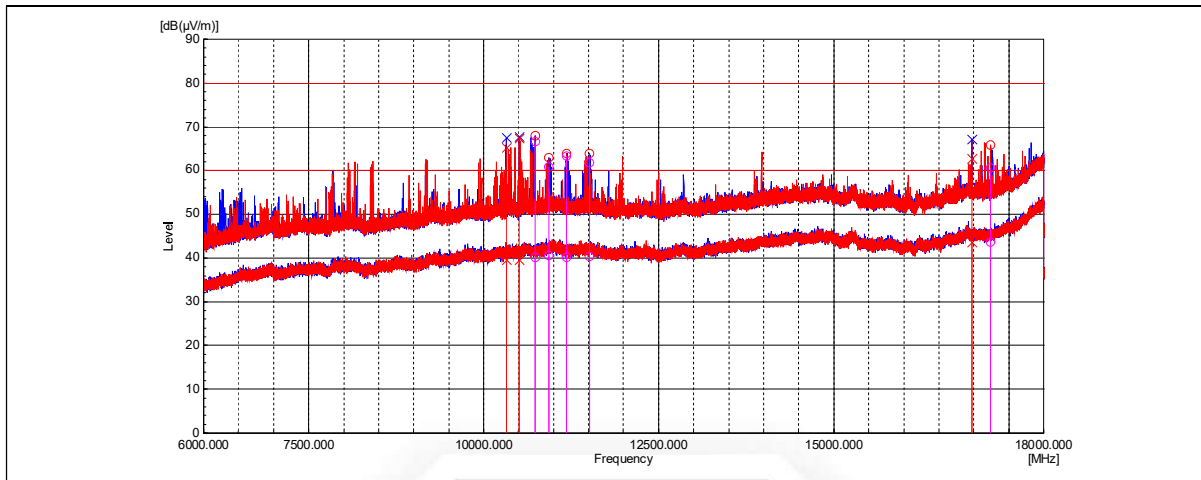
Emissions above 1GHz - 21GHz

Frequency (GHz)	Peak Value (dBμV/m)	Peak Limit (dBμV/m)	Peak Margin (dB)	AV Value (dBμV/m)	AV Limit (dBμV/m)	AV Margin (dB)	Height (cm)	Azimuth (Degrees)	Pol (H/V)
2.7701	79.7	80.0	0.3	31.5	60.0	28.5	200	300	H
3.3301	73.4	80.0	6.6	29.3	60.0	30.7	199	292	V
3.5502	73.6	80.0	6.4	30.8	60.0	29.2	200	292	V
3.5862	74.7	80.0	5.3	30.7	60.0	29.3	100	93	H
3.9222	76.9	80.0	3.1	31.6	60.0	28.4	199	292	V
3.9979	76.6	80.0	3.4	39.0	60.0	21.0	200	100	V



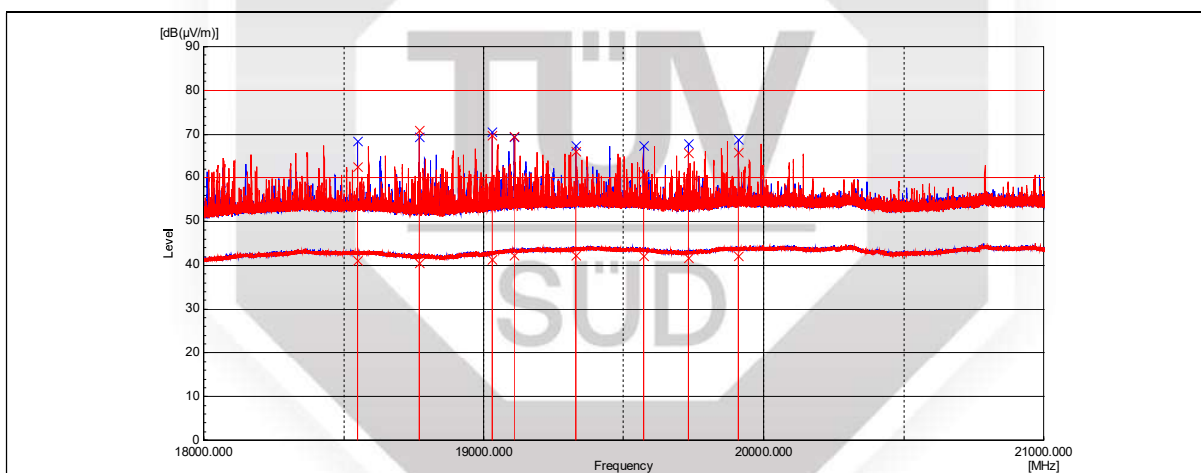
Emissions Plot – 1GHz - 6GHz

Legend	
—	Vertical Polarization
—	Horizontal Polarization



Emissions Plot – 6GHz - 18GHz

Legend	
—	Vertical Polarization
—	Horiztonal Polarization



Emissions Plot – 18GHz - 21GHz

Legend	
—	Vertical Polarization
—	Horiztonal Polarization



Notes

1.	All possible modes of operation were investigated. Only the worst-case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2.	A "positive margin" indicates a PASS as it refers to the margin present below the limit line at the particular frequency. Conversely, a "negative margin" indicates a FAIL.
3.	EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings: <u>30MHz - 1GHz</u> RBW: 120kHz VBW: 1MHz <u>1GHz – 40GHz</u> RBW: 1MHz VBW: 3MHz
4.	The highest frequency of internal sources of the EUT is above 1GHz, as such, the measurement was made up to 5 th harmonic of the highest frequency or 40GHz whichever is lower.





4 Test Equipment

Instrument	Model	S/No	Cal Due Date
Conducted Emissions at Mains Terminals			
Toyo EP5/CE Measurement Software	Ver 5.6.30	Not Applicable	Not Applicable
R&S EMI Test Receiver (5kHz - 3GHz)	EPL1000	100949	29 Jan 2026
Schwarzbeck V-LISN	NNLK 8121	NNLK 8121-518	05 Feb 2026
Radiated Emissions			
Toyo EP5/RE Measurement Software	Ver 6.0.112	Not Applicable	Not Applicable
R&S EMI Test Receiver (9kHz - 26.5GHz)	ESR26	101714	10 Sep 2025
Sonoma Preamplifier (1MHz – 1GHz)	310	263515	06 Oct 2025
TDK Bilog Antenna (30MHz – 1GHz)	HLP-3003C	130745	29 Nov 2025
R&S Preamplifier(6GHz – 18GHz)	SCU18F	101004	27 Jan 2026
Microwave Pre-Amplifier (1GHz-6GHz)	TPA0108-40	1116	05 Dec 2025
Schwarzbeck Horn Antenna (1GHz- 18GHz)	BBHA 9120 D	02574	12 Apr 2026
ETS Horn Antenna (18GHz-40GHz)	3116	0004-2473	25 Oct 2025
R&S Preamplifier (18-GHz-40GHz)	SCU40F1	100643	25 Oct 2025



5 Measurement Uncertainty

All measured results are traceable to the SI units. The uncertainty of the measurement is at a confidence level of approximately 95%, with a coverage factor of 2.

Test Name	Measurement Uncertainty
Conducted Emissions at Mains Terminals	1.1dB (9kHz to 30MHz)
Asymmetric Mode Conducted Emissions	2.8dB (9kHz to 30MHz)
Radiated Emissions	<u>10m Anechoic Chamber (Lab 4)</u> 2.3dB (9kHz to 30MHz @ 10m) 3.5dB (30MHz to 1GHz @ 10m) 4.0dB (30MHz to 1GHz @ 3m) 4.3dB (>1GHz to 40GHz @ 3m) <u>3m RF Chamber (Lab7)</u> 4.0dB (30MHz to 1GHz @ 3m) 4.3dB (>1GHz to 40GHz @ 3m)

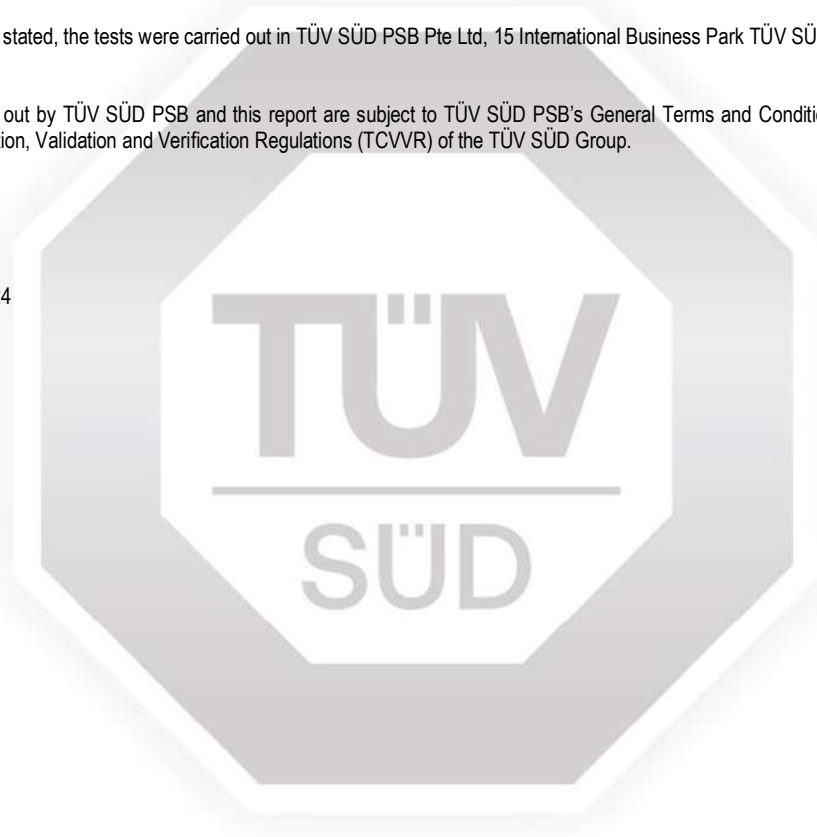




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Effective 27 March 2024





End of the Test Report