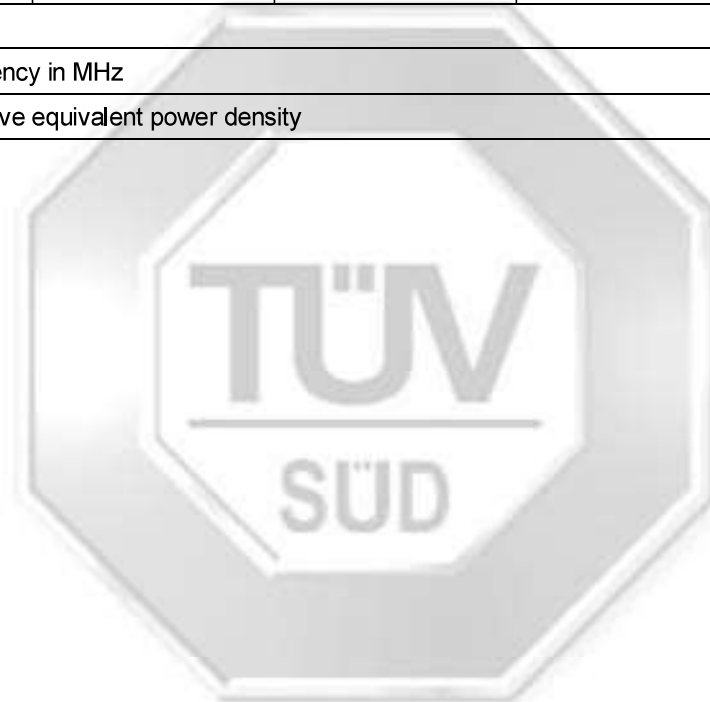


2.7 Maximum Permissible Exposure (MPE)

2.7.1 Test Limits

The EUT shows compliance to the requirements of this section, which states the MPE limits for general population / uncontrolled exposure are as shown below:

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (min)
0.3 - 1.34	614	1.63	100 ^{Note 2}	30
1.34 - 30	824 / f	2.19 / f	180 / f ² ^{Note 2}	30
30 - 300	27.5	0.073	0.2	30
300 - 1500	-	-	f / 1500	30
1500 - 100000	-	-	1.0	30
Notes				
1. f = frequency in MHz				
2. Plane wave equivalent power density				





2.7.2 Test Setup

2.7.2.1 The EUT and supporting equipment were set up as shown on the setup photo.

2.7.2.2 The relevant field probe was positioned at least 20cm away from the EUT and supporting equipment boundary.

2.7.3 Test Method

2.7.3.1 . The EUT was switched on and allowed to warm up to its normal operating condition.

2.7.3.2 The test was first carried out at one of the positions / sides of the EUT.

2.7.3.3 Power density measurement (mW/cm^2) was made using the field meter set to the required averaging time.

2.7.3.4 Measurements were repeated for the next position and its associate EUT operating mode, until all possible positions and modes were measured.

Sample Calculation Example

At 2400 MHz, limit = $1.0 \text{ mW}/\text{cm}^2$

Power density reading obtained directly from field meter = $0.3 \text{ mW}/\text{cm}^2$ averaged over the required 30 minutes.

Therefore, margin = $0.3 - 1.0 = -0.7 \text{ mW}/\text{cm}^2$ i.e. $0.7 \text{ mW}/\text{cm}^2$ below limit



2.7.4 Test Results

Test Input Power	120V 60Hz	Temperature	26°C
Test Distance	20cm	Relative Humidity	56%
		Atmospheric Pressure	1021mbar
		Tested By	Anthony Toh
		Test Date	02 Mar 2024

Model	Channel Frequency (MHz)	Power Density Value (mW/cm ²)	Limit (W/m ²)	Margin (mW/cm ²)	Averaging Time (min)
Chiller RFID	13.5600	0.0098	0.9789	0.9691	30
Flowcell RFID	13.5600	0.0169	0.9789	0.9620	30

Notes

1.	All possible modes of operation were investigated. Only the worst case highest radiation levels were measured. Measurements were taken at the required averaging time. All other radiation levels 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.

4 Test Equipment

Instrument	Model	S/No	Cal Due Date
Conducted Emissions			
R&S EMI Test Receiver (9kHz - 3GHz)	ESPI3	100349	09 Aug 2024
AFJ LISN	AFJ LT32C/10	32031929295	13 Jul 2024
Schaffner LISN	NNB42	04/10055	08 Aug 2024
Teseq Coupling and Decoupling Network	ISN ST08	60442	10 Sep 2024
Radiated Emissions (Spurious Emissions Inclusive Restricted Bands Requirement) and Radiated Emissions (Fundamental)			
R&S EMI Test Receiver (9kHz - 26.5GHz)	ESR26	101714	14 Sep 2024
ETS Lindgren Loop Antenna	6502	134413	03 Jul 2024
Sonoma Preamplifier (1MHz – 1GHz)	310	254719	21 Jul 2024
TDK Bilog Antenna (30MHz – 1GHz)	HLP-3003C	130237	24 Jan 2025
Frequency Stability Versus Temperature and Frequency Stability Versus Input Voltage			
HP Universal Counter	53132A	3736A06236	04 Jul 2024
Xantrex DC Power Supply	XHR 150-4	33778	24 Sep 2024
TABAI Climate Chamber	PSL-2G	3511427	12 Jul 2024
Maximum Permissible Exposure			
Wavecontrol EM Field Meter	SMP2	21SN1744	03 Nov 2024
Wavecontrol Isotropic EM Field Probe (300kHz – 18GHz)	WPF18	21WP090498	03 Nov 2024
Wavecontrol Probe (1MHz – 40GHz)	WPF40	22WP140286	21 Jun 2024